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June 4, 1985

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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
June 4, 1985 Volume 1055 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
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COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of May 7, 1985 and was published in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

International PCT fees were changed effective May 28, 1985 and were announced in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International fees	
Basic fee (first 30 pages)	230.00
Basic Supplemental fee (for each page over 30)	4.00
Designation fee (for the first 10 national or regional offices)	55.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

May 7, 1985.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on June 1, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,332,033 through 4,333,178

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,942,338, Re. S.N. 636,070, Filed July 30, 1984, Cl. 464/34, TORQUE LIMITING COUPLING, James Furlette, et al., Owner of Record: *Inventors,* Attorney or Agent: Ernest I. Gifford, Ex. Gp.: 342

4,381,288, Re. S.N. 725,443, Filed Apr. 22, 1985, Cl. 423/101, MERCURY BRINE SLUDGE TREATMENT, Samuel Weiss, et al., Owner of Record: *Stauffer Chemical Co., Westport, Conn.,* Attorney or Agent: Roger S. Benjamin, et al., Ex. Gp.: 113

4,383,327, Re. S.N. 725,433, Filed Apr. 22, 1985, Cl. 378/019, RADIOGRAPHIC SYSTEMS EMPLOYING MULTI-LINEAR ARRAYS OF ELECTRONIC RADIATION DETECTORS, Robert A. Kruger, Owner of Record: *The University of Utah, Salt Lake City, Utah,* Attorney or Agent: James T. Hoffman, et al., Ex. Gp.: 256

4,395,420, Re. S.N. 724,338, Filed Apr. 17, 1985, Cl. 424/278, METHOD AND COMPOSITION FOR TREATING PRURITIS, Joel E. Bernstein, Owner of Record: *Jaye Boern Laboratories, Inc., Northbrook, Ill.,* Attorney or Agent: Ronald A. Sandler, et al., Ex. Gp.: 125

4,416,408, Re. S.N. 724,830, Filed Apr. 19, 1985, Cl. 228/019, SOLDER REMOVING DEVICE, Ernst Spirig, Owner of Record: *Inventor,* Attorney or Agent: Lawrence E. Laubscher, Sr., et al., Ex. Gp.: 325

4,482,051, Re. S.N. 712,251, Filed Mar. 15, 1985, Cl. 206/392, SHIPPING PALLET, Bryant W. Cantey, Jr., Owner of Record: *C & R Container, Inc., Greenville, S.C.,* Attorney or Agent: John B. Hardaway, III, Ex. Gp.: 241

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,760,331, Reexam. No. 90/000,766, Requested: Apr. 26, 1985, Cl. 339/36, ELECTRICAL CONNECTING DEVICE FOR INSULATED WIRES, Grey Manning Gurley, Owner of Record: *AMP Investment, Inc., Harrisburg, Pa.,* Attorney or Agent: William J. Keating, Ex. Gp.: 215, Requester: Molex, Inc., Chicago, Ill.

4,416,508, Reexam. No. 90/000,772, Requested: Apr. 26, 1985, Cl. 350/96.21, OVERHEAD ELECTRIC AND OPTICAL TRANSMISSION CABLES, Philip Dey, et al., Owner of Record: *BICC Public Limited Co., London, England,* Attorney or Agent: Eugene F. Buell, Ex. Gp.: 251, Requester: Alcoa-Fujikura, Ltd., Los Angeles, Calif.

COMMISSIONER ORDERED REEXAMINATIONS

Notice under 37 CFR 1.11(c). The orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the Orders and other related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed. 37 CFR 1.248(a)(5) and 1.525(b).

4,497,254, Reexam. No. 90/000,776, Requested: May 10, 1985, Cl. 104/IR, ISOLATING DEVICE FOR AN OPENING TRAVERSED BY CONVEYOR CARS, Siegfried Schmidt, Owner of Record: *Buropatent AG, Glarus, Switzerland,* Attorney or Agent: Karl F. Ross, Ex. Gp.: 312, Requester: Commissioner

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

North American Fan Co., aka, N.A.F. Co., Inc., Dallas, Tex., Reg. No. 1,231,783, for the mark "PARK PLACE", Canc. No. 14,401.

Simco-Pacific, dba, American Sport Co., Oakland, Calif., Reg. No. 951,818, for the mark "AMERICAN SPORT", Canc. No. 14,460.

Artronix, Inc., St. Louis, Mo., Reg. No. 924,153, for the mark "ARTRONIX AND DESIGN", Canc. No. 14,516.

General Natural Corp., New York, N.Y., Reg. No. 1,159,117, for the mark "NATURAL LIVING", Canc. No. 14,522.

Louis Marx & Co., Inc., a Del. Corp., assignee by mesne assignment and merger of Louis Marx & Co., Inc., a N.Y. Corp., Glen Dale, W. Va., Reg. No. 844,946, for the mark "COMANCHE", Canc. No. 14,539.

San Francisco Shirt Works, Inc., San Francisco, Calif., Reg. No. 1,154,934, for the mark "SHAZAM AND DESIGN", Canc. No. 14,555.

Fairfield-Noble Corp., Farmingdale, N.Y., Reg. No. 1,035,974, for the mark "PALO ALTO AND DESIGN", Canc. No. 14,556.

Fred L. Runnels, dba, Metrin, Seattle, Wash., Reg. No. 1,287,587, for the mark "METRIN", Canc. No. 14,557.

Lowinger Imports Corp., Miami, Fla., Reg. No. 804,226, for the mark "LEONARDO" Etc. and design, Canc. No. 14,573.

Shez Sports International, Fairfield, N.J., Reg. No. 1,262,455. for the mark "SHEZ", Canc. No. 14,583.

Premier Eyewear Co., Inc., Englewood, N.J., Reg. No. 1,187,460, for the mark "PREMIER AND DESIGN", Canc. No. 14,596.

Energy Solutions, Inc., Stevensville, Mo., Reg. No. 1,142,354, for the mark "SOLAR SOLUTION", Canc. No. 14,625.

Heim Brothers Packing Co., Inc., Little Rock, Ark., Reg. No. 806,996, for the mark "RANCHERO BRAND", Canc. No. 14,630.

Thayer, Inc., assignee, by mesne assignment, of Thayer Co., Gardner, Worcester, Mass., Reg. Nos. 559,722, 561,691 and 568,652, for the marks "TOPS FOR TOTS" & Design, Canc. No. 14,728.

ERMA S. BROWN,
Deputy Clerk of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of June 4, 1985

D. 276,696	4,457,237	4,473,367	4,480,842
4,016,179	4,458,544	4,473,433	4,481,243
4,116,370	4,458,841	4,475,180	4,481,521
4,336,400	4,459,825	4,475,197	4,481,983
4,356,113	4,459,876	4,475,211	4,483,185
4,375,623	4,460,262	4,475,472	4,483,784
4,389,335	4,461,030	4,475,661	4,484,528
4,404,375	4,461,509	4,475,673	4,484,676
4,419,271	4,462,753	4,476,110	4,484,783
4,419,417	4,463,370	4,476,155	4,484,787
4,424,642	4,464,765	4,476,191	4,485,472
4,425,033	4,465,116	4,476,355	4,485,872
4,431,666	4,466,180	4,476,375	4,486,841
4,432,133	4,466,746	4,476,464	4,488,010
4,434,997	4,467,101	4,478,239	4,488,236
4,435,283	4,467,485	4,479,186	4,488,462
4,435,429	4,468,529	4,479,411	4,489,182
4,435,647	4,468,806	4,479,765	4,491,116
4,435,930	4,469,605	4,479,934	4,491,521
4,437,842	4,469,889	4,480,082	4,491,607
4,439,160	4,470,889	4,480,466	4,491,703
4,441,543	4,471,173	4,480,597	4,491,935
4,442,873	4,471,459	4,480,643	4,493,077
4,446,029	4,471,807	4,480,654	4,498,457
4,447,887	4,472,064	4,480,706	4,498,803
4,455,247	4,472,563	4,480,830	

Disclaimers

3,810,515.—*Ben Ingro,* Elmwood Park, Ill. WALL CLIMBING DEVICES. Patent dated May 14, 1974. Disclaimer filed Dec. 10, 1984, by the inventor.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,294,839.—*Thomas Doll,* Mainz; *Erich Schacht,* Seeheim-Jugenheim; *Hans-Eckart Radunz,* Muhltal and *Ernst Schulze,* Darmstadt, Fed. Rep. of Germany. BENZOTHIAZOLE DERIVATIVES AND PHARMACEUTICAL FORMULATIONS CONTAINING THEM. Patent dated Oct. 13, 1981. Disclaimer filed July 6, 1984, by the assignee, *Merck Patent Gesellschaft Mit Beschrankter Haftung.*

Hereby enters this disclaimer to claims 1, 3, 4 and 5 of said patent.

4,401,624.—*Charles B. Atwater,* Springfield, Mo. BUFFERED SOLUTIONS WHICH HAVE A REDUCED CORROSIVE NATURE. Patent dated Aug. 30, 1983. Disclaimer filed Dec. 20, 1984, by the assignee, *Syntex (U.S.A.) Inc.*

Hereby enters this disclaimer to all claims of said patent.

4,406,210.—*Alan C. Baker,* Huntington Beach, Calif., and *John E. Roach, Jr.,* Alexandria, Va. JET-PROPELLED MISSILE WITH SINGLE PROPELLANT-EXPLOSIVE. Patent dated Sept. 27, 1984. Disclaimer filed Mar. 28, 1985, by the assignee, *Brunswick Corp.*

Hereby enters this disclaimer to claims 11–16 of said patent.

4,512,420.—*Asadollah Hayatdavoudi* and *Ladd M. Adams,* Norman, Okla. DOWNHOLE VORTEX GENERATOR. Patent dated Apr. 23, 1985. Disclaimer filed Feb. 6, 1985, by the assignee, *Gill Industries, Inc.*

The term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Dedication

4,390,390.—*Dallas A. Margraf,* Spring Valley and *Fritz F. Treiber,* Centerville, Ohio. LABEL APPLICATOR DEVICE. Patent dated June 28, 1983. Dedication filed Mar. 11, 1985, by the assignee, *Hobart Corp.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers and Dedications

4,342,293.—*James W. Nickerson,* Mobile, Ala. VALVE GUIDE AND METHOD FOR MAKING SAME. Patent dated Aug. 3, 1982. Disclaimer and Dedication filed Apr. 1, 1985, by the assignee, *Teledyne Industries, Inc.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

4,484,547.—*James W. Nickerson,* Mobile, Ala. VALVE GUIDE AND METHOD FOR MAKING SAME. Patent dated Nov. 27, 1984. Disclaimer and Dedication filed Apr. 1, 1985, by the assignee, *Teledyne Industries, Inc.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4243
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF April 27, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	12-12-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	11-05-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	1-04-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	5-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	3-22-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	10-1-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-28-82
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	2-28-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	5-26-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-08-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	1-31-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	4-11-83

Expiration of patents: The patents within the range of numbers indicated below expire during April 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,375,529 to 3,381,302, inclusive
Plant Patents ..... Numbers 2,802 to 2,810 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JUNE 4, 1985

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

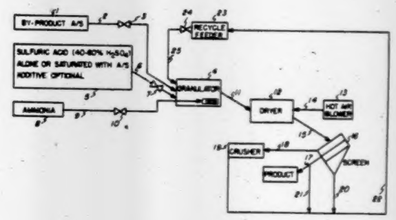
T105,501
GRANULATION OF CRYSTALLINE BY-PRODUCT AMMONIUM SULFATE

Cecil P. Harrison, Rte. 13, Box 41, Florence, Ala. 35630, and Cullen G. Tittle, 109 Monroe Dr., Tuscumbia, Ala. 35674

Filed Sep. 25, 1984, Ser. No. 654,278
Int. Cl.[3] C05B *3/00*
U.S. Cl. 71—61
2 Sheets Drawing. 28 Pages Specification

The present invention teaches a simple method for reclaiming principally the N and S values in by-product, fine, crystalline ammonium sulfate in a granular form eminently suitable for the preparation of direct application fertilizers and/or the incorporation into bulk-blending operations for the preparation thereof.

In the instant invention, normally from about seventy (70) percent to about eighty (80) percent of the ammonium sulfate product produced therefrom, is derived from feedstock comprising said by-product, fine, crystalline ammonium sulfate. Furthermore, in one embodiment for the practice of the instant invention, from about eighty (80) percent to about eighty-eight (88) percent of said fine, crystalline ammonium sulfate feedstock is directly incorporated thereinto with the remainder thereof being indirectly introduced thereinto by means of applicants' prepared special "binder." In another embodiment for the practice of the instant invention wherein same is effected juxtaposed an ammonium sulfate crystallizer unit the aqueous saturated ammonium sulfate mother liquor removed therefrom, with and/or without slurry fines therein may be admixed with water and sulfuric acid to prepare the binder solution for subsequent introduction into the inclined rotating drum. In this embodiment for the practice of the instant invention, all of the fine, crystalline ammonium sulfate feedstock may be directly incorporated into the upper end of said inclined rotating drum, i.e., by acidifying the mother liquor from the crystallizer it is not necessary to employ desolution of a sidestream of the by-product fines from the stockpile thereof.



GRANULATION OF BY-PRODUCT A/S

REISSUES

JUNE 4, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,903

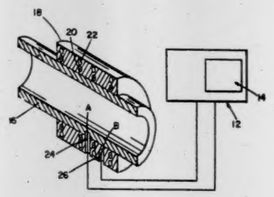
EXTRUDER TEMPERATURE CONTROLLER

Louie M. Faillace, Pawcatuck, Conn., assignor to Crompton & Knowles Corporation, Parsippany, N.J.

Original No. 4,262,737, dated Apr. 21, 1981, Ser. No. 48,974, Jun. 15, 1979. Application for reissue Apr. 13, 1983, Ser. No. 484,689

Int. Cl.[3] **F28F** *27/00;* **B29F** *3/00;* **G05D** *23/22*

U.S. Cl. 165—12 **22 Claims**



1. An extruder system having a barrel *having an axis and a plurality of zones at different positions along said axis,*

a shell surrounding said barrel *and having a plurality of zones corresponding to said zones of said barrel* and having heat exchange elements *for exchanging heat with said zones of said barrel,*

heat exchange element power means,

at least one pair of temperature sensitive elements *in each of said plurality of zones,* one of said pair being placed to sense the temperature adjacent the inner surface of said barrel, the other of said pair being placed to sense the temperature of said shell, and

a controller having

temperature signal input means for receiving an independent temperature signal from [each] *said one temperature sensitive element and for receiving an independent temperature signal from said other temperature sensitive element* of said pair of temperature sensitive elements,

setpoint signal input means for inputting a setpoint signal representative of a desired barrel temperature setpoint *for each one of said plurality of zones of said barrel,*

storage means for independently storing [each of said input independent temperature signals and] *said independent temperature signal from said one temperature sensitive element, said independent temperature signal from said other temperature sensitive element, and* said input setpoint signal, and

control means responsive to said stored input setpoint signal and each of said stored input independent temperature signals *for each of said zones* to derive output signals *for each of said zones, said control means including means responsive to said stored input setpoint signal for providing a control signal for each of said zones, and means responsive to the deviation between said stored input setpoint signal and said stored input temperature signal from said one temperature sensitive element of said pair, for varying said control signal for each of said zones, said control means further including means responsive to said control signals, as varied by said means for varying a control signal, and said stored input temperature signal from said other temperature sensitive element of said pair, for providing said output signals for each of said zones,*

said heat exchange element power means being responsive to said output signals automatically to maintain the temperature of *each of* said *zones of said* barrel close to said input setpoint temperature *for each of said zones of said barrel.*

Re. 31,904

METHOD AND APPARATUS FOR RECYCLING ASPHALT-AGGREGATE COMPOSITIONS

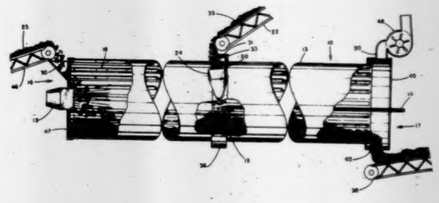
Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Original No. 4,215,941, dated Aug. 5, 1980, Ser. No. 12,657, Feb. 16, 1979. Division of Ser. No. 864,673, Dec. 27, 1977, Pat. No. 4,177,080, which is a continuation-in-part of Ser. No. 718,063, Aug. 26, 1976, Pat. No. 4,182,631, which is a continuation-in-part of Ser. No. 603,357, Aug. 11, 1975, Pat. No. 3,999,743. Application for reissue Jan. 18, 1982, Ser. No. 340,086

The portion of the term of this patent subsequent to Dec. 28, 1993, has been disclaimed.

Int. Cl.[3] **B28C** *5/46*

U.S. Cl. 366—25 **13 Claims**



1. Apparatus for heating and mixing asphalt-aggregate composition comprising

(a) an elongated rotatable drum having an input end and an opposite output end,

(b) means for supplying hot gases of combustion at said input end and for directing said hot gases substantially along the length of said drum between said input and said output ends whereby said composition is gradually heated therebetween,

(c) first means for supplying aggregate particles into said drum at a hot zone whereby said aggregate is directly exposed to said hot gases,

(d) second means for introducing asphaltic concrete particles comprising a mixture of asphalt and aggregate to said drum in a cooler zone whereby said asphaltic concrete is directly exposed to said hot gases in said cooler zone, and

(e) means for recovering heated and mixed composition at said output end.

Re. 31,905

METHOD AND APPARATUS FOR RECYCLING ASPHALT-AGGREGATE COMPOSITIONS

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Original No. 4,177,080, dated Dec. 4, 1979, Ser. No. 864,673, Dec. 27, 1977. Continuation-in-part of Ser. No. 718,063, Aug. 26, 1976, Pat. No. 4,182,631, which is a continuation-in-part of Ser. No. 603,357, Aug. 11, 1975, Pat. No. 3,999,743. Application for reissue Jan. 18, 1982, Ser. No. 340,087

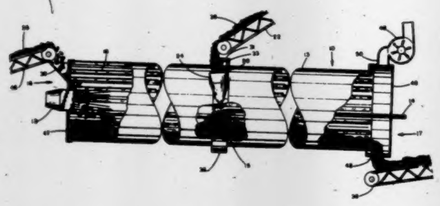
Int. Cl.[3] **C08L** *95/00;* **B28C** *5/46*

U.S. Cl. 106—281 R **18 Claims**

1. A process for [producing asphalt-aggregate composition] *continuously recycling used asphaltic concrete* comprising *continuously* introducing *only* non-asphalt containing aggregate particles in a hot zone of a rotatable drum and gradu-

ally heating and advancing said aggregate toward an output drum end,

continuously introducing *only a mixture of coarse and fine* solid particles of used asphaltic concrete comprising a mixture of asphalt and aggregate radially into said drum downstream from said hot zone *at a single location* in a cooler temperature zone,



gradually mixing and heating said aggregate with said asphaltic concrete particles, and

adding and mixing liquid asphalt with [said] *the mixture of aggregate and asphaltic concrete* particles downstream from said hot zone to produce [said asphalt-aggregate] *an asphaltic concrete paving* composition.

Re. 31,906

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

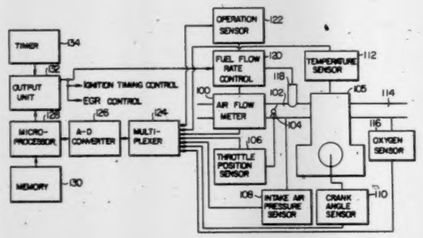
Yoshishige Oyama; Teruo Yamauchi, and Yutaka Nishimura, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 4,205,377, dated May 27, 1980, Ser. No. 899,159, Apr. 24, 1978. Application for reissue May 27, 1982, Ser. No. 382,692

Claims priority, application Japan, Apr. 22, 1977, 52-45795

Int. Cl.³ G06F *15/20;* **F02D** *33/00*

U.S. Cl. 364—431.06 **14 Claims**



14. A control system for an internal combustion engine comprising: an air flow meter for metering the flow rate of intake air supplied to the engine and for producing an output signal relative to the flow rate of intake air; a plurality of sensors for detecting different conditions of engine operation; a microprocessor for carrying out digital computation on the basis of the output signal of said air flow meter and the output signals of said sensors thereby providing at least one control signal for the engine; fuel supply means for supplying fuel to the engine; and fuel flow rate control means for controlling the flow rate of fuel supplied by said fuel supply means according to said control signal; wherein said air flow meter includes means for producing, as said output signal relative to the flow rate of intake air, a non-linear signal having a non-linear characteristic such that the changing rate of said signal with respect to the flow rate of intake air is greater in a predetermined region in which the flow rate of intake air is smaller than in other regions of the flow rate of intake air, said control system further comprising means for converting said non-linear signal to a digital form, said microprocessor being supplied with said non-linear signal in a digital form for carrying out digital computation on the basis of said non-linear signal.

Re. 31,907

TETRAFLUOROETHYLENE COPOLYMER FINE POWDER RESIN

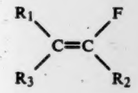
Robert V. Poirier, Fairport, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 4,036,802, dated Jul. 19, 1977, Ser. No. 616,442, Sep. 24, 1975. Application for reissue Jul. 18, 1978, Ser. No. 925,886

Int. Cl.³ C08L *27/18;* **C08F** *259/08*

U.S. Cl. 525—276 **8 Claims**

11. An agglomerated fine powder resin whose agglomerated particles have an average size of between about 350μ and 800μ and are composed of primary particles [defined as provided in the definition of the particles in claim **1**] *having an average size of between about 0.1 and 0.5μ; said particles having at least two portions, an outer portion and an adjacent inner portion, each portion consisting essentially of a copolymer of units of tetrafluoroethylene and at least one comonomer having the formula*



(a)

wherein

R_1 independently is F;

R_2 independently is F;

*R_3 is Cl; said inner copolymer portion containing a higher percentage of said comonomer than the outer copolymer portion; the total comonomer content present in the particle, the amount of comonomer present in the copolymer of each portion, and the amount of each portion within such particles being sufficient to produce on AWG 22 wire a sintered coating having no more than 5 flaws per 100 meters of coated wire when said particles are paste extruded at a reduction ratio of 2840:1, the flaws being detected by subjecting the sintered coated wire to a high voltage spark tester at 2 KV and 300 Hz; the copolymers of the inner portion and the outer portion combined containing an amount of comonomer which is low enough to maintain the non-*melt-*fabricable nature of the polymer particles.*

Re. 31,908

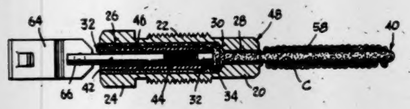
GLOW PLUG

John T. Petrik, Newtown, and Brooke N. Westover, Stratford, both of Conn., assignors to Sun Chemical Corporation, New York, N.Y.

Original No. 4,414,463, dated Nov. 8, 1983, Ser. No. 303,004, Sep. 17, 1981. Application for reissue Feb. 13, 1984, Ser. No. 579,441

Int. Cl.³ F23Q *7/10*

U.S. Cl. 219—270 **12 Claims**



1. A diesel glow-plug ignitor comprising, in combination:

(a) a tubular metal body having an inner end securely carried in a cylinder opening of an engine,

(b) an electrically conductive core pin insulatedly carried in the bore of the body, physically structurally united therewith, and having a portion projecting from said inner end thereof, said projecting portion of said core pin being coated with insulating material, and

(c) a tight-wound helical igniting coil of resistance wire on said projecting portion of the core pin, having its ends respectively welded to the body and welded substantially to the end of said projecting portion of the pin,

(d) the convolutions of said coil having an insulating oxide coating thereon to prevent them from short-circuiting each other,

(e) said insulating material on the core pin having ceramic-containing insulation and being plasma sprayed thereon to further prevent the convolutions of the coil from electrically contacting the projecting portion of the core pin.

PLANT PATENTS

GRANTED JUNE 4, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,482

ROSE PLANT

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Nov. 30, 1983, Ser. No. 556,267
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by bright lemon yellow and currant red flowers of good exhibition form and medium to heavy petalage with petals reflexing upon opening displaying red toned outer petal edges and apices and retaining good exhibition form until open.

5,483

ROSE PLANT

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Nov. 30, 1983, Ser. No. 556,266
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by capsicum red buds which open quickly into bright orange red flowers with irregular yellow flower centers in the fully open stage.

5,484

ROSE PLANT

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Nov. 30, 1983, Ser. No. 556,268
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by bright red buds which upon opening reveal bicolored petals of red and Naples yellow toward point of petal attachment and display yellow centers amid red colored petals at full open bloom, flowers are very long lasting on the plant and after cutting.

5,485

PECAN TREE (JUBILEE)

Melvin B. Clemons, Rte. 1, Box 1315, Foley, Ala. 36535

Filed Nov. 15, 1983, Ser. No. 551,937
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—31 **1 Claim**

1. A new and distinct variety of pecan tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of medium-early maturity of high quality, large nuts on an annual basis, without the use of fungicide in an area where most pecan varieties are severely affected by pecan scab disease, said nuts having medium-thin shells which separate easily from the kernel, and a self-fertile habit which assures good annual nut crops even in the absence of any neighboring pecan trees.

5,486

PLUM TREE '42-GA-1200'

Chris F. Zaiger, 537 Rosemore Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 2121 Elm Ave., all of Modesto, Calif. 95351

Filed Jun. 30, 1983, Ser. No. 509,872
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree, substantially as illustrated and described, characerized by large, clingstone, nearly globose fruit slightly flattened at the base and apex, the fruit having bluish-red skin and firm, yellow flesh; and further characterized by blooming with the Santa Rosa but bearing fruit ripening approximately one week earlier; the fruit having a good flavor and very good storage, shipping, and eating qualities; and, throughout the tree, the fruit being nearly uniform in size and relatively uniform in maturity.

5,487

PLUM TREE, SUPLUMFIFTEEN

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Nov. 25, 1983, Ser. No. 555,191
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree substantially as illustrated and described, characterized particularly as to novelty by its general similarity to the Simka Plum Tree (U.S. Plant Pat. No. 1,882) in its regular and productive bearing of large, dark purplish skinned fruit having firm, pale yellow flesh, but differing therefrom in the greater size of its fruit, the ripening of its fruit about three weeks later than that of the Simka, and its flesh which clings over the entire surface of the stone.

PATENTS

GRANTED JUN. 4, 1985

ERRATA

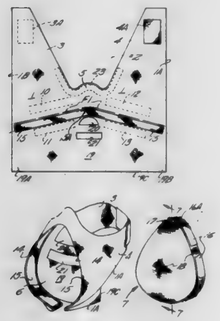
For CLASS	See PATENT NO.
406–086	4,521,130
416–175	4,521,154
357–081	4,521,170
530–501	4,521,336
534–560	4,521,337
514–021	4,521,409
514–026	4,521,410
514–203	4,521,413
514–229	4,521,414
514–252	4,521,415
514–252	4,521,416
514–255	4,521,417
514–272	4,521,418
514–267	4,521,419
514–259	4,521,420
514–267	4,521,421
514–258	4,521,422
514–290	4,521,423
514–314	4,521,424
514–350	4,521,425
514–346	4,521,426
514–354	4,521,427
514–277	4,521,428
514–383	4,521,429
514–211	4,521,430
514–471	4,521,431
514–556	4,521,432
514–315	4,521,619
514–122	4,521,646

PATENTS

GRANTED JUNE 4, 1985

GENERAL AND MECHANICAL

4,520,509
MASK WITH REMOVABLE COUNTERCURRENT EXCHANGE MODULE
Russell G. Ward, 2050 SW. 71st Ave., Portland, Oreg. 97225
Filed Feb. 18, 1983, Ser. No. 467,914
Int. Cl.³ A42B 1//18
U.S. Cl. 2—206 **7 Claims**



1. A face mask for protecting the wearer from hazardous environmental conditions such as cold temperatures or airborne particles, said mask comprising,

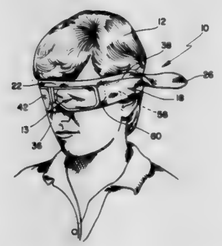
a filter body of three dimensional shape,

a fabric sheet which may be configured to define an open area within which said filter body is at least partially inset, means on said sheet for securing same to a wearer's face,

closure strips on said fabric sheet to retain same in a desired configuration to define said open area, and

attachment means in place on said sheet and about the perimeter of said filter body whereby the filter body may be retained in place within said open area in a removable manner.

4,520,510
CONVERTIBLE HEADBAND CONSTRUCTION
Ronald H. Daigle, Cranston, R.I., assignor to Wilbert Rosenberg, a part interest
Filed Dec. 5, 1983, Ser. No. 558,576
Int. Cl.³ A61F 9/02
U.S. Cl. 2—452 **10 Claims**



1. A convertible headband construction comprising:

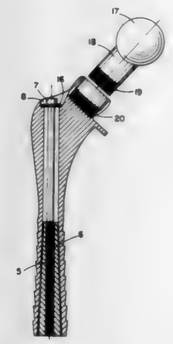
a. an elongated flexible band receivable in snugly encircling relation on the head of a wearer, said band having an eye opening therethrough;

b. a flexible flap on said band, said flap being alternately positionable in a first position thereof wherein it is received in encircling relation around said band for covering said eye opening and wherein said flap and said band cooperate to define a strap-like headband, and a second position thereof wherein said flap is disposed adjacent said band but said eye opening is unobstructed, and wherein said band is receivable on said head so that said eye opening is aligned with an eye of said wearer;

c. means for detachably retaining said flap in said first position thereof; and

d. means for alternatively detachably retaining said flap in said second position thereof.

4,520,511
HIP PROSTHESIS WITH EXPANDING FEMORAL COMPONENT
Paribelli Gianezio, Via Branzanti 2, and Godoli Nunzio, Via Boccaccini, both of Ravenna, Italy
Filed Jul. 30, 1982, Ser. No. 403,419
Int. Cl.³ A61F 1/24
U.S. Cl. 3—1.913 **14 Claims**



1. A hip prosthesis comprising:

an elongated member adapted for insertion in the femoral canal against the inner surface of the large femoral trocanter having a longitudinal bore and a slanted upper end terminating in an articulation;

said upper end being formed with a retaining collar adapted to rest against the median counterfort of the femur;

the lower end of the member having a plurality of longitudinal slits defining a plurality of expansible, resilient, unitary, straight, sectors adapted to grip the inner surface of the femoral trocanther;

a longitudinal, internally threaded rod with said bore; and,

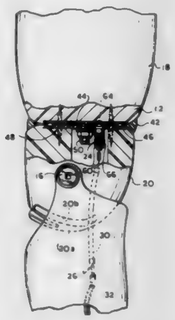
actuating means in said rod for expanding said sectors after insertion of the prosthesis in said femoral canal;

said sectors having spaced outwardly extending, peripheral shoulders for locking said prosthesis in place.

4,520,512
ARTIFICIAL LIMB WITH AUTOMATIC RELEASE FOR FREE ROTATION
Hans R. Lehneis, Roslyn, and Robert G. Wilson, New York, both of N.Y., assignors to New York University, New York, N.Y.
Filed Sep. 8, 1981, Ser. No. 300,256
Int. Cl.³ A61F 1/04
U.S. Cl. 3—22 **17 Claims**

1. In an artificial limb of the type having a joint and incorporating a rotator unit for achieving rotation about an axis ex-

tending along the limb, said rotator unit being disposed in the vicinity of said joint and including a locking mechanism movable to enable and disable the rotation of said rotator unit, the improvement comprising a coupling mechanism connecting said locking mechanism to a fixed point on said limb, said rotating unit and fixed point being on opposite sides of said



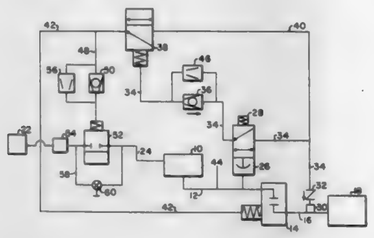
joint, said coupling mechanism extending along said limb and across said joint, and means for coupling the pivotal movement of said limb at said joint to said coupling mechanism to impart movement to said locking mechanism for enabling and disabling said rotation, whereby said enabling and disabling occur automatically when said limb is pivoted at said joint.

4,520,513

AUTOMATIC VACUUM URINAL FLUSH MECHANISM

Milton W. Raupuk, Jr., Annapolis, and Edward M. Pennington, Chester, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 2, 1983, Ser. No. 500,509
Int. Cl.³ E03D *13/00*
U.S. Cl. 4—302 **8 Claims**



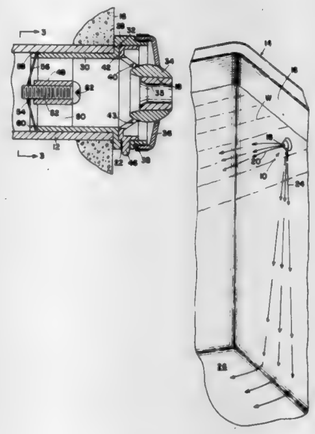
1. In a vacuum sewage flow system of the type characterized by a manual flushometer that admits water into a urinal, a pressure sensing device that responds to the increased hydrostatic pressure resulting from the flush water, a vacuum switch that opens in response to the pressure sensing device, a discharge timing controller activated by and connected to system vacuum through said vacuum switch and through a check valve and orifice device, and a main discharge valve activated by and connected to system vacuum through said discharge timing controller such that the opening of the main discharge valve permits flow from the urinal which drops the hydrostatic pressure, resets both the pressure sensing device and vacuum switch and admits atmospheric pressure through the said orifice to the timing controller and main discharge valve to reset the system to its original status the improvement comprises:
a vacuum controlled water dispensing valve;
an additional vacuum line connecting the discharge timing controller to the vacuum controlled water dispensing valve so that flush water is introduced into the urinal in response to the activation of the pressure sensing switch.

4,520,514

FITTING FOR A SWIMMING POOL RETURN LINE

Bruce R. Johnson, Petaluma, Calif., assignor to Jandy Industries, San Rafael, Calif.

Filed Apr. 29, 1983, Ser. No. 490,119
Int. Cl.³ E04H *3/18*
U.S. Cl. 4—490 **4 Claims**



1. A fitting for a swimming pool return line having an outlet end near the surface of the pool comprising:
a generally cylindrical housing;
a cylindrical extension on one end of said housing receivable in the outlet end of said return line to be secured therein;
an end closure on said other end of said housing;
a nozzle centrally located on said end closure, and
a flow passageway through said nozzle to direct a jet of water outward;
said nozzle being movable in said end closure for directional adjustment of said flow passageway;
an arcuate slot in the lower portion of said housing to jet a sheet of water downward along a wall in which said housing is mounted; and
an arcuate closure member movable in said housing between a closed position wherein said slot is covered and a full open position wherein flow through said slot is unimpeded.

4,520,515

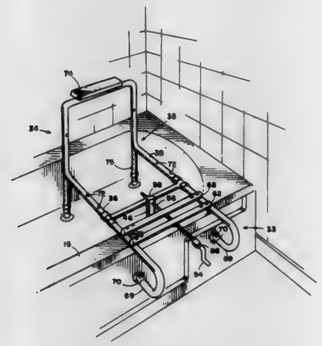
THREE POINT CLAMPING MEANS FOR A SHOWER BENCH

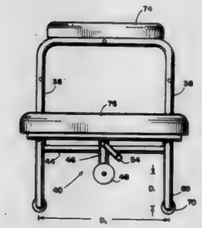
John Hatala, Clifton, N.J., assignor to Temco Home Health Care Products, Inc., N.J.

Continuation-in-part of Ser. No. 477,158, Mar. 21, 1983, Pat. No. 4,475,256. This application Jan. 9, 1984, Ser. No. 569,507
Int. Cl.³ A47K *3/022, 3/12;* **A61H** *33/02*
U.S. Cl. 4—579 **8 Claims**

1. A shower bench apparatus for use in a bathtub having an edge, said apparatus comprising:
at least two feet locatable inside of said bathtub;
a first and a second rail attached to said feet;
a chair unit attachable to said rails; and,
a clamping means for attaching one end of said bench to the edge of said bathtub, said clamping means including:
a stationary portion attached to said first and second rails and locatable outside of said bathtub;
a slidable member also attached to said first and second rails and locatable within said bathtub; and,

a hand operable means for driving said slidable member along said first and second rails,





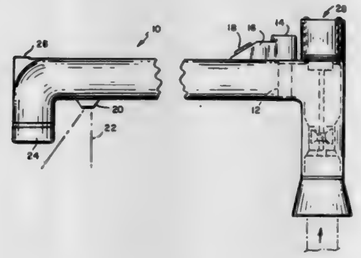
wherein rotation of said hand operable means causes said slidable member to engage the inside portion of said bathtub edge thereby clamping said bench to said bathtub.

4,520,516

ULTRASONIC FLOW-CONTROL SYSTEM

Natan E. Parsons, 86 Henry St., Cambridge, Mass. 02139

Filed Sep. 23, 1983, Ser. No. 535,213
Int. Cl.³ E03C *1/05*
U.S. Cl. 4—623 **13 Claims**



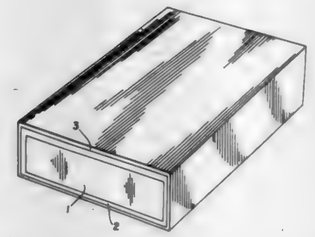
5. A flow-control system comprising:
A. a faucet, having an inlet and an outlet and providing a fluid path between the inlet and the outlet, for receiving liquid at its inlet and directing the liquid out through its outlet;
B. an electrically operable valve interposed in the fluid path and operable, by application of control signals thereto, between an open position, in which it permits fluid flow in the fluid path, and a closed position, in which it prevents fluid flow therein; and
C. a detection circuit electrically connected for application of control signals to the electrically operated valve, the detection circuit including means for detecting moving objects and means for, in at least one mode of operation, operating the valve to permit liquid flow if the detecting means detects a moving object and for operating the valve to prevent fluid flow if the detecting means does not detect a moving object.

4,520,517

MATTRESS OR PILLOW CONSTRUCTION

Lars Ahlm, Ulricehamn, Sweden, assignor to Timmele Laminering AB, Ulricehamn, Sweden

Filed Jun. 24, 1982, Ser. No. 391,689
Claims priority, application Sweden, Sep. 21, 1981, 8105554
Int. Cl.³ A47C *27/15*
U.S. Cl. 5—481 **2 Claims**



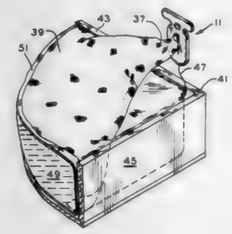
1. A mattress, pillow, or the like, having a core formed of an elastic plastic material having a predominant portion of open cells, a thin layer of soft elastic plastic polyester material having predominately open cells and a short curing time said plastic thin layer completely covering said core and being permanently joined to said core by means of heat-lamination and necessitating minimum solidification time, a polyurethane plastic film which is easy to disinfect and clean, entirely covering and permanently fixed by heat-lamination to said thin layer of soft elastic plastic.

4,520,518

BED SHEET INSTALLATION AND RETENTION

Brian K. Reaser, 600 E, Road 880S, Bluffton, Ind. 46714

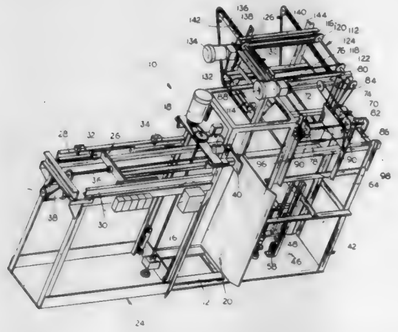
Filed Sep. 30, 1983, Ser. No. 537,703
Int. Cl.³ A44B *21/00*
U.S. Cl. 5—498 **6 Claims**



1. A bed-cover retainer for holding an edge portion of a bed-cover in position beneath an edge of a bed mattress comprising a semi-rigid generally flat anchor having an elongated stem portion with a handle portion near one end of the stem portion, and a bed-cover gripper permanently fastened to the anchor for selectively fastening a section of the bed-cover near an edge thereof to the anchor whereby the bed-cover may be fastened to the anchor and then the anchor slid downwardly along the side and then under the mattress to lie generally flat beneath the mattress and retained by the weight thereof to hold

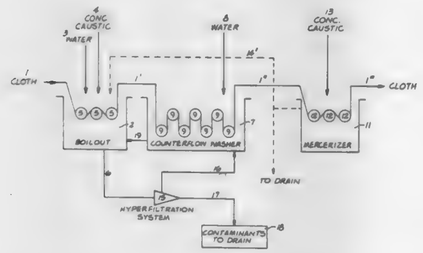
the bed-cover in position tucked about the mattress, the handle portion comprising a pair of oppositely extending lateral tabs.

4,520,519
APPARATUS FOR REMOVING HONEY FRAMES FROM SUPERS
Lawrence J. Kuehl, Loup City, Nebr. 68853
Filed Sep. 12, 1983, Ser. No. 530,955
Int. Cl.³ A01K *51/00*
U.S. Cl. 6—12 R **4 Claims**



1. An apparatus for removing the frames from honey supers, comprising:
a frame means,
a first support means on said frame means adapted to receive a stack of honey supers thereon,
first means for horizontally laterally moving the uppermost super from the stack to a first holding area on said frame means,
second means on said frame means for vertically removing the frames from the super which is held in said first holding area,
conveyor means on said frame means for moving the removed frames to a second holding area on said frame means for subsequent removal from the frame means,
said first means comprising a horizontally movable push arm which engages the uppermost super and pushes the same laterally to said first holding area.

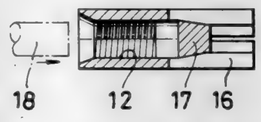
4,520,520
MERCERIZATION PROCESS AND APPARATUS
Lawton L. Johnston, P.O. Box 104, Graniteville, S.C. 29827, and Craig A. Brandon, 103 Crestwood Dr., Clemson, S.C. 29631
Filed Feb. 1, 1983, Ser. No. 462,909
Int. Cl.³ D06B *7/08, 23/20*
U.S. Cl. 8—151 **19 Claims**



1. In a process for mercerizing of cellulosic cloth comprising treating the cloth with 3–10% caustic at the boil in a boilout stage, washing the cloth after treatment in the boilout stage and treating the washed cloth with 20–25% caustic in a mercerizer, the improvement comprising the steps of:
(a) collecting overflow from the boilout stage, contaminated with additives used in weaving and knitting the cloth;
(b) treating the contaminated overflow from the boilout stage by prefiltration to remove solid material and treating a resulting filtrate by hyperfiltration to produce a recovered fraction of relatively pure caustic solution and a concentrate fraction containing additives used in weaving or knitting the cloth;
(c) washing the cloth after treatment in the boilout stage with the recovered fraction of relatively pure caustic from step (b) and
(d) withdrawing said concentrate fraction containing additives used in weaving or knitting the cloth from the system.

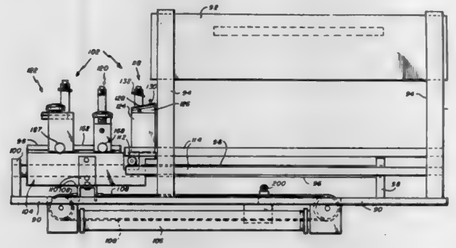
12. In an apparatus for mercerizing cellulosic cloth comprising boilout means for treating the cloth with 3–10% caustic solution, means for washing the cloth downstream of the boilout means and mercerizer means for treating the washed cloth with 20–25% caustic solution, the improvement wherein the boilout means is provided with means for collection of overflow liquor, contaminated with additives from weaving or knitting; the overflow collection mens is provided with a hyperfiltration means, downstream from a perfilter means for removing solid materials from the overflow liquor, for treating the resulting prefiltered overflow liquor to produce a recovered fraction of relatively pure caustic solution and a concentrate fraction, containing additives used in weaving or knitting; and the apparatus is further provided with means for recycling the recovered fraction of relatively pure caustic solution to the washing means; and the apparatus is further provided with means for withdrawing said concentrate fraction, containing additives used in weaving and knitting.

4,520,521
PROCESS OF MANUFACTURING A SLEEVE AND WEDGE FOR AN ANCHOR BOLT
Akira Miyake, 5-2, Imagawa 2-chome, Higashi, Sumiyoshi-ku, Osaka-shi, Osaka, Japan
Filed Mar. 8, 1983, Ser. No. 473,341
Claims priority, application Japan, Dec. 2, 1982, 57-212312
Int. Cl.³ B21K *1/44;* **B21D** *31/00*
U.S. Cl. 10—27 PH **7 Claims**



1. A process for manufacturing a sleeve and wedge for an anchor bolt, comprising the steps of:
(1) cutting a bar stock into longitudinally extending pieces of predetermined length;
(2) forming a longitudinally extending bolt hole having a cross-sectional area, at one end of each piece, the bolt hole terminating at an end surface having an area equal to the cross-sectional area of the bolt hole, inside the piece;
(3) forming slits in each piece longitudinally extending from the end of each piece opposite the one end to about the midpoint of the longitudinal extend of the piece; and
(4) longitudinally striking the other end of each piece only over a striking area less than the area of the end surface of the bolt hole so as to shear a wedge from each piece, the wedge having opposite end surfaces defined by the end surface of the bolt hole and said striking area, without removing the wedge from inside the piece.

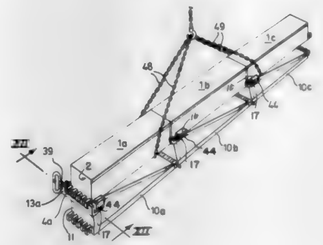
4,520,522
TECHNIQUES FOR STIFFENING SHOE INSOLES
Jules N. Allard, Tyngsboro, Mass., assignor to Bush Universal, Inc., Woburn, Mass.
Division of Ser. No. 236,569, Feb. 20, 1981, Pat. No. 4,430,767.
This application Sep. 19, 1983, Ser. No. 533,226
Int. Cl.³ A43D *31/00;* **A43B** *13/41*
U.S. Cl. 12—40.5 **12 Claims**



1. An apparatus for stiffening an insole with an externally activatable, flexible shank strip comprising:
means for supporting the insole to confine the insole to a predetermined longitudinal curve;
said insole supporting means being adapted to support the insole at three points including the heel, ball and arch, each of said supporting points being preselected for a particular insole configuration and defining a predetermined datum point for the respective portions of the insole whereby plurality of insoles successively placed on the supporting means each will by confined to the identical predetermined longitudinal configurations;
said supporting means further comprising a heel support unit, an arch support unit and a ball support unit, the heel support unit being located in a predetermined location, each of the ball and arch support units being movable longitudinally with respect to the heel support unit and with respect to each other;
gauge means associated with the heel support unit to provide a fixed datum for the longitudinal placement of the heel of the insole;
hold-down means movable toward and away from the insole supporting means to press the insole firmly into engagement with the insole supporting means;
said hold-down means being further constructed and arranged to retain the flexible shank strip in an uncured state on the insole and in a position conforming to the shape of the insole; and
means for activating the shank strip while retaining the insole in said predetermined configuration and while maintaining the shank strip insert conforming shape.

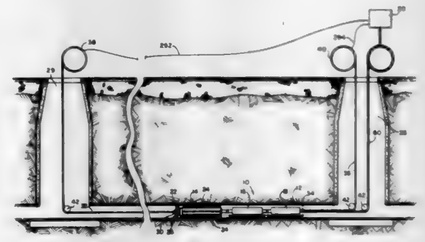
4,520,523
BRIDGE MODULE FOR USE IN A CRANE ASSISTED METHOD OF BUILDING A TRANSPORTABLE GIRDER BRIDGE
James P. Fitzgerald-Smith, Ossemsley, Nr. New Milton; Bertram Bird, Bournemouth, and Michael Willis, Ryde, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Great Britain
Filed Oct. 5, 1982, Ser. No. 432,828
Claims priority, application United Kingdom, Oct. 5, 1981, 8130029
Int. Cl.³ E01D *15/12, 21/04*
U.S. Cl. 14—2.4 **4 Claims**

1. A crane-assisted method for interconnecting a second bridge module to an identical first bridge module, said first and second modules each including upper and lower girder sections, said method including the steps of:
a. supporting the second module in a substantially horizontal attitude by means of two pairs of slinging chains symmetrically attached to the upper girder section, the second module being positioned so as to interdigitate tongues of exposed upper and lower first end faces respectively provided on the upper and lower girder sections of the second module with corresponding tongues of exposed second end faces respectively provided on the upper and lower girder sections of the first adjoining module,



b. pinning the lower interdigitated tongues of the lower girder section with a first assembly pin;
c. disconnecting one pair of the slinging chains nearest to a stub pin and relieving the cantilever effect of the second module at the stub pin by upwardly rotating the second module about the first assembly pin by means of the other pair of slinging chains until the stub pin can be freely withdrawn and replaced by a second assembly pin; and
d. disconnecting the other pair of slinging chains.

4,520,524
REMOTELY CONTROLLED HYDRAULIC CLEANER APPARATUS
Charles A. Long, Jr., 4144 Sharpsburg Dr., Birmingham, Ala. 35213
Filed Mar. 26, 1984, Ser. No. 593,453
Int. Cl.³ B08B *9/02*
U.S. Cl. 15—104.3 R **18 Claims**



1. A remotely controlled, hydraulically operated cleaner apparatus for use in cleaning the interior of a conduit comprising:
control means located outside of the conduit for generating control signals for controlling the operation of the cleaner apparatus;
a source of pressurized hydraulic fluid;
valve means for receiving both pressurized hydraulic fluid from the fluid source and control signals from the control means and for distributing the received hydraulic fluid in accordance with the received control signals;
a housing;
a hydraulically powered motor within the housing, said motor receiving hydraulic fluid from the valve means for operation thereof;
adjustable cleaner tool means cooperating with the motor

for rotation relative to the conduit upon operation of the motor, said cleaner tool means being adjustable to maintain engagement with the interior walls of the conduit;

adjustable support means for supporting the housing within the conduit;

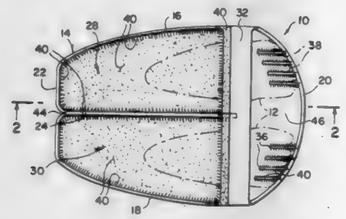
hydraulically actuated means for receiving hydraulic fluid from the valve means, said hydraulically actuated means including means for adjusting the adjustable support means to maintain the housing generally radially centered within the conduit whereby the housing is moved along the conduit with the motor in operation so that the cleaner tool means rotate while engaging in the interior conduit walls for cleaning the interior of the conduit.

4,520,525

FOOT BRUSH

Seigi Yogi, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Sep. 26, 1983, Ser. No. 536,166
Int. Cl.³ A47K *3/022*
U.S. Cl. 15—104.92 **5 Claims**



1. An apparatus for brushing and bathing feet which comprises:

(a) an oblong receptacle having two side walls, a front wall a rear wall, a center wall and a floor that forms two compartments for the feet;

(b) a bridge member affixed across the top of the two side walls near the front wall of the receptacle to engage insteps of the feet;

(c) a plurality of short wall members affixed transverse to the front wall to engage inbetween toes of the feet; and

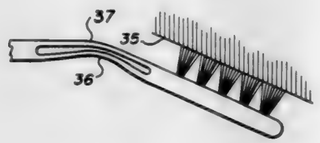
(d) brush-like material affixed to inner surfaces of the two side walls, the rear wall, the center wall, the floor, the bridge member and the short wall members so that all parts of the feet can be cleaned by rubbing all parts of the feet against the brush-like material.

4,520,526

RESILIENTLY FLEXIBLE TOOTHBRUSH

Charles W. Peters, 1498 Padres Dr., San Jose, Calif. 95125

Filed Jun. 22, 1984, Ser. No. 623,107
Int. Cl.³ A46B *9/04*
U.S. Cl. 15—167 R **3 Claims**



1. A tooth brush comprising:

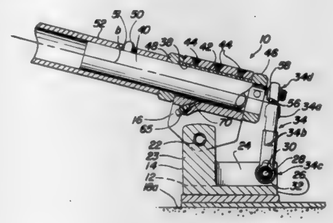
a shaped body member having a handle portion, a head portion and a resiliently flexible portion therebetween, the head portion having attached bristles, the resiliently flexible portion being flexible in a vertical plane allowing the head portion movement relative to the handle portion, but substantially rigid in a horizontal plane, the bristles extending upwardly in the vertical direction, wherein said body member has a shaped hollow at the resiliently flexible portion, creating a thin top resiliently flexible horizontal member and a thin bottom resiliently flexible horizontal member, said shaped hollow extending completely through said resiliently flexible portion from one side to the other side thereof in the horizontal direction, and wherein the middle of the head portion can be deflected in the ¼" to ¾" range with a force just sufficient to bring the bristle ends in good contact to the irregular surfaces of the teeth and gums.

4,520,527

CONCRETE FINISHING TOOL

Richard A. Maggio, 27191 Shenandoah, Laguna Hills, Calif. 92653; Leonard C. Maggio, 1520 N. Carol Dr., La Habra, Calif. 90631, and Norman L. Hill, 731 E. El Morado Ct., Ontario, Calif. 91764

Filed Jul. 15, 1983, Ser. No. 514,237
Int. Cl.³ E01C *19/44*
U.S. Cl. 15—235.8 **14 Claims**



1. A tilting bracket tool adapted for connection to a smoothing plate, comprising:

a base plate;

a yoke pivotably mounted to the base plate, said yoke having means defining a passageway therein, which passageway has an axis that is disposed generally at a right angle to the axis about which the yoke pivots;

handle receiving means extending through the passageway with the forward end thereof extending beyond the yoke pivot axis, which handle receiving means is adapted to rotate while being retained in the passageway; and

a rod having one ball and socket end universally and operably secured to the forwardly located end of said handle receiving means and another ball and socket end universally and operatively secured to the base plate at a location forward of the base plate pivot axis to allow the end of the rod connected to the handle receiving means to follow the movement of the handle means as it rotates and to allow the other end connected to the base plate to pivot about a point so that the longitudinal axis of the rod inscribes a cone as it moves during rotation of the handle receiving means, thereby tilting the base plate.

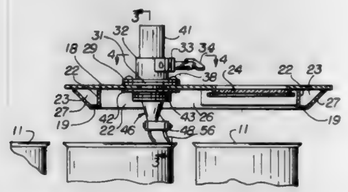
4,520,528

VACUUM FOAM REMOVER

Geza J. Grof, Fremont, Calif., assignor to James Dole Corporation, Redwood City, Calif.

Filed Jul. 27, 1983, Ser. No. 517,581
Int. Cl.³ B67C *1/00;* **B08B** *5/04*
U.S. Cl. 15—304 **11 Claims**

1. A vacuum foam remover comprising a nozzle extending across the path of containers as they move between filling and closing stations, support means supporting said nozzle above said path, vacuum means for drawing a vacuum through said nozzle, and a substantially rectangular frame at the bottom of said nozzle extending across said path, first and second parallel



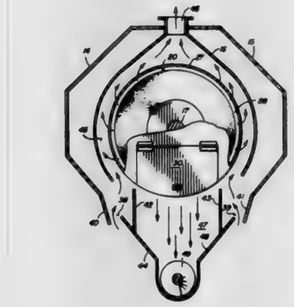
sides of said frame being substantially transverse to said path and substantially longer than the third and fourth sides of said frame.

4,520,529

SEED DELINTER

Boyce W. Davis, 3902 E. Bronco Trail, Phoenix, Ariz. 85044

Filed Aug. 24, 1983, Ser. No. 525,937
Int. Cl.³ D01B *1/04*
U.S. Cl. 19—41 **9 Claims**



1. An apparatus for delinting cottonseed comprising:

a generally cylindrical wire mesh drum means,

an abrasive rotor disposed within said drum means whereby an annular space is provided between said rotor and the interior of said drum means,

means for rotating said drum means and said rotor relative to each other in the same direction,

said drum means rotating at a slower speed than said rotor,

an inlet whereby cottonseed is introduced into said annular space,

at least one cottonseed outlet from said annular space,

a lint collection hood formed partially around and along the length of said drum means for receiving lint dislodged from the cottonseed in said annular space and forced through said drum means upon the relative rotation of said drum means and said rotor, and

means for causing a stream of air drawn into said apparatus to pass through said annular space and out of said apparatus.

4,520,530

FIBER FEEDING APPARATUS WITH A PIVOTED AIR EXHAUST WALL PORTION

Akiva Pinto, 525 Eastwood Dr., Gastonia, N.C. 20854

Filed Sep. 2, 1983, Ser. No. 528,973
Int. Cl.³ D01G *15/40*
U.S. Cl. 19—105 **5 Claims**

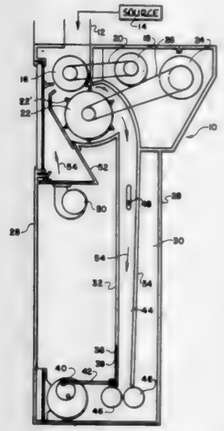
1. Apparatus for feeding fibers to textile processing equipment such as carding machines and the like, said apparatus including:

(a) a fiber collecting chute formed by generally stationary, imperforate walls extending in a vertical direction;

(b) means for delivering fibers into the upper end of said chute for collection therein;

(c) means for causing a flow of air downwardly through said collected fibers in said chute to compact said collected fibers;

(d) means for discharging said collected and compacted fibers from the lower end of said chute;



(e) a generally vertically extending perforated wall portion disposed along at least a portion of the vertical extent of said chute to permit said flow of air to be discharged therethrough, said perforated wall portion being mounted for alternating pivotal movement about a generally horizontal axis disposed intermediate the vertical extent of said perforated wall portion so that said pivotal movements thereof cause the upper and lower ends of said perforated plate to be alternately and periodically abutted against and separated from the fibers compacted adjacent thereto to release said fibers, and

(f) drive means for causing said pivotal movements about said horizontal axis.

4,520,531

APPARATUS FOR MAKING A WEB FROM FIBERS

Hubert Hergeth, Kockerellstr. 3, Aachen, Fed. Rep. of Germany

Filed May 2, 1984, Ser. No. 606,349
Claims priority, application Fed. Rep. of Germany, May 2, 1983, 3315909; Aug. 5, 1983, 3328358
Int. Cl.³ D01G *15/40*
U.S. Cl. 19—105 **14 Claims**

1. An apparatus for making a web of fibers, the apparatus comprising:

an upright and horizontally elongated supply duct having an upper end, an open lower end, and a foraminous side wall;

means for feeding fibers to the upper end of the supply duct, whereby the fibers descend in this duct as a ribbon-shaped web;

an upright and horizontally elongated forming duct having an upper end receiving the fiber web from the supply duct, a lower end, and a foraminous side wall;

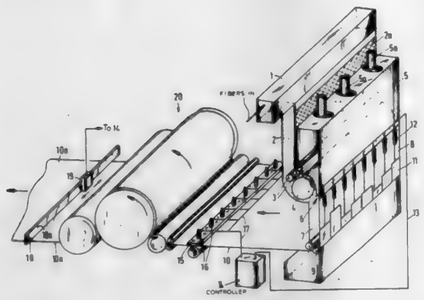
means for flowing gas down in the ducts and through the foraminous side walls thereof for shaping the web and advancing it to the respective lower ends;

means at the lower end of the forming duct for withdrawing the web therefrom;

means for measuring the thickness of the web at a plurality

of sensing locations spaced transversely along the web downstream of the lower end of the forming duct;

respective individually operable flow-adjusting means for varying the gas flow in one of the ducts at respective



zones spaced transversely across the web like the sensing locations; and

control means connected between the detecting and adjusting means for varying the flow in accordance with the detected thickness.

4,520,532

DRAFTING MECHANISM FOR SPINNING MACHINES

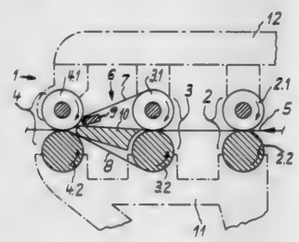
Herbert Stalder, and Emil Briner, both of Winterthur, Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Sep. 28, 1983, Ser. No. 536,653

Claims priority, application Switzerland, Oct. 11, 1982, 5945/82

Int. Cl.³ D01H *1/22*

U.S. Cl. 19—244 **5 Claims**



1. A drafting mechanism for spinning machines for drafting fiber slivers, in particular for jet spinning machines comprising:

a pair of rollers;

a respective apron provided for each of the rollers of said pair of rollers for guiding a fiber sliver between said aprons;

said aprons defining an apron pair having an exit opening;

at least one pair of delivery rollers arranged downstream of said pair of rollers provided with said aprons, viewed with respect to a predetermined direction of movement of the fiber sliver;

said exit opening of the pair of aprons being arranged in relation to a nip line of the pair of delivery rollers such that the fiber sliver undergoes at least one diversion at a region between said exit opening and said nip line;

said pair of delivery rollers defining a converging space;

one of said two aprons projecting into said converging space of said pair of delivery rollers;

said fiber sliver being diverted about said one of the two aprons which projects into said converging space of the pair of delivery rollers; and

both aprons being guided close to the pair of delivery rollers such that said aprons do not contact said pair of delivery rollers and an air gap between the aprons and said pair of delivery rollers essentially is as small as possible in order to divert circumferentially directed air streams which are entrained by the rotating delivery rollers, substantially along said rotating delivery rollers and thereby preventing such air streams from entering said converging space defined by said pair of delivery rollers and acting upon the fiber sliver drawn from said exit opening of said pair of aprons through said converging space defined by said pair of delivery rollers.

4,520,533

STRAP GUIDE FOR STRAP ADJUSTMENT ASSEMBLY

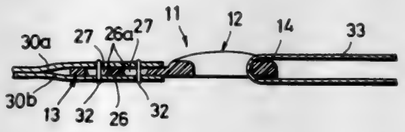
Kazumi Kasai, Namerikawa, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1983, Ser. No. 522,401

Claims priority, application Japan, Aug. 12, 1982, 57-122728[U]

Int. Cl.³ A44B *11/00*

U.S. Cl. 24—198 **11 Claims**



1. A one-piece molded strap guide for use in a strap-adjustment assembly, comprising:

(a) a rectangular frame having a single central strap-receiving rectangular opening therein; and

(b) a rectangular attachment wing integral with one side of said frame remote from said opening, and having a length corresponding to that of said opening, said rectangular wing having a pattern of uniformly spaced parallel openings defined by a series of uniformly spaced ribs, said spaced openings being receptive of sewing stitches by which said wing may be sewn to the assembly.

4,520,534

SLIDING CLOSURE ASSEMBLIES

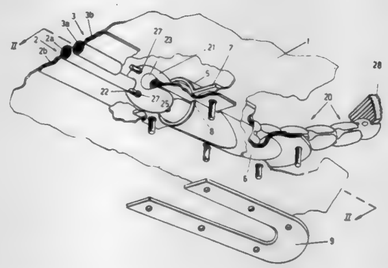
Eduardo De Lima Castro Netto, Rua Sao Luiz Gonzaga No. 912, Rio de Janeiro, Brazil

Filed Jan. 4, 1983, Ser. No. 455,623

Claims priority, application Brazil, Jan. 22, 1982, 8200339

Int. Cl.³ A44B *17/00*

U.S. Cl. 24—399 **14 Claims**



1. A sliding closure device of an opening in a bag or the like, characterized by including two track parts which extend along opposite sides of the opening, each said track part comprising a rail and a fixing portion for attaching the rail to the bag fabric, an elongate closure element comprising a plurality of substantially identical articulatedly joined segments which have a total length substantially equal to the length of the

opening, each segment having at least one passageway extending in the longitudinal direction of the closure element and an open slot communicating with each passageway along its length, the rails each being slidingly receivable in a respective passageway, each said fixing portion being joined to the bag fabric and extending from the bag fabric through a said slot to its respective rail portion.

4,520,535

SLIDE FASTENER HAVING DISCRETE COUPLING ELEMENTS

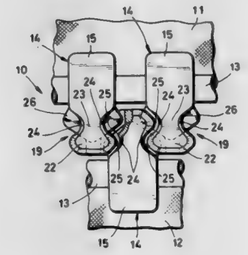
Kazumi Kasai, Namerikawa, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed May 6, 1983, Ser. No. 492,142

Claims priority, application Japan, May 7, 1982, 57-66159[U]

Int. Cl.³ A44B *19/00*

U.S. Cl. 24—410 **2 Claims**



1. A slide fastener comprising:

(a) a pair of stringer tapes; and

(b) a series of uniformly spaced coupling elements carried on each of said stringer tapes, each said coupling element having a generally rectangular body which has a coupling end portion and a pair of parallel spaced apart legs extending axially rearwardly therefrom to hold a longitudinal edge portion of each of said stringer tapes therebetween, said coupling end portion projecting beyond said longitudinal edge portion at a right angle to the axis of the slide fastener, and having

(1) a first coupling portion located on one side of the plane of said stringer tapes, said first coupling portion having a rounded head and a neck integral therewith, said head and said neck being complementary in shape to each other, said neck having a pair of arcuate first sidewalls respectively defining a pair of recesses disposed symmetrically with respect to the axis of said body, and

(2) a second coupling portion located on the other side of the plane of said stringer tape, said second coupling portion having a pair of second sidewalls each having a first planar portion extending obliquely outwardly from respective opposite sides of one of said legs to a turning point beyond the width of said legs, and a second planar portion extending obliquely inwardly from said turning point to intercept one end of said first sidewalls respectively adjacent to said rounded head, thereby defining a pair of shoulders at the ends of said recesses which extend laterally in opposite directions beyond the width of said legs.

4,520,536

CLOTHING CLASP

Hiroyuki Hata, 5-8-19 Morikita-cho, Higashinada-ku, Kobe 658, Japan

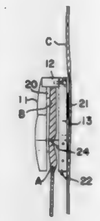
Filed Jun. 8, 1983, Ser. No. 502,200

Claims priority, application Japan, Jun. 17, 1982, 57-91363[U]

Int. Cl.³ A44B *21/00*

U.S. Cl. 24—498 **9 Claims**

1. A clasp for holding articles of clothing together, comprising a front member, a back member, detachable fastening means for attaching said back member to said front member at spaced locations to define a space therebetween, said fastening means being releasable to enable said back member to be detached from said front member, and said fastening means including resilient means enabling said back member to move relative to said front member and to urge said back member toward said front member, a clamp member, pivot means connecting said back and clamp members together, said front



and back members being adapted to be positioned such that portions of said articles of clothing are received in said space, said clamp member being movable on said pivot means between a clamped position and an open position, said clamp member including article engagement means thereon, said engagement means extending into said space when said clamp member is in said clamped position and being out of said space when said clamp member is in said open position.

4,520,537

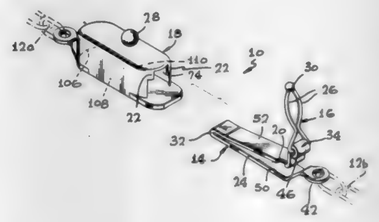
GOLD JEWELRY CLASP ASSEMBLY

Sioma Valikov, Van Nuys, Calif., assignor to Harry Wolf & Sons, Los Angeles, Calif.

Filed Jun. 18, 1979, Ser. No. 49,544

Int. Cl.³ A44B *19/00*

U.S. Cl. 24—616 **4 Claims**



1. A gold jewelry catch assembly, comprising:

a catch; and

a retainer which includes a wire with a pivot portion pivotally held on said catch;

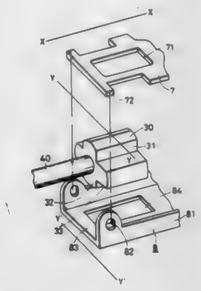
said catch being formed of a unitary strip of gold alloy, said strip having a middle portion which is folded over to form a folded leaf spring and said strip being of a spring temper along said middle portion, said strip having an eyelet at a first strip end and being bent into a loop at the other second end around said wire pivot portion, whereby to complete the ends of the strip without a soldering operation which could heat and anneal the leaf spring.

4,520,538

BUCKLE ASSEMBLY

Yasumasa Sano, Kanagawa, and Tetsuya Ohwada, Chiba, both of Japan, assignors to NSK-Warner K.K. and Nippon Kinzoku Co., Ltd., both of, Japan

Filed Jun. 2, 1983, Ser. No. 500,444
Claims priority, application Japan, Jun. 10, 1982, 57-86348[U]
Int. Cl.³ A44B *1/18*
U.S. Cl. 24—682 **11 Claims**



1. A buckle assembly comprising:
a clinched anchor block fixedly secured to a wire and provided with a first interlocking portion at an upper part and a second interlocking portion at a lower part thereof,
a buckle base having at least one bottom wall provided with a portion to be engaged with the second interlocking portion,
a support means mounted on the buckle base and adapted to engage with the first interlocking portion, and
the second interlocking portion being fixedly connected with the portion to be engaged of the buckle base, and the first interlocking portion being maintained in a non-engaged state with respect to the support means;
the clinched anchor block being normally engaged only with the buckle base and the support means movably disposed with respect to the buckle base, whereby the clinched anchor block becomes held both by the buckle base and the support means by the first interlocking portion being engaged with the support means when the wire received a tension exceeding a predetermined value.

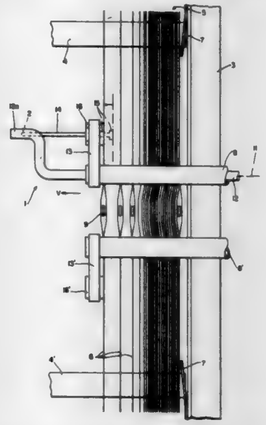
4,520,539

DEVICE FOR SEPARATING AND DELIVERING INDIVIDUAL HEDDLES TO A DRAW-IN POSITION

Heinz John, deceased, late of Berneck, Switzerland, and Friedlinde John née Rueffler, heiress, Gams, Switzerland, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,287
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139625
Int. Cl.³ D03J *1/14*
U.S. Cl. 28—206 **6 Claims**

1. In a device for individually separating drop wires or heddles bunched into packs and mounted on heddle slide rails, using individually separating means associated with the individual packs by the intermediary of which the foremost drop wire or heddle of a pack first is lifted a discrete extent from the pack and then is moved into a position for drawing-in a warp thread, and including a pair of blow tubes displaceable parallel to the pack and rotatable about their longitudinal axes with suction nozzles arranged at bent-around ends of said blow tubes, the improvement comprising a blow nozzle (**12***a*) in at least one of said blow tubes (**12**), said blow nozzle being located in the bent-around end of the respective blow tube (**12**) and directed along the direction of advance (V) of the heddle (**6**) or drop wire, and an oppositely directed suction nozzle (**14**) inserted as an ejector nozzle (**2**) into said blow nozzle (**12***a*), whereby a blast through the respective blow tube (**12**) generates a suction effect at the suction nozzle (**14**) to lift the foremost drop wire or heddle from the pack for movement with the displaceable blow tube to a drawing-in position.

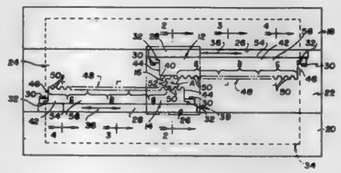


4,520,540

FIXTURE FOR GRINDING RACKS

James T. Killop, Warren, Mich., assignor to Anderson-Cook, Inc., Fraser, Mich.

Division of Ser. No. 237,240, Feb. 23, 1981,. This application Mar. 25, 1983, Ser. No. 478,897
Int. Cl.³ B24B *39/00, 19/00*
U.S. Cl. 29—90 B **5 Claims**



1. A fixture for holding a pair of unitary blanks during grinding of toothed faces thereon, the fixture comprising: a base having a flat lower surface and a pair of upwardly facing support surfaces that are inclined with respect to the lower surface the same angular extent as each other; and a clamp for clamping a pair of unitary blanks on the base with the mounting surfaces thereof respectively engaged with the pair of inclined support surfaces such that inclined teeth can be ground on both blanks by feeding of a rotating grinding wheel parallel to the lower surface of the base.

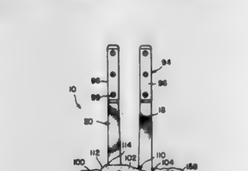
4,520,541

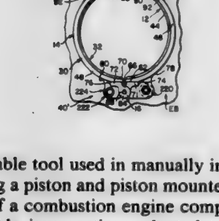
METHOD FOR PRODUCING PROFILED PRODUCT HAVING FINS

Isao Miki, and Toshiyuki Kawai, both of Shimizu, Japan, assignors to Nippon Light Metal Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1981, Ser. No. 331,177
Claims priority, application Japan, Dec. 19, 1980, 55-178992; Apr. 13, 1981, 56-55287
Int. Cl.³ B23P *15/02*
U.S. Cl. 29—156.8 CF **10 Claims**

1. Method for producing a profiled product with fins such as impellers having twisted vanes not formable directly by casting without collapsible cores, comprising the steps of first casting a preliminary shape, said shape having roots and elongated fins in such a form that they can be shaped by a casting process, one side of said root of each fin being formed with a concave filled out portion varying in size or amount along the length of the fin depending upon the final configuration thereof, while a corresponding cut out portion is formed at the opposite side of said root at a position corresponding to said concave filled out portion, and applying a laterally offsetting force relative to the fin to force each fin radially outwardly





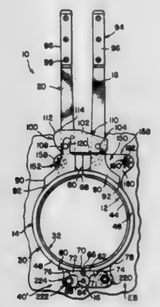
from said shape so as to cause plastic deformation at the portion of the fin where said concave filled out and corresponding cut out portions are provided to provide a lateral offsetting of the fin to the side toward the concave filled out portion thereby permitting the position of the root of each fin at said portions to be displaced toward the side provided with said concave filled out portion by an amount corresponding to the variation in the size of said concave filled out and cut out portions to form the final shape of each fin.

4,520,542

HAND OPERABLE TOOL USED IN INSTALLING PISTON ASSEMBLIES INTO AN ENGINE BLOCK

Tibor J. Villanyi, Hanahan, S.C., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Sep. 14, 1983, Ser. No. 532,149
Int. Cl.³ B23P *15/10*
U.S. Cl. 29—224 **9 Claims**



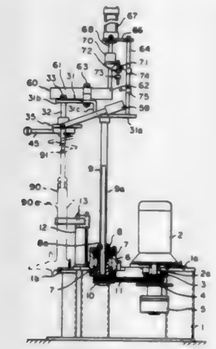
1. A hand operable tool used in manually installing a piston assembly including a piston and piston mounted piston rings in an engine block of a combustion engine comprising:
a pair of movable jaw portions adapted to move from an open piston to receive the piston assembly to a closed position to surround the piston mounted piston rings;
dowel pin receiving means on said movable jaw portions for attaching said movable jaw portions to an engine block of a combustion engine and for accurately orienting, locating and supporting said movable jaw portions with respect to an engine block cylinder bore;
at least one permanent magnet means on said movable jaw portions for attaching said movable jaw portions to an engine block in a stable manner; and
handle means for moving said movable jaw portions between said open and closed positions.

4,520,543

COIL SPRING COMPRESSOR, WITH VERTICALLY ADJUSTABLE CLAMP CARRIAGE

Yuji Ito, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 28, 1982, Ser. No. 453,839
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—227 **3 Claims**



1. An improved coil spring compressor for use in the assemblage of automotive suspension systems, said coil spring compressor being of the type in which a movable head plate is provided above a base for movement toward and away from said base to compress a coil spring mounted on a suspension strut which forms part of the suspension system to be assembled and which is secured to said base, wherein the improvement comprises:
a pair of spaced guide bars connected to and pending from said movable head plate;
a slidable clamp carriage mounted on said guide bars for sliding movement through at least a predetermined distance; and
a pair of clamping assemblies mounted on said clamp carriage opposite with one another at both sides of said coil spring, each of said clamping assemblies comprising a pair of clamping arms pivoted to the clamp carriage and provided, respectively, with a clamping finger at the inner free end thereof, one of said clamping arms being provided with an operating handle, said clamping arms being interconnected with each other so that on actuating said one arm by said handle the clamping fingers on both arms conjointly extend toward the coil spring to engage between any desired successive turns of the coil spring.

4,520,544

METHOD OF AND APPARATUS FOR AUTOMATICALLY FINISHING SLIDE FASTENERS

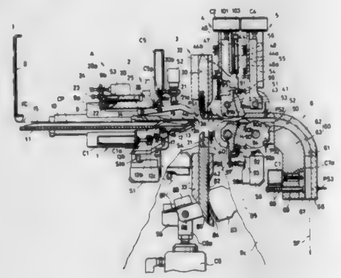
Toyoo Morita, Uozu, and Yoichi Horikawa, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,312

Claims priority, application Japan, Nov. 16, 1982, 57-173471; Dec. 7, 1982, 57-214183

Int. Cl.³ B21D *53/50*

U.S. Cl. 29—408 **8 Claims**



1. A method of automatically finishing slide fasteners, comprising the steps of:

(a) feeding an elongate slide fastener chain with a feedout mechanism by gripping a leading end of said chain along a chain path past a cutting mechanism;

(b) feeding said slide fastener chain with a first feeder mechanism (**4**) disposed downstream of said cutting mechanism along said chain path while inactivating said feedout mechanism;

(c) feeding said slide fastener chain with a second feeder mechanism disposed downstream of said first feeder mechanism along said chain path while inactivating said first feeder mechanism;

(d) stopping a slider on said slide fastener chain with respect to the movement thereof along said chain path to intermesh a pair of rows of coupling elements thereon while said chain is being fed by said second feeder mechanism;

(e) engaging a bottom stop on said slide fastener chain adjacent to said rows of coupling elements to stop the movement of said chain;

(f) inactivating said second feeder mechanism simultaneously with said engaging step (e); and

(g) cutting off said chain across an element-free gap adjacent to said bottom stop to produce a slide fastener.

4,520,545

METHOD FOR MANUFACTURING PINS PARTICULARLY INTENDED FOR ANCHORING IN THE GROUND POSTS OR STAKES, AND PINS OBTAINED THEREBY

Paul Moraly, 168, 170 rue Victor-Hugo, 93110 Rosny sous Bois, France

PCT No. PCT/FR83/00037, § 371 Date Oct. 19, 1983, § 102(e) Date Oct. 19, 1983, PCT Pub. No. WO83/03115, PCT Pub. Date Sep. 15, 1983

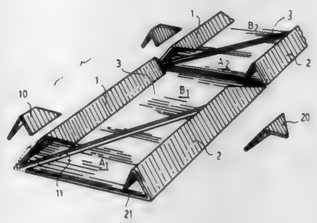
PCT Filed Mar. 1, 1983, Ser. No. 547,575

Claims priority, application France, Mar. 5, 1982, 82 03681

Int. Cl.³ B23D *17/00;* **E04H** *12/20*

U.S. Cl. 29—412 **16 Claims**

1. A method of making, from a strip, a peg including a prismatic sheath from at least one surface of which extends a fin shaped so as to facilitate its downward penetration into the ground and provide strength in the transverse direction, characterized in that the method comprises: shaping a strip adapted to form a plurality of pegs so as to define on each edge thereof a straight prismatic sleeve (**1, 2**) having all along its longitudinal dimension an opening (**11, 21**) extending along its edge which connects it with the intermediate strip portion (**3**) joining both sleeves to each other; and cutting said shaped strip both in a direction orthogonal to the generatrixes of said prismatic sleeves (**1, 2**) to form sections (A_1, B_1, A_2, B_2) the length of which is equal to the vertical dimension of the peg, and, in each said section, along a diagonal plane (A_1, B_1).



4,520,546

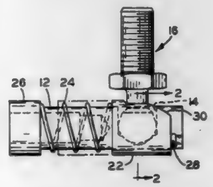
METHOD FOR FABRICATING A BALL JOINT ASSEMBLY INCLUDING A STEP FOR BURR REMOVAL

Raymond E. Darnell, 313 Elmer St., Fort Wayne, Ind. 46808

Division of Ser. No. 367,688, Apr. 12, 1982, Pat. No. 4,431,330. This application Aug. 19, 1983, Ser. No. 524,551

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—441 R **4 Claims**



1. The method of fabricating a ball joint assembly comprising the steps of providing a body of at least part cylindrical shape, drilling a cylindrical socket into said body along an axis transverse to the axis of said body and to penetrate at least a portion of the cylindrical surface of said body and to a diameter and size as forms substantially diametrically opposed feather edges on said body, providing a stud member having a ball-like swivel portion dimensioned to have a sliding fit with the side wall of said socket, said swivel portion being an integral part of said stud member, cutting away said feather edges by counterboring the outer portion of said cylindrical socket to a predetermined depth that provides a shoulder completely surrounding said socket near the outer end thereof and which penetrates said cylindrical surface of said body, said annular shoulder defining a plane substantially normal to the axis of said socket, and placing said ball-like swivel portion of said stud member within said cylindrical socket.

4,520,547

FLANGING OF PLASTIC LINED CONDUIT

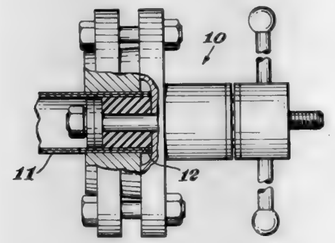
Larry J. Laursen, Midland, and Elton D. Prueter, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 15, 1983, Ser. No. 466,452

Int. Cl.³ B21D *39/00;* **B21B** *17/02*

U.S. Cl. 29—469.5 **4 Claims**

1. A method for the preparation of a flanged synthetic resinous thermoplastic lined conduit, the steps of the method comprising providing a malleable metallic conduit having a malleable synthetic resinous liner, the synthetic resinous liner being adhered to the metallic conduit at least adjacent the terminal portions of the metallic conduit, deforming a terminal portion of the synthetic resinous lined conduit to form a generally outwardly extending radial flange thereon while maintaining adhesion of the plastic liner to the so-formed flange portion.



4,520,548

METHOD AND APPARATUS FOR FASTENING AN ERASER TO A PENCIL

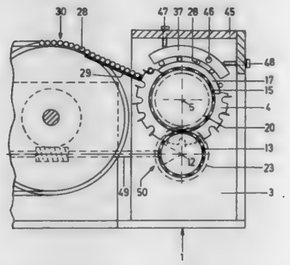
Harald H. Kremser, Postbauer-Heng, and Walter Barth, Nüremberg, both of Fed. Rep. of Germany, assignors to Bleistiftmaschinenfabrik Dipl. Ing. Karl Zuber GmbH & Co. KG, Nüremberg, Fed. Rep. of Germany

Filed Nov. 30, 1982, Ser. No. 445,524

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1981, 3147863

Int. Cl.³ B21D *39/00*

U.S. Cl. 29—517 **11 Claims**



1. An apparatus for securing an eraser to a pencil by deforming a sheath mounted at one end on one end of the pencil, with the other end of the sheath partially receiving the eraser, said apparatus comprising a first means for supporting and moving a pencil along a predetermined path of movement, said apparatus additionally comprising two members positioned contiguous to each other and to said first means for receiving between said two members said sheath while said pencil is being supported and moved by said first means, said two members defining an interspace therebetween, said interspace defining a pressure gap of decreasing dimension which is larger at its inlet end and smaller toward its outlet than the outer diameter of said sheath when said sheath is in its undeformed state, at least one of said members defining said pressure gap being provided with deformation profiles, means for introducing a pencil onto said first means and for positioning a portion of the eraser-receiving end of said pencil and additionally said sheath in said interspace between said two members, and means for relatively rotating said two members whereby to impart a rolling movement to at least said sheath while said sheath is moving through said interspace.

4,520,549

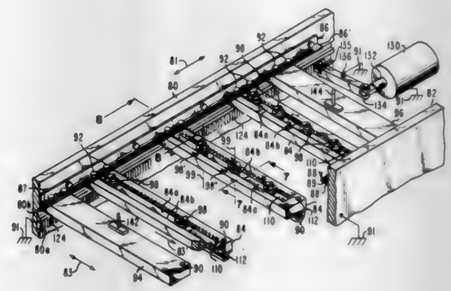
MULTIPLE COMPONENT LEAD PROCESSING APPARATUS

George J. Whitley, Philadelphia, Pa.; Martin Rayl, Lawrenceville, and William Squire, Livingston, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Mar. 31, 1982, Ser. No. 363,960

Int. Cl.³ B23P *19/00;* **H05K** *3/30*

U.S. Cl. 29—566.3 **18 Claims**



1. A system for concurrently processing multiple leads of one or more components, said leads extending through a printed circuit board and projecting therefrom on the side opposite the components, comprising, in combination:

a support structure;

a plurality of component lead processing assemblies lying in a plane;

means secured to said support structure for aligning a printed circuit board relative to said lead processing assemblies;

each said assembly comprising an anvil mounted to said support structure and a lead processing means rotatable relative to said anvil and cooperating with said anvil for processing said projecting leads as said lead processing means is rotated relative to said anvil;

link means coupled to a plurality of said processing means and movable relative to said support structure in a direction parallel to said plane for concurrently rotating each said processing means;

said link means comprising a plate lying in a plane parallel to said plane and connecting means corresponding to each processing assembly coupled to said plate and each corresponding lead processing means; and

drive means coupled to said plate for reciprocating said plate in directions parallel to said plane to concurrently rotate all said lead processing means a partial revolution in one rotational direction and then in the opposite rotational direction, whereby the leads of each said component are processed.

4,520,550

ROBOT TOOL CHANGER

Jimmy L. Dunn, Hurst; George L. Mayo, and Frank C. Romeo, both of Fort Worth, all of Tex., assignors to Automated Robotic Systems, Inc., Arlington, Tex.

Filed May 27, 1983, Ser. No. 498,731

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 **17 Claims**

1. An apparatus for installing and removing a tool on a chuck connected to a robot arm, comprising:

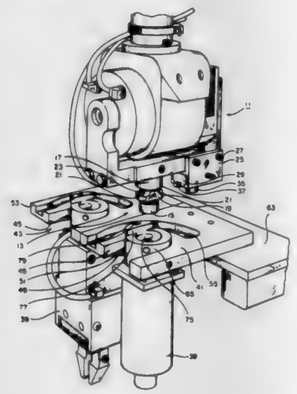
a tool coupling member on the tool;

a chuck coupling member on the chuck, adapted to mate with the other tool coupling member;

locking means for securing the coupling members together when the coupling members are aligned in a locked position, and for releasing the coupling members when the

coupling members are rotated a selected distance of less than 360° relative to one another;

support means for receiving and preventing rotation of the tool coupling member; and

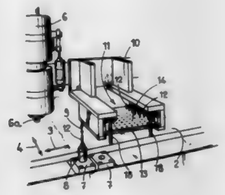


guide means on one of said support means and said chuck and coacting means on one of said support means and said chuck for causing the chuck coupling member to rotate relative to the tool coupling member when the chuck places the tool coupling member in the support means and moves relative to the support means.

4,520,551
MACHINE TOOL

Werner Imhof, Bienne, Switzerland, assignor to Posalux S.A., Bienne, Switzerland

Filed Aug. 22, 1983, Ser. No. 525,005
Claims priority, application Switzerland, Sep. 1, 1982, 5186/82
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **8 Claims**

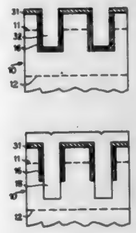


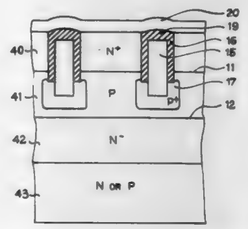
1. A machine-tool comprising: a work-piece carrier, at least one working unit that includes a spindle adapted to drive an engaged rotatable cutting tool, drive means for effecting relative movement between the work-piece carrier and said at least one working unit in two directions; at least one container fixed in position relative to said at least one working unit, said container having a plurality of tool containing positions and including at least one tool; and at least one tool transporting device fixedly mounted on said work-piece carrier, said device including gripper means able to grip tools carried in said container; so that relative movement between the work-piece carrier and said at least one working unit can align said transporting device opposite any tool containing positions in said container, at which positions said gripper means can grip any said opposed tool, and further relative motion can align said transporting device opposite said spindle, into which said gripped tool can be engaged by said gripper means, and so that by similar operation a tool can be disengaged from said spindle and be returned to said container.

4,520,552
SEMICONDUCTOR DEVICE WITH DEEP GRIP ACCESSIBLE VIA THE SURFACE AND PROCESS FOR MANUFACTURING SAME

Jacques Arnould, and Eugène Tonnel, both of Paris, France, assignors to Thomson-CSF, Paris, France

Division of Ser. No. 253,263, Apr. 13, 1981, abandoned. This application Jan. 16, 1984, Ser. No. 571,095
Claims priority, application France, Apr. 14, 1980, 80 08270
Int. Cl.³ H01L *29/80, 27/02, 21/76*
U.S. Cl. 29—571 **3 Claims**





1. A process for manufacturing a semiconductor device on a semiconductor substrate, the device including different layers of distinct conductivity type and/or doping levels, said device including an array of highly doped regions of a first conductivity type buried in a region of a second conductivity type opposite to the first type, said array being conductively connected to a metallization layer formed on a major surface of the substrate, said process comprising the following steps:

coating said major surface of the substrate with a layer of a first protecting substance,

selectively etching said first substance according to a predetermined pattern corresponding to said array to be formed,

anisotropically etching the substrate where it is not covered by said first substance, to form vertical grooves having vertical lateral walls and a bottom wall, said grooves extending to a first depth from said major surface of the substrate,

forming on the vertical walls and bottom wall of the grooves a coating of a second, electrically insulating, protecting substance,

removing said second substance from the bottom wall of the grooves through an anisotropic etching process while keeping said second substance on the vertical walls, and keeping said first substance outside said grooves,

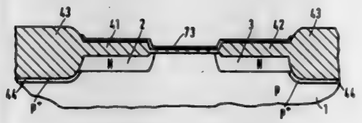
deepening said grooves where they are not coated with said second protecting substance, by an anisotropic etching process, thereby vertically increasing the depth of the grooves to a depth greater than said first depth, and

filling the grooves with a conductive material to make electrical contact at the bottom of the grooves between said conductive material and said semiconductor substrate, said conductive material being insulated from said substrate by said second protecting layer along the vertical walls of the grooves from the surface of the substrate down to said first depth.

4,520,553
PROCESS FOR MANUFACTURING AN INTEGRATED INSULATED-GATE FIELD-EFFECT TRANSISTOR

Wolfgang Kraft, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 10, 1984, Ser. No. 608,784
Claims priority, application Fed. Rep. of Germany, May 19, 1983, 3318213
Int. Cl.³ H01L *21/76*
U.S. Cl. 29—571 **2 Claims**



1. A process for manufacturing an integrated MIS field effect transistor including source and drain regions introduced into a semiconducting substrate, contacts at the source and drain regions which are self aligned with respect to a gate electrode, the gate electrode being coated with an insulating material by thermal oxidation, contact windows in the insulating material being provided over the source and drain regions, and contacts in the windows attached to the source and drain regions and separated from the gate electrode by the insulating material, said process comprising the steps of:

depositing on the surface of said substrate an oxidation masking layer suitable for being used as an ion implantation mask, including depositing a lower partial layer and depositing an upper partial layer, said lower partial layer being selectively etchable relative to said upper partial layer and being capable of being used as said gate insulating material;

depositing on said oxidation masking layer a first photoresist mask defining source and drain region areas;

removing said oxidation masking layer from said source and drain region areas;

implanting ions of the respective conductivity type of source and drain into the surface of said substrate in said source and drain region areas to produce said source and drain regions respectively;

producing insulating layers covering said source and drain region areas by thermal oxidation;

removing at least said upper partial layer of said oxidation masking layer;

covering said source and drain region areas and a gate area with a further oxidation masking layer and defining field areas in the uncovered portions of the substrate;

covering the field areas of said substrate lying outside said further oxidation masking layer with a thick oxide layer by way of thermal oxidation;

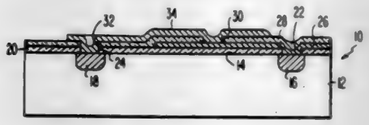
forming contact windows in said insulating layers with the aid of a photoresist mask; and

attaching contacts to said source and drain regions in said contact windows.

4,520,554
METHOD OF MAKING A MULTI-LEVEL METALLIZATION STRUCTURE FOR SEMICONDUCTOR DEVICE

Albert W. Fisher, Ringoes, N.J., assignor to RCA Corporation, Princeton, N.J.

Division of Ser. No. 465,640, Feb. 10, 1983,. This application Nov. 30, 1984, Ser. No. 676,948
Int. Cl.³ H01L *21/388*
U.S. Cl. 29—591 **5 Claims**



1. A method of forming a multi-level metallization on a substrate comprising the steps of:

forming a first metallization layer of aluminum containing up to 3 percent of silicon over a surface of a substrate,

forming a layer of an insulating material over the first metallization layer,

forming an opening through the insulating layer to the first metallization layer,

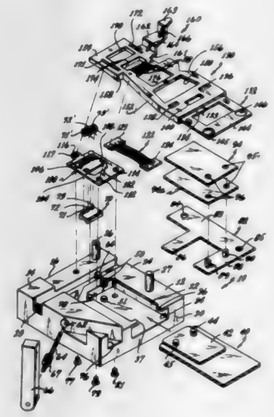
forming a second metallization layer of aluminum containing silicon in an amount less than that contained in the first metallization layer over the insulating layer and in the opening to contact the first metallization layer, and

heating the metallization layer to sinter the two layers together at their junction within the opening within the insulating layer and to diffuse some of the silicon from the first metallization layer into the second metallization layer.

4,520,555
APPARATUS AND METHOD FOR ALIGNING AND ASSEMBLY OF A GIMBAL, MAGNETIC SLIDER HEAD, AND FLEXURE ARM

Ko Ko Gyi, Thousand Oaks, and Gurbachan S. Grewal, Sepulveda, both of Calif., assignors to Magnetic Information Technology, Inc., Chatsworth, Calif.

Filed Sep. 27, 1982, Ser. No. 424,073
Int. Cl.³ G11B *5/42*
U.S. Cl. 29—603 **17 Claims**



1. As an article of manufacture a fixture for use in assembling parts of a component of magnetic information storage apparatus, the parts including a magnetic slider head; a gimbal plate; and, a flexure arm, in combination, a fixture member having

means to removably receive and hold a magnetic slider head; the fixture having means for holding a gimbal plate in position relative to the said magnetic slider head, the said fixture having means to hold a flexure arm in aligned position relative to the gimbal plate and the magnetic slider head, the magnetic slider head, gimbal plate, and flexure arm being in position to be secured together.

4,520,556

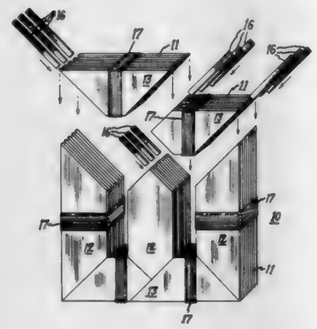
METHODS FOR ASSEMBLING A TRANSFORMER CORE

Walter J. Pasko, Jr., Lee, and William H. Rathbun, Pittsfield, both of Mass., assignors to General Electric Company, King of Prussia, Pa.

Division of Ser. No. 260,023, May 4, 1981, abandoned. This application Aug. 18, 1983, Ser. No. 524,495

Int. Cl.³ H01F *7/06*

U.S. Cl. 29—606 **2 Claims**



1. A method for creating a transformer core and winding assembly comprising the steps of:

arranging a plurality of core leg laminations and bottom core yoke laminations to form at least a pair of core legs having a bottom interconnecting core yoke, all lying in a horizontal plane;

assembling a plurality of top core yoke laminations extending between open ends of said transformer core legs to form a top core yoke and a magnetic path between said transformer core legs and said transformer top and bottom core yokes;

assembling a plurality of core steel inserts in corners formed by said core legs and said top core yoke to complete said magnetic path;

mechanically fastening together the respective laminations of said transformer core legs and the respective laminations of said transformer top and bottom core yokes;

raising said fastened core legs and said fastened top and bottom core yokes together to a standing position with said transformer legs extending in a vertical plane;

removing said fastened transformer top core yoke as a unit and said inserts to provide access to said transformer core legs;

arranging a transformer winding around at least one of said transformer core legs; and

reassembling said fastened transformer top core yoke as a unit and said inserts intermediate said transformer core legs to recomplete said magnetic path.

4,520,557

APPARATUS FOR MOUNTING CHIP TYPE CIRCUIT ELEMENTS ON PRINTED CIRCUIT BOARDS

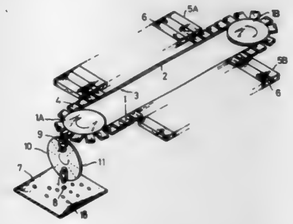
Kotaro Harigane; Shuichi Tando; Kenichi Takahashi, and Hirokazu Shudo, all of Tokyo, Japan, assignors to TDK Corporation, Japan

Filed Aug. 18, 1982, Ser. No. 409,184

Claims priority, application Japan, Aug. 24, 1981, 56-131548; Aug. 25, 1981, 56-124803[U]; Aug. 25, 1981, 56-124804[U]; Aug. 31, 1981, 56-127914[U]; Aug. 31, 1981, 56-127915[U]; Sep. 11, 1981, 56-135406[U]; Sep. 11, 1981, 56-135407[U]; Sep. 11, 1981, 56-135408[U]; Sep. 16, 1981, 56-136367[U]; Sep. 26, 1981, 56-141989[U]; Oct. 9, 1981, 56-150828; Oct. 9, 1981, 56-150829[U]

Int. Cl.³ H05K *3/30*

U.S. Cl. 29—740 **17 Claims**



1. Apparatus for mounting chip type circuit elements on printed circuit boards, comprising:

supply unit means for supplying chip type circuit elements;

a plurality of pallets and means for conveying said pallets in an intermittent fashion in a particular direction;

first shifting means for shifting said chip type circuit elements from said supply unit means onto said pallets;

an X-Y table carrying said printed circuit boards thereon;

mounting means including at least one mounting head for mounting said chip type circuit elements on a printed circuit board carried by said X-Y table; and

second shifting means for shifting said chip type circuit elements from said pallets to said at least one mounting head;

wherein each of said pallets have circuit element gripping means for mechanically receiving and gripping said chip type circuit elements; and

wherein said at least one mounting head has circuit element gripping means for mechanically receiving and gripping said chip type circuit elements;

so that said chip type circuit element supplied by said supply unit means is positively gripped mechanically until it is mounted on said printed circuit board.

4,520,558

TOOL FOR MATRIX CONNECTOR

Edward D. Bunnell, Palm Harbor, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 19, 1983, Ser. No. 543,597

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—749 **1 Claim**

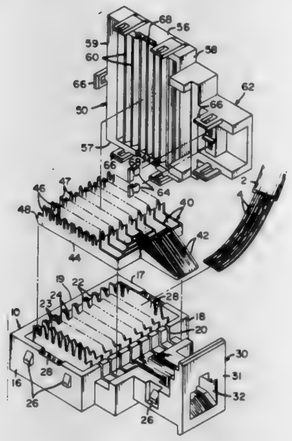
1. A tool for programmable termination of a plurality n of wires to a plurality n of adjacent terminals in an electrical connector, said connector having a base with said terminals mounted therein, each terminal having a plurality n of wire receiving portions each having a wire receiving slot, said slots of adjacent terminals forming a plurality n of rows of slots, said slots as a whole forming an n×n array, said tool comprising:

a housing;

a cover hinged to said housing, said cover being pivotable from an open position to a closed position, said cover having a top surface and an opposed bottom surface which faces said housing when said cover is closed;

a plurality n of wire inserters extending from the bottom surface of said cover, each said inserter being slidable relative to said cover to a plurality n of fixed positions spaced as the wire receiving portion of a terminal, said positions as a whole forming an n×n array spaced as said wire receiving slots;

nest means carried in said housing, said nest means being movable perpendicularly to said bottom surface of said cover when said cover is closed, said nest means being



profiled to position said base with said array of slots paralleling said array of inserters when said cover is closed,

actuating means for moving said nest means toward said cover when said cover is closed whereby, upon laying a plurality n of said wires in an array against said base with each wire overlying a row of slots, any wire may be connected to any terminal by positioning said inserters in the appropriate positions.

4,520,559

APPARATUS FOR PAIRING TWO ROWS OF SLIDE FASTENER ZIGZAG COUPLING ELEMENTS

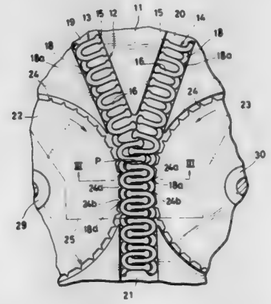
Kihei Takahashi, Uozu, and Yusei Sassa, Namerikawa, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jan. 12, 1984, Ser. No. 570,252

Claims priority, application Japan, Jan. 20, 1983, 58-8561

Int. Cl.³ A41H *37/06;* **B21D** *53/52*

U.S. Cl. 29—766 **5 Claims**



1. An apparatus for interengaging a pair of rows of continuous slide-fastener zigzag coupling elements, each element having a coupling head, a pair of spaced legs extending from the coupling head in a common direction, and a connecting portion disposed remote from the coupling head and extending between one of the legs and a corresponding one leg of an adjacent coupling element, said apparatus comprising:

(a) a base defining therein a substantially Y-shaped guide channel including a pair of branch guide passages for receiving disengaged rows of coupling elements, respectively, said branch guide passages being joined together into a joint passage for mating the disengaged rows of coupling elements, said joint passage having a width narrow enough to substantially prevent interengaged rows of coupling elements from moving laterally with respect to each other; and

(b) a pair of coplanar guide wheels rotatably mounted on said base one on each side of said joint passage for guiding therebetween the interengaged rows of coupling elements, each said guide wheel having a plurality of peripheral teeth engageable with the interengaged rows of coupling elements for feeding the rows of coupling elements through said guide channel, two adjacent ones of said teeth projecting into said joint passage for holding therebetween one connecting portion at opposite ends thereof.

4,520,560

APPARATUS FOR HOLDING A SLIDE FASTENER SLIDER

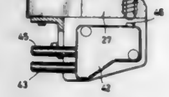
Toshiaki Nakagawa, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,119

Claims priority, application Japan, Nov. 17, 1982, 57-173959[U]

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—708 **6 Claims**



1. An apparatus for holding a slider in position during threading onto a slide fastener chain, the slider including a slider body and a pull tab pivotally connected to the slider body on its upper side and having an opening, said apparatus comprising:

(a) a base;

(b) an elongate support vertically slidably mounted on said base, said support having at its upper end a seat for supporting thereon the slider body upside down, and a longitudinal slit opening into said seat for receiving the pull tab hanging from the slider body supported on said seat, said support being slidable on said base between an upper position and a lower position;

(c) a first spring acting between said base and said support to normally urge the latter to said upper position;

(d) means for detecting when said support, as manually pressed downwardly against the bias of said first spring, arrives at said lower position;

(e) a lever pivotally mounted on said base and having a locking projection, said lever being pivotable between a slider-holding position in which said locking projection projects into said slit for engagement with an edge of the opening of the pull tab, and a slider-release position in which said locking

projection is retracted out of said slit for releasing the pull tab;

(f) a second spring acting between said base and said lever to normally urge the latter to said slider-release position; and

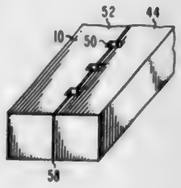
(g) means, responsive to detection of the arrival of said support by said detecting means, for driving said lever from said slider-release position to said slider-holding position against the bias of said second spring.

4,520,561

METHOD OF FABRICATING AN ELECTRONIC CIRCUIT INCLUDING AN APERTURE THROUGH THE SUBSTRATE THEREOF

Richard Brown, Union County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 16, 1983, Ser. No. 562,244
Int. Cl.³ H05K *3/34*
U.S. Cl. 29—840 **4 Claims**



1. A method for fabricating an electronic circuit on first and second slabs of electrically insulating substrates including at least one aperture through the substrates, comprises the steps of:

a. cutting at least one slot along an edge of said one substrate between an upper surface thereof and a lower surface thereof;

b. metalizing said edge in which said slot is formed;

c. metalizing an edge of said second substrate;

d. securing the metalized edges of the first and second substrates together, thus forming an aperture extending between the upper surface and the lower surface of the combined substrates;

e. forming a printed circuit pattern on one of said upper and lower surfaces of said combined substrates; and

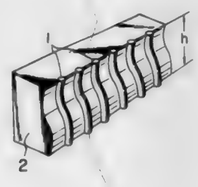
f. metalizing the other surface including a connection with the metalized edges created in steps (b) and (c) above.

4,520,562

METHOD FOR MANUFACTURING AN ELASTIC COMPOSITE BODY WITH METAL WIRES EMBEDDED THEREIN

Ryoichi Sado, and Kazutoki Tahara, both of Saitama, Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 206,064, Nov. 12, 1980, abandoned. This application Nov. 4, 1983, Ser. No. 549,014
Claims priority, application Japan, Nov. 20, 1979, 54-150369
Int. Cl.³ H01R *43/02*
U.S. Cl. 29—878 **1 Claim**



1. A method for manufacturing an elongated piece of a composite body composed of a polymeric body of an elongated form and a plurality of linear bodies of an electroconductive material embedded in the elongated body in alignment, each of the linear bodies extending in the transverse direction of the elongated body in substantial parallelism with each other and being in a form, which comprises the steps of

(a) integrally bonding a plurality of straight linear bodies of an electroconductive material on at least one of the surfaces of a polymeric sheet in alignment and substantial parallelism with each other,

(b) plastically deforming the linear bodies in corrugation with a regular pitch together with the plastic sheet,

(c) integrally providing a layer of a rubber overlying the array of the corrugated linear bodies to give an integrated composite body, and

(d) cutting the integrated composite body in a plane perpendicular to the longitudinal direction of the linear bodies about a single pitch of corrugation to provide a composite body having a single pitch of corrugation and two oppositely facing substantially parallel contacting end surfaces.

4,520,563

CHAIN SAW EXTENSION ATTACHMENT

Aurilien J. Marceau, 221 S. Johnston, Box 49, Kenney, Ill. 61479

Filed Mar. 12, 1984, Ser. No. 588,338
Int. Cl.³ B27B *17/02, 19/00*
U.S. Cl. 30—122 **14 Claims**



1. A reciprocating saw attachment for a chain saw wherein said chain saw includes a rotating drive and a guide bar, comprising:

a second guide bar for replacing the first mentioned guide bar, said second guide bar having an elongated aperature in the body thereof and a slide block reciprocally moveable in said aperature;

a wheel mounted on said second guide bar, said wheel having connecting means eccentric thereof;

a crank lever having one end thereof connected to said connecting means and the other end thereof connected to said slide block;

an endless link means encircling said second guide bar, said rotating drive of said chain saw, and said wheel for rotating said wheel;

an elongated rod mounted on said second guide bar for reciprocal movement thereon; and

a saw blade connected to the distal end of said elongated rod.

4,520,564

TOOL FOR REMOVING AUTOMOTIVE DOOR PANELS

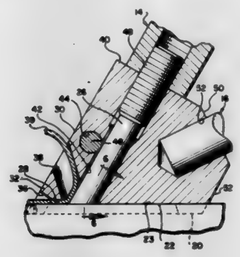
Gerald P. Wivinis, 25889 Grass Lake Rd. W., Antioch, Ill. 60002

Filed Nov. 7, 1983, Ser. No. 548,922
Int. Cl.³ B26B *3/00*
U.S. Cl. 30—168 **10 Claims**

1. A tool for use in removing a door panel from an automobile door, the door panel being an outer sheet metal skin with its edges reversely folded over the edge of the door frame so that the door frame is sandwiched between the folded over edge and the outer sheet metal skin, said tool comprising:

a head having at least a front wall, a back wall and a bottom wall;

a stepped guide groove formed in said bottom wall and extending from said back wall to said front wall and having a first and a second bottom surface, said second bottom surface being deeper in depth than said first bottom surface;



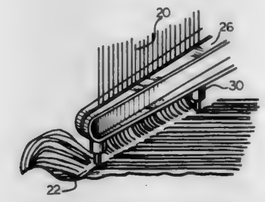
a cutting bit disposed with the cutting edge thereof co-planar with said first bottom surface of said guide groove, said second bottom surface of said guide groove being forward of said cutting bit.

4,520,565

HAIR CUTTING GUIDE APPARATUS AND METHOD

Lynne D. Maggiore, 229 Continental La., Schaumburg, Ill. 60194

Filed Oct. 27, 1983, Ser. No. 545,891
Int. Cl.³ A45D *24/36*
U.S. Cl. 30—201 **1 Claim**



1. A hair cutting guide apparatus comprising:

a first and second jaw member;

means for urging said jaw members in position one against the other;

a plurality of extending portions depending from said first jaw; and

means for increasing the length of said extending portions comprising a plurality of spacers of predetermined length arranged for removable attachment to said first jaw member.

4,520,566

SHEAR PIN HILT FOR KNIFE

Kurtis D. Davis, P.O. Box 57, Bixby, Okla. 74008

Continuation-in-part of Ser. No. 515,200, Jul. 20, 1983, Pat. No. 4,458,420. This application Feb. 23, 1984, Ser. No. 582,893
Int. Cl.³ B23P *11/00*
U.S. Cl. 30—342 **3 Claims**

1. An impact-resistant handle with tool comprising:

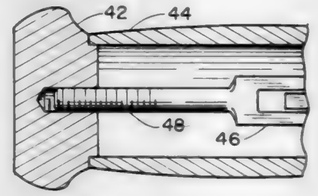
(a) a substantially hollow tubular handle member;

(b) a first end piece covering one end of said hollow tubular handle member wherein said first end piece has an opening therein for accepting one end of a tool;

(c) a tool wherein one end of said tool extends through said opening in said first end piece terminating within said handle member;

(d) a second end piece covering the other end of said hollow tubular handle wherein said second end piece includes an internally threaded bore to threadably engage one end of a shear pin means; and

(e) a shear pin means within said handle member wherein the other end of said shear pin means is attached to said terminal end of said tool and said one end is threadably engaged to said internally threaded bore in said second end piece



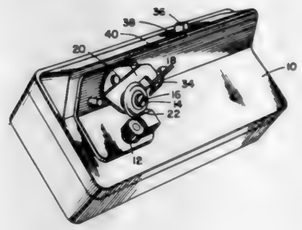
such as to apply compressive force to said handle through said shear pin means and hold said handle and tool in an assembled state.

4,520,567

POWER PIERCE CAN OPENER

John G. Crawford, Monroe, Conn., assignor to Black & Decker, Inc., Newark, Del.

Filed Apr. 18, 1983, Ser. No. 485,593
Int. Cl.³ B67B *7/38*
U.S. Cl. 30—424 **7 Claims**



1. An electric powered can opener having a housing, a feed gear rotatably mounted to drivingly hold and rotate a can by its rim, an operating lever pivoted above said gear on the housing and carrying a cutter mechanism to contact and remove the can lid, an improvement in said mechanism comprising:

a cutter wheel rotatably pivoted at one end of said lever, said wheel having a flat chordal portion on and within the wheel periphery

said wheel being located on said lever so a line drawn through said wheel pivot and said lever pivot falls inside the meeting edge of said flat and said wheel periphery when said flat lies along the lid of a can,

whereby the cutter free wheels until the meeting edge contacts the can, outside said line and the flat is forced stationary into and pierces the can lid whereupon the cutter rotates severing the lid.

4,520,568

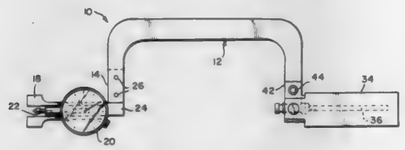
BRAKE DRUM GAUGE

Dewey A. Drenner, Glen Burnie, Md., assignor to 4D Incorporated, Baltimore, Md.

Filed Mar. 27, 1984, Ser. No. 593,922
Int. Cl.³ G01B *5/12, 3/22*
U.S. Cl. 33—143 R **14 Claims**

1. A brake drum gauge comprising a frame having a first end and a second end, said first end having attached thereto a support adapted to rest on the rim of a brake drum and a micrometer including an outwardly biased reciprocative actuating pin with a free end adapted to engage the inner surface of

said brake drum, said second end having removably attached thereto an additional support adapted to rest on the rim of said brake drum substantially opposite the first mentioned support and a reference pin with a free end adapted to engage the inner surface of said brake drum at a point diametrically opposite the free end of said actuating pin, said reference pin and additional support being elements of a set including a plurality of refer-



ence pins and corresponding additional supports adapted for removable attachment to the second end of said frame, each reference pin having a free end adapted for engagement with the inner surface of a brake drum of corresponding prescribed nominal diameter when that pin is attached to said second end, the additional support corresponding to that pin being adapted to rest on the rim of the same brake drum when attached to said second end.

4,520,569

COMPONENT MEASURING INSTRUMENT

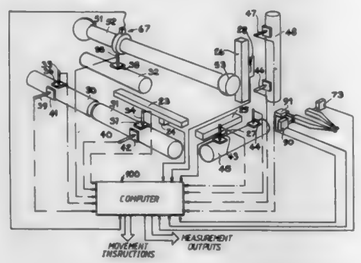
Eric Ireland, Letchworth, England, assignor to Sigma Ltd., England

Filed Feb. 10, 1984, Ser. No. 579,011

Claims priority, application United Kingdom, Feb. 12, 1983, 8303961

Int. Cl.³ G01B *7/28*

U.S. Cl. 33—148 E **13 Claims**



1. A component measuring instrument comprising a base, a carriage mounted for movement on the base along a first axis, an are mounted on said carriage for angular movement relative thereto about a point on the carriage, a cradle supporting the arm at a position spaced from said point, means supporting the cradle on the carriage for movement along second and third axes which are perpendicular to one another and to said first axis, whereby a free end of the arm is movable to any point on an imaginary part spherical surface with its centre at said point, first measuring means for measuring the position of the carriage relative to the base in the direction of the first axis, second and third measuring means for measuring the position of the cradle relative to the carriage in the direction of said second and third axes respectively, caliper means mounted on the free end of the arm and having a pair of contact tips which are urged together along predictable locii passing through and substantially normal to the centre line of said arm, to a predetermined rest position relative to the arm, means for turning said caliper means about a fourth axis extending through said point and through said centre line of said arm, and fourth measuring means on the caliper means for measuring the position of each of said contact tips, whereby a measurement of a component can be made using said caliper means at any position within a range of positions determined by the ranges of movement of said carriage and said cradle.

4,520,570

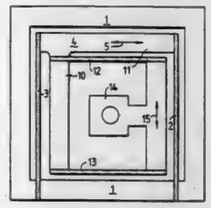
PIEZOELECTRIC X-Y-POSITIONER

Johannes G. Bednorz, Adliswil, Switzerland; Ralph L. Hollis, Jr., Yorktown Heights, N.Y.; Martin Lanz; Wolfgang D. Pohl, both of Adliswil, Switzerland, and Celia E. Yeack-Scranton, South Salem, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,306

Int. Cl.³ G01B *5/00*

U.S. Cl. 33—180 R **6 Claims**



1. Piezoelectric X-Y-positioner of the parallelogram type having a fixed frame and a support frame movable with respect to said fixed frame and adapted for supporting the device to be positioned, characterized by at least one intermediate frame (**4**; **36**; **49** . . . **52**) linked to said fixed frame (**1**, **29**, **44** . . . **46**) by at least one pair of first piezoelectric benders (**2**, **3**; **30**, **31**; **47**, **48**) in parallel extending in a first direction, said intermediate frame (**4**; **36**; **49** . . . **52**) being linked to said support frame (**14**, **43**, **56**) by at least one pair of second piezoelectric benders (**12**, **13**; **37**, **38**; **53**, **54**) in parallel extending in a second direction orthogonal with respect to said first direction.

4,520,571

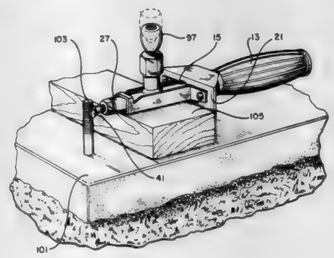
BASE PLATE BOLT HOLE MARKER

Delbert Harding, 751 W. 44th St., San Angelo, Tex. 76903

Filed Oct. 31, 1983, Ser. No. 547,230

Int. Cl.³ B23B *49/02*; **B25H** *7/04*

U.S. Cl. 33—189 **4 Claims**



1. A base plate bolt hole marker of the type used to mark bolt holes on a base plate in slab construction where foundation bolts are provided at spaced intervals along the edge of a concrete slab, comprising:

a handle portion;

a measuring arm slidably received within said handle portion, said measuring arm having a bolt engaging end;

a marking member carried on said measuring arm for marking the location of a bolt hole on a base plate;

a depending flange affixed to said handle portion for aligning said marker with respect to said base plate whereby said measuring arm extends generally perpendicular to the longitudinal axis of said base plate when said depending flange contacts said base plate, the distance between said bolt engaging end and said depending flange being adjustable by varying the position of said measuring arm with respect to said handle portion to mark bolt holes in base plates of varying widths; and

wherein said bolt engaging end of said measuring arm is adjustable to vary the length of said measuring arm.

4,520,572

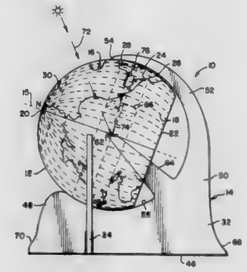
GEOGRAPHICAL SUNDIAL

Athelstan Spilhaus, Box 1063, Middleburg, Va. 22117

Filed Mar. 14, 1984, Ser. No. 589,425

Int. Cl.³ G04B *49/02*

U.S. Cl. 33—270 **11 Claims**



1. A sundial comprising

a transparent, hollow globe having a polar axis and having latitude and longitude markings;

a base for rotatably supporting said globe with said polar axis inclined toward the geographic south pole of the earth;

index means secured to said base, said globe being rotatable with respect to said index means to position a selected latitude and longitude on the surface of said globe at said index means;

reflector means; and

support means mounted on said base and supporting said reflector means, said support means locating said reflector means on said polar axis and at the center of said globe for reflecting an image of sunlight entering said globe to a location on said globe which corresponds to solar noon.

4,520,573

GUIDE RAIL FOR A DRAWING MACHINE CARRIAGE

Heinrich Otten, Wilhelmshaven, Fed. Rep. of Germany, assignor to Franz Kuhlmann Prazisionsmechanik und Maschinenbau GmbH & Co. KG, Wilhelmshaven, Fed. Rep. of Germany

Filed Jan. 24, 1983, Ser. No. 460,485

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1982, 3202191; Sep. 3, 1982, 3232776

Int. Cl.³ B43L *13/02*

U.S. Cl. 33—438 **13 Claims**

1. A guide rail for a drawing machine carriage comprising:

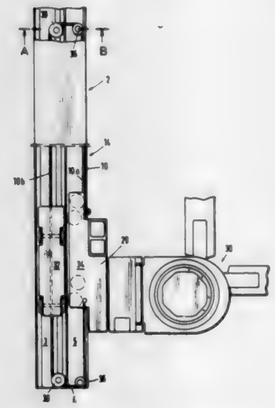
a housing forming a track configuration for the guidance of the carriage;

said housing including first and second spaced apart longitudinally extending surfaces which form a first slot adjacent to said track configuration;

carriage means traveling on said track configuration and supported thereby, said carriage means extending through said slot;

a covering element comprising a continuous band which covers the first slot along the length of the slot and which is connected to the carriage means;

said housing forming a first hollow chamber for the guidance of a counterweight and a second hollow chamber for the guidance of said carriage means, and a second longitudinal slot between said first and second hollow chambers, wherein as the carriage means moves one face of the continuous band travels adjacent with the first longitudinal slot and the other face of the continuous band travels



through the first hollow chamber and is attached to the counterweight.

4,520,574

PROCESS FOR DRYING FOODS UNDER REDUCED PRESSURE

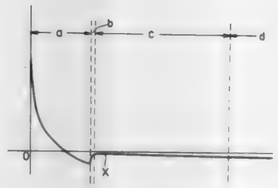
Ko Sugisawa; Yasushi Matsumura, both of Nara, and Kazumitsu Taga, Neyagawa, all of Japan, assignors to House Food Industrial Co., Ltd., Osaka, Japan

Filed Nov. 23, 1983, Ser. No. 554,862

Claims priority, application Japan, Feb. 25, 1983, 58-31690; Feb. 25, 1983, 58-31691; Mar. 3, 1983, 58-34925

Int. Cl.³ F26B *5/06*; **F25B** *19/00*

U.S. Cl. 34—5 **12 Claims**



1. A process for drying a food under a reduced pressure, comprising the steps of:

(a) placing said food to be dried in an environment of reduced pressure low enough for freezing water contained in said food thereby to vaporize a portion of said water and to freeze the balance of said water by the action of the heat absorbed by vaporization;

(b) heating the thus frozen food for drying it; and

(c) returning the environment surrounding said food back again to the atmospheric pressure.

4,520,575

IMPINGEMENT OVEN AND METHOD

Donald P. Holmes, and David I. McDonald, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 25, 1983, Ser. No. 554,967

Int. Cl.³ F26B *3/00*

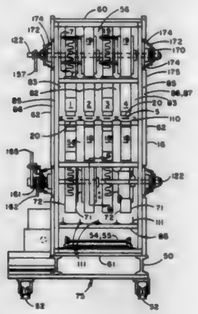
U.S. Cl. 34—23 **22 Claims**

1. An impingement oven module for heating a generally planar workpiece of resin by directing a flow of heated fluid substantially normally against at least one surface of the workpiece comprising

a housing defining an enclosure within which occur heating and heated gaseous fluid flow and having side, bottom, top and end walls and within said enclosure

a pair of plenum chambers arranged side-by-side

each plenum chamber having an elongated nozzle plate and a plurality of plenum walls defining said plenum, said nozzle plate being means for defining a perforate one of said plenum walls and for exhausting heated fluid against a workpiece, gaseous pump impeller means within the walls of said plenum for removing fluid from within said enclosure and discharging fluid within the plenum for exhaust through said nozzle plate, a heater wall comprising another of said plenum walls and dis-



posed facing and spaced from the heater wall of the other plenum of the pair, impeller inlet means on said heater wall aligned with said impeller heater means disposed on said heater wall at the inlet means for heating fluid drawn from said enclosure before the fluid reaches said impeller means,

the respective nozzle plate for each plenum in the pair being generally coplanar with the nozzle plate of the other such plenum so that both nozzle plates discharge against the workpiece in generally the same direction,

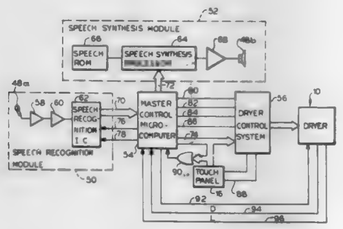
the inlet means of each plenum protruding from its respective heater wall and overhanging at least a portion of the other plenum in the pair.

4,520,576

CONVERSATIONAL VOICE COMMAND CONTROL SYSTEM FOR HOME APPLIANCE

Donald R. Vander Molen, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 6, 1983, Ser. No. 529,504
Int. Cl.³ F26B *21/06*
U.S. Cl. 34—45 **8 Claims**



1. A method of preparing an appliance having an openable door for operation comprising the steps:

(1) recognizing a first voice command,

(2) counting pulses from a source of timing signals on a counter,

(3) recognizing a second voice command within a predetermined time span of the recognition of said first voice command,

(4) automatically opening a door of said appliance in response to the recognition of the voice commands,

(5) emitting a first audible synthesized speech signal indicating that said door is open,

(6) sensing the positional condition of said door,

(7) emitting at least one additional audible synthesized speech signal requesting an input command after said door is sensed to be closed,

(8) receiving the input command in response to said signal,

(9) emitting an audible synthesized speech signal indicating that said appliance is in condition to begin operation after receiving said command,

(10) recognizing a final voice command, and

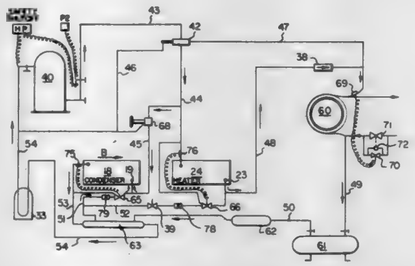
(11) initiating operation of said appliance upon recognition of said final voice command.

4,520,577

CLEANING APPARATUS

Moshe Suissa, 5561 Alpine Ave., Cote St. Luc, Montreal, Quebec, Canada

Filed Apr. 4, 1983, Ser. No. 482,088
Claims priority, application Canada, Apr. 2, 1982, 400389
Int. Cl.³ F26B *11/04*
U.S. Cl. 34—76 **6 Claims**



1. An apparatus for performing drying and cooling cycles on dry cleaned items and for recovering cleaning solvents therefrom, including:

drum means for receiving said items for treatment with cleaning solvent;

circulating means for drawing air through said drum means following said treatment;

condensing means for condensing solvent vapors entrained in said heated air during said drying cycle;

heater means for heating the air drawn through said drum means during the drying cycle of said apparatus; and

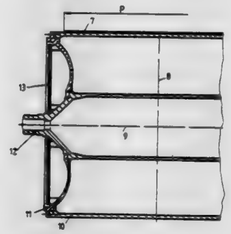
gas compresser means to supply cold refrigerant and hot gas to said condensing means and hot gas to said heater means during said drying cycle; and cold refrigerant to said heater and condensing means during said cooling cycle of said apparatus.

4,520,578

DRYING CYLINDER ADAPTED TO BE HEATED WITH STEAM

Christian Schiel; Georg Zürn, and Karl Schmid, all of Heidenheim, Fed. Rep. of Germany, assignors to J.M. Voith GmbH, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,432
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219714
Int. Cl.³ F26B *25/20*
U.S. Cl. 34—110 **10 Claims**



1. A drying cylinder adapted to be heated with steam, comprising:

a cylindrical cylinder jacket having opposite open ends; the cylinder jacket having a flange defined on each of its open ends; each jacket flange having a substantially rectangular cross-section, and having an axial length in the direction of the axis of the cylinder which is at least as great as the radial thickness of the jacket flange;

opposite end covers covering the open ends of the jacket; each cover having a relatively small wall thickness and being curved inwardly of the jacket and toward the other cover, whereby each cover is concave as viewed from the outside of the cylinder; the cover including a connection flange thereon having a cross-section which is substantially L-shaped, wherein the connection flange includes an axial arm extending toward the axial center of the cylinder and toward the other cover and a radially outwardly extending arm located axially toward the outside of the cover; the axial arm of the connection flange having at least the same length as the radial arm thereof; the jacket flange being received in the L-shaped space defined by and lying against the arms of the connection flange;

the cylinder jacket and the covers being shaped so that when they are viewed in cross-section through the connection flange of the end cover, the point of intersection of the center line running through and along the center of the cross-section of the cover with the center line running along the radial center of the cross-section of the axial arm of the connection flange lies generally in the axial middle of the axial arm of the connection flange.

4,520,579

TOBACCO BIN

Dan De Cloet; Ben De Cloet, both of Tillsonburg, and Ted Krempa, Simcoe, all of Canada, assignors to De Cloet Ltd., Ontario, Canada

Filed Jun. 16, 1983, Ser. No. 504,885
Claims priority, application Canada, Mar. 9, 1983, 423246
Int. Cl.³ F26B *9/06*
U.S. Cl. 34—204 **23 Claims**

1. A tobacco curing bin for use in a tobacco curing kiln, the said bin comprising a box-like structure with opposing ends, a top, a front, a back, a floor, and having tynes adapted to pierce and support the tobacco leaves therein;

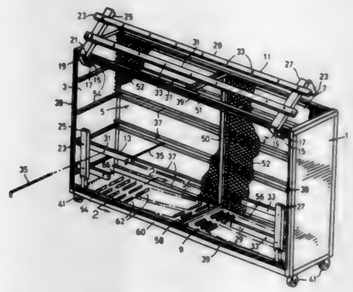
each said end being impervious to the flow of curing air;

said front having spaced holes to receive said tynes and having at least one pivotally mounted gate to permit loading and unloading the bin;

said back providing a support for the tobacco leaves in the bin when the bin is being loaded or unloaded and further being perforated to receive said tynes;

said tynes passing through said holes in the front, to pierce the tobacco leaves and engage with said back to support the tobacco leaves within the bin;

said floor being pervious to the flow of curing air and being characterized in that said floor slopes upwardly from both said opposing ends to a middle portion in said floor to



thereby permit improved flow of curing air through said floor, the tobacco leaves, and out said top of the bin to affect curing of the tobacco leaves therein;

each said end being further adapted to be adjacent to and seal against an inside portion of said kiln to prevent the flow of curing air about the ends of the bin; and

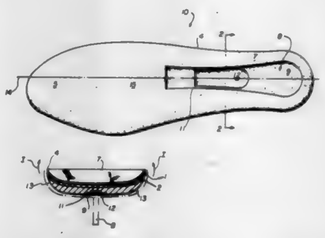
said tobacco bin having seal means to seal against other like tobacco bins in the kiln to prevent the flow of curing air between adjacent tobacco bins.

4,520,580

SKATE BOOT INSERT

Dennis N. Brown, 1091 Fir Ave., Blaine, Wash. 98230

Filed Mar. 30, 1982, Ser. No. 363,548
Int. Cl.³ A43B *13/38*
U.S. Cl. 36—44 **16 Claims**



10. An orthotic appliance comprising in combination:

a multi-layered insert including at least a top layer and a bottom layer and configured to generally conform to a plantar surface of a person's foot, the insert further including an upwardly-curved peripheral lip circumscribing a heel area of the foot, and

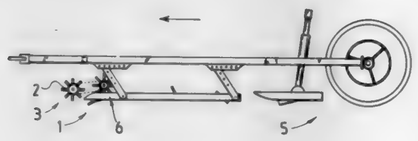
the bottom layer having a substantially longitudinal keyway-shaped downwardly opening indentation formed therein substantially from the metatarsal head area into the calcaneal region, whereby the insert will deform due to the person's weight substantially over the indentation, thereby causing the peripheral lip to cup inwardly for improved gripping of the person's heel.

4,520,581
CUSTOM FOOTBED SUPPORT AND METHOD AND APPARATUS FOR MANUFACTURING SAME
J. Michael Irwin, 7730 B, SW. Spruce St., Tigard, Oreg. 97223, and Jay P. White, Tigard, Oreg., assignors to J. Michael Irwin, Portland, Oreg.
Filed Dec. 30, 1981, Ser. No. 335,645
Int. Cl.³ A43B *13/38, 19/00*; A61F *5/14*
U.S. Cl. 36—88 **23 Claims**



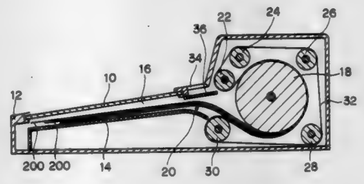
1. A method of manufacturing a custom footbed support for use in supporting a foot in a shoe or boot comprising:
positioning a lamina of a liquid-activated fabric sheet casting material while in a wet uncured flexible condition over a domed portion of a resilient foot pad;
placing the user's foot on the uncured material with the longitudinal arch of the foot positioned on a side portion of the domed portion of the pad and with the toe and heel portions of the foot overlying the pad, and applying weight to the foot to form a contoured shape corresponding to the undersurface of the foot in the material;
while continuing to apply weight to the foot, allowing the material to at least partially cure, and then removing the foot from the material such that the material retains the foot contoured shape;
removing the substantially cured material from the pad and trimming the shaped material to size about the impression so as to fit within the shoe or boot.

4,520,582
SKI TRAILS ROTARY CUTTER AND CRUSHER DRAG UNIT
Tapio Niemelä, Linnatie 10 D 5, 99100 Kittilä , Finland
Filed Mar. 7, 1984, Ser. No. 586,994
Claims priority, application Finland, Mar. 18, 1983, 830907
Int. Cl.³ E01H *4/00*
U.S. Cl. 37—222 **3 Claims**



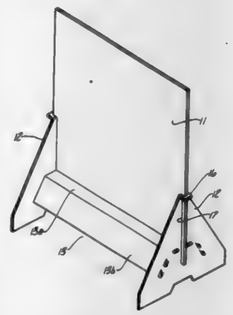
1. Apparatus for making ski trails, and apparatus being adapted to be towed and comprising a drag, a cutter unit mounted on the drag rotatable about an axis transverse to the direction of travel of the apparatus, said cutter unit carrying radial blades and being operable to break up tamped tract surface of snow and deriving its rotary motion from the tamped track surface, means for shaping trail grooves disposed behind the drag, a snow-crushing unit carrying radial snow crushing blades mounted on the drag behind the cutter unit rotatable about an axis transverse to the direction of travel of the apparatus, and transmission means connecting the crushing unit to the cutter unit, whereby the crushing unit derives its rotary motion from the cutting unit.

4,520,583
SHEET FILE MOUNTING/DEMOUNTING MECHANISM IN AN ITEM SELECTION SIGNAL INPUT SYSTEM
Takashi Oka, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 23, 1983, Ser. No. 525,664
Claims priority, application Japan, Aug. 31, 1982, 57-152304; Aug. 31, 1982, 57-152305
Int. Cl.³ B42F *9/00*
U.S. Cl. 40—378 **13 Claims**



1. A sheet file mounting mechanism comprising:
a bidirectionally rotatable drum;
a sheet file comprising a base sheet and a plurality of item lists secured to said base sheet;
an engaging member secured to one end of said sheet file; and
a claw disposed at a predetermined position of said bidirectionally rotatable drum so as to catch said engaging member, said claw comprising:
an engaging surface for catching said engaging member; and
a guide surface for guiding said engaging member to said engaging surface, wherein said engaging member is secured to one end of said base sheet.

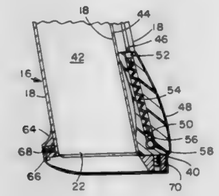
4,520,584
DISPLAY SCREENS AND THE LIKE
Robert Howard, Thornlie, Australia, assignor to Daventry Pty. Ltd., Subiaco, Australia
Filed May 18, 1983, Ser. No. 495,612
Claims priority, application Australia, Mar. 11, 1983, PF8409
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—606 **8 Claims**



1. A display screen comprising a planar display panel, a pair of end panels and a pair of brace members, each end panel being mounted at a respective side of the display panel extending transversly from said face thereof and having vertically extending surface engaging opposed portions of each face for a substantial portion of the height of the display panel, each brace member being located one to each side of the display panel and extending between said end panels and having a horizontal portion defining a surface extending between the

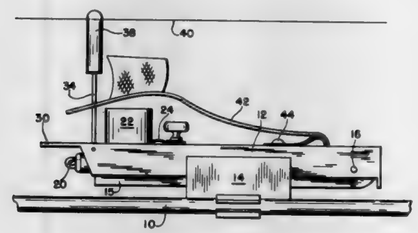
end panels and in abutting relationship with the face of the display panel.

4,520,585
PISTOL MAGAZINE LOADING GUIDE
Timothy M. Barrett, 1131 W. Duarte, No. 6, Arcadia, Calif. 91006
Filed Dec. 30, 1983, Ser. No. 567,064
Int. Cl.³ F41C *25/06*
U.S. Cl. 42—7 **18 Claims**



1. An improved magazine loading aid for use with a pistol comprising a base which seats against the butt of a pistol frame and which embraces the walls thereof and which defines a funnel with a magazine receiving opening in said butt of said pistol frame, and which defines transverse openings on opposite sides thereof in coaxial alignment with magazine spring housing pin receiving means in said pistol frame, and a mounting rod engaged with said base in said transverse openings, and passing through said magazine spring housing pin receiving means to secure said base to said pistol frame butt and to function as a magazine spring housing pin.

4,520,586
AUDIBLE AND BI-VISUAL INDICATOR
Louis E. Moisan, 1920 N. Main St., Lancaster, Mass. 01523
Filed Feb. 16, 1984, Ser. No. 580,734
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—17 **9 Claims**



1. An indicator comprising, a housing, a light bulb on the housing, a battery, means to mount the battery in the housing, an electric audible signal on the housing, electric grounds for said bulb and signal, an electrode for the audible signal,
a spring in the form of an electric current-carrying, resiliently deformable, elongated element, means to secure said element at one end thereof to said housing, a portion of the elongated element adjacent said one end being in the general form of a hook movable under the influence of the resiliency of the element,
said battery, bulb, and audible signal electrode being aligned,
said hook portion of the elongated element having a normal position engaging the battery to energize the audible signal and bulb simultaneously thereby,
said elongated element including a free end length normally substantially erect relative to the housing and capable of being bent down to a position close to the housing thereby moving the hook portion thereof out of engagement with the battery to deenergize the bulb and the audible signal, and a trip member to hold the elongated element temporarily in said de-energizing position,
whereby upon release of the trip member from the elongated element, the latter assumes its erect position moving the hook portion thereof into engagement with the battery and energizing the bulb and signal.

4,520,587
TUBULAR FISHING ROD WITH INTEGRAL HANDLE-REEL SEAT
Leonard D. Wallace, 1 S. Strawberry St., Philadelphia, Pa. 19106
Filed Mar. 21, 1983, Ser. No. 477,118
Int. Cl.³ A01K *87/00*
U.S. Cl. 43—18.1 **15 Claims**



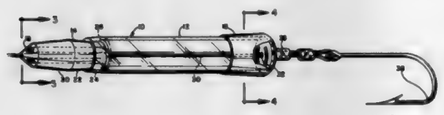
1. A fishing rod comprising a handle and a rod tip section, said rod tip section comprising a tubular section in the form of an elongated member having a free end, the outer diameter of said tubular section decreasing from a point adjacent said handle to a point adjacent said free end, said handle including a reinforcing insert having a first end portion arranged for disposition within said section and a second end portion extending into said handle, with said handle being molded in situ on said second end portion, said insert being of rod-like construction and configured to matingly frictionally engage the interior of said tubular section when said insert is disposed therein to provide good securement between said rod tip and said handle, said fishing rod including recess means within said handle permitting said insert to penetrate further into the tubular section of said rod tip section without interference caused by abutting portions of said rod tip section and said handle in the event that either of the engaging portions of the insert or the rod tip section wear away upon repeated use, to thereby maintain said good securement.

4,520,588
FISHING LURE
Charles Hindermyer, 1766 Creek Rd., Hatfield, Pa. 19440
Filed Dec. 5, 1983, Ser. No. 557,868
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.06 **11 Claims**

1. A fishing lure for use with a line bearing terminal gear, comprising:
a flexible tubular body member;
a head member attachable to the tubular body at one end and having at least one axial bore therethrough;
an end cap attachable to the tubular body at the other end

thereof and also having at least one axial bore therethrough; and,

means for preventing movement of the terminal gear through the axial bore in the end cap, the lure being threadable over the line, which passes through the bore in



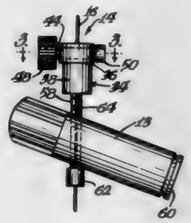
the head member, through the tubular member and through the bore in the end cap, whereby the lure flexes on the line particularly at the end cap as the lure is pushed through the water by structure of the terminal gear engaging the preventing means, as the terminal gear is itself pulled through the water by the line.

4,520,589

LOCKING AND RELEASING MECHANISM

Michael G. Lummis, Portage, Mich., assignor to Pacific Atlantic Products, Ltd., Kalamazoo, Mich.

Filed Aug. 29, 1983, Ser. No. 526,999
Int. Cl.[3] A01K *91/00*
U.S. Cl. 43—43.12 **15 Claims**



1. A locking and releasing mechanism for a fishing line release adapted for use with a downrigger cable which comprises:

a hollow, elongated housing defining a longitudinal bore for receiving the downrigger cable therethrough;

locking means rotatably mounted in said housing substantially transversely to said longitudinal bore and having an eccentric portion that is positionable in said bore to vary the effective diameter thereof and to releasably wedge the cable against a wall portion defining the bore;

a hollow spindle extending from said housing and defining a central passageway for receiving the downrigger cable, the central passageway being substantially aligned with said longitudinal bore; and

mounting means on said spindle for pivotally mounting a fishing line release thereon.

4,520,590

TREE BRACE SYSTEM

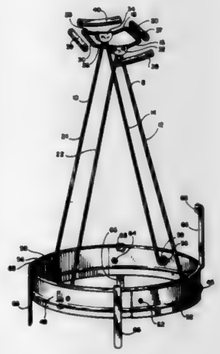
Gerald J. Schuh, 3670 Gina Pl., Las Vegas, Nev. 89103

Filed Apr. 13, 1983, Ser. No. 484,433
Int. Cl.[3] A01G *17/06*
U.S. Cl. 47—43 **12 Claims**

1. A tree brace unit comprises:

a base member adapted to be ground-mounted spaced from the tree,

brace means for maintaining the tree in a substantially upright position comprising a pair of substantially identical opposing brace members, each brace member formed from a one piece metal rod, and each member having a pair of upwardly extending, substantially parallel legs, each leg having a lower end thereof attached to the base member, said legs being connected at upper portion thereof by a collar forming segment and



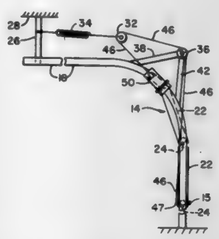
a collar formed by opposing upper collar forming segments of the brace members adapted to extend around the periphery of the tree located at an upper portion of the legs.

4,520,591

GARAGE DOOR SAFETY LOCKING SYSTEM

Michael J. Calvagno, 11 Samuel St., Nesconset, N.Y. 11767

Filed Mar. 16, 1984, Ser. No. 590,364
Int. Cl.[3] E05D *17/00*
U.S. Cl. 49—322 **5 Claims**



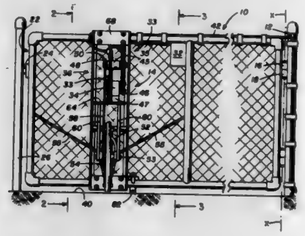
1. In a garage door operating system having a door opening, a pair of parallel tracks on opposite sides of said door opening extending up the sides of said opening and then turning to extend back into said garage above the opening and substantially parallel to the floor of said garage, a garage door having wheels mounted on the sides thereof for riding within said tracks permitting movement of said garage door between a vertically extending position closing said opening and a fully open position above and back from said opening substantially parallel to the floor of said garage, said door being movable between said positions, said wheels in said tracks guiding said door as the latter moves between its open and closed positions, and means comprising a spring and cable connecting said door to said garage to support at least in part the weight of said door thereby facilitating the raising and lowering of said garage door, the improvement comprising a lock assembly mounted on each of said tracks, means supported by said assembly being biased into a position extending into said track for blocking movement of said wheels, and means for connecting the garage end of said cable and spring to said biased means the force of said spring and weight of said garage door overcoming said bias and holding said biased means out of said position extending into said track, the failure of said spring or cable resulting in slackness in said cable releasing said biasing means with the result that it moves quickly into said track and limits movement of said garage door.

4,520,592

AUTOMATIC GATE OPENER

Falis E. Holloway, P.O. Box 911, Lancaster, Tex. 75146

Continuation-in-part of Ser. No. 250,543, Apr. 3, 1981. This application Sep. 2, 1983, Ser. No. 529,039
Int. Cl.[3] E05F *11/00*
U.S. Cl. 49—358 **16 Claims**



1. A gate opener for use on a gate mounted to a structure for pivotal motion about a generally vertical axis, comprising:

a mounting bracket mounted on the gate for limited vertical motion;

motor means mounted on the mounting bracket for rotating a shaft;

conductor means for providing power to said motor means to rotate the shaft;

wheel means rotatably mounted on the mounting bracket and in contact with a stationary surface;

transmission means interconnecting the motor shaft and said wheel means for transmitting rotation of the shaft to said wheel means;

a receiver for activating said motor means in response to reception of an electromagnetic signal of predetermined frequency to selectively open and close the gate; and

a portable controller for transmission of the electromagnetic signal at the predetermined frequency from a position remote from the gate, the frequency being proprietary to resist unauthorized operation of the gate, the controller permitting operation of the gate between the open and closed positions from within a vehicle proximate the gate, the mounting bracket, motor means, wheel means and transmission means having their weight supported at least in part through the wheel means on the stationary surface so that the weight of the mounting bracket, motor means, wheel means and transmission means assists in providing traction to the wheel means on the stationary surface sufficient to permit the gate to be pivoted about the vertical axis with the mounting bracket, motor means, wheel means and transmission means moving vertically sufficient to move over obstructions and to follow the grade of the stationary surface.

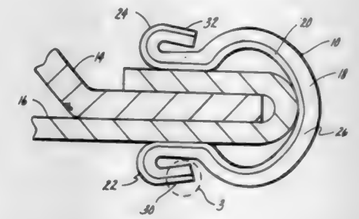
4,520,593

INSULATED EDGE GUARD

Robert Adell, Novi, Mich., assignor to U.S. Product Development Company, Sunnyvale, Tex.

Filed Jun. 24, 1982, Ser. No. 391,619
The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.
Int. Cl.[3] B60J *5/00*
U.S. Cl. 49—462 **10 Claims**

1. In a vehicle body having a sheet metal body panel of a given color on a marginal edge portion of which is disposed an ornamental and protective metallic edge molding of generally U-shaped cross section comprising an inner leg and an outer leg whose free ends bear against opposite sides of said marginal edge portion and an insulating liner disposed between the metallic edge molding and said marginal edge portion, including the locations where the free ends of the legs bear against said marginal edge portion, to insulate the molding from the panel, the molding including a bead at the free end of said outer leg with the insulating liner covering the bead on the side thereof opposite the side which is disposed toward said marginal edge portion, the improvement characterized in that the insulating liner comprises two superimposed layers of plastic film, one layer being an inner plastic film via which the liner is secured to the metallic edge molding and the other of which is an outer plastic film of polyvinylfluoride which has a color matching that of said panel, said inner plastic film being a material other than polyvinylfluoride.



4,520,594

DOOR EDGE GUARD AND METHOD OF MANUFACTURE

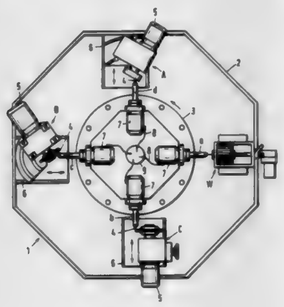
Robert Adell, Sunnyvale, Tex., assignor to U.S. Product Development Company, Sunnyvale, Tex.

Filed Sep. 19, 1983, Ser. No. 533,687
Int. Cl.[3] E05F *7/00*
U.S. Cl. 49—462 **12 Claims**



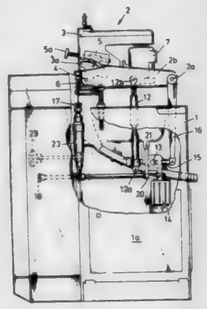
1. The method of making an edge guard of the type comprising a metal strip formed into a U-shaped cross section having inner and outer legs, said method comprising applying a layer of insulation to one surface of a metal strip, forming the strip into the general U-shaped cross section of the edge guard to dispose the insulation of the interior, inwardly turning the distal marginal edge of at least one of the legs of the edge guard so that bare metal id disposed at the interior surface of the bead thus formed and a crevice is provided between each such bead and the corresponding leg, and applying a non-metallic strip over the distal end margin of said at least one leg and its bead, said non-metallic strip covering both the inwardly facing surface of the bead onto which it is applied as well as an immediately adjacent portion of the exterior of the corresponding leg of the U-shaped cross section, and disposing a marginal edge of said strip in said crevice.

4,520,595
AUTOMATIC MACHINE TOOL
Herbert Diener, Albstadt, Fed. Rep. of Germany, assignor to Gottlieb Guhring, Ebingen, Fed. Rep. of Germany
Continuation of Ser. No. 280,832, Jul. 6, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 521,018
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1980, 3025638
Int. Cl.³ B24B *7/00*; B23B *21/24*
U.S. Cl. 51—3 **24 Claims**



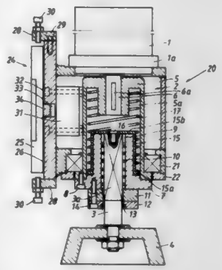
1. A method for operating an automatic machine tool for machining workpieces having a plurality n of workpiece receivers where "n" is at least two or greater and an equal plurality n of work stations, the receivers or the stations being disposed at mutual angular separations of 360°/n on a rotatable index table comprising the steps of:
driving the index table from a starting position in a sequence of (n−1) rotary steps of 360°/n in one direction such that each workpiece traverses the stations in the same sequence and
driving the index table in a single rotary step of 360°(n−1)/n in the opposite direction to return the index table to the starting position.

4,520,596
GRINDING OR POLISHING MACHINE FOR OPTICAL LENSES
Maurice J. Otto, Marseille, and Jean-Pierre Peridont, Ollioules, both of France, assignors to Societe Anonyme dite: Etudes et Fabrications Optiques, France
Filed Mar. 15, 1983, Ser. No. 475,535
Claims priority, application France, Mar. 26, 1982, 82 05363
Int. Cl.³ B24B *13/02, 29/00*
U.S. Cl. 51—55 **12 Claims**



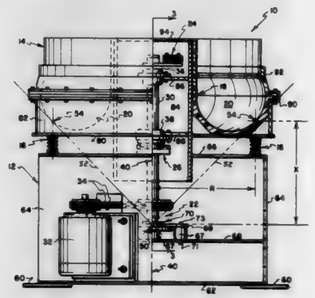
1. A machine for grinding or polishing optical lenses, comprising a frame on which is mounted at least one spindle designed to carry a tool, at least one lens-support, means for delivering a polishing agent between the tool and the support, means to bring the lenses in contact with the tool, means to place the lenses on the lens-support and to remove the lenses therefrom, said lens-support being mounted for free rotation on said frame, said frame including an oscillating movable head on which the tool-holding spindle is driven in rotation above the lens-support; wherein the lens-support is carried by a vertically movable lens-support spindle mounted in a sleeve which is flared at the top to form two bearing surfaces extending horizontally and opposedly on opposite sides of the lens-support spindle; wherein the lens-support is downwardly extended by a skirt, said skirt being provided with a lower horizontal ledge extending towards the center of said support to enclose the part of the sleeve which comprises said bearing surfaces; and wherein said lens-support rests on a lens-support spindle head mounted for free rotation on a fixed pivot situated at the top of said lens-support spindle, so that when the lens-support spindle moves upwardly, the lens-suport comes to rest on said bearing surfaces and is immobilized in a horizontal position to lay the lenses thereon, in order to polish them, or to remove them once they have been polished, and so that when the lens-support spindle moves downwards, the lens-support, being apart from said bearing surfaces, can oscillate freely during the polishing of the lenses under the influence of the oscillating movable head.

4,520,597
GRINDING UNIT FOR INDUSTRIAL ROBOT AND AUTOMATIC MACHINES
Per-Olof Lindberg, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden
Filed Nov. 8, 1982, Ser. No. 439,874
Claims priority, application Sweden, Nov. 10, 1981, 8106654
Int. Cl.³ B24B *5/00*
U.S. Cl. 51—134.5 R **15 Claims**



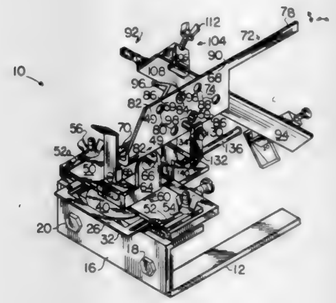
1. A grinding unit which is attachable to a robot, said grinding unit comprising
a holder,
an adjustable attachment means connected to said holder for attaching said holder to a robot,
a housing having opposite ends, said housing being rotatably journalled at one of its ends in said holder,
an axial guide sleeve means mounted at the journalled end of said housing,
a grinding wheel shaft non-rotatably mounted relative to said housing but axially movably mounted between a first limit position and a second limit position, said grinding wheel shaft being capable of mounting a grinding wheel,
a stop means defining said first limit position,
spring means urging said grinding wheel shaft toward said first limit position, and
a drive motor mounted on said holder, said drive motor including a drive shaft connected to said housing to simultaneously rotate said housing and said grinding wheel shaft.

4,520,598
BOWL-TYPE VIBRATORY FINISHING MACHINE
John F. Rampe, Bratenahl, Ohio, assignor to Jepmar, Fairport Harbor, Ohio
Continuation-in-part of Ser. No. 406,976, Aug. 13, 1982, abandoned. This application Nov. 29, 1982, Ser. No. 444,362
Int. Cl.³ B24B *31/06*
U.S. Cl. 51—163.2 **29 Claims**



1. In a bowl-type vibratory finishing machine, including:
(a) a base structure,
(b) a generally annular bowl structure having a central axis and defining a substantially annular finishing chamber having a rounded bottom adapted to receive finishing medial and workpieces to be finished;
(c) support means interposed between and movably supporting the bowl structure on the base structure,
(d) drive means for vibrating the bowl structure relative to the base structure to impart a finishing action to contents within the finishing chamber by moving the bowl structure substantially about a nodal point located at a predetermined position along the central axis, the drive means including:
(i) a drive shaft extending with respect to said axis, said shaft being rotatable with respect to the bowl and base structure;
(ii) bearing means connected to the bowl structure and journaling the drive shaft such that rotation of the drive shaft will cause vibrations to be imparted to the bowl structure; and
(iii) power-operated drive means carried by the base structure and connected to the drive shaft to rotate the drive shaft;
the improvement therein to achieve predeterminable maximized bowl-finishing action in any such bowl-type finishing machine by specific location of said nodal point comprising:
said nodal point on said central axis defining the apex of an imaginary conical surface generated therefrom, which surface tangentially intersects the rounded bottom surface portions of said bowl structure annular finishing chamber, wherein said conical surface forms an angle of between 35 degrees and 55 degrees with said central axis, and
drive shaft restraint means disposed at said nodal point to constrain vibratory motion of said bowl structure to movements generally centering about said nodal point, said means including resilient elements cooperatively associated with said drive shaft about said axis at said nodal point to restrict gyratory motion thereof while permitting substantial gyratory motion of said bowl structure, and
means providing a positive rotative drive connection between said power-operated drive means and said drive shaft while otherwise permitting said substantial relative gyratory movement to the drive shaft at the bowl structure.

4,520,599
DRILL BIT SHARPENER
Albert Slinsky, 909 Aberdeen Ave., New Port Richey, Fla. 33552
Filed Feb. 14, 1983, Ser. No. 466,036
Int. Cl.³ B24B *3/26*
U.S. Cl. 51—219 R **9 Claims**



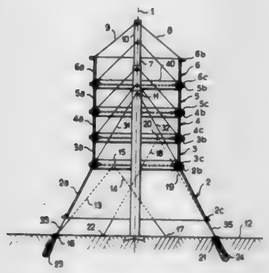
1. An apparatus for sharpening a drill bit on a grinding means, comprising,
a cradle means for holding the drill bit to be sharpened,
a cradle means holder that holds said cradle means in a predetermined angular orientation corresponding to the point angle of the drill bit held by said cradle means,
said cradle means mounted for pivotal movement in a horizontal plane and in a vertical plane,
a support means for supporting said cradle means holder,
said support means being selectively moveable away from or toward said grinding means along a line normal to the plane of said grinding means, but said support means not moving during the sharpening procedure,
said support means having a downwardly turned trailing edge,
a support means forwardmost position indicator that indicates the optimal forwardmost position of said support means and hence of said drill bit to be sharpened for a given drill bit diameter,
said indicator being disposed downwardly of said support means, in close proximity therewith, and said support means being slideable along said line with respect to said indicator,
said indicator including a rotatably mounted circular disc member,
said indicator further including a flat, generally rectangular, slideably mounted stop member,
said stop member having a generally rectangular aperture means formed therein,
said disc member and said stop member being cooperatively positioned relative to one another so that said stop member overlies said disc member, said aperture formed in said stop member permitting said disc member to be seen by the operator of said apparatus,
a plurality of visually ascertainable markings provided on said disc member,
whereby the forwardmost position of said support means for a given drill bit point angle is determined when said disc member is rotated to a preselected position, when said stop member is positioned relative to said disc member in a preselected position dependent upon the location of one of said markings, and when said support means is slid toward said grinding wheel until its downwardly turned trailing edge abuts said stop member.

4,520,600

STACKS OR VERTICAL PIPES FOR THE FLOW OF GAS

René Bordet, Courbevoie, France, assignor to Electricite de France (Service National), Paris, France

Filed Feb. 13, 1981, Ser. No. 234,435
Claims priority, application France, Feb. 18, 1980, 80 03484
Int. Cl.³ E04B *7/14*
U.S. Cl. 52—83 **21 Claims**



1. A stack or vertical pipe for the flow of gas, such as an atmospheric cooling tower, said stack or vertical pipe comprising:

a suspension mast defining a vertical suspension axis,

a plurality of supple surfaces, open downwardly and upwardly, symmetrical with respect to this vertical axis, superposed vertically,

a rigid, substantially horizontal upper hoop fast with the upper periphery of each surface,

a rigid, substantially horizontal lower hoop fast with the lower periphery of this surface, each hoop being symmetrical with respect to said vertical axis,

supple bearing ties suspending each upper hoop from the mast,

the lower hoop of an upper supple surface is adjacent to but independent of the upper hoop of a supple surface located immediately therebeneath, these two hoops having similar shapes and dimensions in a horizontal plane,

the lower hoops are not provided with bearing ties for suspension from the mast,

the adjacent upper and lower hoops are adapted to undergo relative movements, and

stays for connecting each lower hoop to one or more points fixed with respect to the ground, said points located at a level lower than that of said hoop to which the respective stays are connected, to stretch each supple surface between the corresponding upper and lower hoops, independently of the other supple surfaces.

4,520,601

MECHANICAL FASTENER

Albert B. Stacey, Jr., Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

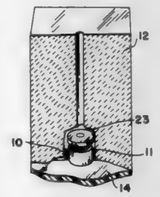
Continuation of Ser. No. 392,095, Jun. 25, 1982, abandoned.
This application Oct. 7, 1983, Ser. No. 539,230
Int. Cl.³ E04G *21/12*; E04C *5/12*
U.S. Cl. 52—127.7 **10 Claims**

1. A device for blind side fastening an object to a supporting member comprising:

a supporting member;

an object to be placed flush against said supporting member, fastenable thereto in place from the object side only;

fastening means having structure for puncturing, biting into and adhering to said supporting member distal to the axis of rotation of said fastening means and for forming an ingress within said supporting member upon rotation with respect thereto;



bearing means bonded to said object; and

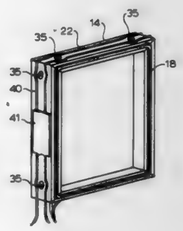
connecting means for directly engaging said fastening means with said bearing means, whereby said fastening means, said bearing means and said connecting means are operable to draw said object into contact with said supporting member to securely fasten said object to said supporting member in less than one rotation of said fastening means.

4,520,602

MULTI-PANE SEALED WINDOW AND METHOD FOR FORMING SAME

Clarence W. Miller, Bourbonnais, Ill., assignor to Thermetic Glass, Inc., Peoria, Ill.

Filed Aug. 3, 1981, Ser. No. 289,190
Int. Cl.³ E06B *3/66, 3/24*; E04C *2/38*
U.S. Cl. 52—173 R **3 Claims**



1. A spacer frame subassembly for a hermetically-sealed, multi-pane window, said spacer frame subassembly comprising:

A. side members and top and bottom members, said members arranged to form a frame, said members being made of material having good thermal conductivity properties, the frame having a first side surface, a second side surface, an outside surface between the two side surfaces and an inside surface diametrically opposite the outside surface;

B. a resistance heating electrical wire extending along substantially the entire outside surface of the frame;

C. a thin layer of electrical insulation material interposed between the wire and the frame, the insulation material being substantially unaffected by temperatures up to about 220° F. so that the insulation material does not degrade at said temperatures; and

D. fastening means for maintaining the wire and the interposed insulating material and the outside surface of the frame in direct surface-to-surface contact; and

E. a first bead of thermoplastic sealant extending along the first side surface of the frame;

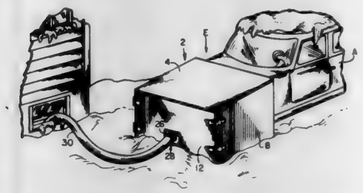
F. whereby a source of electrical energy can be attached to the ends of the wire to cause the wire to heat up along its length and thereby transfer heat to the outside surface of the frame, which heat is transmitted through the frame to the two side surfaces and through the first side surface to said bead of thermoplastic sealant so that said heat will soften the sealant and enhance the sealant flowability and adhesion characteristics.

4,520,603

AUTOMOBILE SHELTER

Earl W. Brogie, P.O. Box 336, Warrenville, Ill. 60555

Filed Feb. 28, 1983, Ser. No. 470,072
Int. Cl.³ E04H *14/00*
U.S. Cl. 52—173 R **11 Claims**



1. An automobile shelter comprising a housing, said housing including a front portion having an opening therein and being adapted to receive an engine compartment portion of an automobile, said front portion having means for fitting snugly completely around said automobile, a floor portion adapted to receive wheels of said automobile engine compartment, a roof portion adapted to overlie said automobile engine compartment, and a back portion enclosing one end of said housing, and a heat supply source connected to said housing and adapted to influence the ambient temperature within said housing, whereby to influence the temperature of said automobile engine compartment, said floor, side and roof portions each being of a length extending from a point forward of, but proximate, a forward-most portion of said automobile to a point forward of, but proximate, the forward extent of a front windshield portion of said automobile.

4,520,604

SKYLIGHT STRUCTURE

Jay F. Halsey, Lake Hopatcong, and Jeffrey M. Briggs, Oak Ridge, both of N.J., assignors to RCA Corporation, Princeton, N.J.

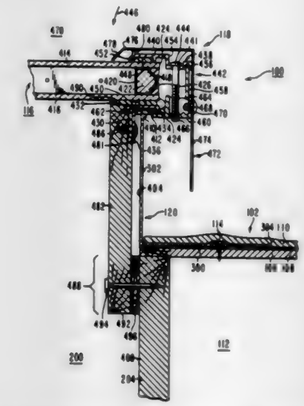
Filed Nov. 23, 1983, Ser. No. 554,850
Int. Cl.³ E04B *7/18*
U.S. Cl. 52—200 **12 Claims**

1. A skylight structure for enclosing an opening in a wall, comprising:

an annular curb member including a flange element for securing the member to and exterior from said wall and an upstanding wall having an edge surface extending around the periphery of said opening;

a skylight assembly including a light transmitting member and a frame member, said frame member having a sealing surface adapted to be in abutting sealing engagement with a sealing member at the periphery of said opening, said frame member including first and second spaced clamping elements positioned so that the periphery of said light transmitting member is between said clamping elements, a plurality of pivot links spaced around the periphery of said light transmitting member each connected to said first and second elements, and clamp adjustment means coupled to one of said clamping elements and to said pivot links for squeezing said light transmitting member between said clamping elements;

a sealing member adapted to extend continuously around said opening between said edge surface of said upstanding wall and said frame member sealing surface; and



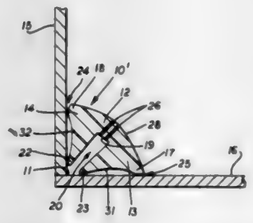
a skylight securing member secured to and depending from said frame member and adapted to be secured to said wall at a location interior to said skylight assembly.

4,520,605

DECORATIVE MOLDING FOR TUB OR COUNTER CAULKING

Richard W. Budd, 9785 Huntcliff Trace, Atlanta, Ga. 30338

Filed Sep. 27, 1982, Ser. No. 423,564
Int. Cl.³ E04F *19/04*
U.S. Cl. 52—287 **4 Claims**



1. A molding for protecting and sealing a joint formed by the angular intersection of two surfaces, comprising:

a first flexible, water-impervious elongate strip including a bottom edge and a top edge;

a second flexible water-impervious elongate strip including a bottom edge and a top edge;

a flexible, water-impervious intermediate elongate strip comprising an inner surface and a convex outer exposed surface, said intermediate strip joining said top edge of said first strip to said top edge of said second strip and forming an outer exposed surface of the molding;

said inner surface of said intermediate strip, said first strip and said second strip defining an elongate channel for receiving caulking; and,

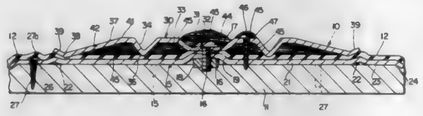
means defining a plurality of perforations in said intermediate strip extending between said outer exposed surface and said elongate channel for increasing the surface area of said channel for adhesion of caulking introduced into said channel, whereby caulking introduced into said channel for adhesion of said molding to said intersection appears at said outer exposed surface when said molding is affixed to said intersection.

4,520,606

ROOF MEMBRANE ANCHORING SYSTEMS USING DUAL ANCHOR PLATES

Thomas F. Francovitch, 6373 Windharp Way, Columbia, Md. 21045

Filed Jan. 27, 1983, Ser. No. 461,453
Int. Cl.[3] E04B *2/08*; E04D *3/36*
U.S. Cl. 52—410 36 Claims



1. Roof membrane anchoring system structure for anchoring a water and moisture impervious membrane to a roof substrate comprising:

(a) upper and lower plates in superposed relationship, said lower plate on and engaging said substrate,

(b) a membrane between said plates,

(c) fastener means for holding the said lower plate to the roof substrate comprising at least one linear fastener extending into said substrate and directly securing only said lower plate thereto, and

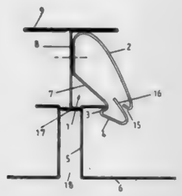
(d) means for compressively securing said upper plate against said membrane.

4,520,607

RELEASABLE RESILIENT MOUNTING ASSEMBLY FOR PANEL MEMBERS

Klaus Suckow, Biebesheim, Fed. Rep. of Germany, assignor to Stahlkonstruktionen Suckow & Fischer, Biebeshiem, Fed. Rep. of Germany

Filed May 18, 1983, Ser. No. 495,787
Claims priority, application Fed. Rep. of Germany, May 27, 1982, 3219933
Int. Cl.[3] E04B *5/52*
U.S. Cl. 52—489 20 Claims



1. A mounting assembly for releasably supporting a panel member comprising:

a stationary support member to which said panel member is to be attached;

retaining clip means affixed to said support member adapted to releasably hold in place said panel member;

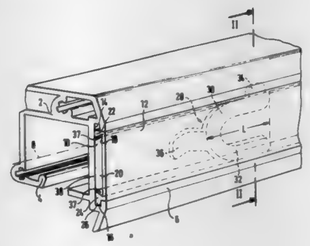
said retaining clip means comprising clasping spring means resiliently movable between an engaging position at which said panel member is releasably engaged therewith and a disengaged position for release of said panel member and a lock member adapted to engage said clasping spring means to hold said clasping spring means in said disengaged position during removal of said panel member and to release said clasping spring means prior to or during replacement of said panel member.

4,520,608

STRUCTURAL ASSEMBLY FOR SHOWER PARTITION OR THE LIKE

Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Hünibach/-Thun, Switzerland

Filed Jun. 30, 1983, Ser. No. 509,864
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224716
Int. Cl.[3] E04F *19/02*
U.S. Cl. 52—718 17 Claims



1. A structural assembly comprising:

a support member having an elongated first channel defined by a first bottom web and first side flanges, said first side flanges forming opposed first grooves facing one another over said first web;

an elongated U-shaped panel member having a second channel defined by a second bottom web and second side flanges, said second side flanges being undercut by inwardly inclined inner surfaces forming dove-tail grooves facing one another over said web; said panel member being dimensioned for snuggly fitting into said first channel with said first and second webs in facing relation;

a connecting element having a resilient portion and outwardly inclined chamfered side edges fitting into said undercut dove-tail grooves whereby said connecting element is retained in said second channel between said first and second webs, said panel member and connecting element thereby forming an integrated panel assembly;

a first lateral projection formed on said resilient portion of said connecting element, and wherein one of said second side flanges is formed with a through slot for the resilient engagement thereacross of said first projection, said first projection having a length sufficient for reception thereof into one of said first grooves adjacent said one of said second side flanges, and

a second lateral projection on said panel assembly receivable in the other of said first grooves, whereby said panel assembly is removably secured in said first channel by said projections lodged in said first grooves, respectively.

4,520,609

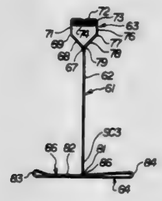
GRID TEE FOR SUSPENSION CEILINGS OR THE LIKE

Robert F. Worley, Bay Village, and Jeffrey L. Petras, Avon Lake, both of Ohio, assignors to Donn Incorporated, Westlake, Ohio

Filed Sep. 27, 1982, Ser. No. 424,026
Int. Cl.[3] E04B *5/52*
U.S. Cl. 52—729 3 Claims

1. A grid tee for suspension ceilings comprising a thin strip of metal bent to form a generally planar central web, a bulb along one extremity of said web and oppositely extending panel supporting flanges along the opposite extremity of said web, said bulb having a lateral width substantially less than the total lateral width of said flanges, said strip of metal providing at least two reverse bends at the extremity of said bulb remote from said web, said reverse bends interconnecting at least three layers of said metal extending laterally with respect to said bulb at the extremity thereof remote from said web, said layers being in substantial face-to-face contact, said layers operating

to concentrate metal at the bulb extremity of said tee to improve the strength and stiffness thereof to resist loads encountered when panels are supported on said flange, said metal providing substantially right angle bends at the ends of said layers so that said bulb provides spaced metal portions substantially parallel to said web on opposite sides thereof extending from said layers in the direction of said web, said substantially parallel metal portions on opposite sides of said web extending to inturned bends to provide inwardly extending metal portions extending to said web at the bulb extremity thereof thereby providing a hollow substantially closed bulb with multiple layers along the extremity thereof remote from said web, at least one of said inwardly extending metal portions being joined to said web, said metal being bent to provide four reverse bends with two reverse bends being opposite and substantially abutting, two of said layers being provided by separate substantially coplanar laterally extending metal portions.

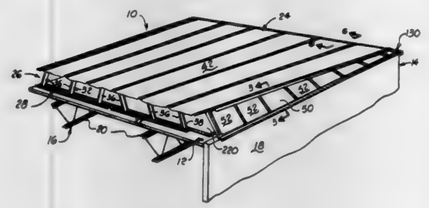


4,520,610

METHOD FOR INSTALLING A ROOF SYSTEM POSITIONABLE OVER AN EXISTING ROOF STRUCTURE

Harold G. Simpson, Oklahoma City, and Leo E. Neyer, Edmond, both of Okla., assignors to Encon Products, Inc., Oklahoma City, Okla.

Filed Apr. 22, 1983, Ser. No. 487,614
Int. Cl.[3] E04B *1/346*
U.S. Cl. 52—745 7 Claims



1. A method for reroofing a substantially flat existing roof of a structure so as to provide a new roof structure having a predetermined slope independent of the slope of the existing roof structure, the structure having a plurality of walls, each wall having an upper end portion, the method comprising the steps of:

securing an eave connector assembly to the upper end portion of one of the walls of the structure;

securing a lower cord of an adjustable ridge truss to the substantially flat existing roof such that the adjustable ridge truss is disposed at a location on the existing roof substantially corresponding to the ridge of the new roof structure and substantially parallel to the eave connector assembly, the adjustable ridge truss further characterized as having an upper cord and an adjustable web assembly disposed between and interconnecting the lower and upper cord;

adjusting the web assembly of the adjustable ridge truss so that the upper cord thereof is substantially horizontally disposed a predetermined distance above the lower cord and independent of the plane of the existing roof;

positioning at least one panel member across the upper cord of the adjustable ridge and the eave connector assembly such that the panel member is supported thereby; and

connecting the panel member to the upper cord of the adjustable ridge truss and the eave connector assembly to provide the new roof structure having a roof plane substantially independent of the roof plane of the substantially flat existing roof.

7. A method for reroofing a substantially flat existing roof of a structure so as to provide a new roof structure having a planar surface substantially independent of the planar surface of the existing roof, the method comprising the steps of:

securing a lower cord of a first adjustable eave truss to the flat existing roof, the first adjustable eave truss having an upper cord and an adjustable web assembly disposed between and interconnecting the lower and the upper cord;

adjusting the web assembly of the first adjustable eave truss so that the upper cord thereof is substantially horizontally disposed a first predetermined distance above the lower cord;

securing a lower cord of an adjustable ridge truss to the flat existing roof such that the adjustable ridge truss is disposed a selected distance from the first adjustable eave truss and substantially parallel thereto, the ridge truss being positioned in close proximity to the location of the ridge portion of the new roof structure, the adjustable ridge truss having an upper cord and an adjustable web assembly disposed and interconnecting the lower and upper cord;

adjusting the web assembly of the adjustable ridge truss so that the upper cord thereof is substantially horizontally disposed a second predetermined distance above the lower cord, the second predetermined distance being greater than the first predetermined distance between the upper cord and the lower cord of the first adjustable eave truss;

securing a lower cord of a second adjustable eave truss to the flat existing roof such that the second adjustable eave truss is disposed a selected distance from the adjustable ridge truss and parallel thereto, the second adjustable eave truss having an upper cord and an adjustable web assembly disposed between and interconnecting the lower and upper cord;

adjusting the web assembly of the second adjustable eave truss so that the upper cord thereof is substantially horizontally disposed a third predetermined distance above the lower cord, the third predetermined distance being less than the second predetermined distance between the upper cord and the lower cord of the adjustable ridge truss;

positioning panel members on the upper cords of the first adjustable eave truss, the adjustable ridge truss and the second adjustable eave truss such that the panel members are supported thereby; and

connecting the panel member to the upper cords of the adjustable trusses to provide the roof structure.

4,520,611

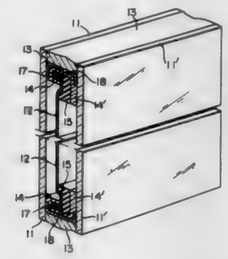
STRUCTURE OF MULTILAYERED UNIT FOR WINDOWS

Tadashi Shingu, Hino; Tadakazu Tsutada, Hachioji; Toshio Nishihara, and Nobuo Suzuki, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 235,548, Feb. 18, 1981, abandoned.
This application Oct. 17, 1983, Ser. No. 541,474
Claims priority, application Japan, Feb. 20, 1980, 55-19055; Feb. 20, 1980, 55-19056; Mar. 6, 1980, 55-27300
Int. Cl.[3] E04C *2/54*
U.S. Cl. 52—789 12 Claims

1. The structure of a multilayered unit for windows, com-

prising a plurality of planar members; at least one flexible film disposed therebetween and spaced from two of the planar members; spacers solely defining the clearance between opposing planar members; and a sealing member for sealing the spaces defined by the planar members at substantially their entire peripheral edge portions said flexible film extending at least over that region of said planar members which forms a window, and the planar members present on at least one side of the flexible film being transparent or semi-transparent, characterized in that the structure includes a resilent stretching member separate from said spacers for stretching the flexible film taut by imparting thereto a force having at least a vector component thereof acting at right angles to the plane of the film, so as to tend to push said film away from said stretching member, each of the spacers opposing each other on each side of said film having a space formed therein which faces the flexible film and further wherein the stretching member is located in at least one of said spaces and is substantially shielded from sunlight by at least one of said spacers.



4,520,612

PACKAGING MACHINE

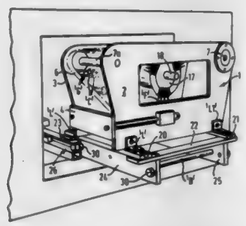
Rolf Muller, Longuich/Mosel, Fed. Rep. of Germany, assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 31, 1983, Ser. No. 462,163

Claims priority, application United Kingdom, Jan. 15, 1982, 8201078

Int. Cl.³ B56B *11/10*

U.S. Cl. 53—48 **4 Claims**



1. In a packaging machine for applying a wrapper to a group of articles whereby overlapping portions of the wrapper are tightened and secured together by tightening and locking elements, a removable locking unit mounted in the machine on transversely extending guide rails so that it can be withdrawn as a unit transversely of the machine from a first operative position within the machine frame to a second non-operative position clear of the machine frame, said unit comprising a housing which contains said tightening and locking elements arranged in operative relationship, runner plates supporting said housing and slidingly engaging said guide rails, a releasable drive coupling for engaging drive means of the machine when said locking unit is in said first operative position so that drive is transmitted to said tightening and locking elements and for automatically disengaging said drive means of the machine when the locking unit is withdrawn to said second non-operative position so that drive to said tightening and locking elements is disconnected, and releasable locking means for securing said locking unit in said first operative position.

4,520,613

METHOD AND MACHINE FOR THE PACKAGING OF ARTICLES WITH A STRETCHABLE FOIL

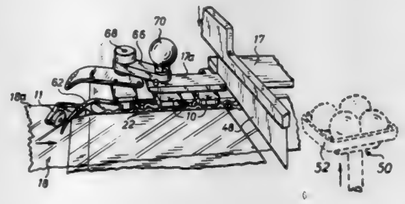
Fuzzi Claudio, Lugano, Switzerland, assignor to Eurobeva Engineering Trust, Lugano, Switzerland

Filed Jul. 20, 1981, Ser. No. 285,059

Claims priority, application Switzerland, Jul. 18, 1980, 5506/80

Int. Cl.³ B65B *41/14, 41/04*

U.S. Cl. 53—441 **13 Claims**



1. Method for packaging of articles, especially fruit, vegetables or meat, placed in a dish-like container comprising

(1) grasping two lateral edges of a leading foil portion, projecting from a roll, by a first set of at least two gripper tongs, positioned transversely—with respect to the longitudinal extent of a foil—said at least two gripper tongs being part of a plurality of sets of movable gripper tongs arranged, with spacing, from one another;

(2) intermittently transporting the gripper tongs over the dish-like containter and drawing off the foil from the roll;

(3)grasping further foil portions downstream of the leading foil portion, subsequent to the first grasped foil portion, by succeeding sets of gripper tongs;

(4) cutting off and severing a leading foil section from the leading foil portion in the region of the grasped portions after the lateral foil edges of the further foil portions have been grasped on both sides by at least one succeeding set of gripper tongs while continuing to grasp both the leading foil section and the further foil portions by the respective sets of gripper tongs, the step of cutting the foil section being carried out after the step of grasping the further foil portions;

(5) stretching the then severed leading foil section over the container filled with the articles; and

(6) releasing the grasp of the gripper tongs on the foil section to permit folding the foil edges around the underside of the container.

4,520,614

APPARATUS FOR INTRODUCING STACKS OF PAPER SHEETS OR THE LIKE INTO CARTONS

Kurt Aykut, deceased, late of Hamburg, Fed. Rep. of Germany; by Eva-Marie Aykut, executor, Barmbeker Str. 177, D-2000 Hamburg 60, Fed. Rep. of Germany, and Wolfram Wolf, Holsteinhausstr. 1, D-2081 Bilsen, Fed. Rep. of Germany

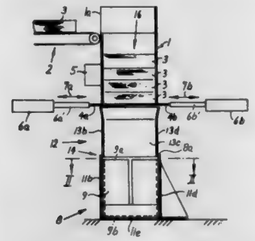
Filed Mar. 9, 1983, Ser. No. 473,732

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208388

Int. Cl.³ B65B *35/52*

U.S. Cl. 53—540 **11 Claims**

11. Apparatus for introducing stacks of paper sheets or the like into open-top cartons having side walls which tend to bulge outwardly in response to a rise of air pressure in the cartons, comprising an open-top receptacle defining a chamber for reception of cartons in such orientation that the open top of the carton in the chamber faces upwardly, said receptacle having a side wall movable to and from an open position in which a carton is insertable into and removable from said chamber; a duct extending upwardly from the open top of said receptacle and having a cross-sectional area at least substantially matching the format of the stack which is to be introduced into the carton in the receptacle below the duct; and means for feeding stacks into said duct whereby a stack which descends in said duct compresses the air therebelow and causes the thus compressed air to urge the side walls of the carton in said chamber against said receptacle.



4,520,615

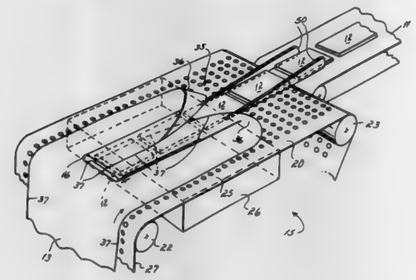
TUBE FORMING APPARATUS FOR PACKAGING

Peter B. Engler, River Falls, and Stanley D. Denker, New Richmond, both of Wis., assignors to Doboy Packaging Machinery, Inc., New Richmond, Wis.

Filed Feb. 28, 1983, Ser. No. 470,194

Int. Cl.³ B65B *9/06, 9/10*

U.S. Cl. 53—550 **6 Claims**



1. Apparatus for making a packaging tube from a web of paper or film comprising:

an endless, perforated belt having a flat run;

means driving said belt through said flat run in a first direction;

vacuum box means having an upstream and downstream end for applying a vacuum to the underside of said flat run;

means for continuously supplying said web to the flat run of said perforated belt to pull said web in said first direction toward said downstream end;

rotary web-engaging means disposed proximate said upstream end for withdrawing said web from said flat run by drawing said web in a direction opposite to said first direction;

said web being folded to flow in said opposite direction and to turn the side edges of said web inwardly upon itself, continuously forming a tube moving in said opposite direction without use of an intervening edge member for defining fold lines;

said vacuum box means being positioned at the location where said web is folded to flow in the opposite direction to form said tube.

4,520,616

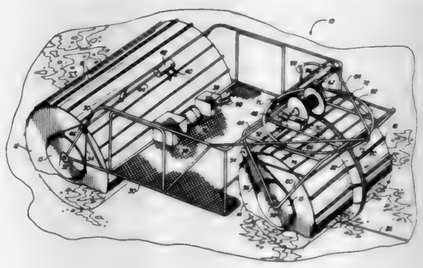
METHOD AND SYSTEM FOR CONDITIONING AND REMOVING AQUATIC PLANTS

E. Allen Stewart, Cassadaga, and Evan L. Keesling, Lake Helen, both of Fla., assignors to Amasek, Inc., Cocoa, Fla.

Filed Sep. 16, 1983, Ser. No. 533,012

Int. Cl.³ A01D *44/00*

U.S. Cl. 56—9 **23 Claims**



1. A method for conditioning aquatic plants growing on the surface of a body of water, said method comprising the steps of:

(a) providing a water craft having a rotatable drum, the specific density of said drum being substantially less than 1, whereby said drum floats on top of a body of water;

(b) fitting said drum with conditioning ribs extending away from the surface thereof;

(c) moving said craft across an area of compacted growth of surface-growing aquatic plants;

(d) rotating said drum so that said ribs separate and condition said growth of plants for a relatively uniform distribution across the surface of said body of water; and

(e) removing said plants from said body of water after said separating and conditioning step.

4,520,617

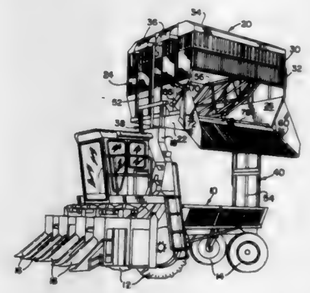
COTTON HARVESTER

Robert M. Fachini, Naperville; Monroe C. Barrett, Downers Grove, and Maxwell D. McClure, III, Naperville, all of Ill., assignors to J. I. Case Company, Racine, Wis.

Continuation-in-part of Ser. No. 338,191, Jan. 11, 1982,. This application Jul. 19, 1983, Ser. No. 515,330

Int. Cl.³ A01D *46/08*

U.S. Cl. 56—16.6 **16 Claims**



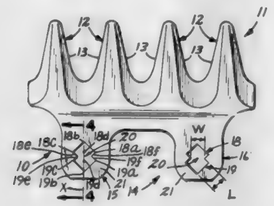
1. In a cotton harvester having a wheeled chassis, a picking unit for harvesting cotton, a conveyor operably connected to the picking unit, and a unitary basket having a floor and up-

wardly extending walls for collecting cotton from the conveyor, the combination of means for raising the basket in a constant angle position to a cotton discharge position, means for discharging cotton from the basket in a controllable fashion while the basket remains in the same constant angle position, and control means for opening and closing said basket regardless of said basket elevation and speed of dischargeable cotton.

4,520,618
CUTTER GUARD

Wayne E. Sorensen, West Des Moines, and Larry E. Johnson, Indianola, both of Iowa, assignors to Herschel Corporation, Indianola, Iowa

Continuation of Ser. No. 612,665, May 21, 1984, abandoned, which is a continuation of Ser. No. 425,688, Sep. 28, 1982, abandoned. This application Oct. 23, 1984, Ser. No. 664,086
Int. Cl.³ A01D *55/10*
U.S. Cl. 56—310 **1 Claim**

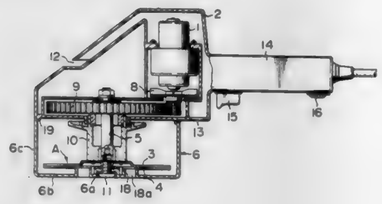


1. A guard for a cutter bar of a harvesting machine, the guard having a leading prong section, and a trailing section for attachment with a bolt having a square portion to the cutter bar, said trailing section including a pair of spaced-apart, outwardly extending members, each of said members having a longitudinal axis, wherein the improvement comprises means at said trailing section for positioning said guard in either a first position or a second position on the machine cutter bar, said positioning means including a central portion on each of said members containing a forward opening and a rearward opening aligned with respect to each other, each of said respective openings of said members being substantially square in shape and having a center point and at least one corner located on said respective extending member axis, each opening including an area overlapping a like area of said other opening, said overlapping area defining a reduced passage to prevent said bolt from inadvertently moving from one of said first and second position to the other.

4,520,619
LAWN MOWER

Hachiro Doi, and Masayuki Yaegashi, both of Saitama, Japan, assignors to Fuso Keigokin Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1982, Ser. No. 454,328
Claims priority, application Japan, Sep. 25, 1982, 57-167839
Int. Cl.³ A01D *67/00, 55/00*
U.S. Cl. 56—320.1 **17 Claims**



1. A lawn mower comprising:

a housing;

a cutter unit including:

(a) a lower cutting unit below said housing and having at least one lower blade attached thereon; and

(b) an upper cutting unit below said housing and coaxial with said lower cutting unit around an axis, wherein said upper cutting unit is adapted to rotate in a direction t around said axis and wherein said upper cutting unit comprises: at least one upper blade thereon, and a cutting surface on said blade, having a first end and a second end, wherein said first end is closer to said axis than said second end, wherein said cutting surface extends in front of a line passing through said axis and said first end, in said direction t,; and

a supporting arm, attached to said housing and adapted to prevent said lower cutting unit from rotating; and

a fixed shaft, attached to said lower cutting unit, wherein said supporting arm is attached to said fixed shaft and to the bottom of said housing, wherein said upper cutting unit is adapted to rotate around an axis, wherein said supporting arm and said lower cutting unit are adapted to rotate through ninety degrees around said axis, and then become rigidly attached to said fixed shaft.

4,520,620
HARVESTER REEL PICKUP TINE

James M. Gessel, La Moille; Gary L. Kunz, and E. Louis Scheidenhelm, both of Mendota, all of Ill., assignors to Hart-Carter Company, Minneapolis, Minn.

Filed Sep. 27, 1984, Ser. No. 655,163
Int. Cl.³ A01D *57/02*
U.S. Cl. 56—400 **2 Claims**



1. A crop pickup tine adapted for mounting on a harvester reel bat and having a bat attachment portion at its upper end and a pickup finger portion of predetermined length extending from the bat attachment portion, the finger portion of the tine having a constant thickness in the front-to-rear direction from adjacent its upper end to more than half the finger length and then decreasing progressively to the finger tip, and the finger width of the tine decreasing progressively from substantially twice its thickness at the said upper end to less than its thickness at the finger tip.

4,520,621
GARDENING TOOL

Gene R. Archer, 8225 Gale Rd., Rte. 1, Hebron, Ohio 43025

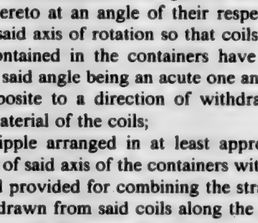
Filed Aug. 25, 1983, Ser. No. 526,271
The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.
Int. Cl.³ A01D *7/00*
U.S. Cl. 56—400.11 **12 Claims**

1. A garden tool, comprising:

a. a handle; and

b. a rake element including;

i. a bridge portion centrally connected to one end of the handle, the bridge portion including a plurality of flex portions extending transversely and laterally on opposite sides of the handle, the bridge portions terminating and joined to ends depending or extending at an angle downward,



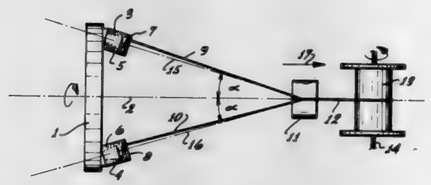
ii. a comb element joined on the sides of the ends of the flex portions and,

iii. the gage of the rake element being sufficiently thin that the tool is characterized by an elastic response when applied to a work surface.

4,520,622
STRANDING DEVICE

Gerhard Ziemek; Friedrich Schatz, and Hermann Meyer, all of Langenhagen, Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,637
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221369
Int. Cl.³ D07B *3/06*
U.S. Cl. 57—59 **5 Claims**



1. A stranding apparatus, comprising:

at least one carrier element, having an axis and being provided for rotation about the axis;

a plurality of coil containers arranged on said carrier and mounted thereto at an angle of their respective axes in relation to said axis of rotation so that coils of stranding elements contained in the containers have axes of like orientation, said angle being an acute one and oriented in relation opposite to a direction of withdrawing of the stranding material of the coils;

a stranding nipple arranged in at least approximately an intersection of said axis of the containers with the axes of rotation and provided for combining the stranding material as withdrawn from said coils along the said inclined axis;

takeup means disposed downstream from said stranding nipple for receiving and winding stranded together stranding elements; and

said angle being selected to be dependent upon the speed of rotation of the carrier, the distance of the coils from said axis of rotation and the friction between the coils and the respective container such that the angle is smaller for a higher speed and/or a larger value of said distance, but larger with higher friction, the angle being not smaller than 5 degrees and not larger than 30 degrees.

4,520,623
ACTIVATED CARBON FIBER SPUN YARN

Hiroyasu Ogawa; Kazuo Izumi, and Kenji Shimazaki, all of Shizuoka, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1983, Ser. No. 514,898
Claims priority, application Japan, Jul. 17, 1982, 57-123784
Int. Cl.³ D02G *3/02*
U.S. Cl. 57—236 **14 Claims**

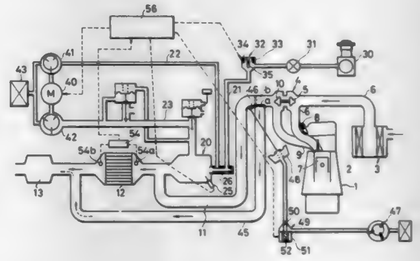
1. An activated carbon fiber spun yarn comprising activated carbon fibers having a specific surface area of 500 to 1,500 m^2/g, a ductility of at least 0.5%, and a tensile strength of at least 10 kg/mm^2 and derived from acrylonitrile-based fibers, said spun yarn having a twist coefficient of 30 to 60, wherein the twist coefficient is defined by the equation:

$$\text{twist coefficient} = \frac{\text{twist number per meter}}{\sqrt{\text{metric count of spun yarn}}}$$

4,520,624
DIESEL PARTICULATE FILTER SYSTEM

Yuhiko Kiyota; Katsuyuki Tsuji; Satoru Kume, all of Kyoto; Hiroaki Takada; Kiyoichi Shinsei, both of Hyogo; Akio Matsumoto, and Hitoshi Ogawa, both of Hyogo, all of Japan, assignors to Mitsubishi Jiboshia Kogyo Kabushiki Kaisha and Mitsubishi Denki Kabushiki Kaisha, both of, Japan

Filed Jul. 12, 1984, Ser. No. 630,054
Claims priority, application Japan, Jul. 15, 1983, 58-128779
Int. Cl.³ F01N *3/02*
U.S. Cl. 60—286 **10 Claims**



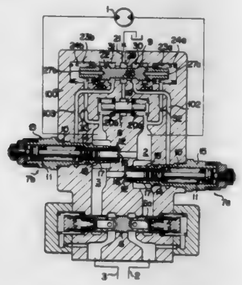
1. A system for trapping diesel particles, comprising: an exhaust gas line extending from an exhaust port of a diesel engine; a particulate filter connected in said exhaust gas line; ignition means; a burner connected at a point upstream of said particulate filter and which is supplied with fuel, a primary air flow for atomizing said fuel and a secondary air flow for burning particulates trapped in said particulate filter and which supplies said particulate filter with a hot burning gas produced by said ignition means; primary and secondary air pumps for supplying said primary air and secondary air flows, respectively; a single motor for driving both said primary and secondary air pumps; and means for controlling said ignition means and said motor such that said filter; when it has trapped particulates in an amount exceeding a preset level, is cleaned by burning said particulates in said burner.

4,520,625

HYDRAULIC BRAKE VALVE SYSTEM

Hideyori Sato, Funabashi; Nobuaki Inaba, Yokohama; Mitsuru Arai, Kamakura, and Michio Onzou, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 2, 1983, Ser. No. 471,341
Claims priority, application Japan, Mar. 4, 1982, 57-029613; Mar. 4, 1982, 57-029614
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—464 2 Claims



1. A hydraulic brake valve system installed in a hydraulic fluid circuit wherein a hydraulic motor is connected with a manually operated directional control valve through a driving fluid line of the circuit and a braking fluid line, characterized in that said system comprises:

(a) a counterbalance valve connected between the driving fluid line and the braking fluid line and actuated by pressure differential between them;

(b) a first relief valve having two pressure receiving surfaces therearound for relieving the pressurized fluid acting on one of said pressure receiving surfaces at a low pressure and for relieving the pressurized fluid acting on the other of said pressure receiving surfaces at a high pressure, said first relief valve having a back pressure chamber to block the relieving operation which is arranged to connect the pressure receiving surface on the low pressure side with the driving fluid line and to connect the pressure receiving surface on the high pressure side with the braking fluid line;

(c) a second relief valve having the same construction as that of the first relief valve and arranged to connect the pressure receiving surface on the low pressure side with said braking fluid line and to connect the pressure receiving surface on the high pressure side with said driving fluid line;

said first and second relief valves each comprising a valve seat member having an axially extending bore communicating with a first port; a poppet having a diameter larger than that of the seat of said valve seat member thereby defining an inner diameter portion and an outside diameter portion, the inner diameter portion defining said one of said pressure receiving surface, the end face of the outside diameter portion of said poppet being located oppositely to a second port and defining the other of said pressure receiving surfaces; and a spring located to urge said poppet from the rear surface thereof towards said valve seat member, the arrangement being made such that if the area of the poppet to receive the pressurized fluid from the first port is defined as A_1 and that of the poppet to receive the pressurized fluid from the second port as A_2, then a relationship of $A_1 < A_2$ is obtained; the rear surface of said poppet facing said back pressure chamber and being located oppositely to a third port;

(d) a drain change-over valve means actuated by the pressure differential between the driving fluid line and the braking fluid line for connecting either one of said fluid lines which is kept at a low pressure with a drain passage; and

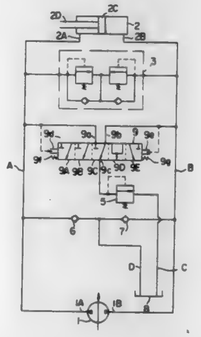
(e) timer valve means actuated by the pressure differential between the driving fluid line and the braking fluid line for supplying with a time lag the pressurized fluid within either one of said fluid lines which is kept at a high pressure into the back pressure chamber of the relief valve whose pressure receiving surface on the low pressure side is connected with said fluid line kept at a high pressure.

4,520,626

HYDRAULIC DRIVE SYSTEM FOR SINGLE ROD CYLINDER

Kichio Nakajima; Eiki Izumi; Hiroshi Watanabe; Yukio Aoyagi, and Kazuo Honma, all of Ibaraki, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1982, Ser. No. 337,283
Claims priority, application Japan, Jan. 10, 1981, 56-1614
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—468 3 Claims



1. A hydraulic drive system for a single rod cylinder formed with a rod side port and a bottom side port, including:

a hydraulic pump formed with two ports;

a rod side main line fluidly connecting one of said two ports of said hydraulic pump to the rod side port of said single rod cylinder;

a bottom side main line fluidly connecting the other port of said hydraulic pump to the bottom side port of said single rod cylinder;

fluid replenishing means for replenishing said main lines with a working fluid;

a flushing valve formed with two inlet ports respectively connected to said two main lines and one outlet port for communicating the inlet port of a lower pressure with said one outlet port; and

a low pressure line connecting said outlet port of said flushing valve to a fluid tank;

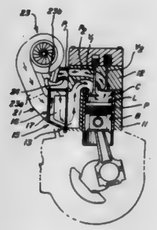
characterized in that said flushing valve is displaceable between a normal position and first and second switching positions while maintaining communication between at least one of the inlet ports and the outlet port, said flushing valve is located in the normal position when the hydraulic pump is stopped so that one of the inlet ports is communicated with the outlet port, said flushing valve is displaced from the normal position when the hydraulic pump is actuated to the first switching position in which one inlet port is communicated with the outlet port and to the second switching position in which the other inlet port is communicated with the outlet port so that said rod cylinder is held at a stopped position against an external force being applied thereto by means of said flushing valve, and in that a pressure means is mounted in said low pressure line wherein said low pressure line is located in a path communicating one of the main lines to the fluid tank, for causing an increase in pressure in the main line connected to the inlet port communicated with the outlet port when the flushing valve is in the normal position to displace the flushing valve to one of the switching positions, whereby said flushing valve drains excess fluid from said main line of a lower pressure.

4,520,627

TURBOCHARGED INTERNAL COMBUSTION ENGINE

Dean H. Reichenbach; John H. Stang, both of Columbus; Lewis W. Cummings, New Whiteland; Richard E. Glasson, and David A. Ruthmansdorfer, both of Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Aug. 9, 1983, Ser. No. 521,625
Int. Cl.³ F02F *1/42*
U.S. Cl. 60—599 7 Claims



1. A turbocharged internal combustion engine comprising a block provided with a plurality of cylinders and an elongated cavity formed on one side of said block and extending the length of said block and having an opening thereto on the exterior of said one side; a head mounted on said block in overlying relation with the corresponding end of each cylinder, said head being provided with an internal intake passageway and an internal exhaust passageway for each cylinder, one end of each intake passageway communicating with said cavity and one end of each exhaust passageway terminating at the exterior of said head adjacent said block one side and in proximity to said cavity opening; an elongated heat exchange assembly disposed adjacent said cavity opening and extending the length of said cavity and having a housing mounted on the exterior of said block one side in overlying relation with said cavity opening, said housing having an inlet and an outlet spaced therefrom, and a heat transfer means disposed within said housing intermediate said inlet and outlet and extending the length of said housing, said housing outlet extending the length of said cavity opening and communicating with said cavity opening; and a turbocharger disposed adjacent the exterior of said block one side and having an exhaust gas intake communicating with the terminating one end of each exhaust passageway of said head and a charged air outlet communicating with the housing inlet whereby the change air flow within said housing must pass said heat transfer means before exiting into said cavity; said turbocharger, said head exchange assembly, and the corresponding one ends of said exhaust gas passageways being in close proximity to said cavity.

4,520,628

METHOD FOR COMPRESSING AND HEATING A HEATING MEDIUM TO BE EXTERNALLY SUPPLIED TO AN ENGINE WHILE USING THE ENERGY AVAILABLE IN THE HOT EXHAUST GASES OF THE ENGINE

Stig G. Carlqvist, Malmö, Sweden, assignor to Stig G. Carlqvist Motor Consultant (CMC) AB, Malmö, Sweden

Continuation of Ser. No. 421,719, Sep. 22, 1982, abandoned. This application Jul. 23, 1984, Ser. No. 633,069
Claims priority, application Sweden, Oct. 22, 1981, 8106246
Int. Cl.³ F01K *23/06;* F02B *33/44*
U.S. Cl. 60—616 9 Claims

1. A compound engine system comprising

a heat-producing unit which receives air and exhausts a heated gaseous medium,

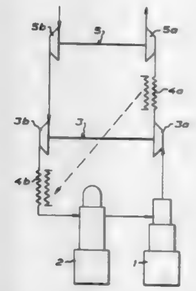
an engine which receives the gaseous medium from the heat-producing unit for externally heating the engine,

a first compression stage for compressing air for said heat-producing unit,

a second compression stage for receiving and compressing the air from the first compression stage,

a first expansion stage for receiving exhaust gases from the engine,

a second expansion stage for receiving exhaust gases from said first expansion stage,



said first compression stage and said second expansion stage being mechanically interconnected,

said second compression stage and said first expansion stage being mechanically interconnected,

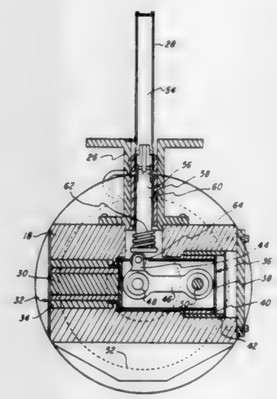
a heat exchanger interposed between the first expansion stage and the second expansion stage and between the second compression stage and the heat producing unit such that heat is transferred between the exhaust gases passing from the first expansion stage to the second expansion stage and the air passing from the second compression stage to the heat producing unit.

4,520,629

DRIVE MECHANISM FOR A REFRIGERATOR WITH CLEARANCE SEALS

Robert M. Dix, Dallas; Timothy A. Ellis, Plano, and Gary W. Andrews, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 26, 1983, Ser. No. 526,851
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 13 Claims

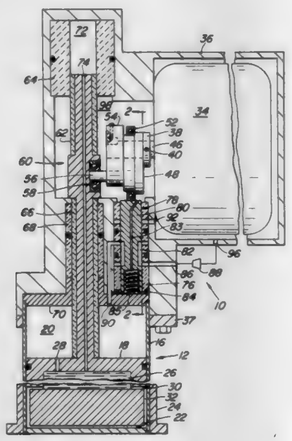


1. A cryogenic refrigerator comprising:

(a) a housing,

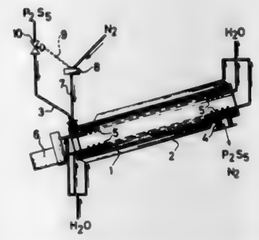
(b) a cold finger means operatively connected to the housing, said cold finger means including a regenerator/displacer;
(c) a motor connected to the housing;
(d) a crankshaft operatively connected to the motor;
(e) a connecting rod having first and second end portions, said first end portion operatively connected to the crankshaft and to the regenerator/displacer of the cold finger;
(f) a piston guide means having a guide member rigidly fixed to the housing, a hollow body member having a portion thereof mounted in said guide member, said hollow body journalled to the second end of the connecting rod for reciprocal movement in response to movement of the connecting rod; and
(g) a clearance seal, said clearance seal including a cryogen compression piston rigidly fixed to the hollow body of the cylinder means and a sleeve member ridigly fixed to the housing in a spaced relationship to the piston to form an elongated sealing gap therebetween, whereby said cryogen compression piston is reciprocated substantially free of a clearance seal degrading side force vector.

4,520,630
CRYOGENIC REFRIGERATOR AND HEAT SOURCE
Domenico S. Sarcia, Carlisle, Mass., assignor to CVI Incorporated, Hilliard, Ohio
Filed Mar. 6, 1984, Ser. No. 586,575
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **12 Claims**



1. In a cryogenic apparatus in which a movable displacer means defines within an enclosure first and second chambers of variable volume, and in which a refrigerant fluid is circulated in a fluid path between the first chamber and the second chamber by movement of the displacer means, chamber means for guiding a slide connected to the displacer means, a reversible motor connected to said slide for reciprocating said slide, a valve having a reciprocable valve member for controlling the flow of high and low pressure fluid, said motor being connected to a cam arranged to reciprocate said valve member in timed relation with reciprocation of said slide so that the valve member will introduce high pressure fluid into said first and second chambers when the displacer means is at each of the extremities of its movement so that the apparatus is either a refrigerator or heat pump.

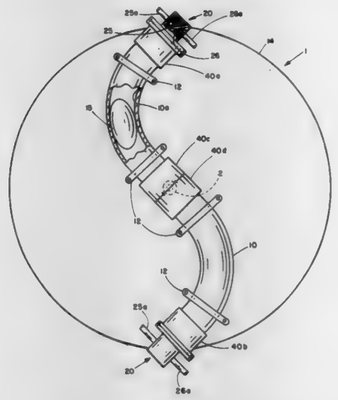
4,520,631
METHOD FOR CONTROLLING AND OPTIONALLY REGULATING THE LEVEL OF LIQUID P_2S_5 IN A COOLING DEVICE
Günter Reichert, Bornheim-Merten; Franz Mainzer, Hürth; Kurt Lehmann, and Hermann Niermann, both of Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Continuation of Ser. No. 446,777, Dec. 3, 1982, abandoned, which is a division of Ser. No. 235,050, Feb. 17, 1981, Pat. No. 4,386,503. This application May 14, 1984, Ser. No. 609,518
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006625
Int. Cl.³ F25D *17/02*; G01F *23/00*
U.S. Cl. 62—188 **3 Claims**



1. A method for measuring and controlling the level of P_2S_5 in a cooling apparatus for solidifying molten liquid P_2S_5 comprising: introducing molten liquid P_2S_5 through a P_2S_5-feed inlet into the lower end portion of the cooling apparatus which is in an inclined position, cooling and solidifying the molten liquid P_2S_5 within the cooling apparatus, and discharging completely solidified P_2S_5 by a screw conveyer through an outlet at the upper end portion of the said cooling apparatus; introducing an inert gas into said lower end portion of the cooling apparatus through an inlet opening thereinto, said inert gas inlet being positioned in the immediate neighborhood of the liquid P_2S_5 inlet so as to terminate above the wall of the cooling apparatus at a level which lies between the axis and lower edge of the screw conveyor; bubbling the inert gas through the P_2S_5, measuring the pressure difference which is established in accordance with the P_2S_5 level in the apparatus, thereby obtaining measurements relating to the level of P_2S_5 in the cooling apparatus; and controlling the level of P_2S_5 in the cooling apparatus by utilizing said measurements.

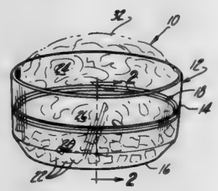
4,520,632
METHOD AND APPARATUS FOR EXTRACTING HEAT AND MECHANICAL ENERGY FROM A PRESSURED GAS
Edwin W. Dibrell, San Antonio, Tex., assignor to Centrifugal Piston Expander, Inc., San Antonio, Tex.
Continuation-in-part of Ser. No. 436,852, Oct. 25, 1982, abandoned. This application Aug. 19, 1983, Ser. No. 524,281
Int. Cl.³ F25D *9/00*
U.S. Cl. 62—403 **44 Claims**

1. Apparatus for extracting heat and mechanical energy from a pressured gas comprising, in combination, a rotatable body; power means for rotating said body about a first axis; a cylinder means defining an elongated fluid pressure chamber having a generally S-shaped longitudinal axis; means for rigidly mounting said cylinder means on said body with the ends of said fluid pressure chamber disposed on opposite sides of said first axis and radially remote therefrom, and the central portions of said fluid pressure chamber proximate to said first axis; said fluid pressure chamber having a uniform cross-section throughout its length; a free piston mounted in said fluid pressure chamber for sliding sealable movement throughout the S-shaped length thereof, first and second valve means for respectively supplying pressured gas to the ends of said fluid pressure chamber; third and fourth valve means for respectively exhausting expanded gas from the ends of said fluid pressure chamber; and a plurality of piston detecting means spaced along the length of said cylinder means and operatively



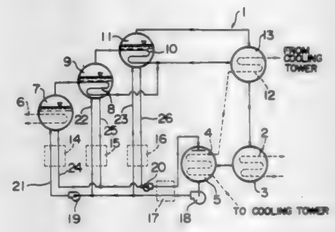
connected to said first, second, third, and fourth valve means to cause said piston to continuously reciprocate from one end to the other of said fluid pressure chamber as said body is rotated.

4,520,633
SALAD BOWL
Roberta L. Hoydic, 5035 Highwood Dr., Flint, Mich. 48504
Continuation-in-part of Ser. No. 405,512, Aug. 5, 1982, abandoned. This application Apr. 23, 1984, Ser. No. 602,262
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—457 **7 Claims**



1. A receptacle comprising:
a wall having an inner dimension;
a substantially planar lid having an outer dimension substantially the same as said inner dimension of said wall;
a bottom affixed to one end of said wall;
means for detachably lockingly securing said lid to said wall located at a point between said bottom and the top of said wall, said lid securing means defining an upper wall portion and a lower wall portion;
wherein said lower wall portion, said bottom and said lid define a chamber in said receptacle and wherein said lid and said upper wall portion define an open receptacle portion; and
means for detaching said lid from said wall secured to said lid.

4,520,634
MULTI-STAGE ABSORPTION REFRIGERATION SYSTEM
Tomihisa Oouchi; Sampei Usui; Tamio Fukuda, and Akira Nishiguchi, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 12, 1984, Ser. No. 599,482
Claims priority, application Japan, Apr. 13, 1983, 58-63596
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—476 **10 Claims**

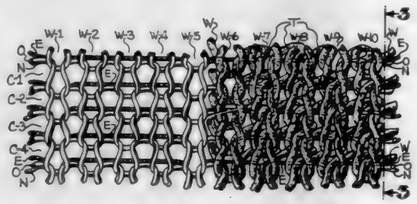


1. A multi-stage absorption refrigeration system comprising;
a first generator equipped with a heating source for heating a solution to vaporize a refrigerant therein and produce a gas refrigerant;
means conveying said gas refrigerant produced in said first generator to a second generator utilizing the gas refrigerant produced in said first generator as a heating source for heating the solution to vaporize refrigerant therein and produce gas refrigerant;
means conveying said gas refrigerant produced in said second generator to a third generator utilizing the gas refrigerant produced in said second generator as a heating source for heating the solution to vaporize refrigerant therein and produce gas refrigerant;
condenser means for cooling the gas refrigerant produced in the first generator and second generator and used for heating the solution in the next following generator and the gas refrigerant produced in the third generator, to produce liquid refrigerant;
evaporator means vaporizing the liquid refrigerant produced in the condenser means to thereby cool a medium to be cooled while producing gas refrigerant;
absorber means causing the gas refrigerant produced in said evaporator means to be absorbed in a concentrated solution produced in each said generator to produce a dilute solution;
a solution supply system for supplying the dilute solution produced in said absorber means directly to each said generator without passing through another generator;
pump means for supplying the dilute solution to each said generator through said solution supply system;
heat exchanger means comprising a plurality of heat exchangers each for causing heat exchange to take place between the solutions going into and coming from each generator; and
a cooling medium flow system causing the cooling medium to flow first through the condenser means and then through the absorber means.

4,520,635
CUSHION FOOT SOCK
Harper Shields, and Roger D. Lineberry, both of Burlington, N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.
Filed May 29, 1984, Ser. No. 614,775
Int. Cl.³ A41B *11/02*; D04B *9/46*
U.S. Cl. 66—185 **10 Claims**

1. An improved cushion foot sock including a leg, and a foot with a heel, an instep, a sole, and a toe knit of a body yarn, the

improvement comprising an elastic yarn incorporated in spaced-apart wales and floating inside of multiple wales of successive courses of said leg and said instep and forming mock ribs therein, said elastic yarn being incorporated in every other wale in said sole to provide stretchability and to maintain said sole in close engagement with the foot of the wearer, and wool



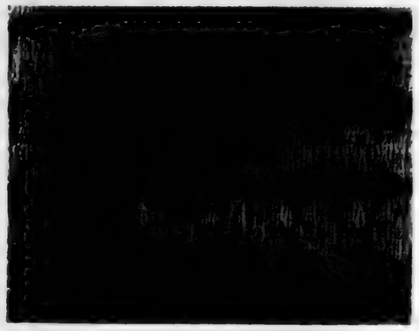
yarn knit in plated relationship with said body yarn in said heel, sole and toe so that said wool yarn is exposed on the outside of said heel, sole and toe to provide a soft and fuzzy appearance thereto, said wool yarn forming inwardly extending terry loops in said heel, sole and toe to provide a soft cushion and good moisture characteristics thereto.

4,520,636

WOVEN-LIKE WARP KNIT FABRIC WITH TENSION CONTROL FOR TOP EFFECT YARN

Julius R. Schnegg, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 97,972, Nov. 28, 1979, Pat. No. 4,395,889. This application Aug. 31, 1981, Ser. No. 297,963
Int. Cl.³ D04B *23/08*
U.S. Cl. 66—192 **32 Claims**



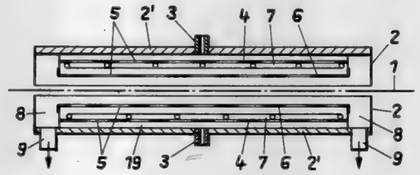
1. A warp knit fabric having woven-like characteristics comprised of a plurality of chain stitches extending in the machine direction of the fabric, a plurality of weft yarns extending in the cross-machine direction and at least one top effect yarn laid into at least one of said chain stitches, said top effect yarn being a non-slubbed yarn and being bunched at random intervals in dependence upon varied tension of the top effect yarn along the machine direction, said top effect yarn exhibiting the appearance of ratine-like slub effect yarn due to the varied tension thereof.

4,520,637

STEAMING DEVICE ARRANGED IN FRONT OF A SYNTHETIC FIBER CRIMPING INSTALLATION FOR HEATING FIBERS TRAVELING PAST SUCH STEAMING DEVICE

Heinz Fleissner, Riehen, Switzerland, assignor to Vepa Aktiengesellschaft, Riehen/Basel, Switzerland

Filed Jan. 10, 1983, Ser. No. 456,764
Int. Cl.³ D06B *5/04*
U.S. Cl. 68—5 D **6 Claims**



1. A steaming device to be arranged in front of a synthetic fiber crimping installation for heating the fibers travelling past the device, which comprises:

a steaming duct extending over an operating width of the device;

means for feeding steam to the duct including a pipe having a discharge opening leading to the duct;

means for shielding the opening with respect to the fibers travelling past the device, said shielding means including a first steam permeable distributor panel that extends over the length of the duct and that is arranged at a spacing with respect to an insulated duct wall in order to form a distributor channel, the first distributor panel being partially perforated with spaced openings and having an imperforate area opposite to the steam feed pipe, a second steam permeable distributor panel arranged in superposition and at a mutual spacing from the first distributor panel, the openings of the first distributor panel being laterally offset with respect to openings in the sound distributor panel; and

a heater for heating the steam extending over the width of the steaming duct between the two distributor panels.

4,520,638

TRIPLE ACTION AGITATOR FOR AUTOMATIC WASHERS

Robert A. Brenner, St. Joseph Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 7, 1983, Ser. No. 558,874
Int. Cl.³ D06F *17/08*
U.S. Cl. 68—133 **15 Claims**

11. A means for converting oscillatory rotation into vertical reciprocating motion comprising:

a rotationally oscillating drive barrel,

a thruster barrel rotatably and reciprocably mounted on said drive barrel,

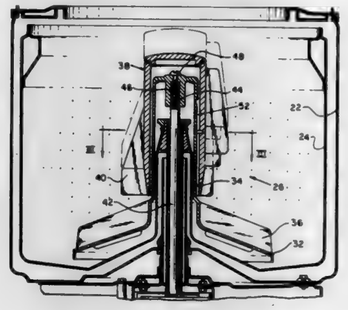
means retarding rotary movement of said thruster barrel,

pin means projecting radially from one of said barrels toward the other,

recessed channel means formed in the surface of the other of said barrels to receive said pin means,

said channel means comprising a circuit with upper and lower legs and angled side legs connecting said upper and lower legs and including means allowing one way movement of said pin means around said channel circuit,

whereby rotational movement of said drive barrel will cause relative movement between said pin means and said channel means causing said pin means to move around said channel



circuit in the direction allowed by said channel means thereby causing said thruster barrel to reciprocate.

4,520,639

DOUBLE DEAD BOLT DOOR LOCK

George Wartian, Detroit, Mich., assignor to Wartian Lock Co., St. Clair Shores, Mich.

Filed Dec. 6, 1982, Ser. No. 447,235
Int. Cl.³ E05B *65/06*
U.S. Cl. 70—110 **9 Claims**

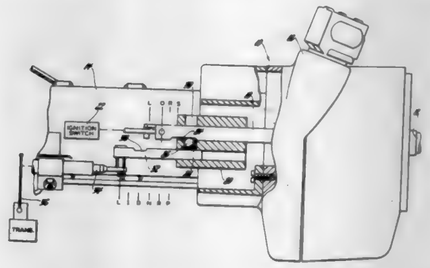
1. A double dead bolt door latch and lock mechanism for a door comprising a housing adapted to be mounted on the door, a latch movably mounted on said housing and when in operative position adapted to engage a keeper to maintain said door closed, an operator mounted on said housing and operable to withdraw said latch from operative position to release said latch from engagement with the keeper and permit the door to be opened, a dead bolt mounted on said housing for movement from an extended operative position engageable with a keeper recess to lock the door in closed position to a retracted inoperative postion, and single means for moving said bolt to its operative position and simultaneously locking said latch in its operative position, said single means comprising an actuator having a pin and slot connection with said bolt and rotatable in one direction to a first position to move said bolt to its extended, operative position and rotatable in the opposite direction to a second position to move said bolt to its retracted, inoperative position, said actuator having a part movable into blocking relation to said latch when said actuator is rotated in said one direction to lock said latch in its operative position, and movable out of blocking relation ot said latch when said actuator is rotated in said opposite direction to permit said latch to be withdrawn, said part of said actuator being a ring for blocking said latch as aforesaid which has a peripheral notch for clearing and unblocking said latch when said actuator is rotated in said opposite direction to said second position.

4,520,640

POSITION CONTROL MECHANISM FOR A VEHICLE IGNITION LOCK

Richard L. Kramer, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 297,232, Aug. 28, 1981, abandoned. This application Jun. 30, 1983, Ser. No. 509,403
Int. Cl.³ E05B *65/12*
U.S. Cl. 70—248 **5 Claims**



1. A position control mechanism, a steering column, a steering column mounted ignition lock cylinder mechanism and a floor-mounted transmission shift control mechanism, said position control mechanism comprising; a guide member secured to the steering column, an ignition pin member slidably disposed in said guide member and cooperating therewith to form an axially extending lock recess and being movable to a plurality of positions including "Lock" by the ignition lock mechanism, a shift pin member sidaby disposed in said guide member and cooperating therewith to form an axially extending park recess selectively alignable with the lock recess and being movable to a plurality of positions including "Park" by the transmission shift control mechanism, and interlock means disposed in said guide member and being engaged in the lock recess in the ignition pin for preventing the ignition pin from moving to the "Lock" position unless the park recess is engaged, being engaged in the park recess in the shift pin when the shift pin is in the "Park" position for preventing movement of the shift pin from the "Park" position when the ignition pin is in the "Lock" position, and being movable between the recesses when the ignition pin is out of the "Lock" position and the shift pin is in the "Park" position.

4,520,641

COMBINATION LOCK WITH SECURITY FEATURE

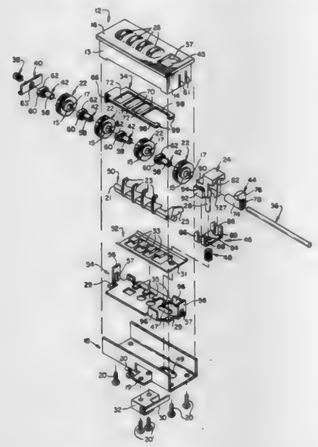
Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Dec. 14, 1981, Ser. No. 330,694
Int. Cl.³ E05B *37/02*
U.S. Cl. 70—312 **25 Claims**

1. A combination lock including a plurality of combination dials each of which must be disposed in a particular rotational orientation in order to open the lock, a movable locking member released by the dials for movement only when the dials are each in said particular orientation, a manual actuator associated with the locking member for opening the lock when the locking member is released, coupling means between the locking member and the manual actuator, means for releasing the coupling means responsive to movement of the actuator from a first to a second position when opening the lock, and upsetting means operatively connected between the manual actuator and at least one of the dials for rotating the dial out of said particular orientation by movement of the manual actuator beyond the second position.

8. A combination lock having a plurality of axially aligned rotary combination dials which must each be disposed in a particular rotational orientation to enable the lock to be opened, combination sleeves releasably coupled to the respective dials for rotation therewith, a manual actuator for opening

the lock when the dials are disposed as aforesaid, and a manually operable shift member for axially moving the sleeves out of coupling engagement with the dials when the dials are



disposed as aforesaid, characterized in that the shift member has an operating portion disposed in a pocket formed in the manual actuator, the pocket being accessible from one side of the actuator to permit operation of the shift member.

4,520,642

CONTROL DEVICE FOR CONTINUOUS ROLLING MACHINE

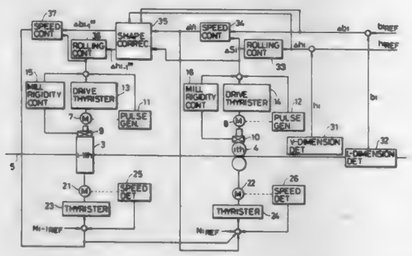
Shuheu Niino; Koichi Ishimura; Ken Okamoto, and Koichi Ohba, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 425,792

Claims priority, application Japan, Sep. 30, 1981, 56-157218; Sep. 30, 1981, 56-157219; Sep. 30, 1981, 56-157220

Int. Cl.³ B21B *37/12*

U.S. Cl. 72—8 **4 Claims**



1. A control device for a continuous rolling machine, comprising; a lateral dimension detector for detecting a lateral dimension bi of a material at the exit of an ith mill stand, first means receiving a difference Δbi between the detected value bi from said lateral dimension detector and a reference lateral dimension biREF and generating a speed control output directed to speed controls of one or more of the ith, i−1th and i−2th mill stands for controlling the tension between an i−1th mill stand and the ith mill stand so that said difference is reduced to zero, and shape correction means receiving said control output of said first means and said a difference Δbi in the lateral dimension for calculating a change value hi−1* in the vertical dimension and a change value bi−1* in the lateral dimension of the i−1th mill stand as will reduce the difference Δbi to zero in accordance with a predetermined algorithm; rolling control means for controlling the rolling position of the i−1th mill stand in accordance with said change value hi−1* in the vertical dimension as calculated by said shape correction means, and second means generating speed control signals directed to speed controls of one or more of the ith, i−1th and i−2th mill stands for controlling the tension between an i−2th mill stand and the i−1th mill stand in accordance with said change value bi−1* in the lateral dimension as calculated by said shape correction means.

4,520,643

ASSEMBLY FOR BLOWING OUT AND SPRAYING DIES IN FORGING PRESSES

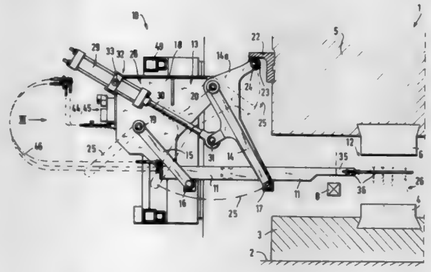
Eberhard Werner, and Friedrich Willim, both of Leverkusen, Fed. Rep. of Germany, assignors to Eumuco Aktiengesellschaft Für Maschinenbau, Fed. Rep. of Germany

Filed Aug. 2, 1983, Ser. No. 519,647

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230095

Int. Cl.³ B21C *43/00, 9/00*

U.S. Cl. 72—39 **18 Claims**



1. An assembly for blowing and spraying dies in forging presses having a mold area and a press plunger, said assembly comprising:

(a) nozzle means mounted on carrier means to move into and out of the mold area of the forging press,

(b) the carrier means being coupled to a four-bar linkage including two levers each having an end facing away from the carrier means being pivotably mounted to a support means,

(c) one of the levers being connected to a drive means with the support means being fixedly secured with respect to the forging press, to define a drive lever mounted to move independent of the press plunger, and

(d) said drive lever being connected via a connecting rod to a crank mechanism.

4,520,644

SPRING COILING MACHINE WITH IMPROVED CUT-OFF MEANS

Bernard P. Lampietti, Goshen, Conn., assignor to Torin Corporation, Torrington, Conn.

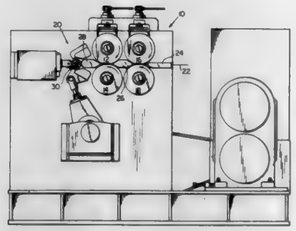
Continuation of Ser. No. 570,427, Jan. 13, 1984, abandoned, which is a continuation of Ser. No. 510,992, Jul. 5, 1983, abandoned, which is a continuation of Ser. No. 224,919, Jan. 14, 1981, abandoned. This application Oct. 10, 1984, Ser. No. 659,498

Int. Cl.³ B21F *11/00*

U.S. Cl. 72—131 **2 Claims**

1. In a cyclically operable spring coiling machine having a vertical front frame and a coiling station at an upper portion thereof; the combination of at least one pair of oppositely rotatable feed rolls on said frame for intermittently advancing wire longitudinally to the coiling station, at least one coiling tool at the coiling station arranged to engage the longitudinally

advancing wire to obstruct the linear movement thereof whereby progressively to bend the same about the coiling arbor and impart a coiling stress thereto resulting in the formation of a coiling spring configuration at a leading end portion thereof, an anvil means at said coiling station, a pair of cut-off tools at said coiling stations generally on opposite sides of said coiling arbor and co-operable with said anvil means intermittently to sever coiled leading end portions of the wire whereby to provide individual coil springs, a pair of holders for said cut-off tools respectively mounted on pivotally supported shafts and exposed at the front of the machine frame for urging the cut-off tools toward and away from the anvil means and wire coiled thereabout, said pivot shafts projecting rearwardly through the machine frame and carrying interconnecting gears at rear end portions thereof whereby to pivot said tool holders in unison but in generally opposite directions toward and away from the anvil means, a continuously rotating horizontal shaft forming a part of the coiling machine drive mechanism and having one end portion projecting forwardly through the



vertical front frame of the machine beneath and in spaced relationship with said tool holders, and motion transmitting and converting means exposed at the front of the machine frame and connected between said projecting end portion of said shaft and one of said tool holders and operable to effect a single tool holder and cut-off tool movement of each tool holder toward and away from said anvil means and wire coiled thereabout during each rotation of said shaft, said motion transmitting and converting means comprising an eccentric mounted on the forwardly projecting end portion of said continuously rotating shaft and an associated arm oscillable thereby to effect the tool holder movement as aforesaid, said oscillable arm being directly connected at one end thereof to said eccentric on said projecting end portion of said continuously rotating horizontal shaft, and further, directly connected at an end of said arm opposite said one end to said one of said tool holders, said arm including an adjustment for changing the throw of said cut-off tools toward and away from the anvil means and wire coiled thereabout.

4,520,645

FEEDING THIN FOIL-LIKE MATERIAL INTO A GAP BETWEEN A PAIR OF ROTATABLE ROLLS

Hugh M. Ross, Poole, and Peter G. Grocock, Ringwood, both of England, assignors to Davy McKee (Poole) Limited, Poole, England

Filed Jan. 17, 1983, Ser. No. 458,708

Claims priority, application United Kingdom, Jan. 26, 1982, 8202181

Int. Cl.³ B21B *39/02*

U.S. Cl. 72—250 **12 Claims**

1. Apparatus for feeding the leading end of the outer turn of a coil of web material into a gap defined between a pair of rotatable rolls, comprising:

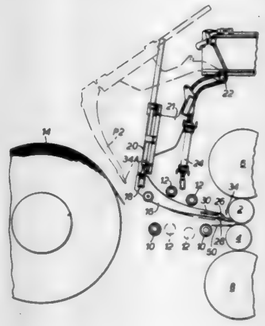
a pair of rotatable rolls having a gap defined therebetween;

means for supporting a coil of web material at a location spaced from said pair of rotatable rolls;

a structure having a length comparable to the width of said web material;

means for moving said structure between said coil of web material and said pair of rotatable rolls so as to move said leading end of said outer turn of said coiled web material from said coiled web material location to said gap of said pair of rotatable rolls;

suction means mounted upon said structure for grasping said outer turn of said coiled web material at a predetermined distance rearwardly of said leading end of said web material; and



means mounted upon said structure for blowing air past said leading end of said web material so as to properly orient said leading end of said web material relative to said gap defined between said pair of rotatable rolls and thereby facilitate the feeding of said leading end of said web material into said gap defined between said pair of rotatable rolls.

4,520,646

SHEET-METAL BENDING BRAKE

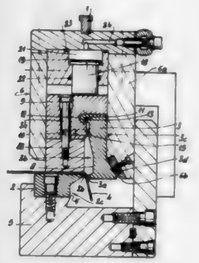
Alexis Pauzin, 19, montee des Soldats, Caluire (Rhone), France

Filed Mar. 18, 1983, Ser. No. 476,523

Claims priority, application France, Mar. 19, 1982, 82 05046

Int. Cl.³ B21D *5/04*

U.S. Cl. 72—313 **8 Claims**



1. A sheet-metal bending brake comprising:

a substantially stationary anvil having a flat and horizontal support surface bounded by and having a straight and horizontal stationary bending edge and a back surface also bounded by and extending downward from the stationary bending edge and forming an acute angle with the support surface, whereby a plate workpiece to be bent is supported on the support surface with an edge region projecting horizontally backward beyond the stationary edge;

a bending frame displaceable vertically above the anvil;

a movable bending blade carried on the frame pivotal about a horizontal axis parallel to the bending edge and having a horizontal and movable bending edge parallel to the stationary edge, the blade being pivotal on the frame between a back position with the movable edge spaced horizontally parallel to the support surface from the sta-

tionary edge and a front position with the movable edge generally aligned vertically perpendicular to the support surface with the stationary edge, the blade having a horizontally directed front face bounded by the movable edge and formed with a cutout open horizontally parallel to the support surface toward the stationary edge;

a clamp bar above the support surface adjacent the blade and having a downwardly directed clamp-bar face vertically confronting and substantially parallel to the support surface;

means supporting the clamp bar on the bending frame for limited vertical movement relative thereto between a lower position with the bar face below the movable edge and an upper position with the bar face above the movable edge, the frame including a carrier on which the blade is pivoted and on which the support means supports the clamp bar, the carrier also being vertically displaceable relative to the frame between an upper position and a lower position;

drive means for vertically displacing the frame with the bar and the blade relative to the anvil between an upper position with the bar face and the movable edge both above the support surface and the workpiece thereon and a lower position with the bar face pressing the workpiece against the support surface and the movable edge below the stationary edge and through an intermediate position with the bar face and the movable edge level with each other and both engaging the workpiece, the front face of the blade and the back surface of the anvil at least partially horizontally confronting each other in the lower position of the blade, whereby the bar clamps the workpiece to the anvil and downward movement from the intermediate position to the lower position of the blade bends down the workpiece edge region;

means between the blade and the frame for pivoting the blade from the back position in the upper and intermediate positions of the frame into the front position in the lower position of the frame, the stationary edge being aligned with and engaging into the cutout of the front face of the blade in the lower position of the frame and front position of the blade, whereby the workpiece end region can be bent through more than a right angle; and

biasing means between the carrier and the frame for urging the carrier into the respective lower position.

4,520,647

SURFACE FINISHING PROCESS

James Economy, San Jose, and Anagnostis E. Zachariades, Hillsborough, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1983, Ser. No. 528,351
Int. Cl.³ B21B *3/00*
U.S. Cl. 72—365 **2 Claims**



1. A method for simultaneously modifying the rough micro surfaces on opposite faces of a recording disk substrate, the rough micro surfaces extending beyond the bulk thickness of the substrate, comprising the steps of:

placing the substrate between a pair of rollers, said rollers having a surface finish smoother than the rough micro surfaces of the substrate, the hardness of the surfaces of said rollers exceeding the hardness of the rough micro surfaces to be modified,

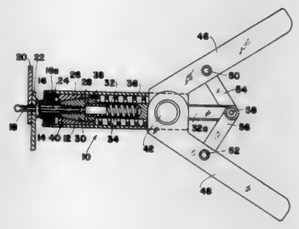
and applying through said rollers a deformational force to the rough micro surfaces to be modified which exceeds the elastic limit of the rough micro surfaces to be modified to produce plastic deformation thereof, said deformation extending into the rough micro surfaces no greater than approximately four microns, without lessening the bulk thickness of the substrate or otherwise modifying the bulk properties of the substrate.

4,520,648

LEVER OPERATED RIVETER

Jack T. Gregory, Penngrove, Calif., assignor to Gregory Tool Systems, Inc., Sonoma, Calif.

Filed Feb. 1, 1984, Ser. No. 576,022
Int. Cl.³ B21D *31/00*
U.S. Cl. 72—391 **3 Claims**



1. A mechanical pulling tool comprising

a slideway;

a nose piece carried on one end of said slideway to press against a surface;

a gripping member slidable along said slideway to pull a work-piece away from said surface;

a pair of squeezable handles pivoted about a common axis on the other end of said slideway;

a rod carrying said gripping member at one end thereof and extending rearward through said common axis and between said handles, with the other end thereof being located rearward of said other end of said slideway, said rod being encompassed by said slideway; and

a pair of links, each pivoted at one end to one of said handles near said common axis, and extending inward of said handles and rearward of said common axis to pivot at the other end thereof to said other end of the rod so that squeezing said handles extends said links to pull said rod and gripping member away from said nose piece.

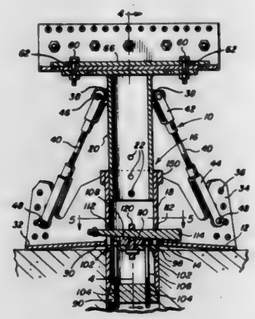
4,520,649

VEHICLE ANCHORING STAND

George D. Barton, Sr., Rte. 2, Box 103, Clear Creek Rd., Mabank, Tex. 75147

Filed Aug. 2, 1983, Ser. No. 519,231
Int. Cl.³ B21D *1/12*
U.S. Cl. 72—457 **12 Claims**

1. A vehicle anchoring stand including horizontal base structure having a central opening therein and a plurality or outer marginal portions spaced about said central opening and disposed in a plane spaced slightly below the central portion of said base structure defining said opening, upright central post structure supported from said central portion of said base structure, attaching structure carried by the upper end portion of said central post structure for anchoring to a vehicle frame, and anchor means carried by said base structure and operative through said opening for tightly drawing said central portion of said base structure downward relative to a flor anchor, said base structure being slightly flexive whereby downward drawing of said central portion relative to said floor anchor will insure tight full seated engagement of said marginal portions with opposing floor surfaces disposed about said floor anchor, brace structure extending and connected between said marginal portions and corresponding peripherally spaced portions



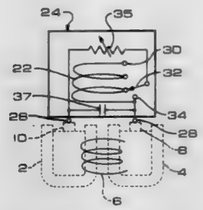
of upper portions of said central post structure, whereby flexing of the base structure as said central portion is draw downward toward said floor anchor will place said upper portions of said central post structure under compression through said brace structure to thus resist lateral deflection of said central post structure.

4,520,650

FIELD-PORTABLE CALIBRATION UNIT FOR ELECTROMAGNETIC FLOW METERS

David A. Palmer, and James K. Palmer, both of San Luis Obispo, Calif., assignors to Montedoro-Whitney Corporation, San Luis Obispo, Calif.

Filed Sep. 28, 1983, Ser. No. 536,749
Int. Cl.³ G01F *25/00*
U.S. Cl. 73—3 **12 Claims**



1. A field-portable calibrator for calibrating an electromagnetic flow velocity sensor of the type that uses a coil to generate a time-varying magnetic field whose lines of flux extend perpendicular to the direction of flow and that includes electrodes spaced apart in a direction that is perpendicular to both the direction of flow and the direction of the lines of flux, said field-portable calibrator characterized in that it simultaneously checks for accuracy both the strength of the time-varying magnetic field generated by the sensor and the determination made by the sensor of the flow velocity, and further characterized in that it requires neither water nor a source of electrical power, said field-portable calibrator comprising in combination:

pickup means for intercepting a precisely known percentage of the lines of flux when the sensor is engaged with the calibrator during calibration and for responding to the time-varying magnetic field by producing an electrical signal that bears a known constant relationship to the time-varying magnetic field; and,

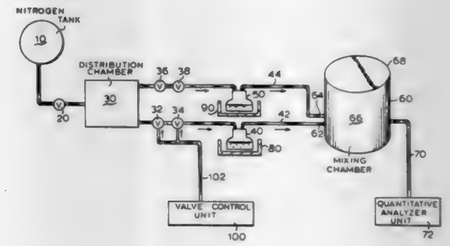
feedback means connected to said pickup means for applying said electrical signal to the electrodes of the sensor.

4,520,651

METHOD AND APPARATUS FOR OBTAINING THE COMBINED AROMA OF SEVERAL SUBSTANCES

Ira Litman, 41 Holiday Park Dr., Hauppage, N.Y. 11788

Filed Apr. 19, 1982, Ser. No. 369,846
Int. Cl.³ G01N *31/00*
U.S. Cl. 73—23 **9 Claims**



1. A method of obtaining a combination of volatile substances having a preselected aroma, said method comprising:

mixing the vapors of each volatile substance with an odorless gas to form several gas mixtures;

blending the gas mixtures to form a gas composite; determining the aroma of said gas composite; and

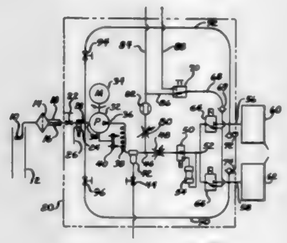
varying said mixture until said preselected aroma is obtained.

4,520,652

SYSTEM FOR OBTAINING EXHAUST SAMPLES AND ANALYZING THE SAME

Michael S. Englund; Joseph C. Hafele, both of Peoria, and Dwain C. Schulze, Jr., North Pekin, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 311,858, Oct. 16, 1981, Pat. No. 4,386,534.
This application Jan. 28, 1983, Ser. No. 461,727
Int. Cl.³ G01N *1/24, 1/26*
U.S. Cl. 73—23 **5 Claims**



1. A method of analyzing, on a fuel specific basis, the exhaust of a combustor for constituent levels without measuring fuel consumption rates, comprising:

partially filling a sample collecting container (60,62) with dried air;

thereafter directing the exhaust to be analyzed into said sample collecting container (60,62);

subsequently measuring the combined dried air and exhaust to determine the volumetric levels of at least two constituents therein each of whose level is changed by combustion from the level present in ambient air; and

calculating the fuel specific basis level of one of said constituents utilizing the data obtained in the step of measuring,

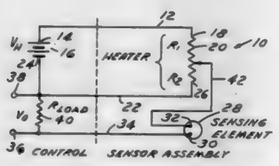
and the normal volumetric level of the other constituent in ambient air.

4,520,653

CIRCUITS FOR OBTAINING A VOLTAGE READING FROM A SENSING ELEMENT

William J. Kaiser, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 29, 1983, Ser. No. 527,633
Int. Cl.³ G01N *27/12*
U.S. Cl. 73—23 **14 Claims**



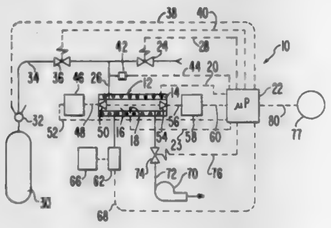
1. A circuit for obtaining a voltage reading from a sensing element, characterized by:
a voltage source;
a resistance heater;
first circuit means for connecting a first end of said voltage source to a first end of said resistance heater;
second circuit means for connecting a second end of said voltage source to a second end of said resistance heater;
a sensing element having two leads;
third circuit means for connecting a first one of said leads of said sensing element to an external circuit;
a load resistor coupled between said second circuit means and said third circuit means; and
interconnecting circuit means for coupling a second one of said leads of said sensing element intermediate said resistance heater;
said electrical resistance of said resistance heater being substantially less than said electrical resistance of said sensing element.

4,520,654

METHOD AND APPARATUS FOR DETECTING HYDROGEN, OXYGEN AND WATER VAPOR CONCENTRATIONS IN A HOST GAS

James H. Terhune, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Mar. 14, 1983, Ser. No. 475,340
Int. Cl.³ G01N *29/02*
U.S. Cl. 73—24 **8 Claims**



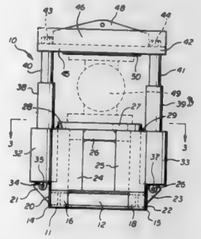
1. Apparatus for analyzing samples of an atmoshere drawn from the containment of a nuclear plant, said atmosphere being substantially constituted of varying concentrations of first, second and third constituent gases diffused in a host gas, said apparatus being operative to determine the concentrations of said first, second and third constituent gases in said host gas, said apparatus comprising:
a sonic cell for holding a fixed volume of gas;
first means coupled with said sonic cell for introducing unknown samples of said containment atmosphere into said sonic cell;
second means coupled with said sonic cell for introducing calibration samples from an atmosphere of known concentrations of said constituent gases difussed in said host gas into said sonic cell;
means for establishing said samples at a standard, predetermined temperature and pressure;
means for directly ascertaining the concentration of said third constituent gas in said samples;
ultrasound generating means disposed in said sonic cell;
ultrasound receiving means disposed in said sonic cell a predetermined distance from said generating means;
exhaust means for discharging samples from said sonic cell;
means coupled with said receiving means and said third constituent gas gas ascertaining means for calculating the concentrations of said second and third constituent gases in said samples in response to the attenuation factor and the transit time of ultrasonic waves propagated through said unknown samples across said predetermined distance, the concentration of said third constituent gas and the attenuation factor and the transit time of ultrasonic waves propagated through a calibration sample;
said calculating means being coupled with said first means, second means, third gas ascertaining means, ultrasound generating means and exhaust means for controlling or monitoring the operation thereof; and
means coupled to the calculating means for displaying the calculated results.

4,520,655

VALVE TESTING APPARATUS

Ester L. Owens, Houston, Tex., assignor to Gordon E. Eldridge, Friendswood, Tex., a part interest

Filed Dec. 18, 1981, Ser. No. 331,994
Int. Cl.³ G01M *3/28*
U.S. Cl. 73—46 **15 Claims**



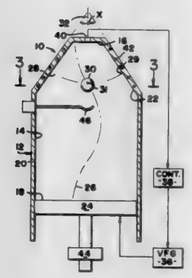
1. An apparatus for fluid testing high pressure valves comprising
a rigid supporting base,
a test table supported on said base, having a central opening for application of fluid pressure and API grooves in the supporting face thereof for sealing one opening of a valve being tested,
a pair of fluid operated cylinders positioned on opposite sides of said test table and supported on said base,
a pair of pistons, one in each of said cylinders, for application of compressive force by retraction thereof under fluid pressure,
a clamping bar extending between and supported on the ends of said pistons, and adapted to support a closure plate for supporting and sealing another opening of a valve being tested,
controllable means for supplying fluid pressure to said test table opening, comprising
a hydraulic fluid reservoir,
a hydraulic fluid pump having an inlet connected to said reservoir,
a selector valve having an inlet connected to the outlet of said hydraulic fluid pump and a plurality of outlets,
one of said selector valve outlets being connected to said reservoir,
another of said selector valve outlets being connected to one side of each of said cylinders, and
another of said selector valve outlets being connected to the other side of each of said cylinders, and
controllable means for supplying fluid pressure to said cylinders for clamping a valve to be tested between said clamping bar and said test table.

4,520,656

GRAVITY ENHANCED ACOUSTIC LEVITATION METHOD AND APPARATUS

Martin B. Barmatz, Glendale; James L. Allen, LaCrescenta, and Dan Granett, Los Angeles, all of Calif., assignors to The United States of America as represented by the Adminstrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 9, 1983, Ser. No. 559,988
Int. Cl.³ G10K *10/00*
U.S. Cl. 73—505 **8 Claims**



1. An acoustic levitation system for use in an environment wherein a gravity or other force urges an object in a predetermined downward direction, comprising:
walls forming a chamber having a top wall, a bottom wall, and side walls, said side walls forming a stabilizer location at a position along the height of said chamber where said side walls are angled so they converge in an upward direction; and
means for applying acoustic energy to said chamber at a frequency which is resonant to the height of said chamber to produce a standing wave pattern along the height of the chamber, said frequency chosen so there is an acoustic levitation surface at the height of the stabilizer location.

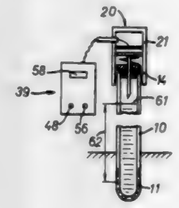
4,520,657

APPARATUS FOR DETERMINING THE PRESSURE OF CAPILLARY WATER, ESPECIALLY IN SOIL

Hans-Peter Marthaler, Adlikon bei Regensdorf, Switzerland, assignor to Dr. von Ballmoos AG, Horgen, Switzerland

Filed Jul. 19, 1983, Ser. No. 515,121
Int. Cl.³ G01N *19/10*
U.S. Cl. 73—73 **6 Claims**

1. An apparatus for determining the pressure of capillary water in the ground, especially in soil, said apparatus comprising:
a probe tube adapted to be filled with a measuring liquid and to be partially inserted into the soil;
said probe tube having a first end structured to be introduced into the soil to be investigated;
a porous plug closing said first end of said probe tube and being permeable for said measuring liquid opposite said first end;
said probe tube having a second end;
a closure member closing said second end of said probe tube;
a pressure measuring device for measuring the pressure prevailing in said probe tube above said measuring liquid;
said pressure measuring device comprising an elastically deformable membrane;



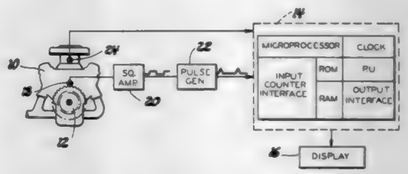
a hollow needle;
said hollow needle being arranged to interconnect said measuring chamber and said internal space of said probe tube; and
said closure member at said second end of said probe tube forming a plug of a pierceable and self-sealing material.

4,520,658

METHOD OF LOCATING ENGINE TOP DEAD CENTER POSITION

William P. Ryan, Royal Oak, and Thaddeus Schroeder, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1983, Ser. No. 556,790
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 **4 Claims**



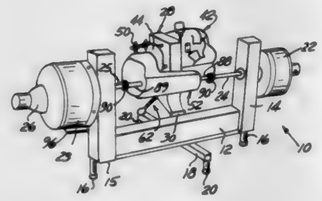
1. A method of determining the location of top dead center position of at least one cylinder of an internal combustion engine having an output shaft whose instantaneous rotational velocity undergoes cyclic changes at the combustion frequency of the cylinders, the method comprising the steps of:
monitoring the instantaneous rotational velocity of the output shaft;
determining the angular position of the output shaft at which the angular velocity of the output shaft is minimum as an estimation of engine top dead center; and
correcting the angular position estimation of engine top dead center with a predetermined velocity and combustion timing dependent correction angle corresponding to the average rotational velocity of the output shaft and the combustion timing angle, whereby the corrected angular position of the minimum angular velocity of the output shaft corresponds substantially to top dead center position of the engine.

4,520,659

TRANSMISSION TESTER

Carroll J. Lucia, 2703 Bay Settlement Rd., Green Bay, Wis. 54301, and George C. Lucia, 214 N. Superior St., DePere, Wis. 54115

Filed May 10, 1983, Ser. No. 493,301
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **27 Claims**



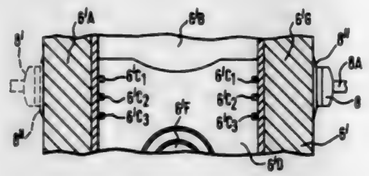
1. A transmission testing apparatus comprising a frame member, at least one upright member disposed at an end of said, said upright member having a shaft journalled therethrough and an inertia flywheel supported by said shaft for rotation thereby, an adjustably positionable bulkhead, a prime mover mounted on one side of said bulkhead, said prime mover having an output shaft, a transmission support plate removably attached to said bulkhead and having mounting apertures for affixing thereto a transmission to be tested, said transmission having an input shaft aligned with said prime mover output shaft for coupling to said prime mover output shaft and an output shaft, means for displaceably and adjustably supporting said bulkhead relative to said frame member for aligning said transmission output shaft with said inertia flywheel shaft, and means for coupling said transmission output shaft to said inertia flywheel shaft.

4,520,660

ENGINE TESTING APPARATUS AND METHODS

Keith N. Hitchcock, Worcester, England, assignor to Froude Consine Limited, England

Continuation-in-part of Ser. No. 455,418, Jan. 3, 1983, Pat. No. 4,444,049. This application Oct. 12, 1983, Ser. No. 541,041
Claims priority, application United Kingdom, Dec. 22, 1980, 8040966; Dec. 22, 1980, 8040969; Jan. 22, 1981, 8102004; Jan. 4, 1982, 8200089; Sep. 13, 1982, 8226057
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—120 **31 Claims**



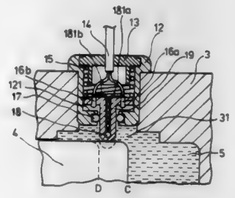
1. A method of detecting a piston ring of a piston in a cylinder of a piston engine, comprising the steps of:
- directing an ultrasonic beam through the cylinder block of the engine towards the cylinder;
- moving the piston in the cylinder; and
- receiving and examining an ultrasonic signal from the cylinder for a characteristic of the piston ring; wherein the ultrasonic beam and the ultrasonic signal are transmitted and received respectively as a series of pulses and wherein each received ultrasonic signal pulse is transduced into a corresponding electrical signal pulse and wherein each electrical signal pulse is sampled at a timed instant which is such that the portion sampled of each electrical pulse is dependent in value upon the presence and absence respectively of the piston ring in the ultrasonic beam.

4,520,661

TEMPERATURE AND WEAR SENSOR FOR A BRAKE

Takashi Tamai, Hirakata; Shigefumi Tomiyama, Higashiosaka, and Nobumasa Ohshima, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 24, 1983, Ser. No. 497,582
Int. Cl.³ G01L *5/28*
U.S. Cl. 73—129 **12 Claims**



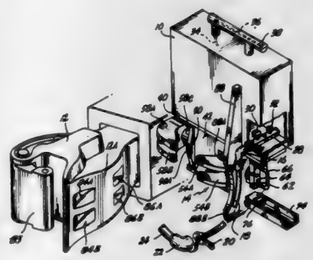
1. A temperature and wear sensor for a brake having a shoe movable by a piston and cylinder against a rotating part comprising:
- a composite position and temperature sensing device engageable between the cylinder and the piston, said device including:
- means for detecting and electrically indicating predetermined changes in temperature; and
- means including switch means operable by a predetermined relative position between the cylinder and the piston for electrically indicating a predetermined wear condition of the shoe.

4,520,662

COUPLER MOUNT ASSEMBLY

Hartmut Schmid, North Vancouver, Canada, assignor to Glenayre Electronics, Ltd., Vancouver, Canada

Filed Sep. 9, 1983, Ser. No. 530,724
Int. Cl.³ G01L *5/28*
U.S. Cl. 73—129 **20 Claims**



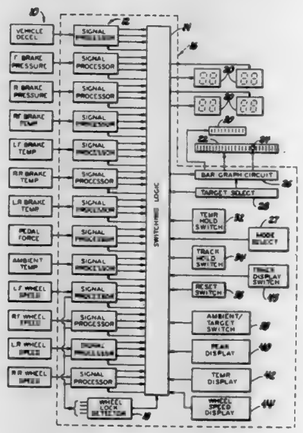
17. A coupler mount assembly for use with a railway vehicle coupler including a side wall having a convex exterior surface that is provided with a first pair of vertically aligned and spaced-apart relief holes adjacent the coupler tip and a second pair of vertically aligned and spaced-apart relief holes adjacent the coupler base, said coupler mount assembly being adapted to mount an equipment housing on the coupler and comprising:
- first and second jaw means, each of which includes a hook;
- support means to which the equipment housing may be secured, said support means additionally supporting said first and second jaw means for movement relative to each other and so that the hooks thereof project from said support means and face each other; and,
- clamping means supported by said support means for drawing said first and second jaw means toward each other, whereby said hooks of said first and second jaw means clamp an intermediate portion of the coupler side wall between the first and second relief hole pairs when said hook of said first jaw means has been inserted into one hole of the first relief hole pair and said hook of said second jaw means has been inserted into a corresponding hole of the second relief hole pair.

4,520,663

VEHICLE BRAKE TEST APPARATUS

George R. Moore, Englewood, and Daniel H. Mahannah, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 19, 1983, Ser. No. 563,219
Int. Cl.³ G01L *5/28*
U.S. Cl. 73—129 **5 Claims**



1. Vehicle brake test instrumentation for monitoring operation and performance parameters of a brake system while under control of a vehicle operator comprising
- transducers coupled to the vehicle and the brake system for sensing values of parameters,
- display means including a target lamp and a line of lamps adjacent thereto,
- control means for processing information sensed by the transducers and controlling the display means, the control means including means for establishing a desired value of an operator controlled parameter and means for illuminating only the target lamp when the controlled parameter is substantially at the desired value and for illuminating a successive one of the line of lamps for each increment of deviation of the actual parameter value from the desired value whereby the line of lamps indicates in bar graph form the instantaneous amount of deviation from the desired value so that the operator can readily view and interpret the information while trying to attain the desired value.

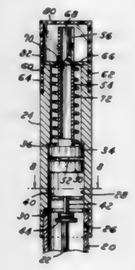
4,520,664

TIRE PRESSURE INDICATOR

Robert Kramer, 23417 Mary, Taylor, Mich. 48180

Filed May 26, 1983, Ser. No. 498,420
Int. Cl.³ B60C *23/04*
U.S. Cl. 73—146.8 **4 Claims**

1. A visual tire pressure indicator for application to a standard tire valve stem which comprises:
- (a) a hollow body unit to be secured at a first end to a standard valve stem and having at the other end an axially extending indicator post,
- (b) a pressure responsive means movable within said body to be exposed to the tire pressure and biased against said tire pressure, and
- (c) shield means on said pressure responsive means extending over said indicator post to shield said post from view in one position of said pressure responsive means and to expose said indicator post in other positions of said pressure responsive means, said body at its other end having a cap telescoping over and secured to said body, and said indicator post projecting axially outward of said cap away from said body.

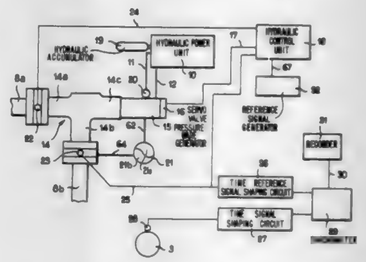


4,520,665

SYSTEM FOR DETECTING A NATIVE RESERVOIR FLUID IN A WELL BORE

Bernard Cordier, Billere, and Christian Berge, Morlaas, both of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Jul. 11, 1983, Ser. No. 512,365
Claims priority, application France, Jul. 13, 1982, 82 12248
Int. Cl.³ E21B *47/10*
U.S. Cl. 73—155 **13 Claims**



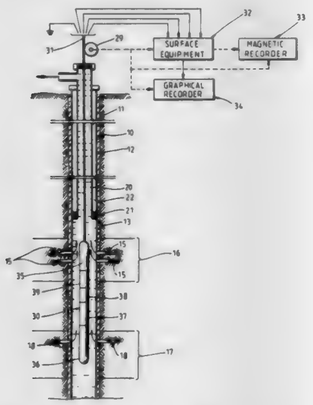
1. A system for detecting a pressure wave of the type comprising means for injecting a drilling fluid, means for recovering said drilling fluid after it has circulated within a well bore, wherein said system further comprises a device for generating at least one pressure wave, means for detecting the pressure wave as it passes through a first pipe in which the auxiliary drilling fluid circulates in the uncontaminated state, means for detecting said pressure wave as it passes through a second pipe in which said drilling fluid circulates and may be contaminated by a reservoir fluid which has entered said drilling fluid at any point of the well bore.

4,520,666

METHODS AND APPARATUS FOR DETERMINING FLOW CHARACTERISTICS OF A FLUID IN A WELL FROM TEMPERATURE MEASUREMENTS

Andrea Coblentz, Paris; Didier Lefevre, Elancourt, both of France; Pascal Colombani, Littleton, Colo., and Denis Meunier, Paris, France, assignors to Schlumberger Technology Corp., Houston, Tex.

Filed Dec. 12, 1983, Ser. No. 560,354
Claims priority, application France, Dec. 30, 1982, 82 22100
Int. Cl.³ E21B *47/06*
U.S. Cl. 73—155 **14 Claims**



1. A method for determining the flow rate of fluid in a well over an axial interval which includes zones where fluid is exchanged between the well and the formations, comprising the steps of:

measuring the temperature along said interval;

measuring the flow rate at at least two axially separated points of said interval where accurate flow rate measurements can be determined;

combining said measured temperatures and said measured flow rates, in a manner enabling the determination of a flow rate value for a given point located between said axially separated points from the temperature measurement at said given point.

4,520,667

NONMECHANICAL DIGITAL RAINGAUGE

Joseph A. Nelson, Box 249, Le Grand, Iowa 50142

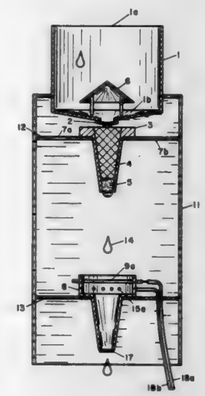
Filed Sep. 7, 1983, Ser. No. 530,055
Int. Cl.³ G01W *1/14*
U.S. Cl. 73—171 **5 Claims**

1. A gauge for measuring low to heavy rainfall comprising,

(1) A rainwater collection means (**1**) having an upwardly facing opening (**1*a***) and a downwardly sloping base (**1*b***) leading to a smaller opening,

(2) a rainwater transfer means including a filter (**2**) below said smaller opening and a deflector (**6**) preventing direct impingement of rainwater upon the filter,

(3) An equal water droplet volume discharge means (**3**,**4**, **5**) including a discharge funnel (**3**) positioned below said



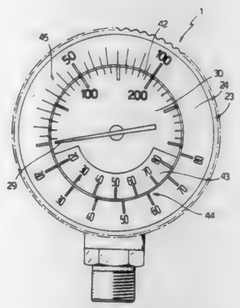
filter terminating in a discharge orifice (**5**) and a mass of loosely packed fibers within said discharge funnel.

4,520,668

MANOMETRIC INSTRUMENT FOR UNDERWATER DIVING

Emilio Allemano, Via Rosolino Pilo, 4, 10143 Torino, Italy

Filed Feb. 24, 1983, Ser. No. 469,336
Claims priority, application Italy, Jul. 5, 1982, 67852 A/82
Int. Cl.³ G01F *23/18*; G01L *7/08*
U.S. Cl. 73—300 **7 Claims**



1. A manometric instrument for use with air bottles of an underwater respirator for underwater diving, comprising:

a sealed casing having a transparent closure cover;

a first fixed scale disposed at a fixed position within said casing for indicating a first unit of measurement, such as pressure, said first fixed scale having graduations based on the first unit of measurement;

a second fixed scale disposed at a fixed position within said casing adjacent said first fixed scale for indicating pressure, said second fixed scale having graduations based on a second unit of measurement different from said first unit of measurement;

one of said first and second units of measurement expressing units of lengths, and the other of said first and second units of measurement expressing residual pressure of air in said air bottles;

an adjustable support element displacable with respect to said first and second fixed scales;

a first movable scale fixed on said support element and having graduations based on said second unit of measurement and differing from said second fixed scale;

a second movable scale fixed on said support element for indicating an ascent time as a function of the depth underwater and the residual pressure, when said support element is adjustably displaced such that a value on said first movable scale is brought into coincidence with the same value on said second fixed scale;

an indicator element movable along said first fixed scale and said second movable scale; and

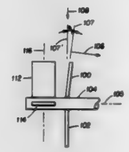
a transducer device for detecting pressure and for controlling the position of said indicator element in dependence on the detected pressure so as to indicate the ascent time on said second movable scale.

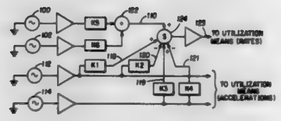
4,520,669

CROSS-AXIS ACCELERATION COMPENSATION FOR ANGULAR RATE SENSING APPARATUS

Billie F. Rider, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 28, 1982, Ser. No. 402,522
Int. Cl.³ G01C *23/00*; G01P *15/09*
U.S. Cl. 73—510 **6 Claims**





1. A sensor assembly, comprising:

an inside-out motor having a central shaft fixed with respect to a major axis of reference of a vehicle, a stator affixed to the shaft, and a rotating element including a motor housing, means for journaling the motor housing to the shaft, the motor housing having a spin axis coaxial with the shaft, and cylindrical means mounted inside the motor housing and juxtaposed with the stator for driving the motor housing, the motor housing being driven at a substantially constant spin frequency in response to alternating current applied to the stator;

a first cantilevered piezoelectric bender element mounted exteriorly on the motor housing for rotation therewith, said first bender element having a bending axis essentially normal to the spin axis of the cylindrical housing and an axis of sensitivity essentially parallel with the spin axis of the motor housing;

second and third cantilevered piezoelectric bender elements mounted exteriorly on the motor housing for rotation therewith, said second and third bender elements each having a bending axis essentially parallel with the spin axis of the motor housing and an axis of sensitivity essentially normal to the spin axis of the motor housing, the axes of sensitivity of said second and said third bender elements being angularly displaced from each other;

a circuit-bearing substrate mounted exteriorly on the motor housing for rotation therewith;

first circuit means on said circuit-bearing substrate responsive to an electrical signal generated by said first bender element for generating a first output signal representative of angular displacement with respect to inertial space of the major axis of reference of said vehicle;

second and third circuit means on said circuit-bearing substrate each responsive to an electrical signal generated, respectively, by said second and said third bender elements for generating, respectively, a second and a third output signal representative of linear acceleration of said vehicle in a plane perpendicular to the major axis of reference of said vehicle, the instantaneous direction of the linear acceleration sensed being along the axes of sensitivity of said second and said third bender elements;

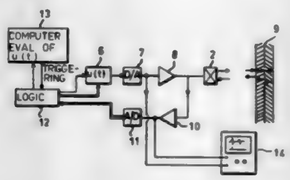
means coupled to said first circuit means for selecting a portion of each said second and said third output signals, said first circuit means including means for summing said signal portions with the first output signal to cancel signal components representative of cross-axis accelerations sensed by said first bender element.

4,520,670

METHOD AND APPARATUS FOR GENERATING SHORT ULTRASONIC ECHO PULSES

Göran Salomonsson, Lagerbrings väg 7 C, S-222 51 Lund; Per O. Börjesson, Nygård, S-290 71 Mörrum; Bengt Mandersson, Magistratsvägen 29, S-222 43 Lund; Nils-Gunnar Holmer, Gilleskroken 7, S-222 47 Lund, and Kjell Lindström, N. Skogsvägen 3, S-236 00 Höllviksnäs, all of Sweden

PCT No. PCT/SE82/00431, § 371 Date Aug. 18, 1983, § 102(e) Date Aug. 18, 1983, PCT Pub. No. WO83/02330, PCT Pub. Date Jul. 7, 1983
PCT Filed Dec. 20, 1982, Ser. No. 527,576
Claims priority, application Sweden, Dec. 22, 1981, 8107731
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—602 **8 Claims**



5. An apparatus for generating short ultrasonic echo pulses including an ultrasonic transducer (**2**) having an excitation input, and a signal generator (**1**) connected to the excitation input of the ultrasonic transducer (**2**), by means adapted to generate an excitation signal which substantially is a weighted least squares filter signal.

4,520,671

METHOD AND MEANS FOR REAL TIME IMAGE ZOOM DISPLAY IN AN ULTRASONIC SCANNING SYSTEM

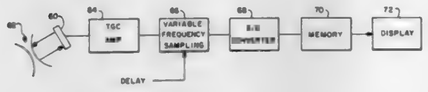
William R. Hardin, North Highlands, Calif., assignor to General Electric Company, Milwaukee, Wis.

Filed Jun. 10, 1983, Ser. No. 503,161
Int. Cl.³ H04N *5/02*; G01N *29/00*; G06F *3/147*
U.S. Cl. 73—620 **5 Claims**

1. In an ultrasound imaging system in which a display is controlled by electrical signals based on reflected ultrasonic waves, a method of varying the size of a displayed area based on a user selected scale factor and user selected start and stop points comprising the steps of

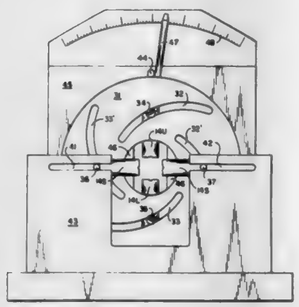
transmitting ultrasonic pulses,

generating electrical signals in response to echoes of said ultrasonic pulses,
sampling said electrical signals at a plurality of sampling rates depending on a scale factor indicative of desired size of a display image said step of sampling being delayed after said step of transmitting ultrasonic pulses whereby



sampled signals are obtained only from a limited area as established by user selected start and stop points,
generating pixel illumination data corresponding to the sampled electrical signals, and
controlling scan lines in said display image by said pixel illumination data.

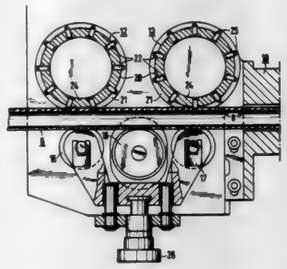
4,520,672
THICKNESS MEASURING
John D. Saint-Amour, 158 E. Main St., Westboro, Mass. 01581
Filed Aug. 19, 1982, Ser. No. 409,589
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—622 **11 Claims**



1. An ultrasonic thickness measuring system comprising,
first and second opposed ultrasonic probes defining a channel therebetween for accommodating tubing whose thickness is to be measured thereby,
said probes being formed with passages extending into said channel for receiving fluid under pressure for preventing bubbles in said fluid between said tubing and said probes when said tubing is in said channel,
slotted cam means for supporting said probes and controlling their radial displacement from the axis of said channel,
and means for rotatably supporting said cam means whereby rotation of said cam means displaces each of said probes radially by equal radial increments to maintain said probes at substantially the same radial distance from said axis.

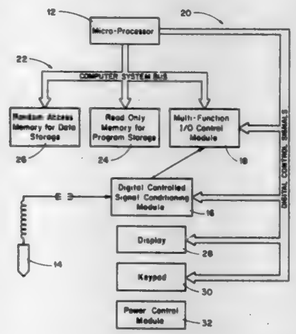
4,520,673
INSPECTION DEVICE, ESPECIALLY FOR STEAM GENERATOR TUBES
Thomas Müller, Erlangen, and Rainer Bauer, Herzogenaurach, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany
Filed Jan. 28, 1983, Ser. No. 462,052
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202883
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—623 **6 Claims**

1. Inspection device, comprising a probe having a flexible thrust hose for moving said probe, said thrust hose having mutually equidistant holes formed therein along a generatrix line thereof, a feed device having two drive wheels for engaging said thrust hose to move said probe, and plugs disposed on



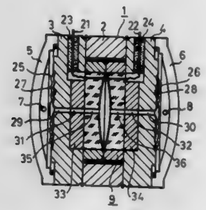
said drive wheels for insertion in said holes, said support plugs on one of said drive wheels being circumferentially offset relative to said support plugs on the other of said drive wheels.

4,520,674
VIBRATION MONITORING DEVICE
Ronald G. Canada; Kenneth R. Piety; Daniel G. Simpson, all of Knoxville, and E. Forrest Pardue, Lenoir City, all of Tenn., assignors to Technology for Energy Corporation, Knoxville, Tenn.
Filed Nov. 14, 1983, Ser. No. 551,338
Int. Cl.³ G01H *1/00*
U.S. Cl. 73—660 **16 Claims**



1. A portable vibration monitoring device for use in connection with a base computer which stores data regarding the nature and parameters of vibration measurements to be made on preselected machines by such device, said device comprising:
power supply means;
a vibration sensor which produces an analog signal representative of selected vibration of said machine upon mechanically connecting said sensor with said machine at preselected measurement points thereon;
signal conditioning means for conditioning said analog signal generated by said vibration sensor, said signal conditioning means including anti-aliasing means for filtering preselected frequencies from said signal generated by said sensor to enhance the accuracy of the data collected;
means connected with the output of said signal conditioning means including multiple modules which are selectively energized, one of said modules comprising high speed math processor means;
processing means for selectively energizing said modules for purposes of reducing power consumption, for loading and retrieving information and instructions, and for selectively employing said anti-aliasing means for analysing digital information concerning vibration data stored in said device and for selectively interfacing with an operator by causing information to be displayed, and for controlling the various operational modes of said device;
means operably connected to said processing means for entering and loading instructions and information for controlling the operation of said device;
first memory means for storing operating instructions for use by said processing means; and
further memory means for storing data collected by said device from preselected locations upon said machines.

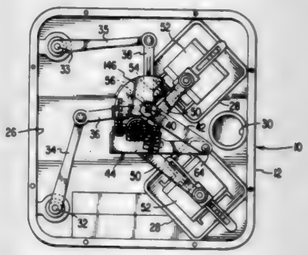
4,520,675
PRESSURE OR PRESSURE DIFFERENCE MEASURING TRANSDUCER
Horst Ziegler, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Mar. 31, 1983, Ser. No. 480,742
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1982, 3213320
Int. Cl.³ G01L *9/12*
U.S. Cl. 73—718 **6 Claims**



1. In a pressure or pressure difference measuring transducer comprising:
a diaphragm clamping housing;
two fixed capacitor plates in said housing;
a measuring diaphragm clamped between the two fixed capacitor plates;
a pressure housing;
a ring shaped support element which is elastic in the radial direction supporting the clamping housing in the pressure housing; and
first and second separating diaphragms mounted to the pressure housing such that they rest against suitably formed shaped beds in the pressure housing in the event of an overload, the improvement comprising:
the ring shaped support element being designed and connected to the pressure housing and the diaphragm clamping housing in such a manner that a connection between the pressure housing and the diaphragm clamping housing which is stiff in a direction parallel to the axis is produced.

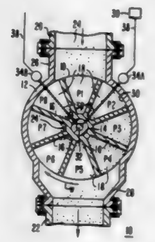
4,520,676
ADJUSTABLE TANGENT ASSEMBLY FOR A DIAPHRAGM GAS METER
Irwin A. Hicks, Radnor, and Charles W. Albrecht, Warminster, both of Pa., assignors to The Singer Company, Stamford, Conn.
Filed Apr. 25, 1983, Ser. No. 488,290
Int. Cl.³ G01F *3/22*
U.S. Cl. 73—281 **13 Claims**

1. A tangent assembly for a positive displacement diaphragm gas meter to drivingly couple a flag assembly to a crank shaft, comprising:
a lock plate non-rotatably connected to said crank shaft along the axis of rotation thereof;
a timing plate;
a stroke plate pivotally connected to said timing plate;
means for pivotally connecting one of said timing and stroke plates to said lock plate;
a first connecting mechanism connected between said lock plate and said one of said timing and stroke plates, said first connecting mechanism being adjustable and adapted to vary the distance between its connection point on said lock plate and said one of said timing and stroke plates so as to pivot said one of said timing and stroke plates with respect to said lock plate;
a second connecting mechanism connected between said stroke plate and said timing plate, said second connecting mechanism being adjustable and adapted to vary the distance between its connection points on said stroke plate and said timing plate so as to pivot said stroke plate with respect to said timing plate;



first adjusting means mounted on said lock plate and coupled to said first connecting mechanism for effecting adjustments to said first connecting mechanism;
second adjusting means mounted on said lock plate and coupled to said second connecting mechanism for effecting adjustments to said second connecting mechanism;
a wrist pin connected to said stroke plate and extending outwardly therefrom parallel to said crank shaft axis of rotation; and
means for connecting said flag assembly to said wrist pin.

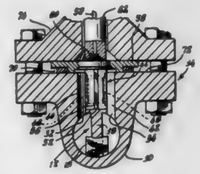
4,520,677
SOLIDS MASS FLOW INDICATION WITH RADIATION
Joseph E. Macko, and Isnard Estriplet, both of Irwin, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Oct. 30, 1981, Ser. No. 316,697
Int. Cl.³ G01F *1/86*
U.S. Cl. 73—861 **3 Claims**



1. An improved rotary feeder system for transporting solid particulate material of the type having a rotary feeder including a plurality of vanes extending radially from a rotating shaft so as to form pockets rotatable within a housing between a housing inlet where said solid material is received by said pockets and a housing outlet where said solid material is discharged from said pockets, said improvement comprising:

a flux discharging radiation source disposed within said shaft;
a first radiation detector disposed externally of said rotatable pockets downstream of said inlet and upstream of said outlet;
a second radiation detector disposed externally of said rotatable pockets downstream of said outlet and upstream of said inlet;
means for measuring the amount of flux transmitted through said pockets to said first and second detectors, said means providing signals indicative of mass content within said rotatable pockets; and
means for correlating said signals to provide an indication of mass flow through said pockets.

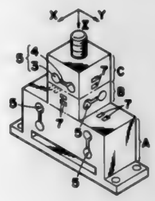
4,520,678
SMALL LINE-SIZE VORTEX METER
Stanislaw Koziol, North Attleboro, and George E. Sgourakes, Millis, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.
Filed Sep. 13, 1983, Ser. No. 531,561
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.24 **17 Claims**



1. Flow-metering apparatus of the type comprising a flow tube having a vortex-shedding element to produce vortices at a rate corresponding to the fluid flow rate;
an external housing integral with said flow tube and formed with a pair of pressure chambers;
the wall of said flow tube being apertured adjacent said vortex-shedding element to form a pair of side-by-side large-area impulse ports located to receive differential pressure fluctuations developed by said vortices;
said impulse ports communicating directly with said pressure chambers respectively and providing for the delivery of vortex pressure energy into said chambers without excessive attenuation;
diaphragm means in said housing responsive to said differential pressure fluctuations and forming part of a sealed cavity having a liquid fill; and
a sensor element responsive to pressure fluctuations transmitted through said diaphragm means and operable to produce corresponding flow measurement signals.

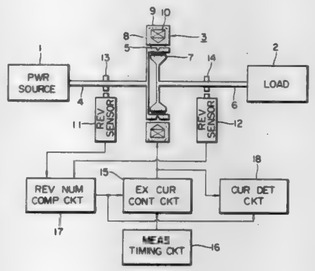
4,520,679
LOAD CONVERTER
Yotaro Hatamura, 2-12-11 Kohinata, Bunkyo-ku, Tokyo, Japan
Filed Oct. 6, 1982, Ser. No. 433,109
Int. Cl.³ G01L *5/16, 1/22*
U.S. Cl. 73—862.04 **11 Claims**

1. A load converter comprising:
a detecting block having first and second opposite planar, parallel, outside surfaces and a through-hole, located between said first and second outside surfaces, extending in a first direction through said block parallel to said outside surfaces;
said through-hole consisting of first and second cylindrical end hole portions respectively defined by first and second cylindrical surfaces in said block respectively adjacent said first and second outside surfaces, and a narrow hole portion elongated in a second direction so as to connect said first and second end hole portions;
said block having first and second side portions on opposite first and second sides of said through-hole, extending between said first and second outside surfaces;
said first cylindrical surface and said first outside surface, and said second cylindrical surface and said second outside surface, respectively defining therebetween respective first and second thin walled block portions, each concurrently bendably deformable at said first and second sides of said through-hole in opposite directions by strains on said block in directions perpendicular to said outside surfaces;



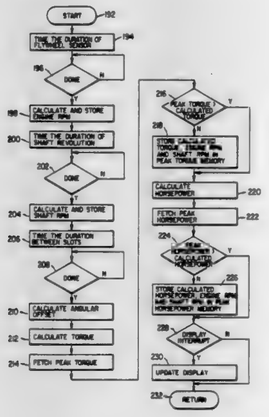
said first and second side portions being substantially thicker in crosswise directions extending between each other, than said first and second thin walled portions, and said first and second outside surfaces extending in said crosswise directions distances beyond said first and second end hole portions substantially greater than the thicknesses of said first and second thin walled portions, such that the only thin walled portions adjacent said through-hole are said first and second thin walled portions, and said first and second thin walled portions are substantially rigid against deformation in response to oppositely directed forces in said crosswise directions.

4,520,680
TORQUE MEASURING APPARATUS
Takumi Tatsumi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 20, 1983, Ser. No. 486,963
Claims priority, application Japan, Apr. 26, 1982, 57-72390; Apr. 26, 1982, 57-72391
Int. Cl.³ G01L *3/14*
U.S. Cl. 73—862.19 **2 Claims**



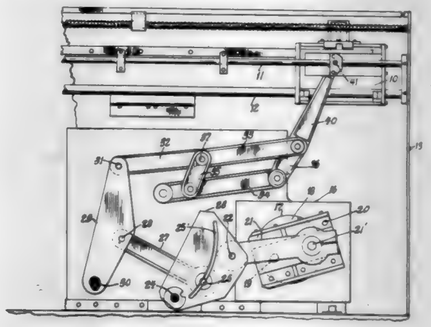
1. A torque measuring apparatus for measuring a torque which is transmitted from a power source to a load, comprising an electromagnetic powder clutch which is interposed between a power source and a load driven by said power source, means for controlling an exciting current of said electromagnetic powder clutch so as to establish a slight slip state between an input side and an output side of said electromagnetic powder clutch, and means to measure the exciting current of said electromagnetic powder clutch in the slight slip state, thereby to measure the transmission torque.

4,520,681
APPARATUS FOR MEASURING TORQUE ON A ROTATING SHAFT
Jeff D. Moore; Eddie C. Moore, both of Mansfield; Burnis H. Tucker, Joshua, and William P. Goodwill, Plano, all of Tex., assignors to Jeff D. Moore and Eddie C. Moore, both of Mansfield, Tex.
Filed Mar. 19, 1984, Ser. No. 590,892
Int. Cl.³ G01L *3/12, 3/24*
U.S. Cl. 73—862.28 **8 Claims**



1. An apparatus for measuring torque on a rotating shaft, comprising:
a first sensor mounted proximate the shaft and having first and second states;
a first circular disk mounted on the shaft for rotation therewith, said disk having a first discrete reference area on the surface thereof for momentarily changing the state of said first sensor from a first state to a second state when said reference area is aligned with said sensor;
a second sensor mounted proximate the shaft and having first and second states;
a second circular disk mounted on the shaft for rotation therewith and displaced a predetermined distance from said first circular disk, said second circular disk having a second discrete reference area on the surface thereof for momentarily changing the state of said second sensor from a first state to a second state when said reference area is aligned with said sensor, the position of said second reference area being independent of the position of said first reference area about the circumference of said shaft;
means connected to said first and second sensors for comparing the states thereof to determine the relative angular position of said first and second reference areas when said first and second sensors momentarily change states, said comparing means calibrating the positional deviations of said first and second reference areas under low torque conditions such that the relative angular position is a function of torque only and not angular position under low torque conditions;
means for calculating torque as a function of deviations in the compared relative angular positions of said first and second reference areas, said deviations in the relative angular positions being due to torque deviations of the shaft between said first and second reference areas; and
means for determining peak torque over a given period of time, said determining means further including means for storing said peak torque.

4,520,682
RECIPROCATING RECTILINEAR MOTION APPARATUS
Robert Eitzinger, Wheeling, Ill., assignor to Mid-West Automation Inc., Wheeling, Ill.
Filed Oct. 29, 1981, Ser. No. 316,084
Int. Cl.³ F16H *21/32, 21/18*
U.S. Cl. 74—40 **1 Claim**

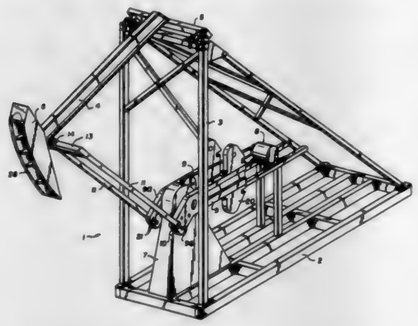


1. A mechanism for converting rotational drive motion into reciprocal rectilinear motion, comprising:
(a) a drive crank, one end of which is pivotally connected to a rotating drive source,
(b) a drive arm, one end of which is pivotally connected to the opposite end of said drive crank so as to be moved through an orbital path about the pivotal connection with a resulting circular movement through a vertical plane to the opposite end of said drive arm,
(c) a slotted adjustment plate supported by a fixed pivot pin extending in a vertical plane therefrom, with said opposite end of said drive arm connected thereto so as to reciprocally rock said adjustment plate through a vertical plane about said pivot pin,
(d) a stroke arm pivotally mounted in spaced relation to said adjustment plate and adapted to be reciprocally rocked in unison with said adjustment plate,
(e) a rocker arm having one end pivotally connected to said stroke arm and with its opposite end adjustably connected throughout the slot of said adjustment plate,
(f) a series of interconnected links forming a pantograph pivotally connected in vertical relation to said stroke arm and said adjustment plate,
(g) a drive link connected to one end of said stroke arm and with its opposite end connected to one of said interconnected links so as to pivot said pantograph through a vertical plane in response to adjusted pivotal movement of said stroke arm,
(h) a tow arm connected to a portion of said pantograph and pivotally connected to a reciprocally movable slide, and
(i) elongated guide means for said slide extending horizontally with respect to the vertical plane of said pantograph, stroke arm and slotted adjustment plate.

4,520,683
PUMP JACK SLANT WELLS
Wayne Haverstock, Daysland; David Krywchuk, Lloydminster, and Peter Masak, Scarborough, all of Canada, assignors to Universal Industries Ltd., Lloydminster, Canada
Filed Apr. 25, 1983, Ser. No. 488,350
Int. Cl.³ F16H *21/32;* G05G *1/04, 1/00;* E21B *19/00*
U.S. Cl. 74—41 **4 Claims**

1. In a pumping unit for reciprocating a rod string in a wellbore which is slanted at an angle from vertical, said unit having a Samson post assembly, a walking beam pivotally mounted at its rear end on the Samson post assembly, a pair of Pitman

arms, pivotally connected at their upper ends to the front end of the walking beam by a pin and hole means, for supporting said beam and rocking it through a predetermined stroke, rotating crank arms for biasing said Pitman arms, said crank arms each being pivotally connected at one end by pin and hole means to the lower end of one of the Pitman arms, the length of the Pitman arms between their pivot connections with the walking beam and the crank arms being their effective length, counterweight means attached to the crank arms at the latter's ends remote from the Pitman arms connection, and means for rotating said crank arms, the improvement comprising:



said walking beam being disposed downwardly at an angle from horizontal when said beam is at the mid-point of its stroke;

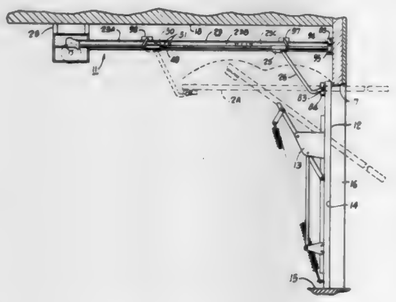
one of said walking beam and pair of Pitman arms having a plurality of pin holes formed in spaced apart arrangement along a plane generally coinciding with the axis of the Pitman arms, whereby the effective length of the Pitman arms may be adjusted by altering the location of the pins interconnecting the Pitman arms with the walking beam, to thereby vary the downward angle of the walking beam.

4,520,684

TAPE DRIVE CLOSURE OPERATOR

Lawrence L. Meyer, Canton, and Alvin J. Carli, Sebring, both of Ohio, assignors to The Alliance Manufacturing Company, Inc., Alliance, Ohio

Filed Feb. 3, 1983, Ser. No. 463,591
Int. Cl.³ F16H *27/02, 29/02*
U.S. Cl. 74—89.21 **12 Claims**



1. A motor-driven closure operator having a flexible tape with a plurality of longitudinally aligned apertures to mesh with teeth on a motor-driven drive member, said flexible tape adapted to be stressed longitudinally by movement of the drive member to actuate a closure, the improvement comprising:

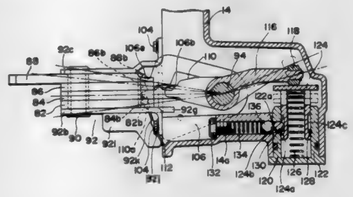
means establishing the spacing and size of the apertures in said flexible tape in accordance with the number of active teeth on the drive member engaging the tape to establish the shear strength of the webs between longitudinally adjacent active tooth apertures approaching the tensile strength of the tape at an aperture.

4,520,685

SHIFT CONTROL MECHANISM OF AN AUTOMOTIVE MANUAL TRANSMISSION

Kotei Takahashi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Feb. 19, 1982, Ser. No. 350,389
Claims priority, application Japan, Feb. 20, 1981, 56-22888
Int. Cl.³ B60K *20/00*
U.S. Cl. 74—473 R **5 Claims**



1. In an automotive manual transmission having a common fork shaft on and along which a plurality of shift forks are slidable and a control rod which is rotatable about and slidable along the axis thereof which is normal to the axis of said common fork shaft, a shift control mechanism subassembly comprising:

a generally U-shaped bracket removably connected to a housing of said transmission, said bracket having a pair of side walls connected by a bottom wall;

a pivoting pin supported by said bracket, said pin having opposite ends received in the bracket side walls, said pin having an axis which is normal to both the axes of said common fork shaft and said control rod;

a plurality of pivoting levers pivotally mounted on said pivoting pin so as to be pivotable about the axis of said pivoting pin, one end of each pivoting lever being pivotally jointed with an extension of the corresponding one of said shift forks to cause movement of the corresponding shift fork on and along the common fork shaft upon pivoting movement of the pivoting lever, said bracket and pivoting pin permitting subassembly of the pivoting levers on the bracket prior to mounting the bracket within the transmission housing; and

a head member secured to said control rod to be movable therewith, said head member being brought into engagement with the other end of a selected one of said pivoting levers upon rotational movement of said control rod about its axis into a predetermined angular position.

4,520,686

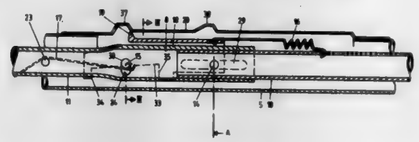
CONNECTING ELEMENT FOR GEARSHIFT LINKAGES

Rolf Renk, Ginsheim-Gustavsburg, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 7, 1983, Ser. No. 472,744
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1982, 3208543
Int. Cl.³ G05G *9/18*
U.S. Cl. 74—473 R **27 Claims**

1. Connecting elements for gearshift linkages, especially gearshift linkages disposed between the transmission and the gearshift lever of a motor vehicle, in the form of a decoupling device located in a tubular casing and between two gearshift rods and adapted to permit, after the transmission has been shifted into any of the gears, forward and backward movement of the decoupled gearshift rod, the improvement comprising: the operative connection between the ends of the gearshift

rods in engagement with one another being by way of a pivotable spring-biased latch, said latch being pivotally mounted at the end of the gearshift rod connected with the gearshift lever



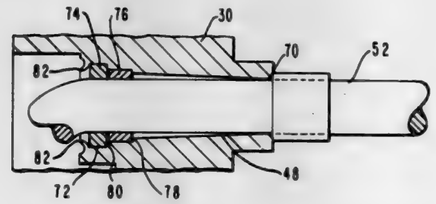
and being operatively associated with a drive pin mounted on the end of the other gearshift rod; and a cam adapted to engage into recesses provided on the casing surrounding the gearshift rods.

4,520,687

OPERATING MECHANISM FOR A CONTROL DEVICE

Gregory J. Golub, Athens, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 28, 1983, Ser. No. 470,648
Int. Cl.³ G05G *7/00*
U.S. Cl. 74—491 **9 Claims**



1. An operating mechanism for extending through an aperture in a housing wall, comprising:

a boss extending through the aperture in the wall and having a bore;

an operating shaft rotatably mounted within the bore;

the bore being tapered with one end being larger than the other end;

a shaft bearing within said one end; and

the shaft being supported solely by the boss at said other end.

4,520,688

VARIABLE CAPACITY FLYWHEEL

Masaki Ban, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 447,574, Dec. 7, 1982, abandoned. This application Sep. 18, 1984, Ser. No. 652,156
Claims priority, application Japan, Dec. 19, 1981, 56-204512
Int. Cl.³ G05G *1/00*
U.S. Cl. 74—572 **1 Claim**

1. A variable capacity flywheel for an engine comprising:

a main flywheel coupled to an output shaft of said engine;

a permanent magnet mounted on said main flywheel wherein said main flywheel defines a generator rotor, a generator stator core and a clutch coil fixedly mounted on a housing in an operative arrangement with said permanent magnet wherein the a.c. output of said clutch coil increases as the speed of said engine increases;

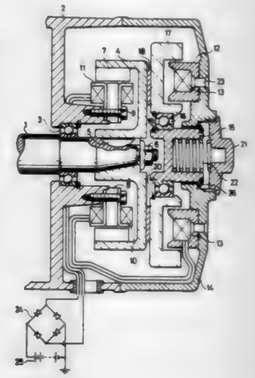
means coupled to said main flywheel for generating an electrical signal;

at least one rotatable auxiliary flywheel mounted for rotation on an axis coincident with the axis of said output shaft;

a clutch facing mounted on the surface of said auxiliary flywheel confronting said main flywheel;

means to bias said auxiliary flywheel in engagement with said main flywheel, said biasing means comprising a compression spring aligned on said axis and constrained by a bearing holder for said auxiliary flywheel;

electromagnetic clutch emans energized by said electrical signal for selectively engaging and disengaging said main and auxiliary flywheels wherein at low engine speeds the excitation of said electromagnetic clutch is insufficient to overcome the force provided by said means to bias and at high speed ranges of the engine the excitation of said



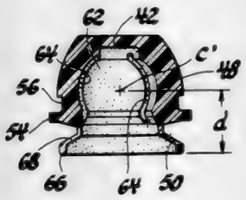
electromagnetic clutch provides a force overcoming the bias force and disengages said auxiliary flywheel from said main flywheel, wherein said electromagnetic clutch means comprises a clutch field core carrying a clutch field coil fixedly mounted relative to said auxiliary flywheel, said clutch coil connected in series to said clutch field coil for energization of said electromagnetic clutch means as a function of output shaft rotation.

4,520,689

WINDSHIELD WIPER TRANSMISSION

Jost S. Sucro, Huber Heights; Ted A. Moyer, Brookville, and William S. Shufflebarger, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1982, Ser. No. 434,114
Int. Cl.³ F16C *3/04*
U.S. Cl. 74—595 **2 Claims**



1. In vehicle windshield oscillatory motion transmission apparatus of the type including first and second transmission members limitedly rotatable relative to each other in diverse planes and one of which has affixed thereto a ball stud received for such relative rotation in diverse planes within a polymeric socket bushing mounted within an aperture in the other of said members, the improvement which comprises mounting said ball stud over a flat surface of said one member with the spherical center of the ball head of said stud located a predetermined distance above said surface, said bushing being constructed of a hard elastomer and including a ball coupling portion received within said aperture of said other member and formed with a thick wall defining an inner ball socket, said bushing further including a depending resilient annular skirt portion of substan-

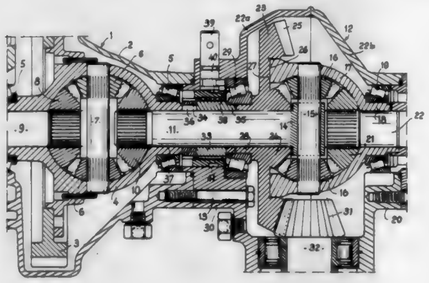
tially thinner wall integral with said thick walled coupling portion and having a terminal annular end engaged with said surface of said first member, and a quantity of lubricant contained internally of said bushing, the dimension between the spherical center of the socket of said coupling portion and the terminal annular end of said skirt portion of said bushing when the latter portion is unstressed being predeterminedly greater than said predetermined distance of said ball head whereby upon installation of said ball stud within said bushing the skirt portion is prestressed under engagement of the lip thereof against said surface to an extent such that said lip is maintained resiliently thereagainst as a lubricant seal during said relative rotation of said transmission members in plural diverse planes.

4,520,690

INTER-AXLE DIFFERENTIAL TRANSFER BOX UNIT FOR A FOUR-WHEEL DRIVE VEHICLE

Henry Dangel, 7 Rue du Sillon, 68100 Mulhouse, France

Filed May 11, 1983, Ser. No. 495,393
Claims priority, application France, May 14, 1982, 82 08440
Int. Cl.³ F16H *37/08, 37/06*
U.S. Cl. 74—695 **10 Claims**



1. A transmission device for a four-wheel drive vehicle comprising at least two differentials, a first of said differentials having a first output semi-shaft and a second output semi-shaft respectively drivingly connected to a first driving wheel and to a second driving wheel of a first axle of the vehicle, a second of said differentials being interposed between the first differential and said first driving wheel, the second differential having an input element drivenly connected to said first semi-shaft of the first differential, a first output element drivingly connected to said first driving wheel and a second output element, a transmission shaft being drivenly connected to said second output element and drivingly connected to a second axle.

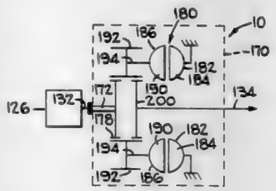
4,520,691

HYDROSTATIC REACTION TRANSMISSION

Waldo E. Rodler, Jr., San Jose, Calif., assignor to FMC Corporation, Chicago, Ill.

Division of Ser. No. 320,256, Nov. 12, 1981, Pat. No. 4,464,973.
This application Apr. 12, 1984, Ser. No. 599,430
Int. Cl.³ F16H *3/44, 1/28;* **F16D** *57/02*
U.S. Cl. 74—790 **1 Claim**

1. A reaction differential comprising a housing; means defining an input shaft journaled in said housing; means defining an output shaft journaled within said housing; differential means within said housing including a planetary gear train having an input portion operatively connected to said input shaft and an output portion operatively connected to said output shaft, said differential means including a rotor movable around an input sun gear and an output sun gear; torque reaction means within said housing including a plurality of stationary coupling blades secured to said housing and a plurality of rotatable coupling blades secured to said rotor closely adjacent said stationary blades and operatively connected to said output portion of said planetary gear train; input power means for driving said input shaft; means for directing hydraulic fluid into said torque reaction means for engagement with said coupling blades; said rotatable coupling blades rotating relative to said stationary blades for preventing rotation of said output portion in a predetermined direction until the rate of rotation of the input shaft



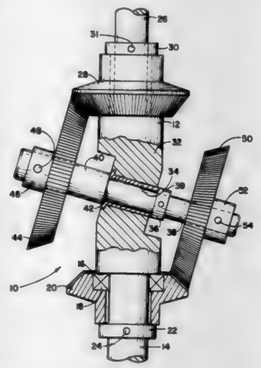
reaches a desired velocity, and thereafter said fluid in said torque reaction means applying a sufficient reaction torque against said rotatable coupling blades for progressively minimizing differential action and to progressively increase the speed of said output shaft.

4,520,692

SPEED DIFFERENTIAL DEVICE

George E. Cummins, 3005 W. 45th Pl., Tulsa, Okla. 74107

Filed Sep. 24, 1982, Ser. No. 422,605
Int. Cl.³ F16H *1/30, 1/14, 35/00, 57/10*
U.S. Cl. 74—799 **7 Claims**



1. A speed differential device for a drive means and a driven means and comprising main shaft means, a pair of first angle rotatable elements secured in the proximity of the opposite ends of said main shaft means in spaced relation and independently rotatable with respect thereto, auxiliary shaft means interposed between the spaced first single rotatable elements and extending transversely with respect to the main shaft means, the auxiliary shaft means being rotated by the main shaft in such manner that the axis of rotation of the auxiliary shaft is the longitudinal axis of the main shaft, a pair of second single rotatable elements secured to said auxiliary shaft means and disposed on opposite sides of the main shaft means, one of said first single rotatable elements being disposed in driving engagement with one of said second single rotatable elements, and the second of said second single rotatable elements being in driving engagement with the second of said first single rotatable elements, the single rotatable elements being sized with relation to one another to provide a selected speed differential ratio between the drive means and the driven means, and wherein the first rotatable elements are level gears, and the second rotatable elements are mating bevel gears, and the ratio of teeth of the gears are selected to provide the selected speed differential between the drive means and the driven means, and

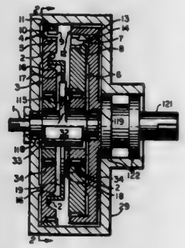
wherein the first of the bevel gears is in engagement with the first of the mating bevel gears and the second of the bevel gears is in meshing engagement with the second of the mating bevel gears, the number of teeth in the first mating bevel gear being one less than the number of teeth in the first bevel gear, the number of teeth in the second mating bevel gear being one less than the number of teeth in the first mating bevel gear, and the number of teeth in the second bevel gear being equal to the number of teeth in the first mating bevel gear.

4,520,693

HIGH RATIO DRIVE

Albert P. Sfredda, 2106 Iris Pl., Bethlehem, Pa. 18018

Filed Oct. 7, 1981, Ser. No. 309,240
Int. Cl.³ F16H *1/28, 13/06*
U.S. Cl. 74—804 **6 Claims**



1. A high ratio drive comprising, a housing fixedly supporting a first annular toothed raceway having rolling surface means, said housing rotatably supporting an output shaft concentrically secured to a second annular toothed raceway having rolling surface means, the first and second toothed raceways being axially aligned, a pair of axially coupled toothed wheels having rolling surface means, said toothed wheels disposed within said first and second toothed raceways, respectively, so as to have rolling contact and tooth interengagement therewith, rolling element bearing means mounted concentrically in said toothed wheels, a drive shaft axially aligned with said output shaft and rotatably supported by said housing, said drive shaft having a drive member connected thereto, said drive member engaging the inner race bore of said bearing means, radially moveable guide means connect said drive member and said inner race, resilient means connect said drive member and said inner race, thereby radially biasing said rolling element bearing means, whereby rotation of said drive shaft will cause the drive member to impart a radial driving force to said pair of toothed wheels.

4,520,694

METHOD OF CONTROLLING ENGINE OPERATION IN AN AUTOMOTIVE VEHICLE DURING GEAR CHANGE

Gerhard Eschrich, and Manfred Schwab, both of Gerlingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,132
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151252
Int. Cl.³ B60K *15/00, 41/14, 41/06*
U.S. Cl. 74—858 **5 Claims**

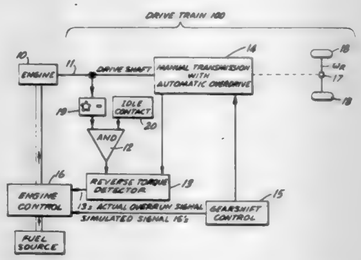
1. In an automotive vehicle having an engine (**10**), an accelerator pedal, and a drive train (**100**),

a method of controlling the drive train of the vehicle, said drive train (**100**) having

a transmission (**14**) driven by the engine (**10**), and vehicle wheels (**18**) driven by the transmission (**14**),

wherein the drive train includes means (**13**) for sensing the direction of power flow between the engine (**10**) and the wheels (**18**), and provides an output signal (**13***s*) if the vehicle is operated under overrunning condition,

comprising the step of



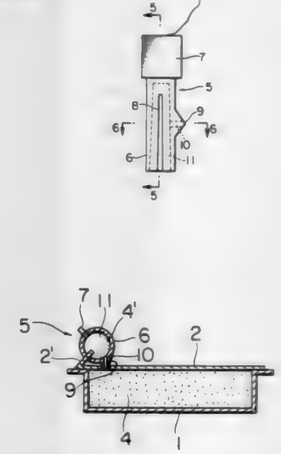
reducing power output of the engine to idling level by producing a simulated overrunning condition signal (**15***s*) during occurrence of a gear change step for a period of time adjusted in accordance with then-pertaining engine speed parameters.

4,520,695

OPENING MEANS FOR POWDER VESSEL

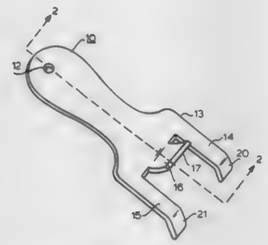
Hiroaki Sugiyama, Numazu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,436
Claims priority, application Japan, Feb. 7, 1983, 58-16363[U]
Int. Cl.³ B67B *7/40*
U.S. Cl. 81—3.07 **1 Claim**



1. In an opening means for peeling a cover means from a powder receiving vessel, which cover means cover an opening of said vessel, said opening means comprising a hollow tubular body having ends and an outer wall and a hollow inside portion, said body being provided with a handle portion at one said end, said body having a substantially axially extending slit in said outer wall at the end of said body opposite to this handle, the improvement comprising a projection on the outer wall of said body, said projection being located so as t pierce the cover means and penetrate it through, upon opening, immediately before peeling off of the cover means starts, this projection having a through hole communicating through said outer wall from the inside portion of said body to outside of said body.

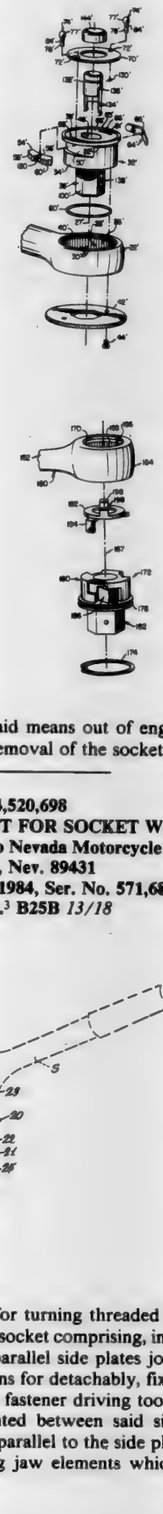
4,520,696
CHAMPAGNE BOTTLE OPENER
Martin H. Wolze, 3007 Hermosa Ave., La Crescenta, Calif. 91214
Filed Apr. 4, 1983, Ser. No. 481,735
Int. Cl.³ B67B *7/00*
U.S. Cl. 81—3.55 **6 Claims**



1. A champagne bottle opener comprising:
a unitary body including a handle portion and a working head portion, said working handle portion including at least one arm extending from said handle and defining with the body a recess of width less than the diameter of the neck ring of a champagne bottle;
said arm including an end bend for engaging the neck ring of the bottle and constituting a fulcrum point when opening said opener including a pry surface positioned within said recess and including an edge of sufficient sharpness to engage a portion of the cork;
whereby a cork may be removed from a champagne bottle by the application of downward pressure by the arm against the neck ring of the bottle and upward pressure against the cork by the edge of the pry portion.

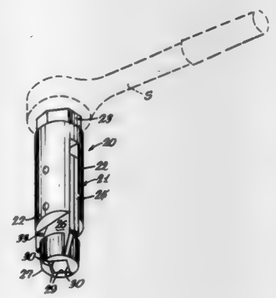
4,520,697
RATCHET WRENCH
John B. Moetteli, 11524 Royalshire Dr., Dallas, Tex. 75230
Filed Sep. 29, 1982, Ser. No. 427,449
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—62 **35 Claims**

1. A ratchet wrench for rotating a fastener, comprising:
a handle having a head at one end thereof, the head having a cylindrical aperture formed therethrough centered on a rotational axis, a wall defining the cylindrical aperture defining ratchet teeth thereon surrounding its periphery;
a drive member for mounting onto the handle and extending into the cylindrical aperture for rotation about the rotational axis relative to the handle, said drive member having a drive portion, the drive portion having an outer surface having a noncircular cross section for operable connection to a fastener for rotating the fastener and an inner surface having a noncircular cross section for operative connection to a fastener for rotation of the fastener, said drive member further defining an aperture extending therethrough along the axis;
ratchet means mounted on said drive member to engage the ratchet teeth on the head for selectively ratcheting the handle in either rotational direction about the rotational axis relative to the drive member and for securing the handle and drive member for joint rotation about the rotational axis in the opposite rotational direction;
a release member mounted on the drive member for movement along the rotational axis with respect to the drive member; and
at least one resilient means extending from an end of said release member and out of a notch in the drive portion for securing sockets to the drive portion, the notch having a camming surface thereon so that movement of the member in one direction along the axis with respect to the



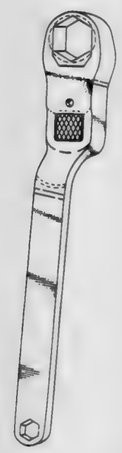
drive member cams said means out of engagement with the socket to permit removal of the socket.

4,520,698
ADJUSTABLE SOCKET FOR SOCKET WRENCHES
Werner W. Martinmaas, c/o Nevada Motorcycle Specialties, 48 Glen-Carran Cir., Sparks, Nev. 89431
Filed Jan. 18, 1984, Ser. No. 571,681
Int. Cl.³ B25B *13/18*
U.S. Cl. 81—128 **13 Claims**



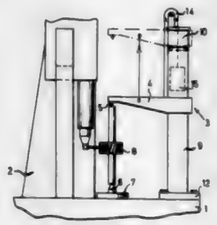
1. An adjustable socket for turning threaded fasteners that have a polygonal head, said socket comprising, in combination:
a body member having parallel side plates joined at a rear end to a mounting means for detachably, fixedly securing said body member to a fastener driving tool;
two jaw members mounted between said side plates for concurrent movement parallel to the side plates, said jaw members having facing jaw elements which are at forward ends of said jaw members and have angularly related faces arranged to engage plural sides of a polygonal fastener head, concurrent movement of said jaw members changing the space between said jaw elements;
control pin means supported on the body member and interengaged with slot means in the jaw members, said control pin means being movable along said slot means from end to end thereof, and being slightly movable across the slot means, said slot means being arranged so that movement of said control pin means along said slot means causes concurrent movement of the jaw members to change the space between the jaw elements, and engagement between a rear surface of said slot means and a rear surface of said pin means locks the jaw members in any attained position of adjustment;
and spring means biasing the jaw members to move the jaw elements toward one another and engage said rear surfaces.

4,520,699
ADJUSTABLE WRENCH
Miodrag Jeremic, 509 Carlaw Ave., Toronto, Canada M4K 3J3
Filed May 2, 1983, Ser. No. 455,954
Int. Cl.³ B25B *13/16*
U.S. Cl. 81—166 **1 Claim**



1. A wrench head of an adjustable wrench, said wrench head comprising a cavity, an adjustable key for varying the size of said cavity to accommodate different sizes of nuts and the like, cover plates on either side of said cavity, a threaded member substantially enclosed within said wrench head, securing means for releasably securing said threaded member to said key, an adjustment member for threadably engaging said threaded member to adjust position of said key, a first access in said wrench head through at least one of said cover plates for gaining access to and for removing said securing means to release said threaded member from said key, and a second access for removing said threaded member from said wrench head to enable repairs to or replacement of said threaded member while said key remains trapped in said wrench head by said cover plates.

4,520,700
TAILSTOCK FOR ROTATABLY MOUNTING A WORKPIECE IN PRECISION MACHINERY
Klaus Herzog, Oberkochen; Franz Szenger, Konigsbronn, and Gabriele Gentner, Aalen-Ebnat, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stuftung, Heidenhheim/Brenz, Oberkochen, Fed. Rep. of Germany
Filed Nov. 30, 1982, Ser. No. 445,536
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1982, 3237083
Int. Cl.³ B23B *17/00, 23/00*; B23F *23/12*; G01B *5/20*
U.S. Cl. 82—31 **10 Claims**



1. A tailstock for rotatably supporting a workpiece on a machine bed comprising:
a vertical column fixedly mounted to said machine bed, said vertical column having first and second regions, said second region being pivotally mounted to said first region, the pivotal axis of said second region being parallel to the longitudinal axis of said first region;
an offset arm extending laterally from said vertical column and carrying a workpiece engageable center, said arm having an opening for accommodating said first and second regions of said vertical column, said offset arm being displaceable along the longitudinal axis of said vertical column;
said offset arm being displaceable from said first region of said vertical column to said second region of said vertical column, said offset arm being pivotable about said pivotal axis when said offset arm is disposed at said second region of said vertical column and non-pivotable when disposed at said first region of said vertical column to thereby be disposed in precise spacial relation with said machine bed.
9. A tailstock for rotatably supporting a workpiece on a machine bed comprising:
a column fixedly mounted to said machine bed;
an offset arm extending laterally from said vertical column and carrying a workpiece engageable center, said offset arm having an opening for accommodating said column, said offset arm being displaceable along the longitudinal axis of said column; and
plain bearing in the form of cylinders disposed between said column and the opening in said offset arm, the longitudinal axis of said cylinders being parallel to that of said column, said cylinders being yieldably retained to said offset arm, and said cylinders being yieldable in a direction perpendicular to that of said column.

4,520,701
TOOL HOLDER FOR LATHE
Abe S. Watamura, 6626 Gatto St., El Cerrito, Calif. 94530
Filed Dec. 27, 1982, Ser. No. 453,781
Int. Cl.³ B23B *29/00*
U.S. Cl. 82—36 R **4 Claims**

1. A tool holder for a lathe comprising
a clamping block having means disposed beneath same for engaging a lathe for adjustable attachment thereto and including vertically disposed undercut key extending along a first side of said block,
a mounting element having a longitudinal tool-receiving

depression with means for gripping a tool disposed therein and having an undercut keyway across a side thereof opposite said depression and adapted to slidably engage the vertical undercut key of said clamping block, and

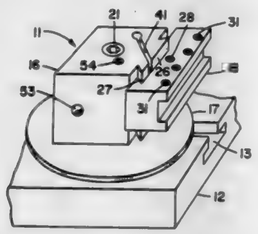
said clamping block having a slot vertically therethrough in extension through said key at an acute angle to said key to define a minor pivotal portion of said block and locking means in said block for adjustably engaging said pivotal portion of said block through said slot for pivoting said minor block portion to expand said key laterally and lock same in the keyway of said mounting element.

3. A tool holder for a lathe comprising

a clamping block having means disposed beneath same for engaging a lathe for adjustable attachment thereto and including a vertically disposed undercut key extending along a first side of said block,

a mounting element having a longitudinal tool-receiving depression with

means for gripping a toll disposed therein and having an undercut keyway across a side thereof opposite said depression and adapted to slidably engage the vertical undercut key of said clampling block,



said clamping block having a slot vertically therethrough in extension through said key to define a minor pivotal portion of said block and locking means in said block for adjustably engaging said pivotal portion of said block through said slot for pivoting said block portion to expand said key laterally and lock same in the keyway of said mounting element, and said locking means comprising

an array of contiguous steel balls disposed in a lateral bore in said block extending to one side of said slot in said block,

a bolt theaded to a vertical bore in said block intersecting said lateral bore and having a further steel ball disposed in said vertical bore for engaging the lower end of said bolt of said bolt and engaging the outer side of the outermost ball of said array of balls above the center thereof for retaining said array in said lateral bore,

whereby threading of said locking bolt into said block forces an end ball of said arry of balls across said slot to deflect said pivotal block portion for laterally expanding said key,

forces an end ball of said array of balls across said slot to deflect said pivotal block portion for laterally expanding said key.

4,520,702

INSPECTION AND CUTTING APPARATUS

Walter L. Davis, Milton-Freewater, Oreg.; Dale Messenger, Montgomery, Ala., and Malcolm W. Randall, Milton-Freewater, Oreg., assignors to Key Technology, Inc., Milton-Freewater, Oreg.

Continuation-in-part of Ser. No. 388,138, Jun. 14, 1982, abandoned. This application May 27, 1983, Ser. No. 496,992

Int. Cl.³ B26D *5/34*

U.S. Cl. 83—71 **19 Claims**

1. Inspection and cutting apparatus for inspecting elongated articles to detect shade variation defects in the articles and for cutting one or more sections from the articles to remove the detected defects from the articles, comprising:

an article conveyor having a plurality of transversely spaced conveying lanes for receiving the elongated articles and moving the elongated articles single file in a plurality of transversely spaced lanes successively past an inspection station and a cutting station;

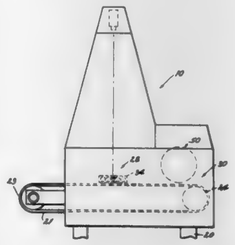
an electro-optical inspection means positioned at the inspection station for viewing the articles as the articles move through the viewing area at the inspection station and for generating electrical signals when defects are observed in which the signals are characteristic of the defects;

a cutting wheel assembly positioned at the cutting station at a selected downstream distance from the inspection station;

said cutting wheel assembly having a plurality of knife support rings aligned with the conveying lanes and mounted for rotational movement about a transverse axis in which the knife support rings have a periphery that moves in a circular path that is substantially tangent to the path of the articles;

said cutting wheel assembly having a set of cutter knives mounted for radial movement on each knife support ring at angularly spaced increments about the transverse axis for radial movement between retracted noncutting positions and extended cutting positions;

said cutting wheel assembly having a knife positioning means for selectively directing a fluid against the knife at a preselected angular position to push the knife radially outward from the retracted noncutting position to the extended cutting position;



drive means operatively connected to the knife support ring and responsive to the article conveyor for rotating the knife support ring in a forward direction about a transverse axis in coordination with the movement of the articles to synchronize the movement of the knives past the preselected angular position of the knife drive means in relation to the movement of the articles past the cutting station;

said cutting wheel assembly having track means for receiving the cutter knives when the cutter knives are in the extended cutting positions and for maintaining the cutter knives in the extended cutting position without the air of fluid as the knives move from the preselected angular position past the cutting station to cut the articles; and

control means operatively connected to the electro-optical inspection means for sensing the generation of the electrical signals and in response thereto selectively activating the knife positioning means to direct fluid against selected knives as the knives move past the preselected angular position of the knife drive means to push the selected knives outward to their extended cutting positions to enable the cutting track means to maintain the cutter knives in the extended cutting position to cut the sections containing the defects from the articles as the projected knives are progressively moved into the path of corresponding articles moving past the cutting station.

4,520,703

ELECTROMOTIVELY DRIVEN HOUSEHOLD SLICING MACHINE FOR FOOD

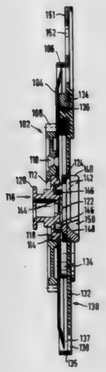
Max Speckhart, Traunstein, Fed. Rep. of Germany, assignor to BOSCH-SIEMENS HAUSGERAETE GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 18, 1983, Ser. No. 495,767

Claims priority, application Fed. Rep. of Germany, May 18, 1982, 3228768; Jun. 23, 1982, 3223450

Int. Cl.³ B26D *4/28*

U.S. Cl. 83—478 **12 Claims**



1. Slicing machine, comprising a housing, a cutting tool assembly having a side facing away from said housing, said cutting tool assembly including a cutting tool having a cutting edge for slicing and means for detachably locking said cutting tool assembly to said housing, and a protective shield being fastenable to said cutting tool assembly and protruding beyond said cutting edge at said side of said cutting tool assembly facing away from said housing, said protective shield including a key for operating said locking means.

4,520,704

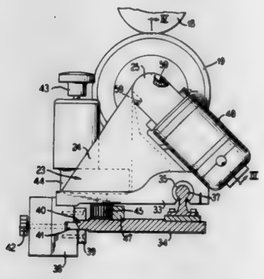
MOTOR DRIVEN SLITTER OF NARROW CONFIGURATION

Alexis Olshansky, Becket, and Gerald A. Guild, Dalton, both of Mass., assignors to Beloit Corporation, Beloit, Wis.

Filed Aug. 5, 1983, Ser. No. 520,847

Int. Cl.³ B23D *19/04;* **B26D** *1/24*

U.S. Cl. 83—499 **17 Claims**



1. A paper web slitter adapted for separating a paper web of substantial width into a plurality of relatively narrow strips while the web and the strips travel longitudinally along a path continuously in one direction, and comprising:

a plurality of upper slitter heads located above said travel path and comprising carriages mounted adjustably along a horizontal beam extending over and across said path of travel and carrying upper downwardly directed rotary slitter blades for slittingly engaging the web from above;

a plurality of lower slitter heads located below said path of travel and supporting lower slitter blades directed upwardly and engageable with the underside of the web and cooperating with the upper slitter blades for severing the web along longitudinal lines;

a lower beam extending across said path under said lower slitter heads and supporting said lower slitter heads adjustably relative to one another along the length of the lower beam;

a relatively short journal box mounted on each of said slitter heads and rotatably mounting each of said lower slitter blades by means of a respective spindle extending axially into one end of said journal box on an axis parallel to said beams and with spaced precision bearings journalling the spindle in said journal box;

a motor carried by each of said lower carriages and having driving means extending from the motor into said journal box to the spindle on an axis generally normal to the spindle axis;

and power transmission means connecting said driving means in driving relation to said spindle between said bearings,

said lower carriages and lower blades and said motors being so related that the lower carriages with their blades and the motors are in such a narrow profile considered in the direction of web travel that the lower slitter heads can be adjusted so close to one another that the lower slitter blades are enabled to cooperate without any motor profile interference with the upper slitter blades for slitting the web into unusually narrow strips.

4,520,705

APPARATUS FOR DECORATING CONFECTIONERY AND BAKERY PRODUCTS

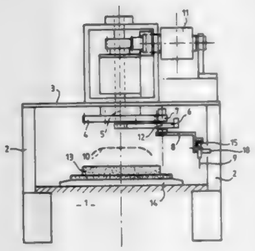
Noël Launay, Beauvais, France, assignor to Nestec, S. A., Vevey, Switzerland

Filed Feb. 4, 1983, Ser. No. 463,932

Claims priority, application France, Feb. 17, 1982, 82 02598

Int. Cl.³ B26D *3/08*

U.S. Cl. 83—879 **5 Claims**



1. An apparatus for scoring pastry comprising:

(a) a planetary train including a stationary wheel and a planet wheel in rolling engagement with said stationary wheel, the axes of said wheels being vertical;

(b) a cutting tool mounted to said planet wheel remote from the axis thereof;

(c) means for driving the planet wheel around the axis of the stationary wheel, whereby the tool will describe a repeating pattern of horizontally-extensive tracings;

(d) means for supporting beneath the tool a pastry to be scored; and

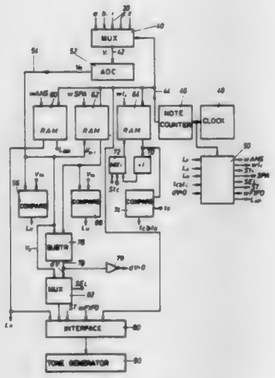
(e) vertical movement means for moving the tool upwardly and downwardly to engage the tool with a pastry supported by said supporting means and disengage the tool from such pastry, whereby the tool will score the pastry in a pattern corresponding to portions of said tracings.

4,520,706

ELECTRONIC MUSICAL INSTRUMENT

Christian J. Deforeit, Semur-en-Auxois, France, assignor to Matth. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed Jan. 10, 1984, Ser. No. 569,579
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1983, 3301354
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.1 **10 Claims**



1. In an electronic musical instrument, the instrument having at least a first keyboard with movable keys for selecting the sounds to be produced, the instrument further having tone generating circuitry responsive to signals produced by operation of the keys for providing signals which may be transduced into the selected sounds, the improvement comprising:

transducer means associated with each key, an electrical characteristic of said transducer means varying as a function of the pressure exerted on the associated key, said transducer means each having an output terminal;

electrical power supply means connected to said transducer means whereby voltages which vary as a function of the pressure exerted on the keys will be generated and will appear at said transducer means output terminals;

clock means for generating timing signals;

multiplexer means, said multiplexer means serially and cyclically sampling the voltages which appear at said transducer means output terminals and individually passing the sampled voltages;

means for converting the voltages passed by said multiplexer means into digital data commensurate therewith;

first comparator means for comparing digital data commensurate with the voltages appearing at each of said transducer means output terminals during two successive cycles of said multiplexer means, said first comparator means generating signals commensurate with the difference between the said each transducer means output terminal voltages;

means generating a signal commensurate with a threshold level of key pressure;

second comparator means for comparing said digital data from said converting means with said signal commensurate with the threshold pressure level and generating control signals indicative of the achievement of equality therebetween; and

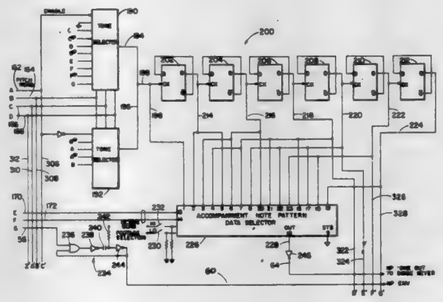
means responsive to said control signals, said timing signals, said digital data commensurate with said transducer means output terminal voltages and the signals generated by said first comparator means for producing input signals for the tone generating circuitry of the instrument, said input signals being commensurate with variation with time of each of said transducer means output terminal voltages subsequent to said output terminal voltages having reached values commensurate with the said threshold pressure level.

4,520,707

ELECTRONIC ORGAN HAVING MICROPROCESSOR CONTROLLED RHYTHMIC NOTE PATTERN GENERATION

Robert A. Weil, Jr., Dale, and Stephen L. Howell, Huntingburg, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Continuation of Ser. No. 358,118, Mar. 15, 1982, abandoned. This application Dec. 27, 1983, Ser. No. 565,130
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **4 Claims**



1. An electronic keyboard musical instrument comprising:

a first controllable tone generator means including a divider string for producing on an output of the divider string a selectable accompaniment tone,

a second controllable tone generator means including a divider string for producing on an output of the divider string of said second controllable means a selectable bass tone,

accompaniment note pattern generator means for controlling said first controllable means and said first divider means to automatically produce a rhythmic accompaniment pattern of a series of the accompaniment tones having respective selected frequencies,

bass pattern generator means for controlling said second controllable means to automatically produce a rhythmic bass pattern of a series of the bass tones having respective selected frequencies, and

means responsive to said accompaniment and bass pattern generator means when an accompaniment tone and a bass tone simultaneously selected, respectively, by the accompaniment and bass pattern generator means are of the same pitch and are octavely related for disabling one of said first and second controllable means and causing the other of said first and second controllable means to produce both of said octavely related tones on respective outputs of the divider string of said other controllable means.

4,520,708

TONE WAVESHAPE GENERATION DEVICE

Masatada Wachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 9, 1984, Ser. No. 598,380
Claims priority, application Japan, Apr. 11, 1983, 58-62360
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.26 **4 Claims**

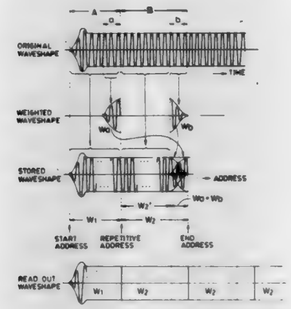
1. A tone waveshape generation device comprising:

memory means for storing,

a first waveshape of plural periods which is a first specified section of an original waveshape of plural periods, said original waveshape being a complete waveshape of a tone to be produced from beginning to end of the tone production and said first specified section being a section from beginning to a certain point of said original waveshape to include an attack portion thereof, and

a second waveshape of plural periods which is comprised of the concatenation of a second specified section succeeding said first specified section of said original waveshape excluding a terminal portion of said second specified section, and a terminal portion, said terminal portion being determined by adding a weighted one of a terminal portion of said first specified section and a weighted one of said terminal portion of said second specified section; and

readout means for reading out said first waveshape once and thereafter reading out said second waveshape repeatedly from said memory means.

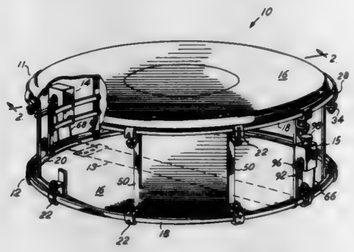


4,520,709

RIMLESS DRUM STRUCTURE WITH TUNING DEVICE

Ralph C. Kester, Jr., 1531-20th Ave. North, Lake Worth, Fla. 33460

Filed Mar. 19, 1979, Ser. No. 21,718
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—415 **18 Claims**



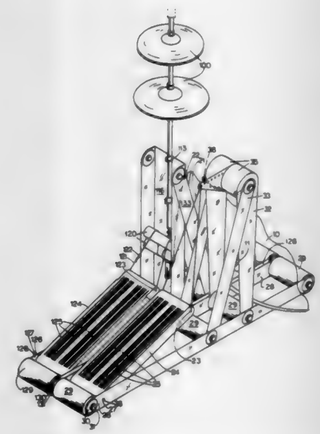
1. A rimless, shell-less dual headed drum structure with tuning means comprising upper and lower drumheads each having a drumhead membrane with an outer rigid ring attached to the periphery thereof, each of said outer rigid rings being generally U-shaped in cross section for receiving therein the edge and a portion of said membrane to which it is attached inwardly from said edge, and having an exposed lip disposed outwardly from said membrane in the tuned drum, a rigid tensioning ring for each of said drumheads being of slightly less external diameter than the internal diameter of said outer rings, each of said tensioning rings being initially positioned within one of said outer rings and moveable through said outer ring and against said membrane, a plurality of spaced attachment and adjustment devices interconnecting said outer and tensioning rings of each of said drumheads, said devices being attached to said lips of said outer rings and having means for adjustably forcing said tensioning rings above said outer rings and against said membranes, a plurality of rigid spacer members between said drumheads, and a snare device disposed on said drumheads and including a sound control adjustment device in contact with the membrane of one of said heads, a plurality of snares stretched across the other of said drumheads, a snare release mechanism and a snare tension adjustment device connected at opposite ends of said snares, said snare release mechanism and said snare tension adjustment device each being attached to one of said rigid spaced members, said snare release mechanism consisting of a shaft fixed to a fixed cam and having mounted thereon a moveable cam operably connected to said snares, wherein movement of said moveable cam causes said moveable cam to ascend and descend on said shaft to make said snares operational or non-operational.

4,520,710

DRUM AND CYMBALS PEDALS ASSEMBLY

Francis J. J. Elliott, Jr., 300 S. Forest Ave., Apt. 6, Liberty, Mo. 64068

Continuation-in-part of Ser. No. 60,132, Jul. 24, 1979,. This application Aug. 18, 1980, Ser. No. 179,872
Int. Cl.³ G10D *13/02, 13/06*
U.S. Cl. 84—422 R **17 Claims**



1. A drum pedal assembly comprising the following:

a plurality of spacer members, each being substantially cylindrical;

a plurality of frame members, each being substantially flat and symmetrical;

said frame members and said spacer members being connected so as to form a base for the assembly;

a treadle comprising a platform with longitudinal openings therein;

a live axle for pivotably supporting said treadle between at least two of the frame members;

a static axle between two other frame members;

an open-bearing cantilever mounted on said static axle;

a tension cable coupling, employed in a triangular form, for detachably connecting said treadle and said beater cantilever;

a drum beater suspended from said beater cantilever which functions as an inherent escapement means;

secondary escapement means mounted near a top extremity of said drum beater, which is itself comprised of fixture means to locate and tension an elastic band, and an elastic band;

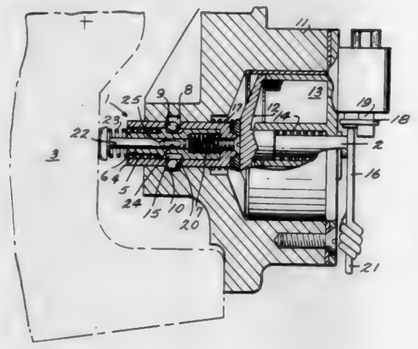
pithy spacers mounted on said static axle on each side of said beater cantilever; and

fastening means for holding everything together.

4,520,711
LOOP RETENTION DEVICE FOR HOOK OPERATED BOMB ARMING SOLENOIDS

Paul R. Robinson, Williamstown, Australia, assignor to The Commonwealth of Australia, Canberra, Australia

PCT No. PCT/AU82/00025, § 371 Date Nov. 10, 1982, § 102(e) Date Nov. 10, 1982, PCT Pub. No. WO82/03272, PCT Pub. Date Sep. 30, 1982
PCT Filed Mar. 12, 1982, Ser. No. 448,997
Claims priority, application Australia, Mar. 13, 1981, PE7983
Int. Cl.³ F41F *5/02*; B64D *1/04*
U.S. Cl. 89—1.5 D **6 Claims**



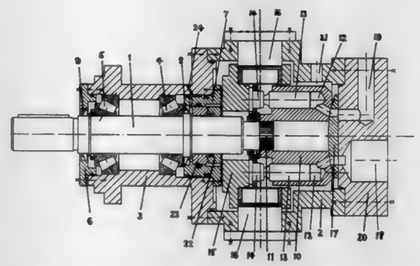
6. A loop retention device for hook operated bomb arming solenoids in which hooks releasably carry the bomb, and solenoid means control an arming lanyard so that the bomb may be dropped in a safe state by releasing the arming lanyard, or dropped in an armed state to retain the arming lanyard, and in which the arming lanyard is retained on a release control pin actuated by the said solenoid which is carried by a housing, characterised by an arrangement such that when the solenoid is de-energised prior to movement of the bomb release hooks when effecting unarmed release, a telescopic push rod means having an inner member and an outer member moves back as a complete unit with the release control pin and with detent means carried by the push rod retracted, but when the said solenoid remains energised during movement of the bomb release hooks only, the inner telescopic member of the said push rod moves to urge detent means outwardly in bores in the outer telescopic member to engage the said detent means in recess means in the housing to lock the outer member and thus the armature of the solenoid and the control pin in place to prevent release of the loop on the arming lanyard.

4,520,712
AXIAL PISTON MACHINE HAVING A SEALED BEARING BOX

Reiner Hovorka, Wuppertal, and Josef Riedhammer, Horb a. Neckar, both of Fed. Rep. of Germany, assignors to Hermann Hemscheidt Maschinenfabrik GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Nov. 1, 1983, Ser. No. 547,566
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1982, 3233579
Int. Cl.³ F01B *13/04*
U.S. Cl. 91—505 **6 Claims**

1. A reciprocating-piston machine of the inclined disc type, comprising a rotatable driving shaft, a drum-shaped cylinder block directly connected thereto for rotation with said shaft and arranged in a housing of the machine, cylinder bores in said block disposed in a circle around the axis of rotation of said driving shaft, longitudinally-displaceable pistons in said cylinder bores, piston shoes connected to said pistons and supported on a stationary inclined disc swivellably adjustable in the machine housing, a control plate at the end of the cylinder block remote from the inclined disc serving to connect the cylinder bores alternately to a suction duct and a pressure duct for fluid medium to be conveyed through the machine, a bearing box located outside the machine housing and surrounding an intermediate part of the driving shaft lying outside the machine housing, two spaced-apart roller bearings in the bearing box serving as the sole means of support for the driving

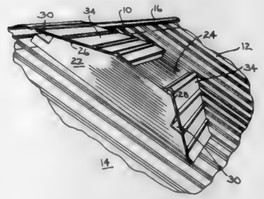


shaft, the cylinder block being mounted on the free end of the bearing-free portion of the driving shaft lying within the machine housing, and slide-ring sealing means adapted to seal the machine housing from the bearing box, the said sealing means including a rotating ring tightly surrounding and directly secured to the driving shaft and arranged to bear in a fluid-tight manner against a stationary ring inserted in a bush associated with the bearing box.

4,520,713
ROOF VENTILATOR

Richard Arfsten, 3031 Sheard Rd., Burlington, Wis. 53105

Filed Mar. 24, 1983, Ser. No. 478,487
Int. Cl.³ F24F *7/02*
U.S. Cl. 98—42.19 **11 Claims**



1. A ventilator for mounting on a building roof, said roof having a hole through which air may flow from the building, said ventilator comprising:

a pair of trapezoidal side members having parallel, straight upper and lower bases and having slanting ends, said side members being spaced from each other, and the lower bases of said side members being mountable on the roof on either side of the hole; and

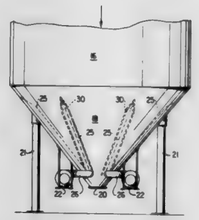
a sheet-like covering means mounted on said side members and extending across the ends and upper base of said side members to form said ventilator, said covering means having an opening along the upper bases of the side members that is flush with the plane of said sheet-like covering means,

the upward movement of air along the exterior of said covering means on said slanting ends and upper base of said ventilator creating a zone of reduced pressure over said opening that draws air out of the building through the hole in the roof and said opening in said ventilator.

4,520,714
AERATION DUCT SYSTEM

Myron L. Gullickson, P.O. Box 35, Barons, Alberta, Canada T0L 0G0

Filed Jan. 4, 1983, Ser. No. 455,558
Claims priority, application Canada, Sep. 27, 1982, 412303
Int. Cl.³ E04H *7/24*
U.S. Cl. 98—56 **11 Claims**

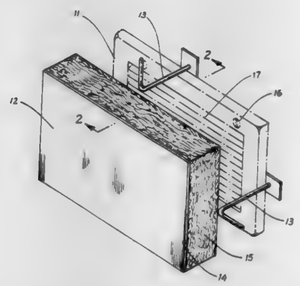


9. An aeration system for a grain bin of the type including a side wall, a top wall and a conical floor, and at least one blower for blowing air into the bottom of said bin, said system comprising a manifold for receiving air from said blower, said manifold being mounted externally of said floor, a plurality of outlet ducts inside the bin and extending upwardly along the inclined interior surface of the conical floor, each outlet duct being in fluid communication via an opening in the conical floor for receiving air from said manifold, each said duct including a pair of contiguous walls defining two adjacent sides of a triangle, the third side of the triangle being defined by part of the inclined interior surface of said conical floor when the system is installed in such bin, and a plurality of openings in said duct walls for discharging air into the bin.

4,520,715
ENERGY-SAVING COVER APPARATUS FOR ROOM AIR REGISTERS

Raymond G. Coomes, and Pamela R. Coomes, both of 10250 N. Volk, Marana, Ariz. 85238

Filed Jun. 21, 1984, Ser. No. 622,831
Int. Cl.³ F24F *7/00*
U.S. Cl. 98—101 **2 Claims**



1. An energy-saving cover apparatus for preventing the loss of warm, room ambient air through a room air register of the type having a framework with an inner depending wall, said framework being attached to a ducting opening by attachment screws, comprising:

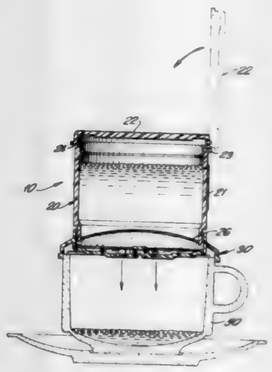
(a) a room air register cover means; and

(b) attachment means for securing said room air register cover means to said room air register, said attachment means being a clamping attachment mechanism having a pivotal cover-latching member and a register attachment member; said cover-latching member having shank portion having one end pivotally attached to said register attachment member and other end being a 90 degree bent portion for clamping to the frontside of said cover means; said register attachment member being a narrow, flat strip of sheet metal, or similar material which can be formed, having an exterior wall portion and an interior wall portion, said exterior wall portion pivotally containing one end of said shank portion and said interior wall portion having a wall bearing part and a backwardly bent parallel part terminating in a substantially small upward bend, said interior wall portion also having sufficient length to be insertable behind the framework of said register after loosening the register attachment screws and the seat be rigidly retained upon reinstalling said register attachment screws by the resulting force upon said wall bearing part and said backwardly bent parallel part with terminating bent end butting against the inner wall of said register framework.

4,520,716
DRIP-TYPE COFFEE MAKING APPARATUS

Susan M. Hayes, 11 W. 69th St., New York, N.Y. 10023

Filed Mar. 19, 1984, Ser. No. 590,604
Int. Cl.³ A47J *31/02, 31/10*
U.S. Cl. 99—306 **16 Claims**



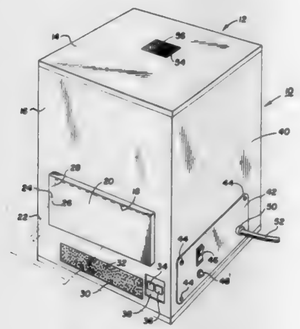
1. A drip-type coffee-making apparatus comprising:

a closed-wall vessel having an open top end for introducing hot water into said vessel and an open bottom end, said vessel comprising a means for closing said top end, a water distribution means extended across and fixed along its circumference to the interior wall of said vessel proximate to the bottom end, and a first attachment means at the bottom end of said vessel, and

a shallow coffee-holding basket having a closed bottom and circumferential wall substantially coextensive with the wall of said vessel; said wall of said basket having a second attachment means at the top thereof which fits cooperatively with said first attachment means of said vessel to form a seal around the circumference thereof resulting in a composite water-tight walled structure,

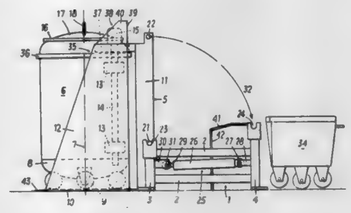
said basket further comprising a filter-support means on the interior of said closed bottom for lining with a coffee filter, at least one drain hole in said basket bottom whereby liquid passes through said bottom, and a basket support means on the exterior of said closed bottom whereby said basket and, thus, said composite structure is supported on the rim of the opening of a coffee receptacle.

4,520,717
FOOD FRYING APPARATUS
Walter G. Bohrer, Jr., Big Bend, Wis., and Kenneth H. Stamps, Garland, Tex., assignors to Alpaire, Inc., Garland, Tex.
Filed Aug. 8, 1983, Ser. No. 520,325
Int. Cl.[3] A47J *37/12*
U.S. Cl. 99—337 17 Claims



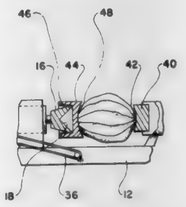
1. Food frying apparatus adapted for use in an enclosed space without connection to an outside exhaust system, said apparatus comprising:
- a cabinet adapted to be supported at a suitable working height and having a top panel, side panels, a rear panel and a front panel, at least one of said panels being configured to allow access to the interior of said cabinet;
- a container, located in said cabinet, for holding a supply of cooking oil;
- means, integral with said container, for heating said container;
- means for supporting food products in the cooking oil during the cooking of said food products;
- blower means, located in said cabinet, for circulating air through said food frying apparatus along a predetermined path and exiting at a predetermined location; and
- a filter unit removably positionable, as a one-piece unit, in said predetermined air path and upstream from said blower means, said filter unit comprising:
  - a solid bottom portion having a first side and a second side;
  - a paper housing element with opposed first and second open ends and having a predetermined inside diameter and a predetermined outside diameter, said paper housing element having said first open end resting against said first side of said solid bottom portion;
  - a housing element with opposed first and second open ends and having a predetermined inside diameter and a predetermined outside diameter, said predetermined outside diameter being smaller than said predetermined inside diameter of said paper housing element, said housing element including air passage means formed in the wall thereof, said housing element having said first open end thereof resting against said first side of said solid bottom portion, said housing element being positioned to be coaxial with said paper housing element;
  - a top portion having an aperture formed therein, said top portion being positioned such that said aperture is coaxial with said paper housing element and said housing element and supporting said second ends of said paper housing element and said housing element; and
  - a predetermined amount of charcoal positioned in the volume formed by said solid bottom portion, said top portion, said paper housing element and said housing element to substantially fill said volume.

4,520,718
EQUIPMENT FOR MASSAGING OF MEAT
Otto Prosenbaüer, Vienna, Austria, assignor to Inject Star Pökelmaschinen Gesellschaft m.b.H., Vienna, Austria
Filed May 22, 1984, Ser. No. 612,823
Claims priority, application Austria, May 27, 1983, 1957/83
Int. Cl.[3] A23B *4/02*
U.S. Cl. 99—535 20 Claims



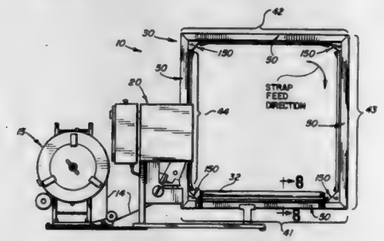
1. Equipment for massaging meat comprising:
an axially symmetric container having an axis, a sidewall, a top, an access opening at the top, a bottom, and a removable cover for closing the access opening, the container being supportable in an upright orientation by wheel means at the bottom;
a support frame for receiving and supporting the container;
support frame positioning means for positioning the support frame in an upright position, a first tilted position and a second tilted position;
the support frame having an open side and a frame bottom for rolling the container onto and off of the frame bottom when the support frame is in its upright position and the container is in its upright orientation;
roller means, mounted to the frame, for rotatably and supportably engaging the container sidewall when the support frame and container therewith is in the first tilted position with the wheel means rotatably engaging the frame bottom; and
means for driving the container about the container axis when the support frame and container therewith is in the first tilted position.

4,520,719
NUTCRACKER FOR CRACKING HARD-SHELL NUTS SUCH AS BLACK WALNUTS AND MACADAMIA NUTS
William M. Price, Rte. 4, Box 226, Wake Forest, N.C. 27587
Filed Apr. 7, 1980, Ser. No. 138,183
Int. Cl.[3] A23B *4/04*
U.S. Cl. 99—578 2 Claims



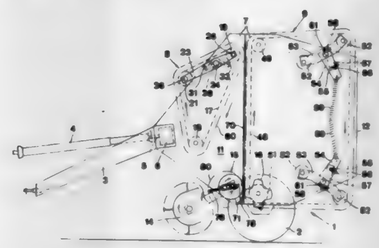
1. In a nutcracker of the type having an anvil and an aligned impact member with said anvil and impact member adapted for rectilinear movement relative to each other and further adapted to receive and hold a nut therebetween for cracking; an impact means for striking said impact member and cracking the shell of the nut held between said anvil and impact member in response to said impact means being cocked and released and striking said impact member; the improvement comprising an adaptation unit for cracking hardshelled nuts such as black walnuts and macadamia nuts, said adaptation unit comprising a second impact member having an open hollow center portion for receiving the other impact member such that said second impact member can be easily inserted over the other impact member; said second impact member including a generally flat and shallow, dish-like and slightly rounded nut receiving recess means formed about an end thereof for receiving a hardshelled nut wherein said nut receiving recess means forms a dish-like depression having a nut engaging surface for directly engaging and surrounding a substantial portion of a nut shell such that the nut shell engaged is continuously surrounded about a substantial area by the nut engaging surface of said second impact member; a second anvil adapted to replace said first anvil and to cooperate with said second impact member for cracking a hardshelled nut, said second anvil including a nut receiving recess means shaped as said nut receiving means of said second impact member such that said second anvil is effective to impart a cracking force to a substantial portion of a nut held therebetween.

4,520,720
STRAP CHUTE FOR AUTOMATIC STRAPPING MACHINE
Clement A. Urban, Willow Springs, and Gale W. Huson, Glenview, both of Ill., assignors to Signode Corporation, Glenview, Ill.
Filed May 11, 1983, Ser. No. 493,676
Int. Cl.[3] B65B *13/04*
U.S. Cl. 100—26 15 Claims



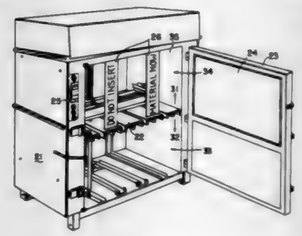
1. A strap chute for an automatic strapping machine in which a strap is fed to form a loop around an article to be strapped, in which the strap is then tightened around the article, and in which the strap is subsequently joined at overlapping portions in the tight loop, said strap chute comprising a plurality of sections for being joined together with said machine to define a path along which said strap is guided as the strap is fed in said loop, each said section including
- (a) a mounting frame having a pair of opposed fulcrum members each defining a fulcrum spaced from the other fulcrum;
- (b) a pair of strap guides each having at least an outer retaining wall for guiding and retaining said strap when said strap guides are located in a closed position wherein said outer retaining walls are in close approximation, each said strap guide having a lever member disposed adjacent one of said fulcrum members in an unpinned relationship to accommodate pivoting movement of said strap guides between said closed position and an open position displaced from said closed position wherein said strap guide outer retaining walls are spaced apart an amount sufficient to accommodate the passage of said strap therepast when said strap is tightened; and
- (c) biasing means disposed in compression between said strap guide lever members for continuously subjecting said strap guide lever members to outwardly directed forces for biasing each said strap guide lever member against one of said fulcrum members and for pivoting said lever members so as to normally maintain said strap guides in said closed position whereby, after said strap loop is formed, the tightening of said strap causes said strap to bear against said strap guide outer retaining walls and pivot said strap guides into said open position to release said strap.

4,520,721
ROUND BALER WITH VERTICALLY ORIENTED START CHAMBER
Frans J. G. C. DeCoene, Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.
Filed Mar. 27, 1984, Ser. No. 594,004
Claims priority, application United Kingdom, Mar. 29, 1983, 8308563
Int. Cl.[3] B30B *5/06*; A01D *39/00*
U.S. Cl. 100—88 11 Claims



1. A round baler comprising:
(a) a base frame;
(b) side walls attached to said base frame;
(c) first and second expandable members arranged to define together with said side walls an initial generally vertically oriented wedge-shaped start chamber which expands to a generally cylindrical shape during bale formation;
(d) an arm supporting said first expandable member, said arm being pivotally mounted on at least one of said side walls and carrying guide members at the ends thereof around which said first expandable member passes; and
(e) upper and lower T-shaped supports supporting said second expandable member, each said T-shaped support being pivotally mounted on at least one of said side walls and carrying a pair of guide members for engaging said second expandable member.

4,520,722
SAFETY AND WARNING DEVICES FOR BALING PRESSES
Albert Goldhammer, Zum Hecht 46, 7770 Überlingen, Fed. Rep. of Germany
Division of Ser. No. 198,163, Oct. 17, 1980, Pat. No. 4,430,934. This application Feb. 10, 1984, Ser. No. 578,843
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942219; Oct. 18, 1979, 2942228
Int. Cl.[3] B30B *1/18*
U.S. Cl. 100—99 26 Claims



1. In a baling press having a housing defining a filler opening and a working space, and a press piston movable in the work-

ing space between a retracted position and a compressing position wherein a bale is compressed, said piston dividing the working space into a press space and a movement space, warning means comprising:

elongated flexible means attached to the piston,

means mounted on the housing and engaging the elongated flexible means for extension thereof between an edge of said filler opening and the piston to provide warning to an operator against inserting material through the filler opening, and

said engaging means comprising tensioning means engaging the elongated flexible means to maintain the elongated flexible means taut at all positions of the piston between said retracted and compressing positions.

4,520,723

PRESSURE ROLL FOR USE IN CALENDERS OR THE LIKE

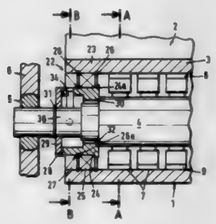
Josef Pav, and Reinhard Wenzel, both of Krefeld, Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Dec. 27, 1983, Ser. No. 565,282

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1983, 3325385

Int. Cl.³ B30B *3/04*

U.S. Cl. 100—162 B **32 Claims**



28. In a machine of the character indicated, particularly in a calender, the combination of first and second pressure rolls defining a nip and having axes normally disposed in a common supporting plane, at least one of said rolls comprising a stationary carrier; a hollow rotary cylindrical shell surrounding said carrier and having first and second end portions movable in said plane radially of the other of said rolls; groups of supporting elements installed in the interior of said shell and being spaced apart from one another, as considered in the axial direction of said shell, each of said groups including at least two supporting elements spaced apart from one another, as considered in the circumferential direction of said shell, and each of said supporting elements comprising a plurality of pressure transmitting units disposed next to each other, as considered in the circumferential direction of said shell, said shell being subject to the action of external forces having components acting at least upon the end portions of said shell substantially at right angles to said plane and said pressure transmitting units being operable to react against said carrier and transmit to said shell internal forces having components acting substantially at right angles to said plane; first and second bearing units each comprising a spherical joint and each including an annular inner bearing element surrounded by the respective end portion of said shell, each inner bearing element being radially movably mounted on said carrier and being arranged to transmit axial stresses from the respective end portion of said shell to said carrier; means for holding said inner bearing elements against rotation with said shell; and regulator means for operating said pressure transmitting units so as to effect the generation of internal forces whose components at least substantially neutralize the components of said external forces to thus maintain the axes of the end portions of said shell in said plane.

4,520,724

SCREW DRIER PARTICULARLY FOR PLASTIC MATERIALS

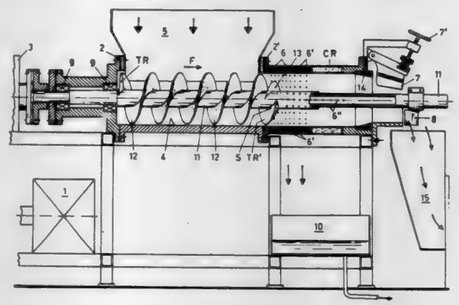
Edoardo Costarelli, Via F. Lli Pellas, 34, Perugia, Italy (06100)

Filed Sep. 22, 1982, Ser. No. 421,165

Claims priority, application Italy, Aug. 18, 1982, 49003 A/82

Int. Cl.³ B30B *9/16*

U.S. Cl. 100—935 **8 Claims**



1. A tunnel drier for waste plastic materials in small particles comprising:

a drier casting having a feed opening;

an elongated cylindrical walled channel in said casing having an inlet section adjacent said feed opening and a discharge end and forming a first chamber in said inlet section and a second chamber connected in series between said first chamber and said discharge end;

a hopper for feeding the plastic material attached to said casing having a discharge opening in the bottom thereof communicating with said feed opening in said casing through which the plastic material is fed to said first chamber;

a screw conveyor comprising a shaft and a helical vane mounted coaxially on said shaft, said shaft being solid in the portion thereof in said first chamber and hollow downstream thereof;

means to rotatably support said shaft coaxially in said channel at the upstream end thereof adjacent said inlet section;

means to rotate said shaft;

a plurality of liquid outlet holes in said shaft in the portion thereof between substantially the center of said second chamber and said discharge end;

said helical vane extends continuously through said first chamber and has a laminar blade shape in said first chamber and a final turn extending into said second chamber a distance of substantially one turn, said final turn having the same radius as the preceding turn and a cross-sectional configuration in the form of a right triangle so that the downstream surface of said final turn forms an oblique helicoid which imparts to the material being treated a pressure which increases from the outer periphery of the final turn to the shaft;

a half-turn segment of a laminar helical vane for breaking up the material having the same pitch as said first-mentioned vane and a radial height from said shaft approximately one-half the radial height of said first vane mounted on said shaft so that its upstream end is at substantially the same angular position as the downstream end of said final vane but displaced upstream therefrom substantially a distance of a half-pitch;

a plurality of liquid outlet holes through the wall of a first upstream portion of said second chamber;

heating means incorporated in the wall of a central portion of said second chamber to facilitate drying of the material passing therethrough;

means for resisting flow of the material to produce a high pressure region in said second chamber between the downstream end of said helical vane and said discharge end; and

a device operatively mounted on said discharge end for adjusting the area of said discharge end.

4,520,725

SETTING MECHANISM FOR TYPE WHEELS OF A PRINTING DEVICE

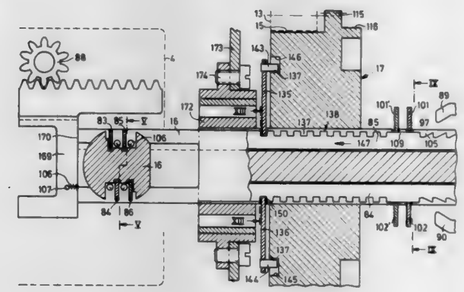
Werner Haug, Langnau, Switzerland, assignor to Frama AG., Switzerland

Filed Sep. 28, 1983, Ser. No. 536,763

Claims priority, application Switzerland, Oct. 4, 1982, 5827/82

Int. Cl.³ B41L *47/46;* **B41J** *1/34*

U.S. Cl. 101—91 **18 Claims**



1. A setting mechanism for a printing device having a plurality of rotatably mounted type wheels each with a pinion connected thereto, comprising:

a support;

at least one push rod associated with one of the pinions, mounted for reciprocal movement to said support for rotating the one pinion by an incremental amount in stepwise fashion to change a type on the type wheel connected to the one pinion during each reciprocation;

an electromagnet connected to said support and having a movable part engaged with said at least one push rob for reciprocally moving said at least one push rod;

said support including a fixed part and a guide plate pivotally mounted to said fixed part, said at least one push rod mounted for reciprocal movement on said guide plate; and

an additional electromagnet connected to said fixed part and engageable with said guide plate for moving said guide plate between a first position in which said at least one push rod is effective to move the one pinion, and a second position wherein reciprocal movement of said push rod has no effect on the one pinion.

4,520,726

FLAT SILK-SCREEN PRINTING MACHINE WITH MOVABLE PIVOTED SUPPORT

Eric Rouly; Philippe Baquet, and Jean-Louis Dubuit, all of Paris, France, assignors to Societe d'Exploitation des Machines Dubuit, Paris, France

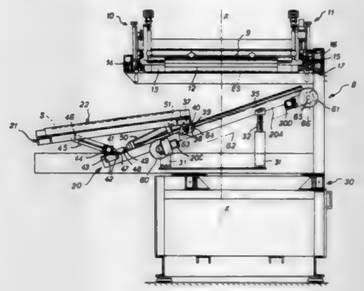
Filed Oct. 18, 1982, Ser. No. 434,860

Int. Cl.³ B41L *13/02;* **B41F** *15/26*

U.S. Cl. 101—123 **11 Claims**

1. A silk-screen printing machine for printing substrates lying flat, said printing machine comprising a machine frame supporting a screen in a substantially horizontal position, ink-applying blade and an ink-wiping blade moveably mounted on said machine frame for alternately sweeping across said screen, a flat table for receiving a substrate to be printed, wherein the improvement comprises:

a fixed inclined table support generally underlying said screen, means mounting said table on said inclined table support for reciprocatory movement along said table support between a lowered, retracted, access position projecting beyond said machine frame and outwardly of said table support at one side of said screen and a raised, advanced, printing position underlying and aligned with said screen; means for pivotally mounting said table on said table support for movement between a sloping condition at said access position and a substantially horizontal



condition parallel to said screen at said printing position; and control means for controlling movement of said table between said raised, advanced, printing position with said table being parallel to and immediately below said screen, and said lowered, retracted, access position for introducing and removing the substrate with a greater part of said table clearing said machine for enhanced acess.

4,520,727

METHOD AND APPARATUS FOR SILK-SCREEN PRINTING

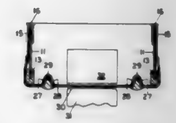
Henry L. Miller, Mars, Pa., assignor to Miller Screen & Design, Inc., Mars, Pa.

Filed Mar. 12, 1984, Ser. No. 588,501

Int. Cl.³ B05C *17/06;* **B07B** *1/48*

U.S. Cl. 101—127 **8 Claims**





1. In a method of applying decorative imprints to the surfaces of workpieces, the steps of:

forming on a stencil screen a paint-impervious layer having a paint-pervious opening therein defining a desired pattern to be imprinted,

forming a resilient membrane including establishing a pocket in said stencil screen by reversely-bent portions thereof between said desired pattern and edge portions of said stencil screen.

filling said packet with a curable eastomer,

curing said elastomer,

securing to a frame the stencil screen by said edge portions, and

stretching said resilient membrane while transferring paint

through said desired pattern onto the surface of a workpiece.

4,520,728

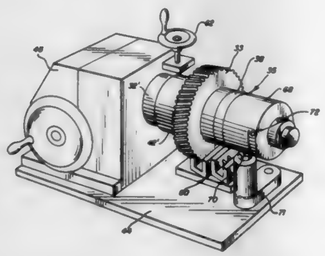
METHOD OF OPERATING A PRINTING PRESS AND APPARATUS

Harold Ecker, DePere, and Harvey J. Spencer, Green Bay, both of Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Continuation of Ser. No. 350,627, Feb. 22, 1982, abandoned. This application Jun. 15, 1984, Ser. No. 620,539

Int. Cl.³ B41F *13/12*

U.S. Cl. 101—248 **15 Claims**



1. In a method of achieving rotary registration in a press having a helical gear-equipped central impression cylinder and at least two helical gear-equipped plate cylinders, the steps of:
(a) providing a positioning fixture separate from the press;
(b) sequentially mounting each plate cylinder gear on the positioning fixture;
(c) orienting each plate cylinder gear relative to a first reference on the positioning fixture which corresponds to a reference on the associated plate cylinder while the plate cylinder gear is mounted on the positioning fixture;
(d) orienting at least one of the plate cylinder gears and said first reference on the positioning fixture relative to a second reference on the positioning fixture which corresponds to a reference on the press to provide a desired phase angle between said one plate cylinder and the other plate cylinder; and
(e) mounting the gear-equipped plate cylinders on the press and moving the plate cylinder gears radially into engagement with the impression cylinder gear.

4,520,729

INKER FOR ROTARY PRINTING MACHINE, AND METHOD

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

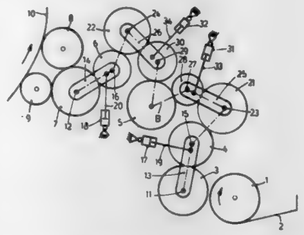
Filed Feb. 1, 1984, Ser. No. 575,856

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1983, 3303988

Int. Cl.³ B41F *31/36*; B41L *27/32*

U.S. Cl. 101—352 **5 Claims**

1. Inker for a rotary printing machine having
a plate cylinder (**10**);
a ductor roller (**1**) and a doctor blade associated therewith;
at least one ink application roller (**8**, **9**) in ink transmitting contact with the plate cylinder;
and an ink transfer roller train in ink transferring relation between the ductor roller (**1**) and the at least one application roller (**8**, **9**), including a plurality of rollers in a serial path—in the direction of ink transfer—between the ductor and the at least one ink application roller,
the ink transfer roller train including two rollers (**4**, **5**; **6**, **5**) which are selectively positionable for surface engagement with each other, or for disengagement, and, when disengaged, defining a gap therebetween;
and comprising
at least one pair of auxiliary or additional ink transfer rollers (**21**, **28**; **22**, **30**) selectively engageable in serial, ink transfer position within the serial path of the rollers of the ink roller train;



one, each, of said at least one pair of additional or auxiliary rollers being selectively positionable for contact with one each respective roller of said two selectively positionable rollers of said roller train adjacent said gap to bridge the gap and transfer ink between the so separated rollers and thereby lengthen the ink transfer path through the roller train.

4,520,730

PRESETTING PROCESS FOR PRINTING CYLINDRICAL OR CONICAL ARTICLES

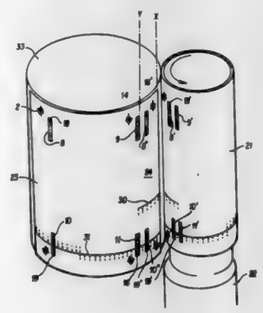
Gilbert Edelmann, Lausanne, Switzerland, assignor to Cebal, Clichy, France

Filed Nov. 10, 1982, Ser. No. 440,549

Claims priority, application Switzerland, Dec. 8, 1981, 7831/81

Int. Cl.³ B41C *1/00*

U.S. Cl. 101—426 **6 Claims**



1. A process for presetting a dry offset printing machine intended for printing cylindrical or conical workpieces and for setting corresponding working blocks, said process comprising the steps of:
(a) preparing a base matrix film by disposing on a film a plurality of spaced reference crosses and two axes forming an angle of from 80° to 100° with one another;
(b) making an enriched matrix film by disposing a plurality of alignment bars on a copy of the base matrix film;
(c) making a master template from the enriched matrix film;
(d) making a plurality of secondary templates which are identical with one another and with the base matrix film;
(e) making four perforations on the master template and on each of the plurality of secondary templates, corresponding perforations on each of the templates being located in corresponding places on each of the templates, two of the perforations being located on one of the two axes mentioned in step (a) and the other two of the perforations being located on the other of the two axes mentioned in step (a);
(f) making working blocks from copies of the base matrix film by forming four perforations therein corresponding to the four perforations mentioned in step (e) on each copy and engraving thereon axes corresponding to the axes mentioned in step (a);
(g) placing the master template on the first quadrant of a dry offset printing machine and inking it up;
(h) making a pass with a blanket and a test specimen, thereby printing images of the reference crosses and the alignment bars on the test specimen and redepositing images of the reference crosses and the alignment bars on the blanket;
(i) adjusting the positions of the master template by checking the positons of the images of the alignment bars on the test specimen and the blanket;
(j) placing the secondary templates on subsequent quadrants of the dry offset printing machine and inking them up;
(k) making a pass over the blanket and the test specimen, thereby printing images of the reference crosses mentioned in step (a) on the test specimen and redepositing images of the reference crosses on the blanket;
(l) adjusting the positions of the secondary templates to ensure that the images of the reference crosses on the blanket coincide with the images of the reference crosses on the master template;
(m) marking each quadrant of the dry offset printing machine through the perforations with reference marks aligned with the axes mentioned in step (a);
(n) removing the templates from the dry offset printing machine;
(o) drawing axes corresponding to the axes mentioned in step (a) on each quadrant on the dry offset printing machine by connecting the reference marks mentioned in step (m); and
(p) placing each working block in position by superposing the axes engraved on each working block on the corresponding axes marked on the corresponding quadrant of the dry offset printing machine.

4,520,731

PROJECTILE CONSTRUCTION AND METHOD OF MAKING THE PROJECTILE

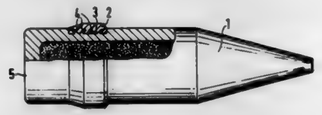
Udo Götz, Trossingen; Winifred Gleichauf, Oberndorf, and Oswin Günther, Schramberg, all of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Oct. 20, 1982, Ser. No. 435,500

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142636

Int. Cl.³ F42B *31/00*

U.S. Cl. 102—527 **4 Claims**



1. A projectile, particularly for automatic rapid firearms and high performance machine guns, comprising:
a projectile body having a projectile jacket surface, said protective body having a circular groove therearound near a rear end of said projectile body, said circular groove having opposite radially extending walls perpendicular to said projectile jacket surface, said circular groove having a bottom extending between said walls;
a plastic rotating band anchored in said circular groove;
at least two spaced apart narrow ribs extending outwardly from said circular groove bottom, each of said ribs having a pair of parallel side walls extending at an acute angle to a radial perpendicular direction parallel to said walls and defining an intermediate groove therebetween, a width of each of said narrow ribs being at most equal to a width of said intermediate groove and being less than a length of each rib from said groove bottom toward said projectile jacket surface, each rib extending at most to a plane containing said projectile jacket surface; and
knurls formed on said intermediate groove.

4,520,732

AMUSEMENT RIDE

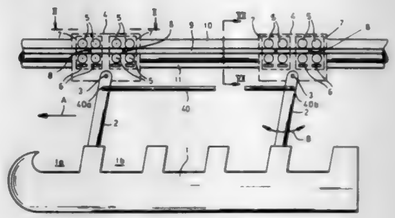
Anton Schwarzkopf, Von-Heidenheim-Str. 5, 8909 Münsterhausen, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,898

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1983, 3303279

Int. Cl.³ A63G *21/04*

U.S. Cl. 104—53 **20 Claims**



1. An amusement ride comprising:
rail means defining a closed travel path;
at least one carriage provided with running rollers and guide rollers riding on said rail means;
at least one strut extending downwardly from said carriage swingably mounted thereon for pendulous movement relative to said carriage;
a vehicle fixed to said strut below said carriage whereby said vehicle is suspended from said strut, said carriage comprising a frame, a yoke spanning said frame in a direction transverse to the direction of travel of said vehicle along said path, and means for suspending said strut from said yoke; and
at least one pair of air springs in the form of bellows cylinders braced between opposite sides of said strut and said yoke for damping angular oscillations of said strut.

4,520,733

GUIDE RAIL AND FOLLOWER WHEEL CONSTRUCTION FOR MONORAIL

Claude Willmann, Morschwiller-le-Bas, France, assignor to Societe Anonyme Dite: Etablissements Tourtellier S.A., France

Filed Jun. 28, 1982, Ser. No. 392,755

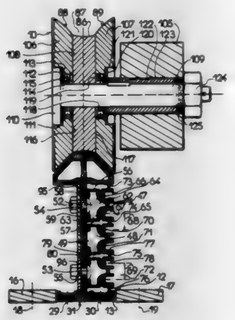
Claims priority, application France, Jul. 1, 1981, 81 13072

Int. Cl.³ B61B *3/02*; E01B *25/22*

U.S. Cl. 104—93 **12 Claims**

1. A system for transporting loads, the system being of the type including a series of guide rails with horizontal sections and sloping sections, wherein each guide rail has a support portion and at least one track portion situated above it, and vehicle means supported by and guided along said rails for carrying the loads characterized in that:
the guide rail has an upper tubular angle bar, a perfectly gauged lower flat angle bar situated below, and an upright center web connecting the upper and lower bars, the guide rail being composed of an extruded material, the center web having fasteners and catches on a surface thereof;

insulating angle bars secured by said fasteners and catches and outfitted with electric power lines;
vertically turning guide wheels on the vehicle means;
the lower angle bar being demarcated by two parallel, vertical edges constituting tracks for the rollers, the lower angle bar having an upper surface with two lengthwise grooves therein, the upper surface having parallel shoulders projecting upwardly, each of said grooves being situated between two parallel shoulders, and which func-



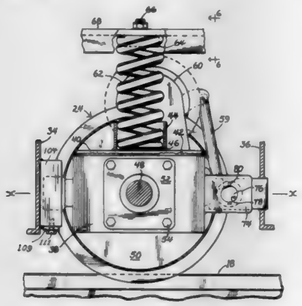
tion as stops for the top portions of means of attachment, means of attachment adapted to be inserted along predefined axes, and at least one further groove in said top surface, adjacent one of said shoulders a fish-plate mounted in contact with said center web and having a longitudinal edge dimensioned to fit in said further groove, and the lower angle bar having a lower surface containing incisions, with said incisions being situated within the same vertical plane as the axes along which means of attachment are inserted.

4,520,734

SHORT DISPLACEMENT DOUBLE ACTING VEHICLE SUSPENSION SYSTEM

Charles R. Herron, Bluefield, Va., assignor to Baker International Corp., Orange, Calif.

Filed Aug. 17, 1983, Ser. No. 524,002
Int. Cl.³ B61F *5/16, 5/30*
U.S. Cl. 105—157 R **5 Claims**



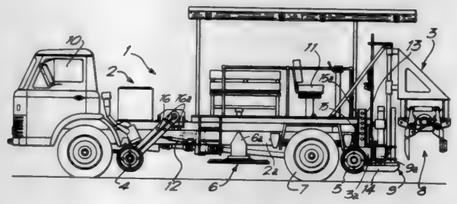
1. In a vehicle, a frame, an axle assembly having an axle housing with a wheel supporting axle rotatably journaled therein, wheels at the ends of said axle, improved short displacement double acting ride suspension means comprising:
separate connecting means, at fore-and-aft ends of the axle assembly, enabling rocking movement of the axle assembly relative to the frame about a longitudinal axis extending generally longitudinally of the direction of movement of the vehicle;
one of said fore-and-aft ends of the axle assembly being a hinged end and the other being a tiltable end;
the connecting means at the hinged end of the axle assembly including a universal joint connection to the frame enabling unrestricted tilting, swinging and rocking movement of the axle assembly about the universal joint connection in all directions with respect to the frame;
the connecting means at the tiltable end of the axle assembly including first and second interengaging guide means on the axle assembly and frame respectively enabling free vertical movement of said tiltable end of the axle assembly while restraining horizontal movement thereof; and
a pair of springs carried between the frame and the axle assembly at opposite sides thereof, each spring being deflectable in a vertical direction under loads applied to the spring by the axle assembly, with the line of action of the spring being generally through the axle, whereby under stable load conditions, such as occur when the vehicle is traveling over flat, regular track, substantially the entire weight of the frame bearing on the axle assembly is borne by the springs and when shocks are applied to the axle assembly, such as occurs when the vehicle is traveling over irregular track, the springs acting together with the connecting means support the frame; and
the springs and the universal joint connection thus provide a stable, cushioned, three-point support for the frame; whereby shocks applied to the axle assembly through the wheels are absorbed by unrestricted rocking movement of the axle assembly about said longitudinal axis accompanied by up and down tilting movement of the axle assembly about said universal joint connection within a range permitted by said springs.

4,520,735

CONVERTIBLE RAIL-HIGHWAY MAINTENANCE VEHICLE

Keith C. Field, Bedford, England, assignor to Matisa (U.K.) Limited, Bedford, England

Continuation of Ser. No. 152,807, May 23, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 408,722
Claims priority, application United Kingdom, May 25, 1979, 7918266
Int. Cl.³ B61D *15/00*; B61F *9/00*; E01B *27/16*
U.S. Cl. 105—215 C **2 Claims**



1. A convertible highway/rail tamper, comprising:
a chassis;
an engine on said chassis;
front and rear highway wheels; suspension means mounting said highway wheels on said chassis for limited movement relative to the chassis;
front and rear rail wheels, said front rail wheels being mounted on said chassis for movement between a retracted position when the vehicle is in a highway going condition and an extended position for engaging track rails when the vehicle is in a rail going condition;
a turntable-jacking means movable mounted on said chassis for movement from a normally retracted position to an extended position for supporting the vehicle with said highway wheels spaced above the track rails during transfer between a highway and track rails;

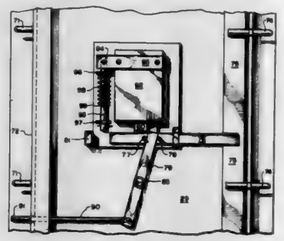
slides fixed to said chassis;
a sub-frame vertically slidable on said slides, said sub-frame carrying for sliding movement therewith tamping apparatus which includes two jacks disposed on respective sides of said chassis, each jack having a jack body fixed to said sub-frame and a foot extendable from said jack body, said rear rail wheels also being mounted on said sub-frame for sliding movement therewith so as to be movable, when said chassis is supported on said turntable jacking means and said feet have been extended into the engagement with ground beside the track rails, from a retracted position to an extended position only by sliding movement of said sub-frame down said slides on relative retraction of the bodies and feet thereof, said front and rear rail wheels when moved to the extended position supporting the vehicle in the rail going condition in which the highway wheels are out of contact with the track rails; and
first and second drive means connected to said engine and at least some of said highway wheels and at least some of said rail wheels and selectively engageable for transmitting power from the engine to at least some of the highway wheels and to at least some of the rails wheels.

4,520,736

LIGHTWEIGHT SAFE AND DOOR MECHANISM THEREFOR

Gaius P. Crosby, Orem, Utah, and Thomas A. James, 341 S. Main, Mapleton, Utah 84663, assignors to Thomas A. James, Mapleton, Utah

Filed May 6, 1983, Ser. No. 492,499
Int. Cl.³ E05B *63/00*; G05B *63/18*
U.S. Cl. 109—60 **8 Claims**



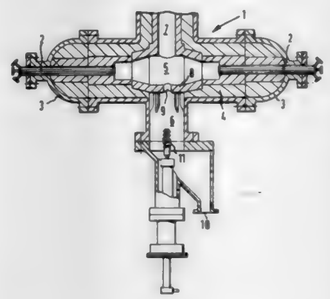
1. A lightweight safe having a hinged door recessed in an offset door frame, said safe comprising:
a box-like structure having a marginal front face, a full back panel parallel to said front face, vertical side panels and top and bottom panels perpendicular to said front face and joining said back panel to said front face to form an open box-like structure;
a plurality of hinges along one vertical edge of said door to attach said door to said door frame adjacent said marginal front face;
a door having a face panel to which hinges are attached along one edge and vertical panels on the inside of said door, said vertical panels perpendicular to said door face panel; and
a first lock mechanism comprising:
a plurality of fixed studs attached along one edge vertical panel of said door and spaced inwardly of said hinges whereby said studs recess behind said door frame when said door is in a closed position,
a plurality of sliding bolts located along the non-hinged vertical edge of said door, said sliding bolts positioned to slide behind the door frame when the door is closed, said sliding bolts pass through openings in a vertical edge panel of said door,
a vertical, movable bolt-bar located within the box-like structure on the inside of the vertical edge panel through which the sliding bolts pass, said bar attached to the proximate ends of said sliding bolts, and
an actuator mechanism to cause said bolt-bar to reciprocate, thereby causing said sliding bolts to slide behind said door frame and retract therefrom, said actuator comprising:
a horizontal movable locking shaft attached to an inside edge of said vertical bolt-bar, said locking shaft having a pair of roll pins protruding from the side of the shaft and protruding towards the interior of said safe, said roll pins spaced apart a predetermined distance, said pins being of sufficiently light construction that significant shear forces applied thereto will cause shearing of said pins,
a lock-actuated bolt to hold said locking shaft securely in a locked position whereby the movable locking shaft is in a position such that the vertical bolt-bar causes the sliding bolts to protrude from the panel and position themselves securely behind the door frame when the door is closed, and
handle means attached to a substantially vertically disposed, swingable handle lever located on the inside of said front face of the door, said lever disposed between said spaced roll pins on said locking shaft whereby said lever swings away from a substantially vertical position to a position at a sufficiently acute angle to a vertical position to move the locking shaft to a locked position.

4,520,737

PROCESS AND REACTOR FOR THE COMBUSTION OF CARBON-CONTAINING FUEL

Matheus M. van Kessel, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 22, 1984, Ser. No. 582,516
Claims priority, application Netherlands, Mar. 16, 1983, 8300950
Int. Cl.³ F23J *1/02*
U.S. Cl. 110—171 **9 Claims**

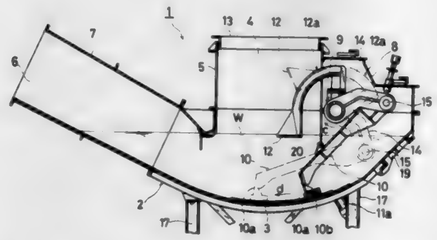


1. A process for the combustion of a carbon-containing fuel with an oxygen containing gas comprising:
reacting the fuel and gas in a reaction zone;
removing the products of combustion from the top of the reaction zone;
discharging the slag by gravity from the reaction zone to a cooling zone through an opening in a partition separating the reaction and cooling zones;
cooling and solidifying the slag in the cooling zone; and
maintaining the opening in the partition clear by periodically vertically moving a cylindrical member upwardly through said opening and then retracting said cylindrical member downwardly from said opening.

4,520,738
DEVICE TO FORCE OUT INCINERATION ASH

Nobuo Takehara, Nishinomiya, Japan, assignor to Kabushiki Kaisha Takuma, Japan

Filed Jun. 19, 1984, Ser. No. 622,346
Int. Cl.³ F23J *1/02*
U.S. Cl. 110—171 **8 Claims**

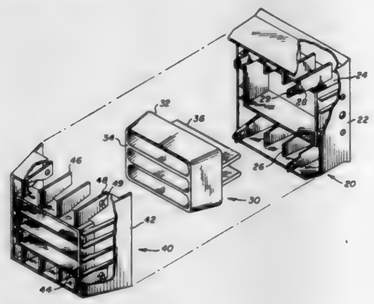


1. A device to force out the incineration ash comprising a main body case provided with an ash receiving chamber in which water is filled, an inlet opening for the incineration ash discharged out of a refuse incinerator and an outlet opening for the incineration ash after burning is extinguished; a main shaft installed horizontally in the rear part of the inlet opening of the main body case and supported so as to be able to turn; a driving mechanism to make the aforementioned main shaft turn in the positive and inverse directions at a fixed angle; a pusher installed on the aforementioned main shaft by means of a lever to force out the incineration ash settled on the bottom of the ash receiving chamber; and a pressing plate installed on the aforementioned main shaft by means of an arm to force down the matter floating on the water surface in the ash receiving chamber into the water.

4,520,739
NOZZLE TIP FOR PULVERIZED COAL BURNER

Michael S. McCartney, Bloomfield; Roman Chadshay, Windsor, and Richard F. Erlacher, Simsbury, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

PCT No. PCT/US82/00940, § 371 Date Sep. 13, 1982, § 102(e) Date Sep. 13, 1982, PCT Pub. No. WO84/00314, PCT Pub. Date Feb. 2, 1984
PCT Filed Jul. 12, 1982, Ser. No. 555,462
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—263 **13 Claims**



1. A nozzle tip for a burner on a pulverized fuel-fired furnace for receiving a stream of pulverized fuel and air discharging from the burner and directing said pulverized fuel and air stream into the furnace, comprising:

a. a hollow, open-ended base body adapted to be mounted to the discharge end of the burner having an outer shell and an inner shell disposed substantially coaxially in spaced relationship within the outer shell so as to define a first flow passage through the interior of the inner shell and a second flow passage through the annular space between the inner and outer shells;

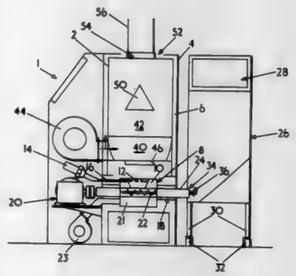
b. a replaceable, hollow, open-ended end cap removably mounted to said base body at the discharge end thereof and having an outer shell and an inner shell disposed substantially coaxially in spaced relationship within the outer shell so as to define a first flow passage through the interior of the inner shell and a second flow passage through the annular space between the inner and outer shells; and

c. a replaceable, hollow, open-ended insert of a highly abrasion resistant material disposed intermediate of said base body and said end cap and retained in position therebetween by said base body and said end cap, said insert having an inlet end mating with an abutting against the discharge end of the inner shell of said base body and an outlet end mating with and abutting against the receiving end of the inner shell of said end cap, said insert defining a highly abrasion resistant flow conduit through the nozzle tip from the discharge end of the first flow passage of said base body to the receiving end of the first flow passage of said end cap through which the pulverized fuel and air stream passes from the burner into the furnace.

4,520,740
COMBUSTION AND HEATING EQUIPMENT

Brian M. Carpenter, Cheltenham, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Mar. 21, 1983, Ser. No. 477,439
Claims priority, application United Kingdom, Apr. 20, 1982, 8211373
Int. Cl.³ F23K *3/10*
U.S. Cl. 110—288 **9 Claims**

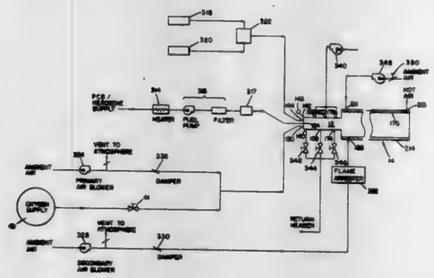


1. Combustion and heating equipment including a body having a lower part, a flue extending from said body an underfeed stoker located in said lower part, the stoker including a retort and a screwfeeder extending through the body to an inlet means, the screwfeeder incorporating a screw flight to reverse hand, a drive arrangement for the screwfeeder at one end thereof and a mobile fuel container at the other end thereof separate from said equipment, but connectible to said inlet means, a jacket extending around the body, a heating space defined between the body and the jacket, at least two ducts disposed within the body and spaced apart vertically above the underfeed stoker, said ducts extending through the body and positioned to interconnect different parts of the heating space, means for introducing a fluid to be heated and causing flow thereof through the heating space and through at least one of said ducts, an outlet means from the heating space and through the jacket for the fluid, and an overfire arch situated above the retort and below the ducts for reflecting heat back to the retort.

4,520,741
WASTE DISPOSAL

Richard W. Carbeau, Hingham, Mass.; James F. Martin, Dechard, Tenn.; John H. Lanier, Manchester, Tenn., and William L. Holt, Nashville, Tenn., assignors to ENSCO, Inc., Little Rock, Ark.

Division of Ser. No. 336,251, Dec. 31, 1981, Pat. No. 4,462,318. This application Apr. 13, 1984, Ser. No. 599,957
Int. Cl.³ F23G *5/06*
U.S. Cl. 110—344 **3 Claims**



1. The method for reducing liquid and slurry hazardous waste to non-hazardous by-products, comprising: blending the waste with a fuel to obtain a blend of liquid fuel and waste having a predetermined minimum fuel value; feeding said blend to a primary combustor; feeding oxygen-enriched air to said primary combustor in an amount such that a fuel rich-atmosphere is provided in said combustor; imparting a rotational swirl in a first direction to said oxygen-enriched air; mixing and burning said blend together with said oxygen-enriched air to obtain a swirling flame in the primary combustor for a relatively short duration at a high temperature; exhausting the products of combustion from said primary combustor to a secondary combustor; feeding secondary air to said secondary combustor in an amount such that an oxygen-rich atmosphere is provided therein, and imparting rotation to said secondary air when entering said secondary combustor in a direction opposite to the rotational direction of the products of combustion entering the secondary combustor; mixing said products of combustion with said secondary air to reduce the rotational swirl thereof while burning said products of combustion with said secondary air for a substantially long duration at a lower temperature than in the primary combustor; controlling the flow rate at which the waste/fuel blend and the oxygen-enriched air are introduced into the primary combustor and the rate at which the air is introduced into the secondary combustor; and quenching the products exiting from the secondary combustor by spraying water into the products.

4,520,742
SEED PLANTER ATTACHMENT FOR CHISEL PLOW

Steven Anderson, Star Rte., Arlington, Oreg. 97812

Continuation of Ser. No. 522,328, Aug. 11, 1983, abandoned. This application Sep. 14, 1984, Ser. No. 650,576
Int. Cl.³ A01C *5/06*
U.S. Cl. 111—86 **5 Claims**

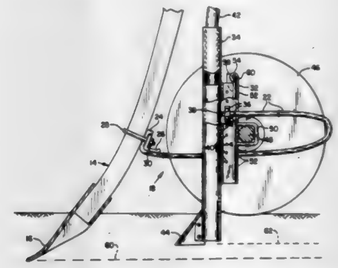
1. A seed planter attached to a vertically oriented chisel plow shank, said seed planter comprising:

(a) a boot;

(b) spring means for mounting said boot in a rearwardly related position from the shank and for imparting a ground engaging bias to said boot;

(c) mounting means for removably and infinitely variably attaching said spring means to said shank at any vertical location along the length thereof so as to adjust the amount of said ground engaging bias;

(d) depth regulating means for regulating the depth of penetration of said boot into the ground independent of the depth the chisel plow penetrates the ground; and

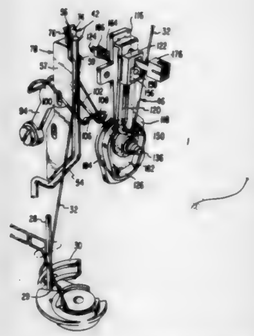


(e) depth adjustment means interconnecting said boot and said depth regulating means for adjusting the depth at which said boot penetrates the ground.

4,520,743
NEEDLE THREAD TENSIONING DEVICE FOR A SEWING MACHINE

Thaddeus J. Zylbert, Morris Plains, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 3, 1984, Ser. No. 637,645
Int. Cl.³ D05B *47/00, 49/02*
U.S. Cl. 112—255 **6 Claims**



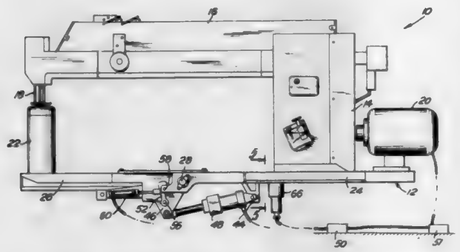
1. In a sewing machine wherein a sewing needle and looptaker cooperate in the formation of lock stitches in a fabric, the combination comprising: a thread source; a thread tensioning device to which thread extends from the thread source, and through which thread may be pulled from the thread source under tension applied by opposing thread engaging members within the device; a thread holder in which thread extending thereto from the thread tensioning device is frictionally engaged between elongate members and from which thread extends to a needle and looptaker; and a takeup for setting stitches and pulling thread through the tensioning device from the thread source, the takeup being movable in a stitch setting direction with thread to one end of its operating range whereat the thread is positioned for temporary retention in the holder, and movable in the opposite direction free of the thread to the other end of said operating range to permit thread to be pulled by the looptaker from the thread holder with movement of the thread from the temporary retention position in the holder to a position of reengagement with the takeup; the thread tensioning device including one or more recesses in the opposing thread engaging members for thread to fall through and so enable the looptaker to obtain thread from said device, without tension applied thereto by the device, in addition to thread obtained from the thread holder.

4,520,744

SEWING MACHINE WITH ARTICULATED TABLE ASSEMBLY

Mario Portilla, 1275 Bloomfield Ave., Fairfield, N.J. 07006

Filed Jul. 12, 1984, Ser. No. 629,995
Int. Cl.³ D05B *57/30, 73/04*
U.S. Cl. 112—260 **16 Claims**



1. A sewing machine comprising:
a power means for operating said sewing machine;
an arm member including a needle assembly for performing a sewing operation and a drive means in communication with said needle assembly and said power source for enabling the operation of said needle assembly;
a support structure connected to and supporting said arm member; and
a table including a support portion and an articulated portion, said support portion being securely connected to said support structure and disposed in fixed relationship to said arm, said articulated portion being hingedly connected to said support portion and rotatable relative thereto, said table further including a drive shaft means in communication with said power source, said drive shaft means including a supported portion generally adjacent to the support portion of said table and an articulated portion generally adjacent the articulated portion of said table, said articulated portion of said drive shaft means being hingedly movable with respect to said support portion thereof such that the articulated portions of said table and said drive shaft means can hingedly move with respect to the support portion of said table.

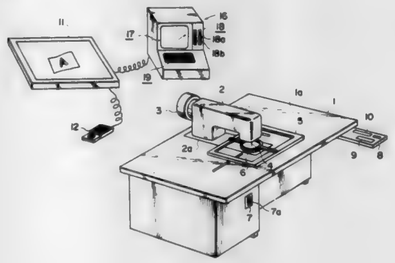
4,520,745

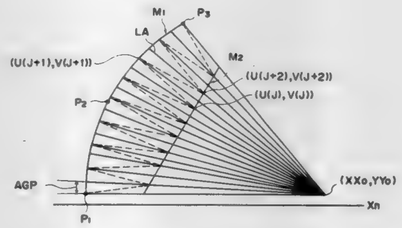
SEAM FORMING METHOD AND DEVICE FOR SEWING MACHINE FOR EMBROIDERY

Hiroaki Shinomiya, and Minetoshi Noguchi, both of Tokyo, Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 429,852
Claims priority, application Japan, May 17, 1982, 57-82701
Int. Cl.³ D05C *9/06*
U.S. Cl. 112—266.1 **12 Claims**

1. A method for embroidering a cloth with a pattern having at least a circular arc and an opposite line opposed to the circular arc thereto, said method comprising the steps of:
reading data of at least three points on the circular arc of an original pattern two points of which are end points of the circular arc-shaped line, said data being read in a form of co-ordinates;
determining, in accordance with the thus read data of said three prints, a circular arc orgin and a radius of the circular arc to specify the circular arc;
reading data of at least two points on the opposite line of the original pattern;
determining, in accordance with predetermined pitch for a needle location point, needle location points on the circular arc specified by said circular arc origin and said radius;
determining a radial bisector passing through said circular arc origin and bisecting an angle defined by radial lines connecting the circular arc origin to two successive needle location points on the specified circular arc;
determining needle location points on the opposite line in such a manner that they are positioned at intersections between said opposite line and said radial bisector; and
moving the cloth or the needle in accordance with said needle location points to embroider the cloth with the pattern.





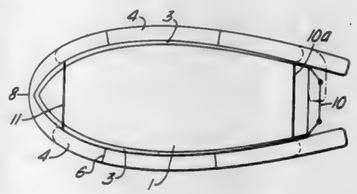
2. A method according to claim **1**, wherein said predetermined pitch for the needle location point is defined by an angular value with respect to the circular arc origin, said needle location points on the circular arc are spaced by twice said angular value and said angle defined by the radial lines corresponds to twice the angular value.

4,520,746

FLOTATION COLLAR

William F. Walters, 103. The Street, Bramford, Ipswich Suffolk, England 1P84DY; Kurt Lammerich, 25 Dalehead Rd., Preston, Lancashire, and John D. Watney, 43 Gertrude St., London SW10, both of England

Filed Dec. 28, 1982, Ser. No. 453,957
Claims priority, application United Kingdom, Jan. 5, 1982, 8200099
Int. Cl.³ B63B *43/10*
U.S. Cl. 114—69 **9 Claims**



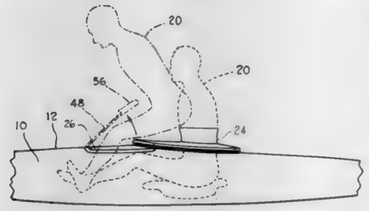
1. A method for forming an inflated flotation collar around at least part of the hull of a boat having a radially outwardly extending projection along the gunwale of said hull, said method comprising:
positioning at least one longitudinal inflatable member of a generally tubular construction and made from a substantially inextensible material along at least part of the external length of both the port and starboard sides of said hull and below said radial projection;
securing directly together the terminal portions of said member against movement towards one another so that the linear length of said gunwale over which said member extends is substantially fixed by securing means separate from said hull and passing around the end surfaces of the stem and stern of the hull but not under said hull; and
inflating said inflatable member, whereby the expansion of said member causes said member to bear against said hull against the restraining effect of the securing of said terminal portions so that said member is held substantially at gunwale level on said hull.

4,520,747

BREAKAWAY KAYAK COCKPIT AND METHOD

William E. Masters, 313 Dogwood La., Easley, S.C. 29640

Filed Feb. 27, 1984, Ser. No. 584,167
Int. Cl.³ B63B *35/72*
U.S. Cl. 114—347 **19 Claims**



7. In an boat having an enclosed hull with an upper deck and an interior space within said hull, a cockpit opening formed in said deck through which a boater is seated in a cockpit within said interior space, a spray skirt rim around the cockpit opening having an upstanding neck and an outwardly extending lip about which a spray skirt worn by the boater is fitted to cover the cockpit opening for waterproofness, a breakaway cockpit permitting emergency escape from said cockpit comprising:
an egress opening formed in front of said cockpit opening;
a removable egress panel carried in said egress opening forward of said cockpit opening;
a joint defined between edges of said egress opening and said egress panel;
means for sealing said joint to prevent entry of water into said interior space of said hull;
means retaining said egress panel in place within said egress opening in generally flush relation with said deck of said hull;
an interruption formed in said cockpit rim defining an egress space so that the boater may move through said cockpit rim and said egress opening for escape from said cockpit; and
said retention means being overcome by manual force of the boater to dislodge said egress panel from said deck and permit egress from said cockpit of said boat for emergency escape.

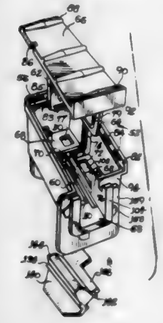
4,520,748

DIFFERENTIAL-VACUUM ALARM DEVICE

Francis G. Frano, Hoffman Estates, and William E. Ruehl, Wheeling, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 19, 1983, Ser. No. 543,561
Int. Cl.³ G01L *19/12;* **G08B** *3/00*
U.S. Cl. 116—70 **9 Claims**

1. A device for sounding a tone responsive to a predetermined vacuum differential between a first vacuum source and a second vacuum source, comprising: a housing having a floor and including a snap engageable cover and first and second wall means carried by said housing for forming within said housing three separate internal chambers, said cover being engageable and disengageable from said housing, each one of said three chambers having a chamber floor common with a portion of said housing floor; first and second communication means for respectively bringing a first one and a second one of said three chambers into communication with said first and second vacuum sources; first, second and third aperture means respectively through said first, second and third chamber floors for bringing each respective one of said three chambers into communication with ambient pressure outside of said housing; reed means carried by one of said first and second wall means, said reed means having a through aperture for bringing two of said three chambers which are located on opposite sides of said one of said first and second wall means into communication, said reed means further having a reed element integral with said reed means and overlying said reed means aperture, for sounding said tone in response to air of predetermined velocity energy flowing in a predetermined direction through said reed means aperture; and valve means carried by said housing, engageable with at least one of said first, second and third aperture means, actuable in response to said predetermined vacuum differential, for causing air to flow in said predetermined direction through said reed means aperture for sounding said tone.

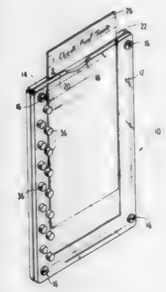


4,520,749

CHECKLIST DEVICE

David A. Jefferson, 353 New Shackle Island Rd., Hendersonville, Tenn. 37075

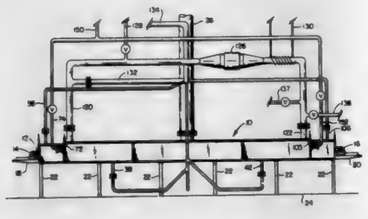
Filed May 6, 1983, Ser. No. 492,342
Int. Cl.³ G09F *9/00*
U.S. Cl. 116—325 **3 Claims**



1. A device for indicating that a series of steps have been performed or not performed comprising a container having a pair of planar members disposed in parallel relationship with each other; a shim means positioned between said members and forming a pocket therebetween, each of said members having a peripheral border about said pocket, said border being formed with a plurality of openings to receive indicator buttons; a card having a series of columnar steps imprinted thereon adapted for reception by said pocket, at least one of

said planar members being transparent in the area over said pocket to expose said steps when said card is in said pocket; and a plurality of manually operated indicator buttons disposed along said border adjacent each of said steps, each of said indicator buttons having a length greater than the thickness of said two members whereby said button, when flush with the exterior of one of said members extends beyond the exterior of the other of said members and each of said indicator buttons having a reduced area formed with protuberances intermediate the ends of said button.

4,520,750
GAS CURING CHAMBER FOR FLAT SUBSTRATES
Maher L. Mansour, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.
Division of Ser. No. 544,364, Oct. 21, 1983, Pat. No. 4,491,610. This application Oct. 29, 1984, Ser. No. 665,936
Int. Cl.³ F26B *15/12, 19/00, 25/00*
U.S. Cl. 118—58 **15 Claims**



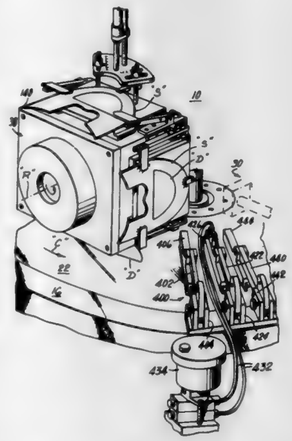
1. A chamber which defines a constant gas flow of passing objects therethrough carried by a conveyor, which comprises an elongate housing having an inlet opening and an outlet opening in the longitudinal direction and a moving conveyor which runs the length of said housing for transporting objects from said inlet opening through said housing and thereout through the outlet opening, the space above said conveyor comprising an inlet zone, a central gas zone, and an outlet zone,

said inlet zone comprising an outer adjustable gate for determining said inlet opening, a central inlet baffle gate, and an inner inlet adjustable deflector wall, the space between said outer gate and said baffle gate being connected to exhaust means, the space between said baffle gate and said deflector wall being a modulating gas cell and containing a gas knife connected to a source of inert gas and capable of injecting said inert gas at an adjustable angle onto said conveyor substantially its entire width;

said outlet zone comprising an outer adjustable gate for determining said outlet opening, a central outlet baffle gate, and an inner adjustable outlet deflector wall, the space between said outer gate and said baffle gate being connected to exhaust means, the space between said baffle gate and said deflector wall being a modulating gas cell and containing a gas knife connected to a source of inert gas and capable of injecting said inert gas at an adjustable angle onto said conveyor substantially its entire width; and

said central gas zone having withdrawal means located in proximity to said inlet deflector wall which withdrawal means are connected to recirculating means for passing gaseous flow back into said central gas zone in a location in proximity to said inner outlet deflector wall, said inlet and outlet deflector walls being sloped downwardly and inwardly within said central gas zone.

4,520,751
RECEIVING BELT MECHANISM
Albert I. Morse; Douglas H. Crowell, both of Beverly, and Thomas J. Gilligan, III, Danvers, all of Mass., assignors to USM Corporation, Farmington, Conn.
Filed Nov. 30, 1983, Ser. No. 556,451
Int. Cl.³ B05C *1/02*
U.S. Cl. 118—203 **7 Claims**



1. A conditioning apparatus for an intermittently rotating annular webbed belt within a frame portion of a powder deposition machine having means thereon for applying a configuration of fusable powder to be heated and cooled and joined with a substrate, comprising:

a residue scraping means arranged over said annular belt;

a fluid applying means arranged over said belt adapted to apply a fluid thereon subsequent to scraping thereof; and

a fluid spreading means arranged over said belt to disperse an even distribution of fluid on said belt from said fluid applying means as said annular belt rotates; said scraping, applying and spreading means each being independently pivotable with respect to said belt for servicing thereof, and each scraping, applying and spreading means each also being independently lockable in an upright orientation to further facilitate servicing of said means or said belt.

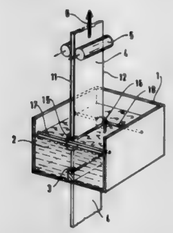
4,520,752
DEVICE FOR DEPOSITING A LAYER OF POLYCRYSTALLINE SILICON ON A CARBON TAPE
Christian Belouet, Sceaux, France, assignor to Compagnie General d'Electricite and Societe Nationale Elf Aquitaine, both of Paris, France
Filed Aug. 24, 1984, Ser. No. 643,927
Claims priority, application France, Aug. 30, 1983, 83 13915
Int. Cl.³ B05C *3/172*
U.S. Cl. 118—405 **1 Claim**

1. Device for depositing a layer of polycrystalline silicon on a carbon tape, comprising:

a crucible adapted to contain a bath of molten silicon,

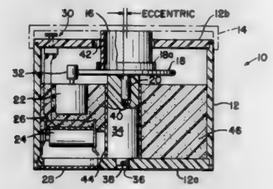
means for moving vertically upwards a carbon tape at least partially immersed in said bath and passing lengthwise and vertically through an equilibrium surface of said bath, whereby said layer is deposited on said tape,

two vertical channels of semicircular cross-section adapted to be partially immersed in said bath with each one surrounding a respective lateral edge of said tape, whereby the surface of said bath is raised by capillary action in the vicinity of said lateral edges of said tape, and



supports to which said channels are attached and which are supported by a wall of said crucible.

4,520,753
EGG LATHE
Robert E. Breuninger, Lancaster, Pa., assignor to John F. Hinkle, Jr., Columbia and Wendell B. Stockdale, Lancaster, both of, Pa., a part interest
Continuation-in-part of Ser. No. 415,652, Sep. 7, 1982, abandoned. This application Apr. 27, 1984, Ser. No. 605,373
Int. Cl.³ B05C *13/02*
U.S. Cl. 118—500 **15 Claims**



1. An egg lathe for use in coloring eggs, said egg lathe comprising:

(a) a circular egg cup open at the upper end and rotatable about the vertical longitudinal axis of rotation;

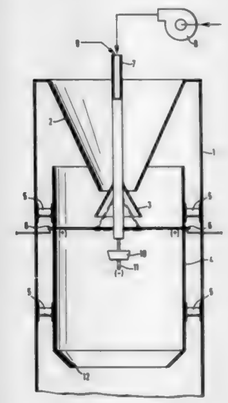
(b) a horizontal driven disc coaxially joined to the bottom of said egg cup, said driven disc having a diameter at least as large as the diameter of said egg cup and further having a coaxial depending stem;

(c) a vertically mounted electric motor having a drive shaft engaging the perimeter of said driven disc for rotating said driven disc and said egg cup;

(d) an elongated vertical support means having a downward extending aperture for rotatably receiving the depending stem on said driven disc, said support means being adjustable for controlling the driving friction between said motor and said driven disc; and,

(e) a cellular polymeric block adapted for embedding and supporting in functional relationship therein, said electric motor and said vertical support means.

4,520,754
PROCESS AND APPARATUS FOR ELECTROSTATIC APPLICATION OF LIQUIDS OR POWDERS ON SUBSTANCES OR OBJECTS
Lester Gange, 25, Bellevue La., Bushey Heath, Hertfordshire, and Reginald J. H. Pannell, 44 Tudor Ave., Worcester Park, Surrey, both of England, assignors to Lester Gange, Bushey Heath; Reginald James Harding Pannell, Worcester Park, both of, England and E.D.T. Electrostatic Deposition Technologies S.p.A., Milan, Italy
Filed Dec. 14, 1982, Ser. No. 449,654
Claims priority, application Italy, Feb. 2, 1982, 19402 A/82
Int. Cl.³ B05B *5/02;* **B05D** *1/04*
U.S. Cl. 118—626 **9 Claims**

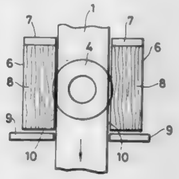


3. Apparatus for the electrostatic coating of products with a liquid or powder material comprising a feeding means for introducing the product to be coated, a non-conductive tube comprising a wall surrounding the end of said feeding means, said feeding means having first diffusion means at the end thereof for producing a substantially continuous free-falling circular curtain of the product against the walls of said tube, a high voltage electrode adjacent the wall of said tube for producing a corona discharge zone of a first polarity to charge the product with said first polarity, a central duct extending into said tube for introducing the coating material therein, second centrifugal diffusion means at the end of said duct for diffusing outwardly the coating material, a high voltage electrode adjacent said second diffusion means for producing a corona discharge zone of a second polarity opposite to said first polarity to charge the material with said second polarity, whereby the coating material is electrostatically attracted to the product to coat the product.

4,520,755
SPRAY TYPE COATING APPARATUS
Yuzo Inukai, Shizuoka, and Yoshiaki Shichijo, Kanagawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 7, 1983, Ser. No. 530,170
Claims priority, application Japan, Sep. 7, 1982, 57-135660[U]
Int. Cl.³ B05B *15/04*
U.S. Cl. 118—629 **2 Claims**

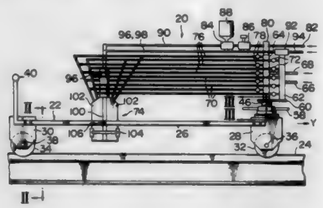
1. In a spray type coating apparatus of the type in which paint is electrostatically sprayed on a substantially vertically disposed moving web, the improvement comprising a pair of flat substantially vertically disposed boards located adjacent said web on both sides thereof with each of said boards having

a plurality of parallel vertically extending protrusions thereon and a liquid supply unit on the top of said boards for providing



a downwardly flowing uniform film of a cleaning liquid for removing oversprayed paint.

4,520,756
BUILD-UP SPRAYING APPARATUS
Mitsuji Hayashi, Tachikawa; Hideo Endo, Sagamihara; Hirotsugu Oishibashi, Musashino; Takeo Aichi, Kitakyushu, and Shigeru Sasaki, Niiza, all of Japan, assignors to Japanese National Railways, Tokyo and Kyushu Tetsudo Kiki Mfg., Co., Ltd., Fukuoka, both of, Japan
Filed Jun. 20, 1984, Ser. No. 622,716
Claims priority, application Japan, Jul. 20, 1983, 58-130867
Int. Cl.³ B05B *7/16*
U.S. Cl. 118—699 **19 Claims**



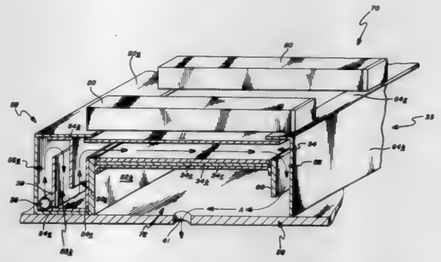
1. A build-up spraying apparatus comprising a truck adapted to travel on an article to be subjected to build-up spraying and a build-up spraying burner supported on said truck to carry out build-up spraying with respect to said article, wherein said build-up spraying burner comprises:

a fluid control device for spreading build-up metal powder, said fluid control device being adapted to eject build-up metal powder together with carrier gas toward said article to spread build-up metal powder in the direction perpendicular to the traveling direction of said apparatus;

a device for controlling the supply of control gas so as to alternately supply to said fluid control device two systems of control gas in a pulse-like manner which act to positionally control the spreading rate of build-up metal powder in the spreading direction; and

at least one heating burner body for heating build-up metal powder ejected from said fluid control device, said heating burner body being adapted to vary the amount of heat according to the difference in injection rate of build-up metal powder in the spreading direction.

4,520,757
PROCESS GAS INTRODUCTION, CONFINEMENT AND EVACUATION SYSTEM FOR GLOW DISCHARGE DEPOSITION APPARATUS
Prem Nath, Rochester; Kevin R. Hoffman, Sterling Heights, and Timothy D. Laarman, Almont, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.
Continuation-in-part of Ser. No. 437,075, Oct. 27, 1982, Pat. No. 4,462,333. This application Dec. 23, 1983, Ser. No. 564,863
Int. Cl.³ C23C *11/00*
U.S. Cl. 118—723 **3 Claims**



1. In an isolated glow discharge deposition chamber adapted for the deposition of layers of semiconductor material onto a large area substrate, the chamber including: a cathode spaced from the substrate; means for introducing streams of process gas into the plasma region formed between the cathode and substrate; and means for energizing the cathode to disassociate the process gas into plasma and deposit semiconductor material onto the substrate; the improvement comprising, in combination:

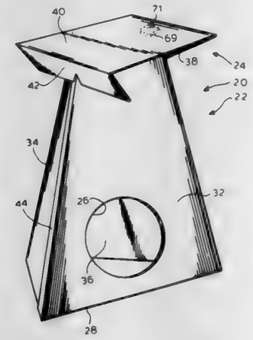
an elongated, apertured manifold adapted to introduce streams of process gas into the deposition chamber, said manifold spaced upstream of and remote from said plasma region;

pattern prevention means operatively disposed upstream of the plasma region, said means cooperatively associated with the manifold so as to (1) introduce only uniform streams of process gas into the deposition chamber, (2) homogenize and interdiffuse all of the adjacent streams of process gas into a single stream prior to the entry thereof into the plasma region; and (3) move the single, substantially uniform and homogeneous stream of process gas through the plasma region at a single rate of flow, whereby the formation of patterns is substantially prevented and semiconductor material of substantially uniform chemical, optical and electrical characteristics is deposited.

4,520,758
ANIMAL HOUSE
John A. Pfriender, 3 Steuben Dr., Jericho, N.Y. 11753
Filed Feb. 22, 1983, Ser. No. 468,451
Int. Cl.³ A01K *1/03*
U.S. Cl. 119—19 **17 Claims**

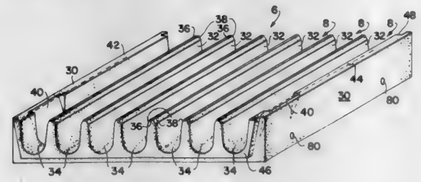
1. A combination animal house and perch comprising; an elongated vertical base having an upper end and a lower end formed of a circumferential sidewall arrangement surrounding a hollow interior, a substantially horizontal Platform on the upper end of the base to form an animal perch when the lower end of the base engages a support surface, the sidewall arrangement tapering inwardly from the lower end to the upper end facilitates support of an animal perched on the platform, and an access opening in the sidewall arrangement to permit an animal to enter and leave the hollow interior of the sidewall arrangement thereby forming a house for the animal, the house and platform being formed of a unitary piece of material, a portion of the unitary piece of material used to form the base including three spaced fold lines to form three serially arranged panels and an attached coupling flap whereupon folding of the panels about the fold lines brings the flap into coupling engagement

with a coupling receiving surface on one of the panels in order to shape the base into a three-sided configuration of triangular cross section, the portion of the unitary piece of material used to form the platform including three spaced fold lines to form a serial arrangement of three platform panels, and one of the



fold lines interconnecting the base with one of the platform panels so that when the platform panels are folded about the fold lines a free edge of the platform is brought into engagement with a platform receiving surface on the base so that the platform is positioned as an animal perch.

4,520,759
WASTE FLUSHING UNIT FOR HOG FARROWING
Thomas J. Deters, Rte. 1, Box 84, Sigel, Ill. 62462
Filed Jan. 20, 1984, Ser. No. 573,029
Int. Cl.³ A01K *1/01*
U.S. Cl. 119—28 **12 Claims**



1. Apparatus for carrying waste comprising a unitary structure having opposed side walls and a bottom extending between said side walls, at least one interior dividing wall between said side walls forming a plurality of generally parallel channels for carrying said waste, each of said interior dividing wall and said side walls having an upper surface which lies in a common plane, the upper end of said interior dividing wall being chamfered toward said upper surface to support a waste permeable floor and to trap a minimum amount of waste between the end of said interior dividing wall and said floor.

4,520,760
HEAT EXCHANGER OUTLET ARRANGEMENT
Russell B. Covell, Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Apr. 23, 1984, Ser. No. 602,857
Int. Cl.³ F22D *1/00;* **C10J** *3/48*
U.S. Cl. 122—7 R **14 Claims**

1. A fluid cooled heat exchanger for cooling product gas comprising:

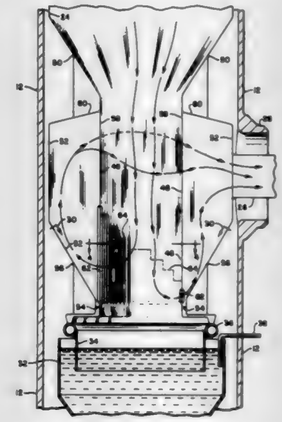
a gas tight water wall, having a gas inlet at the top for receiving hot product gas with entrained solids and a gas outlet near the bottom for discharging cooled product gas, for radiant heat exchange from the product gas to fluid passing through the water wall;

an inward taper in the water wall near the bottom of the water wall;

a first portion of the tapered water wall forming an inner gas tight heat exchange surface enclosing a passage for conducting the product gas beyond the inward taper;

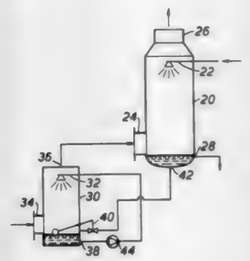
a second portion of the water wall forming an outer gas tight heat exchange surface surrounding the inner gas tight heat exchange surface and defining an annular passage therebetween, the annular passage in fluid communication with the gas outlet; and

a plurality of openings in the inner gas tight heat exchange



surface for passing the product gas from within the inner gas tight heat exchange surface to the annular space between the inner and outer heat exchange surfaces, said openings over a range of sizes with the largest opening most distant from the gas outlet and the smallest opening nearest the gas outlet and with openings of graduated area therebetween whereby the path of least resistance to the product gas flow from within the inner gas tight heat exchanger surface to the annular space between the inner and outer heat exchange surfaces is most distant from the gas outlet and the path of most resistance is nearest the gas outlet.

4,520,761
DIRECT CONTACT WATER HEATER
Gerald D. Arnold, Huddersfield, England, assignor to John Thurley Limited, Harogate, England
Filed May 20, 1983, Ser. No. 496,508
Claims priority, application United Kingdom, May 20, 1982, 8214681
Int. Cl.³ F22B *1/02*
U.S. Cl. 122—31 R **6 Claims**



1. A direct contact water heater comprising: a main chamber

including a hot gas inlet and cold water feed means to feed cold water in said main chamber, whereby to effect direct contact heat exchange between said hot gas and said cold water, the improvement wherein said heater also includes an antechamber having a hot gas outlet coupled to said inlet of said main chamber, and including means to input hot gas into said antechamber and hot water feed means to feed hot water into said antechamber, the temperature of said hot water being higher than the dew point of the hot gas input into the antechamber whereby the dew point of the hot gas outputted by the antechamber is increased and whereby the cold water is heated to a temperature higher than the dew point of the hot gas fed into the antechamber, said antechamber including a hot water outlet coupled to said hot water feed means whereby said hot water is recycled through said antechamber, and a reservoir, the level of which is maintained by flow-control means, said main chamber including a heated water outlet, said outlet being coupled to said flow-control means to maintain the level in said reservoir in the antechamber.

4,520,762

FORCED THROUGH-FLOW STEAM GENERATOR

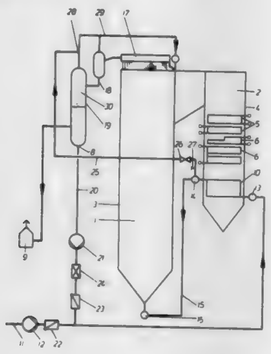
Heino Martin, Oberhausen, Fed. Rep. of Germany, assignor to Deutsche Babcock Werke Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Sep. 12, 1983, Ser. No. 531,233

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1982, 3236979

Int. Cl.³ F22D *7/00*

U.S. Cl. 122—406 ST **5 Claims**



1. Forced flow-through steam generator comprising: feed water pump, economizer, evaporator, and water separator having a vapor space above its water level connected in series; a circulation pipe connected to a water outlet of said water separator; said economizer being located at a level higher than an inlet of said evaporator; evaporation pipe means with valve means, exit means of said economizer being connected by said evaporation pipe means to the highest point of said evaporator, during filling the steam generator with water, water pressing steam bubbles into said vapor space above the water level by said evaporation pipe means to fill the steam generator with a substantially small quantity of feed charging water without vapor remaining in said economizer for preventing pressure reduction in the steam generator occurring when charging with a substantially large quantity of water.

4,520,763

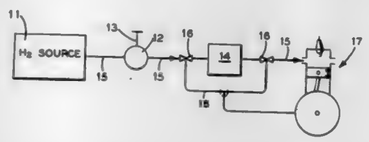
FUEL INJECTION SYSTEM

Franklin E. Lynch, Conifer, and Nathaniel R. Baker, Denver, both of Colo., assignors to Ergenics Inc., Wyckoff, N.J.

Continuation of Ser. No. 305,409, Sep. 25, 1981, abandoned. This application Jun. 6, 1984, Ser. No. 617,713

Int. Cl.³ F02D *21/02*

U.S. Cl. 123—1 A **22 Claims**



1. A fuel injection system for an internal combustion engine coupleable to a source of gaseous hydrogen comprising a means for controlling pressure, a means to selectively vary said pressure control means, a chamber into which hydrogen gas of regulated pressure can flow from said pressure control means, conduit means between said pressure control means and said chamber and a combustion volume of said internal combustion engine and means, timed to said internal combustion engine, whereby during a fuel intake event of said combustion volume of said engine flow of hydrogen from said chamber to a combustion volume of said engine is permitted and from said pressure control means to said chamber is prohibited and whereby the absence of a fuel intake event of said combustion volume of said engine, flow of hydrogen is permitted from said pressure control means to said chamber and prohibited from said chamber to said combustion volume of said internal combustion engine.

4,520,764

STARTER FOR AN ALCOHOL ENGINE

Masuo Ozawa, Yokohama, and Toshio Hirota, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

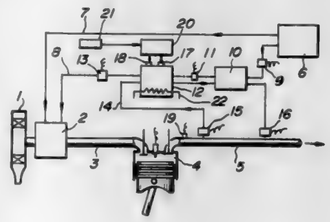
PCT No. PCT/JP79/00329, § 371 Date Aug. 28, 1980, § 102(e) Date Aug. 27, 1980, PCT Pub. No. WO80/01398, PCT Pub. Date Jul. 10, 1980

PCT Filed Dec. 27, 1979, Ser. No. 205,448

Claims priority, application Japan, Dec. 28, 1978, 53-161047

Int. Cl.³ F02M *27/02, 31/08*

U.S. Cl. 123—3 **8 Claims**



1. In combination, an alcohol engine which operates exclusively on alcohol fuel, a source of alcohol fuel connected to said engine, and a starter for said engine, said starter comprising:

means connected to said fuel source for receiving alcohol fuel from said fuel source and reforming a portion of said alcohol fuel during operation of said engine into gaseous fuel containing hydrogen and carbon monoxide as its main components, comprising reforming means for producing said gaseous fuel, and storage means for storing said gaseous fuel, and wherein said reforming means is positioned to receive heat from an exhaust pipe, and said storage means is located in a position remote from said engine and said exhaust pipe so as not to be affected by heat from said engine or said exhaust pipe; and

means for supplying said gaseous fuel to said engine from said storage means only during starting periods of said engine.

4,520,765

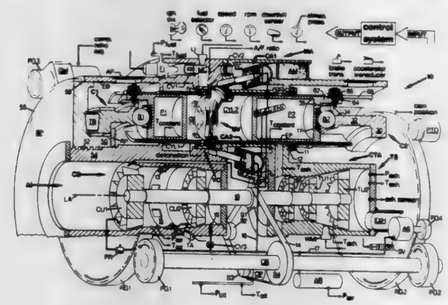
INTERNAL COMBUSTION ENGINE AND OPERATING CYCLE THEREFOR

Anthony Gerace, 28 Allegheny Ave., #2601, Towson, Md. 21204

Filed Apr. 28, 1983, Ser. No. 489,549

Int. Cl.³ F02G *1/044*

U.S. Cl. 123—27 R **20 Claims**



1. A method for extracting work from a fuel comprising the steps of:

forming a homogeneous mixture of a combustion supporting gas and a fuel;

compressing the homogeneous mixture of a combustion supporting gas and a fuel to a predetermined pressure less than that which would effect ignition;

compressing a quantity of combustion supporting gas to a predetermined pressure sufficient to cause the temperature of the so-compressed compression supporting gas to increase to a temperature greater than that of the ignition temperature of said so-compressed homogeneous mixture of a combustion supporting gas and a fuel;

introducing the so-compressed combustion supporting gas into the so-compressed mixture of a combustion supporting gas and fuel to cause ignition thereof and the formation of combustion products;

introducing the combustion products of the so-ignited mixture of the combustion supporting gas and fuel into the compressed combustion supporting gas to cause the addition of heat thereto; and

extracting work from the combustion products of said so-ignited mixture and the additionally heated combustion supporting gas.

4,520,766

DUAL FUEL VALVE

Richard T. Akeroyd, 3803 67th St., Lubbock, Tex. 79403

Continuation-in-part of Ser. No. 378,100, May 14, 1982, Pat. No. 4,463,734. This application Jun. 4, 1984, Ser. No. 616,855

Int. Cl.³ F02B *49/00;* **F02M** *21/02*

U.S. Cl. 123—27 GE **6 Claims**

1. On a diesel engine

a. having an inlet air conduit,

b. a governor on the engine,

c. an output rod from the governor,

d. said output rod controlling liquid injectors on the engine, wherein the improvement comprises in combination:

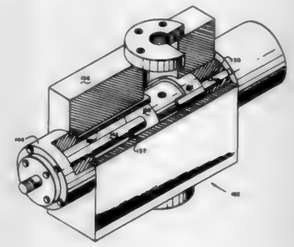
e. a gas metering valve including a cylinder,

f. a plug in the cylinder, said plug connected to the output rod, so that

g. means connected to said plug for moving said plug axially in the cylinder responsive to the movement of the output rod of the governor,

h. an inlet cylinder port into said cylinder,

i. said inlet port entirely closed by said plug when the load of the engine is very small as reflected by the position of the governor output rod,



j. an outlet cylinder port entirely closed by said plug when the load of the engine is very small,

l. said inlet and outlet ports shaped so that gas flow through the metering valve is proportional to the movement of the plug,

m. said inlet port connected to a source of gas fuel, and

n. the outlet port connected to the air inlet conduit.

4,520,767

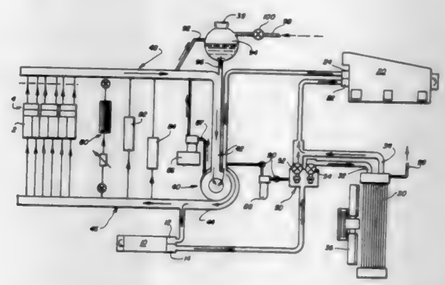
LOW FLOW COOLING SYSTEM AND APPARATUS

Leslie A. Roettgen; Beth A. Webber; Robert M. Brooks, and Robert J. Layman, all of Columbus, Ind., assignors to Cummins Engine Company, Columbus, Ind.

Filed Sep. 16, 1983, Ser. No. 533,099

Int. Cl.³ F01P *3/12, 7/16*

U.S. Cl. 123—41.1 **14 Claims**



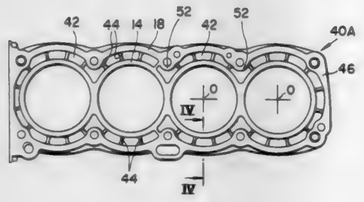
1. A cooling system for an internal combustion engine having an oil cooler, said system operative in various modes and comprising a combination of a heat exchanger and a heat exchanger bypass passage in parallel connection, said combination being downstream of the oil cooler and serially connected to a discharge end of the oil cooler, pumping means for circulating a heat exchange medium through said cooling system and the oil cooler whereby the temperature potential across the heat exchanger is increased, thereby permitting a reduction in the size of the heat exchanger, and control means for sensing the temperature of the heat exchange medium at at least one predetermined location in the cooling system and in response to the temperature sensed, effecting flow of substantially all of the medium discharged from the oil cooler through only the combination heat exchanger when the cooling system is in a full cooling mode; effecting flow of substantially all of the

medium discharged from the oil cooler through only combination bypass passage when the cooling system is in a full heating mode; and effecting predetermined proportioning of substantially all of the medium discharged from the oil cooler between the heat exchanger and the bypass passage of said combination when said cooling system is operating in a mode intermediate the full cooling and full heating modes.

4,520,768
CYLINDER BLOCK OF INTERNAL COMBUSTION ENGINE

Hitoshi Shimonosono, Yokosuka; Naoki Ogawa, and Yoshinori Hirano, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 11, 1984, Ser. No. 649,505
Claims priority, application Japan, Sep. 13, 1983, 58-140864[U]
Int. Cl.³ F01P *3/02*
U.S. Cl. 123—41.44 **6 Claims**



1. In an internal combustion engine including a structure defining aligned cylinders,

walls of said cylinders which are integrally connected at their peripheral portions;

outer walls which surround said cylinder walls to form therebetween a coolant jacket into which the coolant is introduced in a liquid state and from which the coolant is discharged in a gaseous state;

first means for maintaining the level of the liquid coolant in the coolant jacket at such a level as to entirely cover the cylinder walls;

second means for controlling condensation of the gaseous coolant issued from said coolant jacket in accordance with temperature of the liquid coolant in the coolant jacket;

a plurality of spaced ribs disposed in said coolant jacket with their laterally opposed sides integrally connected with said cylinder walls and said outer walls, said ribs extending essentially along the length of the cylinders from the bottom portion of the coolant jacket thereby to form a plurality of cells in said coolant jacket; and

third means for providing a fluid communication between the cells.

4,520,769
ENGINE HEATING SYSTEM

John D. Kratzer, 125 Stearman, Erie, Colo. 80516

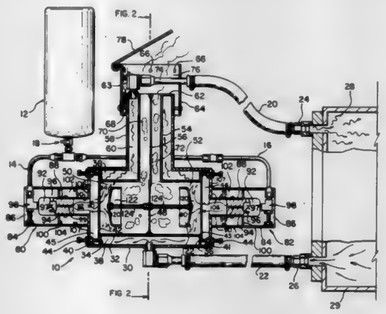
Filed Jul. 30, 1984, Ser. No. 635,405
Int. Cl.³ F02N *17/02*
U.S. Cl. 123—142.5 R **8 Claims**

1. A heating system for heating a fluid by use of a supply gas comprising:

an elongated heater tube means having a central longitudinal axis mounted in a horizontal attitude including concentrically mounted horizontally extending outer tube means and inner tube means divided by central plate means and closed by end plate means for providing a pair of oppositely disposed combustion chambers and an outermost fluid chamber surrounding said combustion chambers;

an elongated stack tube means having a central longitudinal axis centrally mounted on said elongated heater tube means in a vertical attitude including concentrically mounted vertically extending outer tube means connected to said horizontally extending outer tube means and vertically extending inner tube means connected to said horizontally extending inner tube means with an end plate means mounted therebetween for providing a vertically extending fluid chamber connected to said horizontally extending fluid chamber in circumjacent relationship to a vertically extending exhaust chamber connected to each of said pair of oppositely disposed combustion chambers;

a pair of oppositely disposed gas burner means mounted on opposite ends of said elongated tubular heater means for simultaneously supplying a combustible air-gas mixture to and simultaneously burning a combustible air-gas mixture in each of said oppositely disposed combustion chambers;



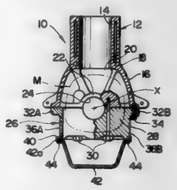
low temperature fluid inlet means for connecting said outermost horizontally extending fluid chamber means to a relatively low temperature body of fluid in a fluid storage means and for continuously supplying and filling said outermost horizontally and vertically extending fluid chamber means with fluid during operation of the heating system; and

high temperature fluid outlet means for connecting said vertically extending fluid chamber means to the fluid storage means and creating a flow of fluid into said horizontal fluid chamber means and laterally around each of said oppositely disposed combustion chambers and then upwardly through said vertically extending fluid chamber means whereby the fluid is first heated in said horizontal fluid chamber means and subsequently further heated in said vertical fluid chamber means.

4,520,770
AUTOMOTIVE INTERNAL COMBUSTION ENGINE WITH BEARING BEAM STRUCTURE

Naoki Ogawa, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 29, 1982, Ser. No. 428,268
Claims priority, application Japan, Oct. 7, 1981, 56-148918[U]
Int. Cl.³ F02F *7/00*
U.S. Cl. 123—195 H **8 Claims**



1. An automotive internal combustion engine comprising:

a cylinder block having a bottom portion including a plurality of bearing sections; and

a bearing beam structure secured to the bottom portion, said bearing beam structure including:

a plurality of main bearing cap sections each of said bearing cap sections being aligned with a respective one of said plurality of bearing sections to form therewith a plurality of axially aligned bores for rotatably supporting a journal of a crankshaft, each of said bearing cap sections including opposed substantially vertical side portions defining a surface area;

first and second side walls respectively connected respectively with substantially the entire surface area of said opposing side portions of said plurality of bearing cap sections to securely connect said bearing cap sections with each other, said first and second side walls extending generally parallel to an axis of said axially aligned bores;

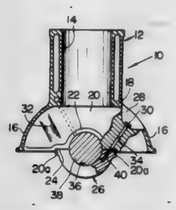
first and second beam sections respectively attached to and connecting opposite upper corner portions of said plurality of bearing cap sections, said first and second beam sections being integral with and projecting outwardly from said first and second side walls, respectively, and extending parallel with said axis; and

third and fourth beam sections respectively attached to and securely connecting opposite lower corner portions of said plurality of bearing cap sections, said third and fourth beam sections projecting outwardly from said first and second side walls, respectively, and extending parallel with said axis.

4,520,771
INTERNAL COMBUSTION ENGINE

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 21, 1983, Ser. No. 544,206
Claims priority, application Japan, Oct. 26, 1982, 57-162235[U]
Int. Cl.³ F02F *7/00*
U.S. Cl. 123—195 H **10 Claims**



1. An internal combustion engine comprising:

a cylinder block including a plurality of integral main bearing bulkheads, and an integral skirt section;

means defining first and second through-holes formed in each bearing bulkhead, each through-hole having a first end opened to said skirt section, and a second end opened to a bottom surface of said bearing bulkhead, an axis of each through-hole being inclined relative to a vertical plane containing an axis of a crankshaft;

means defining a depression at the bottom surface of said bearing bulkhead;

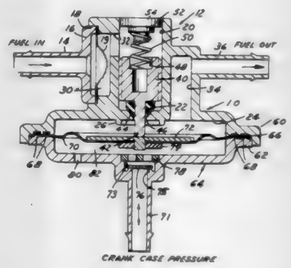
a plurality of bearing caps each of which fits in said depression and is generally semicylindrical, each bearing cap being formed with first and second threaded holes which are aligned with said first and second through-holes, respectively, an axis of each threaded hole being inclined relative to said vertical plane and extending straight and substantially along the curvature of said bearing cap; and

first and second bolts disposed respectively in said first and second through-holes, each bolt having a first end section located in said through-hole of said skirt section, and a second end section which is threaded and screwed in a respective one of said first and second threaded holes of said bearing cap, each bolt being dimensioned to extend through its respective through-hole and terminate in its respective threaded hole.

4,520,772
FUEL SHUT-OFF VALVE FOR INTERNAL COMBUSTION ENGINES

William A. Scott, Cass City, and Roger N. Smith, Caro, both of Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Mar. 2, 1984, Ser. No. 585,494
Int. Cl.³ F02B *77/08*
U.S. Cl. 123—198 DB **1 Claim**



1. An automatic fuel shut-off valve for use in a fuel line below a fuel tank in a fuel supply system for an internal combustion engine which comprises:

(a) a housing shell having a fuel inlet passage and a fuel outlet passage in line on a coincident first axis, an inlet chamber and an outlet chamber in said housing on opposite sides of a central axis normal to said first axis, each communicating respectively with the said inlet and outlet passages, a central cylinder formed between said chambers on said central axis open at one end to said inlet chamber and having a valve seat at the other end open to said outlet chamber,

(b) a slide valve in said cylinder having an open and closed position and shaped to allow flow around its periphery from said inlet chamber to said outlet chamber, and a valve end formed on said slide valve to close said seat in the closed position of said valve, said slide valve having a projection extending below said seat into a diaphragm chamber formed in said housing,

(c) means to bias said valve to a closed position,

(d) a diaphragm in said diaphragm chamber positioned to act on said projection to open said valve against said biasing means to allow fuel to flow from said inlet to said outlet,

(e) a connection in said housing for introducing crankcase pressure of an internal combustion to one side of said diaphragm, and

(f) a unidirectional valve in said connection so that only positive pressure pulses reach said diaphragm to open said valve when an engine is running.

4,520,773
FUEL INJECTION CLEANING AND TESTING SYSTEM AND APPARATUS

James R. Koslow, Westland, Mich., assignor to Miller Special Tools Division Triangle Corporation, Stamford, Conn.

Continuation of Ser. No. 358,519, Mar. 18, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 650,345
Int. Cl.³ B08B *3/08*; F02B *77/04*
U.S. Cl. 123—198 A **24 Claims**

1. An apparatus for cleaning and testing the fuel injection valve system of a vehicle engine, said valve system including at least one electronically pulsed fuel injection valve operably secured to and associated with said engine, means for supplying fuel to said at least one valve, means for controlling said at

least one electronically pulsed valve to feed fuel to said engine, and means for powering said controlling means, said apparatus comprising:

means for feeding a liquid into said fuel supplying means of said vehicle engine, comprising:

an outlet conduit,

means for storing a supply of said liquid,

means separate from said fuel supplying means for pumping said liquid from said storing means to said outlet conduit, and

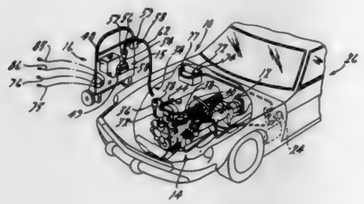
means for communicating said storing means with said pumping means;

means for controlling said liquid feeding means, comprising:

means for operating said at least one electronically pulsed fuel injection valve disposed in operable association with said vehicle engine,

switch means for determining the commencement or cessation of operation of said feeding means, and

means for operably associating said valve operating means and said switch means with said powering means;



means for operably associating said outlet conduit of said feeding means with said valve fuel supplying means and disabling said valve fuel supplying means to permit said feeding means to be the source of the fuel supply for said at least one fuel injection valve;

means for measuring the flow through one fuel injection valve at a remote location during operation of the injection valve while the injection valve is operably secured to and associated with said engine, said measuring means being integrated with said fuel supplying means;

a device for transporting said control, said communicating means, said pumping means, said storage tank, said outlet conduit and said measuring means to and from operable association with said engine; and

valve means disposed on said transporting device for actuating said measuring means when said valve means is disposed in a first position and for bypassing said measuring means when said valve means is disposed in a second position, said measuring means being readily removable from operable association with said valve system by operably disassociating said outlet conduit operably associating means from said feeding means.

4,520,774

FUEL INJECTION APPARATUS WITH PILOT INJECTION AND MAIN INJECTION IN INTERNAL COMBUSTION ENGINES

Erhard Sitter, Horb, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

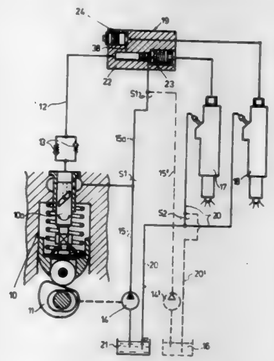
Filed Aug. 24, 1984, Ser. No. 644,071

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1983, 3330774

Int. Cl.³ F02M *45/02, 59/38*

U.S. Cl. 123—300 **15 Claims**

1. A fuel injection apparatus with pilot injection and main injection in internal combustion engines, in particular Diesel engines, having a main injection nozzle supplied with a main injection quantity by a high-pressure injection pump and a hydraulic pilot-injection auxiliary pump driven by the supply pressure of the high-pressure injection pump, said auxiliary pump arranged to contain a pilot injection piston and a work chamber disposed in proximity thereto and from which the pilot injection quantity is positively displaced to a pilot injection nozzle, means for adjusting the useful stroke of the pilot injection piston and for prespecifying the pilot injection quantity (Q_{VE}), the combination comprising, a storage piston provided independently of said pilot injection piston and mechanically separate therefrom for the determination of said pre-



specifiable injection interval between said pilot injection and said main injection, said pilot injection piston being disposed such that while avoiding an initial pressure division, the supply pressure generated by said high-pressure injection pump acts solely upon the pilot injection piston and subsequently, as a result of the stroke movement of said piston, uncovers a pressure conduit which leads to the storage piston.

4,520,775

INTAKE SYSTEM FOR MULTIPLE VALVE TYPE ENGINE

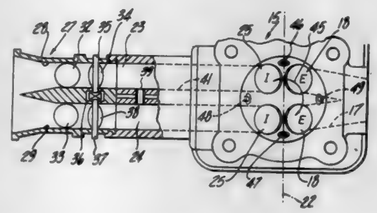
Haruo Nakamura, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Nov. 19, 1981, Ser. No. 322,768

Claims priority, application Japan, Nov. 20, 1980, 55-163988

Int. Cl.³ F02M *35/10*

U.S. Cl. 123—308 **11 Claims**



1. In an induction system for an internal combustion engine of the type having a pair of intake ports for providing a charge to a common chamber of the engine, separate intake passages each independently serving a respective one of said intake ports, throttle valve means in said intake passages for controlling the flow therethrough so that an idle charge is delivered to the chamber primarily through a first of said intake passages and wide open load charge requirements are supplied through both of said induction passages, the improvement comprising an interconnecting passage extending between said first intake passage and the second intake passage downstream of said throttle valve means for providing communication between said passages regardless of the position of said throttle valve means.

4,520,776

INTAKE PORT STRUCTURE FOR INTERNAL COMBUSTION ENGINES

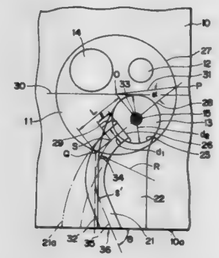
Tokuzi Ishida, Hamamatsu, and Kiyotaka Aono, Toyooka, both of Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Kami, Japan

Continuation of Ser. No. 430,063, Sep. 30, 1982, abandoned. This application Apr. 4, 1984, Ser. No. 596,563

Claims priority, application Japan, Feb. 8, 1982, 57-17420

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—308 **1 Claim**



1. An intake port structure for an internal combustion engine having a plurality of cylinders, comprising:

(a) a cylinder head including combustion chambers each having a longitudinal central axis and supporting an intake valve and an ignition plug in each of said combustion chambers, said intake valve having a stem slidably supported by said cylinder head, said cylinder head having a joint surface;

(b) a primary intake passage defined in said cylinder head and communicating with each of said combustion chambers, said primary intake passage having one end defining a primary intake port directed toward said stem and said ignition plug, said primary intake passage at the other end terminating in an opening at said joint surface;

(c) a secondary intake passage defined in said cylinder head and communicating with each of said combustion chambers, said secondary intake passage having a secondary intake port opening into said combustion chamber, and said primary intake port opening into said secondary intake passage;

(d) a two-barrel carburetor having a primary intake passageway for supplying air-fuel mixture to the combustion chambers under a full range of loads and a secondary intake passageway for supplying an air-fuel mixture to the combustion chambers under higher loads, and an intake manifold connected to said joint surface of said cylinder head and to said carburetor, said intake manifold having a plurality of primary branches each of which provides communication from the primary intake passageway to a respective said primary intake passage, said primary branches being arranged symmetrically with respect to a central axis of the intake manifold, said intake manifold also having a plurality of secondary branches each of which provides communication from said secondary intake passageway to a respective said secondary intake passage;

(e) said primary intake passage having a first straight end portion leading to said primary intake port and having a length which is greater than the diameter of said primary intake port, said first straight end portion having a first longitudinal center line which when extended outwardly beyond the primary intake port first intersects the stem of the intake valve and then intersects the periphery of the combustion chamber at a point thereon, said point being connected to the longitudinal center axis of said combustion chamber by a straight line which extends at an angle ranging from 20° to 30° with respect to said first center line when viewed in a plane which extends perpendicular to the longitudinal central axis of said cylinder;

(f) said primary intake passage including a second straight end portion which terminates in said opening at said joint surface, and a smoothly curved arcuate central portion which connects said first and second straight end portions, said arcuate central portion having an arcuate central axis which tangentially contacts said first center line and at a location spaced therefrom also tangentially contacts an imagery straight working line which extends perpendicularly with respect to said joint surface and intersects said first center line at a working point which is adjacent but spaced outwardly from the periphery of said cylinder, said working point being spaced from the longitudinal axis of the intake valve stem by a distance which is greater than the diameter of the secondary intake port, and said arcuate central portion continuing to smoothly curve outwardly beyond its tangential contact with said working line for connection with said second straight end portion;

(g) said second straight end portion having a second longitudinal center line which tangentially contacts said arcuate central axis and which intersectingly extends at an angle of less than 90° with respect to said joint surface when viewed in said plane which is perpendicular to said longitudinal central axis.

4,520,777

SYSTEM FOR STABILIZING IDLING OF VEHICULAR ENGINE

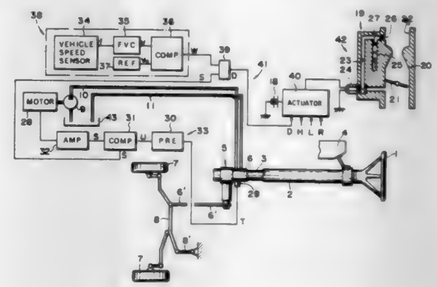
Yukiyoshi Hatori; Eiji Yagi, and Yuji Kobari, all of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 30, 1982, Ser. No. 445,558

Claims priority, application Japan, Dec. 15, 1981, 56-202316

Int. Cl.³ F02M *3/00*

U.S. Cl. 123—339 **6 Claims**



3. A system for stabilizing idling operation of a vehicular engine, comprising:

a power steering system comprising a hydraulic power unit for providing power assistance to the steering system of the vehicle, a hydraulic fluid pump for supplying a hydraulic fluid under pressure to the power unit, sensing means for sensing at least one variable indicating steering conditions of the vehicle, and controlling means connected with the sensing means for generating a driving signal to control the fluid pump in an on/off control mode in accordance with the variable sensed by the sensing means,

low speed detecting means for generating a low speed signal when a vehicle speed is below a predetermined speed,

judging means, connected with said controlling means of said power steering system and said low speed detecting means, for generating an actuating signal when both of said driving signal and said low speed signal are present, and

engine rotational speed adjusting means, connected with said judging means, for increasing the supply of an air fuel

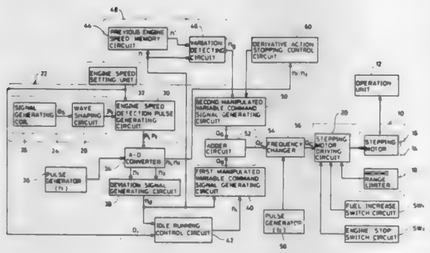
mixture to the engine by a predetermined amount when said actuating signal is generated by said judging means.

4,520,778

METHOD OF CONTROLLING ENGINE SPEED FOR INTERNAL COMBUSTION ENGINE

Hirotoshi Nanjo, Mishima; Hiroo Satou, Susono, and Osamu Takahashi, Numazu, all of Japan, assignors to Kokusan Denki Co., Ltd., Numazu, Japan

Filed Oct. 11, 1983, Ser. No. 540,368
Int. Cl.³ F02D *11/10*
U.S. Cl. 123—352 **10 Claims**



1. A method of controlling an engine speed for an internal combustion engine by controlling an engine speed adjusting operation unit which controls to keep the engine speed of the internal combustion engine at a set engine speed based on proportional control and derivative control action, comprising the steps of:

generating a reference signal P_0 of a reference signal width θ_0 at a predetermined rotational angle position of the engine;

generating a first engine speed detection pulse P_1 having a first pulse width θ_1 which is narrower than that of said reference signal and varied depending upon the actual engine speed and a second engine speed detection pulse P_2 having a second pulse width θ_2 which is equal to the difference between said signal width θ_0 of said reference signal P_0 and said first pulse width θ_1;

obtaining the difference between the time width T_1 of said first engine speed detection pulse P_1 and the time width T_2 of said second engine speed detection pulse P_2 to thereby generate an engine speed deviation signal which indicates the deviation between the actual engine speed and said set engine speed;

generating an engine speed derivative signal which indicates the rate of change of said deviation signal or an actual engine speed signal obtained on the basis of said time width T_1 of said first engine speed detection pulse P_1 with respect to time;

deteriming the range between an engine speed at which said first pulse width θ_1 is rendered zero and an engine speed at which said second pulse width θ_2 is rendered zero to be a derivative control engine speed range;

generating a first manipulated variable command signal which determines a manipulated variable of an engine speed adjusting operation unit of said internal combustion engine depending upon said engine speed deviation signal;

generating a second manipulated variable command signal which determines a manipulated variable of said engine speed adjusting operation unit depending upon said engine speed derivative signal; and

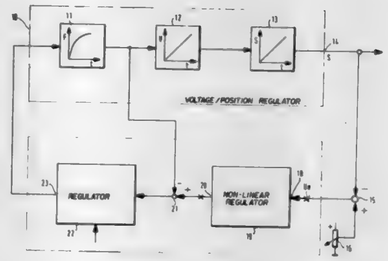
operating said engine speed adjusting operation unit based upon said first manipulated variable command signal to allow only the proportional control action to be carried out when said actual engine speed of the engine is out of said derivative control engine speed range, and operating said engine speed adjusting operation unit based upon both of said first and second manipulated variable command signals to allow the proportional control action and derivative control action to be carried out when said actual engine speed is within derivative control engine speed range.

4,520,779

REGULATING DEVICE FOR THE SIGNAL OF AN ELECTROMAGNETIC CONTROL ELEMENT

Hans Kubach, Korntal-Münchingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 320,998, Nov. 13, 1981, abandoned. This application Jan. 16, 1984, Ser. No. 570,442
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3042917
Int. Cl.³ F02D *5/00;* **G05D** *3/00*
U.S. Cl. 123—357 **8 Claims**



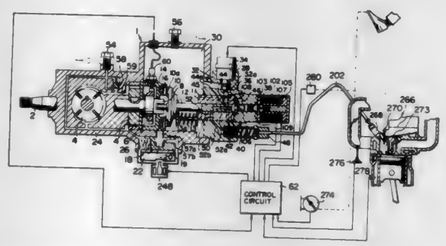
1. A regulating device for controlling the position of an electromagnetic control element according to a set point value, comprising a sensor for sensing an actual position value and at least one regulating loop circuit including a set-point/actual-value comparison means and a regulator having at least one of a control characteristic P, I and D, and said at least one characteristic being responsive to at least one of an output signal from and an input signal to said regulator.

4,520,780

DIESEL FUEL INJECTION PUMP WITH FUEL INJECTION CUTOFF UPON DETECTION OF EXCESSIVE ACTUAL FUEL COMBUSTION TIME

Yoshiyasu Ito; Fumiaki Kobayashi, and Hideo Miyagi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 13, 1984, Ser. No. 650,246
Claims priority, application Japan, Dec. 22, 1983, 58-242969; Jan. 23, 1984, 59-9755
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—359 **7 Claims**



1. For a diesel engine comprising cylinders and a crankshaft: a fuel injection pump, comprising:

(a) an input shaft which is rotated in a predetermined phase relationship with said crankshaft;

(b) a housing and a plunger which slides in a bore formed in said housing and is coaxial with said input shaft, a high pressure chamber being defined at an end of said plunger between it and said bore, and another end of said plunger being rotationally engaged with said input shaft but being free to move axially with respect thereto;

(c) a means for communicating said high pressure chamber to inject fuel into one or another cylinder of said diesel engine, according to the rotational position of said plunger, substantially only when said plunger is axially moving so as to reduce the size of said high pressure chamber;

(d) an electrically actuated electromagnetic valve, comprising a solenoid coil, which selectively vents said high pressure chamber;

(e) a means for selectively actuating and deactuating said electromagnetic valve, so as to provide fuel injection in appropriate amount to said diesel engine;

(f) a means for determining whether or not the voltage across said solenoid coil of said electromagnetic valve, when said means for selectively actuating and deactuating said electromagnetic valve deactuates said electromagnetic valve from its actuated condition, rises higher than a certain value, or not;

(g) a means for restraining said diesel engine; and

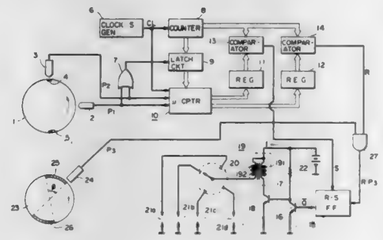
(h) a means for actuating said means for restraining said diesel engine if said determining means detects that said voltage across said solenoid coil of said electromagnetic valve when it is deenergized from the energized condition has not risen to higher than said certain value.

4,520,781

IGNITION CONTROL SYSTEM OF INTERNAL COMBUSTION ENGINE

Minoru Nishida, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1982, Ser. No. 414,955
Claims priority, application Japan, Sep. 16, 1981, 56-147533; Sep. 16, 1981, 56-147534; Sep. 16, 1981, 56-147535
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—414 **8 Claims**



1. An ignition control system of an internal combusion engine comprising:

a spark plug mounted to a cylinder of an internal combustion engine, said cylinder slidably receiving a piston coupled to a crank shaft,

spark plug driving means coupled to said spark plug and responsive to an externally applied ignition enabling signal for electrically driving said spark plug for causing ignition

rotational angle position signal generating means operatively coupled to said crank shaft for generating a rotational angle position signal representing the position of said piston of said internal combustion engine determinable in terms of the rotational angle position of said crank shaft,

ignition enabling signal generating means coupled to said rotational angle position signal generating means and responsive to said rotational angle position signal for generating said ignition enabling signal at an ignition timing associated with the rotational speed of said internal combustion engine, and

ignition enabling means for determining an allowable ignition timing range for said internal combustion engine in terms of an allowable rotational angle range of said crank shaft for enabling application of said ignition enabling signal to said spark plug driving means only during said allowable rotational angle range

said ignition enabling means comprising

a rotating member coupled to said crank shaft,

rotational angle range determining means for determining said allowable rotational angle range of said rotating member for generating an allowable rotational angle range signal,

logical product evaluating means coupled to said ignition enabling signal generating means and to said rotational angle range determining means for evaluating a logical product of said ignition enabling signal and said allowable rotational angle range signal for providing a logical product signal to said spark plug driving means, and

delay means for preventing occurrences of misfire cycles wherein an ignition enabling signal is not applied to said spark plug driving means, said delay means coupled to said rotational angle position signal generating means for delaying said rotational angle position signal by a predetermined time period for providing a delayed signal, and

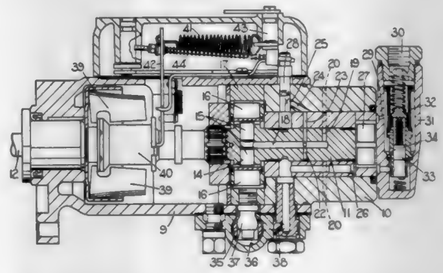
logical sum evaluating means coupled to said delay means and to said logical product evaluating means for evaluating a logical sum of said delay signal and said logical product signal, said logical sum evaluating means connected for providing a logical sum signal to said spark plug driving means thereby generating an alternative ignition enabling signal for application to said spark plug driving means in cycles wherein said ignition enabling signal occurs outside of said allowable ignition timing range and is blocked by said ignition enabling means from application to said spark plug driving means.

4,520,782

FUEL PUMPING APPARATUS

Ralph Holroyd, Dearborn Heights, and Peter O. Spiller, Sterling Heights, both of Mich., assignors to Lucas Industries Limited, Birmingham, England

Filed Mar. 1, 1982, Ser. No. 353,182
Claims priority, application United Kingdom, Apr. 10, 1981, 8111295
Int. Cl.³ F02M *39/00*
U.S. Cl. 123—450 **13 Claims**



1. A liquid fuel injection pumping apparatus for supplying fuel to internal combustion engines comprising; a body part, a bore and a plunger reciprocable in the bore, a cam ring rotatably mounted in the body part having a cam lobe operably associated with the plunger for imparting inward movement to the plunger to pump fuel through a conduit to an outlet, a low pressure pump having an outlet connected to the plunger bore for supplying fuel to said bore during the filling stroke of the apparatus, valve means for controlling the outlet pressure of the pump so that it varies in accordance with the speed at which the apparatus is driven, a fluid pressure operable device

responsive to the outlet pressure of the pump and operably associated with the cam ring for controlling the angular setting of said cam ring, a throttle bore in said body part, an angularly adjustable throttle member mounted in said throttle bore, a groove on the peripheral surface of the throttle member and a port opening into the throttle bore at said groove, said port and groove constituting part of the flow conduit for fuel between the outlet of the pump and the plunger bore, means to vary the degree of registration of the groove and the port by altering the angular setting of the throttle member thereby to vary the quantity of fuel supplied to the plunger bore, at least one side edge of said groove being inclined to the axis of the throttle bore so that the degree of registration of the groove with the port will vary as the axial position of the throttle member is varied, a pivotal lever one end of which operatively engages said throttle member to serve as a stop to control the axial setting of the throttle member, a cam surface formed on the cam ring, a cam follower operatively engaging said cam surface, and the other end of said lever operatively engages said cam follower so that the axial setting of the throttle member can be varied by angular movement of the cam ring.

4,520,783

METHOD OF CONTROLLING FUEL INJECTION AND APPARATUS THEREFOR

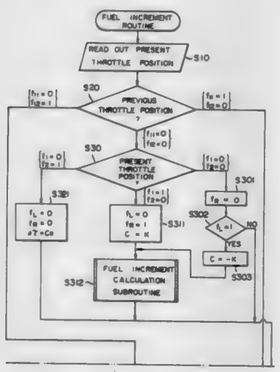
Souichi Matsushita; Kiyoshi Nakanishi, both of Susono, and Tokuta Inoue, Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 30, 1984, Ser. No. 635,884

Claims priority, application Japan, Aug. 1, 1983, 58-140929

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—492 **10 Claims**



1. A method of controlling a fuel injection wherein a basic fuel injection quantity is calculated on the basis of an engine speed and an engine load and is corrected at least by an output incremental value determined in accordance with acceleration or deceleration of an engine thereby to determine a final fuel injection quantity, at least, comprising the steps of:

detecting a position of a throttle valve with regard to whether it is located within one of a small-opening region, an intermediate-opening region and a large-opening region;

correcting said basic fuel injection quantity in accordance with said output incremental value determined in such a manner that it becomes its maximum value when said throttle valve is switched over from said small-opening region to said large-opening region thereby to abruptly increase said basic fuel injection quantity, that it gradually approaches said maximum value when said throttle valve is switched over from said small-opening region to said intermediate-opening region thereby to gradually increase said basic fuel injection quantity, that it becomes substantially zero when said throttle valve is switched over form said large-opening region to said small-opening region thereby to terminate the increase of said basic fuel injection quantity, and that it is gradually attenuated toward substantially zero when said throttle valve is switched over from said large-opening region to said intermediate-opening region thereby to gradually decrease said basic fuel injection quantity.

4,520,784

METHOD OF AND APPARATUS FOR CONTROLLING FUEL INJECTION

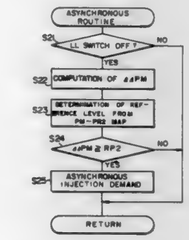
Toshiaki Isobe, Nagoya, and Teruo Fukuda, Kobe, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 2, 1984, Ser. No. 637,024

Claims priority, application Japan, Aug. 5, 1983, 58-143272; Aug. 5, 1983, 58-143273

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—492 **20 Claims**



1. In an internal combustion engine in which synchronous fuel injection is conducted at every predetermined crank angle and an asynchronous fuel injection is conducted regardless of a crank angle, a method of controlling a fuel injection comprising the steps of:

computing a variance of intake pressure in said engine;

comparing the computed variance with a reference level which is predetermined to get greater as the intake pressure becomes higher; and

increasing, in the case of detection of the variance of the intake pressure being greater than said reference level, a quantity of fuel to be injected.

4,520,785

GASEOUS FUEL SUPPLY AND CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

William H. Batchelor, Jensen Beach, Fla., assignor to Propane Carburetion Systems, Inc., Stuart, Fla.

Filed Feb. 1, 1984, Ser. No. 575,776

Int. Cl.³ F02M *21/02*

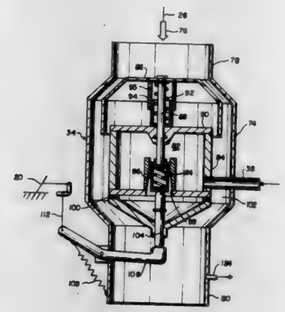
U.S. Cl. 123—525 **11 Claims**

1. In a control system for a dual fuel supply system for an internal combustion engine including a primary liquid fuel supply, a high pressure secondary gas fuel supply, an air intake duct for the engine, a power controller for the engine including a power demand element movable in proportion to engine power demand, means for supplying the gas fuel to a first region of the intake air duct in proportion to the supply of liquid fuel to the engine, and a pressure regulator including a movable regulator valve for controlling the supply of gas fuel to said first region at a reduced, regulated pressure, the regulator valve controlled by a primary absolute pressure signal generated in response to intake duct flow conditions at said first region of said duct, the improvement comprising:

means for sensing and generating a secondary absolute pressure signal responsive to intake air flow rate in the intake duct at a second region different from the first region;

means for transmitting the secondary pressure signal to the pressure regulator;

means for modulating the secondary pressure signal in response to movement of said engine power demand element so that the pressure signal is blocked upstream of the pressure regulator when the engine power demand element is at a full power position and is progressively released to communicate with the pressure regulator as the element moves away from the full power position towards a reduced power position;



means in the pressure regulator for influencing the movement of the regulator valve in response to said secondary pressure signal;

the final position of the regulator valve being determined by the balance of the influences exerted by the primary and secondary pressure signals.

4,520,786

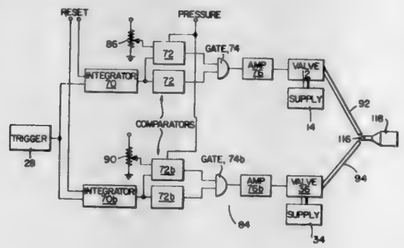
SONIC DISPERSION UNIT AND CONTROL SYSTEM THEREFOR

Arthur K. Thatcher, Merritt Island, Fla., and Ed R. McCarter, deceased, late of Maitland, Fla. (by Rebecca A. McCarter, executrix), assignors to Arthur K. Thatcher Revokable Trust, Merritt Island, Fla.

Continuation-in-part of Ser. No. 118,451, Feb. 4, 1980, Pat. No. 4,317,440, which is a division of Ser. No. 868,825, Jan. 12, 1978, Pat. No. 4,231,333, which is a continuation-in-part of Ser. No. 593,001, Jul. 3, 1975, Pat. No. 4,100,896, which is a division of Ser. No. 293,377, Sep. 29, 1972, Pat. No. 3,893,434. This application Feb. 23, 1982, Ser. No. 351,536

Int. Cl.³ F02M *29/00*

U.S. Cl. 123—536 **25 Claims**



6. A sonic dispersion system for controlling the provision of at least two materials from at least two separate material sources and for mixing said materials and providing a dispersion of said mixture from a single point source to a use apparatus comprising mounting means, sonic dispersion means mounted on said mounting means and including an active material dispersion surface for providing a material dispersion, material input means connected to separately supply material from each of said two material sources to said active material dispersion surface, said material input means including a first control means to control the flow of material from one source to said active dispersion surface and a second control means to control the flow of material from a second source to said active dispersion surface, and computer means connected to control the operation of at least one of said first and second control means to provide a material flow which varies as a function of variations in the operating condition of said use apparatus, said computer means including sensing means operative to provide sensing signals indicative of the operating condition of said use apparatus and control signal generating means connected to receive said sensing signals from said sensing means and operative in response thereto to provide control signals to control the operation of at least one of said first and second control means.

4,520,787

INTAKE AIR HEATING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

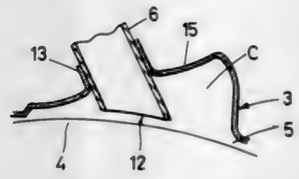
Minoru Midorikawa, Mitaka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 27, 1983, Ser. No. 565,652

Claims priority, application Japan, Dec. 28, 1982, 57-196484[U]

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—556 **10 Claims**



1. An intake air heating system for an internal combustion engine having intake and exhaust passages respectively, connected to said engine, an air cleaner connected to said intake passage and an outside air induction duct connected to said air cleaner, said intake air heating system comprising:

a manifold cover comprising edge portions surrounding the outer surface of said exhaust passage with a limited clearance for air inlet therebetween and at least one enlarged portion extending outwardly from said edge portions to form a heating chamber between said manifold cover and the outer surface of said exhaust passage, and

a heated-air induction pipe for connecting the inside of said cover with said outside air induction duct,

said induction pipe being inserted into said manifold cover and projecting towards the outer surface of said exhaust passage, the projecting length of said induction pipe inside of said cover extending at least more than half of the distance between the outer surface of said exhaust passage and the inner surface of the enlarged portion, whereby an effective heating chamber is formed with openings for air inlet only at said limited clearance and air outlet only at the end of said induction pipe, said chamber being formed by the manifold cover on the outer surface of said exhaust passage, whereby intake air drawn through said limited clearance is temporarily retained and heated in said heating chamber.

4,520,788

ROTATING WHEEL DRESSER

Larry E. Melvin, R.D. #1, Cambridge Springs, Pa. 16403

Filed Sep. 14, 1983, Ser. No. 532,211

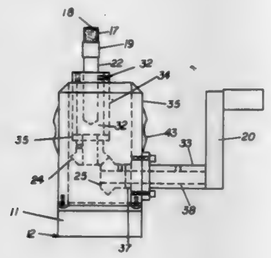
Int. Cl.³ B24B *53/06*

U.S. Cl. 125—11 CD **13 Claims**

1. A wheel dresser having a base with a generally flat lower surface adapted to rest on a magnetic table of a grinding machine,

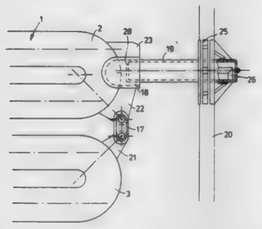
a vertical section attached to said base,

said vertical section extending upwardly therefrom,
a housing swingably attached to said vertical section and swingable about a horizontal axis,
an elongated generally cylindrical diamond impregnated tool having a flat dressing end means rotatably supported on said housing,
manually rotatable means on said housing to manually rotate said tool about its longitudinal axis,



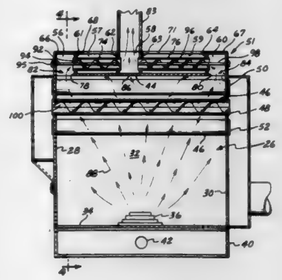
said housing being adapted to be moved up and down relative to a rotating grinding wheel with a part of said flat end of said tool in contact with said wheel,
said tool adapted to be moved radially of the wheel in a vertical path when the wheel and table are moved relative to each other whereby a side of said wheel may be dressed.

4,520,789
SUPPORTS FOR HEATING BODIES INTENDED FOR ANNEALING FURNACES
André H. Rombouts, Rue de la Colline, 97, Ivoz-Ramet, Belgium (B-4120)
PCT No. PCT/BE83/00008, § 371 Date Nov. 23, 1983, § 102(e) Date Nov. 23, 1983, PCT Pub. No. WO83/03428, PCT Pub. Date Oct. 13, 1983
PCT Filed Mar. 25, 1983, Ser. No. 560,984
Claims priority, application Luxembourg, Mar. 26, 1982, 84040
Int. Cl.³ F24C *3/00*
U.S. Cl. 126—91 A **7 Claims**



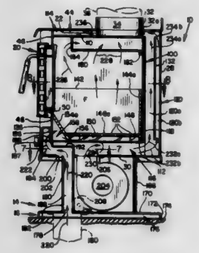
1. A support for a heating body for an annealing furnace, permitting the expansion of the heating body (1) without affecting its heating capacity or the satisfactory operation of the furnace, wherein a pivotal link means (17) joins upper and lower hairpin bends (2, 3) of the heating body to one another, a cup-shaped rest being attached to said upper hairpin bend, a tubular support arm (19) rigidly fixed in the wall of the furnace, said cup-shaped rest being adapted to slide on said tubular support arm.

4,520,790
AIR HEATING FURNACE
Ronald L. Sagness, Bowbells, and Donald A. Peterson, Berthold, both of N. Dak., assignors to Neshem-Peterson, Inc., Berthold, N. Dak.
Filed Jul. 15, 1983, Ser. No. 514,084
Int. Cl.³ F24H *3/08*
U.S. Cl. 126—109 **9 Claims**



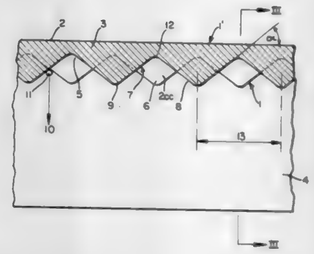
1. An air heating furnace comprising
a combustion chamber including a first end wall, a second end wall, and spaced apart sidewalls connected to said end walls,
burner means in said combustion chamber for burning fuel to create hot combustion gases,
flue means at a top portion of the furnace for exhausting combustion gases from the furnace,
a plurality of spaced-apart air flow conduits above said burner means and extending across said combustion chamber between said end walls, outside surface of said air flow conduits being in the path of travel of combustion gases from the burner means to the flue means,
a plurality of spaced-apart generally horizontal combustion gas flow conduits between the flue means and said combustion chamber, said combustion gas flow conduits having inlets communicating with said combustion chamber for receiving combustion gases and outlets communicating with the flue means,
chamber means for isolating the exterior of the combustion gas flow tubes with respect to their inlets and outlets,
said chamber means having an inlet for air to be heated and including means for directing air entering the inlet around the exterior of the combustion gas flow tubes to outlets at opposite sides of the chamber means,
outer wall means in spaced relation to the outside surface of each side wall of the combustion chamber, said outer wall means combining with said side walls to provide sidewall air flow spaces,
means in said side wall air flow spaces between said outer wall means and said combustion chamber walls to direct air from said chamber means downwardly and toward said first end of the furnace,
plenum means at said first end of the furnace for receiving air from said side wall air flow spaces and for directing the air through said air flow conduits,
plenum means at said second end of the furnace for receiving air from the air flow conduits, and
fan means for forcing air to be heated through the air flow passages of the furnace.

4,520,791
JACKETED WOOD STOVE
Joseph G. Chamberlain, 12350 SW. 124th, Tigard, Oreg. 97223
Division of Ser. No. 360,425, Mar. 22, 1982, Pat. No. 4,422,436, which is a continuation of Ser. No. 131,214, Mar. 17, 1980, abandoned. This application Oct. 14, 1983, Ser. No. 542,131
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 **2 Claims**



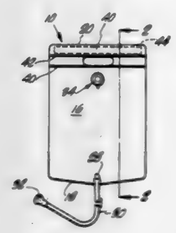
1. A wood stove comprising:
a firebox having top, bottom, rear, and side heat-exchanging walls;
the firebox including a frontal access opening and a door adapted to close the frontal access opening, the door having inner and outer walls spaced apart to define a door airspace and ambient air openings connecting the door airspace to the ambient air for internally convectively cooling the outer wall of the door;
a jacket surrounding the firebox and spaced outwardly from the firebox walls, the jacket including a bottom jacket wall and upstanding rear and side jacket walls defining an airspace around at least a substantial portion of the firebox;
air inlet means in the bottom wall of the jacket for admitting ambient air into the airspace beneath the bottom wall of the firebox;
air outlet means in the upstanding sidewalls of the jacket for air warmed in the airspace to flow outwardly from the airspace;
baffle means within the airspace extending along the side and rear jacket walls and spaced between the firebox and jacket to divide the airspace into inner and outer portions for insulating the upstanding side and rear walls of the jacket from heat transmitted into the airspace from the firebox;
the jacket including a top wall spaced above the top wall of the firebox to define an upper airspace portion,
the baffle means terminating below the top wall of the jacket;
the air outlet means including a first elongated outlet opening extending horizontally along an upper margin of each of the sidewalls of the jacket adjacent an upper edge of the baffle so that the warmed air can flow in the upper airspace portion and laterally out of the jacket through the first elongated outlet openings;
a pedestal disposed under the bottom jacket wall and enclosing the air inlet means; and
a blower positioned within the pedestal for drawing ambient air inwardly through the air inlet means into the airspace for assisting the flow of the warmed air outwardly from the air outlet means.

4,520,792
GRATE BARS FOR USE IN THE GRATES OF INDUSTRIAL FURNACES AND THE LIKE
Erich Weber, Munich, Fed. Rep. of Germany, assignor to Martin GmbH für Umwelt- und Energietechnik, Munich, Fed. Rep. of Germany
Filed Aug. 22, 1984, Ser. No. 643,284
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1983, 3330637
Int. Cl.³ F23H *7/08*
U.S. Cl. 126—175 **16 Claims**



1. A grate, particularly for use in industrial furnaces, comprising a pair of neighboring elongated grate bars at least one of which is movable longitudinally with reference to the other grate bar, said grate bars having adjacent marginal zones including serrated undersides having alternating teeth and tooth spaces, as considered in the longitudinal direction of the respective grate bars.

4,520,793
FOLDABLE, INSULATED SOLAR WATER HEATER
Charles P. Hall, 5815 Bennett Valley Rd., Santa Rose, Calif. 95404
Filed Jul. 26, 1983, Ser. No. 517,277
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—426 **3 Claims**



1. A foldable, flexible, unitary body container for heating water with the sun, the container having opposed first and second ends and comprising:
(a) an outside front wall formed of clear, flexible plastic;
(b) a rear wall diametrically opposed to the front wall, the rear wall comprising:
(i) an inner layer of dark flexible plastic;
(ii) an outer layer of reflective flexible plastic which is reflective on its outer face; and
(iii) a middle layer of flexible insulating foam sandwiched between the inner and outer layers;
wherein the front wall and the inner and outer layers of the rear wall are bonded together at their periphery to form a container with a unitary body;
and wherein the front and rear walls together define a chamber for containing water to be heated such that the water

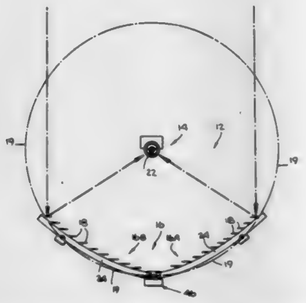
is in direct contact with the front wall and the inner layer of the rear wall; and

(c) an inlet and an outlet for placing water into and removing water from the container.

4,520,794
SOLAR ENERGY CONCENTRATING SLAT ARRANGEMENT AND COLLECTOR

Virgil Stark, New York, N.Y., and Pierre Genequand, Geneva, Switzerland, assignors to North American Utility Construction Corporation, New York, N.Y.

Filed Mar. 5, 1982, Ser. No. 354,930
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—438 **14 Claims**



1. Apparatus for collecting solar energy comprising:

at least one concentrator comprising a plurality of solar energy reflective slats each being of generally rectangular cross-section having a planar solar energy reflective surface, the slats having longitudinal axes and being generally disposed with their axes extending about a portion of a circle to direct solar energy impinging on the slats into a concentrated elongated target located forwardly of the concentrator relative to the travel of solar energy to the concentrator and within the circumference of the circle, the slats being grouped in a plurality of series, the slats within each of said series being disposed at the same angle to respective tangents of the circles as the other slats in the respective series; and

a collector including at least one elongated conduit adapted to pass a fluid therethrough and having a longitudinal axis extending generally parallel to the axes of the slats, the collector being disposed within the circumference of the circle in spaced relationship to the concentrator forwardly of the concentrator so as to receive the solar energy of the concentrated target of the concentrator.

4,520,795
SOLAR COLLECTOR HAVING TANK AND GLAZING CONSTRUCTION

William A. Parkyn; Horace W. Ladd, and Andrew M. Mellon, all of 1424 W. 259th St., Harbor City, Calif. 90710

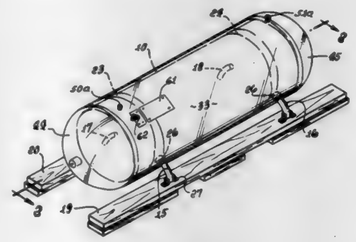
Filed Dec. 9, 1983, Ser. No. 559,051
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **24 Claims**

1. In apparatus for collecting and absorbing solar radiant energy, for storing same, the combination comprising energy

(a) metal tank which absorbs solar radiant and transfers heat to liquid in the tank, the tank having a side wall and a first end wall,

(b) tank support means including leg structure projecting away from the tank for supporting same, and

(c) translucent glazing shell means supported by the tank and having a side wall extending about and spaced from the tank side wall, the shell means including at least one dome in alignment with said tank end wall and spaced therefrom, said shell means adapted to pass radiant solar energy to impinge on the tank side wall and end wall,

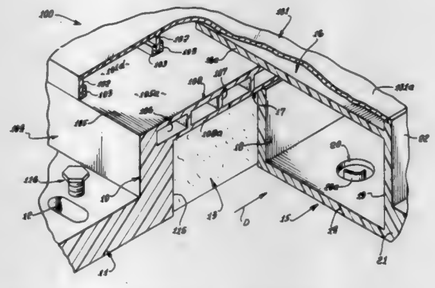


(d) said leg structure extending through at least one opening defined by the shell means.

4,520,796
LIGHTWEIGHT SOLAR COLLECTOR

J. Michael Slaminski, 13567 Bear Valley Rd., Moorpark, Calif. 93021, assignor to J. Michael Slaminski and William W. Haefliger, both of Pasadena, Calif., a part interest

Filed Mar. 26, 1984, Ser. No. 593,649
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—445 **14 Claims**



1. Solar collector comprising, in combination

(a) a first plastic sheet, extending generally horizontally forming multiple parallel branch ducts extending in a longitudinal direction through the sheet length,

(b) a second single plastic sheet extending generally horizontally,

(c) means mounting the second sheet on the first sheet to substantially cover the first sheet and to provide a space between the sheets, said means including legs between the first and second sheets,

(d) the second sheet being transparent so that solar radiation impinging on the second sheet will pass through it and onto the first sheet for heating liquid passing through said ducts,

(e) a third plastic body attached to the first sheet and defining a first header duct communicating with said branch ducts at one end of the first sheet,

(f) a fourth plastic body attached to the first sheet and defining a second header duct communicating with said branch ducts at the opposite end of the first sheet,

(g) said third and fourth plastic body ducts extending laterally and horizontally and having lower portions below the level of said first plastic sheet, said second sheet horizontally covering said third and fourth plastic bodies,

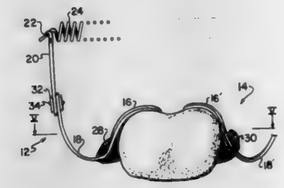
(h) there being insulation space below said first sheet and between said third and fourth plastic bodies,

(i) said first sheet having integral support flanges which extend longitudinally and project downwardly at opposite laterally spaced ends of said insulation space, for attachment to a roof, said second sheet extending over said flanges.

4,520,797
COLLATERAL LIGAMENT RETRACTOR

Thomas D. Petersen, 9680 Alto Dr., La Mesa, Calif. 92041

Continuation of Ser. No. 269,792, Jun. 3, 1981, abandoned. This application Jul. 15, 1983, Ser. No. 514,162
Int. Cl.³ A61B *17/02*
U.S. Cl. 128—20 **5 Claims**



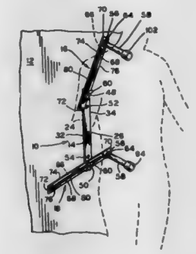
1. A collateral ligament retractor assembly for retracting a pair of collateral ligaments for aiding and providing acess to a knee structure for knee surgery, comprising:

a pair of substantially symmetrical individually manipulable retractor members, each retractor member defined by generally S-shaped lever means including curved finger means formed at one end thereof for independent insertion between a collateral ligament and a tibia plateau and partially encircling and extending behind and engaging the tibia plateau thereby providing fulcrum means comprising a pivot point about which said retractor member pivots in use, and including curved arm means curving around past said one end to a position outside the collateral ligament and terminating at a position behind and to one side of said one end and said tibia, and tension means connected between the arm means of said retractor members behind a knee structure after said retractor members have each been independently inserted in place said tension means pivoting said retractor members about their fulcrum means thereby holding the ligaments in a retracted position away from the tibia for providing access thereto.

4,520,798
SELF ACUPRESSURE METHOD

Tommy K. Lewis, 1605 Henry St., Huntington, Ind. 46750

Division of Ser. No. 317,991, Nov. 4, 1981, Pat. No. 4,452,237. This application Mar. 5, 1984, Ser. No. 586,411
Int. Cl.³ A61H *39/04*
U.S. Cl. 128—24 R **5 Claims**



5. A method of self-administering therapeutic pressure to various points or areas of the body in order to temporarily relieve certain ailments, utilizing an apparatus having a plate generally mounted vertically on a wall structure and including at least one arm rotatably and slidably connected to the plate, the arm having a bar extending outwardly therefrom, there being an appropriate size knob member on a free end of the bar; the method comprising:

sliding and rotating the arm to position the knob member properly at the body area to be treated;

securing the arm in the desired position;

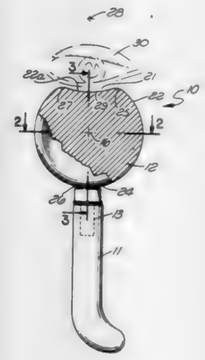
positioning the body area adjacent the knob member; and

with the apparatus supported against the wall structure, pressing the body area against the knob member.

4,520,799
FACIAL TREATMENT DEVICE

Sandra J. Kruger, 2901 Avenida Caballeros, Palm Springs, Calif. 92262

Continuation of Ser. No. 580,753, Feb. 17, 1984, abandoned, which is a continuation of Ser. No. 415,750, Sep. 7, 1982, abandoned. This application Sep. 7, 1984, Ser. No. 648,610
Int. Cl.³ A61H *7/00*
U.S. Cl. 128—67 **7 Claims**



7. A facial treatment device comprising:

a handle; and

a head carried by said handle for contacting a person's skin and which is formed of a highly heat conductive metal;

said head having two similarly curved opposite side surfaces generally parallel to one another, one of which faces in a first direction along a predetermined first axis and is curved substantially spherically and concavely about a first center located essentially on said axis;

the other of said side surfaces facing in the opposite direction along said axis and being curved substantially spherically and convexly about a second center located essentially on said axis and spaced from said first center;

said head, as viewed in a plane disposed transversely of said axis, having an outer edge surface extending essentially about said axis and facing generally away from the axis;

said handle being elongated and connected at a first end thereof to the periphery of said head, at a first side of said first axis, and projecting away from said first axis;

said outer edge surface of the head, as viewed in said plane disposed transversely of said first axis, having a portion defining a recess which curves smoothly inwardly toward said first axis at a location essentially diametrically opposite the location of said handle with respect to said first axis and which extends essentially arcuately about a second axis offset from said first axis;

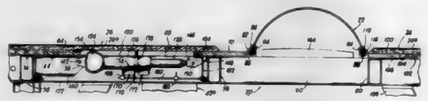
said outer edge surface of the head having two additional portions at opposite sides of said first axis which extend between said recess and opposite sides of said handle, and which are curved convexly and essentially arcuately about said first axis as viewed in said transverse plane;

said head as viewed in said transverse plane being substantially circular about said first axis except at the location of said handle and said recess;

said outer edge surface of the head, as viewed in planes containing said first axis, being rounded convexly and smoothly in a relation merging with and joining said opposite side surfaces along essentially the entire periphery of said head except at the location of said handle, and including the portion of said outer edge surface defining said recess and said two additional portions extending between the recess and handle;

the periphery of said head being thinner at the location of said recess than at said additional portions of said outer edge surface extending between said recess and said handle.

4,520,800
PATIENT TREATMENT TABLE
Frank P. Kowalski, Des Plaines, Ill., assignor to Standex International Corporation, Salem, N.H.
Filed May 9, 1983, Ser. No. 493,145
Int. Cl.[3] A61F *5/00*
U.S. Cl. 128—72 **12 Claims**



1. A patient treatment table, comprising a table frame, a hip board fixedly secured to said frame, a head board fixedly secured to said frame and spaced from said hip board, a transparent, flexible arch member positioned between said head board and said hip board and extending across the entire width of the space between said head board and said hip board, a rigid slide member extending across the table adjacent to and beneath the inner edge of said hip board and pivotally connected to one end of said arch member, means pivotally connecting said other end of said arch member to said frame adjacent said head board, and means for moving said slide member in a horizontal plane so that said one end of said arch member moves away from said fixed hip board and said arch member is bowed upwardly above the surface of said hip board and said head board, said arch member when in said bowed positon being sufficiently rigid to support by itself a substantial weight placed thereon.

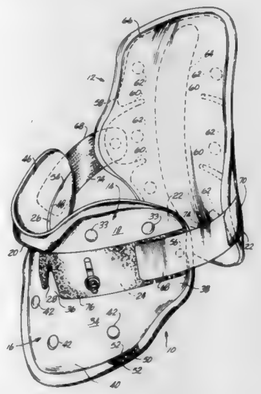
4,520,801
CERVICAL COLLAR
Max Lerman, 1950 Carla Ridge, Beverly Hills, Calif. 90210
Filed Jul. 8, 1983, Ser. No. 511,841
Int. Cl.[3] A61F *5/01*
U.S. Cl. 128—75 **12 Claims**

1. A cervical collar having an improved chin support comprising:

an upper section formed as a thin, semi-rigid upper shell having (a) a generally U-shaped chin-supporting front portion shaped to conform to a patient's chin and having side portions extending along the patient's lower jaw to rear portions in the vicinity of the rear lower jaw, and (b) a generally U-shaped lower bridge member having side portions extending along opposite sides of the patient's neck and a front portion extending across the front of the patient's neck, the bridge member extending generally normal to the U-shaped chin supporting portion of the upper section; and a layer of a resilient open cell containing material on an inside face of the upper portion of the shell;

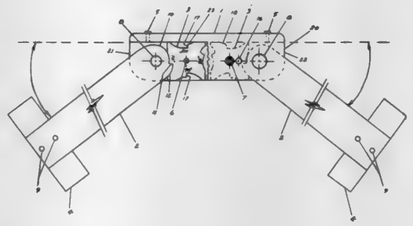
a lower section formed as a thin, semi-rigid lower shell having an upper portion for overlying the lower portion of the patient's neck generally around the vicinity of the collar bone, and a lower portion for resting on a front portion of the patient's chest region; and a layer of a resilient open cell containing material on an inside face of the lower shell;

means attaching the upper and lower sections to one another so that one section is movable relative to the other and for retaining the two sections affixed to each other with the bridge member overlapping the upper portion of the lower section, the two sections being movable to adjust the distance the lower section can be moved toward or away from the upper section to adjust the combined upper and lower sections to different neck sizes; and



fastening means extending between the bridge member and the upper portion of the lower section for being loosened to allow said relative movement between the two sections and for being tightened to hold the two sections in a desired relative position, with the fixed bridge member providing a reinforcing bridge between the upper portion of the lower section and the chin-supporting portion of the upper section.

4,520,802
BI-AXIAL ORTHOTIC DEVICE
James D. Mercer, 100 Silverwood Dr., Lafayette, Calif. 94549, and Gordon Aaserude, 444 La Palomba, El Sobrante, Calif. 94803
Filed Sep. 30, 1983, Ser. No. 537,795
Int. Cl.[3] A61F *3/00*
U.S. Cl. 128—80 C **5 Claims**



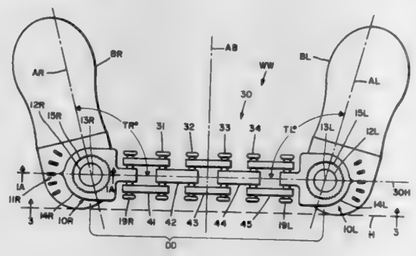
1. A bi-axial orthotic device having

(1) a center bar having pivot points for attachment of independent flex bars one near each end and a pair of independent indexing blocks removably positioned therebetween;

(2) said flex bars pivotally attached through pivoting ends on each flex bar to each end of the center bar and extending longitudinally therefrom terminating in transverse anchor plates, the attached pivoting end of the flex bars contoured to cooperate with the indexing blocks each in close proximity and positioned to coact with said indexing blocks;

(3) independent index blocks securely but removably attached and positioned on said center bar to cooperate with said attaching end of said flex bars each index block having a plurality of sides each side a cam contoured for cooperation with said pivoting end of said flex bar to regulate the movement and angle of said flex bar.

4,520,803
ORTHOPAEDIC APPARATUS
Thomas A. Quest, 9205 Timberline Dr., Omaha, Nebr. 68152
Filed Feb. 21, 1984, Ser. No. 581,889
Int. Cl.[3] A61F *3/00*
U.S. Cl. 128—80 A **7 Claims**



1. Orthopaedic apparatus for comfortably maintaining a selectable eversion-angle between the sole-axes of a longitudinally separated pair of shoes, the eversion-angle bisection extending directionally laterally and substantially perpendicular to said longitudinal shoes spacing, said apparatus comprising:

A. a pair of shoe-connectors and each including a shoe-stud extending along a stud-axis, means for attaching the shoe-connectors to the shoes pair in a condition wherein the stud-axes intersect the two shoes at similar locations and are substantially parallel to each other, each shoe-connector including a plate member angulary rotatable about the shoe-stud and the plate member carrying a laterally extending primary-pivot outwardly offset from the shoe-stud, and means for maintaining a selected angular rotation between the plate member at the primary-pivot and the stud-axis; and

B. a longitudinally extending splint having two longitudinally separated positions thereof pivotably connected to said two laterally extending primary-pivots whereby a longitudinally extending finite splint-length exists between said two primary-pivots, said splint-length being interrupted by at least two laterally extending splint-pivots and being substantially laterally rigid throughout said splint-length including at the splint-pivots, whereby said splint-length includes at least three intervening splint-links having a single direction of free movement restricted to a movement plane substantially perpendicularly intersecting the two primary-pivots and the splint-pivots.

4,520,804
DOUBLE-LOCKING RATCHET FOR ORTHOPEDIC BRACE
Michael A. DiGeorge, P.O. Box 563, Sulphur, La. 70663
Filed Aug. 4, 1981, Ser. No. 289,897
Int. Cl.[3] A61F *3/00*
U.S. Cl. 128—80 C **9 Claims**

1. An improved joint for an orthopedic brace comprising:

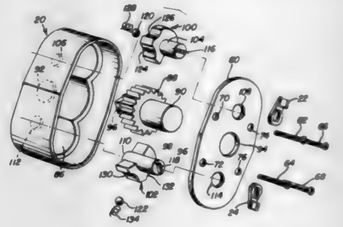
casing means;

ratchet means substantially contained within said casing means;

upper leg brace attachment means for fixedly securing said casing means to an upper leg brace associated with said orthopedic brace;

lower leg brace attachment means for fixedly securing said casing means to a lower leg brace associated with said orthopedic brace; and

selectably positionable ratchet control means for providing alternative operating characteristics to the joint so as to permit selective pivotal movement between said upper and lower leg braces, said alternative operating characteristics including (a) pivotal movement of the braces in one direction and locking of the braces against pivotal movement in the other direction; (b) pivotal movement of the braces in said other direction and locking of the braces against pivotal movement in said one direction; (c) pivotal movement of the braces both in said one direction and in said other direction; and, (d) locking of the braces against pivotal movement both in said one direction and in said opposite direction, wherein said ratchet means includes a ratchet wheel and said ratchet control means includes first and second pawl means selectively engageable with said ratchet wheel to effectively control said operating characteristics.



4,520,805
ABDUCTOR TURNTABLE
Valerie A. St. Vincent, 1750 Prefumo Cyn. Rd., #51, San Luis Obispo, Calif. 93401; Frank B. Heinen, and Steven J. Rinell, both of San Luis Obispo, Calif., assignors to Valerie St. Vincent, San Luis Obispo, Calif.
Filed Jan. 24, 1983, Ser. No. 460,592
Int. Cl.[3] A61F *3/00, 5/00*
U.S. Cl. 128—80 R **8 Claims**



8. Apparatus to facilitate turning a patient lying on his back in a bed onto one side while maintaining the opposite leg in a chosen degree of abduction, a chosen degree of rotation, and a minimal degree of flexion, said apparatus comprising in combination:

a splint for supporting the opposite leg of the patient, said splint including two elongated arched shells connected by a hinge, the axis of the hinge extending generally in the direction of elongation;

elevating means attached to said splint for elevating the opposite leg of the patient by constraining said splint to move along an arcuate path from an initial position on the bed to an elevated position as the patient is being turned onto his side, said elevating means including abduction adjustment means for adjusting the orientation of said splint to an orientation chosen to maintain the opposite leg of the patient at a chosen degree of abduction as the patient is being turned onto his side, said elevating means further including support means for adjustably supporting said elevating means at any of a plurality of elevated positions; and,

splint adjustment means for adjustably affixing said splint to said elevating means at an orientation chosen to maintain the opposite leg of the patient at a chosen degree of rotation as the patient is being turned onto his side.

4,520,806

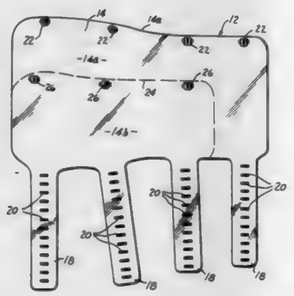
SPLINT AND METHOD OF USING SAME

Larry Miller, 465 Oliveta Pl., La Canada, Calif. 91011

Filed May 18, 1983, Ser. No. 495,630

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—87 R **4 Claims**



1. A device for use in splinting fractures and dislocations, comprising:

(a) a generally planar shaped body portion yieldably deformable from a first open position to a second closed position wherein the area of the fracture or dislocation is closely surrounded by said body portion;

(b) fastening means for securing said body portion in said second position, said means comprising:

(1) a plurality of longitudinally spaced apart, elongated straps extending transversely of said body portion, each said strap having a plurality of spaced apart apertures formed therein; and

(2) a plurality of spaced apart first locking elements affixed to said body portion along a first longitudinally extending line, said elements being receivable within said apertures for interconnecting said straps to said body along said first line; and

(c) indicia dividing said body portion into first and second areas, said second area being encompassed within said first area, said device also being provided with a plurality of second, longitudinally spaced apart locking elements, said first locking element being disposed along a first line located proximate an edge portion of said first area and said second locking element being disposed along a second line disposed proximate an edge portion of said second area.

4,520,807

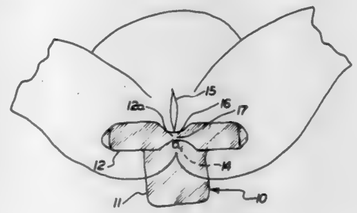
OBSTETRIC DEVICE AND METHOD

Carl W. Rotter, 6461 Brookedge Ct., Dublin, Ohio 43017

Continuation of Ser. No. 275,857, Jun. 22, 1981, abandoned. This application Apr. 29, 1983, Ser. No. 487,999

Int. Cl.³ A61F *5/46*

U.S. Cl. 128—132 D **2 Claims**



1. Apparatus for minimizing and most likely eliminating contamination during an obstetrical delivery and repair on a patient, said apparatus comprising

a shield consisting essentially of a drape portion which consists essentially of a single sheet of material, an adhesive carrying surface zone connected to said drape portion, and a removable backing strip adhered to said adhesive carrying surface zone,

said adhesive carrying surface zone being shaped so as to be locatable between the vagina and the anal opening without covering either the vagina or the anal opening and being pressable into tight engagement with the perineum and perineal area for forming a physical barrier between the vagina and the anal opening, and the drape portion extending away from the adhesive carrying surface zone and being positioned over the anal opening when said adhesive carrying surface zone is adjacent to and in facing relation with the perineum and the perineal area and when the patient is positioned for obstetrical delivery, so that said adhesive carrying surface zone physically blocks flow of fecal material from the anal opening to the vagina while allowing flow of fecal material from the anal opening and said drape portion directs fecal material from the anal opening away from the operative area during obstetrical delivery and repair,

said adhesive carrying zone being bow-tie shaped, being narrow enough in its central portion to fit between the anus and the vagina, and having adequate adhesive in its wider portions to support the shield, the adhesive carrying zone being longer than the width of said drape portion, and the width and length of said drape portion being equal to each other.

4,520,808

INHALATION EXPOSURE APPARATUS

Raphael J. LaBauve, West Hartford, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 10, 1983, Ser. No. 474,098

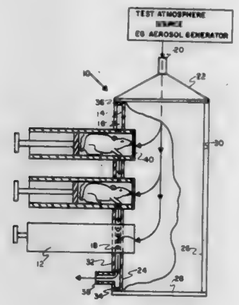
Int. Cl.³ A61M *15/00*

U.S. Cl. 128—200.14 **19 Claims**

1. An inhalation apparatus for exposing small laboratory animals to a test atmosphere comprising an animal holding tube means capable of positioning the nose of an animal at a fixed point within said tube means, said tube means totally enclosing the animal while allowing free movement of the animal within a space enclosed by the tube means without otherwise fettering said animal, said tube means being further provided with:

(a) test atmosphere inlet means located in the vicinity of said nose; and

(b) exhaust outlet means located such that the test atmosphere can be inhaled by the animal then exhausted rearward of said nose of the animal so that said animal is



exposed to a uniform concentration of test atmosphere containing substantially no exhaled materials.

4,520,809

ANAESTHETIC INDUCTION DEVICE

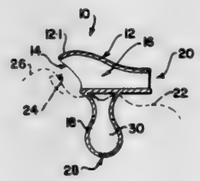
Magdel N. de Greef, 13 Nederburgh St., Welgemoed, Bellville, Cape Province, and Ian D. Smit, 26 Campbell St., Observatory, Cape Town, Cape Province, both of South Africa

Filed Jan. 12, 1983, Ser. No. 457,258

Claims priority, application South Africa, Jan. 12, 1982, 82/0183; Oct. 11, 1982, 82/7424

Int. Cl.³ A61M *15/00*

U.S. Cl. 128—200.24 **4 Claims**



1. A gas induction device for use in anaesthetizing a child, which device comprises:

gas delivery and directing means having a flared terminal portion which defines an outlet opening adapted to be positioned in close proximity to the child's nostrils and a widening gas flow passage leading to the outlet opening, said gas delivery and directing means including means for fluidically communicating said gas flow passage with an external source of anaesthetizing gas and being shaped and dimensioned to lie over the child's face except for the child's nostrils; and

an artificial teat connected to said gas delivery and directing means in such a manner that, when the teat is located in a sucking position in the child's mouth, said gas delivery and directing means is thereby located so that the outlet opening is in close proximity to the child's nostrils, whereby gases flowing through the passage to the outlet opening are delivered from the outlet opening and directed towards the nostrils.

4,520,810

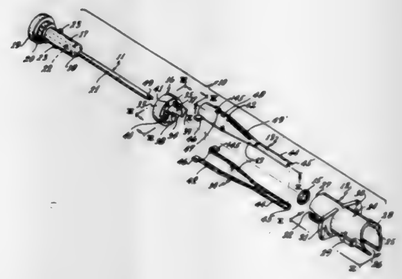
APPARATUS FOR PERFORMING AN EMERGENCY CRICOTHYROTOMY

Sol Weiss, 17227 Quesan Pl., Encino, Calif. 91316

Continuation of Ser. No. 307,764, Oct. 2, 1981, abandoned. This application Apr. 24, 1984, Ser. No. 603,369

Int. Cl.³ A61B *17/32*; A61M *16/00*

U.S. Cl. 128—200.26 **1 Claim**



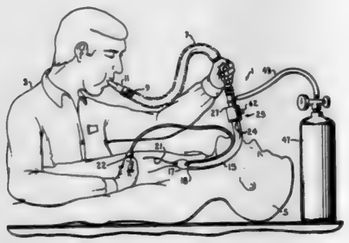
1. A surgical device adapted to puncture human skin for performing an emergency tracheostomy comprising: a housing, a hollow needle insertible in and retained in said housing and having a proximal end portion and a distal end portion of a reduced cross-sectional area, said distal end portion of said needle comprising at least two sections which, taken together, define a throughbore and terminate in a blunt distal end; spring means for holding said sections of said distal end portion of said needle together and to enable said sections of said distal end portion of said needle to be separable from each other and expand radially from the said reduced cross-sectional area of said distal end portion; a stylet of lesser cross-sectional area than said distal end portion and insertible in said throughbore through said needle without expansion of said sections, said stylet having a distal cutting end for limited projection beyond said blunt distal end of said needle for a cooperative insertion of the distal ends of the needle and stylet into a skin incision, and a wider main body portion on the proximal end thereof; first indexing means on the proximal end of the housing and cooperative second indexing means on the main body portion of said stylet; an airway tube movable through said needle, subsequent to removal of the stylet from the proximal end portion thereof to the distal end thereof, said airway tube being of larger cross-sectional area than the said cross-sectional area of said distal end portion of said needle whereby to expand radially said distal end portion of said needle from its normal cross-sectional area as said airway tube is moved through the distal end portion and distal end of said needle, said needle including guiding means for guiding said airway tube through said needle and camming said needle sections apart gradually and progressively before the tube reaches the skin level, said guiding means including an intermediate portion on each of the needle sections, each intermediate portion of said needle sections having an elongated tapered internal area between said proximal end portion and said distal end portion thereof, said internal tapered area being defined by elongated protrusions extending along said intermediate portion and extending interiorly thereof for guidance of said airway tube from the proximal end portion into the distal end portion such that, when said needle sections have their ends inserted into the trachea of a patient, said airway tube engages said guiding means and said guiding means cams said needle sections apart gradually and progressively before the airway tube reaches the skin level.

4,520,811

PULMONARY RESUSCITATOR

Daniel S. White, Independence, and Jerald L. Nave, Oak Grove, both of Mo., assignors to Grove Medical Supply, Inc., Oak Grove, Mo., by said Jerald L. Nave

Division of Ser. No. 232,652, Feb. 8, 1981, Pat. No. 4,449,525.
This application Feb. 28, 1984, Ser. No. 584,326
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—203.11 **1 Claim**



1. An improved pulmonary resuscitator, for use in providing flow communication between a rescuer and a victim; said resuscitator having an air tube and a valve positioned intermediate ends of said tube; said valve comprising:

(a) a valve body, including:

(1) first and second valve body members, each valve body member having a surrounding side wall portion and an end wall portion; said valve body members being slidably interconnected and defining an inner cavity therein such that said end wall portions are located on generally opposite sides of said cavity, said valve body second member surrounding wall portion having an end edge adjacent said valve body first member end wall portion when said valve body members are interconnected;

(2) a fluid flow passageway through said valve body first member end wall portion communicating with said air tube adapted to allow air to pass from the rescuer to the valve body inner cavity;

(3) an aperture through the second valve body member end wall portion communicating with said air tube and adapted to allow air to flow from said valve body inner cavity to the patient;

(4) an exhaust tube having an end thereof extending through said valve body member side walls to said inner cavity, said exhaust tube communicating with ambient air to allow air to flow from said inner cavity to said ambient air; said exhaust tube end beveled in a direction toward said valve body first member end wall portion;

(b) a grid positioned in said passageway;

(c) a butterfly disc having an outer margin and a center flap portion integrally hinged therewith positioned within said inner cavity; said outer margin being snugly held between said second body end edge and said first member end wall and said flap portion is adapted to alternately seal over said passage and said exhaust tube end; said center flap being continuously presented to said stream flow through said valve body; and

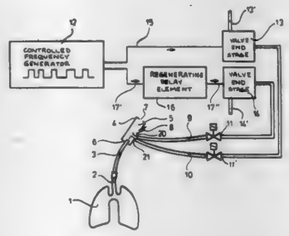
(d) said center flap portion overlying said exhaust tube end such that upon exhalation of air from said rescuer, said rescuer exhaled air is adapted to pass through said valve body to said patient; said center flap overlying said passageway and abuttingly engaging said grid such that upon exhalation by said patient, said patient exhaled air is adapted to pass through said exhaust tube to said ambient air.

4,520,812

METHOD AND APPARATUS FOR CONTROLLING A PRESSURE LEVEL IN A RESPIRATOR

Lutz Freitag; Michael Wendt, and Franz J. Dankwart, all of Münster, Fed. Rep. of Germany, assignors to Drägerwerk AG, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,145
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1982, 3212097
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.25 **14 Claims**



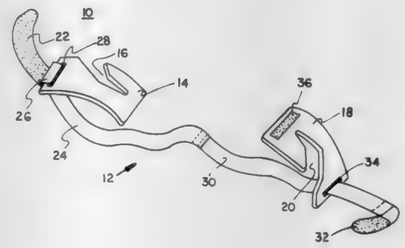
1. An apparatus for connecting a respirator through a tracheal tube to a person's trachea, comprising a tracheal tube adapted to be connected to the person's trachea, an attachment tube having one end connected to said tracheal tube and having a through bore defining an interior cavity, said bore having an opposite opening at one end to atmosphere and an opening at the opposite end into which the tracheal tube extends, a connection for fresh breathing air extending into said attachment tube from a side thereof, and at least two separate gas jet pipes opening into the cavity and each having a gas jet nozzle one of which is directed generally toward said tracheal tube and the other of which is directed in substantially an opposite direction, said connection for fresh breathing air including a fresh gas supply line having a rim portion interconnected with said attachment tube that is located between the opposite opening of said attachment tube and the other of said nozzles and spaced from the other of said two gas jet nozzles which is directed away from said tracheal tube by from 20 to 100 mm.

4,520,813

ENDOTRACHEAL TUBE HOLDER

Michael S. Young, 673 Dream Island Rd., Longboat Key, Fla. 33548

Filed Oct. 17, 1983, Ser. No. 542,444
Int. Cl.³ A61M *25/02*
U.S. Cl. 128—207.17 **7 Claims**



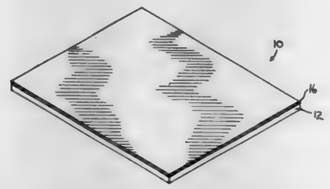
1. An endotraceal tube holder, comprising a pair of identical curved, plate-like hooking members adapted to overlie one another and each having first and second opposite ends and first and second opposite sides, one of said hooking members having a dogleg opening extending inwardly from said first side thereof toward said first end thereof, the other of said hooking members having a dogleg opening extending inwardly from said second side thereof toward said first end thereof whereby, when said holder is used, said openings receive and engage the same endotracheal tube, and a face and neck encircling attachment band connected to said ends of each of said hooking members.

4,520,814

LASER-RESISTANT BACK-UP PAD

Vaughan B. Weeks, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.

Filed Sep. 28, 1982, Ser. No. 426,109
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 **3 Claims**



1. A laser-resistant back-up pad for insertion between the layers of tissue incised by a laser during surgery comprising:

an elastomer substrate having a first surface adapted to face the interior of the body of the patient and an opposite second surface adapted to face the exterior of the body of the patient;

a smooth laser-reflective coating comprised of a mixture of an elastomer and a laser-reflective material permanently bonded to the second surface of said elastomer substrate; and

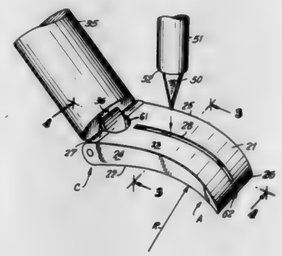
a layer of liquid absorbing non-laser reflective material bonded to said coating such that said laser reflective coating is sandwiched between said elastomer substrate and said liquid absorbing layer.

4,520,815

HAND SUPPORTED SURGICAL INSTRUMENT

Gerald P. Marinoff, Eight Rockford Dr., West Nyack, N.Y. 10994

Continuation-in-part of Ser. No. 389,842, Jun. 18, 1982, abandoned, which is a continuation-in-part of Ser. No. 199,693, Oct. 23, 1980, Pat. No. 4,340,059. This application Jun. 21, 1983, Ser. No. 506,427
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—303 R **13 Claims**



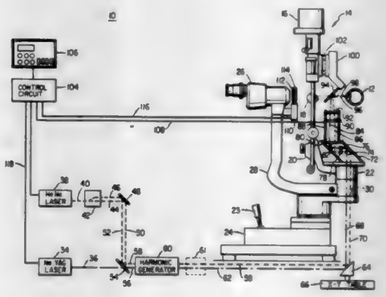
1. A hand supported instrument for assisting in the formation of ophthalmological incisions comprising a plate member having opposing side walls, opposing end walls, the distance between said end walls forming a length dimension, the distance between said side walls forming a width dimension, said length dimension being greater than said width dimension, said plate member having a bottom surface adapted to rest upon the surface of the human eye, said bottom surface being curved so as to conform to the normally curved surface of the human eye, no more than one longitudinally oriented slot extending through said plate to serve as a guide for a knife blade positioned in said slot, said plate member having a top surface spaced from said bottom surface by the thickness of said plate member and serving as means for controlling penetration of said knife blade through said slot, the thickness of said plate member varying from a minimum at a first end of said slot to a maximum at the other end of said slot, and means comprising a handle connected to said plate member at an end wall thereof closest to said second end of said slot for holding said plate member in a desired position on the human eye.

4,520,816

METHOD AND APPARATUS FOR DELIVERING LASER ENERGY FOR OPHTHALMIC USE

Ronald A. Schachar, 1020 N. Highway 75, Denison, Tex. 75020, and Stuart A. Solin, 1740 Shaker Blvd., Okemos, Mich. 48864

Filed Jan. 12, 1983, Ser. No. 457,433
Int. Cl.³ A61B *3/00, 17/36*
U.S. Cl. 128—303.1 **2 Claims**



1. An apparatus for delivering high power laser energy to the eye for surgical operations thereon comprising:

a hollow cylindrical member mounted on and perpendicular to a base, the interior of said cylindrical member communicating with the underside of said base;

a biomicroscope for viewing the eye and mounted for movement about a rotational axis to traverse a first arc, said rotational axis corresponding to the longitudinal axis of said cylindrical member;

a slit lamp mounted for movement about said rotational axis to traverse a second arc;

a Neodymium Yttrium-Aluminum Garnet laser for generating a high energy laser beam directed parallel to the plane of said base;

a control circuit for controlling the duration of said high energy laser beam;

a Helium Neon laser for generating a low power laser beam;

a birefringent crystal disposed in the path of said low energy laser beam for generating the ordinary and extraordinary rays thereof, said rays being parallel and having a defined distance therebetween;

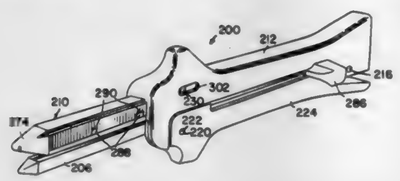
means for mixing the output of said high energy laser and said birefringent crystal such that said high energy laser beam is coexistent with one of the beams output by said birefringent crystal;

a harmonic generator disposed in the path of the combined high and low energy laser beams for generating harmonics of said high energy laser beam;

a pentaprism mounted below said base and proximate the longitudinal axis of said cylindrical member and disposed in the path of the laser beams output by said harmonic generator for providing an orthogonal deflection thereof upward into the interior of said cylindrical member;

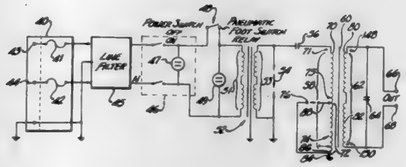
means for adjusting the position of said pentaprism to direct said deflected beams along said rotational axis;
means for optically directing the output of said pentaprism along said rotational axis to intersect the illumination path of said slit lamp at a point radially disposed from said rotational axis such that said intersection point is maintained constant for all rotational angles of said slit lamp;
a Galliliean beam expander disposed in the path of said high and low energy laser beams prior to said intersection point;
a focusing lens disposed in the path of said high and low energy beams between said intersection point and said beam expander;
a replaceable filter disposed in the path of said high and low energy beams between said focusing lens and said intersection point for selecting one of the harmonics of said high energy laser beam;
coding means associated with said replaceable filter for coding each filter such that said control circuit controls the duration and power level of said high energy laser beam automatically with the selection of said filter;
a dielectric mirror disposed at said intersection point to reflect the output of said selected filter and transmit the illumination of said slit lamp to the eye such that said high and low energy beams transmitted through said filter are parfocal with the output of said slit lamp and the illumination of said slit lamp passing through said dielectric mirror;
means for adjusting the position of said dielectric mirror to adjust the focal point of said high energy laser beam within the illuminated area of the eye illuminated by said slit lamp; and
a shutter disposed along the viewing axis of said slit lamp and out of the path of said high energy laser beam;
means for activating said shutter in response to the generation of said high energy laser beam to prevent reflection of the energy from said high energy laser beam from passing along the viewing axis of said slit lamp to the operator; and
filter means disposed along the viewing axis of said slit lamp and out of the transmission path of said high energy laser beam, said filter means selectable to filter out reflections of said high energy laser beam to the operator.

4,520,817
SURGICAL INSTRUMENTS
David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Continuation-in-part of Ser. No. 118,664, Feb. 5, 1980, abandoned. This application Mar. 8, 1982, Ser. No. 356,247
Int. Cl.³ A61B *17/04, 17/11*
U.S. Cl. 128—305 **4 Claims**



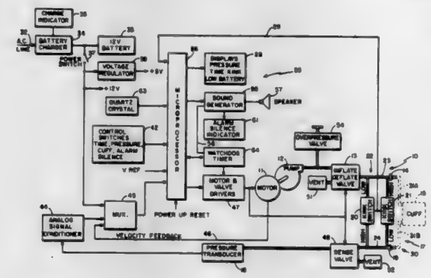
1. A disposable loading unit for use with a surgical stapler of the type having a first jaw adapted to carry a disposable loading unit, and using a pusher bar to eject staples sequentially from a disposable loading unit carried on the first jaw, and having a second jaw facing the first jaw for closing staples ejected from a disposable loading unit on the first jaw;
said disposable loading unit comprising: a body containing at least one longitudinally extending row of surgical staples and having a first longitudinal passage for receiving a pusher bar; camming means for cooperating with a pusher bar to eject said surgical staples from said body; and a slot extending through the entire thickness of said body for receiving jaw support means for supporting the stapler jaws;
further comprising jaw support means for supporting the stapler jaws, wherein said jaw support means comprises shoe means slidably movable along said slot in tandem with a pusher bar when a pusher bar is received in said first longitudinal passage, said shoe means being adapted to cooperate with a surgical stapler of said type for maintaining the jaws of the surgical stapler substantially stationary relative to each other in the vicinity of said shoe means.

4,520,818
HIGH DIELECTRIC OUTPUT CIRCUIT FOR ELECTROSURGICAL POWER SOURCE
Stanley Mickiewicz, Stoughton, Mass., assignor to Codman & Shurtleff, Inc., Randolph, Mass.
Filed Feb. 28, 1983, Ser. No. 470,642
Int. Cl.³ A61B *17/39*; H01F *21/12*
U.S. Cl. 128—303.17 **15 Claims**



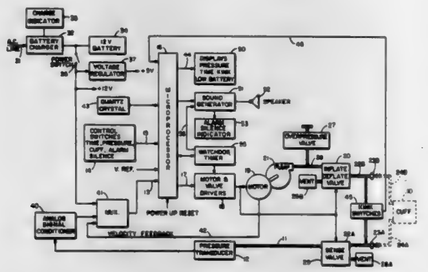
1. A transformer circuit comprising
a primary coil including first and second voltage divider segments, each of said segments arranged in phase and having equal inductance;
a plurality of taps connected to said second segment of said primary coil;
switching means for selectably grounding one of said taps for varying the voltage impressed on said second segment;
a secondary coil including first and second voltage divider segments arranged 180° out of phase and having equal inductance;
each of said secondary coil segments being heavily insulated with highly dielectric material;
said primary coil and said second coil being coupled together to provide an output from said secondary coil equal to the sum of the voltages applied to said segments of said secondary coil
whereby said transformer output can be varied by switching from one tap to another of said second segment of said primary coil.
8. An output circuit for a power source for an electrosurgical instrument comprising:
means for providing an alternating current input voltage signal having a predetermined peak voltage;
a primary resonant circuit connected to said input signal means for receiving said alternating current input voltage;
circuit interruption means for introducing a step-function wave form into said primary resonant circuit when said input voltage signal reaches a predetermined level;
a secondary resonant circuit including output terminals and coupled to said primary resonant circuit and resonating at substantially the same frequency as the said primary resonant circuit for delivering a high-frequency, high-voltage output signal to said output terminals for further transmission to an electrosurgical instrument;
said primary resonant circuit including switching means for adjusting the voltage level at the output terminals of said secondary resonant circuit.

4,520,819
TOURNIQUET WITH DIFFERENTIAL PRESSURE OCCLUSION DETECTOR
Michael J. Birmingham, Denver, and Michael R. Manes, Littleton, both of Colo., assignors to Aspen Laboratories, Inc., Englewood, Colo.
Filed Apr. 15, 1983, Ser. No. 485,346
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—327 **4 Claims**



1. A pneumatic tourniquet comprising:
a first means for inflating and deflating a tourniquet cuff, said means having a first port for connection to said cuff;
a second means for sensing the pressure in said cuff, said means having a second port for connection to said cuff;
a pair of pressure differential switches connected anti-parallelly between said first and second means for producing a signal indicative of a pressure differential between said first and second means; and
means responsive to said signal for producing an alarm.

4,520,820
AUTOMATIC TOURNIQUET WITH IMPROVED PRESSURE RESOLUTION
Dwight W. Kitchin, and Michael R. Manes, both of Littleton, Colo., assignors to Aspen Laboratories, Inc., Englewood, Colo.
Filed Apr. 15, 1983, Ser. No. 485,548
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—327 **15 Claims**



1. A pneumatic tourniquet comprising:
means for inflating and deflating a cuff;
pressure sensing means for sensing the pressure in said cuff and for producing a plurality of digital signals, each signal representative of said pressure and each signal having a pressure-to-digital signal scale such that the pressures at which the transistions between digital quanta occur are different for each signal; and
display means responsive to said plurality of signals for producing a pressure display having greater resolution than each of said digital signals.

4,520,821
GROWING OF LONG-TERM BIOLOGICAL TISSUE CORRECTION STRUCTURES IN VIVO
Richard A. Schmidt, San Francisco, and Emil A. Tanagho, San Rafael, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.
Filed Apr. 30, 1982, Ser. No. 373,772
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—334 R **3 Claims**

1. A method of growing a long-term biological tissue correction structure in vivo and of thereby surgically correcting a defect in a living body, comprising:
removing biological tissue from the area of the defect;
growing the removed biological tissue in vitro on a mesh formed of a bioabsorable material;
placing the mesh in position to temporarily correct the defect, the mesh, when placed in position to correct the defect, including biological tissue grown thereon in vitro, being of a construction sufficient so that biological tissue in the area of the defect can grow into the mesh and form a long-term biological tissue correction structure before the mesh is completed bioabsorbed and of a size selected to form a hemostatic temporary correction of the defect;
fastening the mesh in position to correct the defect; and
maintaining the mesh in position to correct the defect for a time sufficient for the long-term biological tissue correction structure to form and for the mesh to be completely bioabsorbed.

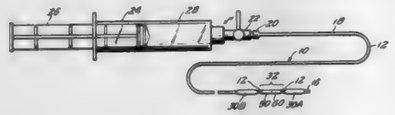
4,520,822
ETHYLENE-PROPYLENE COPOLYMER SUTURES
Edgar V. Menezes, Somerville, and Peter Steinheuser, Manville, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.
Continuation-in-part of Ser. No. 432,487, Oct. 4, 1984, abandoned. This application Sep. 13, 1983, Ser. No. 531,246
Int. Cl.³ A61L *17/00*
U.S. Cl. 128—335.5 **7 Claims**

1. A sterile surgical monofilament suture comprising an ethylene-propylene copolymer, said copolymer containing a small amount of polymerized ethylene, the balance being polymerized propylene, said ethylene being present in an amount sufficient to impart a significant reduction in Young's Modulus to the suture compared with a comparable polypropylene homopolymer suture, wherein said copolymer contains from about 0.3 to about 7 weight percent polymerized ethylene.

4,520,823
CATHETER WITH SEPARABLE BALLOONS
Harry H. LeVeen, 321 Confederate Clr., Charleston, S.C. 29407; Robert F. LeVeen, 312 Lombard St., Philadelphia, Pa. 19147, and Eric G. LeVeen, 358 Summit Ave., Mount Vernon, N.Y. 10552
Continuation-in-part of Ser. No. 250,603, Apr. 3, 1981, Pat. No. 4,404,971. This application Sep. 19, 1983, Ser. No. 533,755
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—348.1 **4 Claims**

1. A catheter which comprises an elongated tube having a central bore extending the length thereof, said bore being closed at one end of said catheter and having means for introducing a pressurized fluid into said bore at the other end of said catheter, said catheter further including first balloon forming structure including expandable wall means disposed about said tube located adjacent the closed end of said catheter, second balloon forming structure including expandable wall means disposed about said tube located along the length thereof spaced from said first balloon forming structure, said wall means being expandable to an inflated position responsive to pressurized fluid in said bore at the location of the associated balloon forming structure, and a separable coupling connected in said tube between said first and second balloon forming structures, said coupling including a first coupling member connected to said tube adjacent said first balloon forming

structure and a second coupling member connected to said tube adjacent said second balloon forming structure, said coupling members having an engaged position and a separated position, and each said coupling member including valve means normally closed in said separated position of said cou-





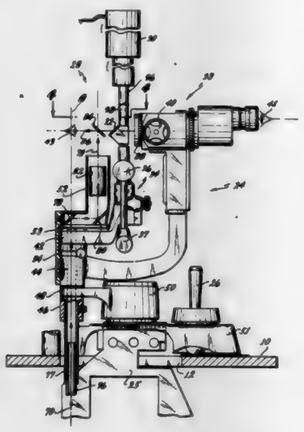
pling members and operable to open position in said engaged position of said coupling members whereby fluid communication in said bore between said balloon forming structures is open in said engaged position of said coupling members and is closed in said separated position of said coupling members.

4,520,824

INSTRUMENT FOR OPHTHALMIC LASER SURGERY

James R. Swaniger, Costa Mesa, and Paul R. Goth, Irvine, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Sep. 13, 1982, Ser. No. 417,689
Int. Cl.³ A61N *5/06*
U.S. Cl. 128—395 **20 Claims**



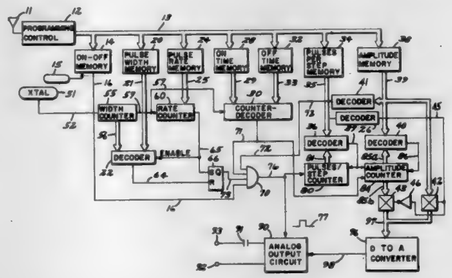
1. An instrument for ophthalmic laser surgery, comprising:
(a) a slit lamp adapted to be positioned adjacent a patient's eye, said slit lamp including magnifying means for observing said eye, and said magnifying means being mounted for pivotal movement about an axis;
(b) laser means for producing a beam of laser light;
(c) beam-directing means for directing said laser beam into said eye, said beam impinging upon said beam-directing means along said axis;
(d) means for pivotally mounting said beam-directing means for pivotal movement coaxial with said magnifying means and coupling means for coupling the magnifying means and the beam-directing means for pivotal movement together about said axis; and
(e) said slit lamp including an illuminator for providing an illumination beam for the patient's eye and means for mounting the illuminator for pivotal movement relative to said beam-directing means and said magnifying means.

4,520,825

DIGITAL CIRCUIT FOR CONTROL OF GRADUAL TURN-ON OF ELECTRICAL TISSUE STIMULATORS

David L. Thompson, Fridley; Glenn M. Roline, Anoka, and Richard J. Harrington, Roseville, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1982, Ser. No. 373,679
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—422 **7 Claims**



1. A remotely programmable circuit for control of gradual turn-on of electrical tissue stimulation comprising:
register means for holding digital signals corresponding to the amplitude of stimulation pulses to be delivered;
pulse generating means responsive to said digital signals for producing electrical tissue stimulation pulses;
means for altering said digital signals in response to successive occurrences of a predetermined number of pulses to cause discrete increases in the amplitude of stimulation pulses from the start of a stimulation interval until a predetermined maximum amplitude is obtained, said means for altering including first memory means for holding digital signals corresponding to said predetermined number, counter means for counting said pulses, and decoding circuit means responsive to said first memory means and said counter means for causing said discrete increases and for resetting said counter means when the count in said counter means corresponds to said predetermined number; and
means for receiving and decoding remotely generated programming signals and altering the contents of said first memory means to permit the rate of increase in the amplitude of stimulation pulses to be remotely programmed.

4,520,826

METHOD FOR GROWTH PROMOTION IN ANIMALS

Viktor V. Sevastyanov; Yakov A. Furman; Anatoly P. Grebenschikov, all of Ioshkar-Ola; Viktor F. Lysov, Kazan, and Boris N. Shalnov, Ioshkar-Ola, all of U.S.S.R., assignors to Mezhkhozyai Stvennoe Opytnokonstruktorskoe Bjuro Mariiskogo Respublicanskogo Proizvodstvennogo Obiedinenia "Mariiskmezhkhozkombikorm" and Mariisky Politekhnichesky Institut, both of Ioshkar-Ola, U.S.S.R.

Filed Sep. 3, 1982, Ser. No. 414,715
Int. Cl.³ A61N *1/06*
U.S. Cl. 128—422 **1 Claim**

1. A method for growth promotion in animals, consisting in percutaneous application of an electromagnetic field having a frequency of from 25 to 150 MHz and a power of from 30 to 40 W, to the region of the epididymal lobules of the spermatic

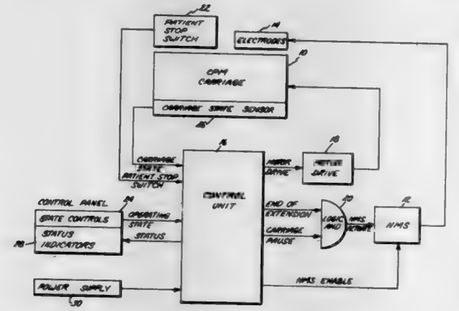
cords and the epididymides, said application of an electromagnetic field being carried out until a subcutaneous induration appears in the aforesaid region, that is, within an exposure time of from 10 to 20 s.

4,520,827

NMS AIDED CONTINUOUS PASSIVE MOTION APPARATUS

Thomas C. Wright, New Brighton, and Stephen H. Ober, Chaska, both of Minn., assignors to EMPI, Inc., Fridley, Minn.

Filed Feb. 9, 1984, Ser. No. 578,470
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—423 W **24 Claims**



1. Apparatus for moving a leg of a patient, comprising:
continuous passive motion carriage means for supporting the leg through a range of reciprocal angular movement;
drive means for causing reciprocal angular movement of the carriage means between a flexion end position in which an angle of a knee joint of the leg is at a minimum, and an extension end position in the angle is at a maximum;
neuro-muscular stimulation means for applying electrical stimulation to a quadriceps muscle of the leg;
carriage state sensor means for providing a signal representative of a state of the carriage means within the range of reciprocal angular movement; and
control means for controlling the drive means and the neuro-muscular stimulation means to cause the drive means to pause for a predetermined pause interval when the carriage state sensor provides a signal indicating that the carriage means is at the extension end position and enabling the neuro-muscular stimulation means to provide the electrical stimulation to the quadriceps muscle during the pause interval.

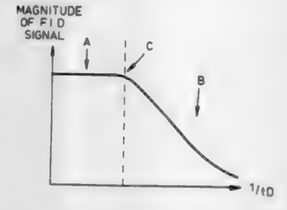
4,520,828

NUCLEAR MAGNETIC RESONANCE METHOD AND APPARATUS

Michael Burl, Hampton Hill, and Ian R. Young, Sunbury-on-Thames, both of England, assignors to Picker International, Ltd., Wembley, England

Filed Jul. 28, 1983, Ser. No. 518,215
Claims priority, application United Kingdom, Aug. 11, 1982, 8223115
Int. Cl.³ A61B *5/05*
U.S. Cl. 128—653 **7 Claims**

1. A method of determining the rate of flow of a liquid in a region of a body comprising: sequentially applying a first magnetic pulse effective to cause nuclei preferentially in a slice of said body which includes said region to emit a first free induction decay signal, waiting a period of time less than the spin-lattice relaxation time for said chosen nuclei in said slice and then applying a second magnetic pulse effective to cause nuclei preferentially in said slice to emit a second free induction decay signal and measuring said second free induction decay signal; repeating said sequence for different values of



said period of time; and relating the values of said period of time and the corresponding measured signals to the rate of flow of said liquid through said slice.

4,520,829

METHOD OF TAKING ANGIOGRAPHS

Karl-Heinz Lohse, Im Bans 20a, 2080 Pinneberg, Fed. Rep. of Germany, assignor to Karl-Heinz Lohse, Pinneberg, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,496
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3204037
Int. Cl.³ A61B *6/00*
U.S. Cl. 128—654 **7 Claims**

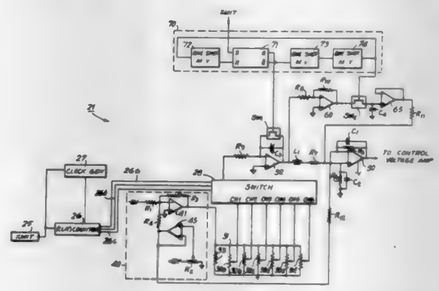
1. Angiographic process utilizing contrast mediums for the roentgenographic representation of living organ vessels, especially human, wherein a reference radiograph is made of a vascular region to be visualized, a contrast medium is infused into said vascular region, a photograph of the same region is produced after a given time interval, for example 0.5 seconds and a visual image is produced by photographic substraction of the two pictures, wherein the process further comprises the steps of reducing the quantity of the contrast medium and the x-ray dose used to produce the pictures by photographically equivalent factors to such an extent that the desired information lies in a density range (blackening range) unsuited to direct observation, and extracting and transposing in the process of photographic subtraction, the density range containing the information into a visual density range suitable for direct observation of the image.

4,520,830

ULTRASONIC IMAGING DEVICE

Eugene L. Flanagan, III, Manhasset, N.Y., assignor to American Home Products Corporation (Del.), New York, N.Y.

Filed Dec. 27, 1983, Ser. No. 566,058
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **26 Claims**



1. For examining the interior of an object, an ultrasonic imaging device includes means for producing echo signals

representative of the paths traveled within said object by corresponding ultrasonic waves which are generated by said device, amplifying means for amplifying said echo signals and control means for controlling the level of amplification provided by said amplifying means; said control means comprising:

means for producing a plurality of input signals;

first adjustable voltage means for producing a selected voltage level;

integrating means for operating on said input signals and producing integrated signal levels of a particular polarity;

inverting means for reversing the polarity of said integrated signal levels and producing inverted signal levels; and

summing means for adding said selected voltage of said first adjustable voltage means and said integrated signal levels and responsive to said inverted signal levels for producing control signals said amplifying means amplifying said echo signals in response to said control signals.

4,520,831

PLASTIC HAIRDRESSING COMB

Henning Schumann, Hilden; Peter Busch, Erkrath; Detlef Fischer, Duesseldorf, and Klaus Thiele, Langenfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 16, 1984, Ser. No. 590,104

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3309925

Int. Cl.³ A45D *24/00*

U.S. Cl. 132—11 R **9 Claims**



1. A plastic hairdressing comb comprising teeth and a spine consisting essentially of at least one section which negatively charges the hair during combing and at least one section which positively charges the hair during combing, wherein the volume ratio and/or the spatial distribution of the at least one section which negatively charges the hair during combing and the at least one section which positively charges the hair during combing are selected to neutralize the charge produced on the hair by the individual sections in a reciprocal manner.

4,520,832

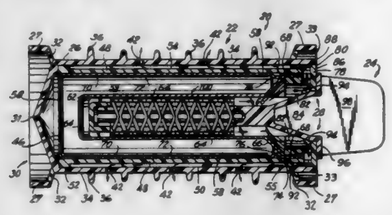
VAPOR GENERATING HAIR ROLLER ASSEMBLY

Jorgen Skovdal, Trumbull, Conn., assignor to Clairol Incorporated, New York, N.Y.

Filed Jan. 28, 1983, Ser. No. 461,811

Int. Cl.³ A45D *2/12*

U.S. Cl. 132—33 R **14 Claims**



1. A vapor generating hair roller assembly comprising:

a hollow roller having a perforated outer surface suitable for winding a tress of hair therearound, said roller having an externally accessible bore with a surrounding heatable surface, said bore being in fluid communication with said perforations; and

liquid providing means removably insertable into said bore for providing liquid at least proximate to said heatable surface so as to generate vapor therefrom, said vapor outletting through said perforation into the tress of hair.

4,520,833

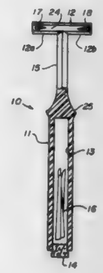
TOOTHPICK HOLDER

Joseph Hadary, 5405 Linden Ct., Bethesda, Md. 20814

Filed Mar. 16, 1983, Ser. No. 476,555

Int. Cl.³ A61C *15/00*

U.S. Cl. 132—90 **5 Claims**



1. A toothpick holder for selectively holding a toothpick in one of a plurality of orientations, comprising:

an elongate handle having a cross-piece at one end;

said cross-piece defining a pair of arms projecting laterally in opposite directions from the handle at substantially a right angle thereto and having free outer ends spaced from the handle; and

each arm having a shaped opening extending transversely therethrough adjacent the free outer end for receiving and holding a toothpick inserted into and through the opening, whereby a toothpick inserted through the opening in one arm has an orientation essentially opposite the orientation of a toothpick inserted through the opening in the other arm, to facilitate access to the interstices between the teeth on opposite sides of the mouth.

4,520,834

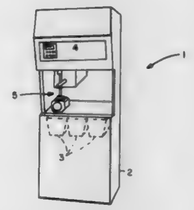
APPARATUS FOR PROCESSING ARTICLES IN A SERIES OF PROCESS SOLUTION CONTAINERS

Paolo S. DiCicco, 395 Laurel St., San Carlos, Calif. 94070

Filed Nov. 8, 1983, Ser. No. 549,990

Int. Cl.³ B08B *3/10*

U.S. Cl. 134—63 **2 Claims**



1. An apparatus in an enclosed housing for the processing of solid materials comprising:

(a) a carrier for containing said solid materials, said carrier affixed to an end of a rotor arm;

(b) a plurality of containers horizontally affixed to a base;

(c) vertical traversing means for raising and lowering said carrier from and into each said container, said vertical traversing means comprising a first carriage attached to said rotor arm and engaged to moveable vertical shafts;

(d) horizontal traversing means for positioning said rotor arm and carrier above each of said containers, said horizontal traversing means comprising a second carriage moveably engaged to fixed horizontal shafts and to said vertical shafts;

(e) drive means for rotating said rotor arm and carrier in a vertical plane within said housing whereby said carrier and solid materials contained therein are subjected to centrifugal force;

(f) means for moving sequentially said second carriage to a preselected sequence of positions along said horizontal shafts;

(g) means for timing preselected periods during which said carrier remains lowered in each said container; and

(h) means for timing a preselected period of rotation of said rotor arm at a preselected rotational frequency subsequent to raising said carrier from each said container.

4,520,835

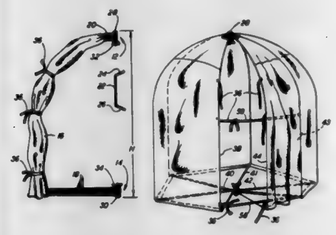
PORTABLE TENT

John D. Moeller, 7854 Vernon Rd. S., Clay, N.Y. 13041

Filed May 25, 1983, Ser. No. 497,999

Int. Cl.³ A45F *1/16*

U.S. Cl. 135—102 **6 Claims**



1. A lightweight, portable tent structure movable between erected and folded positions, and between flexed and unflexed positions while in said folded position, said structure comprising, in combination;

(a) a plurality of not less than three substantially identical frame members, each comprising a continuous, solid, metal rod extending from a lower terminal end defining a substantially closed loop, through a linear base portion and a curved upright portion to an upper terminal end defining a substantially closed loop;

(b) said upper terminal ends of each of said frame members being superposed directly upon one another with the openings defined by said closed loops thereof aligned on a first linear axis, and said lower terminal ends being likewise superposed with the openings defined by said closed loops thereof aligned on a second linear axis, said first and second axes being vertically aligned with said first and second terminal ends spaced by a first distance, in the erected position of said tent, and angularly arranged and spaced by a second distance, less than one-quarter of said first distance, in said flexed position;

(c) means for releasably retaining said tent in said flexed position;

(d) first and second headed bolt members extending loosely through said closed loops of said first and second terminal ends, respectively, and each secured by respective nut means to maintain said first and second terminal ends in said directly superposed relation,

said nut means being selectively loosened to permit free movement of said frame members about said first and second axes between said erected position, wherein said frame members are angularly disposed about said first and second axes, and said folded position, wherein said frame members are substantially mutually superposed, and

tightened to frictionally engage said upper and lower, superposed terminal ends between said nut means and the heads of said bolt members to stabilize the positions of said frame members in the erected position;

(e) a flexible fabric covering extending substantially from said upper terminal ends to said base portions of said frame members and secured to said upright portions in angular segments, whereby the size of said segments establishes the angular relation of said frame members in said erected position, said covering having lateral terminal edges respectively secured to a first and a last of said frame member upright portions, and extending 360° about the periphery of said tent when in said erected position with said first and last frame members immediately adjacent one another;

(f) primary securing means for selective attachment between portions of said covering material lateral edges to maintain said first and last frame members in said adjacent position; and

(g) secondary securing means for selective attachment between said first frame member and the next-to-last frame member to maintain a fixed spacing therebetween and prevent movement away from said erected position, whereby said tent may be positionally stabilized by said secondary securing means as said last frame member is moved between positions adjacent said first frame member and adjacent said next-to-last frame member.

4,520,836

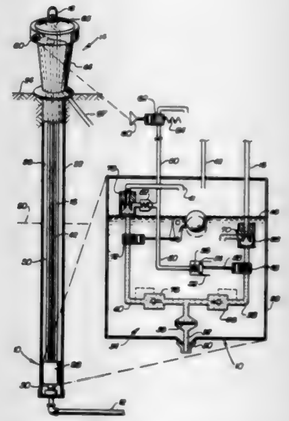
FREEZEPROOF VALVE ASSEMBLY

Charles G. Hutter, III, Carson City, Nev., assignor to Physical Systems, Inc., Carson City, Nev.

Filed Aug. 26, 1983, Ser. No. 526,677

Int. Cl.³ E03B *7/12, 9/14*

U.S. Cl. 137—59 **25 Claims**



1. A freezeproof valve assembly for controlling water flow from a water supply pipe to a hydrant standpipe, comprising:

a sump housing having a sump chamber for receiving a supply of water;

a primary flow conduit for connection between the water supply pipe and the standpipe;

a refill flow conduit for connection between the water supply pipe and the sump chamber;

a main jet pump along said primary flow conduit and having an induction port communicating with the sump chamber at a position below the surface level of water therein;

a control valve movable between a closed position preventing water flow through said primary flow conduit and an

open position permitting a direct water flow from the supply pipe through said primary flow conduit and further through said main jet pump to draw an induced water flow through said induction port into said main jet pump thereby supplying a combined direct and induced water flow to the standpipe;

refill valve means for controlling water flow from the supply pipe through said refill flow conduit into the sump chamber to maintain the surface level of water within the sump chamber between predetermined upper and lower limits above said main jet pump induction port; and

actuator means for selectively moving said control valve between said open and closed positions, said actuator means including and actuator member movable between first and second positions and a fluid coupling between said actuator member and said control valve for moving said control valve between said open and closed positions in response to actuator member movement respectively between said first and second positions;

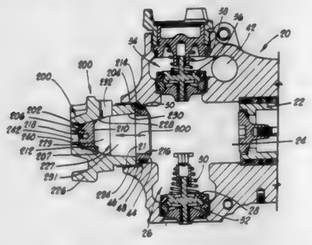
said main jet pump induction port providing a flow path for drainage of water within the standpipe into the sump chamber when said control valve is closed.

4,520,837

COVER RETAINER

Clinton W. Cole, and Verlin R. Beach, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 31, 1984, Ser. No. 575,634
Int. Cl.³ F16K *13/04*; F04B *39/12*
U.S. Cl. 137—68 R **17 Claims**



1. A cover retainer for a fluid end of a plunger-type pump adapted to retain a portion of a protective cover including first and second disc-shaped portions adapted to separate along a boundary therebetween when subjected to cylinder pressure above a predetermined limit, said cover being provided to relieve pressure in a cylinder of said pump when said pressure exceeds said predetermined limit, comprising:

a receptacle including means on the exterior thereof for securing said receptacle to said fluid end, said receptacle including a cup-shaped cavity of generally frusto-conical configuration therein, the mouth of said cavity being disposed adjacent said cover, and the cross-sectional area of said cavity decreasing from the mouth of said cavity to the bottom of said cavity.

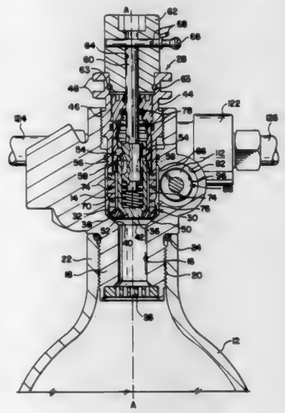
4,520,838

VALVE FOR HIGH PRESSURE FLUID CONTAINER

John M. Fisher, Cuyahoga Falls, and James C. Putt, Barberton, both of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Filed Jul. 1, 1983, Ser. No. 510,001
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—69 **4 Claims**

1. A valve for mounting on a high pressure fluid container comprising a valve housing having a fluid conduit in communication with an inlet passage connected to said fluid container, a cartridge member positioned in said conduit and movable toward and away from said inlet passage, a valve seat in said conduit adjacent said inlet passage, a soft metallic plate member mounted on said cartridge member for seating on said valve seat, pressure means for moving said cartridge toward said inlet passage to crush said plate against said valve seat and close said inlet passage, said pressure means includes a threaded connection between said valve housing and said cartridge, said cartridge having a disc support including a thrust collar member engageable with an outer periphery of said disc for pressing a peripheral edge of said disc against a surface of said valve seat in fluid sealing relationship, said disc support including a central support member positioned adjacent said thrust collar member for supporting a central portion of said disc, latch means connecting said cartridge and said central support member for retaining said central support member in a supporting position, release means for releasing said latch means and permitting movement of said central support member away from said disc so that said central portion of said disc is unsupported and may burst to communicate high pressure fluid from said fluid pressure container to the space within said fluid conduit; resilient rings mounted on said



cartridge in axially spaced relationship at positions spaced from said support member and said latch means in the closed condition for absorbing impact forces when said disc bursts and said high pressure fluid acts against said central support member and said latch means, said valve housing having an outlet passage communicating with openings in said cartridge, said openings in said cartridge communicate directly with said fluid container after bursting of said disc, a regulator chamber in direct communication with said outlet passage, said regulator chamber having an axially movable member to control the flow of fluids therethrough, said movable member having a pair of spaced spools, an outlet opening communicating with said regulator chamber adjacent one of said spools, said one spool operative to regulate the pressure and flow of fluid through said outlet opening by cooperative action with an annular edge of said chamber, the other ones of said spools spaced from said one spool and being greater in surface area than said one spool to facilitate the control of fluid past said one spool to said outlet opening.

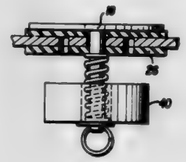
4,520,839

VALVE

Robert W. Roff, 15B Jetty Rd., Toora, Victoria, Australia

Filed Apr. 1, 1983, Ser. No. 481,413
Claims priority, application Australia, Apr. 5, 1982, PF3468
The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.
Int. Cl.³ F16K *17/40*
U.S. Cl. 137—202 **9 Claims**

1. A valve for removing trapped air from a pump line, said valve including an apertured member, a valve member on one side of said apertured member which covers said aperture(s) for allowing escape of trapped air, biasing means for resiliently biasing said valve member toward its closed position and a



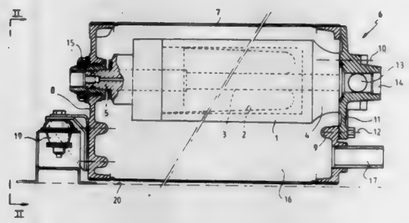
float member on the other side of said apertured member adapted to cover said aperture(s) when said trapped air has been removed or substantially removed.

4,520,840

HYDROPNEUMATIC ENERGY RESERVOIR FOR ACCUMULATING THE BRAKING ENERGY RECOVERED ON A VEHICLE

Robert Michel, Paris, France, assignor to Renault Vehicules Industriels, Lyons, France

Filed Jul. 12, 1983, Ser. No. 513,138
Claims priority, application France, Jul. 16, 1982, 82 12517
Int. Cl.³ F17C *1/00*
U.S. Cl. 137—259 **4 Claims**



1. A combined high pressure-low pressure hydraulic accumulator for a vehicle, said accumulator combining a high pressure hydraulic accumulator located in a casing, and a low pressure hydraulic accumulator comprising the space between said high pressure accumulator and said casing, wherein

said high pressure hydraulic accumulator comprises several bodies, each including a tubular wall, an hydraulic end at an end of said wall with a fitting for hydraulic connection, a pneumatic end at the other end of said wall with a valve and a pneumatic connection for precharging air pressure in said body and checking said pressure, a tie-rod axially located in said body and prestrained between both ends to press said hydraulic end and said pneumatic end toward said wall, and a tubular bladder surrounding said tie-rod and tightly connected to said wall at the vicinity of said pneumatic end and to said tie-rod at the vicinity of said hydraulic end;

said casing comprises a shell with a front end plate at an end thereof and a back end plate at another end thereof, said front end plate being provided with an aperture large enough for freely introducing and extracting all said several high pressure bodies at a time;

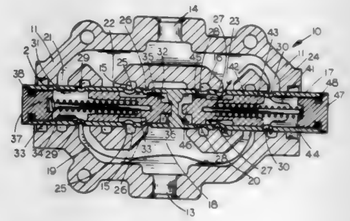
said bodies being all connected, each by said fitting of its hydraulic end, to a single member forming together a manifold for mechanically and hydraulically connecting all said hydraulic ends in parallel to a common high pressure input-output, and a cover for closing said aperture of said casing.

4,520,841

FOUR-WAY VALVE

Glen Brand, and Timmy L. Chew, both of 2332 S. 25th St., Omaha, Nebr. 68105

Filed Dec. 27, 1983, Ser. No. 565,662
Int. Cl.³ F15B *13/04*
U.S. Cl. 137—270 **3 Claims**



1. A four way valve for use in pressure compensated pump systems comprising:

a valve body;

bore means for forming an opening in said valve body;

an inlet port in said valve body in fluid communication with a source of supply of fluid;

an outlet port in said valve body in fluid communication with a fluid supply tank;

a first active port in fluid communication with said opening in the valve body;

a second active port in fluid communication with the opening in said valve body;

a valve member disposed in said opening and selectively movable to first and second active positions and a third neutral position;

a first inlet passage in said valve body leading from said inlet port to said opening in said valve body;

a second inlet passage leading from said inlet port to said opening in said valve body;

a third inlet passage leading from said inlet port to said opening in said valve body;

a first outlet passage in said valve body leading from said opening in said valve body to said outlet port;

a second outlet passage leading from said opening in said valve body to said outlet port;

a third outlet passage leading from said opening in said valve body to said outlet port;

a fourth outlet passage leading from said opening in said valve body to said outlet port;

a first passageway formed in said valve member;

a second passageway formed in said valve member;

a third passageway formed in said valve member;

a fourth passageway formed in said valve member;

said first passageway in said valve member being in fluid communication with said first inlet passage in said valve body and said first active port in said first active position of said valve member, said first passageway in said valve member being in fluid communication with said first active port and with said second outlet passage in said valve body in said second active position of said valve member;

said second passage in said valve member being in fluid communication with said second active port and with said third outlet passage in said valve body in said first active position of said valve member, said second passageway in said valve member being in fluid communication with said first inlet passage in said valve body and said second active port in said second active position of said valve member;

said third passageway in said valve member being in fluid communication with said second inlet passage in said valve body in said first active position of said valve member, said third passageway in said valve member being in fluid communication with said first outlet passage in said

valve body in said second active position of said valve member; and

said fourth passageway in said valve member being in fluid communication with said fourth outlet passage in said valve body in said first active position of said valve member, said fourth passageway in said valve member being in fluid communication with said third inlet passage in said valve body in said second active position of said valve member;

first chamber means for forming a first chamber in one end of said valve member, said first chamber being fluidly connected to said first and third passageways formed in said valve member;

second chamber means for forming a second chamber in the other end of said valve member, said second chamber being fluidly connected to said second and fourth passageways in said valve member;

first fluid pressure compensating means disposed in said first chamber of said valve member for controlling the flow out through said first passageway, said first pressure compensating means, in a meter-out mode being biased to a first position and movable between said first position and a second position, depending upon the relative fluid pressure acting on each end of said first fluid pressure compensating means, the pressure on each end of said first fluid pressure compensating means being the same as the pressure in the inlet port in the first active position of said valve member, said first fluid pressure compensating means tending to be moved from the first position thereof, toward the second position thereof when said valve member is in the second active position thereof, whereby fluid is metered out of said first active port of said valve body, through said first passageway in said valve member, past said first fluid compensating means in said first chamber of said valve member and out the second outlet passage to said outlet port;

second fluid pressure compensating means disposed in said second chamber of said valve member for controlling the flow through said second passageway, said second pressure compensating means being biased to a first position and movable to a second position depending upon the relative fluid pressure acting on each end of said second fluid pressure compensating means, said second fluid pressure compensating means tending to be moved from the first position thereof towards the second position thereof when said valve member is in the first active position thereof, whereby fluid is metered out of said second active port of said valve body, through said second passageway in said valve member, past said second fluid compensating means in said second chamber of said valve member and out the third outlet passage to said outlet port, the pressure on each end of said second fluid pressure compensating means being the same as the pressure in the inlet port in the second active position of said valve member; and

wherein none of said passageways in said valve member are in fluid communication with any of said inlet or outlet passageways in said valve body when said valve member is in the neutral position thereof.

4,520,842

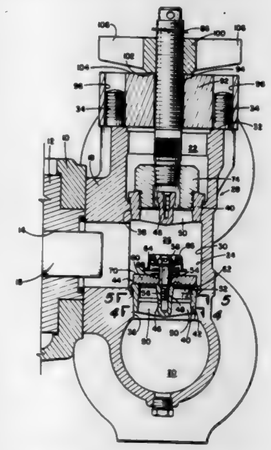
HIGH PRESSURE VALVE FOR POSITIVE PRESSURE PUMPS INCLUDING MEANS FOR INSTALLING AND REMOVING THE VALVE

Robert E. Elliott, 2045 S. Holiday Hills Rd., Midland, Tex. 79703

Filed Nov. 9, 1983, Ser. No. 549,797
Int. Cl.³ F16K *15/02*
U.S. Cl. 137—327 **12 Claims**

1. A high pressure valve seat for a reciprocating pump of the type which has a tapered frustro-conical shaped nonthreaded seat deck comprising:

a tubular seat element having an upper and lower end and having a frusto-conical exterior configuration dimensioned to be received in a pump tapered seat deck, the seat element having a centrally and coaxially positioned stem retainer portion (having an internally threaded recess in the upper end), the exterior dimension of the stem retainer portion being less than that of the tubular seat element interior diameter providing an annular flow passageway, including a plurality of spaced apart web members connected at their inner ends to said stem retainer portion and



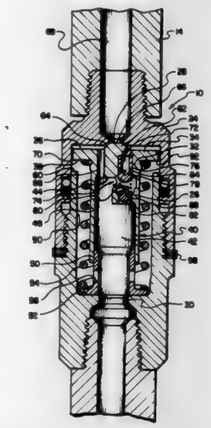
at their outer ends with the lower interior portion of the seat element, the areas between such web members providing fluid passageways in the seat element, the upper end of the seat element providing a circumferential sealing surface, and the upper portion of the seat element interior surface above said web members being internally threaded providing means of removing the seat element from a pump seat deck.

4,520,843

FLOW CONTROL VALVE

Paul E. Debrunner, Jr., Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 27, 1984, Ser. No. 583,561
Int. Cl.³ F16K *17/20*
U.S. Cl. 137—469 **6 Claims**



1. A flow control valve for holding a column of fluid until the pressure of said fluid reaches a preseleted cracking pressure, said control valve comprising:

a valve body having an internal chamber, an inlet at one end of said chamber for receiving said column of fluid and an outlet at the opposite end of said chamber for discharging said fluid from said valve;

a poppet axially movable within said internal chamber between an inlet-closing position and a retracted position, said poppet comprising a piston head having a face opposing said inlet and a plug projecting from said face, said plug closing-off said inlet from the remainder of said face when said poppet is at said inlet-closing position, said face being exposed to said fluid from said inlet when said poppet is moved from said inlet-closing position, said poppet further comprising at least one passage through said piston head for conveying said fluid from said face to a location on the backside of said piston head, an axially reciprocable, hollow connector extending from said backside and defining an interior channel in said poppet extending toward said other end of said valve body, said connector internally conveying fluid from said backside location to said oulet, and an annular hollow stem extending inward from said other end of said valve body slidably engaging the end of said connector to form a continuation of the interior channel defined by the connector;

an annular stop at a fixed location within said chamber for peripherally engaging said backside of said piston head when said poppet is at said retracted position to thereby prevent further axial movement of said poppet and to form at least a partial seal about the periphery of said piston head, said piston-head passage providing enough pressure drop in the fluid conveyed therethrough to assure that the poppet remains in its retracted position;

at least one hole in the wall of said stem for connecting the lower-pressure, other end of the valve body to a cavity between the backside of the piston head, the valve body and the hollow connector and for evacuating fluid leaking about the periphery of said piston head and

biasing means for urging said poppet towards said inlet-closing position, said biasing means providing sufficient urging force to maintain said poppet at said inlet-closing position until said fluid achieves said cracking pressure,

the surface area of said piston head being greater than that of said plug so that, when said plug is forced out of sealing contact with said inlet, said fluid pressure against said piston head exerts a substantially greater force on said piston head than the opposite force exerted thereon by said biasing means, thereby causing said poppet to snap into its retracted, fully open position.

4,520,844

REGULATOR VALVE FOR STABILIZING VOLUME FLOW, ESPECIALLY IN VENTILATION SYSTEMS

Wolfgang Finkelstein, and Josef Haaz, both of Neukirchen-Vluyn, Fed. Rep. of Germany, assignors to Gebruder Trox, GmbH, Neukirchen-Vluyn, Fed. Rep. of Germany

Filed Mar. 22, 1983, Ser. No. 477,752
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 8229509[U]
Int. Cl.³ F24F *13/08*
U.S. Cl. 137—486 **20 Claims**

1. A regulator valve, comprising:

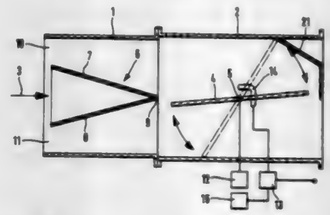
(a) a flow conduit with an upstream end and a downstream end;

(b) an adjustment flap pivotally mounted in said conduit and associated with said downstream end for adjusting the flow of fluid through said conduit;

(c) flow measuring means disposed at least in part in said conduit for monitoring the flow rate of fluid flowing through said conduit;

(d) means operably associated with said adjustment flap and with said flow measuring means for causing pivoting of said adjustment flap; and,

(e) at least two turbulence grates disposed in said conduit and associated with said upstream end and each of said grates has a first end and a second end and said second ends being spaced apart and said first ends being joined



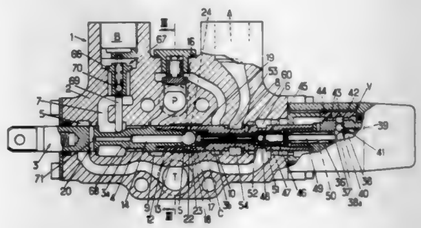
together downstream of said second ends so that said grates are angularly disposed and said second ends are spaced from the periphery of said conduit whereby fluid flowing through said conduit is stabilized.

4,520,845

HYDRAULIC DISTRIBUTORS

Olivier Isaac, and Louis Pignolet, both of Lyons, France, assignors to Rexroth-Sigma, Venis Sieux, France

Filed Dec. 1, 1982, Ser. No. 445,922
Claims priority, application France, Dec. 3, 1981, 81 22670
Int. Cl.³ F15B *13/01*
U.S. Cl. 137—624.27 **8 Claims**



1. A hydraulic distributor comprising:

a body provided at least with one pressurised fluid inlet port, one return port for returning the fluid to a tank, two connecting ports connecting with a hydraulic apparatus or component, and a slide valve adapted to slide in a bore of the distributor body;

the body and the slide valve including passages, channels and/or grooves arranged so as to cooperate to establish the desired connection or closure of the various ports of the distributor body, according to the position occupied by the slide valve;

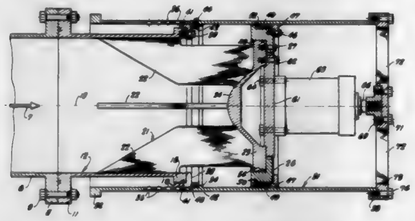
this distributor comprising locking means for the slide valve in its working and resting positions, the locking means actuated mechanically on the movement of the slide valve;

wherein, on the one hand, the slide valve is constructed of at least two parts assembled to one another and a pressure selector is arranged inside the slide valve, this pressure selector comprising two inlets and one outlet, and adapted to compare the two pressures on these inlets and to supply, at its outlet, the highest pressure; coupling means being provided in the distributor body and in the slide valve to couple the two inlets of the selector respectively to the two connecting ports of the distributor, and to connect the outlet of the selector to a channel opening outside the distributor body;

and wherein, on the other hand, the distributor includes means sensitive to the outlet pressure of the selector adapted to control the actuation of the unlocking means

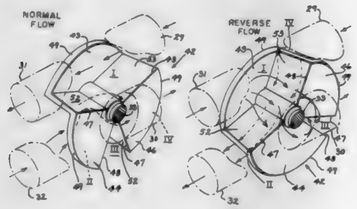
when the outlet pressure of the selector passes through a predetermined limit.

4,520,846
VALVE
Robert W. Dixon, Concord, Calif., assignor to Chas. M. Bailey Co., Inc., Emeryville, Calif.
Filed Aug. 15, 1983, Ser. No. 523,142
Int. Cl.³ F16K *3/26*
U.S. Cl. 137—625.3 **1 Claim**



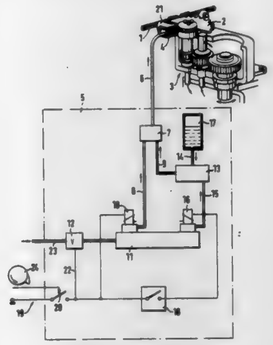
1. A valve comprising a mounting tube concentric with an axis, means for supplying one end of said tube with liquid under pressure, a polyjet sleeve having apertures therethrough externally exposed to the atmosphere to discharge said liquid directly to the atmosphere and surrounding and coaxial with said mounting tube, a solid end plate axially spaced from and extending across the other end of said mounting tube, said end plate spanning the interior of said polyjet sleeve, means on said end plate interengaging the interior of said sleeve, an axially extending cage at one end disposed on said mounting tube and disposed along said axis to extend beyond said other end of said mounting tube, means for securing said end plate on said cage, and means interengaging said mounting tube and said polyjet sleeve for moving said polyjet sleeve in axial directions on said mounting tube and across said interengaging means on said end plate.

4,520,847
FLUID FLOW DIVERTER DISC VALVE
Walter J. Baron, Milwaukee, Wis., assignor to Water Services of America, Inc., Milwaukee, Wis.
Filed Aug. 30, 1983, Ser. No. 527,691
Int. Cl.³ F16K *11/083, 5/02*
U.S. Cl. 137—625.43 **7 Claims**



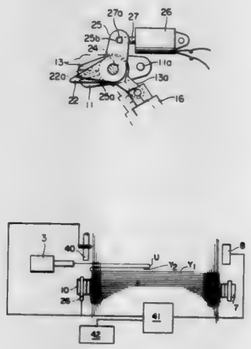
1. A fluid flow reversing diverter valve (1) for connection between a source of pressurized fluid (15) and a process device (2), comprising, in combination:
(a) an enclosed housing (21) having a longitudinally extending generally cylindrical side wall (22) and end walls (23, 24),
(b) a pair of spaced parallel upstream supply and return ports (29, 30) disposed in said housing side wall for connection to the fluid source,
(c) a pair of spaced parallel downstream output and input ports (31, 32) disposed in said housing for connection to the process device, said downstream ports being in line with said upstream ports,
(d) and a valve rotator assembly (42) disposed within said housing for rotation between a first and second position about a longitudinal axis (34) so that fluid entering said supply port (29) may be selectively directed to either of said downstream ports and so that fluid returning through either of said downstream ports is discharged through said return port (30), said assembly being connected to means to rotate the assembly within said housing and including:
(1) axle means (33) mounted for rotation on said axis and fixed against axial movement,
(2) a plurality of disc segments (43–46) disposed transversely of said axle means and extending radially outwardly therefrom, and with said disc segments having a pair of arcuately spaced generally radial edges (47, 48) and terminating in arcuate edges (49) disposed closely adjacent said housing side wall, said disc segments being disposed alternately adjacent opposite end portions of said axle means to form two pair (43, 45–44, 46) of arcuately spaced disc segments,
(3) and longitudinally extending partitions (52, 53) joining said radial edges of alternate disc segments,
(e) said assembly forming a plurality of rotatable alternating arcuate diverter chambers (I–IV) delineated by said housing side wall, said disc segments, and said partitions, and with the ends of said chambers opposite said disc segments being open.

4,520,848
RAPIER OR GRIPPER WEAVING MACHINE
Anton Lucian, and Kurt Geiger, both of Arbon, Switzerland, assignors to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland
Filed Mar. 6, 1984, Ser. No. 586,829
Claims priority, application Switzerland, Mar. 23, 1983, 1575/83
Int. Cl.³ D03J *1/00*
U.S. Cl. 139—1 R **5 Claims**



1. A rapier weaving machine having a rapier, comprising:
a drive element for imparting to-and-fro motion to the rapier of the rapier weaving machine;
an oil lubrication device having a spray nozzle opening in proximity to said drive element;
a pressurized conduit with which there is operatively connected said spray nozzle;
said oil lubrication device comprising a mixing chamber having an outlet;
said pressurized conduit being connected to said outlet of said mixing chamber;
said oil lubrication device further comprising;
means for continuously transmitting a flow of pressurized air through said mixing chamber;
an oil reservoir for supplying predetermined quantities of oil to said mixing chamber for admixture with said continuously transmitted flow of pressurized air through the mixing chamber;
an oil dosing and injecting device arranged upstream of the mixing chamber and operatively connected with said mixing chamber;
a timer provided for the periodical operation of said oil dosing and injecting device to periodically admix a predetermined volume of oil with the continuous flow of pressurized air supplied to the spray nozzle; and
said spray nozzle being a molecular atomizing nozzle.

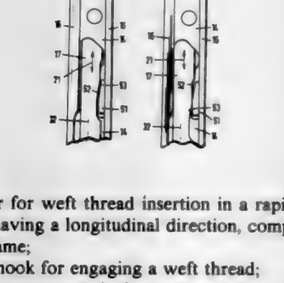
4,520,849
METHOD FOR DISPOSAL OF DEFECTIVE WEFT YARN IN A FLUID JET LOOM
Hajime Suzuki, Anjo, and Yoshimi Iwano, Ohbu, both of Japan, assignors to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki, Kariya, Japan
Filed Dec. 7, 1982, Ser. No. 447,511
Claims priority, application Japan, Dec. 11, 1981, 56-200600
Int. Cl.³ D03D *49/50*
U.S. Cl. 139—116 **5 Claims**



1. A method for disposal of a defective weft yarn in a fluid jet loom, wherein the weft yarn whose length has been measured is inserted by a fluid jet from a weft yarn inserting nozzle into successively formed sheds defined by alternating upper and lower warp yarns and the inserted weft yarn is normally cut by a weft yarn cutter, characterized by the steps of temporarily disabling the weft yarn cutting function by deflecting the weft yarn from the weft yarn cutting point in said weft yarn cutter substantially instantaneously upon detection of a defective yarn insertion and while continuing to insert said weft yarn into the succeeding shed, and subsequently stopping the loom operation whereby the uncut weft yarn contiguous to the defective yarn includes a U-shaped portion and extends to said nozzle.

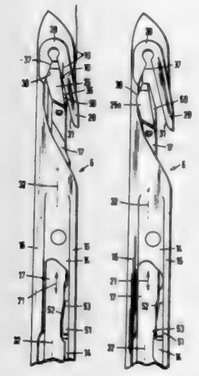
4,520,850
APPARATUS IN A SHUTTLELESS WEAVING MACHINE FOR MAKING A SELVAGE
Gottfried Cramer, Lindau, and Valentin Krumm, Hergensweiler, both of Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany
Filed Oct. 4, 1983, Ser. No. 538,905
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1982, 3240569
Int. Cl.³ D03D *41/00*
U.S. Cl. 139—194 **8 Claims**

1. In an apparatus in a shuttleless weaving machine for forming in a fabric, a selvage with projecting filling yarns, where the ends of said filling yarns inserted into a shed by a filling yarn insertion device, are laid into a fastener means mounted at a lateral spacing from warp threads of the fabric, said fastener means holding said filling yarns and where subsequently the filling yarns are beaten against the fabric by a reed performing a beat-up motion, the improvement comprising first means coupling said fastener means (2) to said beat-up motion of said reed (6), and second means whereby at beat-up



(A) of said filling yarn (3) said fastener means are additionally displaceable along a displacement path in a lateral direction (V) from a rest position tightly against said reed (6), whereby a spacing (S) is formed between the fabric (4) and the fastener means (2).

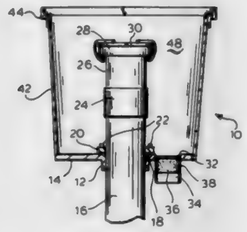
4,520,851
GRIPPER FOR INSERTING THE WEFT IN A RAPIER WEAVING MACHINE
Willy Rohr, Hinwil; Kurt Wollgarten, Rüti, and Rudolf Vogel, Grüt, all of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Apr. 2, 1984, Ser. No. 595,722
Claims priority, application European Pat. Off., Apr. 18, 1983, 83810160.8
Int. Cl.³ D03D *47/20*
U.S. Cl. 139—448 **7 Claims**



1. A gripper for weft thread insertion in a rapier weaving machine and having a longitudinal direction, comprising:
a gripper frame;
a clamping hook for engaging a weft thread;
a clamping tongue operatively associated with said clamping hook and having an opening motion;
spring means acting upon said clamping tongue;
said clamping tongue being translatable in said gripper frame in said longitudinal direction of the gripper under the action of said spring means;
said clamping tongue having a clamping tongue head;
said clamping hook having a major flank and a minor flank;
said major flank of the clamping hook and said clamping tongue head of the clamping tongue being both oriented at

a first inclination to the longitudinal direction of the gripper;
said minor flank of the clamping hook being oriented at a second inclination to the longitudinal direction of the gripper which is of opposite sense to said first inclination; and
said minor flank forming guide means for guiding the clamping tongue head during said opening motion of the clamping tongue.

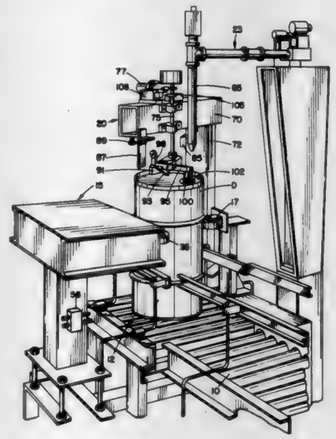
4,520,852
POLLUTION PREVENTION DEVICE
William T. Klein, 33 Valley Ave., Locust Valley, N.Y. 11560
Filed Mar. 21, 1983, Ser. No. 476,935
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—86 **7 Claims**



1. A pollution prevention device for use in association with a fill pipe for filling a storage tank and the like, said device comprising:
a basin positioned about a fill pipe so as to contain liquid spilled during filling or emptying of material through the fill pipe;
said basin includes a bottom and sidewall upwardly extending from the bottom, said bottom includes an opening through which a fill pipe extends upwardly and passes into an area partially defined by the bottom and sidewall, said opening includes a sealing means positioned thereabout and engageable with the outer surface of the fill pipe so as to form a seal therebetween, said sidewall, bottom and outer surface defining an area of the basin capable of holding spilt liquid; and
outlet means provided for said basin which includes means capable of allowing drainage of water from the basin while preventing the spilt liquid from passing through said means so as to collect the spilt liquid in the basin while allowing the run-off of water.

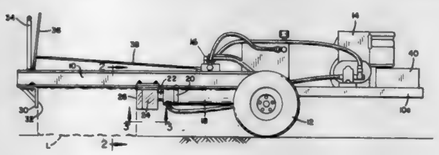
4,520,853
DRUM POSITIONING SYSTEM
Leo J. Niese, and Gary R. Sharlow, both of Toledo, Ohio, assignors to Reliance Electric Company, Cleveland, Ohio
Filed Feb. 6, 1984, Ser. No. 577,333
Int. Cl.³ B65B *35/56*
U.S. Cl. 141—168 **15 Claims**

1. A method for positioning a filler opening of a drum into alignment with a filler comprising the steps of placing a probe in contact with a surface of the drum having a filler opening, moving the probe with respect to the drum surface in a path intersecting the filler opening until the probe engages the filler opening, moving the engaged probe toward the position of the



filler, determining alignment of the filler with the filler opening, and withdrawing the probe from the filler opening.

4,520,854
LOG SPLITTER
Jim May, 12110 SE. Pine, Portland, Oreg. 97216
Filed Nov. 28, 1983, Ser. No. 555,496
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **5 Claims**



4. A log splitter comprising
a longitudinal frame having opposite ends,
wheel means supporting said frame on a supporting surface,
an abutment secured adjacent one end of said frame,
a powered ram on said frame arranged to move toward and away from said abutment,
one of said abutment and ram having a wedge-shaped portion for splitting a log disposed between said abutment and ram,
said abutment and ram being positioned on said frame such that said splitter is capable of splitting a log lying on a supporting surface,
said frame extending longitudinally on both sides of said wheel means,
and counterbalance means adjacent the opposite end of said frame from said abutment whereby to provide easy maneuverability of said splitter.

4,520,855
GOLF CLUB COVER
Sam Dien, 156 Rockwood Pl., Englewood, N.J. 07631
Filed Dec. 27, 1983, Ser. No. 565,457
Int. Cl.³ A63B *57/00*
U.S. Cl. 150—52 G **4 Claims**

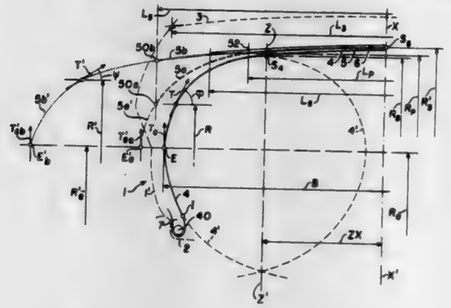
1. A golf club cover arrangement comprising at least two golf club covers, each of said golf club covers including a body portion shaped and adapted to fit over the head of a golf club,

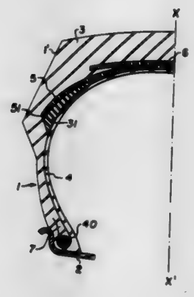
a first and a second attachment member secured to said body portion, first and second mating fastening means respectively secured to said first and second attachment members, whereby one of said fastening means on one of said said first and second attachment members on one golf club cover removed from a golf club can be detachably secured to the mating fastening



means on the other of said first and second attachment members of another golf club cover, and one or more caps provided on said second attachment member and positioned in proximity to said second fastening means, the number of said caps being less by one the identifying number of the golf club over which the cover is adapted to be placed when the club is not in use.

4,520,856
RADIAL TIRE FOR HEAVY LOADS
Jean Pommier, deceased, late of Clermont-Ferrand, France (by Alain Gaston Pommier, heir), assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Continuation-in-part of Ser. No. 363,414, Mar. 30, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 581,236
Claims priority, application France, Apr. 3, 1981, 81 06908
Int. Cl.³ B60C *3/00, 9/08, 9/20*
U.S. Cl. 152—454 **13 Claims**





1. A tire for heavy and very heavy carrier vehicles, possibly traveling off the road, having a carcass reinforcement formed of at least one ply of radial cables anchored to at least one bead ring in each bead and a tread reinforcement comprising essentially two superimposed plies, known as working plies, formed of cables of low extensibility which are parallel in each ply and crossed from one ply to the other, forming acute angles with the circumferential direction of the tire, these plies being, on the one hand, of different axial widths so that the axially narrowest ply has a width less than that of the tread and, on the other hand, parallel to the carcass reinforcement along a zone of parallelism of a width less than that of the narrowest ply, the carcass reinforcement following its natural equilibrium meridian profile approximately from the edges of the zone where the two tread plies are parallel to the carcass reinforcement up to at least the points where the latter reaches its maximum axial width, characterized by the fact that:
when the tire is mounted on its rim and uninflated, the cables of the narrowest working ply, known as an active ply, form, as known per se, an angle of between 15° and 35° with the equatorial plane of the tire;
the other working ply, known as an additional ply, has an axial width between 1.05 times the axial width of the tread and 1.1 times the maximum axial width of the carcass reinforcement;
the cables of the additional ply form with the equatorial plane of the tire an angle α_o greater than and of opposite direction to that of the cables of the active ply and being between 25° and 65°;
the cables of the additional ply follow a geodesic path from one edge to the other of said ply;
the meridian profile of the additional ply is defined by the relationship

$$\cos\psi = \frac{R'^2 - R'^2_e}{R'^2_2 - R'^2_e} \cdot \frac{R' \sin\alpha_o}{\sqrt{R'^2 - R'^2_2 \cos^2\alpha_o}}$$

the meridian curvature $1/\rho_o$ of the additional ply, at the place where it intersects the equatorial plane, is defined by the relationship

$$\frac{1}{\rho_o} = \frac{2\,R'_s}{R'^2_2 - R'^2_e} - \frac{ctg^2\,\alpha_o}{R'_s}$$

ψ designates the angle which is formed by the tangent to the trace of the additional ply at the running point of radius R' with a line parallel to the axis of rotation of the tire; R'_e is between 0.8 and 1.2 times the radius of the point of the carcass reinforcement where the latter reaches its maximum axial width; R'_s is the radius of the point where ψ is equal to zero; the radii R', R'_e and R'_s are measured from the axis of rotation of the tire;
and the trace of the natural equilibrium meridian profile of the carcass reinforcement follows tangentially the curvature of the zone of parallelism from the edge of the zone of parallelism.

4,520,857
HIGH-DURABLE PNEUMATIC RADIAL TIRES
Takao Ogino, Tokorozawa; Yoichi Watanabe, Higashimurayama, and Shigehisa Sano, Akigawa, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Nov. 8, 1983, Ser. No. 549,533
Claims priority, application Japan, Nov. 9, 1982, 57-195332
Int. Cl.³ B60C *9/02, 9/18*
U.S. Cl. 152—527 **2 Claims**

1. In a high-durable pneumatic radial tire comprising a tread portion, a pair of side portions extending from said tread portion, a pair of bead portions extending from said side portions and a carcass reinforced with a belt embedded in said tread portion, the improvement wherein steel cords each obtained

by twisting plural steel filaments with a pearlite structure having an average value of interlamellar distance between



cementites of 300-500 Å and a tensile strength of not less than 220 kg/mm^2 are used in at least one of said belt and carcass.

4,520,858

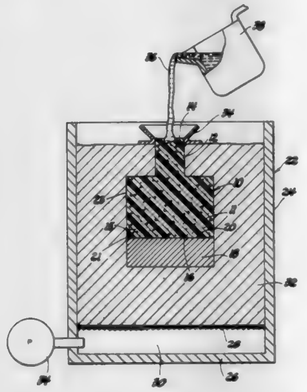
CHILL-ENHANCED LOST FOAM CASTING PROCESS

Edward F. Ryntz, Jr., Warren, and John J. Bommarito, Washington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 2, 1983, Ser. No. 547,839

Int. Cl.^{3} B22C *9/04*; B22D *15/00*

U.S. Cl. 164—34 **3 Claims**



1. A lost foam casting process for producing a metal casting having a region characterized by substantially reduced porosity and comprising

adhesively bonding a vaporizable pattern to a chill member using a vaporizable adhesive agent, said chill member being characterized by a relatively high thermal diffusivity,

embedding the bonded assembly of the chill member and the pattern within a mold formed of unbonded refractory particles,

pouring molten metal into the mold to vaporize and replace the pattern including a region immediately adjacent the chill member, whereupon the adhesive agent is also vaporized,

cooling and solidifying the metal within the mold to form a product casting, said chill member accelerating cooling of metal in the region thereadjacent to preferentially solidify the metal, and

removing the product casting from the mold and separating the product casting from the chill member, whereupon the metal within the region cast adjacent the chill member exhibits reduced porosity as a result of said chill-enhanced solidification.

4,520,859

APPARATUS FOR RAPID SOLIDIFICATION OF THIN METALLIC STRIPS ON A CONTINUOUSLY MOVING SUBSTRATE

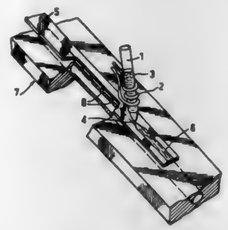
Pascal Fournier, Paris, and Jean-Claude Peraud, Mandres Les Roses, both of France, assignors to Pont-A-Mousson, S.A., Nancy, France

Filed Jul. 17, 1981, Ser. No. 284,346

Claims priority, application France, Jul. 18, 1980, 80 15918

Int. Cl.^{3} B22D *11/06, 27/15*

U.S. Cl. 164—253 **19 Claims**



1. An apparatus for rapidly solidifying a metal or alloy on its formation into a thin strip comprising a band moving at high speed, a means for ejection under pressure of a metal or alloy in molten state, situated above the high speed band, said band having a zone of impact in which said molten metal or alloy impacts on said band after said ejection, at least one perforated unit containing at least one opening for the ejection of a pressurized gaseous fluid at low temperature opposite at least one of the faces of said band and in proximity to said zone of impact of the molten metal or alloy on said band, said ejected gaseous fluid creating between said unit and said band a fluid cushion which maintains said band in position without friction against said unit and substantially without other means of support in proximity to said zone of impact.

4,520,860

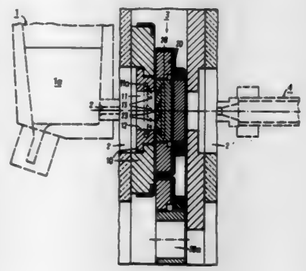
HORIZONTAL CONTINUOUS CASTING APPARATUS

Manfred Haissig, 31 Foxhill, Irvine, Calif. 92714, and Josef Lothmann, Langerwehe, Fed. Rep. of Germany, assignors to Manfred Haissig, Irvine, Calif.

Filed Feb. 28, 1983, Ser. No. 470,269

Int. Cl.^{3} B22D *23/00, 11/128*

U.S. Cl. 164—415 **6 Claims**



1. Apparatus for the continuous casting of metals comprising a container for molten metal to be cast, at least one discharge duct at the bottom of said container connecting with a horizontal continuous casting mold and a closure assembly in said duct, characterized in that said closure assembly comprises

a substantially vertically disposed headplate fixed at one side thereof to said discharge duct facing said molten metal container, said headplate having a horizontally oriented bore therethrough aligned with said duct, said

a substantially vertically disposed slider plate adapted to be moved across the other side of said headplate to block flow of molten metal through said bore to said mold,

said slider plate having a plurality of nozzle openings in the surface of said slider plate facing said bore, said nozzle openings being disposed along a circular path adjacent to but smaller than the diameter of said bore, said nozzle openings being arranged to direct a gaseous medium at an angle of between 3 degrees to 45 degrees to said surface and substantially tangentially to said circular path.

4,520,861

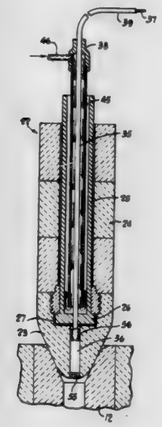
METHOD AND APPARATUS FOR ALLOYING CONTINUOUSLY CAST STEEL PRODUCTS

Robert Sobolewski, Streetsboro, and David N. Eberle, North Canton, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Nov. 18, 1983, Ser. No. 553,163

Int. Cl.^{3} B22D *11/10*

U.S. Cl. 164—473 **6 Claims**



1. In an apparatus for continuously casting alloyed steel products, the improvement comprising:

(a) stopper rod means for controlling the flow of liquid steel from a tundish nozzle;

(b) said rod means having a guide passage through which a alloying wire can be fed, a cooling passage adjacent said guide passage, and a hole in one end forming an enlarged extension of said guide passage;

(c) heat meltable plug means for temporarily closing said hole; and

(d) meltable closure means for temporarily closing said guide passage.

4,520,862

ENERGY STORAGE APPARATUS

Walter Helmbold, Vor der Hurth 31, 5902 Unglinghausen, Fed. Rep. of Germany

Filed Feb. 8, 1983, Ser. No. 465,068

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1982, 3204849; Mar. 20, 1982, 3210370

Int. Cl.^{3} F28D *17/02*

U.S. Cl. 165—10 **16 Claims**

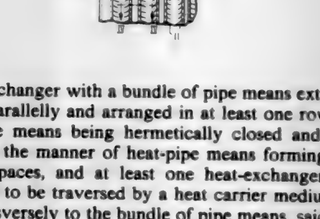
1. Storage apparatus for storage of energy in the form of heat over a selectably prolonged storage period, said apparatus comprising:

(a) container means forming an external enclosure for a heat storage zone and for an insulating zone which surrounds said storage zone and is in pressure communication therewith;

(b) a porous mass of heatable storage material disposed in said storage zone within said container means to form a storage core for storage of heat energy;

(c) means for subjecting said storage material in said storage zone to a heating process thereby to effect storage of heat energy in said storage core;

(d) means for extraction of said stored heat energy from said storage core;



(e) a thermal insulating layer disposed in said insulating zone between said storage core and inner wall means of said container means, said insulating layer comprising an insulating porous mass of granular or fibrous material; and

(f) means for inducing in said storage zone and in said insulating zone within said container means a pressure below atmospheric pressure thereby to inhibit conduction of said stored heat energy from said storage core in direction through said insulating layer to said container means.

4,520,863

HEAT-EXCHANGER WITH A BUNDLE OF PARALLELLY EXTENDING PIPES ADAPTED TO BE ACTED UPON BY AIR

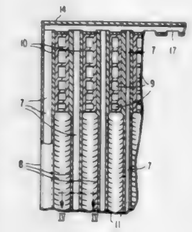
Rudolf Andres; Helmut Grantz, both of Sindelfingen; Wolf-Dietrich Münzel, Ehningen, and Wolfgang Odebrecht, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 27, 1982, Ser. No. 436,937

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143334

Int. Cl.^{3} F25B *29/00*

U.S. Cl. 165—48 R **17 Claims**



1. A heat-exchanger with a bundle of pipe means extending substantially parallelly and arranged in at least one row, said bundle of pipe means being hermetically closed and being constructed in the manner of heat-pipe means forming heat-pipe hollow spaces, and at least one heat-exchanger head means adapted to be traversed by a heat carrier medium and extending transversely to the bundle of pipe means, said heat-exchanger head means being sealed off with respect to the heat-pipe hollow spaces of the bundle of pipe means and in heat-transferring connection therewith;

said bundle of pipe means and heat pipe hollow spaces of a pipe row being in the form of a first heat-exchanger plate means extending in an air stream and up to the area of the heat-exchanger head means, the pipes of said bundle of

pipe means being formed by channel means formed in the heat-exchanger plate means;

the first heat-exchanger plate means being arranged substantially parallel to the air stream;

a second heat-exchanger plate means containing heat-carrier channel means and limited to the heat-exchanger head means being coordinated to each first heat-exchanger plate means, adjacent first and second heat-exchanger plate means being heat-conductingly connected to each other; and

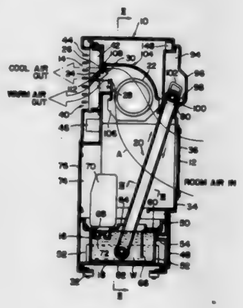
the heat pipe hollow spaces forming pipes of different heat-exchanger plate means, which heat pipe hollow spaces are disposed at approximately the same depth in the air stream, are connected with each other transversely to the air stream.

4,520,864

YEAR-ROUND AIR CONDITIONER WITH EVAPORATOR BAND AND SPECIAL HEATER PLACEMENT

Nobuhiko Katagiri, Maebashi; Hidenobu Matsubara, Shibukawa, and Akio Iida, Maebashi, all of Japan, assignors to Toshiba Electric Appliances Co., Ltd., Maebashi, Japan

Filed May 27, 1983, Ser. No. 498,653
Claims priority, application Japan, May 29, 1982, 57-91881
Int. Cl.³ F24F *3/14*
U.S. Cl. 165—60 **8 Claims**



1. A year-round air conditioner capable of selective supply of cool and warm air, comprising:

(a) a housing having an air inlet and an air outlet defined therein;

(b) a water receptacle within the housing for containing water;

(c) a wet band assembly comprising an endless band of water-absorbent and air-permeable material capable of traveling, the endless band being arranged to be partly immersed in the water receptacle, thereby to be wetted, and to intervene between the air inlet and the air outlet in the housing;

(d) a fan within the housing for creating airflow from the air inlet to the air outlet through the endless band of the wet band assembly;

(e) a damper disposed at the air outlet in the housing and dividing the air outlet into a cool air outlet and a warm air outlet, the damper being pivotable about an axis between a first position where the cool air outlet is opened with the warm air outlet being closed and a second position where the warm air outlet is opened with the cool air outlet being closed, the damper extending obliquely across an air passage so as to change the direction of an air flow in the passage; and

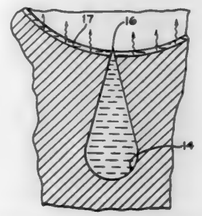
(f) a heater mounted on the surface of the damper and arranged to face the cool air when the damper is in the second position, and further arranged to be outside the air flow when the damper is in the first position.

4,520,865

GAS-TOLERANT ARTERIAL HEAT PIPE

Gary D. Bizzell, Los Altos, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Jun. 25, 1984, Ser. No. 624,198
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—104.26 **19 Claims**



1. A closed-loop arterial heat pipe comprising:

(a) an evaporator domain having an internal surface defining an evaporation chamber in which a working fluid in liquid phase evaporates to vapor phase by absorbing heat from a heat source;

(b) a condenser domain in which said working fluid in vapor phase condenses to liquid phase by rejecting heat to a heat sink; and

(c) a transition domain including:

(i) a conduit through which said working fluid is thermodynamically driven in vapor phase from said evaporator domain to said condenser domain, and

(ii) an artery through which said working fluid is returned in liquid phase from said condenser domain to said evaporator domain by capillary action,

said artery communicating with said evaporation chamber through an aperture in said internal surface of said evaporation chamber; said artery being of generally pyriform transverse cross-sectional configuration, a wide portion of said artery having a relatively large transverse dimension remote from said aperture, intermediate portions of said artery having progressively narrower transverse dimensions toward said aperture, and a throat portion of said artery having a narrowest transverse dimension adjacent said aperture; said aperture having a transverse dimension smaller than said narrowest transverse dimension of said artery; said internal surface of said evaporation chamber having a capillary channel for distributing said working fluid in liquid phase within said evaporation chamber; said capillary channel intersecting said aperture in said internal surface; said capillary channel having a transverse dimension smaller than said transverse dimension of said aperture.

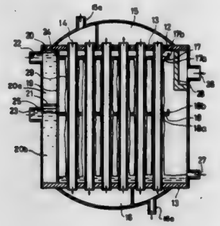
4,520,866

FALLING FILM EVAPORATION TYPE HEAT EXCHANGER

Tadakatsu Nakajima, Ibaraki; Wataru Nakayama, Kashiwa, and Takahiro Daikoku, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 26, 1983, Ser. No. 498,554
Claims priority, application Japan, May 26, 1982, 57-87934
Int. Cl.³ A23C *3/04*
U.S. Cl. 165—115 **18 Claims**

1. A heat exchanger comprising an outer shell, a plurality of heat transfer tube means disposed substantially vertically in said outer shell, means for supplying a fluid to said heat tranfer tube means, means for supplying a liquid refrigerant, liquid refrigerant distributor means disposed at least at an upper and intermediate portion of the respective heat transfer tube means communicating with said liquid refrigerant supplying means for causing a liquid refrigerant to freely fall as a film of refrigerant along an outer peripheral surface of each of said heat transfer tube means, and vapor discharge means and liquid refrigerant discharge means disposed in a side wall of said outer shell so as to enable an evaporation of said film of refrigerant and discharge of liquid refrigerant whereby a heat exchange is effected between said fluid flowing through said heat transfer tube means and the film of refrigerant.

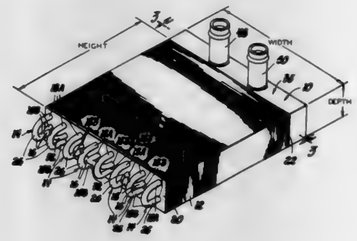


4,520,867

SINGLE INLET/OUTLET-TANK U-SHAPED TUBE HEAT EXCHANGER

Demetrio B. Sacca, Lockport; Edward H. Sanderson, and Paul K. Beatenbough, both of Medina, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 6, 1984, Ser. No. 577,178
Int. Cl.³ F28F *9/26*
U.S. Cl. 165—144 **3 Claims**



1. A heat exchanger comprising a tank having a header plate, a plurality of tubes each having at least two legs joined by a return bend, the legs of said tubes extending through and terminating with an open end at one side of said header plate, a first group of said tubes being arranged so as to each have their two open ends located in one and the other of two outboard rows extending longitudinally of said header plate, a second and remaining group of said tubes being arranged with their return bends criss-crossing those of alternate tubes in said first group and their open ends all located in a third and inboard row extending between said two outboard rows, and partition means in said tank for cooperating with said header plate to define an inlet chamber and an outlet chamber in said tank open respectively to the open tube ends in one and the other of said two outboard rows and also to alternate ones of the open tube ends in said inboard row whereby each said tube is connected to effect two-pass flow between said chambers.

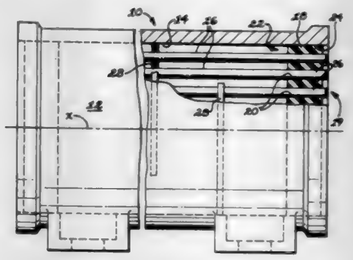
4,520,868

HEAT EXCHANGER

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 22, 1982, Ser. No. 443,811
Int. Cl.³ F28F *9/04*
U.S. Cl. 165—158 **12 Claims**

1. A heat exchanger, including a rigid, longitudinally-extending, peripheral shell, an end plate of elastomeric material disposed at at least one end of said shell and said elastomeric material having a hardness in the range of about 45 durometer to about 80 durometer as measured on the Shore A scale, a multiplicity of elongate tubes disposed longitudinally within the shell and extending through said end wall, said peripheral shell having an inner wall for urging an outer periphery of the end plate inwardly and maintaining a compressive stress on the periphery of the end plate, and each of said tubes having an external surface area for urging a portion of the end plate circumscribing each of said tubes in a direction radially outwardly from each of the tubes and maintaining a compressive stress on the end plate in a transverse direction with respect to the longitudinal direction of said tubes sufficient, when combined with the compressive stress on the periphery of the end plate, to expand the end plate in the longitudinal direction about one-third (⅓) greater than the longitudinal dimension of said end plate when measured in an unconfined state, and a plurality of unitary baffle plates disposed within said shell in a predetermined spaced relationship along and normal to said longitudinally disposed tubes, each baffle plate having a multiplicity of openings for respectively supporting some of said tubes, and formed of a vibration energy absorbing material having a hardness less than a predetermined hardness of said tubes.

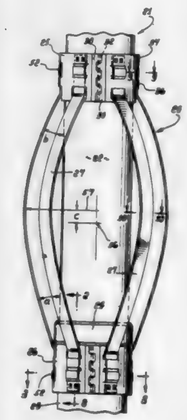


4,520,869

CENTRALIZER FOR WELL CASINGS

Bert N. Svenson, 9259 Raviller Driver, Downey, Calif. 90240

Filed Sep. 29, 1983, Ser. No. 537,096
Int. Cl.³ G21B *17/10*
U.S. Cl. 166—241 **24 Claims**



1. In a centralizer for a well casing, said centralizer comprising a plurality of bows joined at the bow ends to first and second collars, respectively, the improvement wherein:

each of said collars comprises an arcuate band with a bow receiving section for each bow, each of said bow receiving sections having first and second aligned channels formed

in a first direction and a third channel formed in a second opposite direction and aligned with said first and second channels defining a bow receiving passage,

with a first opening between said first and second channels in which said third channel is disposed, and with each of said channels having a central section and opposed parallel edges, with both opposite edges of each channel and the intermediate central sections formed as an integral part of said collar; and wherein

each of said bows comprises an arcuate strip with a collar engaging section at each end, each of said collar engaging sections having formed therein a hat section with first and second aligned members and an upstanding third member therebetween;

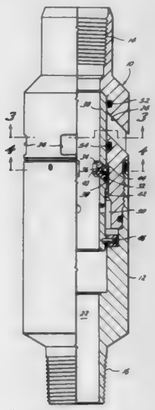
with a bow end slideable into a collar passage with said bow hat section third member disposed in said collar first opening and with said bow hat section first and second members in said collar first and second channels, respectively.

4,520,870

WELL FLOW CONTROL DEVICE

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Dec. 27, 1983, Ser. No. 566,109
Int. Cl.³ E21B *34/14*
U.S. Cl. 166—317 **6 Claims**



1. A well flow control device for use in an oil and/or gas well tubing string for communicating between the tubing string and the annulus comprising,

a tubular body adapted to be connected in a tubing string in a well, said body having a plurality of openings for communication between the interior of the body and the outside of the body,

a sleeve telescopically movable in the interior of the body and initially covering and closing said openings,

at least one dog carried by the sleeve, said dogs movable outwardly from the sleeve towards the body,

said body including a backup shoulder positioned to hold the dogs inwardly when the sleeve is covering said openings for allowing a tool to engage said dogs, move the sleeve, and uncover the openings,

said body including a recess positioned to receive the dogs when the sleeve is moved to a position uncovering said openings,

releasable means between the sleeve and the body initially preventing moving of the sleeve relative to the body, and

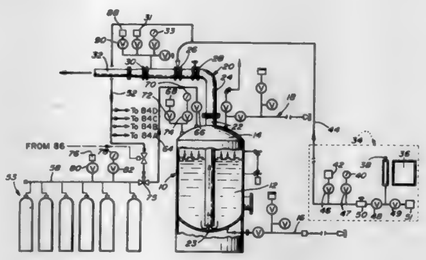
the sleeve includes a window for each dog, said windows having tops and bottoms which taper upwardly and inwardly for supporting said dogs.

4,520,871

FIRE EXTINGUISHING SYSTEM

Walter G. Miller, Mississauga; Michel Macé, Montreal, and George Zitterbart, Mississauga, all of Canada, assignors to Wormald Fire Systems, Inc., Montreal, Canada

Filed Nov. 5, 1982, Ser. No. 439,546
Claims priority, application Canada, Nov. 1, 1982, 414603
Int. Cl.³ A62C *1/06, 13/26*
U.S. Cl. 169—43 **14 Claims**



1. A fire extinguishing system comprising:

(a) a tank;

(b) a fire extinguishing medium partially filling said tank;

(c) an expellant material under pressure in the remaining part of the tank, said material defining a pressure cushion acting on said medium;

(d) a delivery line associated with said tank for carrying said medium from said tank to a hazard;

(e) valve means in said delivery line including a normally closed main valve operable to open said delivery line to deliver said fire extinguishing medium to said hazard;

(f) a reserve of expellant containing means in conduit communication with said cushion in said tank, said expellant containing means including a plurality of groups of serially connected cylinders;

(g) actuator means for operating said main valve and for initiating sequential delivery of said expellant containing means for delivering additional expellant material to said tank to maintain a predetermined pressure therein for quick and total evacuation of said medium from said tank to said hazard.

4,520,872

EMERGENCY FIREHOSE SWITCHOVER DEVICE FOR WELLS AND THE LIKE

Ardee R. Holman, Box 1210, Wasillia, Ak. 99687

Filed Aug. 29, 1983, Ser. No. 527,491
Int. Cl.³ A62C *35/00*
U.S. Cl. 169—54 **14 Claims**

1. An emergency fluid supply system in combination with a well having an electrically operable pump supplying fluid to a structure having a first fluid distribution system, electric power supply means and an electric distribution system, comprising:

(a) a second fluid distribution system in fluid communication with said pump;

(b) valve means connecting said first and second fluid distribution systems and having a first position associated with fluid supply to said first fluid distribution system and a second position associated with fluid supply to said second fluid distribution system;

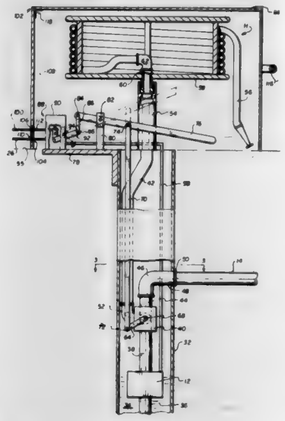
(c) switch means in electrical connection with said power supply means, said pump and said electric distribution means and having a first position associated with power supply to said pump and said electric distribution system and a second position associated with power supply to said pump only;

(d) said valve means first position being associated with said switch means first position and said valve means second position being associated with said switch means second position;

(e) actuator means operably interconnecting said valve means and said switch means for simultaneously positioning said valve means and said switch means in a preselected associated one of said first and second positions;

(f) said valve means being disposed in said well;

(g) said actuator means comprises a rod connected to said valve means for positioning said valve in a preselected one



of said first and second positions and said rod extending upwardly from said well;

(h) a platform disposed adjacent the upper portion of said well;

(i) a support secured to said platform;

(j) said switch means secured to said platform; and,

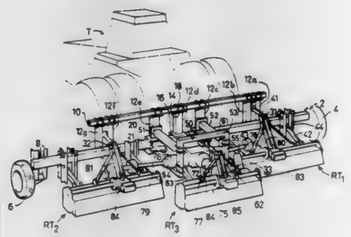
(k) lever means pivotably secured to said support and to said switch means and said rod and adapted for simultaneously positioning said switch means and said valve means in an associated one of said first and second positions.

4,520,873

TRACTOR-DRIVEN AGRICULTURAL APPARATUS INCLUDING A PLURALITY OF ROTARY-DRIVEN AGRICULTURAL UNITS

Nir Gefen, Hagalil Hamaaravi, Israel, assignor to Eshet Eilon, Hagalil Hamaaravi, Israel

Filed Jun. 10, 1983, Ser. No. 503,292
Int. Cl.³ A01B *71/06, 33/02*
U.S. Cl. 172—47 **10 Claims**



1. Agricultural apparatus for attachment to a tractor having a rotary take-off shaft, comprising:

a main frame attachable at its front end to the rear end of the tractor to extend transversely thereacross;

a pair of ground-engaging wheels carried on the opposite ends of said main frame for supporting it when towed by the tractor;

first and second rotary-driven agricultural units spacedly mounted from each other on the opposite sides of the main frame along a common axis rearwardly of the main frame;

a third rotary-driven agricultural unit mounted on the main frame centrally between and in overlapping relation to said first and second units and rearwardly of their common axis;

and transmission means coupling said first, second and third agricultural units to the power take-off shaft of the tractor so as to be driven thereby;

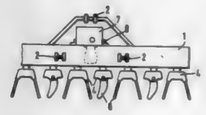
said first, second and third agricultural units each being independently mounted to said main frame by a separate three-point connection permitting independent floating movement thereof with respect to the ground.

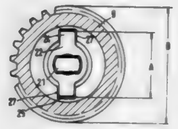
4,520,874

AGRICULTURAL MACHINE

Franz Grosse-Scharmann, Hude, Fed. Rep. of Germany, assignor to Amazonen-Werke H. Dreyer, Hasbergen-Gaste, Fed. Rep. of Germany

Filed Feb. 25, 1983, Ser. No. 470,029
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1982, 3207749
Int. Cl.³ A01B *33/06*
U.S. Cl. 172—49.5 **6 Claims**





1. In an agricultural machine having a frame on which tool rotors are mounted in a row on upright shafts extending across the direction of travel, said rotors being driven by a horizontal driveshaft that is segmented and interlocked by couplings, wherein each segment of the driveshaft is a component of one of a plurality of angular gears that drive the tool rotors, a main train having a housing mounted on the frame and an output gearwheel mounted in the housing by bearings, the horizontal driveshaft being coupled through coupling means inside the housing of the main train with the output gearwheel of the main train, said coupling means forming said couplings, said driveshaft being driven by said output gearwheel, the improvement comprising: guide means for aligning the central axis of the driveshaft components with the center line of the output gearwheel of the main train, the guide means disposed at least between the main train and the angular gears of the tool rotors that are immediately adjacent to it and wherein the coupling means comprises coupling elements in the output gear wheel and a coupling component rigidly attached to the driveshaft components extending into the main train, said coupling component including other coupling elements engaging the coupling elements in the output gearwheel with play inside the output gearwheel bearings.

4,520,875

MARKER FOR TILLING IMPLEMENTS

Harry C. Deckler, South Bend, Ind., assignor to White Farm Equipment Company, Oak Brook, Ill.

Filed Oct. 28, 1983, Ser. No. 546,279
Int. Cl.³ A01B *69/02*
U.S. Cl. 172—126 **1 Claim**



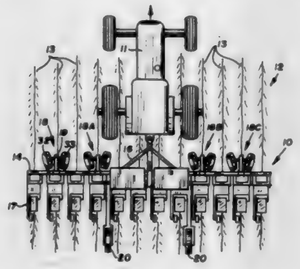
1. Soil marking means for soil tilling implements including planters, comprising, a marker support arm and a soil marker assembly, said soil marker assembly comprising, a soil-engaging disc, yieldable support means for said disc in the form of a generally C-shaped leaf spring having a proximal end and a distal end, means for attaching said proximal end of said yieldable support means to the distal end of said marker support arm, and means for rotatably attaching the center of said disc to the distal end of said yieldable support means and allowing said disc to rotate on its principal axis, said disc being oriented with respect to said marker support arm and said yieldable support means so that a face of said disc is turned generally toward the direction of travel of said marker support arm and said soil and tilling implement, the principal axis of said disc falls between about 15° to 30° to either side of said direction of travel and is tilted downwardly and forwardly at an angle between about 5° to 15°.

4,520,876

GAUGE AND GUIDE WHEEL ASSEMBLY

Richard L. Peterson, Le Sueur; Roger J. Scheurer, Kasota, and Richard W. Steinberg, North Mankato, all of Minn., assignors to Hiniker Company, Mankato, Minn.

Filed Aug. 26, 1983, Ser. No. 526,681
Int. Cl.³ A01B *63/16*
U.S. Cl. 172—427 **19 Claims**



1. A wheel assembly for an implement having a transverse tool bar comprising: an arm, first means adapted to be connected to the tool bar, pivot means pivotally connecting the arm to the first means to allow pivotal movement of the arm about a generally horizontal axis, second means connected to the arm to hold the arm in a selected position relative to the tool bar, a pair of wheel and axle means for supporting the arm and tool bar above the ground, each wheel and axle means having a ground engaging wheel and axle rotatably supporting a wheel, each axle having a first section and a second section, said second section extended at an angle relative to the longitudinal axis of the first section, means rotatably mounting a wheel on the first section of each axle, first sleeve means mounted on the arm for selectively connecting the axles of the arm, said second section of each axle being mounted on the first sleeve means in a position to hold the wheels in a toe-out and camber position, and second sleeve means mounted on the arm, said second section of each axle being mounted on the second sleeve means in a position to hold the wheels in upright spaced side-by-side positions.

4,520,877

ROW CULTIVATOR WITH STRUCTURE TO INHIBIT BOWING OF ITS FRAME END TO END

Bruce F. Magelky, Box 26, New Hradec, N. Dak. 58648

Filed Feb. 28, 1983, Ser. No. 470,298
Int. Cl.³ A01B *39/02, 39/18*
U.S. Cl. 172—643 **4 Claims**



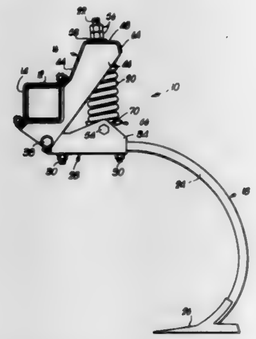
1. A multi-row crop cultivator adapted to move along rows of crop for digging up weeds from between the rows comprising; generally rigid bars and cross braces rigidly interconnected to form an elongated unified frame extending lengthwise laterally of the direction of movement and adapted to be carried in a suspended relationship over the ground, weed digging and cultivating teeth, spring biased mounting means mounting the teeth below the frame at spaced intervals along the elongated unified frame for shallow digging of weeds and limited retraction upon engaging solid objects, said teeth arranged on the frame to provide open spacings thru which multiple rows of crop are adapted to be passed as the weeds between the rows are dug up by the teeth, depth limiting wheels mounted on the frame to establish the height at which the frame is carried over the ground and along the rows in a cultivating operation, said frame being sufficiently extensive to incur end to end bowing of the generally rigidly interconnected rigid bars and cross braces, structural means for inhibiting such bowing of the frame end to end so as to maintain a consistant height of the frame above the ground and to generally apply the weight of the frame evenly to all of the teeth, said structural means including an elevated central support member and vertically extended support braces between the frame and the elevated central support member, said support braces rigidly supporting the central support member spaced upwardly from the rigid bars and cross braces, and a rigid overhead beam independent of said support braces for the central support members extending substantially the entire distance from each end of the frame to the elevated central support member, each said overhead beam being anchored on said central support member and oriented substantially perpendicular to the direction of movement, each said overhead beam further extending diagonally upwardly from the frame to the central support member to establish with the central support member a triangular support configuration on each side of the frame.

4,520,878

SPRING CUSHION CHISEL PLOW SHANK ASSEMBLY

David R. Smith, and Maynard M. Herron, both of Hesston, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Jun. 23, 1983, Ser. No. 507,279
Int. Cl.³ A01B *61/04, 35/24*
U.S. Cl. 172—705 **6 Claims**



1. A tillage shank assembly comprising:
a bracket having one end provided with an aperture;
an earthworking shank pivotally coupled with said bracket remote from said one end thereof for swinging movement generally toward and away from said one end about a transverse axis;
a coil spring interposed between said one end of the bracket and said shank for yieldably biasing the latter away from said one end about said axis;
an elongated member housed within said spring longitudinally thereof;
means at one terminus of the member pivotally coupling the same with said shank and including transverse pivot means,
said member having its opposite terminus telescopically received within said aperture for extension and retraction therethrough during said swinging movement of the shank; and
retainer means adjacent said one terminus of the member for maintaining the coils of the spring in radially spaced relation to said element throughout the length of the spring in all positions of said swinging movement of the shank whereby to avoid transverse loading on said member by the spring,
said retainer means including a seat on said pivot means for one end of said spring having generally longitudinally projecting structure integral with the seat confining the spring against movement on the seat,
said seat and said member being coupled with said pivot means independently of one another, and said one end of the bracket engageably confining the opposite end of the spring against lateral movement, whereby said member is isolated from transverse loading forces imparted to the seat and the bracket by said spring.

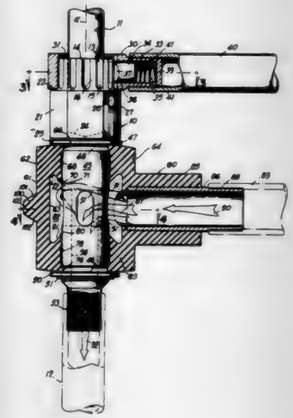
4,520,879

RATCHET AND HYDRAULIC SEAL ASSEMBLY FOR ROTATING HOLLOW SHAFTS

Robert C. MacElvain, Eufaula, Ala., assignor to Deep Rock Manufacturing Company, Inc., Opelika, Ala.

Filed Jun. 4, 1982, Ser. No. 384,892
Int. Cl.³ E21B *1/00*
U.S. Cl. 173—57 **2 Claims**

1. A ratchet and hydraulic seal assembly for transferring power from a rotating drive shaft to a drill pipe and for directing drilling fluid into the drill pipe comprising:
(a) a power transfer pipe, having at its upper end a ratchet member with circumferentially spaced teeth, a pawl for engaging said teeth, a rotatable cap carrying said pawl, means for rotating said cap to rotate through said pawl said power transfer pipe, a shank integrally joined to said ratchet member, said shank having a port and a hollow interior communicating with said port, and a tubular lower threaded end for receiving a drill pipe thereon, said hollow interior communicating with said drill pipe through said lower end;
(b) an elastomeric hydraulic seal assembly having a sleeve providing a chamber surrounding said shank, a collar communicating with said sleeve for introducing drilling fluid into said chamber for passage through said port and said hollow interior;
(c) said shank being provided with a pair of spaced circumferential grooves;



(d) said sleeve including seals on opposite ends of said chamber, surrounding said shank and received respectively in said grooves;
(e) said seal assembly being composed of an elastomer and a lubricant incorporated into said elastomer;
(f) said seals being in tension in said grooves;
(g) said sleeve including second seals surrounding said shank and inwardly of said first mentioned seals;
(h) said second seals protruding inwardly and seating with pressure of said drilling fluid against said shank; and
(i) said ratchet member including a ring having a bore for receiving the end of said drive shaft and a shear pin securing said pipe to said drive shaft.

4,520,880

AUTOMATIC STONE CUTTER

Yoshitaka Saito, 13 2-chome, Yamato-cho, Kasuga-shi, Fukuoka, Japan

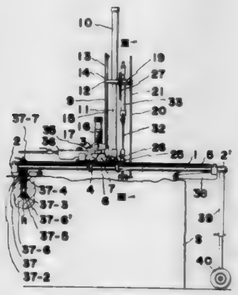
Filed Jun. 6, 1983, Ser. No. 501,249
Int. Cl.³ E21C *41/12*
U.S. Cl. 175—51 **2 Claims**

1. An automatic stone cutter comprising:
a base,
a support including elongated rail means supporting said base for movement along a predetermined path along a stone to be cut,
a drill for forming a hole in the stone,
a cylinder mounted on said base for movement generally perpendicularly to said rail means and toward and away from the stone,
means mounting said drill on said cylinder means for movement with the cylinder means toward and away from the stone,
a sprocket shaft rotatably supported on said base,
a sprocket on said shaft,
means on said support engaging said sprocket for moving

said base along the rail means in response to rotation of the sprocket,

a rod having a stone contact member at one end for contacting a surface of the stone to cut,

mounting means for mounting said rod on a bracket connected to said cylinder for movement with the cylinder between a first position in which the contact member engages the surface of the stone to be cut, and a second position in which the contact member is spaced from the surface of the stone, said mounting means comprising a lost motion connection between the bracket and the rod for permitting the cylinder and drill to continue to move



toward the stone after the contact member engages the stone,

means for adjusting the longitudinal position of the rod relative to the bracket,

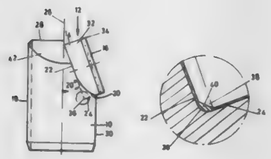
a drilling depth sensor connected to said rod for movement with the rod,

a sensor operating rod connected to the cylinder for movement with the cylinder and drill toward the stone, from a position in which the operating rod is spaced from the sensor, to a position in which the operating rod engages the sensor, so that the sensor operating rod engages the sensor to stop further movement of the cylinder when a hole of predetermined depth is formed.

4,520,881
TOOL COMPONENT

Cornelius Phaal, 34 Rutland Ave., Craighall Park, Johannesburg, Transvaal, South Africa

Filed Sep. 21, 1983, Ser. No. 534,195
Claims priority, application South Africa, Sep. 24, 1982, 82/7030
Int. Cl.³ E21B *10/46*
U.S. Cl. 175—329 **16 Claims**



1. A tool component comprising:

(a) a composite compact comprising an abrasive compact bonded to a cemented carbide support;

(b) a solid, elongate cylindrical pin made of cemented carbide having end surfaces joined by side surfaces;

(c) a recess formed in the pin and comprising a base wall and side walls; and

(d) the composite compact being located in the recess such that the carbide support is received by the recess and bonded to the walls thereof and the abrasive compact presents a cutting edge, characterised in that:

the recess is formed in the pin on one side of a longitudinal plane passing through the central axis of the pin and the base wall thereof slopes from one end surface towards a side surface;

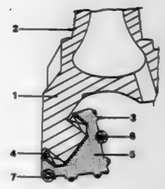
the bonding of the support to the walls of the recess is achieved by a braze alloy having a working temperature of less than 700° C. and containing silver, copper, zinc, manganese and nickel; and

the base wall of the recess is joined to the side wall by a corner having a radius and a chamfered corner of the carbide support is received by the radiused corner of the recess.

4,520,882
DRILL HEAD

Hans B. van Nederveen, Zeist, Netherlands, assignor to SKF Industrial Trading and Development Co., B.V., Nieuwegein, Netherlands

Division of Ser. No. 887,931, Mar. 17, 1978, Pat. No. 4,276,788. This application Nov. 20, 1980, Ser. No. 208,533
Claims priority, application Netherlands, Mar. 25, 1977, 7703234
Int. Cl.³ E21B *10/36*
U.S. Cl. 175—410 **2 Claims**



1. In a drill head including a core and a plurality of hard wear-resistant cutting elements, the core comprising powder metal isostatically compacted in a compressible mold, and each of said cutting elements comprising a shank part having opposite ends with a cutting tip at one of said ends, a base part at the end of the shank part opposite from the cutting tip, said base part comprising a flange extending radially outward, said shank part and the base part being embedded in said core in a non-separable bond therewith, said shank part having a tapered shape becoming greater in the direction of said base part, said cutting element thereby fixedly positioned in said core in a manner inhibiting premature loosening of the cutting element from the core body, and said cutting tip extending from the exposed end of said shank part and projecting outward from the surface of said core part.

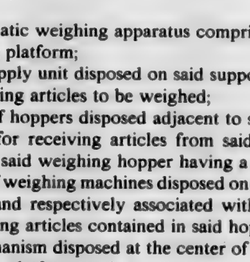
4,520,883
COMBINATORIAL WEIGHING METHOD AND APPARATUS WITH VOLUME SENSING

Masao Fukuda, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Sep. 9, 1983, Ser. No. 530,681
Claims priority, application Japan, Sep. 11, 1982, 57-158348
Int. Cl.³ G01G *19/22*
U.S. Cl. 177—1 **11 Claims**

1. A combinatorial weighing method comprising the steps of:

(a) combining weight data from a plurality of weighing machines of a combinatorial weighing apparatus for weighing articles to obtain the respective combination from said weighing machines giving a total combined weight value that is closest to a target value and which is within preset allowable limits thereof;



(b) discharging the articles from those weighing machines belonging to the combination obtained;

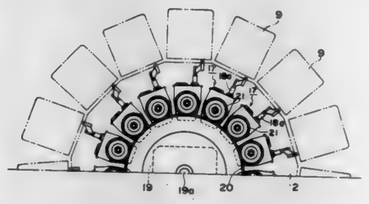
(c) obtaining the volume of the discharged articles; and

(d) correcting said target value, based on the magnitude of the volume obtained, for subsequent operation of said combinatorial weighting apparatus.

4,520,884
HOOPER DOOR OPENING MECHANISM FOR AUTOMATIC WEIGHING APPARATUS

Yoshiharu Mikami, Kyoto, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Nov. 8, 1983, Ser. No. 549,762
Claims priority, application Japan, Aug. 11, 1982, 57-168833[U]
Int. Cl.³ G01G *19/00, 13/18*
U.S. Cl. 177—58 **7 Claims**



1. An automatic weighing apparatus comprising:

a supporting platform;

an article supply unit disposed on said supporting platform, for supplying articles to be weighed;

a plurality of hoppers disposed adjacent to said article supply unit, for receiving articles from said article supply unit, each said weighing hopper having a gate;

a plurality of weighing machines disposed on said supporting platform and respectively associated with said hoppers, for weighing articles contained in said hoppers;

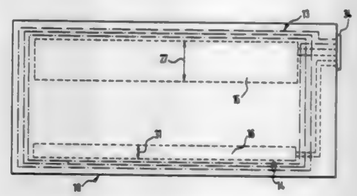
a drive mechanism disposed at the center of and below said supporting platform; and

a plurality of hopper gate opening devices disposed on the bottom of said supporting platform inwardly of and respectively associated with said hoppers, each hopper gate opening device including a drive shaft rotated constantly by said drive mechanism, a push rod for opening the gate of the hopper associated with each hopper gate opening device, and transmission means for transmitting the rotational motion of said drive shaft to said push rod.

4,520,885
LOAD SENSING APPARATUS WITH CAPACITIVE AND INDUCTIVE SENSORS

Peter Jeffrey, Liverpool, England, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,488
Claims priority, application United Kingdom, Aug. 5, 1981, 8123898
Int. Cl.³ G01G *3/00, 7/06*
U.S. Cl. 177—210 C **19 Claims**



1. A load-sensing mat comprising:

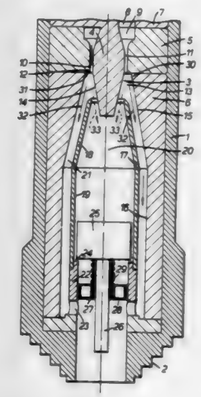
(a) at least one pair of superposed spaced, substantially planar conductive elements embeded in the mat by a flexible resilient material, said pair of conductive elements constituting capacitance plates operative to produce an electric signal in response to the spacing between said capacitance plates when the mat is loaded to compress said resilient material; and

(b) a conductive loop embeded in the mat by said flexible resilient material for providing an inductance-dependent indication of the presence of a load, said conductive loop being disposed around said capacitance plates.

4,520,886
ROTARY DRILLING TOOL WITH PERCUSSION DEVICE

Lionel Marais, Paris, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed Jul. 6, 1983, Ser. No. 511,357
Claims priority, application France, Jul. 7, 1982, 82 11980
Int. Cl.³ E21B *4/14*
U.S. Cl. 173—135 **6 Claims**



1. A rotary drilling tool including a percussion device which comprises;

an annular nozzle (3) comprising, continuously and without interruption from upstream to downstream, a first annular element (5) defining an annular inlet neck (9) in communication with an upstream passage (8) for the introduction of drilling mud, a cylindrical annular duct (10) provided

between an internal cylindrical surface (11) and an external cylindrical surface (12), and a second annular element (6) defining a divergent annular duct (13) provided between an internal convergent conical surface (14) and an external divergent conical surface (15);

a hollow part (17) with an upstream portion (18) of divergent conical shape projecting into said divergent annular duct and dividing it into a central flow path (20) and a peripheral flow path (21), and a downstream portion (19) of cylindrical shape;

a percussion head (25) located in said downstream portion of said hollow part and forming a piston therein; and

an abutment (24) capable of stopping said percussion head in the downstream direction, said central flow path being at least partially closed when said percussion head abuts said abutment;

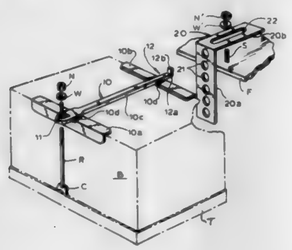
wherein, at an upstream end said external divergent conical surface directly adjoining the cylindrical annular duct, said external divergent conical surface (15) has a larger diameter than said external cylindrical surface (12), said first and second annular elements being in direct contact and said external cylindrical surface being directly connected to said external divergent conical surface to define an abrupt and turbulence generating radial step (31), which makes flow along said peripheral flow path unstable and tends to restore flow automatically into said central flow path.

4,520,887

BATTERY HOLDDOWN ARRANGEMENT

Robert DiFazio, New York, N.Y., assignor to D & S Plug Corporation, Deer Park, N.Y.

Filed Feb. 4, 1983, Ser. No. 463,979
Int. Cl.³ B60R *18/02*
U.S. Cl. 180—68.5 **11 Claims**



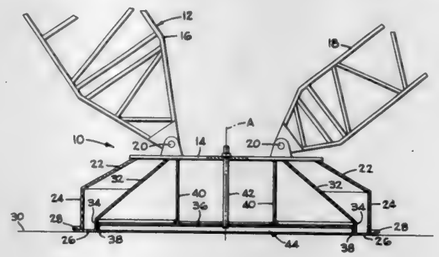
1. Apparatus for securing a storage battery or the like to a mounting, comprising spaced apart arm means for engaging opposite upper edges of the battery, elongate cross-bar means of rectangular cross-section integrally formed with and connected adjacent its opposite end portions to said arm means for bridging the upper surface of the battery, said arm means comprising angle brackets for engaging the upper edges of the battery and having downwardly extending portions, securing means integrally formed with the cross-bar means and extending along the longitudinal axis of the cross-bar means beyond one of said arm means for securing said one of said arm means to the battery mounting; means integrally formed with and as a longitudinal extension of the other end of said cross-bar means and terminating in an upstanding part beyond the other of said arm means for connecting the other of said arm means to said mounting; and L-shaped means for securing said upstanding part, integrally formed on the cross-bar means, to the mounting comprising: a series of vertically spaced apertures in one leg of said L-shaped means for selectively receiving said upstanding part therein; and means in the other leg of said L-shaped means adapted to accommodate means for fixing said L-shaped means to the mounting, said upstanding part having an inner face, facing said other arm means and extending a distance beyond the other arm means substantially equal to the thickness of said one leg of said L-shaped means, wherein said one leg is secured between said upstanding part and said downwardly extending portion of said other arm means when said battery is mounted and secured.

4,520,888

LOAD SUPPORTING STRUCTURE

Marvin L. Wolf, Houston, Tex., assignor to FMC Corporation, Chicago, Ill.

Filed Mar. 24, 1983, Ser. No. 478,194
Int. Cl.³ B60V *1/06*
U.S. Cl. 180—125 **8 Claims**



1. A load supporting structure for supporting and maintaining a load thereon stable when being moved on a substantially flat supporting surface comprising:

means defining a low volume substantially constant capacity pressure chamber with one wall thereof being a portion of the flat surface and having a large area, said pressure chamber including an upper wall disposed adjacent to said flat surface, and an annular outer wall rigidly secured in air tight engagement to said upper wall;

means defining a rigid annular foot encompassing the outer wall of said pressure chamber and having a planar lower surface supported on the flat supporting surface, said rigid annular foot including an upturned outer annular lip for permitting sliding movement of the load supporting structure in any direction over said substantially flat surface;

load supporting means rigidly secured to said rigid annular foot for supporting a load; and

controllable means for directing air into said pressure chamber and maintaining the air at a sufficient pressure to support substantially all of the total weight of the load and the load supporting structure but insufficient to lift the rigid annular foot off said flat surface.

4,520,889

GUIDANCE CONDUCTOR FOR DRIVERLESS VEHICLE

Eiji Abe, and Junpei Kanazawa, both of Ise, Japan, assignors to Shinko Electric Co., Ltd., Japan

Continuation-in-part of Ser. No. 239,458, Mar. 2, 1981, abandoned. This application Jun. 27, 1983, Ser. No. 508,418
Int. Cl.³ B62D *1/24*
U.S. Cl. 180—168 **1 Claim**

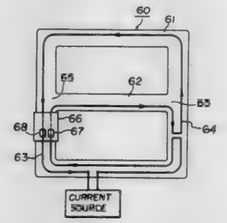
1. A control system for a driverless vehicle which is guided along a track way by detecting an induction field comprising:

a guidance conductor arranged substantially throughout and within said track way to form a closed circuit, said track way including a main portion wherein portions of said guidance conductor are arranged in parallel with each other in a predetermined spaced relationship and a loop portion wherein only one portion of said conductor is laid;

energizing means connected to said guidance conductor for feeding a high frequency current to generate said induction field around said guidance conductor;

a pair of detectors, each said detector being disposed respectively on a side of said driverless vehicle corresponding to a respective edge of said track way, said detectors being arranged to have said predetermined space therebetween for selectively detecting the induction field generated by the conductor portion, if any, laid along the corresponding edge of the track way; and

selection circuit means for selecting one of said conductor portions in accordance with a selected route of said track way along which said vehicle is guided;



wherein each said detector comprises a first detection coil disposed parallel to the plane of said track way and perpendicular to said guidance conductor; and

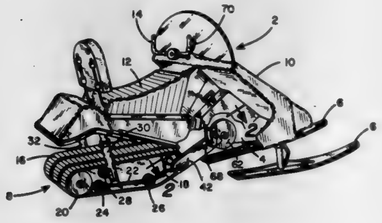
a second detection coil disposed substantially in a vertical plane including said guidance conductor and inclined to the horizontal plane of said track way.

4,520,890

BRAKE ARRANGEMENT FOR SNOWMOBILE

Gregory J. Marier, Forest Lake, Minn., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Aug. 1, 1983, Ser. No. 518,958
Int. Cl.³ B62M *27/02*
U.S. Cl. 180—193 **3 Claims**



1. In a snowmobile of the type having a frame, steerable skis mounted on the forward end of said frame, motor means mounted on said frame, a variable speed transmission coupling said motor to a drive shaft which is journaled for rotation transversely of said frame, an elongated chain case pivotally secured at one end thereof to said drive shaft for limited angular rotation thereabout, a track support means including a track drive assembly, said track support means defining an orbital path for an endless ground-engaging track, said track support means being pivotally coupled to the other end of said chain case and said track drive assembly being driven by a chain coupling contained within said chain case and extending between said drive shaft and said track drive assembly, the improvement comprising:

(a) braking means disposed between said drive shaft and said chain case for stopping rotation of said drive shaft while simultaneously transferring weight to said steerable skis.

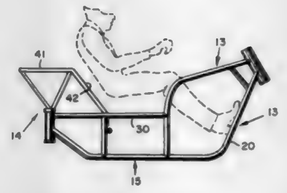
4,520,891

MOTORCYCLE

Bruce D. Omholt, 2117 Richmond, NW., Grand Rapids, Mich. 49504

Division of Ser. No. 155,611, Jun. 2, 1980, Pat. No. 4,413,699.
This application Apr. 25, 1983, Ser. No. 487,969
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.³ B62K *11/04*
U.S. Cl. 180—219 **1 Claim**





1. In a two-wheeled vehicle having a front wheel, a rear wheel and an engine, the improvements comprising: frame means comprising a forward frame section, an intermediate frame section and a rear frame section, all of said frame sections providing a rigid integral frame for said vehicle and characterized in that the top of said intermediate frame section lies substantially below the tops of said other frame sections; means mounting said front wheel to said forward frame section; means mounting said engine to said forward frame section; foot rest means mounted for supporting the feet of a rider in a forward position relative to the knee of the rider and adjacent the forward frame section to define a link angle at the knee of approximately 110° or greater; means for mounting said rear wheel to said rear frame section; and seat means having a seat portion and a backrest portion, said seat portion being mounted directly above said intermediate frame section and said backrest portion extending upwardly and rearwardly for supporting the lumbar region of a rider at an angle in the approximate range of 25–30 degrees relative to the vertical and for supporting the thoracic region of a rider and secured to the upper portion of said rear frame section, whereby a rider positioned on said seat means in operating relation to the vehicle and in supporting relation with said seat means has a link angle at the hip within the approximate range of 95°–100° and greater link angles at the knee and ankle and has his legs straddling the forward frame section and engine when his feet are positioned on said foot rest means.

4,520,892

TWO-WHEELED VEHICLE WITH OFFSET WHEEL

Kazuo Satoh, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

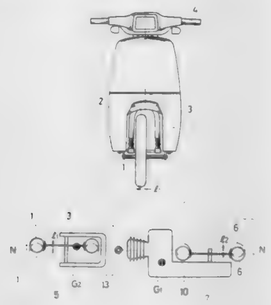
Filed Feb. 17, 1983, Ser. No. 467,208
Claims priority, application Japan, Feb. 17, 1982, 57-24181
Int. Cl.³ B62K *11/02*
U.S. Cl. 180—219 **12 Claims**

1. A two-wheeled vehicle, comprising:

a vehicular body inclusive structure having the center of

gravity thereof deviated in a first transverse direction from the vehicle center line;

a steering system inclusive structure which is transversely turnable and pivotably connected to said vehicular body inclusive structure;



a rear wheel supported by said vehicular body inclusive structure; and

a front wheel supported by said steering system inclusive structure, said front wheel being offset with respect to said vehicle center line in a second transverse direction, opposite to said first transverse direction.

4,520,893

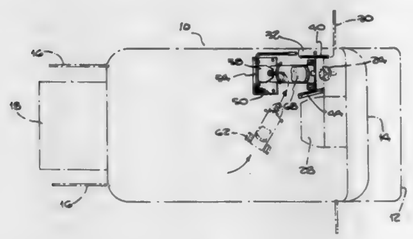
ELECTRIC CART STATION

Rickey Keough, P.O. Box 1571, 2336 Blake St., San Bernardino, Calif. 92405

Filed Jan. 7, 1983, Ser. No. 434,907

Int. Cl.³ A61G *5/04*; B62D *27/06*

U.S. Cl. 180—326 **7 Claims**



1. In a motor vehicle having a body with a front end, a rear end and right and left sides, said body having an access door of a size to admit a motorized cart, said vehicle having a floor having a driver's station at the forward side portion thereof, a motorized cart with a seat thereon, a swivel connection between said seat and said motorized cart for rotating said seat from a forwardly facing position to a rearwardly facing position, locking means for securing said seat in said forward facing position, means for releasably restraining said motorized cart at the driver's station from forward, rearward, vertical, and lateral movement, said means including a rotable notched plate connected with the floor of said vehicle to block forward, vertical, and lateral movement of the motorized cart relative to the driver's station and the steering post of said motorized cart, and an angular member also connected with the floor of said vehicle to block rearward, vertical, and lateral movement of the motorized cart relative to the driver's station and the rear portion of said motorized cart, said restraining member being shiftable from a position engageable with the motorized cart to hold it against rearward, forward, vertical and lateral movement, to a position freeing the motorized cart for maneuvering thereof.

4,520,894

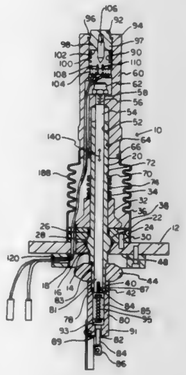
CONTROL WAND FOR OVERHEAD PERSONNEL CRANE

David L. Hensler, 3814 Darwood Ct., Fort Wayne, Ind. 46815

Filed Apr. 4, 1983, Ser. No. 481,621

Int. Cl.³ H01H *25/04*

U.S. Cl. 182—2 **19 Claims**



1. For use with an hydraulically driven overhead personnel crane which includes an elongated articulated arm having a personnel carrying enclosure secured to one end thereof and a plurality of hydraulic cylinders including electrically operated hydraulic cylinder control means operatively connected thereto for selectively controlling the operation of said hydraulic cylinders to maneuver said personnel enclosure in any selected direction in response to operation of one or more of said cylinders, a manually manipulated control wand apparatus for selectively actuating said electrically operated hydraulic control means comprising: a mounting base, an elongated tilting operator shaft pivotably coupled to said base for omnidirectional tilting movement, a first cam element fixedly secured to said tilting operator shaft, a first plurality of electrical switches each having a switch actuator and mounted to said base in an orthogonal array with said actuators adjacent said first cam, individual ones of said switches being operable in response to tilting of said shaft in a respective one of four orthogonally disposed directions towards individual ones of said switch actuators, adjacent ones of said switches being operable in response to tilting of said shaft in radial directions between said orthogonally disposed directions; a sliding operator shaft longitudinally slidably coupled to said tilting operator shaft, a second cam means fixedly secured to said sliding operator shaft, a pair of electrical switches each having a switch actuator and mounted to said tilting operator shaft in positions with said actuators in longitudinally spaced-apart relationship to adjacent ones of said second cam means, individual ones of said switches being operated in response to sliding movement of said sliding operator shaft in diametrically opposite directions; individual ones of said switches being operatively connected to predetermined ones of said hydraulic actuating means, said control wand apparatus being fixedly secured to said personnel carrier with said orthogonal axes disposed in directions corresponding to the direction of movement of said carrier resulting from actuation of that one of said switches disposed in said direction of movement.

4,520,895

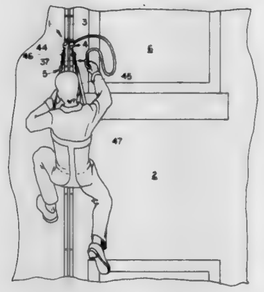
BUILDING WALL DESCENT DEVICE HAVING MANUALLY OPERATED BRAKE MEANS

James A. Armstrong, 4911 Calvert, Cincinnati, Ohio 45209

Filed Sep. 21, 1983, Ser. No. 534,307

Int. Cl.³ A62B *35/00*

U.S. Cl. 182—3 **30 Claims**



1. Apparatus for descending in a controlled fashion along an exterior building wall face comprising a vertically extending rail-like support track fixedly secured to the exterior building wall face, hand operable brake means slidingly cooperating with said track for descending therealong at a selectable rate, and means attached to said brake means for supporting the user, said brake means including manually operable clamp means for slidingly engaging said track and means for varying the clamp force between said clamp means and said track for controlling the rate of descent along said track.

4,520,896

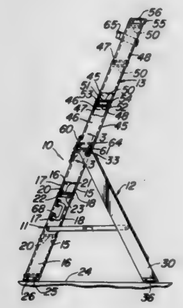
FOLDABLE LADDER

Horace C. Disston, and Timothy J. Eichfeld, both of 217 S. Hurffville Rd., Deptford, N.J. 08096

Continuation-in-part of Ser. No. 264,299, May 18, 1981, and Ser. No. 515,559, Jul. 29, 1983,. This application Apr. 4, 1984, Ser. No. 596,835

Int. Cl.³ E06C *1/20, 1/383*

U.S. Cl. 182—22 **10 Claims**



1. A foldable ladder comprising a lower step section for use inclined in one direction on a horizontal supporting surface, a strut having one end pivotally connected to one end of said lower step section for use inclined in the opposite direction on a horizontal supporting surface, limit means connecting said lower section and strut for limited swinging movement away from each other, an upper step section having one end pivotally connected to said one end of said lower step section for swinging movement between a retracted position lying along said lower step section and an extended position in alignment with said lower step section, a lug on one of said lower step section and strut, and a catch pivotally connected to said upper step section for swinging movement between a retracted position depending along said upper step section when the latter is retracted to a position depending from said upper step section into hooked engagement with said lug when said upper step section is extended, for retaining said upper step section securely extended.

4,520,897

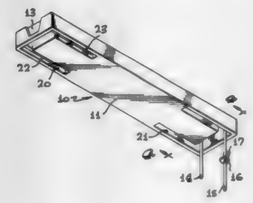
PORTABLE STEPS

George B. Gebo, 4645 E. Industrial St., #2-E, Simi Valley, Calif. 93063

Filed May 14, 1984, Ser. No. 579,685

Int. Cl.³ E06C *7/08*; E04G *1/28*

U.S. Cl. 182—92 **2 Claims**



1. Portable steps comprising:

a plurality of elongated step rungs arranged adjacent to each other in parallel side-by-side relationship;

each step rung of said plurality including an elongated rigid member intended to be stepped upon incorporating a pair of ground engaging spikes at each end of said member for penetrating into the ground for a given length;

an adjustable gauge movably carried on said spikes adapted to engage with the ground to limit penetration of said spikes therein;

means for pivotally coupling said spikes at each end of said member so as to swing between a stowed position and an operative position for penetrating the ground; and

recesses provided in each end of said member for insertably receiving said spikes and intended to be occupied by said spikes in their stowed position.

4,520,898

FOLDING GUARD RAIL FOR A PLATFORM

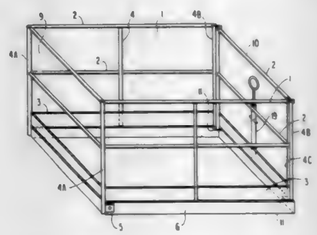
Claude Allemane, 6, rue Chopin, 47000 Agen, France

Continuation of Ser. No. 346,030, Feb. 5, 1982,. This application Feb. 6, 1984, Ser. No. 577,485

Claims priority, application France, Feb. 5, 1981, 81 02450

Int. Cl.³ E04G *1/26, 1/34*

U.S. Cl. 182—113 **12 Claims**



1. A folding guard rail adapted to be placed on a platform having a horizontal surface and a plurality of sides, said guard rail comprising:

(a) two parallel sides, each of said parallel sides having an upper rail and a lower surface and means for rotatably connecting said parallel sides to said platform, said parallel

sides adapted to be positioned exteriorly of said platform sides when said guard rail is connected thereto, each of said parallel sides having a first end and a second end;

(b) a third side perpendicularly connected to said first end of each of said parallel sides;

(c) a fourth side perpendicularly journalled to said second end of each of said parallel sides; and

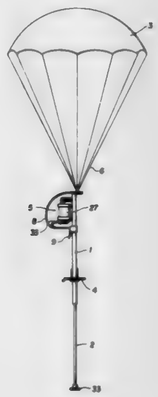
(d) means for maintaining said first, second, third and fourth sides of said guard rail in a first position exterior of said platform sides, said maintaining means comprising a key which is integrally connected to said fourth side, said key comprising a sliding shaft having a first end and a second end, said first end of said sliding shaft including a cross bar, said cross bar being adapted to be inserted into hooks located on said platform to render said guard rail immobile, said second end of said sliding shaft having a handle, said maintaining means further comprising a spindle for immobilizing said key when said cross bar is inserted into said hooks, and means for maintaining said guard rail in a second folded position in which said third side is positioned in a horizontal fashion on said horizontal surface of said platform, said first and second parallel sides being positioned exteriorly of and below said platform and said fourth side being journalled in a position which is at an angle of 270° from said second ends of said parallel sides.

4,520,899

PARACHUTE APPARATUS WITH SHOCK ABSORBER

Tulio Vasquez, Carrera 15 No. 39-27, Bogotá , Colombia

Filed Apr. 22, 1983, Ser. No. 489,142
Int. Cl.³ A62B *1/00*; B64D *17/00*
U.S. Cl. 182—230 **17 Claims**



1. An apparatus for use in jumping from burning buildings or the like, comprising a parachute, restraining means for normally maintaining said parachute in a compact folded condition, first support means for said parachute mounted on said apparatus, means which continue to connect said parachute to said first support means when said restraining means has been released and said parachute has opened, a shock absorber means,

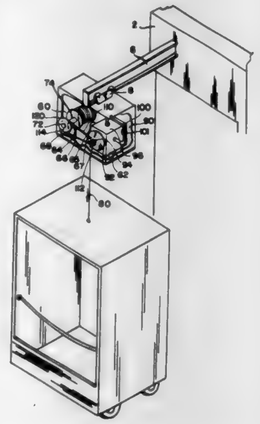
said shock absorber means comprising an outer and an inner tubular member telescopically movable with respect to each other from a retracted position corresponding to the storage position of said apparatus to an elongated extended position corresponding to the in-use position of said apparatus, person support means carried by said apparatus at a level below the level at which said parachute is connected to said first support means, first actuator means for causing the release of said restraining means to permit opening of said parachute to its in-use condition, second actuator means for causing said outer and said inner tubular members to move relative to each other from their retracted position to their extended in-use position, and means for substantially simultaneously actuating said first and said second actuator means to cause movement of said parachute to open condition and to cause said relative movement of said tubular members to said extended position.

4,520,900

FIRE ESCAPE APPARATUS FOR USE IN HIGH-RISE BUILDINGS AND THE LIKE

Orey C. Orgeron, 706 Souvenir Gate, Lafayette, La. 70506

Continuation-in-part of Ser. No. 438,035, Nov. 1, 1982,. This application Mar. 21, 1983, Ser. No. 477,143
Int. Cl.³ A62B *1/02*
U.S. Cl. 182—238 **3 Claims**



1. Fire escape apparatus for facilitating the escape of victims entrapped in a burning high-rise building having a plurality of floors comprising:

a. a support device for carrying a plurality of persons;

b. a cable affixed to said support device extending into and wound upon a cable take-up drum;

c. a constant velocity braking means rotatably connected to said drum for controlling the speed of unwinding thereof, said braking means comprising a constant displacement hydraulic pump and a closed hydraulic conduit, having a flow restriction means and a hydraulic pressure regulating means for continuously circulating hydraulic fluid within the hydraulic conduit and said pump, wherein said constant displacement hydraulic pump is rotatably connected to said cable carrying drum, an outlet of said pump being fluidly connected to a flow restricting means, an outlet of said flow restricting means being fluidly connected to a hydraulic pressure regulating means, an outlet of said pressure regulating means being connected to an inlet of said pump, the entire being filled with a hydraulic fluid;

d. a housing enclosing said cable drum and braking means rotatably connected thereto;

e. a means for removing the aforesaid personnel support device from within the buiding to outside of the building;

f. a mechanical overdrive means rotatably connected to said cable carrying drum and to said braking means, said overdrive means further comprising a first sprocket means fixedly mounted on a shaft of said cable-carrying drum, a second sproket means having a diameter at least twice as small as that of said first sprocket means, fixedly mounted on the shaft of said hydraulic pump of said braking means and an endless chain mounted on first and second sprocket means to operatively connect said drum and said braking means;

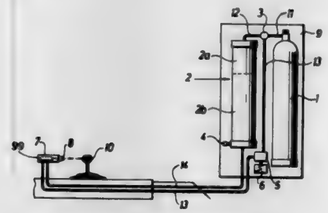
g. said mechanical overdrive means and said constant velocity braking means in combination with said cable-carrying drum producing a decreasing descent velocity.

4,520,901

METHOD AND APPARATUS FOR DISPENSING A WORKING SUBSTANCE SUCH AS A LUBRICANT

Alf L. Borup, Bromma, and Erik G. Aström, Järfälla, both of Sweden, assignors to Swedish Rail System AB SRS, Solna, Sweden

Filed Sep. 28, 1978, Ser. No. 946,923
Claims priority, application Sweden, Sep. 30, 1977, 7710965; Jul. 20, 1978, 7808021
Int. Cl.³ B61F *17/00*; F16N *7/00*
U.S. Cl. 184—3.1 **15 Claims**



1. A method of lubricating with grease a curved section of a railway track subjecting to wear by the wheel flanges of passing railway vehicles, comprising:

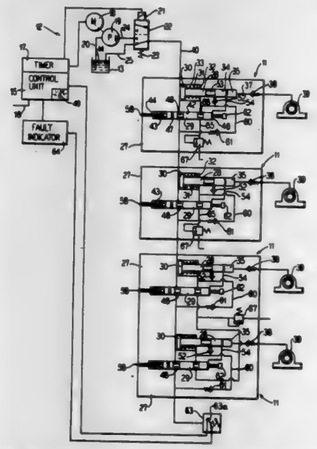
providing a lubricating metering unit at a distance from but adjacent to the inner side surface of a rail section to be lubricated; and, intermittently propelling a metered amount of grease from a generally horizontally directed nozzle of said metering unit in a shot-like fashion to the inner side surface of the rail section.

4,520,902

LUBRICANT APPLYING SYSTEM AND INJECTOR MEANS

John P. Snow, Sagamore Hills, Ohio, assignor to Lubriquip-Houdaille, Inc., Warrensville Heights, Ohio

Filed Apr. 19, 1983, Ser. No. 486,310
Int. Cl.³ F16N *25/00, 29/04*
U.S. Cl. 184—7.4 **18 Claims**



1. A lubricant applying system provided with at least one lubricant injector structure having means for lubricant delivery to at least one respective point of use, and comprising:

a lubricant supply and return passage means connected with said injector structure;

operating means at one end of said passage means functioning cyclically for in one phase supplying lubricant under predetermined pressure from a source through said passage means for sequentially discharging and recharging said injector structure, and for in a second phase and after said recharging permitting return of surplus lubricant from said injector structure in a sequential manner through said passage means to said source;

pressure sensing and signaling means connected to an opposite end of said passage means for monitoring pressure conditions in said passage means;

said at least one injector structure containing a lubricant displacement plunger and a lubricant metering plunger;

means normally biasing said displacement plunger toward one end;

a pressure responsive head on said one end of said displacement plunger for direct exposure to pressure in said passage means for effecting shifting of said displacement plunger in opposition to said biasing means in a lubricant displacement stroke toward its opposite end and into a lubricant displacement chamber at such end from which lubricant is thereby ejected through a port communicating with one of said points of use, the displacement plunger being then returned to said one end upon release of pressure in said passage means;

said injector structure including means completing a metering chamber in combination with one end of said metering plunger and adapted to be substantially occupied by the metering plunger in one operating mode of the metering plunger and to be vacated by the metering plunger in a second operating mode thereof;

said injector structure a passageway connecting said metering chamber with said displacement chamber;

means normally biasing said metering plunger into said one operating mode;

said metering plunger being adapted in said one operating mode for opening said lubricant passage means and by occupying said metering chamber driving lubricant from said metering chamber through said passageway into said displacement chamber, and being adapted in said second operating mode for closing said lubricant passage means and vacating said metering chamber in response to lubricant pressure in said metering chamber; and

said injector structure and said displacement plunger including metering chamber pressurizing and recharging means controlled by said displacement plunger for selectively effecting communication between said lubricant passage means and said passageway in the displacement stroke of said displacement plunger, so that lubricant under pressure will be charged into said metering chamber and cause said metering plunger to shift into said second operating mode and when pressure is released said metering plunger will be shifted into said first operating mode by its biasing means for thereby driving a charge of lubricant from said metering chamber through said passageway into said displacement chamber.

4,520,903

FORKLIFT VEHICLE

William Arnold, Sutton West, and Gerardus J. Brouwer, Keswick, both of Canada, assignors to Brouwer Turf Equipment Limited, Keswick, Canada

Division of Ser. No. 154,567, May 29, 1980, Pat. No. 4,365,921. This application Nov. 12, 1982, Ser. No. 441,055
Claims priority, application Canada, Jun. 21, 1979, 330327
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 R **2 Claims**

1. A self propelled forklift vehicle comprising:

(a) a frame, a fork tower mounted on said frame, and forks mounted on said fork tower,

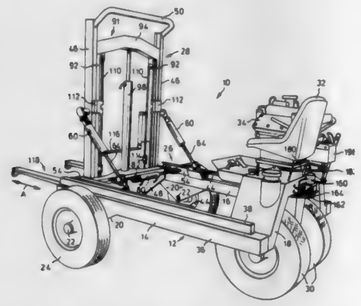
(b) front wheels connected to said frame adjacent the front thereof to support the front of said frame,

(c) said frame including a rear transverse frame member,

(d) yoke means pivotally mounted on said transverse frame

adjacent the rear of said frame for at least 180° rotary movement of said yoke means about a vertical axis, said yoke means being located substantially at the centre of said transverse frame member and extending below said transverse frame member,

(e) rear wheel means pivotally carried by said yoke means for pivotal movement of said rear wheel means about a substantially horizontal first axis, said rear wheel means including differential means pivotally carried by said yoke means for pivotal movement of said differential means about said first axis, said differential means having a pair of free ended axles projecting one from each side thereof and oriented along a substantially horizontal second axis located at rigth angles to said first axis, a pair of rear wheels one mounted on each said free ended axle, said rear wheels being spaced closely together and substantially centred transversely under said rear transverse frame member, thus permitting side to side tilting of said differential means and rear wheels about said first axis,



(f) vertical drive shaft means extending vertically downwardly through said yoke means and connected to said differential means for driving said axles, said vertical drive shaft means including a universal joint connection therein and a telescopic section therein, to permit said side to side tilting of said rear wheel means,

(g) a motor mounted on said frame and coupled to said vertical drive shaft means for driving said rear wheel means,

(h) steering means connected to said frame for rotating said yoke means to steer said vehicle,

(i) said motor being mounted on said rear transverse frame member on one side of said vertical drive shaft means and an operator seat being mounted on said rear transverse frame member on the other side of said vertical drive shaft means, whereby the weight of an operator on said seat constitutes a counterweight for the weight of said motor.

4,520,904

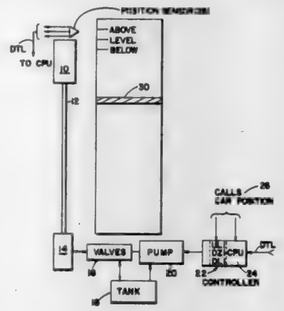
ELEVATOR LEVELING SIGNAL ERROR AND CORRECTION

David J. Rado, Granby, and Steven D. Coste, Torrington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Nov. 9, 1983, Ser. No. 550,161
Int. Cl.³ B66B *1/40*
U.S. Cl. 187—29 R **3 Claims**

1. An elevator comprising a car, a car propulsion system, a car motion control for controlling the propulsion sysem, and a position indicator for providing indications of car position when the car is above a floor, below the floor, and near floor level, characterized in that:

the motion control comprises processing means responsive to indications of car position for providing a first signal when the car is above the floor level at a certain first distance, a second signal when the car is at the floor level, and a third signal when the car is below the floor level by a certain preset distance, for providing a fourth signal that manifests that one of the indications is incorrect as the car approaches a floor and for providing one of those three signals in response to said fourth signal, means for storing



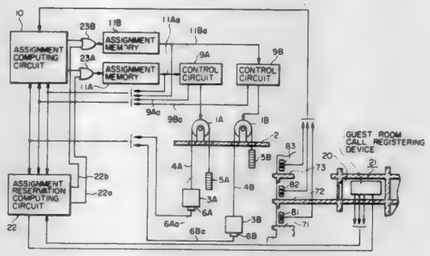
the fourth signal and providing said one of the three signals at each successive floor stop, and means for slowing and stopping the car and opening the doors in response to the three signals.

4,520,905

ELEVATOR GROUP CONTROL APPARATUS

Isao Sasao, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1984, Ser. No. 587,784
Claims priority, application Japan, Mar. 9, 1983, 58-39623
Int. Cl.³ B66B *1/18*
U.S. Cl. 187—29 R **12 Claims**



1. In an elevator group control apparatus in which a call signal is generated by a first call means provided at each of a plurality of floors served by a plurality of cages, an assignment computing circuit is actuated by said first call signal to select one of said cages in a predetermined manner to thereby assign said first call signal to said selected cage, a signal representing the assignment is stored in assignment memories respectively provided for said cages to thereby cause said selected cage to perform service, the improvement comprising:

(a) second call means provided separately from said first call means for producing a second call signal and a desired arrival time designation signal for designating a desired time for a cage to make service in response to the second call signal; and

(b) assignment means receiving said second call signal and said desired arrival time designation signal for determining how service is to be performed, said assignment means comprising means for computing estimated arrival times required for each of said cages to respond to said second call signal, means for comparing the computed estimated arrival times with said desired time to thereby perform said selecting operation, and means for transmitting an assignment signal obtained as a result of comparison to corresponding ones of said memories;

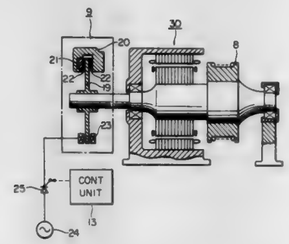
wherein said assignment means comprises means for selecting one of said cages for which said estimated arrival time is longer than and closest to said desired time thereof so that the first call signal takes priority over the second call signal.

4,520,906

CONTROL APPARATUS FOR ELEVATOR

Eiki Watanabe, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jul. 3, 1984, Ser. No. 627,653
Claims priority, application Japan, Jul. 6, 1983, 58-122615
Int. Cl.³ B66B *1/32*
U.S. Cl. 187—29 R **15 Claims**



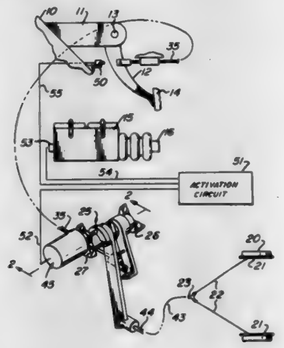
1. A control apparatus for an elevator wherein a cage is driven by a hoisting machine having an electric motor which is driven by A.C. electric power; comprising loss impartation means to impart a loss to the hoisting machine of the cage and being capable of adjusting the loss; cage position detection means to detect the position of the cage; and control means to control said loss impartation means on the basis of an output signal of said cage position detection means so as to adjust the loss in accordance with the position of the cage.

4,520,907

MECHANICAL-EMERGENCY SYSTEM BETWEEN VEHICLE SERVICE BRAKE FOOT PEDAL AND PARKING BRAKE

Joseph G. Sikora, R.D. #3, Box 218, Pottstown, Pa. 19464

Filed Mar. 10, 1983, Ser. No. 473,968
Int. Cl.³ F16D *65/36;* **B60T** *13/02*
U.S. Cl. 188—156 **2 Claims**



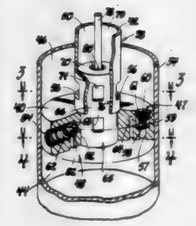
1. A normally quiescent automatically energized manually controlled emergency brake system for a vehicle having a service brake operator and a parking brake apparatus, said system comprising a mounting shaft, an actuator rotatably mounted on said shaft and connected to said service brake operator for back and forth angular movement along a path corresponding to movement of said operator, a follower rotatably mounted on said shaft independently of and adjacent to said actuator for movement longitudinally of said shaft toward and away from said actuator into and out of said path transversely thereof and along said path in following relation with said actuator, follower connection means connecting said follower to said parking brake apparatus for operating the latter upon movement in said following relation, resiliently yieldable holding means operatively connected to said follower to urge said follower longitudinally of said shaft and normally maintain said follower away from said actuator in position out of said path, sensor means for sensing abnormal service brake operator functioning, activator means responsive to said sensor means to urge said follower longitudinally of said shaft against said holding means and into said path and said following relation to operate said parking brake system upon failure of said service brake, and limit means operative upon predetermined yielding of said holding means to limit the restoration thereof and maintain said follower in said following relation.

4,520,908

PRESSURE BALANCED VALVE FOR ADJUSTABLE HYDRAULIC DAMPER

Keith H. Carpenter, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

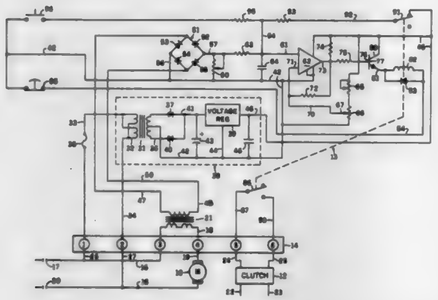
Filed Nov. 10, 1983, Ser. No. 550,564
Int. Cl.³ F16F *9/50, 9/46*
U.S. Cl. 188—319 **3 Claims**



1. In an adjustable hydraulic damper including a piston and rod assembly slidably disposed in a fluid filled cylinder tube and defining therewith inversely variable volume compression and rebound chambers on opposite sides of said assembly and further including at least two relief valve means on said assembly operative to pass fluid to one of said compression and said rebound chambers when respective pressures on said relief valve means exceed corresponding ones of a pair of predetermined relief pressures, the combination comprising, means defining a cylindrical bore in said assembly, first passage means through said assembly between said bore and the other of said compression and said rebound chambers, second passage means between said bore and each of said relief valve means, a hollow right cylindrical valve spool in said bore movable between at least two control positions corresponding to pressure relief at each of said predetermined relief pressures, tube means on said spool extending axially therethrough and open to said one chamber operative to equalize pressure on opposite ends of said spool for axial pressure balance, a first plurality of circumferentially symmetrically arrayed upper ports through said spool intermediate its ends registerable with said first passage means in each of said spool control positions to admit fluid from said other chamber to said spool, a second plurality of circumferentially symmetrically arrayed ports through said spool intermediate its ends selectively registerable with respective ones of said second passage means in respective ones of said spool control positions for directing fluid to corresponding ones of said relief valve means thereby to effect selective pressure relief of said other chamber at either of said predeter-

mined relief pressure levels, the circumferential symmetry of said upper and said lower ports effecting internal radial pressure balance on said spool, and control means connected to said valve spool operative to move said valve spool between said control positions.

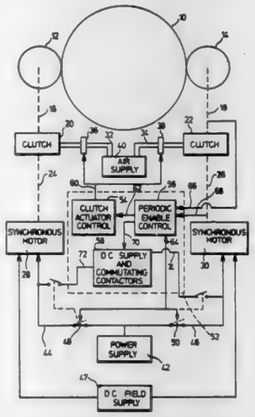
4,520,909
CLUTCH ACTUATOR
Carl T. Brewer, 334 Lyonnais, Creve Coeur, Mo. 63141
Filed Dec. 16, 1981, Ser. No. 331,321
Int. Cl.³ B60K *41/02*
U.S. Cl. 192—0.02 R **10 Claims**



1. In an improved motor driven conveyor system including an electrical motor and a conveyor driven by the motor, wherein the improvement comprises:
(a) an electrically actuated clutch interconnecting the motor and the conveyor in drive relation,
(b) clutch-actuating means, responsive to motor current for actuating the clutch for selectively disconnecting the motor and conveyor when the motor current is greater than a predetermined value corresponding to motor overload,
(c) the clutch-actuating means being selectively adjustable for setting said predetermined value,
(d) the clutch-actuating means including manually actuated means for selectively actuating the clutch for disconnecting the motor from the conveyor and for selectively actuating the clutch for connecting the motor to the conveyor,
(e) the clutch-actuating means including means for comparing the motor current with a reference signal, and
(f) the clutch-actuating means including means for generating the reference signal from the line voltage supplied to the motor.

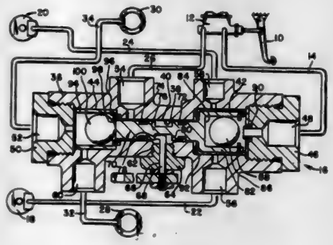
4,520,910
GRINDING MILL CONTROL USING CONTROLLED PULSING OF AIR CLUTCHES
Peter deHertel Eastcott, and Ronald C. Trussler, both of Peterborough, Canada, assignors to Canadian General Electric Company Limited, Toronto, Canada
Filed Dec. 9, 1982, Ser. No. 448,319
Int. Cl.³ B60K *41/02*; F16H *37/06*
U.S. Cl. 192—0.02 R **6 Claims**

1. A control means for stopping motion of a drive system having a large load driven by one or more dynamoelectric machines powered from an electrical source and coupled to said load through respective dry clutches, said control means comprising
clutch actuating means responsive to removal of the electrical source from said machines for applying for a predetermined duration of time a predetermined amount of pressure to said clutches sufficient to at least partially close said clutches but insufficient to fully close and lock-up said clutches, and
enabling means for periodically enabling said clutch actuating means to periodically apply said predetermined amount of pressure for said predetermined time duration



until the motion of at least one of said load and said dynamoelectric machine ceases.

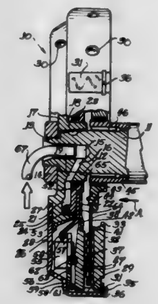
4,520,911
VEHICLE ATTITUDE RESPONSIVE BRAKE CONTROL DEVICE
Robert F. Gaiser, Stevensville, Mich., assignor to Allied Corporation, Morristown, N.J.
Filed Aug. 23, 1982, Ser. No. 410,731
Int. Cl.³ B60K *41/24*
U.S. Cl. 192—13 A **17 Claims**



1. A brake control device for maintaining selectively and automatically an application of vehicle brakes when the vehicle is on an incline, in a vehicle having a split system brake circuit communicating fluid pressure from a master cylinder to one set of brakes and communicating fluid pressure from the master cylinder to a second set of brakes independent of said one set, the control device comprising a housing with a bore therethrough, a pair of attitude responsive valve members movably carried within the bore, a control member disposed within the bore and cooperating with the pair of valve members, said control member sealingly engaging said bore to substantially define a first fluid path communicating with said one set of brakes and a second fluid path separate from said first fluid path and communicating with said second set of brakes, and an actuator extending into the bore of the housing and engageable with the control member, the control member being movable by said actuator from a rest position wherein said pair of valve members provides open communication between said master cylinder and said brake sets to an operable position wherein said pair of attitude responsive valve members may be displaced responsively to vehicle attitude to close

fluid communication in one direction from said brake sets to said master cylinder via said fluid paths in order to maintain said application of the vehicle brakes.

4,520,912
HYDRAULICALLY ACTUATED STARTING CLUTCH ASSEMBLY
Ernest A. Ferris, Oak Brook, and John W. McColl, Broadview, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Oct. 18, 1982, Ser. No. 434,807
Int. Cl.³ F16D *25/064, 25/14*
U.S. Cl. 192—85 AA **9 Claims**



1. A starting clutch for a continuously variable transmission adapted to engage upon a signal from a throttle induced system oil pressure to couple a driving shaft with a driven concentric sleeve shaft, comprising a hub operatively connected to rotate with the continuously rotating driving shaft, a clutch cover secured to said hub and having an axial flange portion, said hub having an annular pressure chamber formed therein receiving an axially reciprocable piston, a clutch plate carrying friction facings, a second hub operatively connected to the sleeve shaft and secured to the clutch plate, an end plate operatively connected to said axial flange portion, an axially reciprocable pressure plate operatively connected to rotate with said axial flange portion, a Belleville spring pivotally mounted in said cover and actuated by said piston to engage said pressure plate and urge it against the clutch plate located between the pressure plate and end plate, said Belleville spring having a plurality of inwardly extending fingers separated by generally radial slots, a source of hydraulic pressure communicating with said pressure chamber, and a plurality of centrifugal weights received in at least some of the slots to counterbalance the centrifugal force of the hydraulic fluid in the pressure chamber.

4,520,913
DEVICE FOR SELECTIVELY SEPARATING AND CONNECTING A ROTATABLE SHAFT
Paul Maucher, Sasbach, and Oswald Friedmann, Lichtenau, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany
Continuation of Ser. No. 143,935, Apr. 24, 1980,. This application Aug. 5, 1982, Ser. No. 405,402
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917137
The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.
Int. Cl.³ F16D *13/44, 21/00*
U.S. Cl. 192—48.8 **43 Claims**

1. Device for selectively connecting and separating the flywheel assembly of a friction clutch to and from a rotatable shaft, such as the crankshaft of an internal combustion engine, comprising a bearing in which the flywheel assembly is rotatable relative to the shaft, a friction plate having first friction surfaces disposed at the opposite sides thereof, means for non-rotatably connecting said friction plate to the shaft, two pressure plates forming part of the flywheel assembly and each having a second friction surface adjacent to one of said first friction surfaces, said pressure plates being axially movably but non-rotatably connected to each other and one of said pressure plates being connected to said bearing against axial movement with reference thereto, means for moving the other of said pressure plates axially, means disposed between the shaft and said first friction surfaces for yieldably biasing said friction

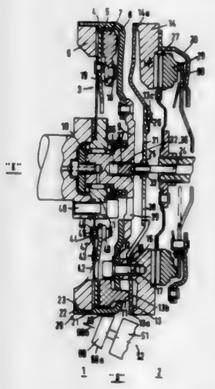
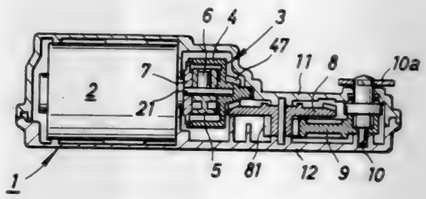


plate axially in a direction away from said one pressure plate, said biasing means being elastic, as considered in the axial direction of said flywheel assembly, and being affixed to the shaft and to said friction plate so that the centers of said first friction surfaces are located on the axis of the shaft, means for holding said biasing means against rotation with reference to said friction plate, and stop means for limiting the extent of axial movement of said first friction surfaces.

4,520,914
CENTRIFUGAL CLUTCH WITH RADIALLY MOVABLE MAGNETIC MEMBER
Tsutomu Kagiyama, and Tatsuyuki Takaishi, both of Yokohama, Japan, assignors to Ohi Seisakusho Co., Ltd., Kanagawa, Japan
Filed May 7, 1982, Ser. No. 376,212
Claims priority, application Japan, May 9, 1981, 56-66905[U]
Int. Cl.³ F16D *43/16, 27/01*; E05C *13/04*
U.S. Cl. 192—71 **2 Claims**



1. An actuator with a centrifugal positive clutch, comprising, in combination:
an outer casing having a cover plate;
a rotary drive shaft made of magnetic material;
a clutch drum of non-magnetic material, said clutch drum being loosely rotatably mounted around said drive shaft, having a large inner diameter portion, having at least one engaging protuberance projecting inwardly from said large inner diameter portion, and having a bevel gear and an axial projection formed integrally at a rear wall of the

clutch drum, said axial projection being supported by the cover plate;

a clutch body of non-magnetic material loosely rotatably mounted within said clutch drum and mounted on said rotary drive shaft for being driven by said rotary drive shaft, said clutch body having a retaining hole extending radially from the center thereof toward the inner wall of said clutch drum;

an engaging permanent magnet freely loosely movable in said retaining hole, said engaging permanent magnet having a length for being held completely within said retaining hole by the magnetic attraction between said permanent magnet and said rotary drive shaft when said clutch body is at a standstill and, when said clutch body is rotated faster than predetermined speed, being caused to protrude from said hole toward the inner wall of said clutch drum due soley to the centrifugal force generated and to engage with said engaging protuberance for driving said clutch drum; and

a lid member tightly sealing one end of said clutch drum, being loosely rotatably mounted around said rotary drive shaft for blocking entrance of water and dust into the centrifugal clutch.

4,520,915

MULTISTAGE CLUTCH DISC ARRANGEMENT WITH DISHED CLUTCH DISC, FRICTION GENERATING MEANS, AND LOAD FRICTION UNIT

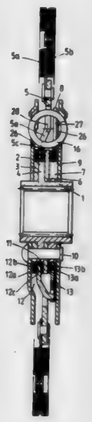
Jean-Claude Strub, Strassburg-Neuhof, France, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Jul. 7, 1982, Ser. No. 396,137

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1981, 3126695

Int. Cl.³ F16D *3/14, 3/66*

U.S. Cl. 192—106.2 **27 Claims**



1. A clutch disc arrangement for use in friction clutches, particularly in friction clutches of automotive vehicles, comprising a first component including a hub, a pair of spaced apart guides rotatable with said hub and a partition rigid with said hub; a second component including a clutch disc disposed between said guides and rotatable within limits relative to said first component from a neutral position; first energy storing means interposed between said components to yieldably resist rotation of said clutch disc from said neutral position; at least one first friction generating means interposed between said components to resist at least some first stages of rotation of said clutch disc from said neutral position; and a load friction unit interposed between said components to resist predetermined advanced stages of rotation of said clutch disc from said neutral position and to resist at least one of said first stages jointly with said first friction generating means, said load friction unit including at least one friction disc between said clutch disc and one of said guides, at least one second friction generating means interposed between said friction disc and first component, and second energy storing means disposed outwardly of said partition, as considered in the radial direction of said hub, and interposed between said friction disc and at least one of said guides to yieldably oppose rotation of said clutch disc relative to said first component during a predetermined stage of rotation of said clutch disc from said neutral position, said clutch disc and said first friction generating means being disposed at one side and said friction disc and said second friction generating means being disposed at the other side of said partition, as considered in the axial direction of said hub.

4,520,916

CLUTCH DISC ASSEMBLY INCLUDING A FLANGE ON THE CLUTCH DISC, THE FLANGE EXTENDING THROUGH ONE GUIDE PLATE AND A FRICTION DISC

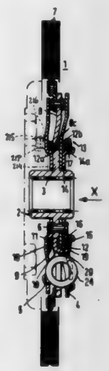
Jean-Claude Strub, Strassburg-Neuhof, France, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,615

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136600

Int. Cl.³ F16D *3/14, 3/66*

U.S. Cl. 192—106.2 **36 Claims**



1. A clutch disc assembly, particularly for use in in the clutches of automotive vehicles, comprising a first component including a hub and two spaced apart guides rotatable with the hub; a second component including a clutch disc disposed between said guides and rotatable within limits relative to said first component; first energy storing means interposed between said components to yieldably resist at least some stages of rotation of said clutch disc relative to said first component from a neutral position; and means for yieldably opposing advanced stages of rotation of said clutch disc from said neutral position, comprising at least one friction disc, friction generating means acting between said friction disc and said first component, and second energy storing means interposed between said friction disc and said first component, said clutch disc comprising means for regulating the operation of said friction generating means in cooperation with said friction disc and for limiting the extent of angular displacement of said clutch disc relative to said first component, said regulating means comprising at least one projection provided on said clutch disc, one of said guides and said friction disc having a cutout for said projection.

4,520,917

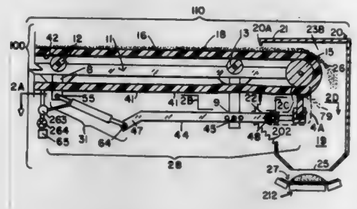
CONVEYOR BELT CLEANING METHODS AND APPARATUSES THEREFOR

Bob Sillivent, and Clifford Sillivent, both of Amarillo, Tex., assignors to Thomas J. Wright, Alburqueque, N. Mex. and Mike L. Burns, Amarillo, Tex.

Filed Mar. 3, 1982, Ser. No. 354,298

Int. Cl.³ B65G *45/00*

U.S. Cl. 198—499 **6 Claims**



1. In combination, a conveyer belt assembly and an electrically conductive exterior belt surface scraper assembly, said conveyor belt assembly comprising a rigid conveyor belt assembly frame, a series of like upper sets of idler rollers, lower idler rollers and a drive roller,

each upper set of rollers comprising a horizontally extending central lower transverse roller and, laterally thereof, rollers extending transversely to the length of the belt which lateral rollers are at an angle to the horizontal portions of the belt,

a lower, interior, surface of an upper run of said conveyer belt on top of the upper set of rollers, said upper run carrying particulate material toward a drive roller and said belt contacting and curving around said drive roller at a front portion of said belt,

a return lower path of said belt extending from the drive pulley to a driven pulley and the exterior lower surface of the belt then riding on idler rollers,

said exterior belt surface scraper assembly comprising a belt scraper control arm sub-assembly, a blade sub-assembly, and a piston sub-assembly,

said sub-assemblies attached to said conveyer belt assembly frame, said control arm sub-assembly comprising a pair of like rigid arms, each pivotally connected at a pivotal support on said frame,

each said arm formed of a first straight solid central rigid electrically conductive portion and a forwardly extending sleeve portion extending horizontally forwardly of said first portion, the rear portion of each of the arms connected to said piston sub-assembly,

said piston sub-assembly comprising a pair of like pistons each having a rear pivotal support and an extensible piston arm, one end of said piston arm pivotally connected at a front pivot fixed to a rear portion of the adjacent arm,

a pneumatic connector conduit hose operatively joining an interior chamber of said pistons to a conventional connector which is releasably connected to a source of air pressure,

said blade sub-assembly comprising a flexible flat surfaced scraper blade and a rigid blade bracket support, said scraper blade held by said bracket support and extending transversely to the length of said belt,

whereby said belt scraper blade is held by the control arm sub-assembly and the rear end of each of the pair of arms connects to and is movable by said piston subassembly and each of the arms is pivotally held at a bearing which is in fixed spatial relationship to the frame of the conveyer belt assembly and said belt,

and said upper edge of the scraper blade matches the exterior contour of the belt on the drive roller and is the edge of a solid prismatic piece of plastic and said upper edge of blade is, in its operative position, positioned at a location on the exterior belt surface which is vertically below the center of an axle of said drive roller, said blade edge being softer than said belt and electrically conductive and insoluble in oil, and wherein, rigid steel plugs are rigidly and firmly connected to the rear of bracket, each plug having a plurality of longitudinally spaced apart transverse holes therein and holes therefor in the arm sleeve portions whereby to allow for longitudinal adjustment of the blade relative to the spatially fixedly located supports for said arms.

4,520,918

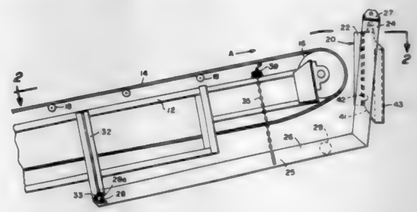
METHOD OF AND APPARATUS FOR PREVENTING SEGREGATION OF AGGREGATE

Joe R. Ray, San Jose, Calif., assignor to Noble Automated Systems, Inc., San Jose, Calif.

Filed Aug. 12, 1982, Ser. No. 407,453

Int. Cl.³ B65G *31/00*

U.S. Cl. 198—640 **7 Claims**



1. Apparatus for preventing separation of different size particles from a mix of aggregate of various size particles as it is discharged from the end of a conveyor comprising a generally upright aggregate intercepting and confining member, and mounting means for mounting said intercepting member adjacent the discharge end of a conveyor, said member comprising a plurality of vertically extending channels disposed side-by-side facing the end of the conveyor, said channels being arranged generally in a square-wave configuration in transverse cross-section, said channels being formed from generally upright rear wall means for intercepting aggregate moving in a first direction away from the end of the conveyor and vertically elongated generally upright side wall means for preventing movement of particles of aggregate laterally of said first direction, said rear wall and side wall means being arranged to guide aggregate directly downwardly in a pile, said member being disposed a selected spaced distance from said discharge end of said conveyor to intercept the aggregate before larger particles separate from smaller particles.

4,520,919

WORK-CLAMP PALLET FOR MACHINE TOOL

Yonezawa Keitaro, Itamishi, Japan, assignor to Aioi Seiki Kabushiki Kaisha, Itamishi, Japan

Filed Jul. 12, 1982, Ser. No. 397,246

Claims priority, application Japan, Jul. 21, 1981, 56-108998[U]

Int. Cl.³ B65G *49/00*

U.S. Cl. 198—648 **15 Claims**

1. A work clamp pallet for a machine tool comprising:

a. a base block having means on a lower surface for attachment to a bed of a machine tool;

b. a plurality of hydraulically activated work clamping devices attached to the base block such that a plurality of workpieces may be mounted on the base block;

c. hydraulic fluid conduit means attached to the base block and interconnecting the work clamping devices;

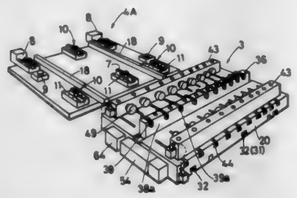
d. a hydraulic fluid pressure source;

e. self-sealing coupling means for attaching the hydraulic fluid pressure source to the fluid conduit means; and,

f. a shut-off valve attached to the base block and interposed

between the self-sealing coupling means and the fluid conduit means, the valve having:

i. a valve core element biased against a valve seat to close the valve and prevent decline of the hydraulic fluid pressure in the work clamping devices and the fluid conduit means;



ii. valve operating means to move the valve core element against the spring bias away from the valve seat to open the valve and permit fluid to flow through the self-sealing coupling; and,

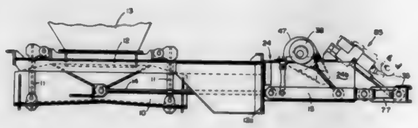
iii. auxiliary valve means located between the valve seat and the self-sealing coupling to release the hydraulic fluid pressure in the shut-off valve.

4,520,920

VARIABLE STROKE DRIVE MECHANISM

Joe R. Ray, San Jose, Calif., assignor to Noble Automated Systems, Inc., San Jose, Calif.

Filed Oct. 7, 1982, Ser. No. 433,227
Int. Cl.³ B65G *27/00*
U.S. Cl. 198—761 **3 Claims**



1. Apparatus for controlling the rate of discharge of material comprising:

(a) a feeder pan;

(b) means supporting said feeder pan for reciprocating movement;

(c) pan drive means having a pan drive member and a connecting rod connected to said feeder pan for imparting a reciprocating movement to said feeder pan through a range of movement, said pan drive member having an end section;

(d) motor drive means connected to said pan drive means for imparting a reciprocating movement to said pan drive member and said connecting rod; and

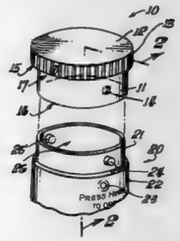
(e) control means having an adjusting arm pivotally connected to said end section of said pan drive member at a pivot axis, said control means comprising a pivot frame for controlling the angular position of said adjusting arm about said pivot axis relative to the direction of travel of said reciprocating movement of said pan drive member and said connecting rod, said end section of said pan drive member being movable over an arcuate path during the reciprocation of said pan drive member and said connecting rod, and means for pivoting said pivot frame for varying the angular position of said adjusting arm, pivotal movement of said pivot frame to vary the angular position of said adjusting arm moves the center of the circle of the arcuate path along which said end section travels to control the extent of reciprocating movement of said pan drive member and said connecting rod, whereby the positioning of said adjusting arm co-extensive with said pan drive member and said connecting rod results in minimum reciprocation of said feeder pan and the positioning of said adjusting arm at an angle relative to the direction of travel of said reciprocating movement of said pan drive member and said connecting rod results in an increased reciprocating movement for said feeder pan.

4,520,921

METHOD AND APPARATUS FOR CLOSING CYLINDRICAL CONTAINERS

Ellin D. Vissing, P.O. Box 437, Idaho Falls, Id. 83401

Filed Mar. 23, 1984, Ser. No. 592,887
Int. Cl.³ A45C *13/10*
U.S. Cl. 206—1.5 **2 Claims**



1. A container for pharmaceuticals and the like comprising in combination:

a first cylindrical member having one end closed and one end open formed of a deformable material, and having a portion of said first cylindrical member adjacent its open end with a reduced wall thickness compared to the balance of the wall thickness of said first cylindrical member, a boss extending outwardly a distance from one position on said reduced thickness;

a second cylindrical member having a closed end with an enlarged flange and an open end, said cylindrical member being formed of a deformable material, and the interior dimension on said second cylindrical member being suitable to receive the reduced thickness portion of said first cylindrical member, and having an opening in its cylindrical wall suitable to accommodate the boss on said first cylindrical member, and wherein said second cylindrical member has a spiraling and tapering ramp extending from the outer edge adjacent the open end of said second cylindrical member but on the interior thereof to an interconnection with said opening in such manner that the boss on the first cylindrical member may be engaged within said ramp and by twisting the said second cylindrical member about the first cylindrical member the boss will ride up the ramp and snap into position within the opening in said second cylindrical member.

4,520,922

CONTAINER FOR FLAT ARTICLES

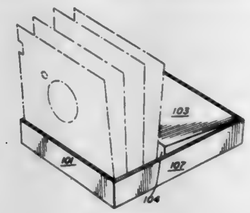
Edward B. Beach, 5112 Williamsburg Blvd., Arlington, Va. 22207

Filed Jun. 25, 1984, Ser. No. 623,936
Int. Cl.³ B65D *5/44, 5/34*
U.S. Cl. 206—44 R **20 Claims**

1. A shipping and storage container for shipping and storing flat articles said container formed from foldable material and capable of being convertible to a display stand comprising

a. a bottom wall having opposing, upright front and rear walls extending upwardly from said bottom wall and having opposing, upright side walls extending upwardly from said bottom wall, and

b. a top wall covering the container comprising a front section and a rear section said front section being hingedly attached to said rear section at longitudinal score lines, whereby said container being convertible to a display stand by folding down said top front wall section along said score lines to form a wall substantially upright with respect to the bottom wall and spaced rearwardly of said front wall a distance sufficient to support all the flat contents in an upright position in a well formed between the newly formed upright wall and said front wall.



4,520,923

CONTACT LENS HOLDER

Fred Waldman, 8929 E. Jewell Cir., Denver, Colo. 80231

Continuation-in-part of Ser. No. 396,233, Jul. 8, 1982. This application Feb. 29, 1984, Ser. No. 584,557
Int. Cl.³ A45C *11/04*
U.S. Cl. 206—5.1 **6 Claims**

1. A contact lens holder comprising a stem terminating on one end in means for attaching the stem to the underside of a cap to a case for storing contact lens soaking solution and terminating on the other end in a dome, free of any surrounding sidewall, said dome having one or more cut out sections in its sides for exposing the underside rim of a contact lens positioned on said dome, and having a hinged strap, having a width less than the width of the dome, said strap being further provided with a connecting means for detachably connecting with a receiver means positioned on the side of the dome opposite the side to which the hinged strap is attached.

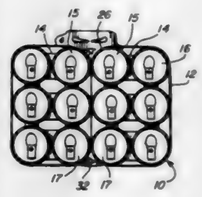
4,520,924

MULTI-PACKAGE AND PACKAGING DEVICE

Bryant Edwards, Clarendon Hills; M. Julius Klygis, Barrington, and Robert C. Olsen, Streamwood, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 27, 1984, Ser. No. 604,754
Int. Cl.³ B65D *85/62, 75/56*
U.S. Cl. 206—150 **9 Claims**

1. A multi-packaging device comprising a first integral resilient plastic strip formed as a continuous loop, an intermediate strip extending across said loop having opposite ends integral with said first strip, a juncture region at each end of the intermediate strip including a pair of diverging strap segments each extending generally diagonally between the intermediate strip and the first integral resilient strip wherein a plurality of arrays of containers may be positioned within said first strip with the intermediate strip positioned therebetween so that the strap segments resiliently engage the corner regions of an associated array.

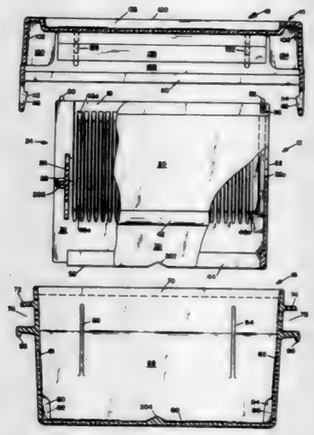


4,520,925

PACKAGE

Douglas M. Johnson, Chanhassen, Minn., assignor to Empak Inc., Chanhassen, Minn.

Filed Aug. 9, 1983, Ser. No. 521,723
Int. Cl.³ B65D *85/48*
U.S. Cl. 206—334 **15 Claims**



15. Package comprising:

a. package bottom including a flat bottom member, four slightly angled sides, an edge groove surrounding said sides, hook catches with finger holes on ends of said opposing end sides, internal vertical end guides and end internal side guides about said sides; and,

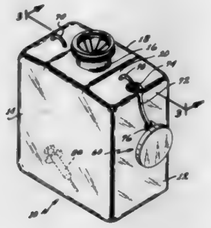
b. package top including a top horizontal member, four angled sides surrounding said top, a tongue lip for encompassing said grooved edge about a lower edge of each side opposing latches at ends of said top extending downwardly and a finger hole in each of said latches, opposing flexible longitudinal members for mating with each wafer, positioning vertical end and side angled members extending outwardly from interior of said sides and said ends for positioning of said cassette, and a recessed top surface in said top horizontal member whereby said package top tongue lip engages about and into said package edge groove, and said latches engage over said catches ends between said top and bottom packages respectively, thereby providing secure and contamination-free environment for transportation and storage.

4,520,926

CONTAINER FOR SHARPS

Ralph E. Nelson, Newport Beach, Calif., assignor to Winfield Corp., San Diego, Calif.

Filed Feb. 27, 1984, Ser. No. 583,599
Int. Cl.[3] A61M *5/32;* **B02C** *19/12*
U.S. Cl. 206—366 **30 Claims**



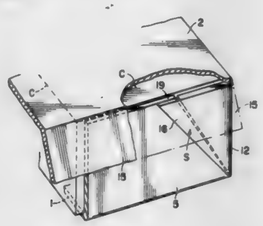
1. In combination for storing sharp objects,
a container for holding sharp objects, the container being made from a plastic material having properties that are heat resistant to autoclaving heat,
the container having a rim portion,
a funnel disposed on the rim portion of the container cover and having a central opening and a plurality of slits extending to the central opening,
there being a first detent in the rim portion and a detent in the funnel for cooperating with the first detent in the rim portion to retain the funnel in locked relationship with the rim portion, and
a cap disposed on the funnel and shaped to press the detent in the funnel against the detent in the rim portion.

4,520,927

HEAT-SEALABLE PACKAGE BLANK FOR A VIDEO TAPE CASSETTE

Yoshihiro Sato, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1982, Ser. No. 455,944
Claims priority, application Japan, Jan. 30, 1982, 57-10821[U]; Apr. 7, 1982, 57-49369[U]; Oct. 5, 1982, 57-151220[U]
Int. Cl.[3] B65D *85/672*
U.S. Cl. 206—387 **1 Claim**



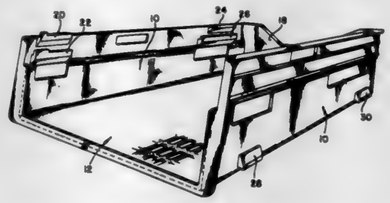
1. A container for a prereceived video tape cassette formed from a single polypropylene sheet having surface layers of heat-sealable nature, said container comprising:
a backstrip;
first and second panels disposed on opposite sides of said backstrip and folded into a right-angle relation with said backstrip and into a parallel relation with each other;
a pair of substantially triangular back flaps disposed between said first and second panels, extending from said backstrip, and folded into a right-angle relation with said backstrip and said panels and each member of said pair of back flaps further comprising a sloping edge along one side adjacent said first panel and a recess disposed along another side adjacent said second panel;
a first pair of side flaps disposed between said first and second panels, extending from opposite sides of said first panel, and folded into a right-angle relation with said first panel, each member of said first pair of side flaps further comprising a sloping edge extending along said sloping edge of each member of said pair of back flaps;
partially overlapping seams formed at a joining location of said sloping edge of each member of said back flaps and each member of said first pair of side flaps, each of said seams including a band-shaped portion extending along a portion of said sloping edge of each member of said back flaps and overlapping each member of said first pair of side flaps without being sealed thereto, each band-shaped portion having a substantially uniform reduced thickness that is less than the thickness of said back flaps and each band-shaped portion terminating prior to the end of said sloping edge of each member of the back flaps adjoining the backstrip;
a second pair of side flaps defining a first surface disposed to overlie a second surface defined by said back flaps and said first pair of side flaps, said second pair of side flaps extending from opposite sides of said second panel and folded into a right-angle relation with said second panel; and
heat-sealed seams formed between first and second opposing surfaces of said first pair of side flaps, said back flaps and said second pair of side flaps whereby said overlapped seams prevent intrusion of heat into said container so as to protect said prereceived video tape cassette.

4,520,928

NESTABLE/STACKABLE CONTAINERS FOR BAKERY GOODS AND THE LIKE

James D. Wilson, 421 Vista Suerte, Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 546,822, Oct. 31, 1983, abandoned. This application Jan. 25, 1984, Ser. No. 573,695
Int. Cl.[3] B65D *21/04*
U.S. Cl. 206—505 **4 Claims**



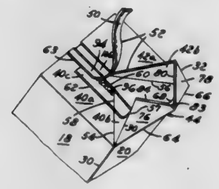
1. A nestable/stackable container formed of molded plastic material and intended to be nested in other like containers and stacked on other like containers at three different levels, said container having first and second side walls, each of said side walls having a plurality of discrete integral upper stacking lugs formed on the inner surface thereof at spaced positions along the upper edge thereof, and each of said side walls having a plurality of discrete integral lower stacking feet formed on the outer surface thereof at spaced positions along the lower edge thereof, the lower stacking feet being positioned to be received on the upper stacking lugs of a like container when the two containers are stacked on one another at a first vertically aligned stacking level with the front and rear ends of both containers facing the same directions, each of said side walls having a plurality of further discrete intermediate integral stacking lugs formed on the inner surface thereof under respective ones of said upper stacking lugs and extending beyond the respective ends of the corresponding upper stacking lugs by a predetermined amount to receive the lower stacking feet of a like container when the containers are stacked on one another in a second vertically aligned stacking level with the front and rear ends of both containers facing in the same directions; and each of the side walls including a plurality of cut-outs positioned below respective ones of the intermediate stacking lugs, and each cut-out having an inclined end portion extending beyond the corresponding intermediate stacking lug to permit an upper like container to be nested down into the first-named container at a third vertically aligned level with the lower stacking feet of the like container being received in respective ones of the cut-outs.

4,520,929

FLAT TOP END CLOSURE FOR LIQUID CONTAINER

Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed May 31, 1984, Ser. No. 615,641
Int. Cl.[3] B65D *3/20;* **B43M** *7/00*
U.S. Cl. 206—610 **2 Claims**



1. A blank for forming a flat top end closure for a liquid carrying, paperboard container, said blank comprising four side panels, first and second pairs of top closure panels alternately connected by respective horizontal score lines to the top edges of said four side panels as extensions thereof, said first pair of top closure panels each including a substantially triangular panel portion defined by converging diagonal score lines, and a pair of fold-back panels integrally connected to said substantially triangular panel portion at said diagonal score lines, said second pair of top closure panels including one shorter and one longer panel, a diagonal opening assist score line formed on each of said shorter and longer panels, a fold-over panel segment formed on the end of said shorter top closure panel, a reverse diagonal opening assist score line formed on said fold-over panel segment extending from an end of the adjacent diagonal opening assist score line, a lift tab formed on a side edge of said longer panel and extending past a portion of the adjacent fold-back panel, a perforated line extending across said longer top closure panel to the diagonal opening assist score line thereon aligned with an edge of said lift tab and the edge of said adjacent fold-back panel, and an extension formed on the fold-back panel adjacent said fold-over panel segment adapted to serve as an underlying segment for said perforated line when said blank is formed into a container.

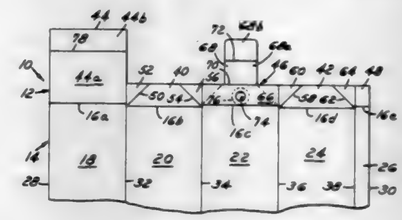
4,520,930

CONTAINER AND BLANK FOR CONSTRUCTING SAME

Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed May 2, 1983, Ser. No. 490,767
Int. Cl.[3] B65D *5/74*
U.S. Cl. 206—628 **15 Claims**

1. In a thermoplastic coated blank for constructing a container, the blank including body panels including front and back panels and a pair of side panels; a side fold-in edge panel integrally connected to the top end of each of said pair of side panels; a front edge panel integrally connected to the top end of said front panel and including a fold-in segment and a fold-out segment, said fold-in and fold-out segments being interconnected by a weakened line, and a score line formed across the width of said fold-out segment at a distance away from said weakened line equal to the height of said fold-in panel segment; a cover panel integrally connected to said back panel; a diagonal score line formed on each of said side fold-in edge panels at the end thereof away from said front edge panel; and an additional diagonal score line formed on one of said front fold-in panel segment or said adjacent side fold-in edge panels; the



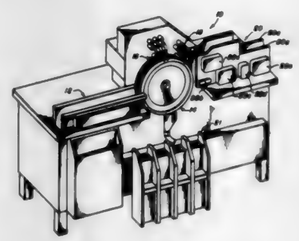
improvement comprising: said height of said front fold-in panel segment being sufficient to form an opening means therein, and an opening means formed therein.

4,520,931

APPARATUS FOR REORIENTING ELECTRICALLY ASYMMETRICAL AXIAL LEAD DEVICES IN A SORTER/TESTER

Jean Evain, Framingham, Mass., assignor to Daymarc Corporation, Waltham, Mass.

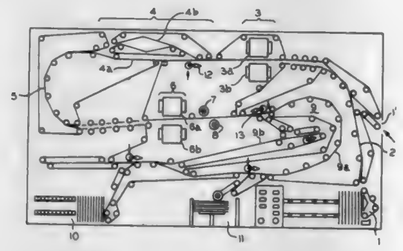
Filed Aug. 18, 1983, Ser. No. 524,413
Int. Cl.[3] B65G *47/24;* **B07C** *5/344*
U.S. Cl. 209—542 **11 Claims**



1. Orienting apparatus for use in conjunction with apparatus that tests and sorts electrically asymmetrical, axial lead electronic devices, said test/sort apparatus having a magnetic input bin, a magnetic output bin, an intermediate magnetic carrier wheel, means for electronically testing each of the devices as they are carried on the outer circumference of said wheel, and means for stripping said devices from said wheel after said testing at one of several preselected circumferential locations in response to the results of said test, said devices being aligned generally in the same physical orientation while in said test/sort apparatus, but having a random electrical orientation in said input bin and on said carrier wheel, said orienting apparatus comprising
means for creating a bi-directional magnetic field in said magnetic output bin to produce an upper bin region and a lower bin region with oppositely directed magnetic fields, a first one of said stripper means operating to direct devices to said upper bin region and a second one of said stripper means operating to direct said devices to said lower bin region,
means mounted in said output bin for transporting said devices in said upper bin region to said lower bin region, said transporting means including a plurality of means for holding one of said devices, said holding means being mounted on said transporting means for free rotation through at least 180° between positions where the devices are aligned with said magnetic fields,
orientation magnet means mounted on each of said holding means to align said holding means and the device carried on the associated holder with said magnetic fields, said

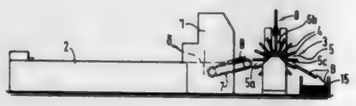
orientation magnet means reversing the alignment of the associated one of said holding means as said transporting means carries it from one of said bin regions to the other and through a zone where the bi-directional magnetic field is reversed.

4,520,932
STAMP DETECTION IN A MAIL PROCESSING APPARATUS
Yoshihiro Matsuda; Hiroshi Kimishima, and Yoshikazu Kado, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Jan. 31, 1983, Ser. No. 462,224
Claims priority, application Japan, Jan. 29, 1982, 57-13462
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—545 **15 Claims**



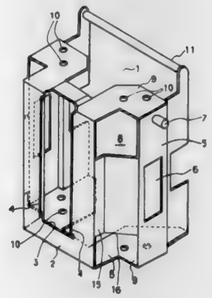
4. A stamp detecting and orienting system comprising transport means for conveying mail articles from a source to at least one collection area, means for feeding mail articles from said source into said transport means with random orientation whereby said mail articles may have any one of four initial orientations while in said transport means, means for detecting luminescence on opposite sides of each mail article for locating a stamp on each mail article regardless of which one of the orientations said mail article may then have in said transport means, means responsive to said detecting means for comparing the levels of said luminescence from opposite sides of said mail article, and control means responsive to said comparing means finding a signal having a higher level from a location on one side of said mail article for operating said system to uniquely process the mail article according to the orientation of said mail article which is indicated by said higher level signal.

4,520,933
DEVICE FOR STACKING CUT PLATES IN PLATE SHEARS
Harro Reiff, Leipheim, Fed. Rep. of Germany, assignor to Karl Mengele & Söhne, Günzburg, Fed. Rep. of Germany
Filed Apr. 7, 1982, Ser. No. 366,143
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114718
Int. Cl.³ B07C *5/36*
U.S. Cl. 209—606 **8 Claims**



1. Device for stacking plate-like members, such as sheet metal blanks, cut by a guillotine shears, comprising a drum having an axis and being rotatable about the axis, said drum having a circumferentially extending outside surface, a plurality of partitions extending radially outwardly from the outside surface of said drum and each pair of said partitions forming therebetween a compartment closed radially inwardly by the outside surface of the drum and being open radially outwardly, each of said compartments being movable with said drum into a first position for receiving a plate-like member, into a second position spaced angularly from the first position and into a third position spaced angularly from the second position and located opposite the first position with the third position arranged for removing the plate-like member from said compartment, a displacement device located at the second position and being movable in the axial direction of said drum for selectively positioning the plate-like member within the compartment in the axial direction of said drum so that in the third position the plate-like member can be removed to a selected stacking position, and said displacement device being positionable out of the path of said partition when said drum is rotated.

4,520,934
CRADLE FOR SEMICONDUCTOR ELEMENT CARRIER
Seiichiro Aigo, 3-15-13, Negishi, Daito-ku, Tokyo, Japan
Filed Mar. 19, 1984, Ser. No. 590,624
Int. Cl.³ B65D *85/30*
U.S. Cl. 211—41 **10 Claims**

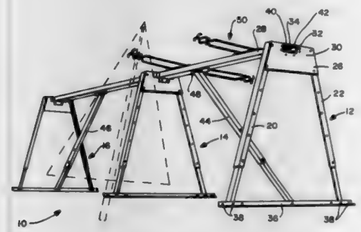


1. A cradle for receiving a carrier which has leg portions and contains semiconductor elements stored therein, and mounting said carrier on a predetermined position of a spin drier, which cradle comprises a rear wall with a window therein, said rear wall having a pair of end edges and a pair of side edges, a pair of opposed end walls extending at right angles from said rear wall end edges, a pair of stepped portions extending at right angles from said rear wall side edges, an inclined wall portion extending outwardly from each said stepped portion, and a pair of opposed parallel side walls extending from said inclined wall portions, the end portions of said stepped portions and inclined wall portions being cut away to receive the corners of said carrier, the leg portions of said carrier being received between said stepped portions and restrained thereby against outward movement.

4,520,935
TREE STAND
Howard Churchill, 662 Dartmouth Ave., San Carlos, Calif. 94070
Filed Mar. 21, 1984, Ser. No. 591,838
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—124 **13 Claims**

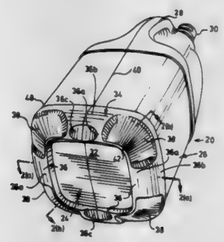
1. A stand for displaying one or more objects comprising:
a first support tower;
a second support tower;
a channel;
first means for allowing the first support tower to support the channel at one location on the channel;
second means for allowing the second support tower to support the channel at another location on the channel;

means for securing an object to the stand, said securing means including a base means for holding said securing means in said channel, a clip means for allowing the object to be secured to said securing means and an extension means for connecting said base means to said clip means, said means being slidably positionable in said channel; wherein
said channel has at least one lip; and



said base means of said securing means include two parallel rods, each of which has been bent into substantially a U shape so as to have first and second legs, and crossbar means interconnecting the first and second legs of the rods and extending therepast, said rods and crossbars insertable into said channel under said lip and said crossbars holding said securing means in said channel.

4,520,936
BLOW MOULDED PLASTIC CONTAINERS
Gerard E. Lyons, Burlington, Canada, assignor to Polybottle, Weston, Canada
Filed May 20, 1982, Ser. No. 380,455
Int. Cl.³ B65D *1/02, 23/00*
U.S. Cl. 215—1 C **5 Claims**



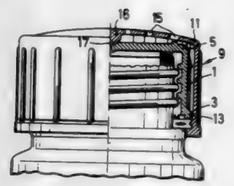
1. A blow moulded plastic container which is of substantially rectangular shape in plan and which has a correspondingly shaped base adapted to support the container on a surface, and a side wall which extends upwardly from the base and defines therewith a space within the container, wherein the base is of substantially uniform wall thickness throughout and includes a central portion which is raised with respect to a plane in which the base makes contact with a said surface and a marginal portion surrounding said raised central portion, said marginal portion including four supporting sections spaced around said portion, said supporting sections being positioned essentially mid-way along each side of the base and being adapted to support the container on a said surface in use, said sections having respective outer surfaces which are disposed in said plane at the lower extremity of the container and which curve convexly upwardly from said plane and merge into the side wall of the container, intervening areas of said marginal portion between said supporting sections being depressed inwardly of the container with respect to said supporting sections and extending around corners of said marginal portion of the base.

4,520,937
GLASS STORAGE JAR
Pier L. Bormioli, Mariano, Italy, assignor to Vetreria Padana Polesana, S.p.A., Bergantino, Italy
Filed Nov. 21, 1983, Ser. No. 553,760
Claims priority, application Italy, Feb. 8, 1983, 28919/83[U]
Int. Cl.³ B65D *21/00*
U.S. Cl. 215—10 **4 Claims**



1. A glass storage jar comprising a body, a neck extending from the body and having a smaller circumference than the body portion from which it extends and defining a shoulder, a lid sized to fit over the neck and having an inner circumference larger than the outer circumference of the neck so as to provide a radial clearance between the neck and lid when the lid is placed on the neck, an annular seal having first and second stretches, said first stretch extending along the neck and having at least a portion thereof in contact with the neck, said first stretch having at least a portion thereof greater than the radial clearance between the lid and the neck, said second stretch extending radially and being sized to seat on said shoulder and adapted to have the lid rest thereon.

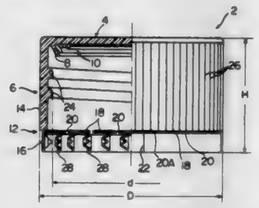
4,520,938
SAFETY SCREW CAP
Robert G. Finke, Finnentrop, Fed. Rep. of Germany, assignor to Robert Finke GmbH, Finnentrop, Fed. Rep. of Germany
Filed Jun. 12, 1981, Ser. No. 273,021
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022465
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—220 **15 Claims**



1. Safety screw cap comprising an inner cap arranged to be secured onto the neck of a bottle and having an axially extending annular side wall and an end closure wall extending transversely across and forming a closure for one end of said side wall, said side wall having an inner surface with a thread formed thereon for engagement with a corresponding thread on the neck of the bottle, an outer cap forming a cover over said side wall and end closure wall of said inner cap, said outer cap having an axially extending annular side wall and an end enclosure wall extending transversely across and forming a closure for one end of said side wall, wherein the improvement comprises that said end closure wall of said outer cap has flexibility improving perforations extending therethrough with

each said perforation having the shape of a laterally closed space.

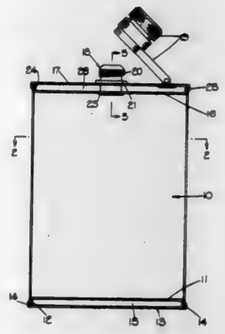
4,520,939
PILFER-PROOF PLASTIC CLOSURE FOR CONTAINERS
Junichi Itsubo; Takashi Yazaki, both of Hiratsuka, and Fumio Mori, Yokohama, all of Japan, assignors to Japan Crown Cork Co., Ltd., Tokyo, Japan
Filed Feb. 21, 1984, Ser. No. 581,845
Claims priority, application Japan, Jan. 18, 1984, 59-5756
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—252 **5 Claims**



1. A pilfer-proof plastic closure for a container equipped with a mouth-neck portion having an external thread formed on its peripheral surface and a holding jaw portion located below the external thread, said closure comprising a top panel wall and a cylindrical skirt wall extending downwardly from the peripheral edge of the top panel wall, said skirt wall having formed therein a circumferentially extending breakable line dividing the skirt wall into a main portion above the breakable line and a pilfer-proof bottom portion below it, said main portion having formed on its inner surface an internal thread to be engaged with the external thread on the mouth-neck portion of the container and said pilfer-proof bottom portion having formed on its inner surface a plurality of radially inwardly projecting engaging flaps at circumferentially spaced positions; each of said engaging flaps having a first portion extending from the inner surface of the pilfer-proof bottom portion tiltedly in a direction opposite to the direction of rotation of the closure at the time of mounting it on the mouth-neck portion of the container and a second portion bent with respect to the first portion and further extending from the end of the first portion, and the first portion forming an angle α smaller than 90 degrees and the second portion forming an angle β larger than the angle α, both with respect to the tangent of the inner surface of the pilfer-proof bottom portion at the base edge of the engaging flap.

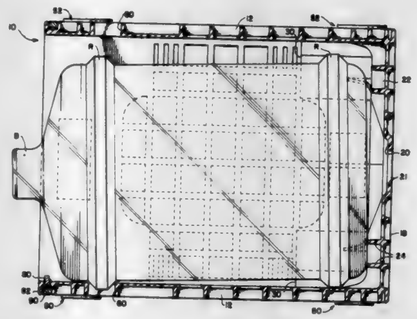
4,520,940
CONTAINERS FOR LIQUIDS
Malcolm W. Boyd, Walsall, and Michael G. Mander, Wombourne, both of England, assignors to W. A. Goold Limited and W. J. Goodwin & Son Limited, both of Walsall, England
Filed Jun. 29, 1984, Ser. No. 626,288
Claims priority, application United Kingdom, Jul. 2, 1983, 8318007
Int. Cl.³ B65D *6/34, 8/04, 8/06*
U.S. Cl. 220—68 **22 Claims**

1. A container comprising a tubular body portion having a seamless, continuous internal surface, respective inner end members fitted in the body portion to close the ends thereof, respective outer end members being secured by soldering or the like to the body portion at the ends thereof to define respective chambers between them and the inner end members, the solder or the like being out of contact with the interior of



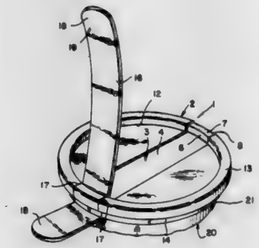
the container, and a pouring and filling spout secured at one end of the container.

4,520,941
WATER BOTTLE CRATE
John A. Hagan, Huntington Beach, and James Lafferty, Fullerton, both of Calif., assignors to Rehrig Pacific Company, Los Angeles, Calif.
Filed Sep. 14, 1984, Ser. No. 650,611
Int. Cl.³ B65D *11/16*
U.S. Cl. 220—72 **7 Claims**



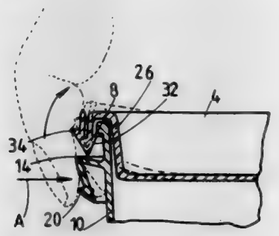
1. A molded plastic crate for transporting and storing differently configured five-gallon water bottles comprising:
two pairs of opposed side walls integrally joined at their adjoining longitudinal edges to define a square box;
a centrally apertured bottom closing one end of said box;
reinforcing internal corner strut means nested within each of the four corners of said box integrally joined with adjacent side walls and said bottom, said strut means terminating immediately above said bottom to leave the box interior fully open throughout a major portion of its length;
each of said side walls having an exterior midsection portion that is recessed where said adjoining edges form the upstanding corners of said box to accommodate hand-truck pickup when the crate is lying on it side; and
one pair of said side walls having oppositely aligned wide handle openings provided at a first height above said box bottom and the other pair of said side walls having oppositely aligned wide handle openings provided at a second height above said box bottom that is different from said first height, said handle openings serving to catch the circumferential rib on a bottle exterior to restrain the bottle against slippage from the crate.

4,520,942
CONTAINER CLOSURE HAVING A FRANGIBLE OUTER CAP
Davis B. Dwinell, Warren, N.J., assignor to American Flange & Manufacturing Co. Inc., Linden, N.J.
Filed Apr. 20, 1984, Ser. No. 602,481
Int. Cl.³ B65D *51/20*
U.S. Cl. 220—257 **8 Claims**



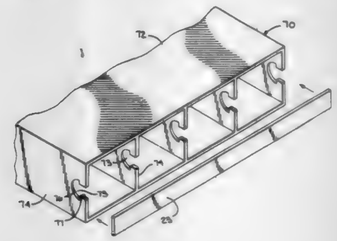
1. A two piece tamper-evident closure assembly comprising a metal tear-off overcap and a plastic reusable undercap, said undercap including a recessed center panel surrounded by a downwardly opening sealing channel said sealing channel having an inner wall extending upwardly substantially vertically from said center panel, an annular top wall and a depending substantially vertical outer wall terminating in a lower free edge, said inner wall and said outer wall being substantially equal in vertical length, said overcap having a complimentary configuration so as to closely confine said undercap, a diametrically extending tear strip formed in said overcap commencing in an outwardly projecting gripping ear, said tear strip defined by a pair of score lines commencing at either side of said ear and extending across said cap wherein removal of said overcap is achieved by pulling said ear first radially outwardly so as to tear across the contiguous outer wall portion then pulling upwardly and radially inwardly causing said tearing to continue across said center panel and terminate at the remote sealing channel inner wall.

4,520,943
RECLOSABLE PLASTIC CONTAINER
Jens O. Nielsen, Hvidhoj 2, DK-8870 Langaa, Denmark
Filed Jul. 26, 1984, Ser. No. 634,537
Claims priority, application Denmark, Jul. 28, 1983, 3449/83
Int. Cl.³ B65D *43/04*
U.S. Cl. 220—281 **6 Claims**



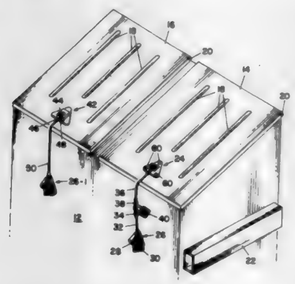
1. A sales packing of the bucket or jug type, comprising a plastic container, the mouth edge portion of which is provided with an upper annular groove between an inner mouth flange and an outer mouth flange, and a lid having a depending edge flange, which is received in said edge groove so as to engage underneath an annular locking nose portion of the interior side of the outer mouth flange of the container and be inwardly supported by the exterior side of the inner mouth flange, characterized in that additional cooperating locking nose means are provided on the outside of the inner mouth flange of the container and on the inside of the depending edge flange of the lid, respectively, and that the outer mouth flange of the container is designed so as to be outwardly and downwardly foldable into a swung down position, in which a local, radially inwardly directed pressure thereon will result in the inner mouth flange of the container being resiliently inwardly displaced so as to thereby get released from its locking nose engagement with the edge flange of the lid.

4,520,944
OPEN-ENDED CONTAINER CLOSURE
Robert W. Bachi, Itasca, and Phillip L. Bachi, Schaumburg, both of Ill., assignors to Bachi, Inc., Itasca, Ill.
Filed Apr. 26, 1984, Ser. No. 604,167
Int. Cl.³ B65D *11/00*
U.S. Cl. 220—305 **23 Claims**



1. A closure for an open-ended container comprising:
at least one wall member;
a slot in said wall member opening into said wall member from the outside thereof in a first direction and extending through said wall member;
a locking member for temporary retentive engagement in said slot and extending over a portion of the open-ended container to provide a barrier to the contents thereof;
said locking member and said slot constructed and arranged to retain said locking member in said slot and prevent removal therefrom in said first direction yet permit removal therefrom by a force acting in a direction substantially transverse to said first direction.

4,520,945
SOLID WASTE RECEPTACLE SECURITY SYSTEM
Allan M. Hodge, 5852 Lomond Dr., San Diego, Calif. 92120
Filed Mar. 19, 1984, Ser. No. 590,697
Int. Cl.³ B65D *45/00*
U.S. Cl. 220—315 **18 Claims**



1. A locking trash bin assembly comprising:
a trash bin;
at least one lid for said trash bin, said lid being formed of relatively flexible material;
locking means secured to the front of each said lid and to the

front of said trash bin for preventing the opening of said lid; and

non-ferrous reinforcing rod means secured to the inside of said lid toward the front thereof and extending toward the corners thereof, to prevent deformation or flexing of said lid and opening thereof while said lid is locked.

4,520,946

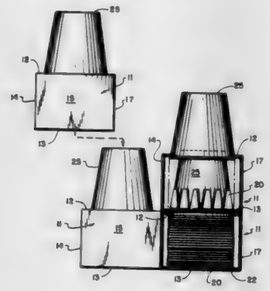
PACKAGE STRUCTURE

Jerome Gould, Encino, and Thomas W. Kellogg, Irvine, both of Calif., assignors to James River-Norwalk, Inc., Norwalk, Conn.

Continuation of Ser. No. 338,867, Jan. 12, 1982, abandoned. This application Nov. 10, 1983, Ser. No. 550,925

Int. Cl.³ B65D *5/16*; B65H *1/00*

U.S. Cl. 221—63 **3 Claims**



1. A dispenser carton for packaging and separately dispensing a cup from a stack of rimmed tapered disposable cups each of which has a tapered sidewall, a bottom wall, and an open top surrounded by a rolled rim, comprising a container having substantially square planar parallel mutually spaced first and second end walls and connecting rectangular sidewalls; said first end wall including a central circular opening of a size sufficient to permit the bottom and tapered sidewall of a cup to extend freely therethrough and insufficient in size for the passage of the rim of a cup freely therethrough; a plurality of relatively short radial knife cuts extending outwardly from said opening and defining a plurality of relatively stiff flexible tabs normally lying in the plane of said first end wall while a cup is projecting through said opening and capable of being deflected in the direction of movement of a cup through said opening to permit passage of a cup therethrough solely by flexure of said tabs, thereby allowing the outermost cup to be withdrawn from the carton while retaining the remainder of the stack, said second end wall including an opening axially aligned with and smaller in diameter than the opening in said first end wall, said second end wall having a plurality of radial slits extending from said opening therein outwardly a distance from the center of said opening sufficient to exceed the radius of the small end of a cup but less than a distance equal to the radius of the large end of a cup.

4,520,947

MACHINERY FOR FILLING CAVITIES WITH FLOWABLE REACTION MIXTURES

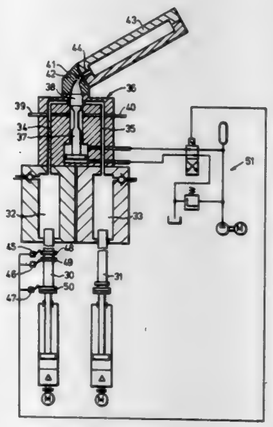
Ferdinand Althausen, Neunkirchen Seelscheid; Ferdinand Proksa, Leverkusen, and Ulrich Qsinski, Koenigswinter, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 305,238, Sep. 24, 1981, abandoned, which is a division of Ser. No. 2,776, Jan. 11, 1979, Pat. No. 4,309,373. This application Aug. 23, 1982, Ser. No. 410,220

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803311

Int. Cl.³ B29F *1/03*

U.S. Cl. 222—63 **1 Claim**



1. An apparatus for filling a cavity with a flowable reaction mixture through an inlet opening located at the bottom of the cavity comprising:

(a) a metering device comprising at least two metering pistons and at least two metering cylinders associated therewith,

(b) a mixing chamber with conduits leading from each of said metering cylinders to said mixing chamber,

(c) a displacing piston slidable in said mixing chamber whereby said flowable reaction mixture can be either supplied to said inlet opening or can be prevented from flowing through said inlet opening,

(d) a regulator means for controlling said displacing piston, said regulator means being associated with two end contacts, located on at least one of said metering pistons, through two stop switches for interrupting and continuing the flow of flowable reaction mixture through said inlet opening, the first of said stop switches and the first of said end contacts being adjusted in such a way that when they contact each other, the stroke length of the metering piston associated therewith corresponds to a volume equal to the volume of the reaction mixture to be fed into the cavity.

4,520,948

DISPOSABLE CONTAINER FOR LIQUIDS AND APPARATUS FOR DISPENSING LIQUID FROM SUCH CONTAINER

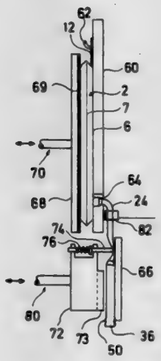
Hans-Joachim Hampel, Niederhöchstadt; Ludwig Scondo, Frankfurt am Main; Jürgen Stahl, Frankfurt am Main; Wilhelm Wegner, Frankfurt am Main, all of Fed. Rep. of Germany, and Harry Bonne, Meilen, Switzerland, assignors to Jacobs Beverage Systems AG, Zug, Switzerland

Filed Dec. 8, 1981, Ser. No. 328,799

Claims priority, application Switzerland, Dec. 8, 1980, 9035/80

Int. Cl.³ G01F *11/02*

U.S. Cl. 222—103 **5 Claims**



1. A one-way package for storing fluid and from which the stored fluid may be dispensed in successive metered portions, said one-way package comprising:

means defining a fluid-tight bag enclosing a fluid storage space;

an extraction tube having an inlet end sealingly communicated through said bag to said fluid storage space and an outlet end disposed externally of said fluid storage space;

a flat package box surrounding said bag, said flat package box being made of relatively stiff material compared with said bag and being constructed and arranged for also containing said tube, for storage;

said tube including an extraction duct extending therealong, a longitudinally extending portion of which provides a metering chamber normally in communication with said inlet end of said tube;

said tube further including a pressure relief valve provided for said extraction duct near said outlet end of said tube for normally closing said outlet end of said tube;

means provided between said inlet end of said tube and said metering chamber constructed and arranged for permitting interruption in communication between said metering chamber and said inlet end of said tube;

means for squeezing the bag; said flat package box including two relatively broad opposed wall means which are perimetrically joined to one another by relatively narrow wall means, these relatively narrow wall means including a total of one, outwardly-bowed fold line means extending perimetrically of the flat package box on the relatively narrow wall means approximately midway between the two relatively broad opposed wall means, whereby said bag may be emptied in dispensing fluid from said fluid storage space into said duct by actuating said means for squeezing the bag by pressing one of said two relatively broad opposed wall means towards the other of said two relatively broad opposed wall means while permitting said relatively narrow wall means to fold on itself along said fold line means.

4,520,949

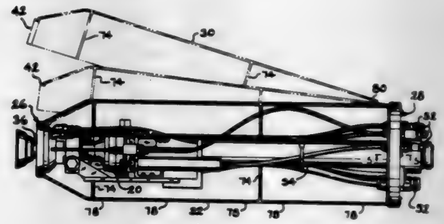
PROTECTIVE HOUSING FOR COATING APPLICATOR

David M. Seitz, Blissfield, Mich., and Richard Weinstein, Toledo, Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Apr. 11, 1983, Ser. No. 483,865

Int. Cl.³ B67D *1/16*

U.S. Cl. 222—108 **12 Claims**



1. A housing for a coating applicator including a coating dispenser and means for supplying coating material to the coating dispenser, said housing comprising in combination, a front bulkhead adjacent the coating dispenser, a pair of mating housing members defining a chamber for a portion of the coating applicator, said housing members defining longitudinally extending mating edges, means on each of said housing members for engagement with said front bulkhead, a rear bulkhead spaced from said front bulkhead, said front bulkhead and said rear bulkhead supporting said mating housing members in surrounding relationship to said portion of said coating applicator, said rear bulkhead including a cup-shaped base for receiving said housing members, and spring means for urging at least one of said housing members against one of said bulkheads.

4,520,950

IN-HOME DRINK DISPENSER

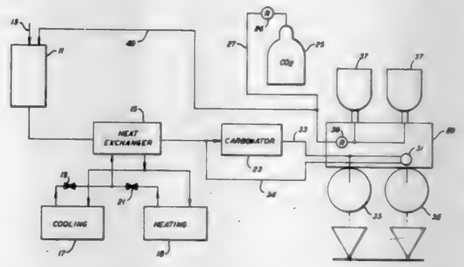
Edward L. Jeans, Gwent, Wales, assignor to Cadbury Schweppes Public Limited Company, London, England

Continuation-in-part of Ser. No. 140,685, Apr. 16, 1980, abandoned. This application Jun. 29, 1982, Ser. No. 393,299

Claims priority, application United Kingdom, Jul. 11, 1979, 7924162

Int. Cl.³ B67D *1/04*

U.S. Cl. 222—129.1 **73 Claims**



1. A manifold for use with a beverage dispenser comprising:

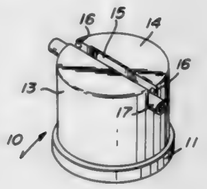
(a) a manifold body comprising:

(1) a first passage, formed in said body, having an inlet, for connection to a source of pressurizing gas and an outlet adapted to be coupled to a diluent supply, to provide pressurization thereof;

(2) a second passage, formed in said body, having an inlet adapted to be coupled to the diluent supply and an outlet adapted to be coupled to a dispensing valve;

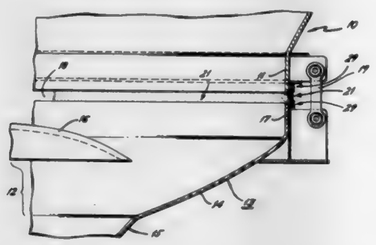
(b) fittings extending from the outlet of said first passage and inlet of said second passage in parallel spaced relationship adapted to mate with mating fittings of diluent supply;
(c) first and second check valves in said fittings, whereby pressurization within said manifold will be maintained when the diluent supply is disconnected from said manifold;
(d) a first pressure reducing valve disposed in said body;
(e) a third passage in communication with said first passage for supplying said source to the inlet of said pressure reducing valve; and
(f) a fourth passage for coupling the outlet of said first pressure reducing valve to pressurize a concentrate source.

4,520,951
AEROSOL CAP
Roy B. Facey, Pymble, Australia, assignor to CRC Chemicals Inc., Warminster, Pa.
Filed May 30, 1980, Ser. No. 154,750
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—182 **5 Claims**



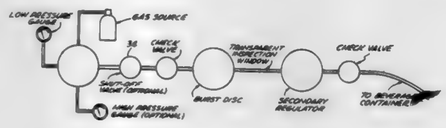
4. A cap for an aerosol container comprising an annular wall open at it bottom end and closed at it upper end by a top wall perpendicular to the annular wall, the top wall having a diametric transverse groove formed integral with the top wall and adapted to releasably retain a tube in a lowermost portion thereof, said groove being open at each end, the groove having a substantially semi-circular cross-section at the lowermost half thereof and having substantially parallel straight sides at the uppermost half thereof integral with the top wall so as to be open at the top, the groove further having protuberances along the inner faces of the parallel sides adjacent the upper most portion of the sides at spaced locations along the inner faces thereof for frictionally embracing and releasably retaining the tube in the groove, and a plurality radially directed lugs at spaced portions along the inner periphery of the annular wall at the lowermost portion thereof for engaging and releasably securing the cap to the top end of the container.

4,520,952
FLEXIBLE SLEEVE FOR BIN ACTIVATOR
Richard C. Wahl, 66 Holton La., Essex Falls, N.J. 07021, and Eugene R. Wahl, 40 Lynwood Rd., Cedar Grove, N.J. 07009
Filed Jun. 21, 1983, Ser. No. 506,381
Int. Cl.³ B65G *65/44*
U.S. Cl. 222—199 **4 Claims**



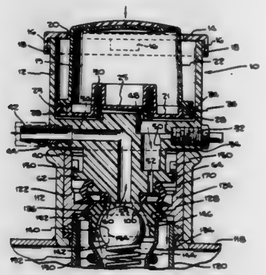
1. A sealing sleeve assembly for sealing the gap between a cylindrical flange on the bottom of a storage bin and similar diameter cylindrical flange on the upper end of a bin activator, said assembly including:
(a) a flexible sleeve of generally cylindrical shape having a diameter and axial length such to closely overlie the bin and bin activator flanges and span the gap therebetween;
(b) upper and lower pairs of laterally extending circumferential ribs defining therebetween upper and lower channels respectively, each of said channels having straight parallel sides extending at right angles to the sleeve;
(c) upper and lower clamp bands received within said upper and lower channels respectively, to securely clamp said sleeve to the cylindrical flanges of said storage bin and bin activator, said clamp bands having a width substantially equal to the width of said channels and a thickness less than the depth of said channels so that while the sealing sleeve is secured to the cylindrical flanges said clamp bands are frictionally retained within said channels; and
(d) said upper and lower channels spaced apart a distance greater than the gap between the storage bin cylindrical flange and the bin activator cylindrical flange spanned by said sealing sleeve.

4,520,953
SAFETY APPARATUS FOR HIGH PRESSURE SYSTEMS
Merton R. Fallon, Thousand Oaks, Calif., assignor to Draft Systems, Inc., Northridge, Calif.
Filed Feb. 7, 1983, Ser. No. 464,593
Int. Cl.³ B67D *1/04*
U.S. Cl. 222—396 **6 Claims**



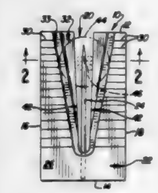
1. A safety apparatus for use in beer dispensing applications wherein a source of high pressure gas is interconnected with a container containing the beer to be dispensed, said apparatus comprising:
(a) a primary pressure reducing regulator interconnected between the container and the source of high pressure gas and proximate the latter, said primary regulator being capable of adjustment to permit the continuous flow of gas toward the container at a pressure of about 35 psi;
(b) a frangible burst disc interconnected between the container and said primary regulator, said burst disc being adapted to fail and to automatically vent source gas flowing therethrough to atmosphere at a pressure of about 80 psi;
(c) a secondary pressure reducing regulator interconnected between the container and said burst disc and proximate the latter, said secondary regulator being capable of adjustment to permit the continuous flow of gas toward the container at a pressure of about 15 psi;
(d) a check valve interconnected between the container and said secondary regulator, said second check valve being adapted to permit the flow of gas toward the container, but to restrict all fluid flow in the opposite direction; and
(e) a check valve interconnected between the container and said primary regulator to permit the flow of gas toward the container, but to restrict gas flow in the opposite direction, said check valve being adapted to restrict gas flow toward said secondary regulator until the input pressure to said check valve reaches about 35 psi.

4,520,954
COUPLER
Anthony D. Brown, Woodland Hills, Calif., assignor to Grundy Dispense Systems, Inc., Canoga Park, Calif.
Filed May 3, 1982, Ser. No. 373,963
Int. Cl.³ B67D *1/04*
U.S. Cl. 222—400.8 **4 Claims**



1. An improved coupler which is used to dispense fluid under pressure from a container by means of a probe at one end of the coupler which is inserted into a valve assembly at the opening of the container, wherein said valve assembly comprises dual valves which includes a first valve assembly and a second ball valve assembly, the first valve assembly comprising a first valve housing which has a first valve seat at its lower interior surface and a first valve member, the second ball valve assembly comprising a ball valve member which abuts the lower interior portion of the first valve member which acts as its valve seat, and a valve passageway associated with each of the valve assemblies which are opened when the valve members are moved away from the valve seats, wherein a probe head at the forward tip of the probe pushes the ball valve member away from its seat to open one passageway and a section of the probe head pushes first valve member away from the first valve seat to open the other passageway, so as to permit gas or air to be placed into the container and to permit fluid to exit the container through the opened passageways in the coupler, wherein the improvement comprises:
a. the probe head at the forward tip of the probe which being fixed and integral with the probe;
b. a large flexible bellows type fluid seal member placed on the outermost circumference of the foreward end of the probe;
c. said large flexible bellows type fluid seal member being of one piece construction and containing three sections, an outwardly extending upper portion, an inwardly extending middle portion and an outwardly extending lower portion; and
d. said large flexible bellows type fluid seal member being of sufficient height so that the outwardly extending lower portion comes in contact with an upper surface of said first valve housing to thereby seal both of said valve passageways before the probe head comes in contact with said ball valve member and moves it away from its valve seat;
e. whereby said large bellows type fluid seal member will prevent any fluid from spewing out of the container after the probe head causes the entire valve assembly to open, and the flexibility of the three section design in the large bellows type fluid seal member creates a bellows action which permits the seal to fold in on itself between the upper portion and middle portion and permits the lower portion to be substantially flat against the upper surface of said first valve housing to thereby form a very secure sealing means.

4,520,955
BUTTON SEWING AID
Edgar C. Gutweniger, 5618 N. McVicker Ave., Chicago, Ill. 60646
Filed Jan. 9, 1984, Ser. No. 569,296
Int. Cl.³ A41H *37/10*
U.S. Cl. 223—044 **16 Claims**

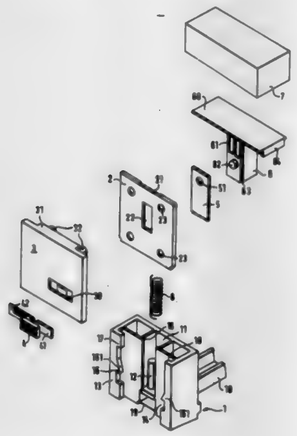


1. A button sewing aid for holding buttons having sew through holes comprising:
a button holding jig having front and rear edges and a base portion adjacent the rear edge,
a groove in the jig for receiving a button, the groove being open at the front edge and having a bottom and sidewalls, the sidewalls converging towards each other from the front edge towards the rear edge, the button received between the converging sidewalls and upon the bottom of the groove,
an open channel extending from the front edge towards the rear edge and terminating at the base portion, the width of the open channel being at least as wide as the space between the sew through holes of the button,
an elongated pin extending from the base portion towards the front edge and disposed within the open channel and parallel to the long axis of the channel with the button positioned so that the sew through holes in the button lie on either side of the pin with the pin disposed between the material and the button to provide a shank of thread therebetween after the button is sewn and the jig removed,
whereby the button is held by the jig in its proper position adjacent the material during stitching with the jig being removed after the button is sewn to the material.

4,520,956
STAPLING MACHINE
Jose E. A. Urresti, Eibar, Spain, assignor to Olave, Solozabal y Cia., S.A., Eibar, Spain
Filed Apr. 15, 1983, Ser. No. 485,257
Int. Cl.³ B25C *5/02, 5/11*
U.S. Cl. 227—120 **14 Claims**

1. A stapling machine, comprising two elongated arms movable relative to one another, one of the arms carrying an anvil for bending over staple ends, said arms being formed of a single piece having a weakened joint area for rotation; guiding means to prevent sideways bending between said arms and including first means provided on one arm and interacting with second means provided on the other arm; a travelling assembly movable to at least one position for its disassembling to allow access to a stapling area; a stapling head mounted on the other arm, and having a supporting frame with a rear extension and a front formed as a guide for the associated travelling assembly; at least two leaves which, beginning at the arms form a single body with the arms and allow flexible motion in the joint area;

and a staple magazine formed by the other arm carrying the stapling head and the rear extension of the supporting frame,



the staple magazine being capable of undergoing longitudinal motion with respect to the other arm.

4,520,957

IN-FOLDED FIN SEAL END CLOSURE

Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jul. 26, 1984, Ser. No. 634,718
Int. Cl.³ B65D *5/74*
U.S. Cl. 229—17 R **6 Claims**



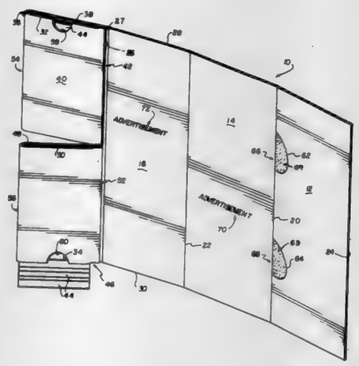
1. In a blank for constructing a container adaptable to being folded into a flat end container, wherein the blank includes five body portion panels interconnected by vertical score lines, five end closure panels connected via a first row of horizontal score lines to respective ends of the body portion panels; said five end closure panels including two panels having triangular panels respectively connected to the ends of two alternate body portion panels, and inner closure panels respectively connected to the ends of the other three alternate body portion panels; a pair of additional triangular panels connected via diagonal score lines to the opposite sides of each of said triangular panels; sealing panels respectively connected via a second row of horizontal score lines to said inner closure panels; and a pair of sealing panels respectively connected via said second row of horizontal score lines to each pair of additional triangular panels; the improvement comprising two sets of supplementary score lines formed on the edge portions of the inner closure panels located adjacent opposite sides of each pair of aligned additional triangular panels and sealing panels.

4,520,958

MULTI-COMPARTMENT ENVELOPE FOR COUPON NESTING

John H. Jones, Westfield, and Donald W. Schoenleber, Princeton, both of N.J., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Jun. 23, 1983, Ser. No. 507,139
Int. Cl.³ B65D *27/08*
U.S. Cl. 229—72 **20 Claims**



1. A multi-compartment envelope for coupon nesting, comprising:

(a) a generally rectangular blank having first, second and third spaced parallel scorelines defining first, second, third and fourth generally rectangular interconnected panels;

(b) said first panel and said fourth panel each having a side edge;

(c) a fold in said fourth panel generally equidistant said fourth panel side edge and said third scoreline and generally parallel thereto providing a first panel portion and a second panel portion;

(d) means securing said fourth panel side edge to said first panel portion generally adjacent said third scoreline whereby said second panel portion overlies said first panel portion and thereby said panel portions provide a compartment;

(e) a slit being disposed in said first and second panel portions and extending from said fold to generally adjacent said third scoreline and thereby dividing said compartment into a first compartment and a second compartment;

(f) a first and second contoured slit, each of said contoured slits being disposed at least in part in said first panel and each of said contoured slits defining a wafer tab;

(g) said first panel being folded on said first scoreline and thereby overlying said second panel whereby said wafer tabs extend a substantial distance in a first direction away from said first panel;

(h) said fourth panel being folded along said third scoreline and thereby overlying said third panel;

(i) said third panel being folded along said second scoreline whereby said fourth panel overlies said first panel and said third scoreline is proximate said first scoreline;

(j) said wafer tabs being folded on a line generally parallel to said first scoreline whereby said wafer tabs extend in a second direction generally aligned with said first panel and a first surface of each of said wafer tabs engages a substantial portion of said third panel; and,

(k) seal means securing said first surface of each of said wafer tabs to said third panel.

4,520,959

ENERGY SAVER DAMPER ASSEMBLY

Stanley Kolt, Mamaroneck, N.Y., assignor to Leonard W. Suroff, Jericho, N.Y., a part interest

Filed Jun. 20, 1983, Ser. No. 505,789
Int. Cl.³ F24F *13/10*
U.S. Cl. 236—49 **17 Claims**



1. An energy saver automatic temperature responsive vent for permitting the passage of air from one defined space to another comprising:

(a) frame means for mounting adjacent to an opening from said one defined space to said another defined space, said frame means having a central passage disposed therethrough;

(b) flap means movably mounted to said frame means; said flap means being movable from a closed position substantially blocking said passage to an open position permitting the free flow of air therethrough, said flap means assuming said closed position when at rest; said flap means being pivotally affixed to said frame means;

(c) temperature responsive drive means mounted to detect temperature changes adjacent to said opening, said temperature responsive drive means being coupled to said flap means and being actuated in response to temperature changes within a predetermined range, actuation of said temperature responsive drive means moving said flap means from said rest position; and

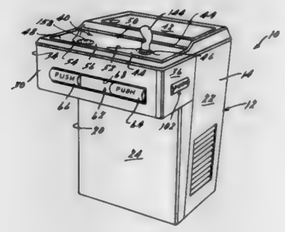
(d) adjustment means coupled to said flap means, said adjustment means for adjustably precluding said flap means from assuming said closed position when at rest, said adjustment means comprising movable wedge means disposed between a portion of said flap means and a portion of said frame means.

4,520,960

BARRIER-FREE WATER COOLER

Robert L. Cushman, Solon, Iowa; Arlan Koester, Rock City, Ill., and Michael Eveland, Cedar Rapids, Iowa, assignors to Halsey Taylor Division of King-Seeley Thermos Co., Prospect Heights, Ill.

Filed Jan. 13, 1983, Ser. No. 457,729
Int. Cl.³ E03B *9/20*
U.S. Cl. 239—29 **8 Claims**



1. A barrier-free water cooler in combination in a water dispensing apparatus adapted for operative association with a water source comprising:

a cabinet structure having a first side portion extending laterally between second and third spaced generally parallel side portions;

water dispensing means associated with said apparatus and including valve means for controlling the flow of water from the source thereof to said dispensing means;

mounting bracket disposed within said cabinet structure and having laterally opposed mounting portions;

first actuating means for actuating said valve means comprising first manually engageable push bar presented on said first side portion and means for slidably and pivotally securing said first push bar to each of said laterally opposed mounting portions;

at least one second actuating means for actuating said first actuating means comprising second manually engageable push bar presented on one of said second and third side portions, said second push bar having laterally opposed ends, one of said ends being pivotally secured to said cabinet structure and the other of said ends having an actuating leg extending generally orthogonal to said second push bar;

said first actuating means defining a camming surface and said actuating leg portion being positioned adjacent said camming surface;

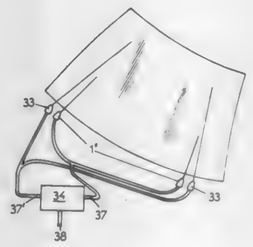
whereby selective application of a force to either end of said first push bar means results in actuation of said valve means and whereby selective application of a force to said second push bar means causes said actuating leg portion to slidably engage and move said camming surface to effect actuation of said first push bar means, thereby resulting in actuation of said valve means.

4,520,961

WINDSHIELD WASHING SPRAY WITH JET INCLINATION VARIABLE AS A FUNCTION OF THE SPEED OF THE VEHICLE

Francois Hueber, Saint-Louis, France, assignor to Fabrique de Produits Chimiques, d'Entretien et de Degraissage Ravicolor, S.A., Saint-Louis, France

Filed Jul. 20, 1983, Ser. No. 515,480
Claims priority, application France, Jul. 21, 1982, 82 13038; Feb. 15, 1983, 83 02620
Int. Cl.³ B05B *1/10*
U.S. Cl. 239—284 R **10 Claims**



1. A windshield washing spray with jet inclination variable as a function of the speed of the vehicle, comprising a first fixed spray (**1'**) adapted to direct a jet of washing liquid at a relatively low portion of a windshield, a second fixed spray (**33**) adapted to direct washing liquid at a relatively high portion of a windshield, an electromagnetic ball valve (**34**) having an inlet orifice (**38**) supplying said washing liquid to said valve, a first outlet passage for supplying said liquid to said first spray (**1'**) and a second outlet passage (**37'**) for supplying said liquid to said second spray (**33**), and means responsive to the speed of the vehicle to actuate said valve (**34**) so that said liquid passes from said inlet orifice (**38**) to said first outlet passage (**37**) at

relatively low speed of the vehicle and from said inlet orifice (38) to said second outlet passage (37') at relatively high speed of the vehicle.

4,520,962

MAGNETIC FUEL INJECTION VALVE

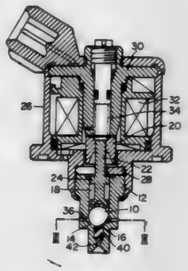
Masakichi Momono; Hisanori Moriya; Masahiro Souma, and Eiji Hamashima, all of Katsuta, Japan, assignors to Hitachi, Ltd. and Hitachi Automotive Engineering Co., Ltd., both of Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,802

Claims priority, application Japan, Jan. 30, 1981, 56-13486

Int. Cl.³ F02M *51/08*

U.S. Cl. 239—585 **7 Claims**



1. A magnetic fuel injection valve comprising a coil; a core provided at a center of the coil; a yoke formed around the coil and connected with the core; a plunger facing one end of the core and slidable along a central axis of the yoke; a globe valve formed at the other end of plunger on an opposite side of the core; a valve housing connected to the yoke, the globe valve being adapted to slide inside the valve housing; a valve seat facing the globe valve, the valve housing being adapted to guide the outer surface of the globe valve in sliding movement thereof to align the center of the globe valve with that of the valve seat; a radially extending fuel inlet passage communicating an outer surface of the valve housing with an immediate upstream side of the valve seat inside the valve housing, the fuel inlet passage being formed so that the fuel is not swirled at the upstream side of the valve seat;

means provided at the downstream side of the valve seat for generating a spiraling movement in outgoing fuel in a direction perpendicular to a direction of injection; and a fuel metering orifice provided downstream of the spiraling flow generating means; the valve housing is adapted to engage an outer surface of the globe valve during an entire stroke of sliding movement of the globe valve for aligning the center of the globe valve with that of the valve seat, and an inner opening of the fuel inlet passage is formed between the valve seat and a narrowest portion of a gap between the glove valve and the inner surface of the valve housing.

4,520,963

PROCESS AND EQUIPMENT FOR CONTINUOUS CUTTING OF MATERIAL

Reiner Grebe, Biedenkopf; Max Norbisrath, and Karl-Heinz Schmidt, both of Breidenbach, all of Fed. Rep. of Germany, assignors to Kramer & Grebe GmbH & Co. KG, Biedenkopf-Wallau, Fed. Rep. of Germany

Filed May 17, 1982, Ser. No. 378,520

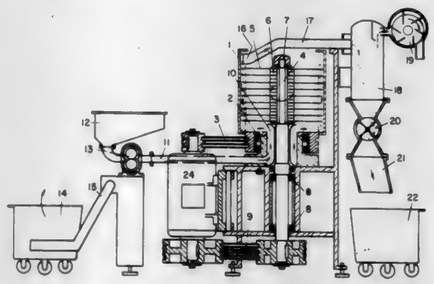
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122266

Int. Cl.³ B02C *23/36, 18/00*

U.S. Cl. 241—30 **25 Claims**

1. Process for cutting material with fast rotating blades on a shaft parallel to the axis of a vessel including the steps of,

continuously feeding material into said vessel while rotating said vessel around said axis with sufficient speed so that the fed material is guided to and positioned against the inside of the vessel wall by the centrifugal force and cut by said fast rotating blades while positioned against the inside of the vessel wall,



and continuously withdrawing the cut material from said vessel thus rotating.

4,520,964

WASTE COMMINUTING APPARATUS

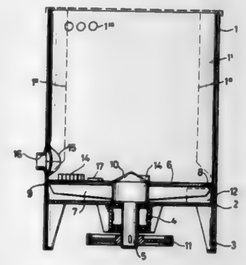
Kurt Rössler, Blankenburgerstrasse 21a, D-4550 Bramsche 1, Fed. Rep. of Germany

Filed Jun. 16, 1982, Ser. No. 389,146

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125309

Int. Cl.³ B02C *19/12*

U.S. Cl. 241—55 **8 Claims**



1. Comminuting apparatus for the comminution of waste wood material and the like by imparting a loop shaped circulating movement to the waste so that the waste comminutes itself by mutual rubbing, beating and striking, comprising a housing having an inner wall of a generally circular cross-sectional configuration, said housing having a top with an access opening for receiving the waste to be comminuted, said housing defining a feed hopper for the waste to be comminuted, said housing having a bottom portion disposed above a bottom wall, a combined screening and centrifugal plate rotatably mounted in the bottom portion of said housing, said plate having an upper side and an under side, a raised entrainment dog extending upwardly from said upper side at the peripheral edge of said plate, centrifugal blower blades mounted on the underside of said plate, said blades being disposed in said bottom portion of said housing between said plate and said bottom wall of said housing, said centrifugal blower blades being substantially radially disposed and forming stiffening means for said plate, said bottom portion of said housing having an outlet for comminuted material, said outlet being disposed below said plate, said plate having a continuous circular outer edge having a diameter substantially equal to the inner diameter of said housing such that comminuted material is precluded from passing between said outer edge of said plate and the inner wall of said housing, drive shaft means attached to said plate for rotating said plate, said drive shaft means extending externally of said housing, said plate having an outer radial portion disposed inwardly of said outer edge, a plurality of screening holes in said plate at said outer radial portion for screening and passing the comminuted material from said housing to said outlet, an upwardly projecting guide cone extending upwardly from the central region of said plate, said guide cone having a continuous conical surface having its apex upwardly disposed, said plate and said housing being constructed and arranged to impart a loop-shaped circulating movement to the waste in said housing as a result of the centrifugal action of said plate on the waste coming into contact with said plate such that the waste moves radially outwardly at the bottom portion of said housing above said plate, generally upwardly at the radial outer portion of said housing, generally radially inwardly at the upper portion of said housing and generally downwardly at the radial inner portion of said housing as a hollow funnel forms in the circulated mass of waste material and the waste once again repeats the loop-shaped circulatory movement as the comminuted pieces and particles formed during said loop-shaped circulatory movement of less than the diameter of said screening holes passes out of said housing through said screening holes in said plate, said waste to be comminuted thereby comminuting itself by mutual rubbing, beating and striking as said waste travels said loop-shaped circulatory movement.

4,520,965

APPARATUS FOR WINDING COILS IN ELECTRIC MACHINERY

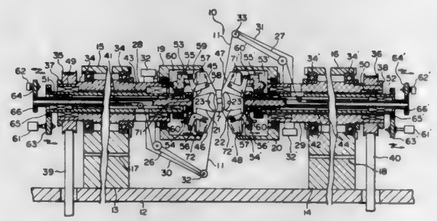
Kazuo Kimura; Yukinori Taneda; Shinichi Tsuyuki, all of Yokohama; Shun Suzuki; Yoshio Hashimoto, both of Katsuta, and Shinichi Sakamoto, Hitachi, all of Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed Aug. 4, 1983, Ser. No. 520,196

Claims priority, application Japan, Aug. 7, 1982, 57-137559; Aug. 18, 1982, 57-143819

Int. Cl.³ H02K *15/09*

U.S. Cl. 242—7.05 B **1 Claim**



1. An apparatus for winding coils on an electric machinery component having axial slots, comprising:

means for continuously supplying a wire as coil turns into a selected pair of the slots; and

means for guiding the supplied coil turns as a layer in the paired slots, said guiding means being movable in incremental steps in a direction toward open ends of the slots for laying successive layers of coil turns in the slots,

wherein said guiding means comprises a plurality of fixed formers adapted to be positioned peripherally around the armature for guiding the wires into the slots, and a plurality of movable formers adapted to be positioned at axial ends of the armature for guiding the coil turns to be inserted as the layer in the slots,

wherein said supplying means comprises a table, a pair of rotatable shafts supported on said table, and a pair of flyers mounted on said shafts, respectively, for corotation, and having guide rollers for guiding wires, respectively, said guide means comprising a plurality of splined shafts rotatably and axially movably supported in said rotatable shafts, slide blocks mounted respectively on ends of said splined shafts, respectively, a pair of housings rotatably mounted on ends of said rotatable shafts, a pair of chucks mounted in said housings, respectively, for supporting the armature therebetween, said chucks defining said fixed formers, said movable formers being movably supported on said chucks, and a plurality of former drive arms pivotably mounted on said chucks and pivotably engaging said slide blocks and said movable formers for causing said movable formers to be radially outwardly displaced successively to define successive spaces between themselves and bottoms of the slots in response to axial movement of said splined shafts, whereby the coil turns can be inserted into said spaces as successive layers in the slots.

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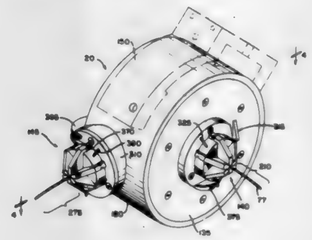
WIRE CANISTER FOR A ROBOTIC WIRE HARNESS ASSEMBLY SYSTEM

Joseph T. Bloch, and Dan A. Cross, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 7, 1983, Ser. No. 539,768

Int. Cl.³ B65H *75/00*; B25G *3/22*

U.S. Cl. 242—54 R **10 Claims**



1. A transportable canister for accepting, storing and dispensing a wire segment to be used by a robot during the assembly of a wire harness, comprising:

a cylindrical housing having an access opening for a wire,

a cylindrical drum disposed within said housing, the outer surface of said drum being provided with a wire-accepting helical groove and a wire inlet opening,

means for enabling said drum to rotate with respect to said housing,

a drive plate attached to said drum whereby a rotation of said drive plate effects a rotation of said drum, said drive plate being provided with a wire outlet opening,

a wire guide tube disposed within said drum and extending between said inlet opening and said outlet opening,

means forming a first releasable clamp for constraining and centering the leading end of said wire segment, said first clamp means being disposed at said outlet opening, and

means forming a second releasable clamp for constraining and centering the trailing end of said wire segment, said second releasable clamp means being disposed at said access opening;

whereby in use said drive plate and thus said drum may be rotated to initially align said inlet opening with said access opening and subsequently wind said wire into said groove.

4,520,967

DEVICE FOR A ROLL SPINDLE

Bengt A. Andreasson, Åmål, Sweden, assignor to Aktiebolaget Amals Mekaniska Verkstad, Amal, Sweden

Filed Dec. 13, 1983, Ser. No. 560,876

Claims priority, application Sweden, Dec. 20, 1982, 8207249

Int. Cl.³ B65H *75/24*

U.S. Cl. 242—55 **5 Claims**

1. Device for a roll spindle for unwinding or winding up a web material, said device comprising:

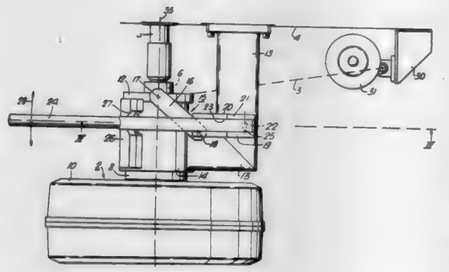
a mechanism having a central axis and being operatively

connected to a roll spindle for developing a torque upon said roll spindle, said roll spindle having a longitudinal axis defining an axial direction;

a clutch between said roll spindle and said mechanism for operatively connecting said roll spindle and said mechanism;

an articulated joint including a link extending between a first and a second hinge joint, said first hinge joint being connected to said mechanism;

means for performing first and second operations in said axial direction, said first operation causing said mechanism to move towards or away from said roll spindle in said axial direction for engagement and disengagement, respectively, of said mechanism and said roll spindle, said second operation causing said mechanism when connected with said roll spindle to move in said axial direction, said means for performing said first operation comprising:



means for displacing said second hinge joint relative to said first hinge joint,

means for preventing said mechanism from significantly rotating about said central axis when said second hinge joint is displaced relative to said first hinge joint, whereby said mechanism is caused to move in its axial direction, said means for performing said second operation comprising:

locking means for locking said second hinge joint such that said second hinge joint remains essentially stationary during said second operation, and

means for rotating said mechanism about said central axis when said second hinge joint is locked by said locking means, such that said articulated joint forces said mechanism to move in said axial direction.

4,520,968

DISPENSING DEVICE FOR CYLINDRICAL BODIES, SUCH AS ROLLS OF TOILET PAPER, PAPER TOWELS AND THE LIKE

David Shpigelman, 1 Mavo Gilat, Ramath Zahla, Tel Aviv, Israel

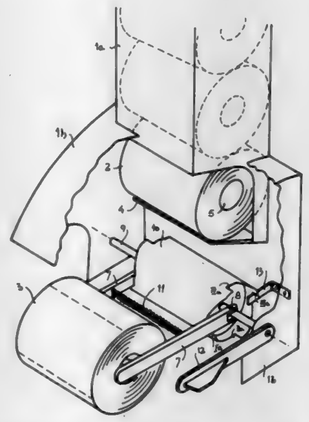
Filed Oct. 20, 1983, Ser. No. 543,906

Claims priority, application Israel, Oct. 20, 1982, 67028

Int. Cl.³ B65H *19/04*

U.S. Cl. 242—55.3 **5 Claims**

1. A dispensing device for cylindrical bodies, such as rolls of toilet paper, paper towels and the like, said device comprising a magazine in which a vertical stack of rolls is positionable with the axes of the rolls normal to the vertical extension of the stack, a dispensing and holding mechanism being positioned below the said stack, said mechanism comprising a cylindrical body mounted within said magazine and arranged below the stack and having a central axle, two arms extending radially relative to said cylindrical body, a tension spring fixed to each of said arms and biasing said arms toward one another, said cylindrical body having a pair of opposite circular ends each forming a number of cam paths, said arms being hingedly mounted on said axle and being angularly movable towards and away from one another, said arms each having a free end spaced outwardly from said axle and each free end mounting a stud oppositely directed to said stud on the other said arm, said studs adapted to enter a hollow reel of a roll, each said arm



extending across and in contact with one of said cam paths and being urged towards the other said cam paths by said tension spring and means for imparting rotative movement to the said cylindrical body about said central axle.

4,520,969

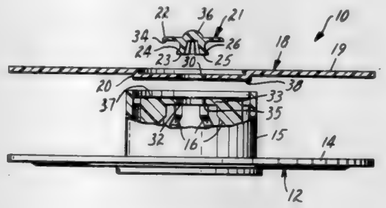
VIDEOCASSETTE TAPE SPOOL HAVING A WEAR BUTTON

James J. Wulfing, Afton, and Robert M. Rood, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 17, 1983, Ser. No. 542,430

Int. Cl.³ B65H *75/18;* **G03B** *1/04;* **G11B** *15/32*

U.S. Cl. 242—71.8 **8 Claims**



1. Tape spool for a tape cassette, which spool comprises a flanged hub having a cylindrical tape-winding surface and a wear button projecting beyond the flanged hub at the axis of the spool, wherein the improvement comprises:

a first piece including one flange and said hub, said hub including a radial wall defining a circular central opening;

a disk which completes said hub to provide the other flange and thereby define said flanged hub, said disk including a circular central opening coaxial with said first piece central opening; and

a separate piece bearing said wear button and including a collar having an inner face which fits flush against said disk, and an outer face opposite said inner face; at least two detents projecting from said inner face of said collar and through said coaxial circular central openings in said disk and said first piece to lock to said radial wall of said hub with said disk interposed between said collar and said hub to retain said disk adjacent said hub; and a protuberance on said outer face of said collar which defines said wear button;

said central openings of said disk and said hub being circular to permit assembly of said disk to said hub and assembly of said separate piece to said hub through said disk without any particular radial orientation of said hub, disk or separate piece.

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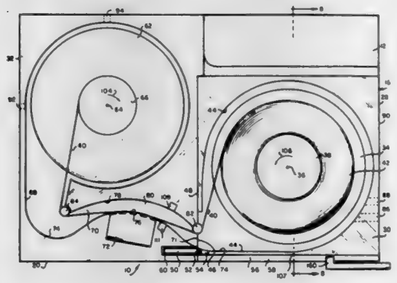
CARTRIDGE TAPE DRIVE HAVING VACUUM AUTO-THREADING

Donald O. Rasmussen, Arcadia; William C. Chow, West Covina, and Franklin J. Davio, Burbank, all of Calif., assignors to Kennedy Company, Monrovia, Calif.

Filed Oct. 3, 1983, Ser. No. 538,426

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—195 **20 Claims**



4. An auto-threading magnetic tape drive for use with a removable tape cartridge comprising:

a base;

a take-up reel rotatably mounted on the base;

a magnetic head assembly mounted on the base;

means defining a generally enclosed continuous flowpath along the base between an upstream portion of the flowpath and the take-up reel and extending past the magnetic head assembly;

a cartridge having a generally enclosed housing and a supply reel mounted within the housing, the supply reel having a length of magnetic tape wound thereon and terminating in a leading end, the housing having a tape exit port through which the leading end of the length of magnetic tape may exit the housing and an air intake port;

means for releasably mounting the cartridge on the base with the tape exit port at the upstream portion of the flowpath;

means mounted on the base for selectively rotating the supply reel and the take-up reel; and

vacuum means for drawing air through the air intake port and through the housing, the tape exit port and the flowpath to pull the leading end of the length of tape from the supply reel to the take-up reel as the supply reel is rotated by the means for selectively rotating to unwind the tape therefrom;

the means for selectively rotating the supply reel and the take-up reel including a motor coupled to the base, a drive pulley mounted on the motor, an idler pulley movably mounted on the base, means normally biasing the idler pulley for movement in a direction away from the drive pulley, an endless belt encircling the drive pulley and the idler pulley, and a driven pulley disposed at the bottom of the housing of the cartridge and coupled to the supply reel, the driven pulley being operative to engage the endless belt between the drive pulley and the idler pulley when the cartridge is mounted on the base by the means for releasably mounting so as to be driven by the motor via the drive pulley and the endless belt.

4,520,971

FISHING REEL

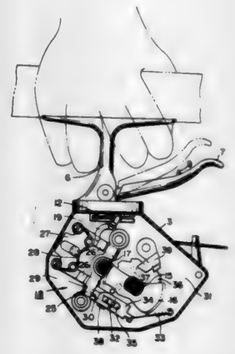
Hiromitsu Nagata, Tokyo, Japan, assignor to Daiwa Seiko Inc., Tokyo, Japan

Filed May 28, 1982, Ser. No. 383,231

Claims priority, application Japan, Jul. 3, 1981, 56-99241; Nov. 27, 1981, 56-190214[U]

Int. Cl.³ A01K *89/02*

U.S. Cl. 242—220 **2 Claims**



1. A double bearing type fishing reel including a spool shaft with a spool mounted fixedly thereon and supported between right and left side plates of a reel body, a handle shaft, and a clutch mechanism for operatively coupling, and uncoupling, said handle shaft and said spool shaft, said fishing reel comprising:

a reel mounting leg having a fishing rod mounting member, said leg being fastened between upper portions of said side plates,

an operating lever connected pivotably to a base portion of said reel mounting leg and having an operating portion opposed to a lower front portion of said fishing rod mounting member,

a pivotable member engaged with an end of said operating lever above said spool in such a manner that said pivotable member can be turned horizontally,

operating means, projecting from a circumferential portion of said pivotable member, for actuating said clutch mechanism to render said spool freely rotatably, spool braking means engagable with said operating means for braking the rotation of said spool,

and a cam formed on a lower surface of said pivotable member and adapted to actuate said spool braking means.

4,520,972

SPIN-STABILIZED TRAINING MISSILE

Walter Diesinger, Bergisch-Gladbach, and Axel Homburg, Taunusstein-Wehen, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jun. 7, 1982, Ser. No. 386,072

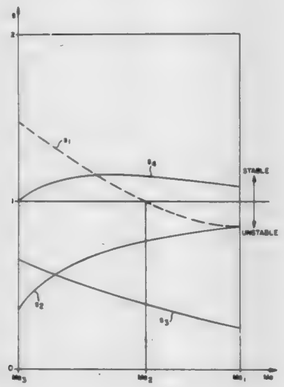
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3122320

Int. Cl.³ F42B *13/20*

U.S. Cl. 244—3.1 **15 Claims**

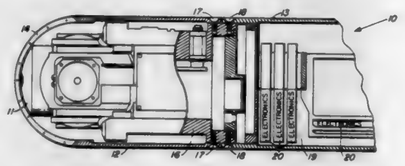
1. A spin-stabilized training missile which comprises a base member shaped as a missile with a stabilizer means for reducing spin in order to decrease the flight range, the base member of the training missile, upon firing, having a stability due to spin that is too low for stable flight, and said stabilizer means comprises at least one element having a stabilizer surface which effects, on the one hand, an additional aerodynamic stabilization providing stable flight in the training range together with the spin stabilization of te base member and, on the

other hand, after leaving the training range, such a spin reduction that the training missile becomes unstable; the stabilization attainable by spin upon firing of the training missile base member, without the stabilizer means, is defined by a stability factor



$s<1$, said stabilizer means, which is mounted behind the center of gravity of said base member, initially compensating for the lack of stability of the base member and then generating a longitudinal moment which brakes the rotation of said training missile.

4,520,973
STABILIZED GIMBAL PLATFORM
Keith E. Clark, and Charles E. Woods, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 11, 1983, Ser. No. 484,050
Int. Cl.³ F42B *15/02*; F41G *7/22*
U.S. Cl. 244—3.16 **12 Claims**



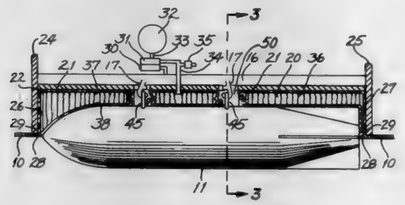
1. A rate gyro stabilized gimbal tracking system comprising:
a support frame with counterweight assembly;
a platform mounted on said support frame;
a two-axis gimbal ring on said support frame mounted to said platform;
at least one rate gyro connected to said platform;
a lens system with a characteristic focal length and focal point attached to said platform;
a sensor mounted on said platform spaced from said lens system at the focal point of said lens system;
a light level control assembly connected to said sensor;
a bail connected to one axis of said two-axis gimbal ring;
a bail drive assembly mechanically connected to said bail; and
an electronic control assembly connected to said rate gyro and bail drive assembly.

4,520,974
COMBINED FASTENING DEVICE FOR TRANSPORTING AND HOISTING A TURBOJET ENGINE
Pierre Debeneix, Saint Sauveur sur Ecole, France, assignor to S.N.E.C.M.A., Paris, France
Filed Mar. 8, 1983, Ser. No. 473,204
Claims priority, application France, Mar. 8, 1982, 82 03807
Int. Cl.³ B64D *27/00*
U.S. Cl. 244—54 **3 Claims**



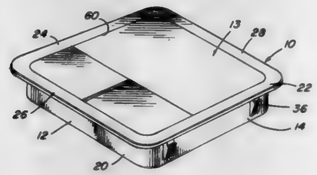
1. A combined fastening device for transporting and hoisting a turbojet engine into an airframe, said device comprising:
two first straps, each said first strap being positioned at the intersection of a housing of said engine with the horizontal diameter thereof, each said first strap having spaced first fixing lugs including coaxial first bores;
a rod for each said first strap, each said rod having one end positioned between said first fixing lugs, said one end having a first hole coaxial with said first bores, each said rod having a second end including a second hole adapted to receive engine hoisting means associated with said airframe;
a sleeve inserted between each said first bores and first holes, the interior or each said sleeve being adapted to receive engine transporting means,
said engine transporting means comprising:
a pin insertable in said sleeve;
a transport truck having an arm for each said first strap; and
a second strap on each said arm, each said second strap having second fixing lugs including second bores positionable coaxial with said first bores, whereby each said pin can be simultaneously inserted in one said sleeve and said second bores.

4,520,975
AIR-BAG EJECTION SYSTEM FOR STORE DEPLOYMENT
William R. Blackhurst, Toluca Lake, Calif., assignor to Northrop Corporation, Hawthorne, Calif.
Filed Dec. 6, 1982, Ser. No. 447,223
Int. Cl.³ B64D *1/02*; F41F *5/02*
U.S. Cl. 244—137 R **1 Claim**



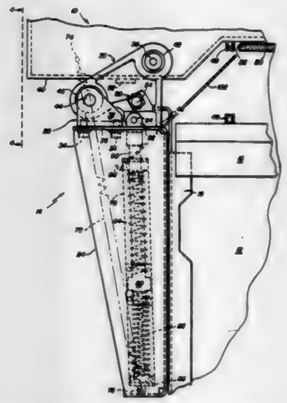
1. For an aircraft having through its envelope an open section forming a cavity adapted to carry a store suspended therein by means of store release hooks which engage lugs forming a part of the store, and from which the store can be released, an improved dual condition air-bag system arranged in said cavity, comprising:
an inflatable air-bag having opposing interior surfaces, one of which forms an outer surface, having a plurality of ties with each tie having one end attached to one of said interior surfaces of said air-bag and the other end of each tie being attached to another interior surface of said air-bag for causing said surfaces of said air-bag to be displaced to a positive spaced relation relative to each other upon inflation of said air bag;
said air-bag being arranged in the cavity of said aircraft to permit insertion of a store into said cavity, and to cause the outer surface to be expanded into substantial conformity with the envelope of the aircraft;
said air-bag having at least one air-tight passage extending through said air-bag to provide clearance for lugs of the store to pass through for engagement with the release hooks; and
said air-bag system further comprising spring cleat means in said passage to automatically open and close said passage.

4,520,976
CABLE BUSHING
Bernard T. Cournoyer, Holden, and Norman A. Hedstrom, Worcester, both of Mass., assignors to Wright Line Inc., Worcester, Mass.
Filed Mar. 25, 1982, Ser. No. 361,640
Int. Cl.³ F16L *5/00*
U.S. Cl. 248—56 **15 Claims**



1. A cable bushing comprising a frame portion, and a filler portion, said filler portion being disposable on said frame portion and including a body portion, and at least one flap hingedly connected to said body portion, said flap movable to a first position in which it is coplanar with the body portion and a second position in which the flap is disposed within said frame portion thereby providing an opening therethrough, said frame portion being adapted to occupy an opening in a structure and being further adapted to receive a cable therethrough.

4,520,977
APPARATUS FOR MOUNTING A DOCUMENT FEEDER ON A COPIER/DUPLICATOR
Ronald C. Holzhauser, Holley; James A. McGlen, and Gary P. Lawniczak, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 29, 1982, Ser. No. 427,237
Int. Cl.³ E05D *13/12*
U.S. Cl. 248—201 **11 Claims**



1. In apparatus for mounting a document feeder on a copier/duplicator or the like for movement between a first position adjacent an exposure station of the copier/duplicator and a second position spaced from the exposure station, the improvement comprising:
means pivotally mounting the feeder on the copier/duplicator (1) for movement about a first axis during initial movement of the feeder away from the exposure station and (2) for movement about a second axis during subsequent movement of the feeder away from the exposure station, the first and second axes being offset from the exposure station with the second axis being further from the exposure station than the first axis, and
stop means associated with the mounting means for stopping movement of the feeder about the first axis after the feeder has moved through a first lift angle; and counter-balance means coupled to the feeder to facilitate movement of the feeder between its first and second positions.

4,520,978
DISPLAY HANGER
Ronald H. Taub, 230 E. Ohio St., Chicago, Ill. 60611
Filed Jun. 21, 1982, Ser. No. 390,384
Int. Cl.³ A47F *5/00*
U.S. Cl. 248—220.4 **1 Claim**

1. A hanger adapted for increasing the merchandise carrying capacity of a product display comprising:
a body including connector means adjacent the bottom thereof, a vertical extension rod rising vertically upward from said connector means, and a product support rod extending laterally outward adjacent the top of said vertical extension rod;
said connector means being selectably engaged with a product display stand to maintain the hanger in mounted position thereon;
said vertical extension rod being a height greater than the height of the largest desired package to be positioned on said product support rod, said product support rod being

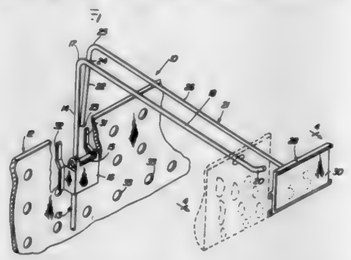
a length sufficient for mounting a desired number of packages in dependent fashion thereon;

said vertical extension rod and said product support rod being made of one elongated rod having a first elbow intermediate opposing ends of said rods defining a boundary therebetween to define said vertical extension rod and said product support rod such that said first elbow connects said opposing ends thereof;

said connector means including a pair of spatially related, substantially parallel finger-like projections adapted for positioning in adjacent apertures in a pegboard-type panel, said finger-like projections each including a stepped portion thereon for retention of said finger-like projections on said panel once positioned partly through the apertures thereof;

a price rail for carrying selectable information thereon;

a price rail-holding rod including a lateral extension portion positioned spatially above said product support rod and extending laterally beyond a distal end of said product support rod, said price rail rod also having a vertical portion extending upwardly from a portion of said vertical extension rod, said vertical portion of said price rail-holding rod having a lower end fixedly secured to said portion



of said vertical extension rod for firm and fixed connection therewith;

said vertical portion of said price rail-holding rod extending upwardly from said portion of said vertical extension rod in an imaginary plane forming an acute angle with an imaginary plane in which said vertical extension rod extends, so that said lateral extension portion of said price rail-holding rod is spaced laterally from said product support rod and substantially parallel thereto along at least most of the length of said lateral extension portion of said price rail-holding rod;

said vertical portion being tilted forward with respect to said vertical extension rod such that an upper portion of said vertical portion projects above a portion of said product support rod, which portion of said product support rod is spaced from said first elbow defining the boundary between said product support rod and said vertical extension rod in a direction away from said connecting means; said vertical portion also being fixedly connected to said portion of said product support rod at a laterally adjacent section of said vertical portion, whereby said vertical portion is permanently affixed to said elongate rod at two spaced portions thereof on each side of said first elbow.

4,520,979

HANGER AND METHOD FOR SUSPENDING A TELEVISION

Donald E. McInnis, 1611 Elwood Dr., Los Gatos, Calif. 95030

Filed Mar. 29, 1982, Ser. No. 362,834

Int. Cl.³ F16M *13/02*

U.S. Cl. 248—323 **2 Claims**

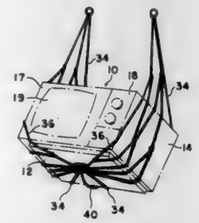
1. A suspender for suspending a television set from the ceiling and wherein the set has a center of gravity and includes top, bottom, side, front and back walls and includes a handle and a cord bracket fixed to one wall, said suspender comprising:

a cradle having a geometrical center and being sized to receive and support the television set;

a plurality of supporting ropes extending two opposite directions from the cradle and upward along the side walls of the set;

one or more ropes extending from said cradle and upward along the edge of the front wall of the set;

one or more ropes extending from said cradle and upward along the back wall of the set;



said ropes being sized to permit the positioning of the cradle adjacent the bottom wall of the set with the geometric center thereof formed of the center of gravity of the television set to allow a forward tilting of the set for better viewing of the front wall thereof;

means to attach the extending ends of said ropes to the ceiling; and

a safety cord having one end fixed to said cradle and the other end fixed to the set to prevent the set from rolling off the cradle and falling to the floor.

4,520,980

ELONGATE COMPRESSION BEARING MEMBER

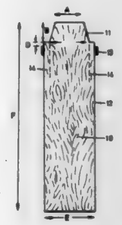
Rodney C. Townsend, Johannesburg, South Africa, assignor to Mine Support Systems (Proprietary) Ltd., South Africa

Filed Nov. 3, 1980, Ser. No. 203,791

Claims priority, application South Africa, Nov. 2, 1979, 79/5882

Int. Cl.³ E04G *25/00*

U.S. Cl. 248—351 **5 Claims**



1. A mine prop for use between a foot wall and a hanging wall in a mine working for supporting the hanging wall above the foot wall and for yielding to a shorter length under the load imposed axially on it by the hanging wall as the hanging wall descends towards the foot wall with the passage of time, while still offering resistance to the imposed load, said mine prop comprising:

(a) columnar timber pole means of substantially uniform cross-section and extending over a major portion of the length of the prop for resisting loads without significant compression thereof;

(b) integral timber protruding end portion means axially adjacent one end of the columnar pole means for compressive yielding under the imposed loads from an initial length to a lesser length, the protruding end portion mean

extending over a minor portion of the length of the prop and tapering from its end adjacent the columnar pole means to its remote end;

(c) the cross-section of the protruding end portion means adjacent the columnar means being less than that of the columnar pole means so that there is a clearly defined shoulder between the protruding end portion means and the columnar pole means;

(d) a restraining ring around the columnar pole means around and engaging the columnar pole means adjacent the protruding end portion means for resisting hoop stresses arising in the columnar pole means as a result of the imposed loads;

whereby upon the application of the hanging wall imposed loads on the prop, the protruding end portion means yields compressively with a corresponding decrease in length, the tapered shape of the protruding end portion means ensuring that the imposed load is taken by progressively larger and larger cross-sections of the protruding end portion means during yielding, and whereby, after compressive yielding of the protruding end portion means has taken place, the imposed load is taken by the columnar pole means until collapse of the prop takes place.

4,520,981

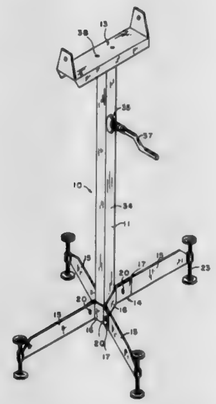
ADJUSTABLE TELESCOPIC SUPPORT

Marvin Harrigan, Elk Grove Village, Ill., assignor to Marvco Tool & Mfg. Inc., Elk Grove, Ill.

Filed May 23, 1983, Ser. No. 497,096

Int. Cl.³ F16M *11/00*

U.S. Cl. 248—413 **8 Claims**



1. An adjustable vertical support comprising;

(a) a square shaped standard having a hollow core,

(b) a base for said standard for supporting the same in a vertical position,

(c) an elongated U-shaped supporting means movable vertically within the hollow core of said standard,

(d) said U-shaped supporting means providing a pair of parallel arms, one edge of each arm being tapered throughout its length so as to provide therebetween an inclined medial face portion,

(e) said parallel arms providing at their free elongated margins parallel straight edges adapted to have sliding contact with the inner wall surface of one wall of said hollow core of said standard so as to maintain said supporting means in axial alignment with said hollow core as it moves therethrough,

(f) said medial face portion of said U-shaped supporting means adapted to be spaced from a confronting inner wall surface of said hollow core of said standard when said supporting means is movably positioned therein, and

(g) means provided by said standard and adjustably projectable through said one confronting inner wall surface into binding contact with said inclined medial face of said supporting means for restraining vertical movement of said supporting means in one direction into said said standard while permitting free movement of said supporting means in an opposite direction out of said standard.

4,520,982

SLIDE ADJUSTMENT APPARATUS

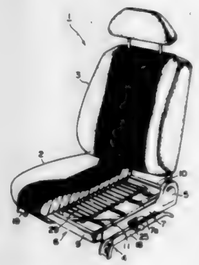
Takaichi Nishino, Tokyo, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Jan. 14, 1983, Ser. No. 458,150

Claims priority, application Japan, Jan. 29, 1982, 57-11721

Int. Cl.³ B60N *1/08*

U.S. Cl. 248—430 **2 Claims**



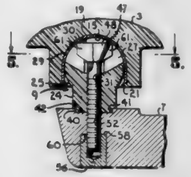
1. A slide adjustment device for adjusting forward and backward sliding movement of vehicle seats, said device comprising a lower rail which is adapted to be attached to a floor of said vehicle, an upper rail which is adapted to be attached to the frame of said seat and which is slidably movable within said lower rail, and a sliding element which is adapted to slide in relation to both of said upper and lower rails and which is positioned substantially between said upper and lower rails, said device further comprising a plurality of rolling members which are rotatably positioned at least partially within said sliding element and which comprise means for causing said sliding element to slide between said rails, each of said roller members being comprised of resin and having a solid cross-sectional area which has a dimension which is less than the width of said sliding element, said rolling members being positioned adjacent front and rear portions of said sliding element, respectively, said upper rail having a lowermost portion which comprises a substantially horizontal flange, a vertical wall, and having a generally U-shaped cross-sectional configuration, said horizontal flange forming one leg of said upper rail, said rolling members rotatably contacting a lower surface of said horizontal flange, said lower rail having a generally rectangular cross-sectional configuration, an inner lower surface, an upper wall having an opening, and a substantially vertical wall, said upper rail flange and at least a portion of said upper rail vertical wall being positioned within said opening, said rolling members also rotatably contacting said inner lower surface and said sliding element contacting said vertical wall, said adjustment device further comprising an adjustable locking mechanism attached to said frame and comprising means for locking said seat in a predetermined fixed position, said upper rail being attached to a side frame portion of said seat.

4,520,983

MIRROR ASSEMBLY

Arthur R. Templeman, Overland Park, Kans., assignor to Peterson Mfg. Co., Grandview, Mo.

Filed Nov. 3, 1981, Ser. No. 317,835
Int. Cl.³ A47G *1/24*
U.S. Cl. 248—481 **2 Claims**



2. An expandable ball and socket arrangement comprising:
(a) a housing;
(b) a socket extending into said housing and having an opening thereinto; said socket exhibiting a surface having a lug extending outwardly therefrom;
(c) a socket liner retained in said socket; said socket liner defining a cavity and comprising a generally thin-walled member having an opening thereinto coaxial and coextensive with said socket opening; said socket liner exhibiting an inner surface contacting said socket surface;
(d) said socket liner defining an aperture therethrough; said aperture being mateable with said lug, whereby said socket liner is inhibited from rotating relative to said socket;
(e) an expandable member having a shank and a head received in said cavity and including an axial passageway therethrough; said head comprising a plurality of laterally spaced segments attached to said shank; said segments being resiliently deformable outwardly from a central axis of said expandable member; said segments each exhibiting at an extremity of said passageway opposed to said shank a beveled face diverging axially outwardly toward said passageway extremity; and
(f) a draw bolt extending through said expandable member passageway, said bolt including at an end thereof adjacent said expandable member segments a head exhibiting a beveled surface mateable with said segment beveled faces; said bolt including at another end thereof means to draw said draw bolt through said axial passageway in a direction from said segments toward said shank such that said draw bolt head beveled surface and said segment beveled faces are forced into interengagement, whereby said individual segments are deformed outwardly into frictional engagement with said socket liner.

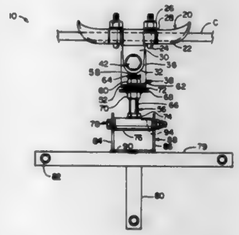
4,520,984

HANGING BRACKET FOR SUSPENDING OVERHEAD SIGNS

Robert J. Rouleau, 28 Cedar Knoll Rd., Cockeysville, Md. 21030

Filed May 5, 1983, Ser. No. 491,706
Int. Cl.³ G09F *7/22*
U.S. Cl. 248—489 **1 Claim**

1. In a system for suspending overhead signs and having: cable clamping means, means for setting lateral angle of a sign in the plane of a cable, means for fixing facing-direction of a sign about a substantially vertical axis including a horizontal arm attached below the means for setting; means permitting swinging of a sign in the plane of the facing direction, including a sleeve, a pivot bolt in the sleeve and arm structure connected with the pivot bolt and sleeve, the improvement comprising: the means for fixing facing-direction including an inverterd "T"-shaped member including a shank in the form of a vertical locking bolt having a threaded upper end proportioned for receiving thereon: said horizontal arm, a backing member, a nut for securing together said horizontal arm and backing member; said shank having thereon a structure for wrenching, said sleeve being affixed transversely on the lower end of said vertical locking bolt, means for minimizing wear of said means permitting swinging including a unitary thermoplastic bushing, said thermoplastic bushing secured within the bore of said sleeve and having a portion protruding from each end thereof in position for bearing on said arm structure, locking means between said horizontal arm and backing member, said locking means being an external-tooth lock washer, said structure for wrenching comprising a nut welded on a part of the threaded upper end below said backing member, said backing member being a backing plate welded to said nut welded on said part of the threaded upper end, and said structure for wrenching further comprising said vertical locking bolt having at said lower end a faceted head.

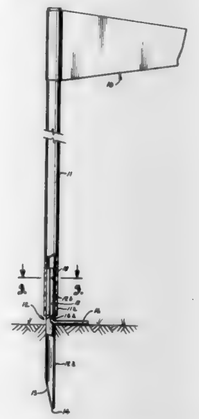


4,520,985

PLAYING FIELD BOUNDARY FLAG AND SUPPORT THEREFOR

Lawrence S. Blumenthal, Kansas City, Mo., assignor to Gelhaar Uniform Company, Kansas City, Mo.

Filed Sep. 22, 1982, Ser. No. 421,410
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—530 **4 Claims**



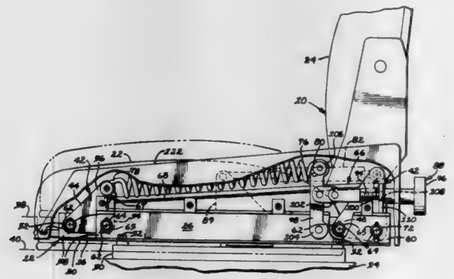
1. A ground insertable support for a playing field boundary marking flag mounted on a flexible staff having a hollow mounting end,
said support comprising
a ground engaging member having a blade portion tipped at one end for insertion in the ground and having a hollow shaft portion extending from the other end of the blade portion in general alignment with the lengthwise direction of the blade portion and adapted to be fitted inside said hollow mounting end of the flexible flag staff,
a rod having a first portion- confined in said hollow shaft, said rod including a second portion bent laterally away from the axis of the first portion and extending through an opening in said ground engaging member located near the juncture of said blade portion and said shaft portion,
said second portion of said rod providing surfaces respectively for application of pressure to drive the blade portion into the ground and for limiting the maximum depth of penetration to keep the shaft portion above ground level.

4,520,986

SUSPENDED SEAT ASSEMBLY

Lawrence A. Liljequist, Chesterland; John E. Wible, Painesville, and Richard A. Schwehr, Mentor, all of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Jan. 10, 1983, Ser. No. 456,686
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—585 **18 Claims**



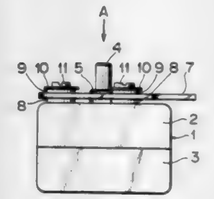
1. In a suspended seat assembly (10) having a seat frame (12) and a support frame (14), said seat frame (12) having first and second spaced apart sides (16,18) and said support frame (14) having first and second spaced apart support members (26,28); said first side (16) and first support member (26) being adjacent one another, and said second side (18) and second support member (28) being adjacent one another; the improvement comprising:
means (42) for pivotally connecting said first side (16) to said first support member (26) and said second side (18) to said second support member (28) and for permitting elevational movement of said seat frame (12) between a first position (38), at which at least a portion of said seat frame (12) is elevationally spaced above said first and second support members (26,28), past said support frame (14) and to a second position (40) at which at least a portion of said seat frame (12) is located elevationally below said first and second support members (26,28), said pivotal connecting means including first, second, third and fourth support links (44,46,48,50), said first and second links (44,46) being pivotally connected to said first side (16) at spaced apart locations and pivotally connected to said adjacent first support member (26) at spaced apart locations, and said third and fourth links (48,50) being pivotally connected to said second side (18) at spaced apart locations and pivotally connected to said adjacent second support member (28) at spaced apart locations;
means (66) for maintaining the first and second sides (16,18) at a preselected attitude relative to the respectively adjacent first and second support members (26,28); and
means (74) for biasing said pivotal connecting means (42) and urging said seat frame (12) to said first position (38), said biasing means (74) includes a first resilient member (76) connected to one of said links (44,46,48,50) and an adjacent one of said first and second support members (26,28), said first resilient member (76) being spaced outwardly from the adjacent one of said first and second sides (16,18), elevationally above the adjacent one of said first and second support members (26,28), and substantially between a plane (90) extending vertically from the adjacent side (16,18) and a plane (92) extending vertically from the adjacent support member (26,28).

4,520,987

STRUCTURE OF SUPPORTING A STEPPING MOTOR

Yasukata Eguchi; Susumu Hanyu; Hideaki Takenoya, and Mikio Inamori, all of Tokyo, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jun. 17, 1982, Ser. No. 389,231
Claims priority, application Japan, Jun. 15, 1981, 56-86797[U]
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—635 **3 Claims**



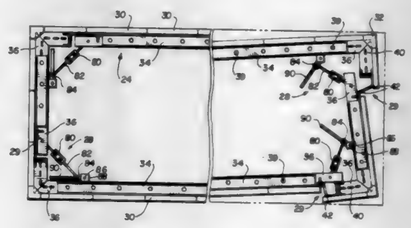
1. A mounting for supporting a stepping motor of a machine, the stepping motor having an electric input pulse stepwise rotated rotor shaft rotatably arranged in a housing and partly projecting out of the housing through a bearing provided on one face of the housing, comprising:
a plurality of inner threaded mounts attachable to the one face of the housing radially of the bearing;
cushion means formed to surround each of said mounts;
a support plate having a plurality of openings adapted to receive said mounts and cushion means with a radial clearance while said cushion means clamps a portion of said support plate surrounding each of said holes, a separate single opening formed to receive the bearing, and one of said plurality of openings being formed so that the housing is prevented from moving angularly with respect to said bearing receiving opening; and
fastening means including washer means oriented to press against said cushion means as a fastening screw is screwed into each of said mounts causing said cushion means to clamp said support plate between said washer means and the housing.

4,520,988

CONCRETE CORE-WALL FORM AND STRIPPING ASSEMBLY THEREFOR

Eugene P. Walker, N. Bergen, N.J., assignor to Harsco Corporation, Wormleysburg, Pa.

Filed Apr. 23, 1984, Ser. No. 602,891
Int. Cl.³ E04G *15/06*; B28B *7/30*
U.S. Cl. 249—13 **15 Claims**



1. An inwardly articulated form assembly for forming a rectangular shaped concrete core-wall structure comprising:

a primary form having exterior wall faces and corners defining a rectangle corresponding to said concrete core-wall structure to be formed,

each of said wall faces having a vertically extending seam such that there is at least one seam adjacent each of said corners, and

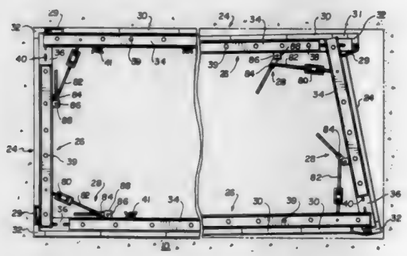
a secondary support means engaging interior portions and corners of said primary form, said support means having a double hinge means corresponding to each seam and operable for effecting a compound movement of said support means to cause each of said wall faces of said primary form to articulate inwardly away from said core-wall structure about said double hinge means, each double hinge means having two pivot axes disposed along and inwardly from a corresponding one of said wall faces, each double hinge means disposed closer to a corresponding corner than it is the other corners, said secondary support means forming rigid angles at the corners.

4,520,989

CONCRETE CORE-WALL FORM AND STRIPPING ASSEMBLY THEREFOR

Frank Digh, Davidson, N.C., assignor to Harsco Corporation, Wormleysburg, Pa.

Filed Apr. 23, 1984, Ser. No. 602,892
Int. Cl.³ E04G *15/06*; B28B *7/30*
U.S. Cl. 249—13 **18 Claims**



1. An inwardly articulated form assembly for forming a rectangular shaped concrete core-wall structure comprising:

a primary form having exterior wall faces and corners defining a rectangle corresponding to said concrete core-wall structure to be formed,

each of said wall faces having a double hinged vertically extending seam such that there is at least one seam closely adjacent each of said corners, and

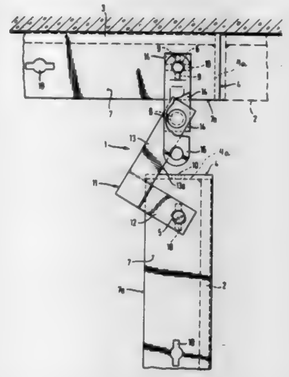
a secondary support means engaging interior portions and corners of said primary form, said support means effecting a compound movement thereof to cause each of said wall faces of said primary form to articulate inwardly away from said core-wall structure about said double hinged seam, and wherein said secondary support means comprises a waler member extending inside of each wall of said primary form in a plane normal thereto and an extension member extending from an associated waler member, each waler member extending for affixation to the extension member associated with an adjacent waler member.

4,520,990

DEVICE FOR SEPARABLY CONNECTING NEIGHBORING PANELS IN CONCRETE FORMS

Josef Maier, Schwimmbadstr 3, D-7611 Steinach, Fed. Rep. of Germany

Filed Mar. 30, 1983, Ser. No. 480,414
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213482
Int. Cl.³ E04G *11/10*
U.S. Cl. 249—47 **26 Claims**



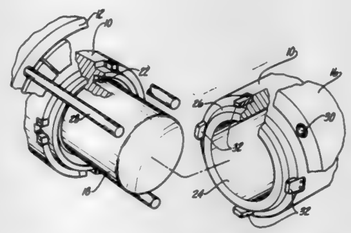
1. In a form, particularly for the pouring of concrete ceilings or the like, the combination of neighboring first and second panels respectively having aligned first and second flanges and prefabricated openings in such flanges; and a device for separably connecting said panels, comprising a first section including a first projection removably received in an opening of said first flange, a second section including a second projection removably received in an opening of said second flange, and means for movably coupling the first and second sections to each other so that one of said panels and the respective section can be moved with reference to the other panel and the respective section.

4,520,991

APPARATUS FOR MAINTAINING UNIFORM WALL THICKNESS IN HOLLOW MOLDED PLASTIC ARTICLES

Ilija Letica, 1700 W. Hamlin Rd., Rochester, Mich. 48063

Filed Mar. 8, 1984, Ser. No. 587,588
Int. Cl.³ B29C *1/00*; B29F *1/022*
U.S. Cl. 249—122 **4 Claims**



1. Apparatus for maintaining a diametrically uniform wall thickness in a hollow molded plastic article such as an open-ended container comprising:

a male mold element having a first exterior portion defining the interior configuration of the article and a second exterior portion defining a striking surface;

a female mold element having a first interior portion defining the exterior configuration of the article and a second exterior portion defining a second striking surface;

said male and female elements being telescopically interfitting with one another along a common axis with said exterior and first interior portions in spaced apart relation to define a mold cavity for said article and with the first and second striking surfaces in mutual engagement;

a plurality of axially extending guide blocks mounted on one of said mold elements in circumferentially spaced relation adjacent the striking surface thereof;

a plurality of pockets formed in the other of said mold elements adjacent the striking surface thereof and in axially alignment with said guide blocks, each of said pockets having a pair of opposing, interior side surfaces; and

first and second reversely similar wear plates mounted within each of said pockets adjacent the opposing side surfaces thereof to define precise openings of a circumferential width closely conforming to the circumferential width of the guide blocks;

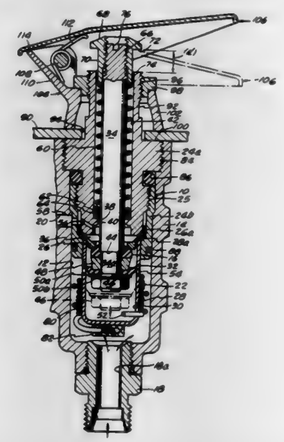
thereby to permit telescopic interfitting of said male and female mold elements in an axial alignment which produces a uniform radial thickness of said mold cavity about said axis.

4,520,992

SLOW-CLOSING VALVE MECHANISM

Ralph L. Sheffer, Arcadia, Calif., assignor to Adams Rite Products, Inc., Glendale, Calif.

Filed Jun. 22, 1983, Ser. No. 506,736
Int. Cl.³ F16K *31/12*
U.S. Cl. 251—48 **15 Claims**



1. A slow-closing valve mechanism for controlling the communication between main inlet and outlet liquid flow passages in a valve housing comprising:

a cylinder forming a timing chamber having a valve seat at one end and an inwardly adjacent main flow inlet, and a bleeder opening at its opposite end;

a valve stem extending through said valve seat into said chamber;

a piston on the end of said stem in the chamber;

a valve member on said piston movable into seated and non-seated relation with said seat;

means normally biasing said piston and said valve member in a direction toward said valve seat;

means for manually moving said piston and said valve member in a direction away from said seat; and

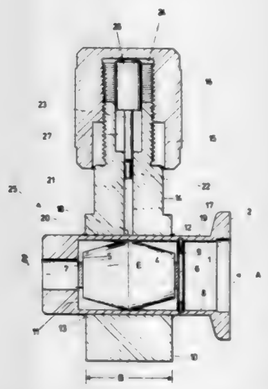
means comprising an elongate capillary tube having convolutions adjacent said opposite end and providing a fixed hydraulic flow passage for controlling flow through said bleeder opening, the inlet end of said tube being in communication with said main inlet flow passage, and the outlet end of said tube being connected with said bleeder opening.

4,520,993

METERING VALVE

Siegfried Schertler, In der Au 6, CH9469 Haag, Switzerland

Filed Dec. 27, 1983, Ser. No. 565,615
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1982, 3248150
Int. Cl.³ F16K *31/12*
U.S. Cl. 251—57 **14 Claims**



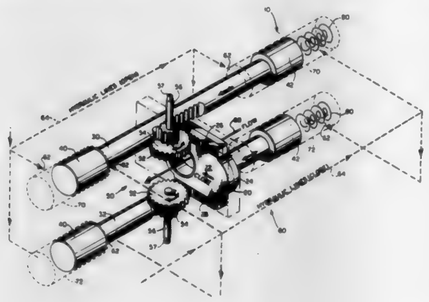
1. Metering valve for use in high vacuum installations comprising a valve housing, a valve body located within said valve housing, said valve body is rotationally symmetrical about a first axis, said valve housing including an axially extending elastically deformable tubular member having an outside surface and an inside surface with the axis of said tubular member being coaxial with the first axis of said valve body, said valve body having an active metering position and in the active metering position said valve body is located in said tubular member, a sleeve member laterally enclosing said tubular member at least in the axially extending region containing the active metering position of said valve body, said sleeve member is tightly sealed to said tubular member, at spaced locations in the axial direction of said tubular member, said sleeve member has an inside surface in closely fitting relation with the outside surface of said tubular member so that a joint is formed therebetween, said sleeve member has a bore therein with one end of the bore located at said inside surface of said sleeve member so that the one end of said bore opens to the outside surface of said tubular member and to the joint between said inside surface of said sleeve member and said outside surface of said tubular member, said metering valve is an all metal design with said tubular member and sleeve member each being formed of metal, said sleeve member is of a significantly greater wall thickness than said tubular member, and said bore in said sleeve is arranged to contain a fluid medium so that under pressure said fluid medium in contact with the outside surface of said tubular member flows into the joint between said sleeve member and tubular member and elastically deforms said tubular member without deforming said sleeve member due to the wall thickness differences between said sleeve member and tubular member and effects an inward movement of said tubular member relative to said valve body for at least partially closing the metering valve.

4,520,994

SUB-SURFACE SAFETY GATE VALVE

Jack J. DeWald, 7323 W. Roadway, New Orleans, La. 70124

Division of Ser. No. 61,076, Jul. 26, 1979, Pat. No. 4,392,631.
This application Jul. 7, 1983, Ser. No. 511,459
The portion of the term of this patent subsequent to Jul. 12, 2000, has been disclaimed.
Int. Cl.³ F16K *31/16*
U.S. Cl. 251—58 **10 Claims**



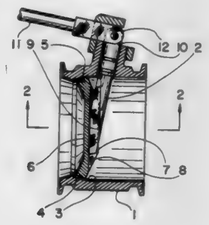
1. A gate valve apparatus, comprising:
a. an elongated generally cylindrical valve body providing a longitudinally running flow conveying bore;
b. a valve gate movable within the confines of the valve body between open flow and closed flow positions and including at least one gear receptive toothed rack;
c. gear structure means rotatably mounted within the valve body for engagedly moving the toothed rack of the valve gate between the open flow and the closed flow positions;
d. operator shaft means carried by and movable within the confines of the elongated valve body for engagedly rotating the gear structure means; and
e. hydraulic attachment means on the valve body for attaching a controlled hydraulic pressure source to the valve body for moving the operator shaft means relative to the valve body.

4,520,995

DISHED DISC FREE-DISC BUTTERFLY VALVE

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed Aug. 31, 1982, Ser. No. 413,531
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—162 **4 Claims**



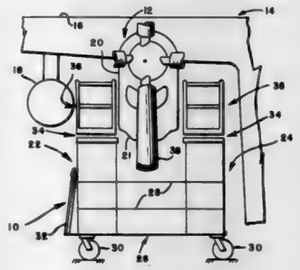
1. A free-disc butterfly valve comprising in combination: a valve body with fluid passage having an inner surface including an annular seat disposed on a plane substantially perpendicular to the central axis of said fluid passage whrein said annular seat substantially coincides with a spherical surface with center substantially coinciding with the central axis of said fluid passage; a stem disposed in an oblique angle with respect to the central axis of said fluid passage, said stem extending through one wall of said valve body rotatably and slidably in a leak-proof manner wherein the center-line of said stem substantially passes through the center of said spherical surface and the inner extremity of said stem includes a retaining slide rail disposed in an oblique angle with respect to the center-line of said stem on a plane substantially including the center-line of said stem; and a dished disc pivotably disposed within said fluid passage adjacent to said annular seat having a rim substantially conforming with said annular seat when said dished disc is rotated to the fully closed position and having a central portion dished away from a plane including said rim toward the center of said spherical surface, said dished disc slidably connected to the inner extremity of said stem by means of said retaining slide rail engaging a retaining slide groove disposed in the convex side of said central portion of said dished disc on a plane substantially parallel to a plane including said rim of said dished disc; whereby, a small amount of axial movement of said stem in one direction relieves the seating pressure between said annular seat and said rim of said dished disc and a small amount of axial movement of said stem in the other direction opposite to said one direction establishes said seating pressure.

4,520,996

AIRCRAFT ENGINE MAINTENANCE STAND

Vincent Viglione, 151 Sun Rise Ter., Springfield, Mass. 01119, and Jack L. Tyndall, 327 Greenaway Dr., Springfield, Mass. 01109

Filed Oct. 2, 1984, Ser. No. 656,843
Int. Cl.³ B66F *5/04*
U.S. Cl. 254—9 C **1 Claim**



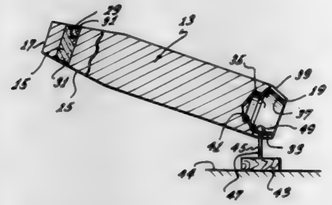
1. An aircraft maintenance stand for use on devices placed on the wings of aircraft comprising:
a rectangular base;
a fixed working platform mounted within said base so that personnel may stand thereon to reach the bottom of said device;
lockable caster wheels, said wheels rotatably affixed to said base at the corners of said base;
a pair of support structures, each of said support structures being rectangular shaped and affixed to said base on opposite sides of said base, said fixed working platform being positioned between said support structures, each of said support structures having four corner posts, at least one diagonal brace connected between two adjacent corner posts, and means for horizontally connecting adjacent posts on said support structure;
means for connecting said support structures together;
a hydraulic lift for each of said support structures, said lift comprising a bottom frame, a top frame, a pair of scissors pivotally attached between said bottom and top frame, a manually operative hydraulic pump means connected to said bottom frame and to said scissors for adjustably moving said scissors, said bottom frame fixedly attached to each of said support strucures;
a working platform, said working platform attached to said top frame of said hydraulic lift; and
a pair of ladders, one of said ladders fixedly attached to each of said support structures.

4,520,997

MODEL CONSTRUCTION TOOL

Allen E. Lorton, Sr., 15906 Mount Jackson St., Fountain Valley, Calif. 92708

Filed Oct. 31, 1983, Ser. No. 546,750
Int. Cl.³ B25C *11/00*
U.S. Cl. 254—26 R **8 Claims**



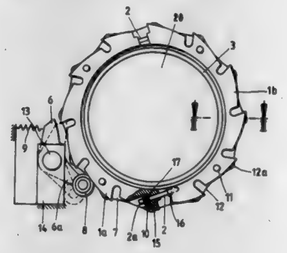
1. A model construction tool for use with pins of the type having a shank and a head and used in model construction, said model construction tool comprising a rigid body having opposite ends, said body terminating in a hammer surface at one of said ends which is adapted for pounding the pins into a surface, said body terminating at the other of said ends thereof in a generally annular, generally axially extending flange, said flange having at least one slot therein opening at said other end of the body, said slot being sized to receive the shank of the pin but being too small to allow the head of the pin to pass through it whereby the slot can be used to pull and remove the pin; said flange at least partially defining a cavity which opens at said other end of said body, said flange being segmented, by said slot; and wherein said flange has inner and outer surfaces and both said inner and outer surfaces taper radially inwardly as they extend axially toward said other end of said body.

4,520,998

SAFETY MECHANISM FOR A HOIST

Heinz Flaig, Bochum, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 413,694, Sep. 1, 1982, abandoned. This application Sep. 4, 1984, Ser. No. 647,026
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1981, 3137523
Int. Cl.³ B66D *5/04*; F16D *65/10*
U.S. Cl. 254—267 **4 Claims**



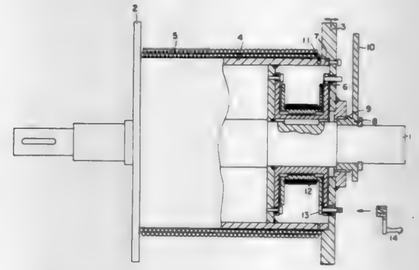
1. A safety mechanism for ensuring that a cable drum-operated hoist does not operate above a predetermined cable speed limit, comprising:
(a) a brake drum directly connected to the cable drum of the hoist and rotating therewith;
(b) a sprocket surrounding said brake drum;
(c) said sprocket being lined with a brake lining interposed between said brake drum and said sprocket;
(d) said sprocket being fixed to and rotatable with said brake drum by the frictional force exerted by said brake lining on said brake drum;
(e) said sprocket being provided at its periphery with at least one stopping slot;
(f) a latching means insertable into said stopping slot and serving to prevent rotation of said sprocket and said brake drum when the predetermined cable speed limit is exceeded;
(g) said sprocket comprised of at least two connected together segments, said segments being connected and selectively variably adjusted together by selective releasing means with respect to one another comprising screws passing from one of said segments into an adjacent of said segments, such that upon selective removal adjustment of said screws said brake lining is adjustably released from said brake drum;
(h) each of said segments being provided for each of said screws with spring support surfaces and the adjacent of said segments having receiving threads for said screws;
(i) said selective releasing means further comprising brake-pressure springs, located between the heads of said screws and said spring support surfaces; and
(j) said brake lining being protected on both ends, from contamination, by a pair of sealing rings directly interposed between said brake drum and said sprocket and directly adjacent to said brake lining and completely isolating said brake lining from contamination.

4,520,999

COMBINATION OF A HOISTDRUM AND HOISTCABLE FOR A WINCH

Franciscus M. Philips, Vermeerstraat 30, Alkmaar, and Koenraad A. de Jong, Planetenlaan 56, Opmeer, both of Netherlands

Filed Mar. 1, 1984, Ser. No. 585,046
Claims priority, application Netherlands, Mar. 14, 1983, 8300912
Int. Cl.³ B66D *1/00, 1/26*
U.S. Cl. 254—278 **10 Claims**



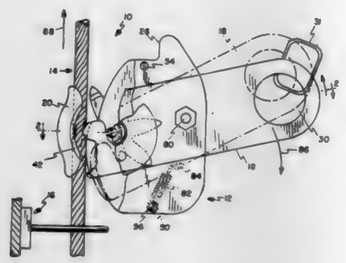
1. In a winch assembly, a hoist drum comprising a pair of spaced side flanges having a cylindrical wall therebetween, a shaft mounting said drum for rotation, an elongated main cable wrapped about the exterior of said cylindrical wall between said side flanges, said main cable having an outer end which is adapted to be displaced relative to the axis of rotation of said drum upon rotation of said drum and an inner end which is releasably attached to said drum at an anchorage location that is fixed in position relative to the axis of rotation of said drum, a spool disposed within said cylindrical wall of said drum in coaxial relation to said drum, an auxiliary cable wrapped about said spool, said auxiliary cable being thinner and more readily breakable upon application of tensile forces thereto than said main cable, said auxiliary cable having an outer end which is attached to said inner end of said main cable, and means for selectively releasing said inner end of said main cable from said anchorage location when said main cable is about to be completely payed out from said drum thereby to free said inner end of said main cable from its attachment to said drum and to permit said main cable to be payed out further and to unwind said auxiliary cable from said spool so as to draw the outer end of said auxiliary cable together with the inner end of said main cable away from said drum.

4,521,000

BYPASSING DOUBLE ACTION ROPE GRIP

Cleveland E. Dodge, Jr., R.D. 1-7, Pownal, Vt. 05261

Continuation-in-part of Ser. No. 501,623, Jun. 6, 1983,. This application May 2, 1984, Ser. No. 606,351
Int. Cl.[3] E06C *7/18;* A47L *3/04*
U.S. Cl. 254—391 10 Claims



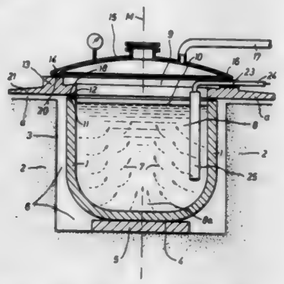
1. A rope grip comprising:
(a) guide means for defining a first gripping surface;
(b) operator means for defining a second gripping surface, said first and said second gripping surfaces defining a passage for receiving a cable therebetween;
(c) support means for rotatably supporting said operator means so that said second gripping surface is in a facing spaced relationship with said first gripping surface, said operator means being configured so that said second gripping surface will define a plurality of radii about its axis of rotation thereby changing the dimensions of said passage upon rotation of said operator means;
(d) a pair of rotatably secured support members with a plurality of spokes having coupling means for supporting said first gripping surface so that said rope grip will jam a cable between said first gripping surface and said second gripping surface upon rotation of said operator means, said support members allowing said rope grip to pass obstacles of specific dimensions along the cable; and
(e) securing means for securing said rope grip to a user.

4,521,001

APPARATUS FOR REMOVING GASES FROM MOLTEN METAL, ESPECIALLY MOLTEN ALUMINUM

Thomas Steinhäuser, Meschede, and Thomas Büch, Arnsberg, both of Fed. Rep. of Germany, assignors to Honsel-Werke AG, Meschede, Fed. Rep. of Germany

Filed Oct. 11, 1984, Ser. No. 659,660
Int. Cl.[3] F27B *11/08*
U.S. Cl. 266—208 12 Claims



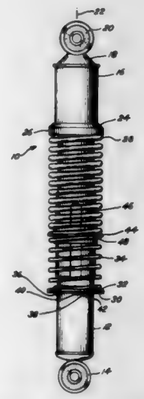
1. An apparatus for removing gases from molten metal, especially from molten aluminum, contained in a ceramic melting receptacle which is accommodated in a furnace; said melting receptacle has a bottom, sides, is open at the top, and has upper rim surfaces on said sides adjacent to said open top; said furnace is provided with a removable cover; a partial vacuum is produced between said cover and the surface of said molten metal; the improvement comprising:
an intermediate ring, which is disposed between said upper rim surface of said receptacle and said cover, and is adapted to support the latter; and
a sealing ring disposed between said intermediate ring and said upper rim surface of said receptacle; said sealing ring is comprised at least partially of fibrous material which can withstand high temperatures; at a surface pressure of greater than 15 kp/cm^2 on said sealing ring, the latter has a compressibility of at least 10% of its cross-sectional area.

4,521,002

SERIES SPRING SHOCK ABSORBERS

Jon M. Adorjan, Glen Ellyn; Michael H. Kobiske, St. Charles, and Michael P. Astorino, Naperville, all of Ill., assignors to Maremont Corporation, Carol Stream, Ill.

Filed Mar. 9, 1983, Ser. No. 473,578
Int. Cl.[3] B60G *15/02*
U.S. Cl. 267—8 R 2 Claims



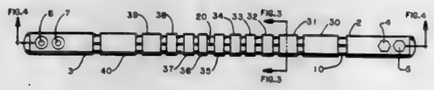
1. A spring-assisted shock absorber assembly comprising:
a shock absorber intermediate cylinder subassembly including an intermediate cylinder, with a cylindrical, intermediate cylinder exterior,
a shock absorber dust tube, the dust tube being slidably mounted to the shock absorber intermediate cylinder subassembly, with the dust tube having a dust tube exterior;
a first, annular, spring retainer fixed on the dust tube exterior and including a radially outwardly projecting, circumferentially extending, first spring end retaining flange;
a second, annular, spring retainer fixed on the intermediate cylinder exterior and including a radially outwardly projecting, circumferentially extending, second spring end retainer flange;
an annular sleeve protector including an annular collar and a plurality of longitudinally elongated, circumferentially spaced fingers extending from the collar and defining longitudinally extending, circumferentially spaced sleeve protection slots therebetween, the sleeve protection slots extending fully through the sleeve protector, the sleeve protector being press fit on the intermediate cylinder exterior between the spring retainers;
an annular spring guide including an annular guide mounting portion and a third radially outwardly projecting, circumferentially extending spring end retaining flange, the spring guide longitudinally slidably mounted on the sleeve protector with the guide mounting portion riding over the sleeve protector slots and the fingers;
a first coil spring having a first spring rate R_1 mounted on the shock absorber assembly and retained between the first spring end retaining flange of the first spring retainer and the third spring end retaining flange of the spring guide; and
a second coil spring having a second spring rate R_2 less than the first spring rate R_1 mounted on the shock absorber assembly and retained between the second spring end retaining flange of the second spring retainer and the third spring end retaining flange of the spring guide;
the combined spring rate R_C of the first and second springs equaling $(R_1 \times R_2)/(R_1+R_2)$ and upon full compression of the second spring, because the second spring ceases to act as a spring, the combined spring rate R_C equaling the first spring rate R_1; and
the springs being guided in movement, as the shock absorber assembly expands and contracts, by the spring guide.

4,521,003

TORSION LINK

Steven L. Odobasic, P.O. Box 21906, Denver, Colo. 80221

Filed Aug. 27, 1982, Ser. No. 412,095
Claims priority, application United Kingdom, Sep. 15, 1981, 8127751
Int. Cl.[3] B60G *11/18;* B64C *27/48;* F16F *1/14*
U.S. Cl. 267—57.1 A 44 Claims



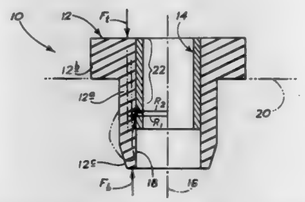
1. For use in providing a connection between relatively pivotable structural elements spaced from one another on a longitudinal axis, a link comprising: at least one elongate open-section member extending longitudinally of said axis between said elements, said open section member having a transverse web portion at least partially surrounding said longitudinal axis and terminating in elongate free edges movable longitudinally in opposite directions relative to one another when torque is applied to said transverse web portion at longitudinally spaced axial locations, means responsive to relative pivotal motion between said elements at said longitudinally spaced locations for applying a torque to said web portion of said open-section member without substantially constraining said relative movement between said free edges, and means yieldably engaging said open-section member intermediate its ends for stabilizing said web portion transversely under various loads while permitting said relative edge movement when said torque is applied, whereby the connection provided by the link is characterized by axial and transverse strength, high flexural stiffness, and low torsional stiffness.

4,521,004

VIBRATION-ISOLATING MOUNTING WITH LOAD-DIRECTING CHAMFER

William F. Caldwell, 3627 S.W. Hamilton Ct., Portland, Oreg. 97221

Filed Oct. 27, 1982, Ser. No. 437,157
Int. Cl.[3] F16F *1/36*
U.S. Cl. 267—141.4 2 Claims



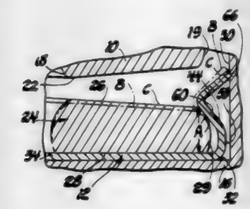
1. A bushing-sleeve combination for a vibration-isolating mounting, said combination, when in a relaxed state, comprising
a resilient elastomer bushing including an elongated cylindrical body portion having a sidewall, a flange portion integral with said body portion radiating outwardly therefrom adjacent one end of the body portion, a tapered portion joined to said body portion adjacent the other end thereof having an outer surface which decreases in diameter progressing axially away from said body portion, said tapered portion having a length which is greater than the thickness of said sidewall, and a continuous, uniform-diameter bore extending axially the entire length of the bushing, and
an elongated, cylindrical, rigid, hollow sleeve of uniform outside diameter fixably received within said bore, with one end of the sleeve being substantially coplanar with that surface of said flange portion which faces axially away from said body portion, said sleeve having an axial length less than that of said bore.

4,521,005

SPRING RETAINER

Sergio L. Calderoni, Dearborn, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 1, 1983, Ser. No. 528,437
Int. Cl.[3] F16F *1/12*
U.S. Cl. 267—179 3 Claims



1. A spring mount for releasably retaining a substantially cylindrical helical coil spring to a body, said spring being of the type having helically rising coils with the first coil having a lower surface and a helically rising upper surface, comprising,
a base engageable with the lower surface of the first coil,
a plurality of generally axially extending tangs circumferentially disposed about the base and joined thereto so as to be radially movable about their juncture with the base,
each tang including a retention wall with a bias portion extending generally radially relative to the base and axially spaced from the base a distance to define a helix angle in cooperation with the bias portion of another tang, said helix angle so defined substantially matching the helix angle of the upper surface of the first coil, whereby the first coil of the spring when attached to the mount has its lower surface engaging the base and its upper surface engaging the bias portions of the tangs, each said tang moving radially in response to relative rotation of said spring and said base to shift circumferentially the point of engagement of its bias portion with said upper surface,
and a latching member on at least one of the tangs, said latching member axially spaced from the base for movement radially with said tang between a first position retaining the spring to the body at one said point of engagement and a second position releasing the spring from the body at another said point of engagement.

4,521,006

REMOVABLE FENCE FOR TABLE SAW

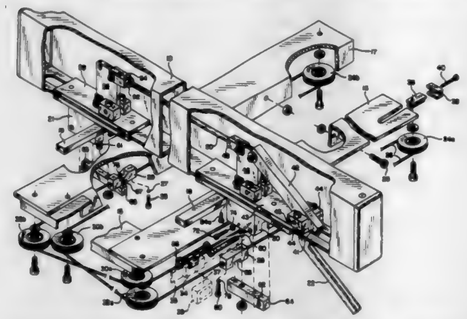
Deryl P. Waters, 4525 NE. 37th, Portland, Oreg. 97211

Filed Jan. 24, 1983, Ser. No. 460,619
Int. Cl.[3] B23Q *3/02*
U.S. Cl. 269—304 13 Claims

1. In a table saw system having a table and an elongate fence having two ends for maintaining parallelism of objects to be cut relative to a planar saw blade, the combination comprising:
(a) at least two flexible elongate members extending substantially parallel to each other on opposite sides of the table and interconnected for movement in unison in a direction substantially perpendicular to the plane of the sawblade, saw members having respective engagement means affixed thereto at respective points equidistant from the plane of said sawblade for positioning said fence parallel

to said sawblade, said flexible elongate members being movable transversely toward and away from said table, and said engagement means being movable into and out of abutment with said table by movement in unison with said flexible elongate members toward and away from said table; and

(b) locking means mounted on said fence for selectively



moving said engagement means into and out of abutment with said table by said movement in unison with said flexible elongate members and thereby selectively holding each of said engagement means in frictional abutment with said table to prevent said fence from moving relative thereto when said locking means is in a locked position and for permitting movement of said fence along said table when said locking means is in an unlocked position.

4,521,007

BRAKING BRUSHES IN FOLDING APPARATUS OF ROTARY PRINTING MACHINES

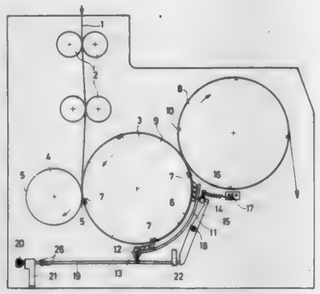
Walter Darda, Eppelheim, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jun. 15, 1984, Ser. No. 620,859

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321577

Int. Cl.³ B42C *1/04;* **B65H** *23/08*

U.S. Cl. 270—47 **5 Claims**



1. Braking-brush assembly in folding apparatus of a rotary printing machine having braking brushes for stretching web sections which are being conveyed in a given direction on a folding cylinder of the folding apparatus, the braking brushes individually being disposed so as to match the curvature of the cylinder and being distributed over the length of the cylinder, comprising a spindle and a cross bar both spaced from one another and extending transversely to the given direction in which the web sections are being conveyed, the braking brushes being articulatingly fastened at lower ends thereof to said spindle and at upper ends thereof to said cross bar, and respective levers supporting said cross bar at each end thereof, said cross bar being independently adjustable by the respective levers for pressing the braking brushes to a greater and lesser extent selectively against the web sections being conveyed on the cylinder.

4,521,008

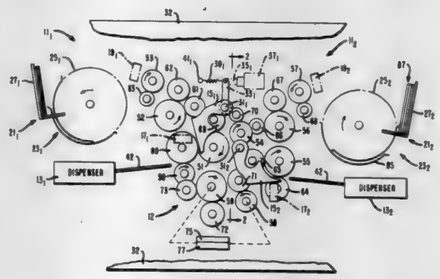
FAIL SAFE DOCUMENT DISPENSING SYSTEM

Robert H. Granzow, Miamisburg; Desh B. Gupta, Dayton; Kimbrough I. Myers, Kettering, and Mark D. Filliman, Beavercreek, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 3, 1983, Ser. No. 471,921

Int. Cl.³ B65H *5/22*

U.S. Cl. 271—3 **19 Claims**



1. An article dispensing system comprising:

first and second article dispensing subsystems, each of said article dispensing subsystems comprising:

dispensing means responsive to a first signal for either sequentially dispensing articles therefrom or for generating a second signal when no articles are being dispensed therefrom;

an output receptacle;

conveying means for feeding articles from said dispensing means to said output receptacle; and

diverter means being responsive to a third signal for diverting articles from said associated dispensing means to said output receptacle of the other one of said article dispensing subsystems; and

means being responsive to said second signal from one of said subsystems for selectively generating first and third signals to cause articles to be fed to said output receptacle in said one of said subsystems from said dispensing means in the other one of said subsystems.

4,521,009

PORTABLE EXERCISE DEVICE

Gary G. Pomeroy, 117 Glenside Tr., Sparta, N.J. 07871

Filed Aug. 16, 1982, Ser. No. 408,168

Int. Cl.³ A63B *23/04*

U.S. Cl. 272—73 **9 Claims**

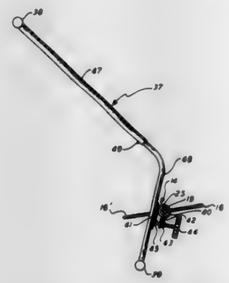
1. An easily portable device for exercising a person's legs or arms comprising

a curved frame, said frame having feet on one end for supporting the device on a surface and handles being located on both sides of the plane defined by the curve of the frame, whereby to give the device stability in use when the user is in a sitting position and is grasping the handles, the mid-section of said frame is curved rearwardly in cantilevered fashion from the principal plane defined perpendicular to the handles and feet;

a pedal assembly, said pedal assembly comprising an axle mounted on said frame having a pair of diametrically opposed crank bars affixed on opposite ends of said axle, said crank bars providing pedals for causing said axle to revolve;

means providing resistance to the rotation of said axle including

a resilient single piece clamp sleeve fitting around the axle



with one end of the sleeve being fixed relative to said frame and the other movable end being resiliently and adjustably pressed toward said fixed end by action of a screw rotating in a threaded nut fixed to the frame.

4,521,010

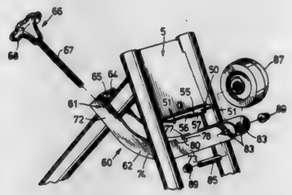
EXERCISER TENSION DEVICE ASSEMBLY

Daniel G. Hahn, 1040 E. North Ave., Olney, Ill. 62450

Filed Aug. 15, 1983, Ser. No. 523,278

Int. Cl.³ A63B *69/16*

U.S. Cl. 272—73 **10 Claims**



1. In a bicycle type exerciser in which a wheel on which a tire is mounted is supported for rotation off the ground between two spaced legs of a fork, the improvement comprising a head plate extending between and secured to said fork legs above said wheel, said plate having at its lower edge an outturned lip; a down tube secured at its upper end to said head plate and extending from a position above said wheel downwardly in a direction away from said wheel, and means for braking said wheel adjustably through a range of resistance, said means comprising a yoke, U-shaped in plan, having two arms and a bridging section between them at one end of said arms, said bridging section extending across said down tube on a side of said down tube away from said wheel and said arms having at their free ends means for mounting a braking element between them to engage said wheel, each of said arms having a knuckle member engaging said lip to form a hinge connection between said plate and said yoke, and means extending between said down tube and said bridging section for selectively rocking said yoke about said hinge connection to move said braking element into tighter or looser engagement with said wheel.

4,521,011

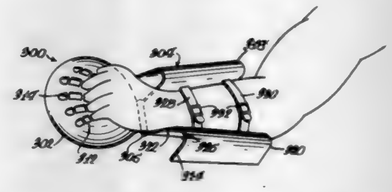
HAND ENGAGEABLE AQUATIC EXERCISE ASSEMBLY

Daniel S. Solloway, 1315 18th St., Woodward, Okla. 73801

Continuation-in-part of Ser. No. 314,690, Oct. 26, 1981, Pat. No. 4,411,422, which is a continuation-in-part of Ser. No. 79,966, Sep. 28, 1979, Pat. No. 4,311,306. This application Sep. 30, 1982, Ser. No. 429,270

Int. Cl.³ A63B *21/00*

U.S. Cl. 272—116 **15 Claims**



14. A hydrodynamic stroke builder for use in water to strengthen the user's arm muscles, comprising:

a hand section having manually grippable portion and a water impingement surface; and

a substantially rigid forearm section operatively associated and cooperating with said hand section for engaging and deflecting water and exerting hydrodynamic resistive forces on the user when said hydrodynamic stroke builder is moved in the water, said substantially rigid forearm section having a generally imperforate forearm-engaging portion and at least one substantially stationary, generally rigid, U-shaped fin fixedly secured to said forearm-engaging portion.

4,521,012

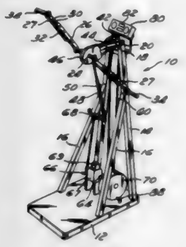
VARIABLE RESISTANCE EXERCISE APPARATUS AND IMPROVED METHOD OF EXERCISING

Theodore E. Cosby, Newport Beach, Calif., and Patrick J. Cunningham, 600 Ladera Vista Way, Fullerton, Calif. 92631, assignors to Patrick J. Cunningham, Fullerton, Calif.

Filed Jan. 31, 1983, Ser. No. 462,555

Int. Cl.³ A63B *21/22*

U.S. Cl. 272—73 **11 Claims**



1. An improved exercise apparatus comprising:

a platform adapted to be positioned upon a support surface;

a column extending from said platform in a generally vertical orientation, said column comprising a pair of struts extending from said platform;

a shaft mounted between said struts;

a yoke having a first end pivotally connected to said shaft and a second end extending away from said shaft;

a hand crank mounted to said second end of said yoke such that pivoting said yoke upon said shaft provides means for adjusting the distance between said hand crank and said platform to cause a full extension of one of the upper extremities of a user standing on said platform and grasping said hand crank, thereby causing the user's body to rotate about the hips and waist, causing the user's torso to

stretch and twist during cycling motion of said hand crank to exercise the muscles of the user's waist, abdomen, chest, back, and shoulders;

means for retaining said hand crank at a selected distance from said platform; and

a drive train connected to said hand crank, said drive train including:

a first gear and a second gear mounted to said shaft;

drive means for transmitting force between said hand crank and said first gear;

a third gear drivingly connected to said second gear; and

means for applying force to said third gear to provide a selected resistance through said drive train to cycling motion of said hand crank.

4,521,013

RESILIENT TYPE EXERCISING DEVICE

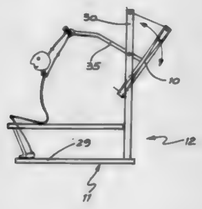
Andrew W. R. Dofel, Castle Hill, Australia, assignor to Supafit Gymnasium Equipment Pty. Ltd., Castle Hill, Australia

Filed Mar. 17, 1983, Ser. No. 476,355

Claims priority, application Australia, Apr. 8, 1982, PF3538; Oct. 7, 1982, PF6240; Nov. 9, 1982, PF6716

Int. Cl.³ A63B *21/04*

U.S. Cl. 272—136 **15 Claims**



7. An exercise device having a generally rigid frame with a ground engaging base and a post extending generally upwardly from the base, a resistance assembly comprising a hollow elongated casing, a carriage mounted within the casing and movable longitudinally therewithin, a resilient member attached to said carriage and said casing for developing a tensional force that resists the longitudinal movement of said carriage in a predetermined direction, and a pulley system mounted within the casing for longitudinally moving said carriage, said pulley system including a cable which extends outwardly of the casing and is looped about the carriage and which, in response to being pulled, causes the carriage to move longitudinally in said predetermined direction against said tensional force developed by said resilient member, and wherein mounting means are provided for mounting said resistance assembly in several alternative positions on said base or post to enable a user to perform a variety of exercises by pulling on said cable to thus tension said resilient member.

4,521,014

VIDEO GAME INCLUDING USER VISUAL IMAGE

David H. Sitrick, 820 Burchell Ave., Highland Park, Ill. 60035

Filed Sep. 30, 1982, Ser. No. 431,153

Int. Cl.³ A63F *9/22*

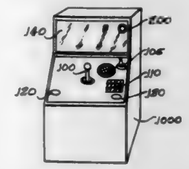
U.S. Cl. 273—1 GC **12 Claims**

1. A video game system comprising:

user input apparatus for providing signal outputs responsive to user provided stimulus;

control means for providing a video game audiovisual presentation, said presentation comprising a sequence of display images, said display images each comprising the combination of a plurality of predetermined imagery segments including a preselected character imagery segment, said sequence order of presentation determined responsive to a non-user defined predefined set of game rules and responsive to the user input apparatus;

means for creating a user video image responsive to the user input apparatus including means for storing said user video image in a memory; and



means for associating said user video image with said preselected character imagery segment such that said user video image is incorporated into said audiovisual presentation of said video game.

4,521,015

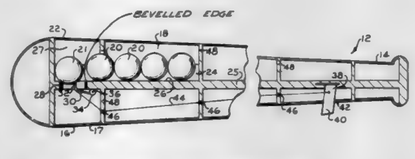
TOY BASEBALL BAT DEVICE

Joseph A. Carafeno, 15 Miller Rd., Northford, Conn. 06472

Filed Dec. 19, 1983, Ser. No. 563,134

Int. Cl.³ A63B *69/40*

U.S. Cl. 273—26 B **12 Claims**



1. A toy baseball bat device comprising:

an elongated member having an exterior configuration in the form of a baseball bat of cylindrical cross section having a smaller diameter handle end portion and an oppositely disposed larger diameter hitting end portion,

said hitting end portion forming an interior chamber for housing a plurality of balls and having a radially disposed ejection aperture adapted to allow the ejection of a ball radially outwardly from said interior chamber,

a ball support means within said interior chamber for supporting an individual ball at a predetermined position in alignment with said ejection aperture to permit the ball to be impacted and driven radially outwardly through said ejection aperture,

means for guiding the balls within said chamber to said ball support means,

a striker element pivotally mounted within said chamber for pivotal movement between first and second positions so as to strike a ball mounted on said support means at said predetermined position as said striker element pivots towards said first position to drive the ball radially outwardly through said ejection aperture, said second position being spaced from a ball supported on said support means,

a torsion spring means for propelling said striker element towards said first position to strike a ball mounted on said support means, said torsion spring means being connected to said striker element and normally biasing said striker element towards said first position, and

trigger means operationally connected to said striker element for momentarily withdrawing said striker element towards said second position into spaced disposition from a ball supported on said support means against the biasing force of said torsion spring means and adapted for abrupt release of said striker element whereby the biasing force of the torsion spring means pivots said striker element toward said first position to impact a ball supported by said support means at said predetermined position and drive said ball radially outwardly through said ejection aperture.

4,521,016

BALL GAME APPARATUS

Yasuhiro Tominaga, 3 Wills Ct., Wyuna Close, Mt. Ommaney, Queensland, Australia (4074)

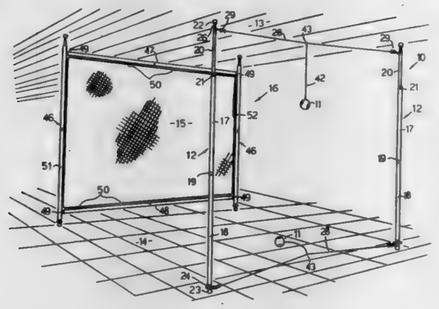
PCT No. PCT/AU81/00079, § 371 Date Feb. 23, 1982, § 102(e) Date Feb. 23, 1982, PCT Pub. No. WO82/00008, PCT Pub. Date Jan. 7, 1982

PCT Filed Jun. 26, 1981, Ser. No. 355,575

Claims priority, application Australia, Jun. 26, 1980, PE4224

Int. Cl.³ A63B *61/00*

U.S. Cl. 273—29 A **12 Claims**



12. Apparatus for practicing a ball game or sports, comprising in combination:

ball means;

elastic cord means connected at one end to said ball means, said cord means being elastically stretched subsequent to striking of said ball means causing return of said ball means;

slack net means having a front side and a rear side, said ball means disposed in front of said slack net means and in the path of movement thereof, for dissipating substantially all of the stored energy in the ball means and thus reducing the rate of return of the ball means;

supporting means placed in front of said slack net means, said supporting means being separated from the slack net means by a predetermined distance;

means for anchoring the other end of the elastic cord means; and

sheave means arranged on said supporting means for connecting said ball means to said supporting means by said cord means extending through said sheave means.

4,521,017

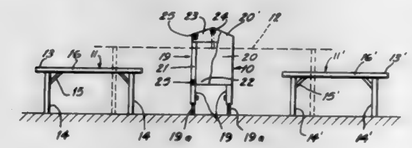
TABLE TENNIS GAME AND TRAINING APPARATUS

James B. McCready, 6 Tods Driftway, Old Greenwich, Conn. 06870

Filed Feb. 23, 1984, Ser. No. 582,958

Int. Cl.³ A63B *67/04*

U.S. Cl. 273—30 **13 Claims**



1. A tennis game and training apparatus comprising a net structure having a width, depth and height in combination with a pair of identical tables, each of said tables having a width somewhat shorter than the width of said net structure, a depth which is approximately two thirds its width and a height of about 18 to 22-inches, each table being transversely divided into three equal size playing areas, the central playing area being added respectively to the right and left playing areas for designating the right and left service courts, and the tables being parallel to, and equally spaced from the net structure by a distance such that, for a player standing near the remote edge of one table, the remote edge of the opposing table subtends an angle corresponding to the angle subtended by one base line of a regulation court to a player standing on the opposing base line.

4,521,018

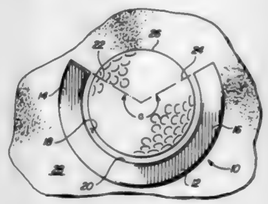
GOLF BALL POSITION MARKER

N. Eugene Cotchonis, 14750 Round Valley Dr., Sherman Oaks, Calif. 91403

Filed Oct. 3, 1983, Ser. No. 538,666

Int. Cl.³ A63B *57/00*

U.S. Cl. 273—32 A **1 Claim**



1. A marker for marking the position of a golf ball that is to be lifted from a putting green surface, said marker comprising a thin gage planar body including a first inner boundary defining a segment of a circle and a second outer boundary generally surrounding said first boundary, said segment defining an angle of greater than 180 degrees and less than 360 degrees, the size of said circle being such that said planar body may be moved vertically downwardly so as to pass closely over the golf ball to be marked onto the putting surface green to mark the position of the golf ball thereon, the thinness of said planar body being such that said planar body presents minimal obstruction to a putted golf ball rolling thereover.

4,521,019

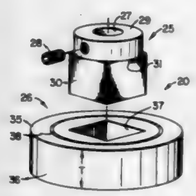
KICKER WHEEL WITH REPLACEABLE SURFACE FOR BOWLING APPARATUS

Joseph F. Prawdzik, Irving, Tex., assignor to Tiger Products, Inc., Irving, Tex.

Filed Jul. 22, 1982, Ser. No. 400,791

Int. Cl.³ A63D *5/02*

U.S. Cl. 273—49 **9 Claims**



9. A hub member for a kicker wheel assembly for a bowling ball return mechanism, said hub member comprising:

an upper portion having a shaft depending thereform,

a center bore through the longitudinal axis of said upper

portion and said depending shaft adapted to receive a shaft of said ball return mechanism;

a driving portion affixed on said depending shaft and having a non-circular outer periphery thereon, said driving portion being formed of polyurethane.

4,521,020

APPARATUS FOR DISPLAYING GROUPED CHARACTERS IN SCANNING TYPE DISPLAY

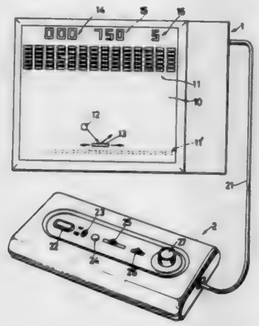
Masayuki Uemura, Kyoto; Akitsugu Murauchi, Osaka, and Takehiro Izushi, Kyoto, all of Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 84,136, Oct. 12, 1979, abandoned. This application Dec. 9, 1982, Ser. No. 448,412

Claims priority, application Japan, Dec. 5, 1978, 53-150782; Dec. 16, 1978, 53-155538; Apr. 24, 1979, 54-51114

Int. Cl.³ A63F *9/22*

U.S. Cl. 273—85 G **66 Claims**



1. An apparatus for displaying a group of characters (11) at predetermined positions on a screen of a display by repetitive horizontal and vertical scanning, said screen of said display comprising a relatively large number of dots in the horizontal and vertical directions, respectively, wherein each of said characters (11) includes an arrangement of dots arranged in a plurality of rows in the vertical direction and in a plurality of columns in the horizontal direction on the screen of said display, comprising: first storage means (RAM 31) having storing positions corresponding in number to the number of said characters (11) to be displayed for loading an information signal of one logic state in those storage positions corresponding to characters (11) to be displayed and for loading an information signal of the other logic state in those storage positions corresponding to characters (11) not to be displayed, horizontal direction addressing ring counter means for providing the same row addressing signal continuously and in the form of counting pulses corresponding to the horizontal width of each character (11) on the screen of said display at said predetermined positions, vertical direction addressing ring counter means for providing the same column addressing signal continuously and in the form of further counting pulses corresponding to the vertical width of each character (11) on the screen of said display at said predetermined positions, first reading means for reading said information from said storing positions of said first storage means (RAM 31) as addressed, and converting means responsive to said information indicating whether or not the character read by said first reading means is to be displayed, said converting means converting said information into an electrical signal for displaying said characters (11) at the predetermined positions on the screen of said display corresponding to said information indicating whether or not the character is to be displayed.

4,521,021

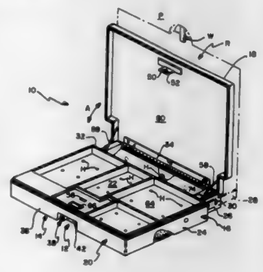
VIDEO GAME TABLE FOR AIRLINES COMMERCIAL VEHICLES OR THE LIKE

Claude E. Dixon, 104 Spree Ave., Grass Valley, Calif. 95945

Filed Feb. 1, 1983, Ser. No. 463,005

Int. Cl.³ A63F *9/22*

U.S. Cl. 273—148 B **11 Claims**



1. A tray table for the seat back of passenger vehicles or the like having an array of passenger seats disposed in rows and columns such that the rows and columns are aligned to provide registry between a back of one seat and front of another seat, said table comprising movable console means including video display means and video control means for said display and said table is provided with means for mounting it to a seat back and for movement independent of the seat back.

4,521,022

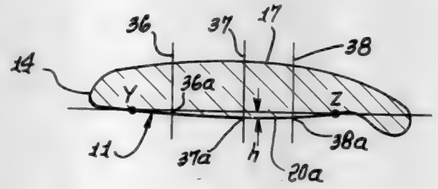
GOLF IRON FACE

Glenn H. Schmidt, 1857 Los Encinos, Glendale, Calif. 91208

Filed May 17, 1983, Ser. No. 495,520

Int. Cl.³ A63B *53/04*

U.S. Cl. 273—175 **7 Claims**



1. In a golf iron head having a heel, toe, bottom surface, a rear side and a front face to strike a ball, said front face angled from vertical in ball addressing position, the improvement comprising

(a) said front face having bulge curvature defined by the intersections with said face of planes generally normal to said front face, extending in heel to toe directions,

(b) said intersections defining curved lines which are substantially hyperbolic with forward convexity,

(c) said curved lines protruding forwardly, relative to a plane passing through vertically spaced points on the front face near the toe, and through vertically spaced points on the front face near the heel, said hyperbolic curved lines of intersection located within a trapezoidal area defined by said front face, the corners of said trapezoidal area defined by said points, the maximum forward protusion of said hyperbolic curved lines relative to said plane being less than $\frac{1}{8}$ inch.

4,521,023

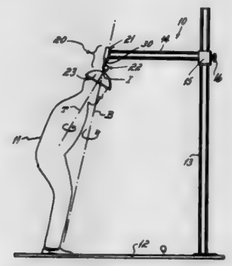
GOLF TRAINING DEVICE

Frank M. Williams, 121 W. Southington, Riverlee, Worthington, Ohio 43085

Filed Nov. 25, 1983, Ser. No. 554,889

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—183 B **8 Claims**



1. A golf training device to teach body movement during a golf swing which substantially maintains fixed the intersection of the user's torso axis and the user's body axis, said torso axis being defined as a line extending generally through the top of the user's head and a point midway between the user's hips, said body axis being defined as a line extending generally through a point midway between the outer surfaces of the user's eyes to a point midway between the balls of the user's feet, said axes intersecting at a point about at the top of the user's head, said device comprising:

a rigid arm adapted to be fixedly located in a generally horizontal orientation, and

head control means carried by the arm, said head control means comprising a cap for the user's head, first means for restricting head movement to free rotation about said body axis, and including resilient means for limited head movement along said body axis, and second means for restricting head movement to free rotation about said torso axis, said second means being fixed with respect to the first means, said head control means being operative to maintain substantially fixed the point of intersection of said torso and body axes during the user's golf swing.

4,521,024

APPARATUS FOR PLAYING A GAME

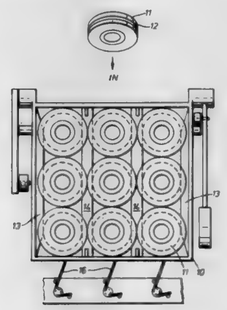
Brian P. Slade, Ashford, England, assignor to Seven Towns Limited, London, England

Filed Jan. 27, 1984, Ser. No. 574,418

Claims priority, application United Kingdom, Dec. 1, 1983, 8331790

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—271 **7 Claims**



1. Apparatus for playing a game, comprising a set of playing pieces having at least three distinct identifiable subsets and a playing surface arranged to receive the pieces and maintain them in a row and column matrix with pieces touching adjacent pieces defining the columns of said matrix and with said matrix being filled with less than the set of said pieces, guide means fixed in relation to said playing surface guiding the pieces for movement along the columns between their ends and permitting pieces to enter and leave each column from its ends so that insertion of a piece at one end of the column causes the pieces to be displaced along the column with a piece being discharged from the other end of the column, and means defining a unique direction in which pieces move along each column.

4,521,025

SEAL DEVICE

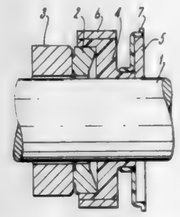
Per-Erik Leonardsson, Rönninge, Sweden, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 3, 1984, Ser. No. 606,440

Claims priority, application Sweden, May 13, 1983, 8302726

Int. Cl.³ F16J *15/36*

U.S. Cl. 277—89 **4 Claims**



1. A sealing device for a shaft comprising:

a first sealing ring having an end face and which is positioned around the shaft in non-rotatable engagement therewith;

a second sealing ring disposed adjacent said end face and being mounted for rotation with the shaft;

a resilient protection member which is secured to the shaft and is positioned on a portion of said second sealing ring to prevent accumulation of pollutants around said second sealing ring;

first gripping means clamped onto said resilient protection member for applying at least radial forces to said protection member which cause the latter to axially expand and urge said second sealing ring into contact with said end face of said first sealing ring; and

second gripping means attached to the shaft and contacting said first gripping means for preventing radial movement of said protection member.

4,521,026

SHAFT SEAL

Daniel L. Eide, Carmel, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 21, 1983, Ser. No. 534,386

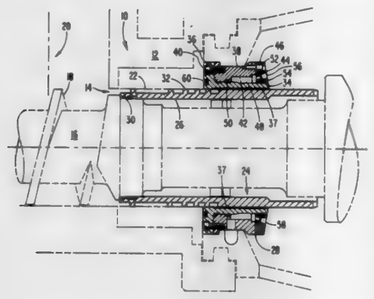
Int. Cl.³ F16J *15/34*

U.S. Cl. 277—134 **6 Claims**

1. In an apparatus which includes a housing having a passage extending from the exterior of the housing to an inlet opening within the interior of the housing through which dry particulate thermoplastic material enters the interior of said housing, a shaft rotatably supported in said housing and extending through said passage, and a seal between said shaft and a surface of said passage for limiting flow of the particulate material through said passage along said shaft, the improvement comprising

the seal including a sleeve surrounding and secured to the shaft to rotate therewith, said sleeve extending along said surface of the passage, and having in its outer surface a variable pitch thread with the threads being directed

toward the inlet opening within the housing so as to direct most of the particulate material entering the threads in a direction back into the housing upon rotation of the shaft but allowing a small amount of material to flow along the passage in a direction opposite to the interior of the housing;



the sleeve having a cylindrical portion extending along the surface of the passage from the threads to the exterior of the housing and being slightly spaced from said surface of the passage; and

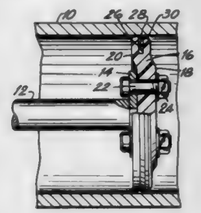
heat control means surrounding and being remote from said space between the cylindrical portion of the sleeve and the surface of the passage to maintain the small amount of material which flows into the space in a molten condition.

4,521,027

DOUBLE FLANGE SEALING MEMBER FOR SINGLE ACTION PISTON PUMP

Charles R. Marshall, Warwick, R.I., assignor to Dixon Industries Corporation, Bristol, R.I.

Filed May 17, 1984, Ser. No. 611,211
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—152 **18 Claims**



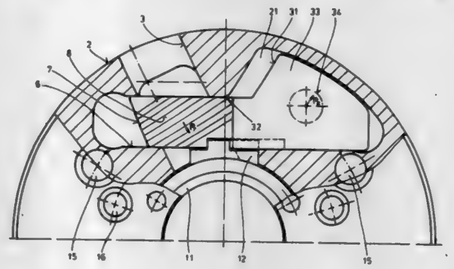
1. A one-piece, self-lubricating, thermoplastic sealing member suitable for mounting on a piston located within a piston and cylinder assembly that operates under differential pressure, said piston and cylinder capable of moving axially relative to one another, said sealing member comprised of an annular shaped body, a peripheral wall portion of which is radially cut into two flexible and resilient flanges of preselected length and thickness, said flanges being substantially in registry with one another, in radial alignment with a transverse axis of said sealing member in an initial position and can be bent in the vicinity of their respective bases in the same direction from said initial position to a preselected angle below about 20° relative to said transverse axis of said sealing member, said flanges having a memory which urges them to return to their initial prebent position, said sealing member adapted for disposition in an annular space between said piston and said cylinder so that: (1) the peripheral positions of said flanges are placed in continuous contact under tension with the annular surface of the inner walls of said cylinder, providing two discrete sealing engagements therebetween in seriatim, the memory of said flanges causing their peripheral portions to be urged radially against the annular surface of the inner walls of said cylinder so as to continuously compensate for any irregularities of the annular surface of the inner walls of said cylinder and maintain said sealing engagements during axial movement of the piston with respect to the cylinder, and (2) the peripheral portion of said sealing member which is oppositely disposed to said flanges is fixedly secured in said piston.

4,521,028

POWER OPERATED CHUCK HAVING CENTRIFUGAL FORCE COMPENSATION

Karl Hiestand, Pfullendorf, Fed. Rep. of Germany, assignor to SMW Schneider & Weisshaupt GmbH, Fed. Rep. of Germany

Filed Dec. 9, 1982, Ser. No. 448,238
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1981, 3148661; European Pat. Off., Feb. 10, 1982, 82109110.5
Int. Cl.³ B23B *31/14*
U.S. Cl. 279—1 C **25 Claims**



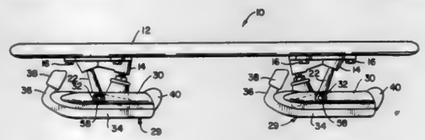
1. A power operated chuck for lathes, comprising a chuck body having a central bore with at least one groove extending radially of the bore, a jaw movable in the groove having a rear face with serrations, a receiving pocket defined in said body adjacent to the groove, a key bar movable in said pocket having a serrated edge engaged with the serrated edge of said jaw to shift said jaw inwardly and outwardly in the associated groove, a shifting element having a surface engageable with said key bar shifting said bar, said chuck having a free space alongside said receiving pocket and a centrifugal weight associated with and movable with said key bar and subject to centrifugal force during rotation of said chuck to act on said bar and said jaw to direct the radial force against said jaw in an amount to compensate for centrifugal force produced by the rotation of the chuck.

4,521,029

ICEBOARD

Thomas L. Mayes, 3913 South Rd., Chesapeake, Va. 23321

Filed Jun. 22, 1982, Ser. No. 390,971
Int. Cl.³ A63C *17/18*
U.S. Cl. 280—7.14 **9 Claims**



1. An iceboard comprising:

a platform,

a pair of trucks depending from the underside of the platform,

an axle extending laterally from each side of each truck,

a pair of skates, each having an ice-engaging pivotal movement about the axles, and

means for mounting said skates for unrestrained pivotal movement about the axles, said mounting means including for each of said skates, a transverse tube defined in a skate housing for receiving a bushing therein; a bushing having an axial length substantially equal to the axial length of said transverse tube and sized at its interior for receiving an axle therethrough, and means for pivotally securing said skate to said axle for free pivotal movement about said axle while preventing the skate from moving laterally along the axial length of said axle;

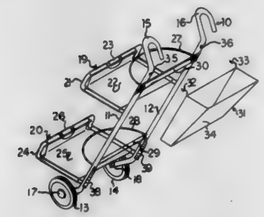
wherein one of the trucks depends from a forward portion of the platform, and each of the skates associated with the forward truck has a protrusion which extends upwardly to a height such that the upper terminus of said protrusion engages the forward portion of said underside of the platform as the skates pivot around the axle and prevent the forward portion of the platform from engaging the ice.

4,521,030

COLLAPSIBLE AND SLIDABLE CART

Jeffrey D. Vance, 7703 24th Ave., N., Hugo, Minn. 55038

Filed Aug. 9, 1982, Ser. No. 406,291
Int. Cl.³ B62B *1/04*
U.S. Cl. 280—42 **20 Claims**



1. A collapsible cart for transporting articles having at least two wheels, at least one article supporting surface and being collapsible for storage, said cart comprising:

a. two generally spacially parallel support members, each having a handle portion for gripping at its upper end and a wheel mounted for rotation at its lower end, said two parallel support members being of a light-weight, tubular construction and each having a tubular post member with an indented ring portion intermediate its length extending generally perpendicularly therefrom,

b. at least one tray member for supporting articles, said tray member extending forward and outwardly from said spacially parallel support members and being attached for rotation to the post member extending from each said support member, said tray member further comprising an elongated tubular perimeter member having an indented circular wall structure at its opposite ends for receiving and for the mating rotational movement with the indented ring portions of said post members, and,

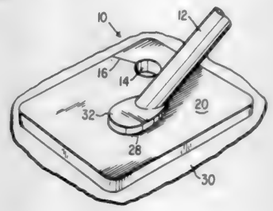
c. means to lock said two parallel support members in a fixed and predetermined spacially parallel configuration by controlling the rotational movement of said perimeter member of said tray member relative to said support members, whereby, a user by operating said lock means can place said cart in either a configuration of use by fixing said tray member generally in a horizontal position or in a configuration for storage by rotationally collapsing the tray member of said cart.

4,521,031

TWO-WHEELED VEHICLE KICKSTAND SUPPORT PAD

Robert M. Huth, 3480 Mirror La., Cincinnati, Ohio 45211

Filed Mar. 7, 1983, Ser. No. 472,584
Int. Cl.³ B62H *1/02*
U.S. Cl. 280—293 **8 Claims**



1. A device for maintaining two-wheeled vehicles having a kickstand in the upright position on soft supporting surfaces, said device comprising:

a thin resilient, planar member, having at least two sides, each side of said member being equally capable of supporting said vehicles;

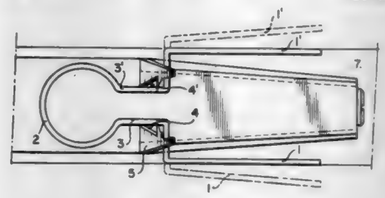
means for reinforcing said planar member for preventing said kickstand from sinking into said soft supporting surface.

4,521,032

BRAKE DEVICE FOR SKIS

Gaston Haldemann, Fürigen, and Francois Wirz, Savièse, both of Switzerland, assignors to Haldemann A.G., Stans, Switzerland

Filed Jan. 18, 1983, Ser. No. 458,910
Claims priority, application Switzerland, Jan. 27, 1982, 495/82
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 **10 Claims**



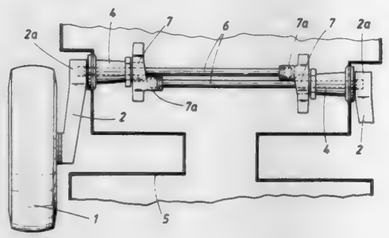
1. Device for braking skis, characterized by the fact that it comprises two lateral arms resiliently interconnected to each other in a manner to maintain them spaced apart, each arm, under the influence of this resilient action, bearing against an incline forming an angle with the upper surface of the ski and which has an element secured to the ski, and by the fact that a forward portion interconnecting the two lateral arms serves as a lever and is adapted to be actuated by a ski boot to control the movement of these arms between an active position, in which they project beneath the sole of the ski and are outwardly directed from the latter, and an inactive position, in which they are retracted substantially parallel to and above the upper edges of the ski, and a casing containing at least one portion of the binding device of the boot on the ski, said lateral arms being introduced with play each through a cylindrical axle pivotable on itself and transversely slidable in the lateral walls of the casing, each transverse cylindrical axle being provided with a finger coacting with inclines on the casing.

4,521,033

ASSEMBLY COMPRISING A FRAME, UNSTEERED WHEELS AND SPRING SUSPENSION OF A MOTOR VEHICLE

Hugo Lenhard-Backhaus, Vienna, and Kurt Krumpeck, Schützen, both of Austria, assignors to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed May 4, 1983, Ser. No. 491,383
Claims priority, application Austria, May 11, 1982, 1835/82
Int. Cl.³ B60G *11/20*
U.S. Cl. 280—700 **3 Claims**



1. An assembly comprising a frame for a motor vehicle adapted to be driven in a direction of travel, a pair of unsteered wheels disposed on opposite sides of said frame, and a spring suspension comprising a respective longitudinal control arm connected to each one of the wheels for constraining the wheel, each control arm having a hub, a respective bearing sleeve having one end secured to the frame and associated with a respective one of the control arms, the control arm hub being rotatably mounted in the associated bearing sleeve, the bearing sleeves having inner ends facing each other, a respective torsion bar associated with each wheel control arm for urging said control arm to a predetermined angular position about the axis of the associated bearing sleeve and having two ends, the torsion bars having axes extending parallel to each other transversely to the direction of travel and the torsion bars being arranged one behind the other in said direction, and a respective anchor secured to said frame against rotation about the axis of an associated one of the torsion bars, one end of each torsion bar being fixed to the hub of the associated control arm and the other torsion bar end being fixed to be associated anchor, wherein the improvement comprises

(a) the anchors being concentrically mounted on the facing inner ends of the associated bearing sleeves and

(b) each anchor being a casting having a sprue eccentric with respect to the axis of the associated bearing sleeve, the other torsion bar ends being fixed in the eccentric sprues whereby the fixed other end of one torsion bar is offset from the fixed one end of the other torsion bar.

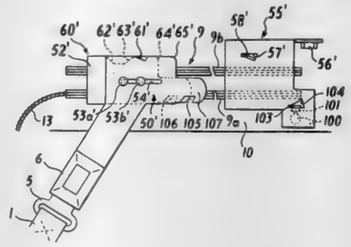
4,521,034

LOCKABLE MOVING BELT ANCHOR FOR PASSIVE VEHICLE OCCUPANT RESTRAINT BELT SYSTEMS

Juichiro Takada, Tokyo, Japan, assignor to Takata Corporation, Tokyo, Japan

Division of Ser. No. 44,196, May 31, 1979,. This application Mar. 17, 1982, Ser. No. 359,116
Claims priority, application Japan, Jun. 8, 1978, 53-077236; Jun. 8, 1978, 53-068348; Jun. 9, 1978, 53-068758; Jun. 15, 1978, 53-081113; Jun. 29, 1978, 53-078097; Feb. 21, 1979, 54-018500; Feb. 28, 1979, 54-021883; Feb. 28, 1979, 54-024068; Mar. 8, 1979, 54-030229; Mar. 26, 1979, 54-034247
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 **12 Claims**

1. In a passive vehicle occupant restraint belt system having a restraint belt which can be shifted between an occupant-restraining configuration and an occupant-releasing configuration by movement of a portion thereof along a path defined by a guide rail affixed in the vehicle, the improvement comprising a movable anchor member received for movement along the rail and adapted to receive said belt portion, an anchor transfer element coupled to the movable anchor member to move it along the rail, a fixed anchor member at a restraint location along the guide rail corresponding to the occupant-restraining configuration of the belt, and locking means for selectively locking the movable anchor member to the fixed anchor member so that the belt is anchored in the occupant-restraining configuration and for releasing the movable anchor member



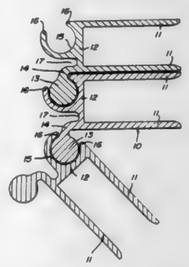
from the fixed anchor member so that it can be moved along the guide rail by the transfer element to transfer the belt to the occupant-restraining configuration, wherein the locking means comprises a shoulder on one of the anchor members and an inertia device on the other anchor member which includes an inertial mass adapted to detect a rapid change in velocity and move in response thereto and a locking member movable by the mass into locking engagement with the shoulder on said one anchor member.

4,521,035

PAPER SHEET HOLDERS

John W. Berezowsky, 2 Sunset Dr., Senneville, Quebec, Canada H9X 1S5

Filed Oct. 20, 1981, Ser. No. 313,237
Int. Cl.³ B42F *9/00*
U.S. Cl. 281—48 **12 Claims**



1. a device for holding paper sheets such as magazines, catalogues and the like comprising:

at least one U-shaped sheet holder integrally formed of resilient material having two arms extending frontally of a base, the arms being adapted to grip the paper sheets,

a rod member extending from one side of said base of the holder and rearwardly of said arms, said rod member being integrally formed with said base and connected to said base by a substantially rigid short neck,

a groove behind and at the other side of the holder, said groove being formed in said base and provided with an opening which is substantially larger than the width of said neck,

the rod member in the holder being adapted to mate with the groove in a substantially similar adjacent device on the one side of the holder and to pivot therein so as to form a tongue and groove pivot means, and

the groove in the holder being adapted to mate with the rod member in a substantially similar adjacent device on the other side of the holder and to pivot thereabout so as to form a tongue and groove pivot means,

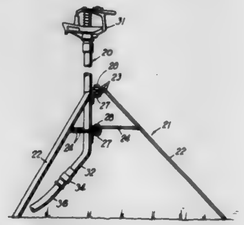
the U-shaped sheet holder being in the form of a short clip and at least two clips being required to grip the paper sheets.

4,521,036

SPRINKLER HEAD SUPPORT

William T. Howell, Jr., Rte. 6, Box 39; John T. Howell, Rte. 4, Box 398A, and Danny T. Howell, Rte. 4, Box 398, all of Eastman, Ga. 31023

Filed Jan. 26, 1982, Ser. No. 342,823
Int. Cl.³ F16L *3/00*
U.S. Cl. 285—61 **3 Claims**



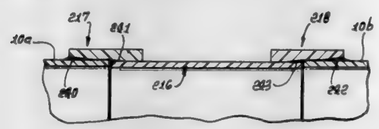
1. A knock-down sprinkler head support comprising a standpipe having screw-threaded end portions, spaced aligned apertured mounting brackets fixed on the standpipe and projecting from one side thereof with their apertures in coaxial relationship, a tripod support for the standpipe including inclined circumferentially spaced separately formed legs, the legs having upper end apertured tabs resting in coaxial stacked relationship on one of said standpipe mounting brackets and the legs having struts fixed thereto below said tabs and being apertured and resting on the other standpipe mounting bracket in stacked relationship, the apertures of said tabs and struts being coaxially aligned and in registration with the apertures of the standpipe mounting brackets, and a single pair of separable fasteners engaged with the apertures of said tabs and struts and the apertures of the standpipe mounting brackets beneath the tabs and struts.

4,521,037

PIPE COUPLING

Granville S. Knox, 1323 Santa Margarita Dr., Fallbrook, Calif. 92028

Continuation-in-part of Ser. No. 524,248, Aug. 18, 1983, abandoned. This application Aug. 20, 1984, Ser. No. 642,261
Int. Cl.³ F16L *55/18*
U.S. Cl. 285—15 **9 Claims**



1. In a coupling for joining and sealing two pipe sections having elongated outer surfaces and end terminals, the combination with said pipe sections comprising

(a) an extension comprising a length of tubing substantially bridging the space between the pipe terminals to form joints therewith,

(b) twin collars telescopically movable axially of the extension into coupling positions spanning the respective joints,

(c) each collar having a first aligning bore sized for close slidable engagement with the outer end surface of the extension and a second aligning bore sized for close slidable engagement with the outer end surface of said pipe section and when in said coupling position holding said pipe section and extension ends in close axial alignment,

(d) said first aligning bore having an axially extending first counterbore providing a predetermined annular space between said collar and the extension and said second aligning bore having an axially extending second counterbore providing a predetermined annular space between said collar and said pipe end when in said coupling position,

(e) and a liquid bonding agent in both said spaces and bonding said collar to the extension and pipe end and sealing therebetween,

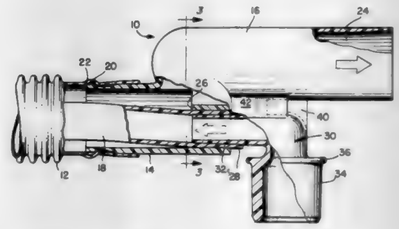
(f) one of said counterbores extending between said first and second aligning bores.

4,521,038

SAFETY CONNECTOR FOR FLEXIBLE TUBE DEVICE

David E. Cerny, Hoffman Estates, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Filed May 20, 1983, Ser. No. 496,558
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—24 **10 Claims**



1. A connector comprising:

a rigid tubular element comprising a first cylindrical element which is joined at its side to a second cylindrical element;

a first tubular end portion is formed by said first cylindrical element;

a second tubular end portion is formed by said second cylindrical element;

an offset flow passage is formed between said first tubular end portion and said second tubular end portion;

a first flexible tubing having an end portion concentrically frictionally positioned on said first end portion;

an internal tubular stub having an external diameter less than the internal diameter of said first cylindrical element is disposed within said first cylindrical element and has an opening that communicates with the exterior of said tubular element;

a second flexible tubing having an external diameter that is less than the internal diameter of said internal tubular stub, extends through said first flexible tubing and is inserted through said internal tubular stub and extends beyond said stub to the exterior of said tubular element providing a visible exposed end position of said second flexible tubing;

an elbow-shaped locking piece having a spout that is frictionally positioned within said second flexible tubing thereby locking said second flexible tubing within said stub; and

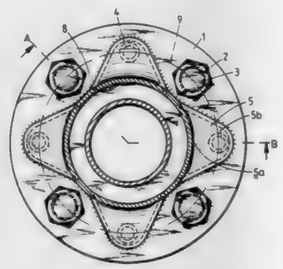
guide means associated with said second cylindrical element and elbow-shaped locking piece which hold said locking piece in proper position.

4,521,039

CONNECTOR FOR HEATED PIPES

Wilhelm Schulz, Kuhleshütte 85, 4150 Krefeld, Fed. Rep. of Germany

Filed Feb. 3, 1983, Ser. No. 463,510
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204561; Mar. 6, 1982, 3208106
Int. Cl.³ F16L *53/00*
U.S. Cl. 285—41 **3 Claims**



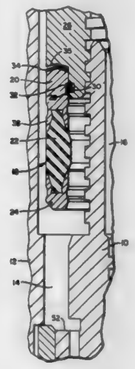
1. In a connector for use with a pipeline section, flange and tubular jacket surrounding the pipeline section with the pipeline section having one end to which the flange is affixed, the flange having bores therethrough for passing fixing bolts and at least three channels for heating and cooling medium to pass through arranged on the same pitch circle, and the tubular jacket surrounding the pipeline section to allow passage of the heating or cooling medium, therebetween the improvement comprising an outer boundary wall of the connector having a first end of circular outline adapted for connection to the tubular jacket, the outer boundry wall having a second end adapted for connection to the flange, said second end formed with a star-shaped, serrated or wavy outline providing circumferentially spaced recesses and projections overlying said channels in said outer boundary wall adjacent to the fixing bolt bores of the flange, access to the fixing bolts the outer boundary wall viewed in radial and axial section being substantially conical shaped.

4,521,040

COMBINED METAL AND ELASTOMER SEAL

Richard W. Slyker, and John R. Pettit, both of Ventura, Calif., assignors to Vetco Offshort, Inc., Ventura, Calif.

Filed Sep. 17, 1982, Ser. No. 419,270
Int. Cl.³ F16L *21/04*
U.S. Cl. 285—140 **13 Claims**



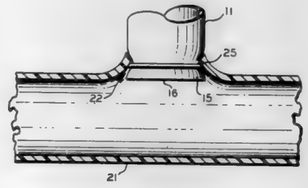
1. A seal for an annular space comprising: a lower metallic seal ring; an upper metallic seal ring; an elastomeric seal ring interposed between said metallic seal rings, and having a thickness greater than each of said metallic rings; at least said lower ring having a pair of flexible lip portions extending upwardly with the outer surface of each lip linear for a majority of the length, said elastomeric seal ring including a substantial portion located between said flexible lip portions whereby axial force on said metallic rings compresses said elastomeric seal ring which in turn forces said lip portions outwardly; said lips having increasing thickness with length from the tip through a majority of the length, and a reduced thickness near the base of each of said lips.

4,521,041

PIPE CONNECTION

Russell C. Cox, and Arthur H. McElroy, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 140,901, Apr. 16, 1980, Pat. No. 4,345,956. This application Jun. 9, 1982, Ser. No. 386,560
Int. Cl.³ F16L *41/00*
U.S. Cl. 285—156 **5 Claims**



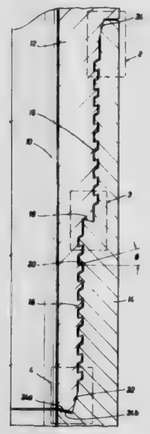
1. A pipe connection comprising:
a first pipe having an inwardly tapered first end portion, formed thereon when cold by deforming the pipe end at least said inwardly tapered first end portion of said first pipe comprising a synthetic thermoplastic polymeric material which has a plastic memory; and
a container, at least a portion of a wall of said container comprising a synthetic thermoplastic polymeric material which has a plastic memory, said portion of said wall of said container having a hole formed therein through which a portion of said inwardly tapered first end portion is inserted in such a manner that the transverse end surface of said inwardly tapered first end portion is substantially flush with the inside surface of the portion of the wall of said container which is substantially adjacent the hole in the wall of said container, the portion of said wall of said container which is adjacent the hole in said wall of said container being deformed while cold extend outwardly from the remaining portion of said container, said inwardly tapered first end portion of said first pipe, as a result of its plastic memory, being under a stress pressing towards the portion of said wall of said container which is adjacent the hole in said wall of said container such that the transverse end surface of said inwardly tapered first end portion of said first pipe is expanded outwardly to a diameter larger than said hole so as to prevent said inwardly tapered first end portion of said first pipe from being pulled out of the hole in the wall of said container, the portion of said wall of said container which is adjacent the hole in said wall of said container, as a result of its plastic memory, being under a stress pressing towards said inwardly tapered first end portion of said first pipe such that at least a portion of the edge of said hole presses against said inwardly tapered first end portion of said first pipe so as to prevent said inwardly tapered first end portion of said first pipe from being inserted further into said container.

4,521,042

THREADED CONNECTION

Jan W. Blackburn, Kingwood, and Burl E. Baron, Houston, both of Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Jul. 5, 1983, Ser. No. 510,881
Int. Cl.³ F16L *25/00*
U.S. Cl. 285—334 **5 Claims**



1. A pipe joint of coaxially mating pin and box members comprising,
first and second pairs of interengaged threads on the respective members, the first pair of threads axially spaced from the second pair of threads, the threads of the respective members having negatively angled load flanks,
a pair of generally positively angled frusto-conical intermediate shoulders on the members disposed axially between the first and second pairs of threads, the angle of the intermediate positive angled shoulder on the box member being greater than the intermediate angled shoulder on the pin, the dissimilar angles of the positive angled intermediate shoulders effecting an intermediate seal on the intermediate shoulders when the members are fully interengaged,
cooperating external frusto-conical sealing surfaces respectively on the outer end of the counterbore of the box member and the inner end of the pin member,
the external sealing surface of the box member being an annular outwardly facing external shoulder inclining outwardly at an angle with respect to the axis of the box member,
the external sealing surface of the pin member inclining inwardly toward the end of the pin member, the angle of incline of the external pin shoulder being substantially the same as that of the external sealing surface, and
cooperating non-engaging protective shoulders on the pin and box members adjacent the external sealing surfaces of the pin member and the external sealing surface of the box member.

4,521,043

TRASH BAGGING APPARATUS

Robert L. Wilsford, deceased, late of Fort Worth, Tex. (by JoAnn Wilsford, executor), assignor to Jo Ann Wilsford, Fort Worth, Tex.

Filed May 11, 1984, Ser. No. 609,310
Int. Cl.³ A47F *13/06*; A47L *13/52*
U.S. Cl. 294—19.1 **7 Claims**

1. Trash bagging apparatus for facilitating emplacing trash in a flexible container, comprising:
a. two flat side sheets hingedly connected together at their interior edges with their exterior edges free to be pivoted about the hinged connection to be moved together and to be opened up to engage a flexible container for trash or the like; at least one of the side sheets being adapted to lie flat on the ground for having the trash swept thereonto; said side sheets being elongate to protrude upwardly beyond the trash container emplaced on its bottom for a distance sufficient to have trash swept onto said side sheet; and
b. biasing means for biasing said exterior edges toward their extremities in which position said hingedly connected sides form a substantially planar structure; said limit of travel of said side sheets being defined by the flexible container engaging the side sheets for receiving the trash when the side sheets are stood upwardly to dump the trash into the flexible container;
wherein there is provided front bag holding means for holding the top of the flexible container on the front of said side sheets when said side sheets are raised to dump trash into the flexible container.

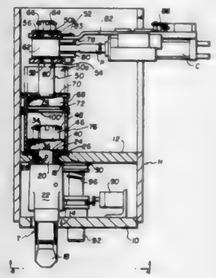


4,521,044

TWISTLOCK OPERATOR

William S. Appleman, Durham, and James D. Sturgill, Roxboro, both of N.C., assignors to RPC Corporation, South Roxboro, N.C.

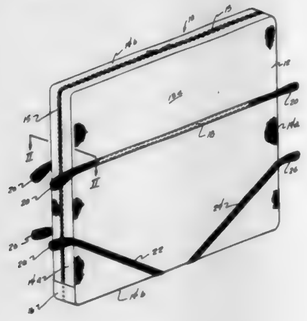
Filed Mar. 21, 1983, Ser. No. 477,323
Int. Cl.³ B66C *1/66*
U.S. Cl. 294—82.24 **19 Claims**



1. A displacable rotation assembly for a twistlock mechanism operably associated with a drive mechanism having a fixed axis and an angularly displacable twistlock with a pivot axis normally positioned along said fixed axis; comprising:
(a) first means coupled with said drive mechanism;
(b) second means coupled with said twistlock;
(c) an angularly displacable operator having an angularly movable axis normally positioned on said fixed axis and connecting said first and said second means;
(d) whereby said operator will be displaced from said fixed axis while maintaining coupling between said first and said second means when said twistlock is angularly displaced from said fixed axis;
(e) said first means includes a first flat actuator having a shaft

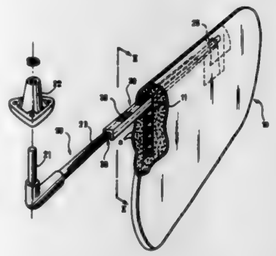
extending therefrom and said shaft connected to said drive mechanism;
(f) said second means includes a second flat actuator;
(g) said operator includes a tube member having an upper and a lower end and wherein said first actuator is pivotally associated with said upper end and said second actuator is pivotally associated with said lower end;
(h) each of said first and second actuators includes arcuate bearing surfaces cooperating with said tube member;
(i) said bearing surfaces of said first and said second actuators have substantially equal radii of curvature; and,
(j) said first and said second actuators are substantially rectangularly-shaped.

4,521,045
MATTRESS CARRIER
Cecil C. Hart, 108 Pine Acres Dr., Spartanburg, S.C. 29302
Filed Sep. 2, 1983, Ser. No. 529,095
Int. Cl.³ B65D *65/00*
U.S. Cl. 294—149 **4 Claims**



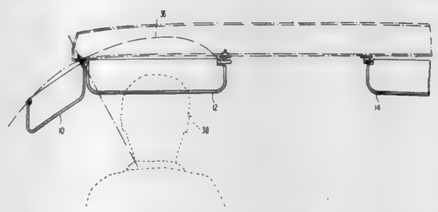
1. An improved mattress carrier for protecting a mattress and facilitating its handling during delivery to a point of use comprising a flexible, generally rectangular cover having an opening for receiving and protectively enclosing a mattress therein, means for closing the opening to contain the mattress within the cover, a pair of hand-engageable handle means attached to each of a pair of opposite ends of the cover and located in spaced relation on opposite sides of a mid-point of the length of said opposite ends for lifting and manipulating the carrier during transportation of a mattress therein, a first set of reinforcing bands of flexible material attached to and extending in opposed relation to each other along opposite sides of the cover generally perpendicular to said opposite ends of the cover, the ends of each of said first set of bands terminating in loops which comprise a first of said pair of hand-engageable handle means at each end of the cover, and second and third sets of reinforcing bands respectively attached to and extending in opposed relation diagonally across adjacent lower corners of opposite sides of the cover, the ends of each of said second and third sets of bands terminating in loops which comprise the second of said pair of hand-engageable handle means, whereby the spaced pairs of handle means at each of said opposite ends of the cover may be engaged by a workman to carry a mattress within the carrier.

4,521,046
CELL STRUCTURE SUN VISOR FOR AUTOMOBILE VEHICLES INCLUDING RETENTION AND SNAP-ACTION POSITIONING MEANS
Giovanni Foggini, Turin, Italy, assignor to Lear S.n.c. di Foggini & C., Orbassano, Italy
Filed Jan. 28, 1983, Ser. No. 461,815
Claims priority, application Italy, Feb. 9, 1982, 67146 A/82
Int. Cl.³ B60J *3/02*
U.S. Cl. 296—97 K **4 Claims**



1. A sun visor for automobile vehicles of the type having a cell structure comprising:
a wire rod having a first portion bent to a right angle with an end thereof attached to a support for engagement with an automobile body roof panel and a second portion engaging with one cell of the cell structure
at least a longitudinal groove formed along at least one portion of said wire rod second portion
an insert of a high strength polymeric material interposed between said cell and said wire rod second portion and surrounding said second portion
at least one longitudinal projecting rib formed internally along said insert engaging said longitudinal groove
said longitudinal groove being adapted to receive said longitudinal rib for elastic release engagement positioning said sun visor
said insert having a length equal at least one half the length of said wire rod.

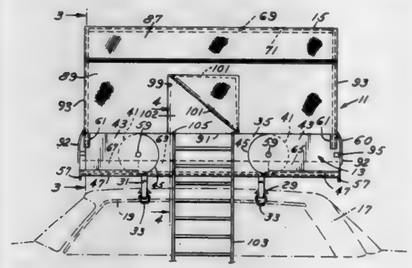
4,521,047
SUN VISOR ARRANGEMENT
Edwin F. Saxman, Allentown, Pa., assignor to Mack Trucks, Inc., Allentown, Pa.
Filed Mar. 22, 1983, Ser. No. 477,658
Int. Cl.³ B60J *3/02*
U.S. Cl. 296—97 K **6 Claims**



1. A sun visor arrangement for a vehicle having a windshield and left and right doors adjacent the ends of the windshield comprising:
(a) a first visor at one side of the windshield and a second visor positioned adjacent said first visor;
(b) said first visor being arranged for pivotal movement between a first position adjacent the windshield and a second position adjacent one of said doors;

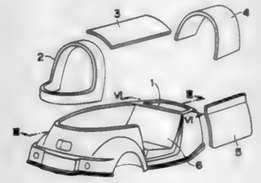
(c) said second visor being arranged for movement about a pivotal axis between a first position adjacent the windshield and to one side of said first visor and a second position substantially in the first position of said first visor;
(d) said first visor including a first rod extending from the free end thereof;
(e) said second visor including a second rod having a portion extending beyond the pivot axis of said second visor on the side of the pivot axis opposite the free end of said second visor for receiving said first rod to support the free end of said first visor; and
(f) said member including a recess for frictionally receiving said first rod, said recess being open on the side facing away from said windshield, whereby when said second visor is moved from its first position towards its second position, said first rod is automatically released from said recess.

4,521,048
VEHICLE SUPPORTED COLLAPSIBLE BED WITH SHELTER COVER
Ivan Prvanoff, 8786 Evangeline, Dearborn Heights, Mich. 48127
Filed Dec. 22, 1982, Ser. No. 452,138
Int. Cl.³ B60P *3/34*
U.S. Cl. 296—160 **10 Claims**



1. A collapsible bed adapted for mounting upon a vehicle roof and having an open position and a collapsed position comprising;
a horizontal center support panel overlying and secured to the roof;
a pair of laterally spaced upright center sections mounted and secured upon said support panel along its sides;
longitudinally spaced pairs of laterally spaced upright end sections;
each pair of end sections respectively bearing against one of the ends of said center sections, with the one ends of each pair of end sections being pivotally mounted and supported upon one of the ends of said center sections respectively, and extending longitudinally outward as extensions thereof when said bed is in said open position;
a horizontal end support panel spanning each of said pairs of end sections and secured to the undersides thereof, coplanar with said horizontal support panel, forming an extension thereof when said bed is in said open position;
said horizontal end support panel having a storage space associated therewith;
said center and end support panels respectively adapted to mount thereon corresponding mattress sections;
and an elongated flexible sheet having an intermediate portion and a pair of end portions, said intermediate portion underlying and secured to the undersurface of said horizontal center support panel in both of said positions and the end portions of said flexible sheet being received within said storage space when said bed is in said open position and extending around said end sections when said bed is in a collapsed position;
said end sections and corresponding end support panels adapted to rotate approximately 180 degrees about their pivotal mountings into registry with said center sections when said bed is in a collapsed position;
and with the corresponding end portions of said flexible sheet overlying and spanning said center sections, the end portions of said flexible sheet not received within said storage space extending around and enclosing the pivot ends of said center and end sections.

4,521,049
SMALL CAR BODY
Hideyuki Genma, Hamamatsu, and Yoshiaki Sugita, Higashi Wakabayasi, both of Japan, assignors to Suzuki Motor Company Limited, Japan
Filed Aug. 28, 1981, Ser. No. 297,180
Claims priority, application Japan, Nov. 17, 1980, 55-160775; Nov. 17, 1980, 55-163471[U]; Nov. 28, 1980, 55-166608
Int. Cl.³ B62D *27/00*
U.S. Cl. 296—185 **5 Claims**



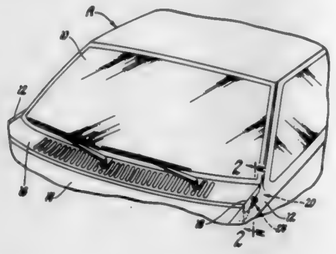
1. A small car body comprising:
a lower half part made of integrally molded synthetic resin and having a central indented area for accommodating a seat, and an outer downwardly extending skirt spaced from the indented area;
a front panel connected to and extending upwardly from said lower half part at a location between said central indented area and said skirt;
a roll bar panel connected to and extending above said lower half part at locations between said central indented area and said skirt;
a roof panel connected between said front panel and said roll bar panel;
a pair of laterally spaced longitudinal members each having low middle portions, a high front portion extending forwardly of said middle portion and a high rear portion extending rearwardly of said middle portion;
a first lateral member having a lower middle part and opposite upwardly extending ends, each upwardly extending end connected to said front portion of one of said pair of longitudinal members;
a second lateral member having a forward middle part and rearwardly extending ends, each rearwardly extending end connected to said low middle portion of one of said longitudinal members, at a forward location thereon;
a bracket plate connected between said low middle part of said first lateral member and said forward middle part of said second lateral members;
a third lateral member connected between said low middle portions of said longitudinal members at rear locations of said low middle portion;
a fourth lateral member connected between said rear portions of said pair of longitudinal member;
said pair of longitudinal, first, second third and fourth lateral members forming a chassis frame;
a plurality of fixing brackets connected to said chassis frame and said lower half part for connecting said chassis frame to said lower half part; and
suspension means for suspending a front tire between each rearwardly extending end of said second lateral member and each longitudinal member front portion respectively.

4,521,050

SHROUD TOP VENT GRILLE RETAINING MEANS

Gerald M. Rea, Sterling Heights; William G. Stoff, St. Clair Shores, and John F. Zens, Algonac, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 10, 1984, Ser. No. 579,083
Int. Cl.³ B62D *25/08*
U.S. Cl. 296—192 **2 Claims**



1. In an automotive vehicle having body structure including left and right fenders defining a body opening, said fenders having inner and outer side walls and an outer top wall, a generally U-shaped panel for covering said opening, said panel having a top and left and right downwardly extending legs disposed within said opening, and left and right retaining means carried by the inner walls of said left and right fenders, respectively, for retaining said panel in place,

the improvement being that said left and right legs have a generally horizontally extending slot therethrough and that each of said retaining means comprises a base portion which is secured to the inner side wall of its adjacent fender a predetermined distance below the top wall of the fender,

spaced apart, upwardly extending fore, middle and aft arms integral with said base portion, said middle arm being deflectable and having a transversely extending barb at its upper free end, said barb having at least one side which is tapered, said fore and aft arms at their free ends defining a curved leaf spring,

said legs of said panel engaging said barbs on said middle arms and causing the latter to be deflected from their normal free state position until said barbs are aligned with said slots on said legs whereupon said arms self return toward their normal free state position and are disposed within said slots to retain said panel in place, said leaf springs on said fore and aft arms biasingly engaging said panel on its underside to bias the panel against the barbs to prevent rattling of the panel and to position the panel so that its outer side is flush with the outer top walls of the left and right fenders,

said legs of said panel along their edges defining an end of the slots engaging said tapered sides of said barbs when the panel is moved into engagement with the tapered sides to cause the middle arms to be deflected from their normal free state position to release the panel from the middle arms to allow removal of the panel.

4,521,051

VISOR WITH MIRROR AND STORAGE MEANS

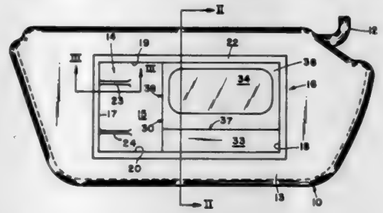
Michael J. Cody, and Scott A. Spykerman, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Sep. 15, 1983, Ser. No. 532,395
Int. Cl.³ B60J *3/02*
U.S. Cl. 296—97 H **15 Claims**

1. A vehicle visor and storage compartment comprising:

a visor body having a central recess formed therein which opens toward one side of said body;

a mirror panel for supporting a mirror thereon said panel coupled to said body to enclose a substantial portion of said recess and define an opening to said recess from an



edge of said panel for insertion and storage of objects within said recess and behind said panel; and

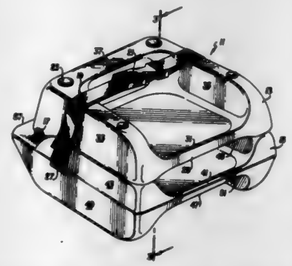
a mirror secured to said panel.

4,521,052

BOOSTER SEAT

Richard E. Cone, Dayton, Ohio, assignor to Spalding & Evenflo Companies, Inc., Tampa, Fla.

Filed Sep. 20, 1982, Ser. No. 420,543
Int. Cl.³ A47D *1/04;* **A47C** *13/00*
U.S. Cl. 297—3 **13 Claims**



1. A child's booster seat for use with an adult chain comprising

a first base having seat indentations on opposite sides thereof;

a second base having seat indentations on opposite sides thereof;

means for pivotally joining said bases at their outer periphery;

the depth of each of said seat indentations being different from the depth of each of the other said seat indentations whereby said booster seat provides four selectively different heights for the child and a back at a selected position.

4,521,053

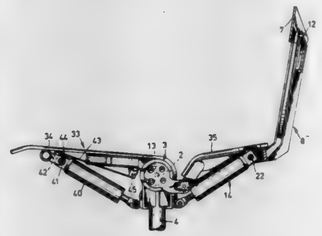
CHAIR

Peter de Boer, SV Bussum, Netherlands, assignor to Gispen+-Staalmeubel B.V., Culemborg, Netherlands

Filed Jun. 16, 1982, Ser. No. 389,037
Int. Cl.³ A47C *1/022*
U.S. Cl. 297—312 **11 Claims**

1. A chair having a supporting frame and a seat and back-supporting assembly supported by said frame, said seat and back-supporting assembly comprising two independently movable sections, one of which is a forward seat portion having a forward margin and the other of which is a generally L-shaped portion defining a rearward seat portion and a back-supporting portion, said forward seat portion having a rearward margin and said rearward seat portion having a forward margin and such margins being disposed in spaced relation to define depression means disposed substantially closer to said back-supporting portion than to said forward margin of the forward seat portion for receiving and locating the pelvic region of a

sitting user, means for independently pivoting said seat portions to allow relative flapping motions thereof about a region adjacent said depression means, first means reacting between said forward seat portion and said frame for adjusting the



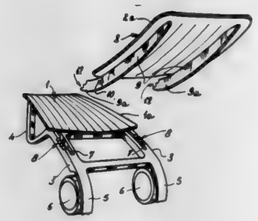
angularity of said forward seat portion relative to said rearward seat portion, and second means reacting between said rearward seat portion and said frame for adjusting the angularity of said rearward seat portion relative to said forward seat portion.

4,521,054

CHAISE LOUNGE

Didier Deconinck, Seysinnet Pariset, France, assignor to Allibert S.A., Grenoble, France

Filed Jun. 14, 1983, Ser. No. 504,250
Claims priority, application France, Jun. 22, 1982, 82 11323
Int. Cl.³ A47C *1/026*
U.S. Cl. 297—357 **2 Claims**



1. A chaise lounge comprising:

an elongated body-supporting unit formed at one end with a pair of wheels, at another end with handle means for displacement of said unit, and between said ends with a surface for supporting a body of a user; and

an adjustable inclination backrest separable from and adapted to be mounted on said body-supporting unit,

said backrest being provided with a body-engaging surface and a pair of arms projecting downwardly from the body-engaging surface,

said unit having at least one opening adapted to receive said arms, and being formed on opposite sides of said unit adjacent said arms and said at least one opening with respective rows of upwardly open notches,

each of said arms having a respective outwardly extended pin engageable in a selected notch in a respective one of said rows,

said unit being formed below said surface of said unit with two abutments at different levels and said arms being provided at free ends thereof below said surface of said backrest with a plurality of formations in the form of notches selectively engageable with said abutments whereby the orientation of said backrest is established by selection of said notches and the engagement of the free ends of said arms with said abutments and said arms are withdrawable from said at least one opening freely upwardly to separate said backrest form said unit,

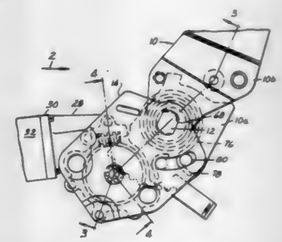
said backrest being cantilevered on said unit upon the engagement of said free ends with one of said abutments and the resting of said pins in the selected notches, said body-supporting unit comprising a pair of molded synthetic resin longitudinal members along oppposite longitudinal sides thereof between said surface of said unit and said one end thereof, each of said members being formed with a respective longitudinally extending slot receiving a respective one of said arms and adjacent a respective row of said upwardly open notches, said slots defining said opening, each of said rows of upwardly open notches being located only along an outer edge of a respective one of said slots.

4,521,055

POWER RECLINER

Chester S. Fudala, Troy, Mich., assignor to Ferro Manufacturing Corporation, Southfield, Mich.

Filed Aug. 30, 1982, Ser. No. 412,584
Int. Cl.³ B60N *1/06*
U.S. Cl. 297—362 **6 Claims**



1. A power recliner for the seat back of a vehicle seat comprising,

a relatively fixed substantially flat plate providing a seat mount,

a substantially flat tie plate parallel to and spaced from said seat mount to define an enclosure therebetween,

a hollow transmission housing in the form of a metal casting having openings at opposite sides and fixedly mounted between said seat mount and tie plate,

said housing having an integral motor support extending laterally therefrom out of said enclosure, said motor support having an opening therethrough communicating with the interior of said housing,

a first one of said openings at one side of said housing being provided with internal gear teeth to form a ring gear,

a reversible electric motor mounted directly on the motor support of said housing, said motor having an output shaft extending through the opening in said motor support into the interior of said housing,

said motor output shaft having a coaxial worm at its inner end,

a cover plate formed of a low friction plastic material fixed to said housing and covering the other opening at the other side of said housing,

a rotary transmission drive shaft journalled at one end in an opening in said cover plate and at the other end in an opening in said seat mount,

a carrier plate fixed to said drive shaft and journalled in said first opening at the said one side of said housing axially outwardly of the teeth therein,

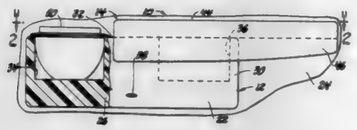
a worm gear rotatable on said drive shaft within said housing and in mesh with said worm,

a sun gear mounted on and rotatable with respect to said drive shaft in the plane of said ring gear,

resilient means yieldably coupling said worm gear to said sun gear,

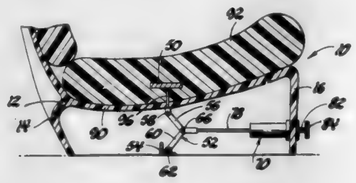
a plurality of planet gears on said carrier plate in mesh with said sun gear and said ring gear,
a drive pinion fixed to said drive shaft exterior of said housing but within the enclosure between said seat mount and tie plate,
a pivot pin extending between said seat mount and said tie plate, and
a seat back mount pivotally carried by said pivot pin and having a toothed sector in mesh with said drive pinion.

4,521,056
MODULAR, MULTI-POSITION ARM REST
Donald C. Lindenmuth, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 2, 1984, Ser. No. 596,056
Int. Cl.³ B60N *1/06*
U.S. Cl. 297—412 **2 Claims**



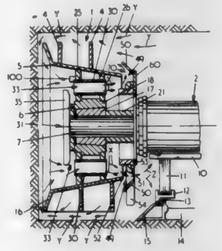
1. A two piece arm rest assembly for use on the inside of a vehicle door or the like and providing a plurality of configurations usable on doors of either hand with or without a receptacle included therein, comprising, in combination,
a base having a mounting portion joinable to the inside of a door and a body portion, said body portion having a recess therein near each end thereof in which a receptacle may be received,
and an arm rest pad overlying said base and attachable thereto, said pad being large enough to cover both of said recesses in the body portion and sufficiently shiftable longitudinally with respect to said base to uncover either of said recesses before being attached to said base,
whereby the pad may be attached to the base so as to be usable on doors of either hand in a first configuration covering both recesses, and in a second configuration covering one of said recesses, and a third configuration covering the other of said recesses, so that the arm rest assembly may be attached to doors or the like of either hand with the uncovered recess in either orientation with respect to the pad to receive a receptacle or with neither recess uncovered when the arm rest assembly is not to receive a receptacle.

4,521,057
AUTOMOBILE SEAT WITH ADJUSTABLE DAMPING
John H. Varterasian, Livonia, and Richard J. Granzotto, Southfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 16, 1983, Ser. No. 466,857
Int. Cl.³ A47C *3/00*
U.S. Cl. 297—455 **1 Claim**



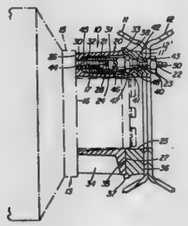
1. A vehicle seat comprising:
a stationary seat support;
a seat cushion of resilient foam vertically compressible to a static vertical condition relative to the stationary seat support corresponding to a certain static occupant load upon the seat and further resiliently movable above and below the static vertical position in response to vehicle vibrations;
plate means embedded within the foam cushion;
a scissors mechanism acting between the vehicle body and the plate means and adapted to translate vertical movement of the plate relative to the stationary seat support into a horizontal movement of a portion of the scissors mechanism; and
an adjustable damping means mounted on the vehicle body and operatively connected to the horizontally movable portion of the scissors mechanism whereby the vertical movement of the seat cushion relative to the stationary seat support above and below the static vertical position is adjustably damped to provide a desired occupant ride.

4,521,058
ROTARY CUTTER HEADS FOR MINING MACHINES
Brian A. Eagles, Johannesburg, South Africa, and Albert G. French, Willington, England, assignors to Coal Industry (Patents) Limited, London, England
Filed Sep. 14, 1982, Ser. No. 418,077
Claims priority, application United Kingdom, Oct. 13, 1981, 8130806
Int. Cl.³ E21C *25/10*
U.S. Cl. 299—81 **9 Claims**



1. A rotary cutter head for a mining machine, comprising a hub assembly drivably mountable on a rotary drive unit, a barrel component secured around and co-axial with, the hub assembly, air flow inducing means for inducing air flow along a first path section within the barrel component and in a general direction towards the mining machine side of the cutter head, and along a second path section outside the barrel component and in a general direction away from the mining machine side of the cutter head, air flow deflector means for urging a first portion of the induced air flow flowing along the first path section towards the air flow flowing along the second path section, the air flow deflector comprising an annular guide inclined to the hub axis, and aperture defining means for permitting a second portion of the induced air flow flowing along the first path section to flow along a third air flow path section leading away from the machine side of the cutter head, the inclined air flow guide being located adjacent to the machine side of the barrel component and being spaced from the barrel component to define further aperture means for said first portion of the air flow deflected from section towards the second path section.

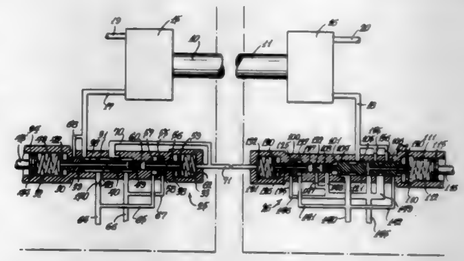
4,521,059
DUAL WHEEL ADAPTER
Minoru Saruwatari, Calgary, Canada, assignor to Qsine Corporation Limited, Calgary, Canada
Filed Mar. 9, 1983, Ser. No. 473,493
Claims priority, application Canada, Mar. 9, 1982, 397899
Int. Cl.³ B60B *11/00, 37/00*
U.S. Cl. 301—36 R **12 Claims**



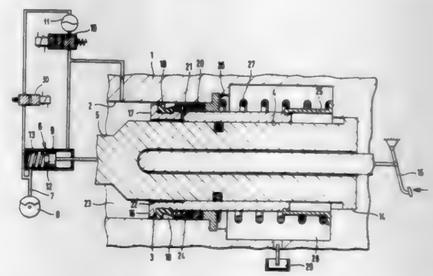
7. An adapter for mounting dual wheels on a vehicle hub having a flange with an annular end face and a plurality of threaded studs projecting from said face, said adapter comprising spacer means including an integral body having an inner radial end surface for engagement with the end face of said flange and an opposite outer radial end surface, said body having a plurality of openings arranged for alignment with said studs and extending axially between said opposite end surfaces thereof, each of said openings having an inner reduced portion of reduced diameter to closely receive one of said studs and an enlarged outer portion extending from said reduced portion to said outer end surface, a seat being provided in each opening between the reduced and enlarged portions, a plurality of elongated studs having at an inner end thereof an axial bore for threaded engagement with the studs of the vehicle hub, said elongated studs each having a seat for engagement with said seat in said opening when threaded on the hub stud and an outer end extending outwardly beyond said outer end surface of said body, said outer ends of said elongated studs being externally threaded for receiving clamping nuts seated against an outer one of said dual wheels having openings aligned with and receiving the outer ends of said elongated studs for clamping the dual wheels outwardly of said spacer means, each elongated stud including a bolt head portion inwardly of the outer threaded end, the distance between said seat and said bolt head portion of said elongated stud being greater than the length of said enlarged portion of the opening in said body whereby said bolt head portion is disposed outwardly of said outer end surface of said body when said elongated studs are threaded onto the hub studs, and wherein said spacer means further includes a second body having an inner radial surface and an outer radial surface and a plurality of openings extending axially from said inner to said outer radial surface thereof and being aligned with said openings of the first body, said openings of said second body having enlarged portions adjacent said inner radial surface thereof for reception of said bolt head portion of said elongated stud.

4,521,060
HYDRAULIC ASYMMETRY DETECTOR
David J. Linton, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Nov. 17, 1983, Ser. No. 553,743
Int. Cl.³ B60T *13/22*
U.S. Cl. 303—71 **14 Claims**

1. A hydraulic asymmetry detector for sensing differential movement of a pair of movable interconnected actuating mechanisms and operable to set a brake when asymmetry is detected comprising, a pressure-regulator valve and a sensor valve, means whereby the pressure-regulator valve sets a control pressure proportional to movement of one actuating mechanism, means associated with the sensor valve for detecting a difference in a force resulting from said control pressure and a force proportional to movement of the other actuating mechanism, and means operable to set said brake when said force difference is detected.



4,521,061
HYDRAULIC BRAKE SYSTEM WITH SLIP CONTROL
Juan Belart, Walldorf; Jochen Burgdorf, Offenbach-Rumpenheim; Lutz Weise, Mainz; Dieter Kircher, Frankfurt am Main, all of Fed. Rep. of Germany, and André F. L. Goossens, Rumst, Belgium, assignors to ITT Industries, Inc., New York, N.Y.
Filed Jun. 24, 1983, Ser. No. 508,294
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1982, 3226987
Int. Cl.³ B60T *8/10, 13/00, 8/12*
U.S. Cl. 303—114 **19 Claims**



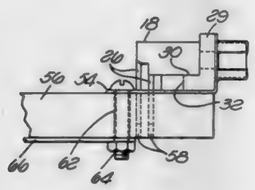
1. A hydraulic brake system for motor vehicles with slip control comprising:
a master brake cylinder having at least one master cylinder piston operating a vehicle wheel brake, hydraulic medium removed from said wheel brake during slip control being supplied to said wheel brake from an auxiliary pressure source via a gasket acting as a first check valve disposed on the circumference of said master cylinder piston;
a hollow positioning piston axially guided in and sealed to an axial bore of a housing, said positioning piston having an end surface thereof pressurized by said auxiliary pressure source during slip control to limit the operating stroke of said master cylinder piston; and
a master cylinder piston rod axially guided in and sealed to the inner surface of said positioning piston;
said positioning piston being a stepped piston having a large diameter portion, a smaller diameter portion sealed at a given point with respect to said axial bore and a step between said smaller diameter section and said larger diameter portion, said step and said given point defining an annular chamber having a volume dependent on movement of said master cylinder piston rod, said chamber having a throttling connection to said end surface disposed on the surface of said larger diameter portion remote from said step, said throttling connection having a

second check valve therein which opens towards said annular chamber.

4,521,062
ELECTRICAL CONNECTOR WITH OPTIONAL GROUNDING ELEMENT

Peter A. Kurbikoff, Agoura, and Gary C. Bethurum, El Segundo, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 26, 1983, Ser. No. 517,196
Int. Cl.³ H01R *4/66, 13/648*
U.S. Cl. 339—14 R **10 Claims**



1. An electrical connector member adapted to mate with a second connector member which is either shell-less or embodies a conductive shell, and has a recess formed in its forward mating end, comprising:

a shell-less insulative connector body having a plurality of projections spaced about its outer periphery adjacent to the forward mating end of the connector body;

the horizontal and vertical dimensions of said connector body as defined by the outer surfaces of said projections being selected to permit a sliding fit of the connector body into the recess of the second connector member;

a metal grounding element substantially surrounding said connector body adjacent to said forward mating end thereof; and

said grounding element having openings therein receiving said projections, said grounding element being dimensioned to have a sliding fit within said recess whereby, if said second connector member has a conductive shell, said grounding element and the shell will be electrically connected when the two connector members are mated.

4,521,063
PRINTED CIRCUIT BOARD LOCK

Thomas A. Milc, Curran, Canada, assignor to Mitel Corporation, Ontario, Canada

Filed Jul. 1, 1982, Ser. No. 394,424
Claims priority, application Canada, Feb. 19, 1982, 396666
Int. Cl.³ H01R *13/54;* **H05K** *1/14*
U.S. Cl. 339—17 LM **15 Claims**

1. A printed circuit board lock comprising:

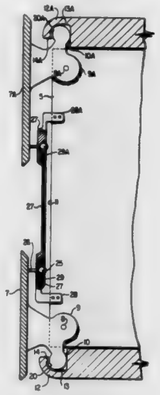
(a) a lever,

(b) means for rotatably attaching the lever to a printed circuit board at a fulcrum point spaced from the axis of the lever,

(c) a latch fixed to the lever at a position closer to the lever and closer to one end of the lever than the fulcrum point, comprised of an indented portion and a protrusion having an orthogonal axis parallel to the axis of the fulcrum, and having a periphery opposite to the lever which describes at least a 180° segment of a circle extending from a line parallel to the lever passing approximately through the axis of the fulcrum,

(d) guide means for directing the printed circuit board along a straight line, and

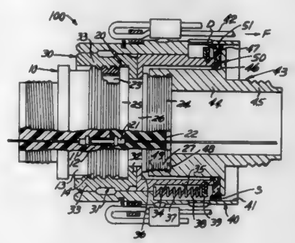
(e) a hook connected to said guide means, having a lip portion thereof for cooperatively engaging said latch, and a bottom portion thereof being a distance from the fulcrum point no shorter than the distance between the fulcrum point and the edge of the latch opposite the fulcrum point, whereby said indentation of the latch is engaged and locked into the lip of said hook in response to the latch being rotated over centre relative to the fulcrum point, such that the printed circuit board is securely retained in the event of external vibration.



4,521,064
ELECTRICAL CONNECTOR HAVING A MOISTURE SEAL

Anthony W. Knapp, Laurens, and Dee A. Werth, Bainbridge, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Filed May 11, 1983, Ser. No. 493,497
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—45 M **10 Claims**



1. An electrical connector assembly having a moisture seal, the assembly comprising: a pair of mated electrical connector members with one of said connector members including a rearward end portion; and coupling means mounted on one of said connectors for releasably coupling the connector members together, said relesable coupling means including a spring retainer mounted to the one connector, a tubular sleeve having its interior wall circumposed about and mounted for longitudinal movement rearwardly of said spring retainer, and a spring disposed in said retainer for resisting rearward movement of said sleeve, said moisture seal sealing said coupling means against the entry of moisture, said moisture seal being characterized by:

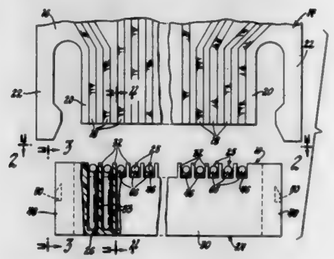
an adaptor mounted to the rearward end portion of said one connector member, said adaptor including a radial collar defining a planar forward face spaced longitudinally rearward from said spring retainer and an outer circumferential face spaced radially inward from the interior wall of said sleeve to define an annular air space (S) therebetween; and

a one-piece, substantially flat and annular shaped seal member bonded to the forward face of said collar, said seal member being comprised of a spongy elastic foam and having a forward surface deformably compressed against the spring retainer and its outer periphery deformably compressed against the interior wall of said sleeve.

4,521,065
SOCKET CONNECTOR FOR PARALLEL CIRCUIT BOARDS

Charles R. Nestor, Niles; Robert G. Plyler, Vienna, and William E. Cross, Brookfield, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 27, 1983, Ser. No. 536,303
Int. Cl.³ H01R *9/09*
U.S. Cl. 339—75 MP **12 Claims**



1. An electrical socket connector for connecting the ends of a plurality of parallel circuit boards, comprising

a dielectric connector body of box-like construction having side walls, end walls and a plurality of spaced partition walls which define a row of cavities which have openings at the top of the connector body,

a first and a second series of aligned slots in the partition walls which are open at the top of the connector body for receiving respective ends of first and second circuit boards in the row of cavities,

a lock nib extending into each cavity from an end wall or a partition wall defining the cavity, and

a plurality of sinuous contact strips disposed in the respective cavities,

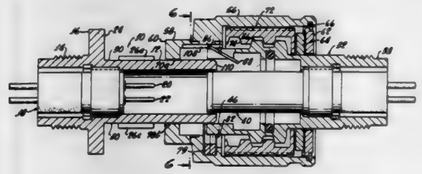
each said contact strip having resilient U-shaped clip portions alinged with the first and second series of aligned slots, respectively, and an intermediate U-shaped locking portion,

each said contact strip being insertable into a respective cavity through the opening at the top of the connector body and individually retained therein by cooperation of the locking portion and the lock nib.

4,521,066
ELECTRICAL CONNECTOR WITH NON-PRECOCKABLE COUPLING RING

Hans I. Kempe, Redlands, Calif., assignor to The Deutsch Company, Electronic Components Division, Banning, Calif.

Filed Apr. 2, 1984, Ser. No. 595,687
Int. Cl.³ H01R *13/623*
U.S. Cl. 339—89 M **16 Claims**



1. In an electrical connector having first and second connector parts adapted to be connected to one another by relative axial motion and including mutually interengagable registration elements that allow connection of the parts in a predetermined relative rotational position, said connector having a coupling ring rotatably engaged with said first part and adapted to engage said second part for driving said parts together after the parts have been partially connected, said coupling ring having coupling ring registration elements in registration with the registration elements of said first part in an aligned position of said coupling ring to permit relative axial motion of the parts, said coupling ring registration elements preventing connection of said parts to each other when said coupling ring is rotated from said aligned position, the improvement comprising

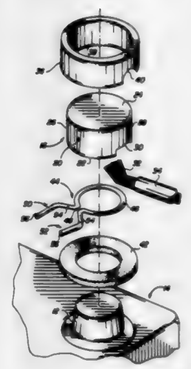
locking means for preventing relative rotation of said coupling ring and said first part, and

means responsive to partial connection of said first and second parts for disabling said locking means, whereby said coupling ring can be rotated relative to said first connector part only after partial connection of said parts.

4,521,067
NON-CONDUCTIVE BATTERY CABLE CONNECTOR AND ELECTRICALLY CONDUCTIVE CLIP FOR USE THEREWITH

Raymond A. Dufresne, 527 W. Townley Ave., Phoenix, Ariz. 85021

Continuation-in-part of Ser. No. 196,868, Oct. 14, 1980, Pat. No. 4,372,636, and a continuation-in-part of Ser. No. 124,979, Feb. 27, 1980, abandoned, and a continuation-in-part of Ser. No. 135,348, Mar. 31, 1980, abandoned. This application Feb. 2, 1983, Ser. No. 463,281
Int. Cl.³ H01R *11/22, 11/26*
U.S. Cl. 339—237 **13 Claims**



1. An electrically conductive clip in combination with an electrically non-conductive battery cable clamp, comprising:

(a) an electrically non-conductive battery cable clamp positionable on a battery post for electrically connecting a battery cable directly to the battery post; and

(b) an electrically conductive clip for permitting electrically conductive connection to the battery post, said clip including,

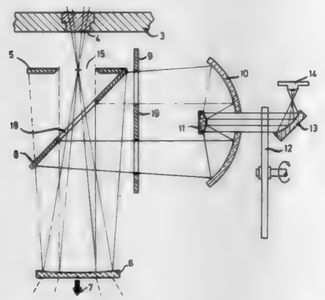
I. a generally circular portion having a periphery with a radial gap therein and arrangeable in substantially circumscribing electrically conductive contact on the battery post beneath said battery cable clamp,

II. a pair of substantially parallel, coextensive legs extending integrally from said circular portion for engagement by a suitable electrical connector.

4,521,068
COOLED FIELD OPTICAL SYSTEM FOR INFRARED TELESCOPES

Joachim Schulte in den Bäumen, Aalen-Röthardt, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim on the Brenz, Fed. Rep. of Germany

Filed Apr. 13, 1983, Ser. No. 484,644
Int. Cl.³ G02B *23/02*
U.S. Cl. 350—1.1 **11 Claims**

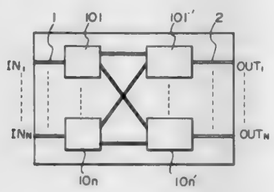


1. A cooled field optical system for uncooled infrared telescopes, comprising a telescope having a primary mirror (**1**) with a central hole, a secondary mirror (**2**), and a cooled diaphragm (**9**), said telescope including a field optical system producing an intermediate image of the exit pupil of the telescope at the location of said cooled diaphragm (**9**), characterized by the fact that behind a focal plane of the telescope limited by a field diaphragm (**5**) there is arranged a mirror (**6**) which reflects back the incident radiation coaxially, the focal length of said mirror and its distance from said field diaphragm (**5**) being so dimensioned as to produce in the vicinity of said field diaphragm (**5**) an image of the exit pupil of the telescope, central vignetting in said pupil image being greater than or equal to the aperture (**15**) of the field diaphragm (**5**).

4,521,069
OPTICAL SWITCH

Masahiro Ikeda, Tokyo, Japan, assignor to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,486
Claims priority, application Japan, Apr. 1, 1981, 56-47264; Sep. 22, 1981, 56-148781; Sep. 25, 1981, 56-150723; Nov. 9, 1981, 56-178416; Feb. 9, 1982, 57-18117
Int. Cl.³ G02B *5/174*
U.S. Cl. 350—96.13 **12 Claims**

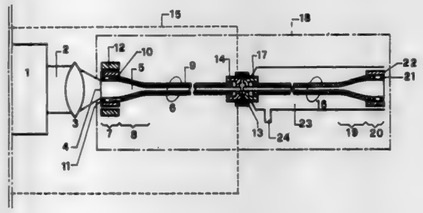


1. An optical switch element comprising:
a semiconductor substrate,
a P-N junction having a P-type semiconductor layer, a N-type semiconductor layer, and an active layer between said P-type semiconductor layer and said N-type semiconductor layer, said P-N junction integral with said semiconductor substrate,
waveguide means coupled to said active layer for applying an input optical signal to said active layer, and for receiving an output optical signal, and
means for applying an injection current in the forward direction in said P-N junction for switching ON and OFF an optical signal wherein the wavelength of an input optical signal is close to the center of gain spectrum defined by the structure of said P-N junction, and wherein said injection current when the present switch element is in the ON state is less than oscillation threshold current, and said injection current is zero when the present switch element is in the OFF state.

4,521,070
HIGH POWER LASER RADIATION CONVEYING DEVICE UTILIZING VARIABLE SECTION FIBER OPTICS

Stefano Sottini, Vaglia; Massimo Brenci, Pistoia; Giancarlo Righini, Florence; Riccardo Falciai, Campi Bixenzio; Vera Russo, and Verga A. Scheggi, both of Florence, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed Mar. 24, 1982, Ser. No. 361,416
Claims priority, application Italy, Mar. 24, 1981, 9367 A/81
Int. Cl.³ G02B *5/14, 7/26*
U.S. Cl. 350—96.15 **28 Claims**



25. A laser radiation conveying device for high power radiation, characterized in that it comprises:
a connector for optical fibers including an input section and an output section;
a first guide coupled stiffly to a laser source, made of a varying-diameter section optical fiber core, a mantle and an external coating of plastic material, and including an input terminal face, and an output terminal face inserted into said input section of said connector for optical fibers;
a second guide having an optical fiber core, a mantle and an external plastic coating, and including an input terminal face inserted into said output section of said connector for optical fibers, and an output terminal face; and
said connector for optical fibers comprises an optical fiber core, a mantle about said optical fiber core, an external coating about said mantle, an input terminal face of said optical fiber core equal in area to said output terminal face of said first guide optical fiber core, and an output terminal face of said optical fiber core equal in area to said input terminal face of said second guide optical fiber core.

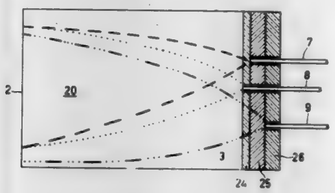
4,521,071
GRADED INDEX ROD LENS COMPRISING LIGHT-WAVE CONDUCTORS

Heinz Böhm, Erlangen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 6, 1983, Ser. No. 492,106
Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3217984
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.18 **10 Claims**

3. A graded-index rod lens (GRIN lens) including several coupled light-wave conductors for optical data communication systems, the improvement therein comprising a profile

provided on an end face of said GRIN lens, said profile including coupling areas for said light-wave conductors, said profile

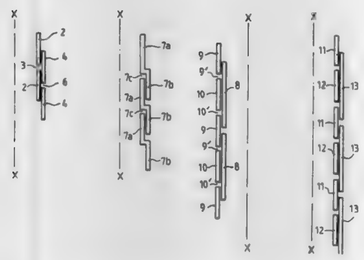


being composed of GRIN lens disks which are stacked on said end face.

4,521,072
OPTICAL CABLE DESIGNED TO WITHSTAND HIGH PRESSURES

Henri E. Cholley, Lamorlaye; Jean J. Laupretre, Rochy Conde, and Jean Rollet, Paris, all of France, assignors to Foptica, Sainte Genevieve, France

Filed Jun. 28, 1982, Ser. No. 392,685
Claims priority, application France, Aug. 5, 1981, 81 15218
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.23 **13 Claims**



1. A flexible optical transmission cable adapted for operation under pressure, the cable being made up of at least one elementary cable comprising optical fibers disposed in a circular cylindrical support and surrounded by at least one wound strip having a space between adjacent strip edges in a wound strip layer, and providing more than 100% overlap of said wound strip layer to cover the space between said adjacent strip edges in said wound layer, the strip being in turn surrounded by a sealing-tight sheath and the elementary cable or cables being in turn surrounded by bearing means and mechanical protection means wherein the thickness of the wound strip or strips is related to the winding radius at a given critical pressure or buckling pressure (Pc) by the following formula:

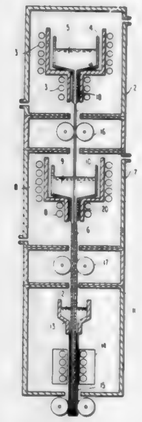
$$Pc = \frac{E}{4(1-\mu^2)}\left(\frac{e}{R}\right)^3$$

in which:
E=elasticity modulus of the strip material,
μ=Poisson coefficient of the strip material,
3=width of strip and
R=average radius around which the outermost strip is wound.

4,521,073
INFRARED LIGHT TRANSMITTING FIBER AND PROCESS FOR PRODUCING THE SAME

Kazuhito Murakami, and Kenichi Takahashi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 12, 1982, Ser. No. 338,941
Claims priority, application Japan, Jan. 12, 1981, 56-2146
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.34 **13 Claims**

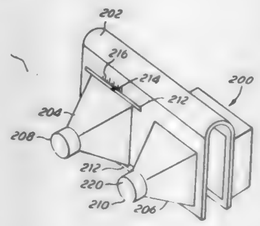


1. An infrared light transmitting optical fiber having a protective coating formed in intimate contact around a step-index fiber having a core and a cladding wherein the core is an infrared light transmitting crystalline material and the cladding is an infrared light transmitting crystalline material,
wherein the core material has a higher melting point and a higher refractive index than the cladding material.

4,521,074
BINOCULAR PRESENTATION OF VISUAL INFORMATION

Patrick G. Kalaugher, Exmouth, England, assignor to University of Exeter, Devon, United Kingdom

Filed Jan. 13, 1983, Ser. No. 457,515
Claims priority, application United Kingdom, Jan. 22, 1982, 8201842
Int. Cl.³ G02B *27/02*
U.S. Cl. 350—145 **7 Claims**



1. A method for presenting first and second images derived from respective different sources to respective ones of an observer's eyes so that they can be substantially mentally fused to be perceived as a single mental image, wherein the method comprises: prerecording a first image to serve as a first image source; selecting a second, different image source for a second image so that said first and second images have substantial but not complete equivalence in visual content; presenting said first image to the observer's first eye while simultaneously

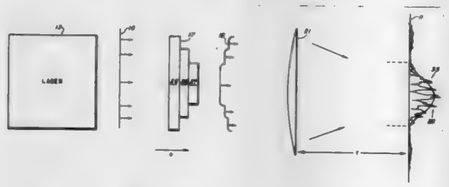
presenting to the observer's second eye said second image under conditions such that it matches the first image sufficiently for said substantial mental fusion to occur; and subsequently interrupting the presentation of one of said images to a respective eye, the other image being visible to the other eye during said interruption; said interruption being effected externally of the observer.

4,521,075

CONTROLLABLE SPATIAL INCOHERENCE ECHELON FOR LASER

Stephen P. Obenschain, 7520 Hamlet St., Springfield, Va. 22151, and Robert H. Lehmberg, 4502 Hadrian Ct., Alexandria, Va. 22310

Filed Mar. 7, 1983, Ser. No. 472,690
Int. Cl.³ G02B *5/18*; H01S *3/13*; G21B *1/00*
U.S. Cl. 350—162.11 **18 Claims**



1. A system for achieving very uniform illumination of a target by a nonuniform beam from a broadband spatially-coherent light source comprising:

a broadband spatially-coherent source of a nonuniform light beam, the beam being characterized by a coherence time that equals the reciprocal of its spectral bandwidth;

a stack of transparent plates packed together to form a stairway of steps for breaking up the beam into a plurality of differently-delayed beamlets with delay increments longer than the coherence time of the beam, said steps having unequal risers and disposed so that the base of the stairway lies in a plane normal to the beam direction; and

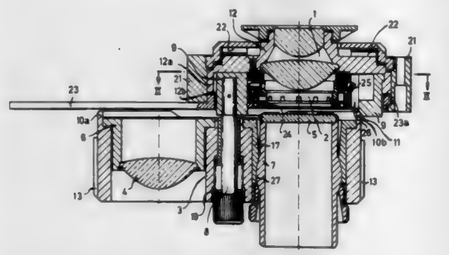
focusing means for overlapping the beamlets at the target to produce, on time scales long compared to the coherence time of the beam, a smooth diffraction profile which is relatively insensitive to amplitude and phase nonuniformities in the beam provided that the beam is uniform over the areas of the individual beamlets.

4,521,076

TRANSMITTED-LIGHT ILLUMINATING DEVICE

Klaüs Weber; Manfred Willert, both of Königsbronn, and Heinz Blessmann, Rosdorf, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,207
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1982, 3225479
Int. Cl.³ G02B *7/00, 21/14*
U.S. Cl. 350—254 **9 Claims**



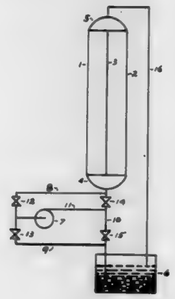
1. A transmitted-light illuminating device having a condenser (1) and an iris-aperture diaphragm (2) on an optical axis, and a turret (3) for the indexed switching-in of auxiliary lenses (4) and/or diaphragms (5), the turret (3) being coupled with the iris-aperture diaphragm (2), characterized by the fact that the turret (3) has at least three receiving openings adapted for optional provision of a ring-diaphragm (5) inserts (7) and/or auxiliary-lens (4) inserts (6) and is mounted for indexed rotation about an index shaft (8), said index shaft (8) being carried at a fixed eccentric location on a ring (9) which controls the opening of the iris diaphragm and which is rotatable about the optical axis, and detent means coacting between the turret (3) and the ring (9) to provide detent retention of each index position at which one of the receiving openings is centered on the optical axis.

4,521,077

LIGHT TRANSMITTING WINDOW ASSEMBLY

Dale L. Connelly, Forth Worth, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed Aug. 16, 1983, Ser. No. 523,559
Int. Cl.³ G02B *5/00, 5/02, 5/24*
U.S. Cl. 350—319 **5 Claims**



1. A light transmitting assembly comprising parallel spaced apart panes of transparent material with a film of polytetrafluoroethylene affixed between said panes, means to substantially coat at least one surface of said film with a fluid having a refractive index approximately equal to that of said film to render said film transparent and means to remove said fluid.

4,521,078

ELECTRO-OPTICAL DISPLAY WITHOUT REFLECTION

Holm Baeger, Schwalbach, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,546
Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019311
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—334 **11 Claims**

1. In an electro-optical display on an instrument panel of an automotive vehicle, said display including a liquid crystal layer and a polarization filter, said display for displaying characters and symbols in said liquid crystal layer the improvement wherein

a depth of installation of said device on said instrument panel is commensurate with the distance between said filter and said layer; and

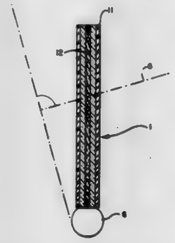
means for swingably mounting said display on said instrument panel are provided so that a central plane through the characters and symbols of the liquid crystal layer is selectively arrangeable in positions other than 90 degrees relative to a direction in which the observer sitting normally in the vehicle views the liquid crystal display and the configuration of the characters and symbols appearing in the liquid crystal layer is a projection of characters and symbols which is perceivable by the observer from a plane vertical to said direction of view of the observer to said plane of the liquid crystal layer.

10. In an electro-optical display for displaying characters and symbols in a liquid crystal layer of the display on an instrument panel of an automotive vehicle, the improvement wherein

the layer of said display is curved and is variably arrangeable in a position other than 90 degrees relative to a direction in which an observer sitting normally in the vehicle views the liquid crystal display;

said display comprising said liquid crystal layer and a polarization filter curved as said to maintain a spacing between said layer and said filter; and wherein

the characters and symbols appearing in the liquid crystal layer are a projection of characters and symbols which are



perceivable by the observer from a plane vertical to said direction of view of the observer to said plane of the liquid crystal layer; and wherein

a depth of installation of said device on said instrument panel is commensurate with the distance between said filter and said liquid crystal layer.

11. A dereflected electro-optical display for representing characters and symbols on a display surface thereof facing a viewer on an instrument panel of a motor vehicle having windows and defining a longitudinal axis, wherein

said display surface is arranged in a position wherein a central perpendicular to the display surface is downwardly inclined at an angle relatively to the longitudinal axis of the vehicle, and light arriving from the windows and reflected at the display surface is reflected into a region which is situated below viewing direction of the viewer viewing the display, and

means for pivotally coupling said display to said instrument panel are provided so that said angle is selectively variable.

4,521,079

LOW-REFLECTION LIQUID-CRYSTAL DISPLAY

Frans Leenhouts, Lenzburg, Switzerland, and Hans Krüger, Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 416,059
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1981, 3137518
Int. Cl.³ G02F *1/135*; G02B *5/28*
U.S. Cl. 350—339 R **9 Claims**

1. A liquid-crystal display with

(1) two mutually parallel, spaced-apart support plates which

(2) enclose between them a liquid-crystal layer which can be switched between two optically different states, and

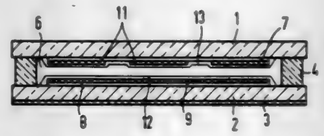
(3) carry, on the surfaces of the two plates facing each other, electrically conductive coatings as electrodes, with at least one of the two support plates designated to be a first support plate

(4) carrying several separately addressable electrodes, and

(5) a continuous dielectric layer designated to be a matching layer under the electrodes, and

(6) a first layer system disposed on top of the electrodes which system contains at least one continuous dielectric layer and a topmost layer designated to be an orientation layer which aligns the liquid-crystal layer,

the combination therewith wherein at least in the first support plate



(7) the matching layer rests on a substrate, and the refraction index n_u of the latter is smaller than the refraction index n_e of the electrode,

(8) the matching layer has an index of refraction n_a, which has at least approximately, the following relationship to the refraction indices of the electrode and substrate:

$$n_a = \sqrt{n_u \cdot n_e},$$

and wherein n_a is between 1.65 and 1.75,

(9) the matching layer has a thickness d_a, according to

$$\left(\frac{2m-1\lambda}{4n_a} - 12\right) \text{ nm} \leqq d_a \leqq \left(\frac{2m-1\lambda}{4n_a} + 12\right)$$

(λ=550 nm, m=natural integer>0), and nm is nanometer,

(10) the layers of the first layer system have indices of refraction between 1.60 and 1.70 and a total thickness between 20 nm and 70 nm

(11) the first layer system rests on another layer system which consists of a single continuous dielectric layer, and

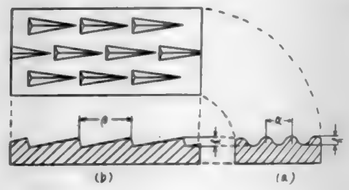
(12) the protective layer of said another layer system has a refraction index between 1.40 and 1.50 and a total thickness which is in the range between 20 nm and 50 nm.

4,521,080

FIELD EFFECT MODE LIQUID CRYSTAL DISPLAY

Fumiaki Funada, Tenri, and Keiichiro Shimizu, Kyoto, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 925,783, Jul. 18, 1978, abandoned, which is a continuation of Ser. No. 592,225, Jul. 1, 1975, Pat. No. 4,232,947. This application Oct. 18, 1982, Ser. No. 432,660
Claims priority, application Japan, Jul. 1, 1974, 49-75689
The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—341 **4 Claims**



1. A liquid crystal display cell including a layer of liquid crystal material sandwiched between a pair of opposing paral-

lel plates each carrying an electrode coating, said liquid crystal display cell further comprising:

a first micro groove structure consisting of a multiplicity of grooves provided at the interfacial surface of the electrode coating in contact with the liquid crystal layer for defining the direction of the liquid crystal molecules in the liquid crystal layer in the plane of said interfacial surface; and

a second micro groove structure of a multiplicity of substantially saw-tooth micro grooves at the interfacial surface of the electrode coating in contact with the liquid crystal layer, said substantially saw-tooth micro grooves having a profile for defining the inclination of the liquid crystal molecules in the liquid crystal layer with respect to said plane of said interfacial surface.

4,521,081

ELECTROCHROMIC DISPLAY DEVICE

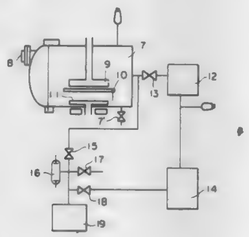
Kiyoshi Miyake, Ube, and Hiroko Kaneko, Toyoura, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Mar. 25, 1982, Ser. No. 361,874

Claims priority, application Japan, Mar. 30, 1981, 56-45594; Mar. 30, 1981, 56-45595

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 **15 Claims**



1. A process for forming an electrochromic film comprising the steps of: introducing a mixture of oxygen gas and inert gas at a predetermined mixing ratio into a reactor which includes one electrode to which a tungsten sheet is fixed as a target and a counter-electrode holding a substrate; maintaining a predetermined total pressure condition and applying a predetermined voltage between said electrodes while maintaining said substrate at a predetermined temperature, thereby forming a WO_x-sputtered film on said substrate.

4,521,082

EXPOSURE APPARATUS

Akiyoshi Suzuki; Hirosi Sato, both of Tokyo; Takashi Omata, Yokosuka, and Masao Kosugi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1982, Ser. No. 401,895

Claims priority, application Japan, Aug. 8, 1981, 56-124211

Int. Cl.³ G02F *1/01*

U.S. Cl. 350—405 **11 Claims**

1. An exposure apparatus for projecting a pattern from a first body onto a second body, the second body being photosensitive, the first and the second bodies each being provided with an alignment mark, said apparatus comprising:

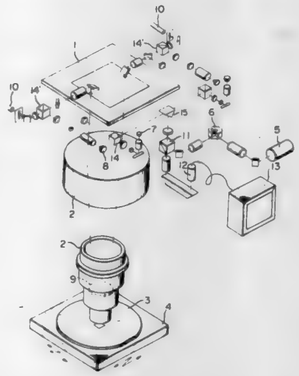
first support means for supporting the first body;

second support means spaced from said first support means for supporting the second body;

a projection optical system for projecting the pattern from the first body to the second body and being so arranged that, when in use, the first and second bodies are optically conjugate relative to said projection optical system;

illuminating means for illuminating the first body so that the pattern may be projected by said projection optical system onto the second body; and

alignment means for aligning the first and the second bodies, said alignment means comprising a source of polarized light, an alignment optical system for projecting said polarized light onto the first body and through said projection optical system onto the second body for illuminating the alignment marks on the first and the second bodies, phase converting means positioned in the optical path between the first and second bodies for altering the polarization of the polarized light so that light reflected from the alignment mark of the first body may be distinguished from light reflected from the alignment mark of the second body, and means for separating the polarized light reflected from the respective alignment marks to permit alignment to be performed, said phase converting means being mounted to remain in position during the projection of the pattern from the first body to the second body.



4,521,083

MICROSCOPE OBJECTIVE

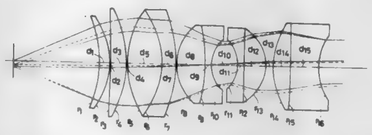
Takayoshi Togino, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,296

Claims priority, application Japan, Nov. 26, 1982, 57-206204

Int. Cl.³ G02B *9/62, 21/02*

U.S. Cl. 350—414 **5 Claims**



1. A microscope objective comprising a first, second, third, fourth, fifth and sixth lens components wherein said first lens component is a positive lens, said second lens component is a positive lens, said third lens component is a positive cemented lens, said fourth lens component is a cemented meniscus lens arranged to be convex toward the object side, said fifth lens component is a cemented meniscus lens arranged to be concave toward the object side, and said sixth lens component is a cemented meniscus lens, said microscope objective being arranged to fulfill the following conditions:

(1) $2.5f < |r_1/(n_1-1)| < 3.5f$, $r_1 < 0$

(2) $0.45f < r_{10} < 0.55f$

(3) $0.45f < r_{11} < 0.65f$, $r_{11} < 0$

(4) ν_5, $\nu_8 \geqq 65$

(5) $10f < |f_{56}| < 50f$

(6) $n_9 - n_{10} \geqq 0.18$

where, reference symbol f represents the focal length of the lens system as a whole, reference symbol f_{56} represents the total focal length of the fifth and sixth lens components, reference symbol r_1 represents the radius of curvature of the surface on the object side of the first lens component, reference symbol r_{10} represents the radius of curvature of the surface on the image side of the fourth lens component, reference symbol r_{11} represents the radius of curvature of the surface on the object side of the fifth lens component, reference symbol n_1 represents the refractive index of the first lens component, reference symbols n_9 and n_{10} respectively represent refractive indices of respective lens elements constituting the sixth lens component, reference symbol ν_5 represents Abbe's number of the lens element on the object side in the fourth lens component, and reference symbol ν_8 represents Abbe's number of the lens element on the image side in the fifth lens component.

4,521,084

PHOTOGRAPHIC LENS SYSTEM

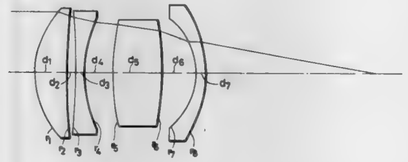
Takashi Kurihara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1983, Ser. No. 545,776

Claims priority, application Japan, Nov. 12, 1982, 57/197542

Int. Cl.³ G02B *9/34, 13/18*

U.S. Cl. 350—432 **7 Claims**



1. A photographic lens system with a short overall length comprising a first, second, third and fourth lens components wherein said first lens component is a positive meniscus lens arranged to be convex toward the object side, said second lens component is a biconcave lens, said third lens component is a biconvex lens and said fourth lens component is a negative meniscus lens arranged to be concave toward the object side, the surface on the object side of said second lens component being arranged as an aspherical surface, said photographic lens system fulfilling the conditions (1) through (4) shown below:

(1) $-0.58 < f(n_2-1)/r_3 < -0.16$

(2) $4.5\times10^{-4} < |\Delta x/f| < 2.0\times10^{-3}$

(3) $\nu_1 - \nu_2 > 19.0$

(4) $0.11f < d_5 < 0.16f$

where, reference symbol f represents the focal length of the lens system as a whole, reference symbol r_3 represents the radius of curvature of reference surface for the aspherical surface on the object side of the second lens component, reference symbol d_5 represents the thickness of the third lens component, reference symbol n_2 represents the refractive index of the second lens component, reference symbols ν_1 and ν_2 respectively represent Abbe's numbers of the first and second lens components, and reference symbol Δx represents the amount of deviation of the aspherical surface on the object side of the second lens component from said reference surface which is measured in the x direction at the position of the maximum effective diameter.

4,521,085

CONICAL MIDDLE COMPONENT MICROSCOPIC LENSES

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Jul. 17, 1984, Ser. No. 631,738

Int. Cl.³ G02B *13/18, 21/00*

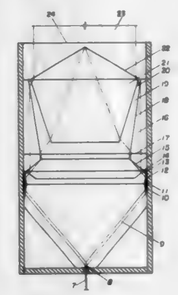
U.S. Cl. 350—432 **1 Claim**

1. Two conical middle component microscopic lenses RT (**1**, **2**) for mounting between lower and middle component lenses RR (**3**, **4**), forming a five-component microscopic stage lens mounted inside a tubular casing (**6**) and aligned on a common vertical optic axis so as to produce single and multiple magnification of images and single and multiple concentration of beams, with the following component lenses;

a. Lower component lens RR (**3**) with a concave conical section (**8**) which refracts incipient beam (**7**), forming divergent conical beam (**9**), and with convex conical section (**10**) which refracts beam (**9**), forming annular beam (**11**),

b. First middle component lens RT (**1**) with a convex conical section (**12**) which refracts beam (**11**), forming convergent conical beam (**13**), and with concave conical section (**14**) which emits beam (**13**),

c. Second middle component lens RT (**2**) with a concave conical section (**15**) which refracts beam (**13**), forming annular beam (**16**), and with a planar section (**17**) which emits beam (**16**),



d. Third middle component lens RR (**4A**) with a convex conical section (**18**) which refracts beam (**16**), forming convergent conical beam (**19**), and with concave conical section (**20**) which refracts beam (**19**), forming convergent conical beam (**21**),

e. Upper component lens RT (**5**) with a concave conical section (**22**) which refracts beam (**21**), forming circular enlarged whole beam (**23**), and with planar section (**24**) which emits beam (**23**) parallel to the vertical optic axis of the lenses.

4,521,086

OBJECTIVE FOR AN IC MASK TESTING DEVICE

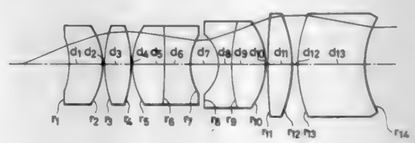
Hiroyuki Kurita, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1983, Ser. No. 509,798

Claims priority, application Japan, Jul. 14, 1982, 57-121346

Int. Cl.³ G02B *21/02, 9/62*

U.S. Cl. 350—464 **6 Claims**



1. An objective for an IC mask testing device comprising a first, second, third, fourth, fifth and sixth lens components, said first lens component being a positive meniscus lens, said second lens component being a biconvex lens, said third lens component being a cemented doublet consisting of a biconvex lens and a biconcave lens, said fourth lens component being a cemented doublet consisting of a biconcave lens and a biconvex lens, said fifth lens component being a biconvex lens, said sixth lens component being a negative meniscus lens, said objective for an IC mask testing device being arranged to fulfill the conditions (1) through (5) shown below:

(1) $1.2f<f_p<1.8f$

(2) $1.5f<f_1$

(3) $d_1<0.36f$

(4) $1.27f<r_{13}<1.40f$

(5) $1.0f<r_{14}<1.05f$

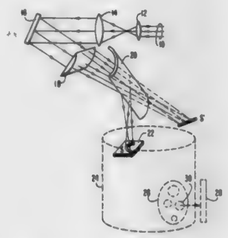
where, reference symbol f represents the focal length of the lens system as a whole, reference symbol f_p represents the total focal length of the first through the fifth lens components, reference symbol f_1 represents the focal length of the first lens component, and reference symbol d_1 represents the thickness of the first lens component, and reference symbols r_{13} and r_{14} respectively represent radii of curvature of respective surfaces of the sixth lens component.

4,521,087

OPTICAL SYSTEM WITH DIFFUSER FOR TRANSFORMATION OF A COLLIMATED BEAM INTO A SELF-LUMINOUS ARC WITH REQUIRED CURVATURE AND NUMERICAL APERTURE

Lawrence P. Hayes, deceased, late of Berlin, Vt.; by Ellen J. Hayes, administratrix, Johnson City, N.Y.; Kantilal Jain, San Jose, and Randall T. Kerth, Morgan Hill, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1983, Ser. No. 497,392
Int. Cl.³ G02B *27/00*
U.S. Cl. 350—574 **8 Claims**



1. Apparatus for producing a curved line source of a desired shape from a collimated light source comprising

a source for producing a large area substantially collimated light beam and means for directing light from said source along a predetermined path;

first optical means along said predetermined path to direct light toward a virtual line image at a first predetermined location;

second optical means interposed between said first optical means and said first predetermined location to produce an arc shaped beam and to direct said beam to a second location; and

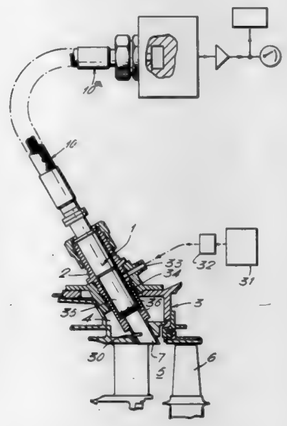
third optical means comprising a diffuser fixed at said second location to receive said arc shaped beam whereby impingement of said beam upon said third optical means produces a continuous self-luminous curved line source of a desired shape.

4,521,088

OPTICAL ELEMENT HAVING A CATALYTIC COATING TO PROMOTE OXIDATION OF OPTICALLY-OPAQUE SUBSTANCES

Ronald A. Masom, Bitterne, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Jun. 14, 1983, Ser. No. 504,339
Claims priority, application United Kingdom, Jun. 17, 1982, 8217559
Int. Cl.³ G02B *1/10*
U.S. Cl. 350—582 **3 Claims**



1. Apparatus for viewing a combustion chamber, the apparatus having forward and rear ends; means mounting said apparatus such that said forward end is located in the vicinity of the combustion chamber; an optically-transparent element having forward and rear surfaces; a surface layer exposed on said forward surface of said element, said layer being substantially transparent to radiation of the wavelengths to which said element is exposed and comprising a catalytic material selected to lower the temperature of oxidation of optically-opaque substances contacting the element below the temperature to which said element is exposed, so as to promote conversion of said substances to a gaseous form; and means mounting said optically-transparent element towards said forward end of the apparatus.

4,521,089

OPTICAL WINDOW PURGE ARRANGEMENT

Thomas L. Bohl, Madison, and Richard C. Ciammaichella, Newbury, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 17, 1983, Ser. No. 542,876
Int. Cl.³ G02B *7/00*
U.S. Cl. 350—582 **10 Claims**

1. An apparatus for isolating an optical surface of an optical element, from a contaminating environment, comprising:

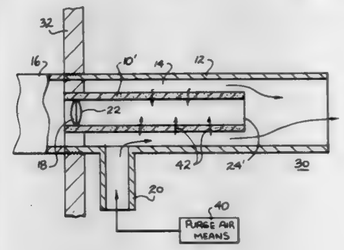
an outer tube having one open end communicating with the contaminating environment;

an inner tube having sides and an open end, disposed in said outer tube and defining with said outer tube a purging gas space surrounding said sides and open end of said inner tube;

the optical element associated with said inner tube so that the optical surface thereof is exposed to an inner space of said inner tube with the optical surface spaced from said open end of said inner tube;

purging gas means connected to said outer tube and communicating with said purging gas space for supplying a purging gas to said purging gas space; and

said inner tube being made of material having porosity within a selected range so that at least some of the purging gas supplied by said purging gas means to said purging gas



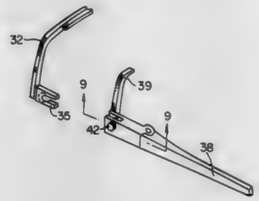
space filters into said inner space to prevent aspiration of contaminents from the contaminating environment into said open end of said inner tube.

4,521,090

SPECTACLE FRAME WITH REMOVABLE FACE ASSEMBLY

Jean-Claude Pierquin, Dompcevrin, France, assignor to Essilor International (Compagnie Generale d'Optique), Cedex, France

Filed Jul. 15, 1982, Ser. No. 398,568
Claims priority, application France, Aug. 11, 1981, 81 15512; Apr. 16, 1982, 82 06575
Int. Cl.³ G02C *1/04, 5/02, 5/00*
U.S. Cl. 351—124 **21 Claims**



1. A spectacle frame comprising:

two components which constitute a supporting structure and a face assembly, respectively, mounted removably to each other, one of said components comprising at least one locking means and the other component comprising a recess adapted to receive said at least one locking means, said at least one locking means being movable between a rest position wherein it allows said two components to be separated from each other and an active position wherein said at least one locking means cooperates with said recess when said supporting structure and said face assembly are mounted onto each other, so as to firmly connect said supporting structure to said face assembly; and

a spring biasing said at least one locking means toward its active position; and

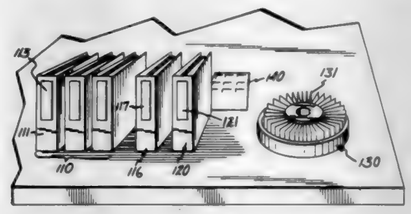
said at least one locking means is constituted by a teat having a key accessible from the outside of the frame, the arrangement being such that a pressure exerted on said key causes said teat to move toward its rest position against the action of the spring.

4,521,091

SLIDE PRODUCTION SYSTEM

Gene Theslof, Jr., North Saint Paul, Minn., assignor to Custom Laboratories, Inc., Minneapolis, Minn.

Continuation of Ser. No. 116,840, Jan. 30, 1980, abandoned. This application Sep. 23, 1982, Ser. No. 421,854
Int. Cl.³ G03B *23/08*
U.S. Cl. 353—122 **12 Claims**



1. A slide production kit comprising:

a first library of individual pictorial slides depicting a plurality of different subjects with a plurality of slides for each subject, each of said slides bearing indicia identifying the slide by category and indicia specifically identifying the slide within said category;

first means for categorizing the slides of the first library by subject matter and for housing said slides in a manner which uniquely identifies each slide, said means including album pages constructed and arranged so as to physically separate said slides by category;

a second library including a first plurality of multiple-image slides each of which includes images of the slides in one of the categories of said first library;

second means for housing the slides of the second library, said second means being constructed and arranged to permit selected presentation of said multiple-image slides and review of the subject matter depicted by each;

a third library of individual exemplary slides representative of optical additions and variations, the subject matter of which may be selectively merged with an individual pictorial slide to achieve a desired presentation;

third means for housing the slides of the third library in predetermined categories; and

an index of selected multiple-image positions, cropping sizes and locations;

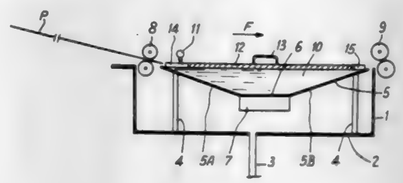
with said second library further including a second plurality of multiple-image slides each of which includes images of the slides in one of the categories of the third library.

4,521,092

DEVELOPING LIGHT SENSITIVE PLATES INCLUDING USE OF ULTRASONIC WAVES

Mario Ferrante, Nancy, France, assignor to Photomeca S.A., Nancy, France

Filed May 19, 1983, Ser. No. 496,110
Claims priority, application France, May 25, 1982, 82 09037
Int. Cl.³ G03D *3/08*
U.S. Cl. 354—320 **5 Claims**



1. A process for developing a relatively rigid plate having

thereon a light sensitive layer, regions of which have been exposed to light so as to alter the characteristic thereof thereby producing wanted and unwanted parts of the light sensitive layer, comprising the steps of:

(a) passing the plate through a bath of developing liquid at a speed in the range of 1 to 4 meters per minute, on a continuous basis, said developing liquid removing the unwanted parts of the light sensitive layer from the plate,

(b) protecting at least the major part of the surface of the developing liquid from contact with the atmosphere,

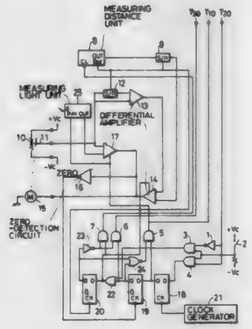
(c) subjecting the developing liquid to ultrasonic waves whilst the plate is immersed therein to assist removal of the unwanted parts of the light sensitive layer without the use of friction from contact with mechanical means and to encourage the removal of unwanted gases from the developing liquid, the frequency of the ultrasonic waves being in the range of about 20,000 Hz to 50,000 Hz with a minimum power of 100 W.

4,521,093

AUTOMATIC FOCUSING DEVICE USED IN COMBINATION WITH AUXILIARY LIGHT SOURCE

Takashi Kawabata, Kamakura, and Masanori Yamada, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,473
Claims priority, application Japan, Jan. 26, 1983, 58-11051
Int. Cl.³ G03B *3/00, 7/00*
U.S. Cl. 354—403 **5 Claims**



1. An automatic focusing device for automatically focusing a photo-taking lens by utilizing an auxiliary light, comprising:

(a) auxiliary light source for emitting the auxiliary light;

(b) drive means for moving said photo-taking lens;

(c) first control means for activating said drive means prior to the activation of said auxiliary light source to move said photo-taking lens to a predetermined position other than a minimum focusing position or an infinite focusing position and then activating said auxiliary light source to emit the auxiliary light;

(d) focus detection circuit for detecting a focus state of said photo-taking lens by utilizing the auxiliary light of said auxiliary light source; and

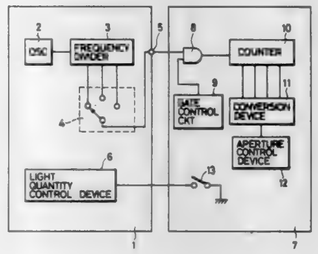
(e) second control means for activating said lens drive means on the basis of the focus state detected by said focus detection circuit.

4,521,094

APERTURE VALUE CONTROL DEVICE UTILIZING FREQUENCY SIGNAL FROM FLASH UNIT FOR CAMERA

Satoshi Takami, and Yoshifumi Kuroki, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 317,377, Nov. 2, 1981, abandoned. This application Sep. 7, 1984, Ser. No. 648,360
Claims priority, application Japan, Nov. 4, 1980, 55-157743[U]
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—423 **7 Claims**



1. An aperture control system for a camera having a flash unit, said aperture control system being of the type having means for generating an aperture value control signal and an aperture value control device on said camera which controls the aperture of said camera to a value in accordance with the value of said aperture value control signal, said control system comprising:

first means on said flash unit for generating a digital signal representing a desired aperture value in accordance with the flash emission characteristics of said flash unit, and for transmitting said digital signal to said camera;

second means on said camera for receiving said digital signal and for generating said aperture value control signal before said flash unit emits light in accordance with the value of said digital signal transmitted from said flash unit;

third means on said camera for generating a second digital signal representing the actual aperture value of said camera during a stopdown operation;

comparison means on said camera for comparing said second digital signal with said aperture value control signal and for generating a coincidence signal upon detecting coincidence between said aperture value control signal and said second digital signal; and

said aperture control device stopping the adjustment of said aperture in response to said coincidence signal from said comparison means, whereby the aperture of said camera is automatically controlled to said desired value without the necessity of a camera operator manually setting the camera aperture to said desired value.

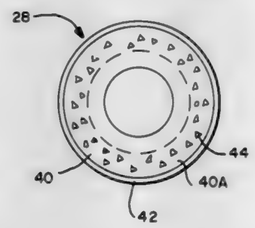
4,521,095

ELECTROPHOTOGRAPHIC COPYING APPARATUS INCLUDING SPECIFIC TONER FUSING ROLL AND ITS METHOD OF USE

Edward F. Mayer, San Jose, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 2, 1983, Ser. No. 529,122
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 FU **12 Claims**

1. In an electrophotographic copying apparatus in which heat fusible toner is transferred from its photoconductive drum to one surface of the ultimate copy sheet, an assembly for fusing the transferred toner onto said sheet, said assembly comprising means supporting said copy sheet for movement along a given path, a fusing roll having an outermost circumferential surface, and containing inwardly of said outermost surface a material which undergoes a phase change at approximately the fusing temperature of said toner, means supporting said roll for rotation such that its outermost surface engages the surface of said copy sheet carrying said toner, and means



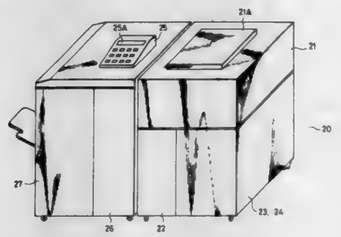
for heating said roll to at least said fusing temperature in order to cause said material to undergo an endothermic phase change and thereby serve as a means for storing heat for use in fusing said toner as the outermost surface of said roll engages said copy sheet.

4,521,096

APPARATUS FOR COMBINING INFORMATION FROM DIFFERENT FORMS TO GENERATE COMPOSITE SLIPS

Saburo Suganuma, and Hiroyuki Katsuka, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 29, 1982, Ser. No. 403,191
Claims priority, application Japan, Jul. 30, 1981, 56-118471
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **6 Claims**



1. A slip processing apparatus, comprising:

form memory means for storing a slip form as an image;

data reading means for reading data necessary for processing a slip;

data memory means for storing as an image, data read by said data reading means;

editing means for distributing predetermined data stored in said data memory means to at least one predetermined position on said form which is stored by said data memory means; and

printer means for printing out on a sheet data distributed by said editing means;

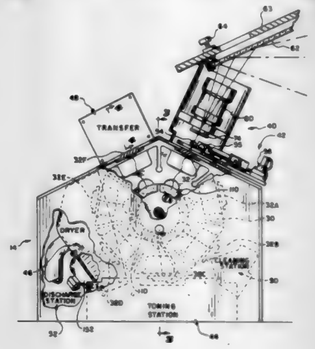
wherein said data memory means comprises first and second memory regions, said first memory region storing unedited data to be distributed and printed out on said sheet, and said second memory region stores data distributed by said editing means, and wherein said printing means prints out on said sheet data from said second memory region.

4,521,097

ELECTROPHOTOGRAPHIC IMAGE RECORDING METHOD AND APPARATUS

Manfred R. Kuehnle, New London, N.H.; George J. Perry, and Robert M. Rose, both of Sudbury, Mass., assignors to Coulter Systems Corporation, Bedford, Mass.

Filed Sep. 24, 1982, Ser. No. 423,020
Int. Cl.³ G03G *15/22*
U.S. Cl. 355—3 R **36 Claims**



1. A method of producing an image-carrying receptor of an original image comprising:

i. providing a planar electrophotographic member having an outwardly facing photoconductive surface,

ii. applying a substantially uniform charge to the photoconductive surface;

iii. projecting a light pattern representative of the original image for a predetermined time, thereby forming a latent electrostatic image on said charged photoconductive surface;

iv. applying toner to the latent electrostatic image, thereby rendering the same visible;

v. drying said photoconductive surface;

vi. transferring the toner image to a transfer medium by:

(a) providing a transfer medium consisting of a substrate carrying a thin heat softenable resin overcoat layer bonded thereto;

(b) bringing together the photoconductive surface of the electrophotographic member carrying the dry toner image and the overcoat layer of the transfer medium in contact engagement;

(c) applying heat and pressure to the engaged layer and surface softening said layer, thereby embedding the toner image within the overcoat layer;

(d) releasing the engaged transfer medium from the photoconductive surface; and

vii. readying the photoconductive surface for reuse after the transfer is completed.

4,521,098

DEVELOPING DEVICE

Masahiro Hosoya, Yokohama, and Tsuyoshi Ueno, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 363,933, Mar. 31, 1982, Pat. No. 4,498,756. This application Oct. 31, 1983, Ser. No. 547,321
Claims priority, application Japan, Apr. 7, 1981, 56-51048
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—3 DD **4 Claims**

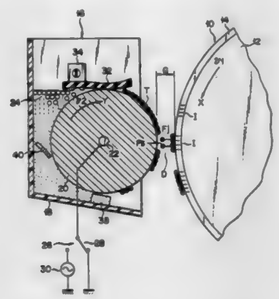
1. A device for developing a latent image formed on a latent image forming surface, by making a non-magnetic single-component developer attracted to the latent image, comprising:

developer holding means for holding said developer on the surface thereof and transferring said developer to a posi-

tion which is in opposition to said latent image forming surface;

supply means for supplying the developer to said developer holding means; and

developer spreading means for spreading the developer supplied by said supply means on the surface of said developer holding means, said developer spreading means having elasticity, a surface of said developer spreading means being pressed, except for the end portions thereof, against the surface of said developer holding means with a predetermined nip width, whereby a developer layer is formed on the surface of said developer holding means.



4,521,099

COPYING APPARATUS

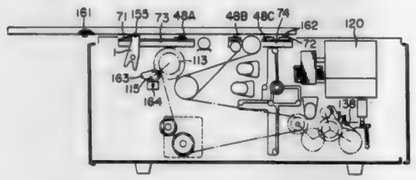
Hajime Katayama; Hiroshi Nitanda; Tateki Nagaoka, all of Tokyo; Hirotoshi Kishi, Higashimurayama; Yusaku Takada, Tokyo; Noriyoshi Iida, Ichikawa; Tsuneki Inuzuka, Fuchu, and Yutaka Komiya, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 932,655, Aug. 10, 1978, abandoned, which is a division of Ser. No. 624,118, Oct. 20, 1975, Pat. No. 4,139,300. This application Sep. 22, 1981, Ser. No. 304,565

Claims priority, application Japan, Oct. 22, 1974, 49-127795[U]; Dec. 13, 1974, 49-143891

Int. Cl.[3] **G03G** *15/04*

U.S. Cl. 355—8 **8 Claims**



1. An image forming apparatus comprising:

process means for forming an image on a recording material, said process means including reciprocable means for scanning an original document;

detecting means for detecting a start position of said reciprocable means to start the reciprocation of said reciprocable means for scanning from the start position;

setting means, in response to said detecting means, for setting before the start of the reciprocation, said reciprocable means to the start position if it is not at the start position;

digital counting means for counting a predetermined period of time required for preliminary operation before image formation but after said process means is instructed to start; and

starting means for starting the scanning operation of said reciprocable means in response to a signal from said detecting means representing said start position, and for outputting a latch signal during the time of operation for the scanning operation of said reciprocable means in response to completion of the counting of the predetermined time period by said counting means, wherein said reciprocable means is kept at said start position in accordance with said setting means during said preliminary operation for image formation.

4,521,100

VARIABLE MAGNIFICATION IMAGE FORMING APPARATUS

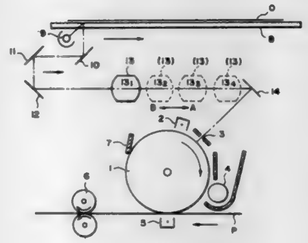
Takaji Yonemori, Tokyo, and Seiji Sagara, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1983, Ser. No. 505,962

Claims priority, application Japan, Jun. 28, 1982, 57-111097; Jun. 28, 1982, 57-111099; Sep. 8, 1982, 57-157162

Int. Cl.[3] **G03G** *15/00*

U.S. Cl. 355—8 **20 Claims**



1. Image forming apparatus wherein an image of an original is formed on a photosensitive member surface at a variable magnification, comprising:

optical means for imaging an original on the photosensitive member surface, said optical means being displaceable to change the magnification at which the image of the original is formed on the photosensitive member surface;

pulse generating means for generating a series of pulses; and

control means for controlling a position of said optical means, said control means controlling the amount of displacement of said optical means on the basis of the count of the pulses generated by said pulses generating means, and said control means effecting, each time said optical means is displaced, an action of once moving said optical means to a reference position and then moving the same to a desired position on the basis of the count.

4,521,101

LIQUID DEVELOPING APPARATUS FOR ELECTROPHOTOGRAPHY

Shigeyoshi Suzuki; Jun Yamada; Takao Senga; Sadao Kuriu, all of Nagaokakyo; Masahiro Yamasaki, Otsu; Iwao Hirose, Hikone, and Tokubee Maegawa, Shiga, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo and Dainippon Screen Mfg. Co., Ltd., Kyoto, both of, Japan

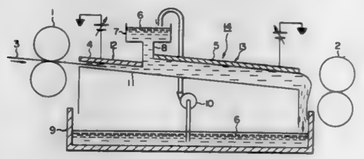
Filed Jun. 13, 1983, Ser. No. 503,602

Claims priority, application Japan, Jun. 18, 1982, 57-91211[U]; Jun. 18, 1982, 57-91212[U]; **Jun. 18, 1982, 57-91213**[U]; **Jun. 18, 1982, 57-91214**[U]

Int. Cl.[3] **G03G** *15/10*

U.S. Cl. 355—10 **10 Claims**

1. A liquid developing apparatus for electrophotography in which an electrostatic latent image surface of a photoconductive material is placed opposite developing electrodes and, at the same time, is transferred through a liquid toner, said apparatus comprising a developing chamber including means defining a transfer path for the photoconductive material, said means defining said path including a bottom plate having an upstream and a downstream side with respect to a direction of flow of the liquid toner, said path further including developing electrodes which face said bottom plate at predetermined intervals and including top plates and side plates wherein said developing chamber is divided into a front section and a rear section with respect to the photoconductive material path, said path having a width between the developing electrode in the front section of said chamber and the electrostatic latent image surface of said photoconductive material, said width being



smaller than the width between the developing electrode in the rear section of said developing chamber and the electrostatic latent image surface of said material, said path having opposite end faces on the upstream and downstream sides thereof which are open and at least one supply passage being provided for the liquid toner, said supply passage being located between the front and rear sections of said developing chamber.

4,521,102

COPY PAPER COUNTING METHOD AND DEVICE FOR COPYING APPARATUS

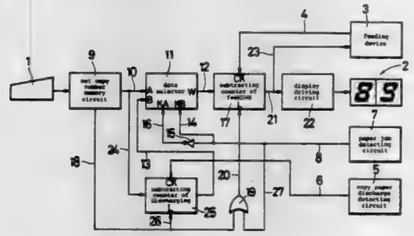
Minoru Motomura, Nara; Kiyoshi Shibata, Osaka; Toshio Watanabe, Osaka, and Yousuke Ohata, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Aug. 27, 1980, Ser. No. 181,842

Claims priority, application Japan, Sep. 3, 1979, 54-113213

Int. Cl.[3] **G03G** *15/00*

U.S. Cl. 355—14 CU **12 Claims**



1. A method of counting copy papers to be used for a copying apparatus capable of successively reproducing a plurality of copies corresponding to an original document, comprising the steps of:

detecting a copy paper being fed to perform a copying operation, and counting the copy paper by means of a first counter;

terminating the feed of the copy paper when the counting value stored in the first counter becomes equal to a preset number;

detecting a copy paper being discharged after completion of a copying operation, and counting the discharged copy paper by means of a second counter; and

detecting paper jamming, and resetting the counting value of the first counter so as to be equal to the counting value of the second counter in response thereto.

4,521,103

ELECTROPHOTOGRAPHIC REVERSAL DEVELOPING APPARATUS WITH CONTROL OF DEVELOPING ELECTRODE BIAS POTENTIAL

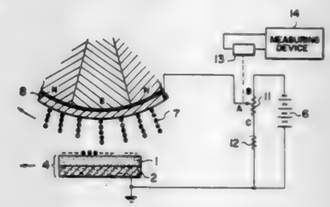
Shuichi Ohtsuka; Yasuo Aotsuka, both of Kasei, and Eiichi Saito, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Dec. 2, 1982, Ser. No. 446,274

Claims priority, application Japan, Dec. 7, 1981, 56-196626

Int. Cl.[3] **G03G** *15/00*

U.S. Cl. 355—14 D **6 Claims**



1. An electrophotographic apparatus for producing and developing an electrostatic latent image on an electrophotosensitive material, comprising

charging means for applying an electrostatic saturation charging voltage of predetermined polarity to an electrophotosensitive material to produce an electrostatically charged and electrophotosensitive material;

means for exposing said electrostatically charged electrophotosensitive material to an image to be reproduced to form a corresponding electrostatic latent image thereon; and

developing means for developing said electrostatic latent image to a reversal electrophotographic image, said developing means comprising:

supply means for supplying a one-component magnetic toner;

bias means for applying a bias voltage of the same polarity as said electrostatic saturation charging voltage to said one-component magnetic toner, said bias voltage and said electrostatically charged electrophotosensitive material having a predetermined differential;

magnetic brush means for applying said one-component magnetic toner to said electrophotosensitive material having said electrostatic latent image thereon;

means for determining the environmental conditions in which said electrophotosensitive material is placed and supplying a signal representing the so determined environmental conditions; and

control means, responsive to said signal, for changing the voltage differential between said bias voltage and said electrostatically charged electrophotosensitive material by setting said bias voltage to a value appropriate for preventing appearance of fog in a reversal electrophotographic image and assuring good contrast therein.

4,521,104

APPARATUS AND METHOD FOR PRODUCING PHOTOGRAPHIC RECORDS OF TRANSPARENCIES

Dwin R. Craig, 9447 Emory Grove Rd., Gaithersburg, Md. 20877

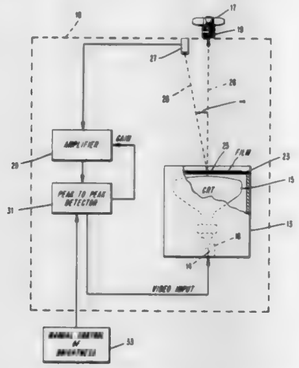
Filed Nov. 29, 1983, Ser. No. 555,973

Int. Cl.[3] **G03B** *27/72, 27/80*

U.S. Cl. 355—20 **11 Claims**

1. Apparatus for producing photographic prints of transparency images comprising a standard television monitor including a cathode ray tube having a raster and operable to generate a flying spot of light on the raster at a standard television sweep rate, a camera having a lens positioned to view the raster, means for supporting said transparency between said raster and said camera lens whereby said lens views light from

said flying spot passing through said transparency, a photoelectric detector operable to continuously monitor light from said flying spot passing through said transparency, said photoelectric detector being positioned relative to said lens to monitor light passing through each area of said transparency before light passing through the same areas of said transparency is viewed by said camera lens, inverse electronic feedback means interconnecting said photoelectric detector and said cathode ray tube and operable to vary the intensity of said light spot



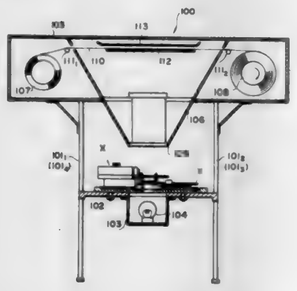
inversely to the brightness of light monitored by said photoelectric detector, said camera lens and said photoelectric detector being positioned relative to one another, and said feedback means being constructed to produce a negative luminous image of said transparency image on said raster, said transparency image and said negative luminous image producing a composite image having a compressed brightness range relative to the brightness range of said transparency image and operable for viewing by the camera lens.

4,521,105

NEGATIVE FILM CARRIER FOR A DISC FILM

Toshiyuki Mukae, and Yoshifumi Azuma, both of Wakayama, Japan, assignors to Noritsu Kenkyu Center Co., Ltd., Wakayama, Japan

Filed Jun. 13, 1983, Ser. No. 503,535
Claims priority, application Japan, Jun. 14, 1982, 57-87321[U]
Int. Cl.³ G03B *27/32, 27/52*
U.S. Cl. 355—64 **6 Claims**



1. A negative film carrier for a disc film having notches at its outer periphery for defining a boundary between adjacent film pieces, said carrier to be used by mounting it on a handling board of a photographic printer, said carrier comprising:

a negative film mask plate adapted to be removably mounted on said handling board, said negative film mask plate having a holding recess on the upper surface thereof and an exposure opening formed within said recess and adapted to overlap with a light projecting aperture formed in said handling board;

a negative film mask holder detachably fitted into said holding recess in a manner immovable in a horizontal direction, said negative film mask holder having a pivoting pin erected thereupon and an exposure opening intercommunicated with said exposure opening of said negative film mask plate;

a disc film holder having a film supporting shaft and a film turning means for turning said disc film to feed negative film pieces on said exposure opening one by one, said turning means including an actuating plate pivotally supported on said holder and a feed ratchet adapted to be driven by said actuating plate to forward said disc film by engagement of said ratchet with one of said notches formed at the outer periphery of said disc film, said disc film holder being supported by said pivoting pin on said negative film mask holder so as to be rotatable about said pivoting pin between one position overlaid on said negative film mask holder to be adapted for printing and another position being displaced to be protruded sidewardly of said negative film mask holder for facilitating the mounting and unloading of said disc film on said shaft; and

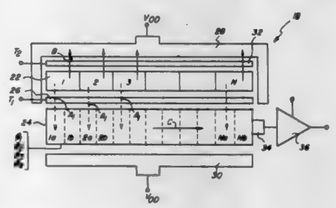
a negative film retainer holder pivotally supported by a horizontal shaft mounted on said negative film mask plate, said negative film retainer holder having a mask-shaped retainer and being adapted for rocking motion about said shaft to allow said retainer to be moved against and away from said disc film.

4,521,106

IMAGE SENSOR AND RANGEFINDER DEVICE WITH BACKGROUND SUBTRACTION USING INTERLACED ANALOG SHIFT REGISTER

David N. Lambeth, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 18, 1982, Ser. No. 409,259
Int. Cl.³ G01C *3/10;* G03B *7/08*
U.S. Cl. 356—1 **8 Claims**



1. A rangefinder, comprising:

means energizable for projecting a beam of light to illuminate a spot on an object in a scene;

a linear array of N photosensitive elements responsive to incident light for generating photosignals;

means for forming an image of a portion of the scene containing the illuminated spot on said array;

analog shift register means having 2N cells for receiving, in parallel, N analog signals into N alternate cells, and responsive to clock signals for shifting said analog signals serially toward an output location;

first transfer means responsive to a control signal for transferring N photosignals generated by said array into the N alternate cells of said analog shift register;

control means for (1) energizing said light beam and generating photosignals in said array, (2) sending a control signal to said first transfer means to transfer photosignals into said analog shift register means from said array, (3) deenergizing said light beam and generating photosignals in said array, (4) supplying clock signals to said analog shift register means to shift said photosignals by one cell, (5) sending a control signal to said first transfer means to transfer photosignals into said analog shift register means, and (6) supplying clock signals to said analog shift register means to shift the photosignals therein serially to the output location; and

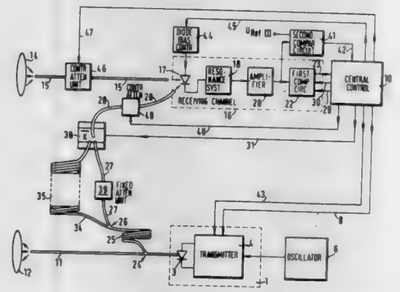
signal processing means, including means for (1) receiving said photosignals and forming a series of difference signals representative of the difference between the responses of Nth photosensitive element with the light beam energized and with the light beam deenergized, and (2) detecting the location of the image of said illuminated spot based on the magnitude of said difference signals, and forming a range signal based on the detected location of said illuminated spot.

4,521,107

APPARATUS FOR MEASURING DISTANCES BY MEASURING TIME OF TRAVEL OF A MEASURING LIGHT PULSE

Hoiko Chaborski, Munich, and Walter Mehnert, Ottobrunn, both of Fed. Rep. of Germany, assignors to MITEC Moderne Industrietechnik GmbH, Ottobrunn, Fed. Rep. of Germany

Continuation of Ser. No. 339,785, Jan. 15, 1982, abandoned. This application Sep. 26, 1984, Ser. No. 654,807
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1981, 3103567
Int. Cl.³ G01C *3/08;* G01S *13/10*
U.S. Cl. 356—5 **29 Claims**



1. Distance measuring apparatus for measuring the time of travel of individual unmodulated measuring light pulses to a target and therefrom, by reflection, back to the apparatus which for this purpose comprises:

a light pulse transmitter for emitting on triggering thereof individual unmodulated light pulses of short duration,

a light beam splitter means for splitting individual light pulses from said transmitter into two parts, a first of which is directed toward an optical transmitting means and a second of which is directed into a reference light path means, said optical transmitting means transmitting said first light pulse part as a measuring light pulse toward said target,

an optical receiving means for receiving a reflected measuring light pulse from the target,

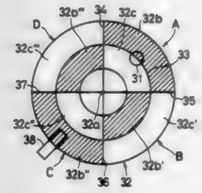
a receiving channel comprising an electro-optical receiving means for receiving from said optical receiving means said reflected measuring light pulse and from said light beam splitter means, via said reference light path means, said second part of each light pulse as a reference light pulse and transforming each received light pulse into an electrical signal, electrical circuit means in said receiving channel for processing each electrical signal to produce time-related distance measuring signals for starting and stopping of said measurement of time of travel of each measuring light pulse, said receiving channel, on responding to each received light pulse having a recovery time which must elapse before the next light pulse can be processed, said reference light path means including intermediate its ends, connected to said light beam splitter and said electro-optical receiving means, first and second functionally parallel reference light path branches of different length and selector means for selecting one of such first and second reference light path branches for supplying the reference light pulse via the selected branch to said electro-optical receiving means, said first reference light path branch comprising a short reference light path branch to transit time through which for the reference light pulse is relatively short and said second reference light path branch comprising a long reference light path branch the transit time through which for the reference light pulse is relatively long, control means for controlling operation of said selector means as a function of target distance, the selector means being controlled to supply reference light pulses to the electro-optical receiving means from the short reference light path branch for long distance targets and for supply of reference light pulses to the electro-optical receiving means from the long reference light path branch for short distance targets, said relatively long transit time for the reference light pulse being at least equal to two times said recovery time of said receiving channel, and a time measuring means connected to the receiving channel and supplied therefrom with said time-related distance measuring signals for measuring the time of travel of each measuring light pulse.

4,521,108

FOCUSING DEVICE FOR OPTICAL SYSTEM

Yoshiaki Horikawa, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1982, Ser. No. 372,374
Claims priority, application Japan, Apr. 30, 1981, 56-64065; Apr. 30, 1981, 56-64066
Int. Cl.³ G01J *1/00;* G03B *13/18*
U.S. Cl. 356—123 **17 Claims**



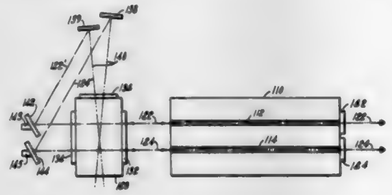
1. A focusing device for an optical system, comprising:

a light intercepting plate, having a rotational center which is not co-axial with an exit pupil of said optical system, arranged rotatably in a plane perpendicular to an optical axis of said optical system, said plate being near said exit pupil of said optical system, and said plate having a plurality of light transmitting parts and light intercepting parts arranged so that a first part which can pass light and a second part which can intercept light both appear in said pupil, wherein said light transmitting parts and light intercepting parts are so arranged that rotation of said plate by 360° causes the relative axial position of said first part and second part in said pupil to alternate periodically at predetermined interval during said rotation.

4,521,109
PASSIVELY Q-SWITCHED DUAL LASER

Peter P. Chenausky, Avon, Conn.; Robert J. Mongeon, East Longmeadow, Mass., and Lanny M. Laughman, Bolton, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 369,303, Apr. 16, 1982,. This application Apr. 13, 1984, Ser. No. 600,041
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—349 **2 Claims**

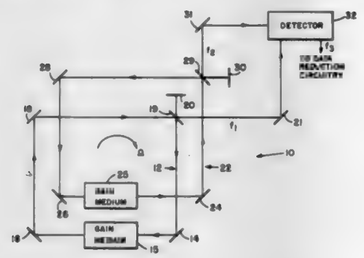


1. A laser ranging system for measuring round trip time to a target comprising:
- laser means for generating simultaneously a pair of pulsed optical beams at first and second optical frequencies separated by a predetermined frequency Δf;
- heterodyne means for detecting an interference signal at said frequency Δf having an initial phase;
- heterodyne means for detecting return radiation of said first and second frequencies and for generating a return signal at said frequency Δf having a return phase;
- phase means for measuring the phase difference between said initial phase and said return phase;
- means for generating a coarse measurement of said round trip time; and
- means for combining said phase difference with said coarse measurement of said round trip time to form an improved round trip time measurement.

4,521,110
DUAL CAVITY LASER GYRO

Thomas G. Roberts, Huntsville, and Thomas L. Honeycutt, Somerville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 13, 1982, Ser. No. 449,011
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **12 Claims**

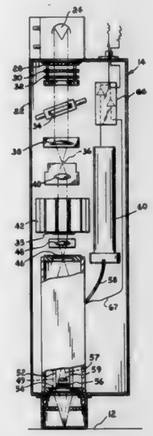


1. A dual cavity laser gyro for determining angular rotation of an area, comprising: first and second, parallel, optical paths each circumscribing an area of 360° and each providing a resonant cavity, a common gain medium disposed in the respective optical paths for providing physically separated optical mode volumes and for inducing separate laser oscillation in each cavity, first and second means coupled respectively to said first and second optical cavities for providing negative feedback therein for limiting laser oscillation to a single traveling wave in each cavity, said traveling wave in said first cavity being in the opposite direction to said traveling wave in the second cavity, means for extracting a portion of the laser oscillation from each cavity, and means for heterodyning the portions of removed laser oscillation for providing a beat frequency output.

4,521,111
APPARATUS FOR MEASUREMENT OF MOLECULAR ORIENTATION

Charles M. Paulson, Jr., and Mark E. Faulhaber, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 23, 1982, Ser. No. 401,331
Int. Cl.³ G01J *4/04*
U.S. Cl. 356—367 **4 Claims**

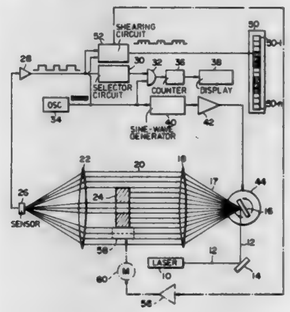


4. An apparatus comprising:
- means for establishing a beam of rotating linearly polarized light incident on an advancing polymeric film;
- an emission housing in and partially intercepting said incident beam;
- a fixed polarizer on said emission housing;
- a filter in the emission housing in the path of light emitted from the film, the optical paths of said incident and emitted light being coaxial;
- a first photodetector having a light sensitive element in the path of incident light passing through said fixed polarizer;
- a second photodetector having a light sensitive element in the path of emitted, filtered light; and
- a detection circuit connected to said first and second photodetectors, the latter providing synchronous and sinusoidal reference and analytical signals, respectively, to the detection circuit, said apparatus further comprising:
  - a support housing for said means and said emission housing; and
  - means mounting the support housing above and for traversing movement relative to the path of advance for said film.

4,521,112
OPTICAL MEASURING DEVICE WITH POSITION INDICATOR

Yoshiharu Kuwabara; Hiroyoshi Hamada, and Masayuki Kuwata, all of Kanagawa, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1982, Ser. No. 452,387
Claims priority, application Japan, Dec. 25, 1981, 56-215253
Int. Cl.³ G01B *11/02*
U.S. Cl. 356—375 **9 Claims**

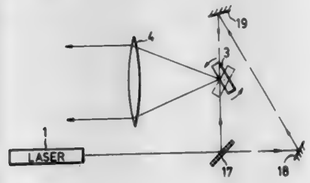


1. An optical measuring device comprising a parallel scanning ray beam generator, condensing means for condensing said parallel scanning ray beams after said parallel scanning ray beams have passed through a workpiece being measured, and a single light receiving element for sensing the brightness of said scanning ray beams condensed by said condensing means to convert the same into an electric signal, whereby the dimensions of said workpiece being measured are measured from the time length of a dark portion or a bright portion generated due to the obstruction of said parallel scanning ray beams by said workpiece being measured, which has been interposed between said parallel scanning ray beam generator and said light receiving element, characterized in that said device further comprises setting position display means having a plurality of light emitting elements arranged in opposed relations to the scanning scope of said parallel scanning ray beams and a time shearing circuit for time-shearing an output from said light receiving element during a single scanning time in accordance with the number of the light emitting elements of said setting position display means to thereby cause the light emitting elements of said setting position display means in accordance with the position of the workpiece being measured with respect to the scanning scope to emit lights.

4,521,113
OPTICAL MEASURING DEVICE

Yoshiharu Kuwabara; Yasuharu Takayama, and Hiroyoshi Hamada, all of Kanagawa, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed May 26, 1982, Ser. No. 382,303
Claims priority, application Japan, Jun. 17, 1981, 56-93543
Int. Cl.³ G01B *11/02*
U.S. Cl. 356—387 **7 Claims**

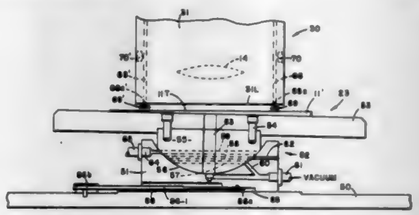


1. An optical measuring device wherein said device having a parallel scanning beam generator comprising a beam generator, a rotary mirror for reflecting incident beams into said scanning beams and a collimator lens for converting said rotary scanning beams from said rotary mirror into parallel scanning beams, wherein a workpiece to be measured is interposed between said parallel scanning beam generator and a light receiving element, and dimensions of the workpiece are measured from the time length of a dark portion or a bright portion generated due to the obstruction of the parallel scanning beams by the workpiece, characterized in that said rotary mirror is formed into as a plate-shaped one, opposite surfaces of which are reflectory surfaces, and said parallel scanning beam generator has a beam transmitting mechanism, in which the beams from said beam generator are split into two and the split beams are caused to be incident upon said rotary mirror from two directions opposite to each other, whereby the two reflectory surfaces of said rotary mirror alternately reflect the split beams from the two directions.

4,521,114
SINGLE LENS REPEATER

Christian K. Van Peski, Hidden Hills, and William L. Meisenheimer, Agoura, both of Calif., assignors to TRE Semiconductor Equipment Corporation, Woodland Hills, Calif.

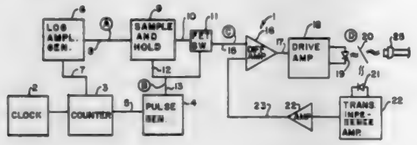
Continuation of Ser. No. 238,148, Feb. 25, 1981, abandoned, which is a continuation of Ser. No. 38,349, May 11, 1979, abandoned. This application Dec. 14, 1981, Ser. No. 330,498
Int. Cl.³ G01B *11/00;* **B25B** *11/00*
U.S. Cl. 356—401 **10 Claims**



1. An apparatus useful in a semiconductor wafer photoexposure system of the type having a camera for exposing said wafer to produce semiconductor devices, said apparatus achieving spaced parallel alignment of the surface of said semiconductor wafer with a reference plane that is associated with the body of the camera of said system and is in spaced facing relationship with said wafer surface, comprising:
- a platform for supporting said wafer;
- a spherical air bearing mounting for said platform,
- a plurality of channels in said camera body for conducting gas under pressure to openings in said camera body facing said wafer surface so as to form gas jets directed toward said semiconductor wafer,
- pressure sensor associated with each of said channels to sense the gas back-pressure therewithin,
- means for applying gas via said channels so that the force of said gas jets applied against said wafer will cause said wafer and said platform to move within said air bearing mounting until the back-pressure condition indicating that the distance from each of said openings to said wafer surface is equal, whereby said parallel alignment between said semiconductor wafer and the reference plane of said camera body is achieved,
- vacuum clamping means for locking with said spherical air bearing mounting to prevent further movement of said platform therewithin, said vacuum clamping means being actuated upon detection by said sensors of said equal back-pressure condition, and
- means for moving said camera body toward and away from said semiconductor wafer, and
- focusing means for causing said moving means to move said body relative to said wafer until the level of back pressure

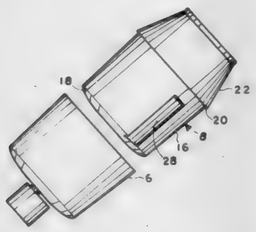
uniformly sensed at all of said sensors is equal to a preselected value, said value corresponding to a spacing between said body end and with wafer at which said camera is exactly focused on said surface.

4,521,115
PULSE CODED OPTICAL ATTENUATION METER
John W. Higginbotham, St. Charles County, Mo., and Dennis C. Dowden, Orange County, Fla., assignors to McDonnell Douglas Corporation, St. Louis County, Mo.
Filed May 21, 1982, Ser. No. 380,705
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—432 **13 Claims**



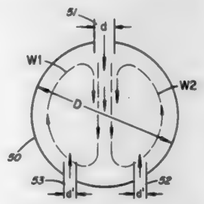
1. A device for measuring attenuation, comprising:
transmitter means for generating an electrical signal including means for converting said electrical signal to electromagnetic wave energy for transmission from said transmitting means;
receiver means for receiving said electromagnetic wave energy from said transmitter means, including means for converting said electromagnetic wave energy to an electrical signal;
means for converting said electrical signal to a plurality of pulses operatively connected to one of said transmitter means and said receiver means, said pulse converting means providing a plurality of pulses decreasing in amplitude by equal decibel values; and
counter means presettable to a desired value operatively associated with said receiver means, said counter being counted down by said plurality of pulses, the count of said counter after count down corresponding to the attenuation of said electromagnetic wave energy during passage of said electromagnetic wave energy between said transmitter means and said receiver means.

4,521,116
MIXING APPARATUS WITH REMOVABLE DRUM LINER
Gordon H. Adsit, Lake Wales, Fla., assignor to Gordon W. Orthner, Tampa, Fla.
Filed Jun. 1, 1984, Ser. No. 616,121
Int. Cl.³ B28C *5/18*
U.S. Cl. 366—54 **8 Claims**



1. Apparatus for mixing concrete or the like, comprising;
a support frame;
rotational drive means mounted to said frame;
liner supporting means rotatably connected to said rotational drive means; and
drum liner means removably connected to and supported by said drum liner supporting means and comprising a container having a first axial portion of generally cylindrical configuration having one closed end and other open end and a second axial portion joined to said first portion at said open end thereof, said first portion having said closed end being received within said drum liner supporting means and said second portion remaining outside said drum liner supporting means and having the configuration of a body of revolution tapering from a diameter approximately the diameter of said first portion where said first portion and said second portion join to a smaller diameter at the end of said second portion distal said first portion, said second portion distal end being open.

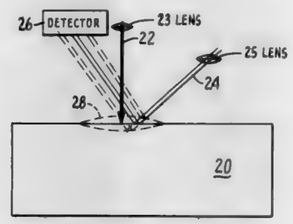
4,521,117
ARRANGEMENT FOR MIXING A GAS INTO A MAIN FLOW OF A SECOND GAS
Johannes H. W. Ouwerkerk, Driehuis; Wouter B. Lucieer, Schagen, and Rudolph E. Cramer, Oudkarspel, all of Netherlands, assignors to Hoogovens Groep B.V., Ijmuiden, Netherlands
Filed Feb. 10, 1984, Ser. No. 578,846
Claims priority, application Netherlands, Feb. 17, 1983, 8300590
Int. Cl.³ B01F *3/03*
U.S. Cl. 366—165 **6 Claims**



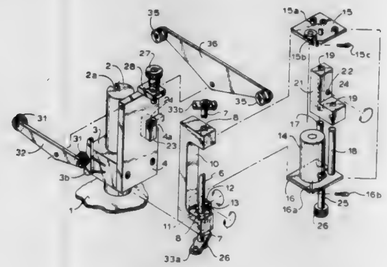
1. In a conduit system having an arrangement for mixing a first gas into a main flow of a second gas, comprising a main conduit bounded by a wall for said main flow and a plurality of supply conduits for the first gas which open into said main conduit, the improvement that
said supply conduits opening into said main conduit provide at least one set of three outlet openings for the first gas into the main flow, which set of openings consists of a first opening which opens into the main flow perpendicularly to the wall and two second openings which are arranged so as each to provide a lesser flow rate of the first gas in operation than said first opening and are offset with respect to said first opening so that the three openings of the set in operation direct the first gas into two contra-rotating circulatory movements, as viewed in the direction of the axis of the main conduit.

4,521,118
METHOD FOR DETECTION OF THERMAL WAVES WITH A LASER PROBE
Allan Rosencwaig, Danville, Calif., assignor to Therma-Wave, Inc., Fremont, Calif.
Filed Jul. 26, 1982, Ser. No. 401,511
Int. Cl.³ G01N *21/41, 25/72*
U.S. Cl. 374—5 **15 Claims**

1. A method for detecting thermal waves in a sample, said thermal waves being generated in an area by a periodic localized heating at a spot on the surface of the sample, said thermal waves radiating outwardly from said spot, said method comprising the steps of:
focusing a probe beam of energy within a preselected portion of said area on the surface of the sample which is being periodically heated by the thermal waves, in a manner such that said beam is reflected from said surface; and monitoring the periodic angular displacement of the reflected probe beam, said periodic displacement resulting from the periodic local angular change in the surface conditions of the sample induced by the presence of thermal waves generated by said periodic localized heating, whereby the periodic displacement of the reflected probe beam can be used to detect the thermal waves.



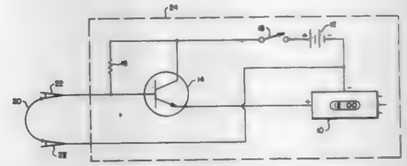
4,521,119
CONSTANT LOAD DILATOMETERS
Anthony C. Stepke, New Hyde Park, and Gerhard R. Clusener, Manhasset, both of N.Y., assignors to Theta Industries, Inc., Port Washington, N.Y.
Filed Oct. 3, 1983, Ser. No. 538,180
Int. Cl.³ G01N *25/16*
U.S. Cl. 374—56 **20 Claims**



1. Apparatus for independently supporting and adjusting the alignment of a member selected from the coil and core of a linear variable differential transformer comprising
(a) a collar which is adapted to slidably engage an elongated extension of said selected member to permit linear movemnt thereof on its longitudinal axis and
(b) adjustable clamping means coupled to said collar for holding and tilting said collar and said selected member on at least one plane parallel to said axis.

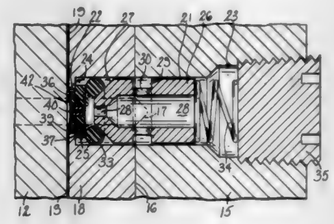
4,521,120
FOREST FIRE RATE OF SPREAD WITH TIMERS METHOD
Richard W. Blank, Haslett, and Albert J. Simard, Dumond Dale, both of Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Sep. 15, 1983, Ser. No. 532,411
Int. Cl.³ G01K *3/04*
U.S. Cl. 374—102 **5 Claims**

1. A method for determining the rate of spread of a forest fire comprising the steps of: locating at least three temperature-actuated timers in a spatial pattern in the expected path of a forest fire, each timer having a low melting alloy switch detachably connected thereto; allowing the forest fire to pass over each one of the timers, thereby melting said switch and actuating each of the timers when the fire reaches said timers; recovering said timers; determining the differences between



the times of actuation of said timers; measuring the distance between timers, correlating the time differences and distance measurements to determine the rate of spread of the forest fire.

4,521,121
AIR BEARING
Gregory L. Klein, York, and C. Leonard Burton, Clover, both of S.C., assignors to Textron Inc., Providence, R.I.
Filed Aug. 8, 1983, Ser. No. 521,035
Int. Cl.³ F16C *32/06, 33/10*; F15D *1/08*
U.S. Cl. 384—100 **5 Claims**

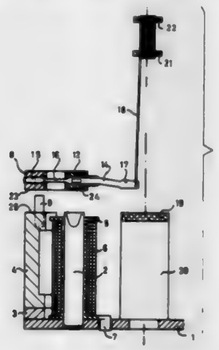


1. An inlet nozzle assembly for an air bearing adapted to supply air under pressure to the gap between facing surfaces of relatively movable first and second machine elements, one of said elements being provided with a bore terminating at said surface of said element, said bore having a reduced diameter portion adjacent said surface and an annular seat adjacent said reduced diameter bore portion, the nozzle assembly comprising, a thin metering disc of a durable material traversed by an axially extending air-metering orifice, the disc having a centrally located reduced diameter portion adapted to rest in the reduced diameter portion of the bore, an O-ring resting against a peripheral portion of the disc on its side opposite the reduced diameter portion, a tubular thimble element fitting freely in said bore and having one end resting against the O-ring, a spring resting against an opposite end of the thimble element, a retaining element removably engaged in said bore in a position to compress the spring against said opposite end of the thimble, whereby the thimble compresses the O-ring against the disc and holds the disc against the annular seat, the means for supplying air under pressure to the nozzle assembly.

4,521,122
NEEDLE PRINTER ASSEMBLY
Rolf Schäfer, Villingen-Schwenningen; Peter Vogelhuber, Brigachtal, and Hans-Joachim Wysk, Villingen-Schwenningen, all of Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen-Schwenningen, Fed. Rep. of Germany
Filed Dec. 8, 1982, Ser. No. 448,020
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1981, 3149300
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **12 Claims**

1. A needle printing device comprising a base plate of magnetic material, a plurality of printing needles, electromagnetic

means including core means operating to individually actuate said printing needles, permanent magnet means, yoke means defining a magnetic flux path between said electromagnetic means and said permanent magnet means, armature means, and spring means connecting with said armature means and having said printing needles attached thereto, said armature means being held against said core means in a first position by said permanent magnet means against the force of said spring means when said electromagnetic means is de-energized, with energization of said electromagnetic means operating to cause said printing needles and said armature means to move toward a printing position under the influence of said spring means, said yoke means including a first and a second yoke part, with said second yoke part having said armature means arranged



thereon, said first yoke part and said core means having, respectively, a first and a second coplanar surface, said first and second coplanar surfaces being arranged to extend in a first common plane, said armature means and said second yoke part having, respectively, a third and a fourth coplanar surface, said third and fourth coplanar surfaces being arranged to extend in a second common plane, said needle printing device being constructed so that when said electromagnetic means is de-energized with said armature means held in said first position said second common plane is immediately adjacent and parallel to said first common plane and said third coplanar surface of said armature means and said second coplanar surface of said core means lie parallel with and flat against each other in abutting relationship.

4,521,123

METHOD AND APPARATUS FOR THE REPRESENTATION OF CHARACTERS

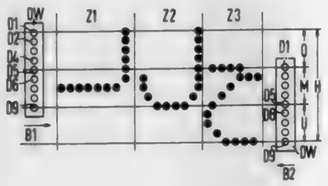
Georg Boehmer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,622

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1982, 3235676

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **11 Claims**



11. In an apparatus for representing characters having a central area within a middle zone for and in an upper zone or in a lower zone descenders or ascenders comprising:

means for printing the entire character of all those characters in a line which have a central area and/or at least one ascender during a first horizontal motion of the print element along the line;

means for displacing the recording medium relative to the print element perpendicular to the line direction by a partial advance such that the characters having a central area and a descender are subsequently printable;

means for printing the entire character of all those characters in a line having a central area and a descender during a second horizontal motion of the print element along the line;

means for printing those characters which have only a central area either during the first motion or the second motion of the print element; and

means for displacing the recording medium relative to the print element in accord with a line feed after printing all the characters of a line;

whereby, characters having a central area and an ascender are printed during a first horizontal movement of said carriage means and characters having a central area and a descender are printed during a second horizontal movement of said carriage means after said platen means has been rotated by a partial advance in an amount equal to the height of one zone, characters having only a central area being printed during either said first movement or said second movement.

4,521,124

CHARACTERS CARRYING PRINT WHEEL DISC FOR PRINTING MACHINE AND METHOD OF MANUFACTURING SAME

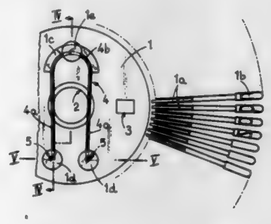
Blaise Moulin, Corcelles, Switzerland, assignor to Caracteres S.A., Neuchatel, Switzerland

Filed Nov. 14, 1983, Ser. No. 551,304

Claims priority, application Switzerland, Nov. 15, 1982, 6638/82

Int. Cl.³ B41J *1/04*

U.S. Cl. 400—144.2 **3 Claims**



1. In a characters carrying print wheel disc for a printing machine of the type which includes a shaft for mounting the wheel, having means for mounting the disc on the shaft, including a U-shaped wire spring on the disc, said spring having a bend and a pair of elastically yieldable arms, each arm having a free end and being convergently biased; and means mounting the spring to the disc comprising first and second raised protrusions, said first raised protrusion comprising a first post unitary with the disc and having an overhang, said first post having an arc identical with the arc of the bend and a pair of side by side second posts longitudinally displaced from said first post and opposite thereto, said second posts each having lateral walls defining a 90 degree sector recess, said recesses opening away from each other, one wall defining an axial abutment relative to the respective spring arms and a second wall perpendicular to the one wall defining a lateral abutment relative to the spring arm, said spring disposed with its bend engaged conformingly on said first post below said overhang and its arms seated engaged within said respective recesses, the free ends bearing axially on the axial abutment while simultaneously

engaged on the lateral abutment whereby longitudinal displacement of the spring is prevented.

4,521,125

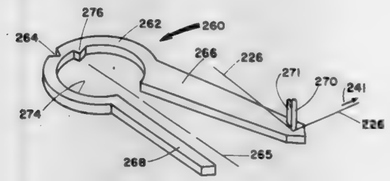
RIBBON CASSETTE ASSEMBLY

Klaus Turbon, Wuppertal, Fed. Rep. of Germany, assignor to Turbon Plastics, U.S.A., Inc., Denville, N.J.

Continuation-in-part of Ser. No. 488,190, Apr. 25, 1983,. This application Jan. 24, 1984, Ser. No. 573,370

Int. Cl.³ B41J *35/28*

U.S. Cl. 400—208 **3 Claims**



1. A ribbon cassette assembly which comprises:

a cassette housing including a ribbon exit arm and a ribbon entry arm;

a ribbon supply spool positioned within said housing, said ribbon supply spool including a shaft member having a serrated surface;

a ribbon take-up spool positioned within said housing;

a ribbon coursed between said ribbon supply spool and said ribbon take-up spool via said ribbon exit arm and said ribbon entry arm; and

a braking device comprised of a segmented ring-shaped portion having a first leg portion extending outwardly from one end thereof, and a second leg portion extending outwardly from another end thereof, one of said leg portions being fixedly positioned and said other leg portion including a pin member about which is coursed said ribbon, said segmented ring-shaped portion being positioned concentrically with respect to said shaft member, said segmented ring-shaped portion being formed of plastic material and having an outwardly extending radial notch disposed on an outer surface thereof opposite to said first and second leg portions; said ring-shaped portion having a tooth member extending from a cylindrical surface thereof at a position between said radial notch and said other leg portion including said pin member; sad tooth member engaging said serrated surface of said shaft member to brake said ribbon supply spool during the condition said ribbon take-up spool is inoperative, and said tooth member being disengaged from said serrated surface of said shaft member to release said ribbon supply spool during the condition said ribbon take-up spool is rotated.

4,521,126

MECHANICAL PENCIL

Gouji Sakaoka, Kawasaki, and Takashi Ishikawa, Toride, both of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,719

Claims priority, application Japan, Aug. 31, 1981, 56-129024; Oct. 21, 1981, 56-156775; Oct. 21, 1981, 56-156776

Int. Cl.³ B43K *21/16, 21/22*

U.S. Cl. 401—65 **4 Claims**



1. A mechanical pencil comprising:

a tubular casing;

a centrally apertured conical tip piece connected to an end of said casing to form a pencil tip, said tip piece having therein a sleeve projecting longitudinally from said tip piece and a lead retaining ring for frictionally holding the lead therein;

a lead engaging collet normally biased to spring open from clamping engagement with the lead, said collet being longitudinally movably mounted within said casing, said collet having recesses for securing rolling elements;

a collet receiver tube longitudinally movably mounted within said casing, said collet receiver tube having a tapered guide surface for said rolling elements, said guide surface tapering inwardly in a direction opposite to said pencil tip such that movement of said collet receiver tube in a first direction towards said pencil tip relative to said collet induces a lead gripping force of said collet against the lead;

first spring means for biasing said collet rearwardly in a second direction opposite to said first direction relative to said collet receiver tube;

second spring means for biasing said collet receiver tube rearwardly in said second direction relative to said casing;

an actuation button means mounted on said casing;

a cylindrical pusher means longitudinally movably mounted within said casing for advancing said collet and said collet receiver tube towards said pencil tip, said pusher means being connected to said actuation button means;

third spring means for biasing said pusher means rearwardly in said second direction;

engagement means for causing said collet and said collet receiver tube to advance together in said first direction towards said pencil tip until said collet receiver tube abuts against a part of said casing when an axial thrust is applied through said button means to said pusher means, and for causing said collet to advance further in said first direction after the forward movement of said collet receiver tube is restricted by such abutment, while enabling said collet receiver tube to be moved by said second spring means in said second direction when the forward thrust is continued, thereby preventing said collet receiver tube from drawing the lead back into the casing upon release of the forward thrust, said engagement means comprising a first friction projection extending inwardly from said collet receiver tube towards an axis of said casing, and a second friction projection extending from said pusher means outwardly from said axis of said casing, said first friction projection being frictionally engageable with said second friction projection when said pusher means is advanced towards said pencil tip; and

said conical tip piece having a rearwardly projecting portion having a rearwardly tapered outer surface, and said collet having a forwardly projecting portion having a forwardly flared inner surface, whereby when said collet is fully advanced towards said pencil tip, said projecting portion of the collet slides on said outer surface of said projecting portion of the conical tip piece so that said collet is opened to permit a new lead to be dropped through the opened collet.

4,521,127

SEALED PROPULSION MECHANISM FOR A STICK-DEODORANT OR THE LIKE CONTAINER

Anthony F. Tomburo, Cranford, and Nicholas W. Kachur, Clark, both of N.J., assignors to Gibson Associates, Inc., Cranford, N.J.

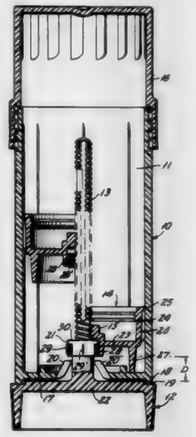
Filed Nov. 30, 1982, Ser. No. 445,429

Int. Cl.³ A45D *40/06*

U.S. Cl. 401—68 **8 Claims**

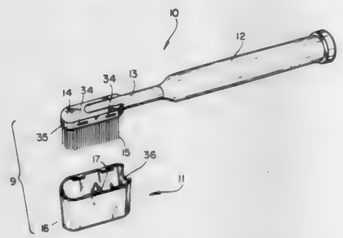
1. In a stick-deodorant or the like container, wherein a tubular housing with a cylindrical bore is closed at one end by a rotatable base-actuating member having a central threaded stem extending within said housing and on the axis of said bore, wherein a piston member has centrally threaded engagement

with said stem and is externally configurated for circumferentially continuously sealed and axially stabilized piloting engagement with said bore, and wherein said stem and piston have ratcheting engagement to retain a lower-limit position of piston retraction within said housing, the improvement wherein at the location of ratcheting engagement said stem is characterized by a circumferentially continuous hub presenting a generally radial annular upper surface to the underside of said piston member, wherein the underside of said piston member integrally includes a downwardly projecting compliantly deformable skirt which axially overlaps at least part of said hub



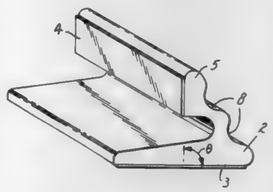
when said piston member is in its lowermost position, said skirt and hub having ratcheting formations which coact to retain one of a relatively large plurality of possible detent positions per single rotation of said threaded engagement, and the underside of said piston member integrally including within said skirt a circumferentially uniform and continuous downward relatively compliant projection that is radially localized for compressionally loaded and circumferentially sealed engagement with said annular surface when in ratcheted lower-limit position, whereby the sealed engagement can protect the ratchet engagement against fouling when the container is being filled with deodorant or the like cosmetic substance.

4,521,128
DISPOSABLE TOOTHBRUSH WITH CAP
Chester L. O'Neal, 809 Gardenside Dr., Greencastle, Ind. 46135
Continuation of Ser. No. 370,454, Apr. 21, 1982, abandoned.
This application Dec. 21, 1983, Ser. No. 564,034
Int. Cl.³ A46B *11/02*
U.S. Cl. 401—183 **1 Claim**



1. A disposable toothbrush device comprising:
A. a unitary toothbrush member comprising:
a squeezable tubular handle with a dispensing end and a filler end and forming a container extending therebetween adapted to hold dentifrice to be dispensed, the tubular handle having a rigid thick portion of the circumference integrally connected to a flexible thin portion of the circumference, both portions extending from the dispensing end to a location immediately adjacent the filler end whereby the thin portion of the circumference of the handle can be pressed against the rigid portion to force dentifrice out of the dispensing end;
a shank connecting the dispensing end of the handle to a brush head;
a brush head connected to the shank with bristles extending outwardly therefrom; and
a passage leading from the handle through the shank to the head and opening between the bristles to deliver dentifrice adjacent the base of the bristles remotely from the distal ends of the bristles when the handle is squeezed;
B. a cap member removably mounted to the head and enclosing the bristles, the cap including an extending plug mounted thereto removably extending sealingly into the opening limiting flow of dentifrice from the opening when the cap is mounted on the head, said plug being generally cylindrical and terminating at the distal end by a truncated cone of smaller diameter than the main body of the plug thereby defining a shoulder adjacent the distal end and contactable against the head, the shoulder and the distal end cooperatively sealing the passage when the cap is mounted to the head; the cap including a free edge portion with inwardly projecting tabs on the two long edges thereof lockingly engaging cooperation securing means on the edge portion of said head, removably securing the cap on the head, the free edge portion of the cap having a cut away portion receiving the shank and limiting movement thereon; and
C. a closure member adapted to close the said filler end of said tubular handle.

4,521,129
ELASTOMERIC PAVEMENT MARKER HAVING IMPROVED CONFIGURATION
Thomas D. Krech, Cottage Grove, and David C. May, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Jun. 17, 1983, Ser. No. 505,382
Int. Cl.³ E01F *9/06*
U.S. Cl. 404—10 **10 Claims**



1. A pavement marker comprising a body:
(a) made of an elastomer having a compressive strength at 25% compression of about 40 to 100 kilopascals;
(b) having a base portion with an approximately flat bottom which can be attached to a road without using either an anchor or a recess in the pavement;
(c) having a raised surface adapted to face on-coming traffic when the marker is mounted on a road, to which surface is attached a reflective material; and
(d) having a shape which supports the raised surface through a connecting portion of the body extending between the back of the raised surface and the base portion, said connecting portion forming an acute angle with the plane of the bottom of the base portion and having at least two ribs located on the back side of said connecting portion which ribs are oriented parallel to the plane of the base portion.

4,521,130
AIR TRANSPORT SYSTEM
Ronald A. Lenhart, Lakewood, Colo., assignor to Precision Metal Fabricators, Inc., Arvada, Colo.
Division of Ser. No. 947,441, Oct. 2, 1978, Pat. No. 4,451,182.
This application Mar. 21, 1984, Ser. No. 591,942
Int. Cl.³ B65G *51/02*
U.S. Cl. 406—86 **7 Claims**



1. A method of vertically and serially transporting cylindrical articles which rotate along their longitudinal axis, said method comprising:
providing a conduit with a wall structure having a rectangular cross-section with spaced side walls and spaced end walls having dimensions just slightly greater than the profile of the articles to provide an effective air seal between adjacent air spaces formed between adjacent articles, the conduit having an inlet end and an outlet end, the inlet end being lower than the outlet end;
introducing the articles into the inlet end of the conduit at predetermined-spaced intervals, the longitudinal axes of said articles being in a generally horizontal orientation;
injecting air as jets into the conduit through the end walls along the length thereof at a downstream angle to impinge upon each end of an article to center and propel the article along the conduit while injecting air into the spaces between articles, the air supplied by the jets being sufficient to maintain the velocity of the articles through the conduit;
providing a back pressure at the inlet to maintain a positive static pressure in the conduit;
providing a decreasing pressure gradient in the respective air spaces between adjacent articles from the inlet to the outlet to maintain separation between the articles; and
exhausting air from the air spaces through one of the conduit side walls in a direction which is lateral to the axes of the articles so that the articles move against and roll along the one side wall.

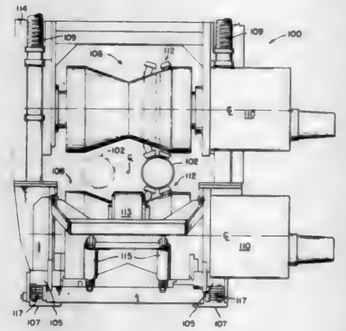
4,521,131
LIGHTWEIGHT SEMI-FLEXIBLE DIKE
Samlal Nandlal, Slidell, La., assignor to Shell Offshore Inc., Houston, Tex.
Filed May 14, 1984, Ser. No. 610,228
Int. Cl.³ E02B *3/10*
U.S. Cl. 405—116 **14 Claims**

1. A method of installing an erosion-preventing lightweight, semi-permeable, semi-flexible structure in the form of a dike for erosion control of a bank along a body of water,
excavating a trench on the land forming a bank along a body of water,
covering the trench and at least the trench wall toward the water with a first woven synthetic permeable flexible fabric to form a trench cover to separate dike building material from the trench subsoil and to inhibit the migration of fines into the underlying soils,
mixing shells, sand and cement together to form the necessary volume of dike construction material,
spreading a series of shallow layers of said shell-sand-cement mixture of dike material in the trench,
compacting the shell-sand-cement mixture between layers above the water level prior to adding another layer,



repeating the steps of adding and compacting additional layers of dike material until the crest elevation and at least the selected water-side slope of the dike has been attained,
covering the crest and the water-side slope of the dike with a second synthetic flexible fabric to form a dike cover permeable to water and impermeable to substantially all of the fine solid material in the shell-sand-cement mixture, and
anchoring to at least the top and water-side slope of the dike said second synthetic flexible fabric dike cover.

4,521,132
APPARATUS AND METHOD FOR SIMULTANEOUSLY TENSIONING PIPES
John E. Isakson, Island County, and H. Eugene Nutting, Snohomish County, both of Wash., assignors to Western Gear Machinery Co., Everett, Wash.
Filed May 16, 1983, Ser. No. 494,811
Int. Cl.³ B63B *35/04*; **B65H** *17/34*
U.S. Cl. 405—166 **20 Claims**



1. A method for simultaneously tensioning at least two relatively small diameter pipes during a pipe-laying operation on a barge having axially aligned pipe tensioners which are capable of simultaneously tensioning the same relatively large diameter pipe in a conventional pipe-laying operation, comprising the steps of:
(a) tensioning a first pipe with a first pipe tensioner while freely passing a second pipe through the first pipe tensioner so that the first pipe tensioner does not apply a tensioning force to engage the second pipe; and
(b) tensioning the second pipe with a second pipe tensioner, axially aligned behind the first pipe tensioner, while freely passing the first pipe through the second pipe tensioner so that the second pipe tensioner does not apply a tensioning force to the first pipe.

4,521,133

CAISSON FOR UNDERWATER STRUCTURES

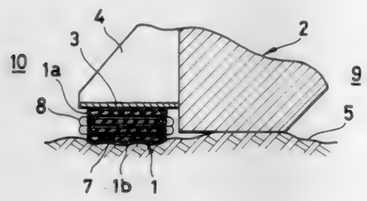
Shoichi Suzuki, Hiratsuka; Wataru Ohta, Ninomiyamachi; Noriaki Sakurai, Kurashiki, and Michio Yamashita, Fukuyama, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1982, Ser. No. 443,109

Claims priority, application Japan, Nov. 20, 1981, 56-172151[U]

Int. Cl.³ E02D *23/16, 27/18, 27/52*

U.S. Cl. 405—195 **8 Claims**



1. A caisson for an underwater structure designed to seal the space between the underside of a frame and bedrock underwater, comprising:

an elongated sponge mat positioned along the outer edge of the base of said frame and arranged to be compressed between a portion of said frame and said bedrock, said sponge mat being molded from a plastic material and comprising a skin of a dense foam structure and an interior of a coarse foam structure;

a plurality of small holes in said sponge mat for admitting water to said interior coarse foam structure, said holes extending crosswise from one side of said mat to the other side through said skin and said interior coarse foam structure, and

at least one rope passing through each of said small holes and serving to prevent collapse of said holes when said mat is compressed and allow drainage of water from said interior coarse foam structure of said mat, each of said ropes having a length equal to or greater than the length of its corresponding small hole.

4,521,134

ELEVATING DEVICE FOR AN ARTIFICIAL ISLAND OR WORK PLATFORM

Wim Schoonmade, Nieuwerkerk, Netherlands, assignor to Gusto Engineering B.V., Schiedam, Netherlands

PCT No. PCT/NL82/00025, § 371 Date Mar. 18, 1983, § 102(e) Date Mar. 18, 1983, PCT Pub. No. WO83/00351, PCT Pub. Date Feb. 3, 1983

PCT Filed Jul. 21, 1982, Ser. No. 476,875

Claims priority, application Netherlands, Jul. 21, 1981, 8103452

Int. Cl.³ E02B *17/08;* **B66F** *7/00*

U.S. Cl. 405—198 **1 Claim**

1. In a work platform:

a work floor;

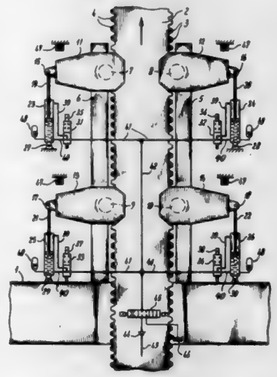
a frame on said work floor;

at least one column extending through an opening in said work floor and through said frame and having at least first and second gear racks conected thereto;

means for displacing said at least one column vertically with respect to said work floor and frame;

said means including a plurality of first and second elevating devices respectively associated with said first and second gear rack;

each elevating device comprising: a pinion mounted on said frame and meshing with one of said gear racks; a reaction arm; a motor, a brake and a driving gear having an output shaft, all mounted on said reaction arm; said brake and said motor being operatively connected to said driving gear; said reaction arm being pivotable about said output shaft and having a free end; gearing interposed between said pinion and said driving gear; hydraulic means interposed between said free end of said arm and said work floor, and having a cylinder, a piston in said cylinder and defining therewith a first and second chamber on opposite sides of said piston in said cylinder; a valve associated with each cylinder and having an open position and a closed position; and first and second conduits respectively connecting said first and second conduits to said valve;



and compensation means, common to said plurality of elevating devices, and comprising:

conduit means interconnecting said valves;

and means operatively connected to said valves and to said motors and to said brakes, and operable to move said valves to said closed position in which said conduit means is shut off from said first and second conduits, when said motors are in operation, and to said open position in which said conduit means is connected to said first and second conduits, when said brakes are in operation.

4,521,135

PRESSURIZED GAS FILLED TENDONS

William H. Silcox, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1983, Ser. No. 508,743

Int. Cl.³ E02B *17/00;* **B63B** *35/44*

U.S. Cl. 405—224 **20 Claims**

1. Apparatus for detecting a leak in a tension leg platform tendon, comprising:

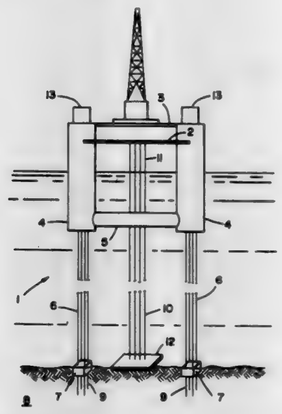
a fluid tight, tubular tendon;

means for supplying gaseous fluid to said tendon;

means for pressurizing said gaseous fluid in excess of the maximum hydrostatic pressure exerted by the sea water on said tendon;

means for monitoring pressure, said means monitoring variations in gaseous fluid pressure in said tendon;

means for connecting an upper end of said tendon to a buoyant offshore structure;



means for connecting a lower end of said tendon to an anchor means connected to the sea floor.

4,521,136

RAPIDLY DISSOLVABLE SILICATES AND METHODS OF USING THE SAME

Joseph R. Murphey, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 265,821, May 21, 1981, Pat. No. 4,391,643. This application Sep. 27, 1982, Ser. No. 423,910

Int. Cl.³ E02D *3/12*

U.S. Cl. 405—263 **6 Claims**

1. A method of preparing an earth formation for bonding with cement comprising the steps of preparing an aqueous solution of potassium silicate by dissolving in water a highly dissolvable partially hydrated powdered potassium silicate having a water content in the range of from about 14 percent to about 16 percent by weight of said partially hydrated powdered silicate and wherein said powder is comprised of amorphous particles of said potassium silicate and flushing the earth formation with said aqueous solution of potassium silicate, said partially hydrated amorphous potassium silicate having a molar ratio of silicon dioxide to potassium oxide in the range of from about 1.5:1 to about 3.3:1.

4,521,137

MOVABLE CASING FOR THE EXCAVATION OF TRENCHES

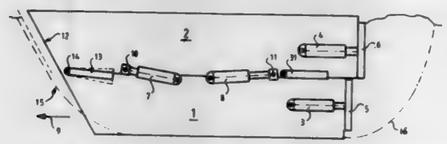
Maria Brecht, Grosse Rheinstrasse 99, Philippsburg, Fed. Rep. of Germany (7522)

Filed Jul. 29, 1983, Ser. No. 518,345

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1982, 3234440

Int. Cl.³ E02D *17/08*

U.S. Cl. 405—283 **10 Claims**



1. A trenching casing for the continuously advancing excavation and refilling of trenches for the installation of ducts, said casing having spaced side walls consisting of at least two vertically adjacent sections, engaging means for supporting said sections movably relative to one another, at least one rear face plate supported—in the advancing direction—at the rear end of each casing section, essentially horizontal hydraulic cylinders mounted on each casing section and connected to the respective rear face plate for forcing said rear face plate against the ground behind the casing and hydraulic operating means extending between and having one end operatively connected to one and the other end to the other of said vertically adjacent casing sections for transmitting an advancing force between said sections for longitudinally moving one of the two adjacent casing sections while the other remains in position and provides the backup for the advancing force applied to said one section.

4,521,138

BUILDING BLOCKS

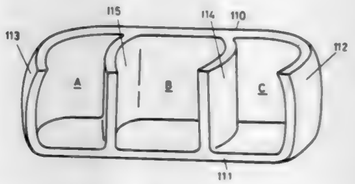
Alfred Steiner, Andelfingen, Switzerland, assignor to Steiner Silidur AG, Andelfingen, Switzerland

Division of Ser. No. 208,217, Nov. 19, 1980, Pat. No. 4,379,659. This application Sep. 9, 1982, Ser. No. 416,206

Claims priority, application Switzerland, Sep. 5, 1980, 6698/80; Sep. 5, 1980, 6699/80

Int. Cl.³ E02D *29/02;* **E04C** *2/04*

U.S. Cl. 405—284 **12 Claims**



1. A building block for walls which are laid in courses without mortar and can be stabilized by planting, comprising, in combination, a solid base wall, a face wall, and two side walls, said base wall having rounded transition sections to the face wall and to the side walls, and at least two additional dividing walls bounding a central space and two outer spaces between the side walls, said face wall, side walls and dividing walls having upper edges lying at least approximately in one plane extending throughout the upper edges of said face wall, side walls and dividing walls, said building block being open at a rear thereof opposite said face wall, and said building block having an open top extending in said one plane from said open rear to said face wall, each dividing wall having a height extending from said base wall to said one plane and a depth extending from said face wall to said open rear, all sides of said dividing walls extending uninterruptedly from said solid base wall in parallel to and for the full extent of said height to said one plane at said open top, said dividing walls extending for their entire depths along said one plane at said open top from said face wall to said open rear, and each of said dividing walls being curved such that said central space has its greatest dimension in a central region thereof between said face wall and said rear.

4,521,139

METHOD OF REGULATING MASS STREAMS

Horst Kretschmer; Guenter Tietze; Juergen Noack; Hans-Joachim Schweigel; Manfred Schingnitz; Klaus Werner, all of Freiberg, and Bernd Kirsch, Hoyerswerda, all of German Democratic Rep., assignors to Brennstoffinstitut Freiberg, Freiberg, German Democratic Rep.

Filed Jul. 19, 1982, Ser. No. 399,989

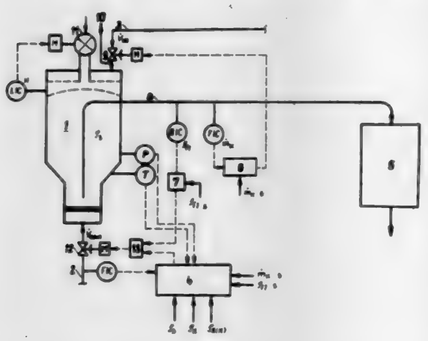
Claims priority, application German Democratic Rep., Jul. 17, 1981, 231889

Int. Cl.³ B65G *51/02*

U.S. Cl. 406—19 **7 Claims**

1. A method of regulating a continuous mass stream of a

finely divided, fine-grained solid fuel which is conveyed pneumatically at an arbitrary concentration and pressure from a closed dosing container through a supply pipe to a gasification reactor or a burner of a heater or steam boiler, comprising the steps of charging the solid fuel into the closed dosing container to create therein a charge of a bulk density ρ_S; forming a fluidized bed in the charge near the bottom part of the container by means of supplying a fluidizing gas V_G; feeding a



compensation gas V_{KG} into a part of the container which is remote from the fluidizd bed; discharging a mass stream of the solid fuel with a mass stream rate m_K from the fluidized bed through the supply pipe; maintaining the flow density ρ_{fl} of the mass stream in the supply pipe at a costant required value by regulation the fluidizing gas V_G depending upon the required flow density ρ_{fl}; and regulating of the mass stream rate m_K in the supply pipe by adjusting the compensation gas V_{KG} according to the equation

$$\dot{V}_{KG} = \frac{\dot{m}_K}{S}.$$

4,521,140
JIG
George C. Doescher, and Jim W. Clark, both of P.O. Box 935, both of Houma, La. 70361
Filed Oct. 3, 1983, Ser. No. 538,150
Int. Cl.[3] B23B *45/14*
U.S. Cl. 408—97 **4 Claims**

1. A jig for supporting a drill or similar tool during operation which comprises:

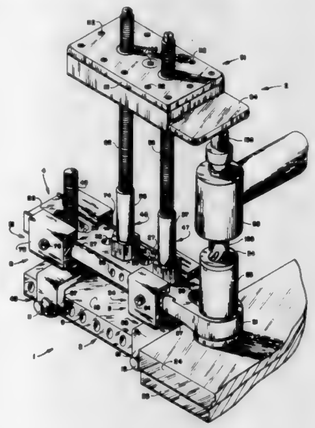
(a) a clamping assembly having an upper and lower clamping bar hingedly attached to one another by a movable pivoting assembly and having means movably attached at one of the opposing ends of the upper and lower bars to spread and contract the distance between the opposing ends, and

(b) a tool support assembly having vertically adjustable support means attached to the upper clamping bar and having a plate attached to the support means and pressingly contactable to the drill in its operative position wherein a bushing support extends through the upper clamping bar and is provided with a hollow bushing fitable therein and through which passes a tool bit attached to the drill; and wherein

i. the upper clamping bar comprises an elongated metallic bar having at one end an upper jaw member provided with a convex lower surface and an opening through which the bushing support extends, and the upper clamping bar is provided with openings on its opposite sides and wherein a series of parallel passageways are drilled completely through the side of the lower clamping bar;

ii. the lower clamping bar comprises an elongated metallic bar having at one end a lower jaw member opposing the upper jaw member and provided with a convex upper surface; and

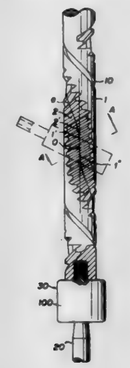
iii. the pivoting assembly comprises an upper positioning plate having side walls extending upward on either side of the upper clamping bar, the side walls being provided with side wall threaded openings aligned with the openings of the upper clamping bar; a lower positioning plate having side walls extending downward on either side of the lower clamping bar, the side walls of the



lower positioning plate being provided with side wall openings aligned with the parallel passageways of the lower clamping bar; attaching means for fixedly attaching the upper and lower positioning plates to one another; bolts of sufficient length to screw through the side wall threaded openings of the upper positioning plate and into openings of the upper clamping bar; and a pin of sufficient length to pass through the side wall openings of the lower positioning plate and one of the passageways of the lower clamping bar.

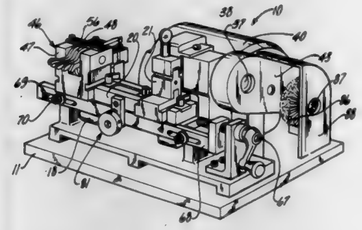
4,521,141
METHOD FOR CUTTING RACK TEETH
Michio Abe, Aichi, Japan, assignor to Tokai TRW & Co., Ltd., Kasugai, Japan
Division of Ser. No. 106,930, Dec. 26, 1979, abandoned. This application Jan. 19, 1983, Ser. No. 459,122
Claims priority, application Japan, Dec. 27, 1978, 53-162363
Int. Cl.[3] B23F *15/00*
U.S. Cl. 409—48 **3 Claims**

1. In a method for cutting rack teeth having a varying pitch line in a rack-pinion steering gear of the type which comprises a pinion to be rotated by a steering wheel and a rotary rack bar movable in the axial direction and provided with rack teeth, the improvement comprising the steps of rotating and axially moving said rack along the varying pitch line of the rack teeth so as to vary the indexed movement of the rack bar in the axial direction and linearly moving a hob cutter or gear shaper along



a line at an angle with respect to the axis of said rack bar to thereby form said rack teeth along said varying pitch line.

4,521,142
KEY CUTTING MACHINE
John Juskevic, Dearborn, Mich., assignor to Essential Automotive Products, Inc., Dearborn Heights, Mich.
Filed Aug. 30, 1982, Ser. No. 412,549
Int. Cl.[3] B23C *1/16*
U.S. Cl. 409—82 **1 Claim**



1. A key duplicating machine for cutting a contoured edge on a key blank, comprising:

a base having a vertically arranged rigid support member;

a fixed shaft mounted upon the support member and extending horizontally above the base;

a fixture having a bracket extending from a platform portion toward the fixed shaft, with said bracket including an opening for journaling said fixed shaft, and said fixture being both pivotable and slideable upon the fixed shaft;

a key blank vise mounted upon a first end of the platform portion for temporarily clamping the key blank with an edge of the key blank being arranged parallel to said fixed shaft;

a rotating cutting wheel mounted upon the base for rotation about an axis parallel to the fixed shaft, said rotating cutting wheel being adapted to cut the edge of the key blank;

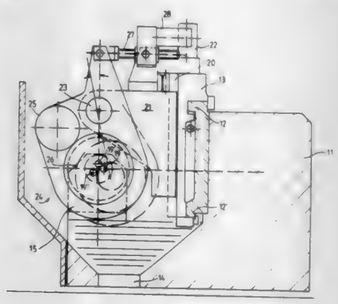
guide means mounted on a second end of the platform portion and a stylus mounted upon the base, and said guide means and stylus mounted for relative movement upon the platform portion and the base, with said guide means establishing a horizontal guide surface, and said stylus engaging the horizontal guide surface;

drive means for sliding said fixture relative to the fixed shaft, said drive means having means for interconnecting the fixture to the base to slide the fixture along the fixed shaft, with said means for interconnecting the fixture to the base permitting said fixture to pivot about said shaft, and wherein said drive means comprises an elongate bar mounted on the base for reciprocating horizontal movement and said means for interconnecting the fixture to the base comprises a vertically elongated slot in said elongate bar and a pin extending from the fixture into the vertically elongated slot, with said pin being moveable vertically in said vertically elongated slot, whereby said elongate bar positively engages said pin for horizontal reciprocating movement while said pin is moveable vertically to permit said fixture to pivot relative to the fixed shaft;

biasing means for urging said fixture pivotally relative to said fixed shaft causing the key blank and guide means to pivot toward the rotating cutting wheel and stylus respectively, and said biasing means comprising a spring which is mounted in a slot formed in an edge of said elongate bar with one end of said spring engaging a bottom surface of said fixture and with the other end of said spring engaging said slot, and adjustable cam means interengaging the elongated bar and the fixture for holding said fixture against the urging of the biasing means thereby separating the rotating cutting wheel from the key blank, and wherein the stylus engages the guide means and the rotating cutting wheel engages the key blank at spaced points at substantially equal radial distances from the fixed shaft, and said spaced points are substantially horizontally aligned on the platform portion in substantially the same radial direction relative to the fixed shaft;

whereby the drive means slides the fixture horizontally relative to the shaft and the rotating cutting wheel respectively, while the biasing means urges the guide means and stylus into engagement with the stylus tracing the horizontal guide surface, thereby controlling the pivoting movement of the key blank toward and away from the rotating cutting wheel as it cuts the contoured edge upon the key blank.

4,521,143
CRANKSHAFT MILLING APPARATUS
Karlheinz Schmid, Neckartenzlingen, Fed. Rep. of Germany, assignor to Gerbrueder Heller Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany
Filed Jun. 13, 1983, Ser. No. 503,698
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1982, 3223285
Int. Cl.[3] B23B *5/22*; B23C *3/06*
U.S. Cl. 409—200 **11 Claims**



1. A crankshaft milling apparatus, wherein a crankshaft is stationary during a milling operation, said crankshaft defining a horizontal longitudinal work piece axis, comprising a machine bed, at least one milling unit having inner milling cutter means for milling bearing pins and flanks of a crankshaft work piece, first slide means carrying said at least one milling unit, first guide means supported by said machine bed for guiding said first slide means in its movement in parallel to said work piece axis, carrier means for operatively securing said milling unit to said first slide means, said carrier means comprising

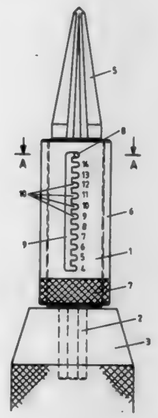
second slide means, second guide means on said first slide means for guiding said second slide means in its movement, pivot journal means having a journal axis spaced from said work piece axis and extending in parallel to said work piece axis, said pivot journal means being carried by said second slide means for securing said milling unit to said second slide means, whereby feed advance movements of said inner milling cutter means extend along a circular path around a crankshaft bearing pin to be milled, first feed advance means on said second slide means for rotating said milling unit along said circular path, said pivot journal means and said first feed advance means being arranged on said second slide means relative to said work piece axis, second feed advance means carried by said first slide means and operatively connected to said second slide means for moving said second slide means substantially in a plane extending perpendicularly to said work piece axis and substantially in parallel to a line connecting said journal axis of said pivot journal means and said work piece axis, said apparatus further comprising work piece chucking means supported on said machine bed, and wherein said milling unit and said carrier means for said milling unit have components which project in parallel to the direction of said work piece axis outside of said inner milling cutter means, said components being so arranged that they are located laterally of or above the adjacent chucking means, and wherein said first and second feed advance means cooperate in revolving said milling cutter means along said circular path around the crankpin to be milled.

4,521,144
QUILL STOP DEVICE
Carl A. Ginter, 3716 27th Ave. S., Minneapolis, Minn. 55406
Filed Aug. 2, 1983, Ser. No. 519,541
Int. Cl.³ B23Q *21/00*; F16B *37/10*
U.S. Cl. 409—218 **1 Claim**



1. A quill stop device, comprising, in combination, a shaft, a ring received on said shaft and a set screw received in said ring; said shaft having an external screw thread; said ring being made of resilient plastic material, said ring being circular and including an inwardly converging opening along its outer periphery, said opening having tangentical side walls to an inward end of said opening which has a screw thread snap-engagable with said screw thread of said shaft; and said ring having a slotted opening communicating with the first said opening inner end and forming pair of jaws on said ring, said set screw drawing said jaws together for quickly locking said ring on said shaft.

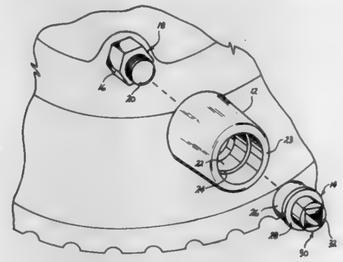
4,521,145
CUTTING OR DRILLING APPARATUS
Hans Bieler, 7402 Bonaduz, Switzerland
Filed Sep. 19, 1983, Ser. No. 533,791
Claims priority, application Switzerland, Sep. 20, 1982, 5529/82
Int. Cl.³ B23B *49/00*; B23C *9/00*
U.S. Cl. 409—218 **8 Claims**



1. An apparatus for cutting or drilling a workpiece including:
an essentially cylindrical body member having, on one end thereof, tool receiving means for receiving a cutting or drilling tool and, on the other end thereof, connection means for connecting said body member to a driving means, and
adjustable means for controlling the position of the tool relative to a workpiece comprising
an essentially cylindrical sleeve member coaxially received on said body member and slidably and rotatably connected thereto, said sleeve member having a scale thereon for indicating a plurality of different predetermined axial positions of said sleeve member relative to said body member and tool which plurality of different predetermined axial positions define a plurality of positions of the tool relative to the workpiece, said sleeve member having a surface which is blocked by the workpiece from movement toward the workpiece and thus defines the position of the tool relative to the workpiece, and
locking means for locking said sleeve member in said plurality of different predetermined axial positions relative to said body member, said locking means comprising a pin radially extending from said body member, a slot arranged in the wall of said sleeve member and extending parallel to the axis of said sleeve and body members, and a plurality of recesses arranged side-by-side along a longitudinal edge of said slot, engagement of said pin with one of said plurality of recesses defining one of said plurality of different predetermined axial positions of said sleeve member relative to said body member.

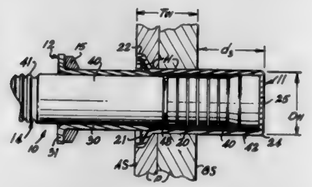
4,521,146
LUG NUT CAP
Donald J. Wharton, Mishawaka, Ind., assignor to Maron Products, Inc., Mishawaka, Ind.
Filed Nov. 8, 1982, Ser. No. 439,772
Int. Cl.³ F16B *41/00*
U.S. Cl. 411—1 **1 Claim**

1. A protective cap for a wheel nut when threaded upon a lug, said cap comprising a skirt member defined by an outer annular wall terminating in outer and inner end edges and having an opening formed therethrough between the end edges, said skirt member adapted to be placed about said nut with its said wall enclosing the nut and exposed end of the lug, said skirt member including an internal shoulder extending from said side wall into said opening, said skirt member shoulder being spaced from said outer end edge to form a recess about said exposed lug end, and a retainer member including socket means for receiving a tightening tool and a threaded portion adapted for engagement with said lug, said retainer member including a flange located between said socket means and said threaded portion, said retainer member flange adapted to adjacently overly said skirt member shoulder when said retainer member threaded part is turned onto said lug end with



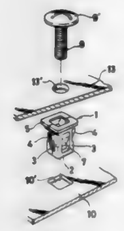
said skirt member placed about said nut, said retainer member socket means including a wall part adapted to be located within said retainer member recess when said retainer member threaded portion is turned onto said lug, and said socket means wall part being yieldable wherein said socket means is stripped when said retainer member is fully turned onto said lug end with said tool rotating relative to the wall part whereby the retainer member is prevented from being further turned or loosened by the tool, said socket means wall part including individual wall members separated by slit means for allowing said wall members to flex away from said tool upon final tightening of said socket means onto said lug end.

4,521,147
FLUSH HEAD BLIND FASTENER
John O. King, Jr., and John O. King, III, both of 3990 N. Ivy Rd., Atlanta, Ga. 30342
Continuation-in-part of Ser. No. 370,060, Apr. 20, 1982,. This application Jul. 12, 1982, Ser. No. 397,018
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—43 **15 Claims**



1. A fastener assembly adapted to attach workpieces together through aligned holes therein of an initial hole diameter having a countersink at one end of the holes comprising:
an outer sleeve member including an elongate tubular side wall and an annular head flange integral with one end of said side wall, said head flange having a size and shape adapted to fit in the countersink in the workpieces;
an inner sleeve member including an elongate tubular side wall and an annular head flange integral with one end of said side wall, said inner sleeve side wall having an outside diameter larger than the inside diameter of said outer sleeve side wall such that, when said inner sleeve member is driven into said outer sleeve member, said inner sleeve side wall will expand said outer sleeve side wall, and said inner sleeve head flange defining a trailing end surface thereon oriented normal to the central axis of said inner sleeve member;
a stem including a support selection thereon slidably extending through said inner sleeve member and having an outside diameter substantially equal to the inside diameter of said inner sleeve side wall to internally support said inner sleeve member while being driven into said outer sleeve member; and
deformable means operatively associated with said inner sleeve head flange and said outer sleeve head flange and adapted to be totally captivated between said inner sleeve head flange and said outer sleeve head flange, said deformable means deformed as an incident to the driving of said inner sleeve member into said outer sleeve member to expand said outer sleeve head flange.

4,521,148
HINGED MIRROR IMAGE PLASTIC FASTENER FOR QUICK ASSEMBLY TO THREADED MALE MEMBERS
Toshie Tanaka, Machida, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed May 6, 1983, Ser. No. 492,274
Int. Cl.³ F16B *13/06*
U.S. Cl. 411—182 **1 Claim**

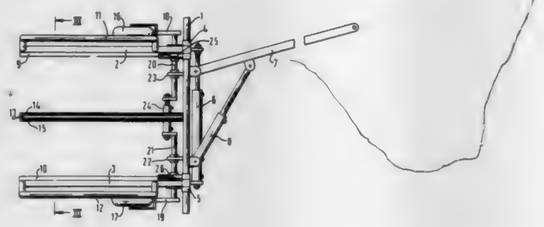


1. a plastic fastener for panels, comprising in integral combination of a main body of the shape of a pair of hinged angular U-shaped pillars each possessed of a pair of spaced opposed side walls interconnected by base means at the lower one end and provided with an interconnecting flange-like head extended outwardly from the opposite upper end boundaries, resilient fitting means provided one each on said side walls and adapted to grasp the edges of a hole bored in a supporting panel in cooperation with the lower side of said head, and mutually opposed elastic tongues forming intermediate side walls positioned between said spaced opposed side walls substantially at right angles and extended from the lower side of said head and slanted toward the interior of the angular pillar of the main body, and said base means, said tongues being provided adjacent the free ends thereof with a plurality of female threads incised in arcuately depressed surfaces, said main body base means forming an imperforate hinged wall, said pair of pillars being adapted to abut with each other along a vertical plane and the halves of the main body being connected to each other through a transverse thin-wall hinge formed in said bottom wall.

4,521,149
BALE HANDLING MACHINE

John R. Redding, 19 Wellfield Rd., Piddington, High Wycombe, Buckinghamshire, and Patrick F. Hunter, Owlswick, both of England, assignors to John Robert Redding, High Wycombe, England

PCT No. PCT/GB82/00018, § 371 Date Sep. 27, 1982, § 102(e) Date Sep. 27, 1982, PCT Pub. No. WO82/02474, PCT Pub. Date Aug. 5, 1982
PCT Filed Jan. 25, 1982, Ser. No. 432,907
Claims priority, application United Kingdom, Jan. 26, 1981, 8102305; Sep. 14, 1981, 8127637
Int. Cl.³ A01D 87/12
U.S. Cl. 414—44 1 Claim



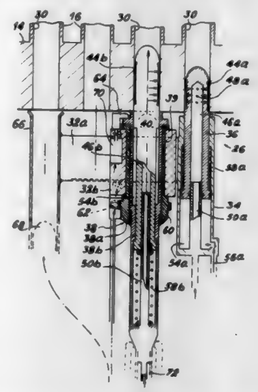
1. A bale handling machine comprising:
a generally U-shaped chassis frame having a pair of laterally spaced arms extending rearwardly from a forward cross-member to define a bale-receiving zone which is open from below and has an open rear end to receive a group of bales and closed forward end;
a tow bar extending forwardly from said cross-member and adapted for connection to a towing vehicle;
a pair of laterally spaced wheels supporting said frame above the ground for translational movement of the frame and movable relative to the frame to lower and raise the frame between a lowered bale-receiving position and a raised bale-transport position;
a pair of mutually horizontally opposed gripping elements mounted on respective arms of the frame, said gripping elements being relatively movable to grip and subsequently release bales located between them;
the said wheels being at the forward end of the frame and spaced rearwardly of the cross-member by a distance less than the length of the tow bar, and the vertical distance moved by the wheels relative to the frame being at least 14 inches and greater than the individual height of the bales which the machine is intended to handle, whereby the machine can place a transported bale onto a bale standing on the ground and subsequently raise and transport the resultant stack of bales.

4,521,150
DEVICE FOR POSITIONING A MEMBER FACING EACH OF THE PERFORATIONS OF A PERFORATED PLATE IN ACCORDANCE WITH A GIVEN GRID

Michel Pigeon, Bures sur Yvette, and Robert Saglio, Antony, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 2, 1982, Ser. No. 364,974
Claims priority, application France, Apr. 10, 1981, 81 07243
Int. Cl.³ B25J 5/00
U.S. Cl. 414—749 7 Claims

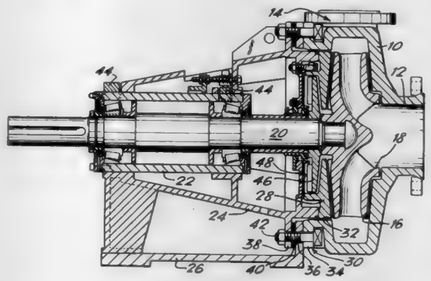
1. A device for positioning a member so as to face each of the perforations of a perforated plate in accordance with a given grid, comprising a body carrying at least two attachment members, means for displacing said members in a direction perpendicular to the plate and independently of one another, so that said members can be introduced into or removed from a facing perforation, means for fixing each of the attachment members into a perforation and means for displacing one of the members relative to another member, said device comprising a fastening finger including a first of said attachment members and a first part of said body carrying said first attachment member, said first part having a guidance surface on which is slidably fitted a second part of said body carrying the other of said attachment members, a semi-rigid guidance member connecting the fastening finger to a remote zone, and remote locking means normally fixing said second part of the body to the fastening finger when the second part of the body is fitted on said guidance surface, whereby said second part of the body carrying the other attachment members can be slid along said semi-rigid guidance member and on said guidance surface when said fastening finger has been fixed into a perforation.



4,521,151
CENTRIFUGAL SLURRY PUMP

John S. Frater, Carlisle, and David W. Pope, Sevenoaks, both of United Kingdom, assignors to Joy Manufacturing Holdings Limited, England

PCT No. PCT/GB81/00035, § 371 Date Nov. 4, 1981, § 102(e) Date Nov. 4, 1981, PCT Pub. No. WO81/02613, PCT Pub. Date Sep. 17, 1981
Continuation of Ser. No. 320,977, filed as PCT 81/00035, Mar. 4, 1981, published as WO 81/026/3, Sep. 17, 1981, § 102(e) date Nov. 4, 1981, abandoned. This PCT application Apr. 4, 1981, Ser. No. 545,106
Claims priority, application United Kingdom, Mar. 7, 1980, 8007912
Int. Cl.³ F04D 29/08
U.S. Cl. 415—131 6 Claims

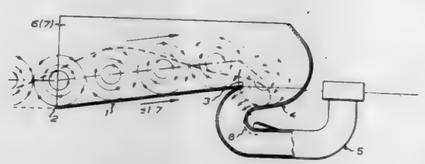


1. A pump, comprising: a unitary generally C-shaped casing in which an inlet and an outlet are defined, a backliner supported at a rear portion of the casing, a pump chamber defined by the casing and the backliner, a rear housing adjacent said backliner, said backliner being axially movable with a first flange member affixed to said rear housing and arranged coaxially with said casing, said casing including an integral second flange member arranged coaxially of said first flange member, said first and second flange members being releasably interconnected to said the backliner in position to establish the rear extent of said chamber, said first and second flange members being axially spaced by structure including removable shims interposed therebetween, an impeller disposed within the chamber and rotatable about an axis of the chamber, a rotatable drive shaft extending coaxially with said axis of the chamber, said impeller being carried by and fixed to said drive shaft for rotation and axial movement therewith, said impeller having a front surface and a back surface, and said impeller being disposed within the chamber such that a front running clearance is defined between a front surface of the impeller and a facing surface of the casing and a back running clearance is defined between a back surface of the impeller and a facing surface of the backliner, wherein said front surface extends over the entire radial extent of the impeller whereby said front running clearance extends over the entire radial extent of the impeller between said front surface and the corresponding facing surface of the casing, and wherein said back surface extends over the entire radial extent of the impeller and said backliner extends radially a distance equal to that of said back surface whereby said back running clearance extends over the entire radial extent of the impeller between the back surface and the corresponding facing surface of the backliner, the pump further comprising adjusting means for enabling axial movement of the shaft and impeller relative to the chamber, said shims and adjusting means enabling the axial extent of both said front and said back running clearances to be maintained at less than a predetermined maximum value, whereby increases in said running clearance due to wear and corrosion may be compensated for at the back surface of the impeller by movement of said shaft and impeller with respect to said backliner and at the front surface of said impeller by movement of the casing with respect to said backliner, rear housing and impeller so as to reduce the axial length and volume of the chamber.

4,521,152
APPARATUS FOR EXTRACTING AT LEAST THE INHERENT KINETIC ENERGY FROM WAVES

Stig A. Henrikson, 21, Fleminggatan, Stockholm S-112 26, Sweden

PCT No. PCT/SE82/00226, § 371 Date Feb. 15, 1983, § 102(e) Date Feb. 15, 1983, PCT Pub. No. WO83/00058, PCT Pub. Date Jan. 6, 1983
PCT Filed Jun. 21, 1982, Scr. No. 474,678
Claims priority, application United Kingdom, Jun. 25, 1981, 8119599
Int. Cl.³ F03B 13/12
U.S. Cl. 415—2 R 7 Claims

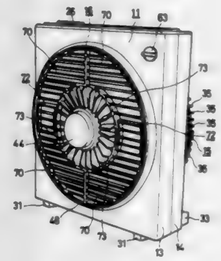


1. Apparatus for extracting inherent kinetic energy from water particles moving in substantially circular paths within waves, comprising a coherent plane extending continuously from an intake side to an outtake side for the passage of waves freely thereover, said plane being upwardly inclined toward said outtake side with an inclination not more than 1-to-7, and a duct including an entrance portion directed substantially beneath said plane toward said intake side, a wall of said entrance portion merging and forming a sharp angle with the edge of said plane at said outtake side, said entrance portion being configured to define a depression adjacent said edge of said plane so that waves passing over said edge fall into said depression, whereby said water particles are caused to be broken from their respective paths and to flow in substantially the same direction in said duct for delivery to associated energy converter means.

4,521,153
BLOWER AND ROTATING WIND DEFLECTOR

Masao Morimoto; Shoji Sano; Kazuyoshi Yoshimi, and Kazuo Saitou, all of Kasai, Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Sep. 28, 1982, Ser. No. 426,203
Claims priority, application Japan, Feb. 17, 1982, 57-25126
Int. Cl.³ F01B 25/02
U.S. Cl. 415—146 16 Claims

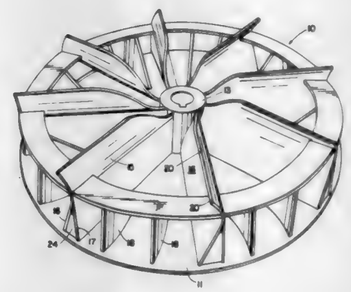


11. A blower comprising:
a body housing having front and rear openings;
a fan, mounted in said body housing, for generating a wind;
a rear guard mounted on said rear opening; and
wind deflector means mounted on said front opening and being freely rotatable therein, for receiving said wind and being rotated thereby, comprising an inner circumferential portion and an outer circumferential portion, at least said outer circumferential portion having a first vane being disposed in parallel, wherein at least a portion of said vane are plural vanes formed into an integral structure, and wherein said integral structure is borne between outer circumferential frames of said outer circumferential portion and said inner circumferential portion to be movable to an arbitrary angle with respect to said wind for changing the speed and/or direction of said wind deflector.

4,521,154
CENTRIFUGAL FANS

Reg D. Corbett, 30103 Clemens Rd., Westlake, Ohio 44145

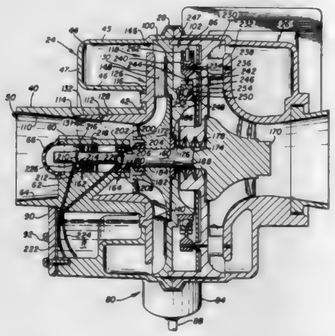
Filed Jan. 13, 1982, Ser. No. 339,029
Int. Cl.³ F01D 5/14
U.S. Cl. 416—175 4 Claims



1. A centrifugal fan comprising a centrally apertured circular metal base plate, a central hub secured to the upper surface of the base plate coaxially with the aperture, a plurality of

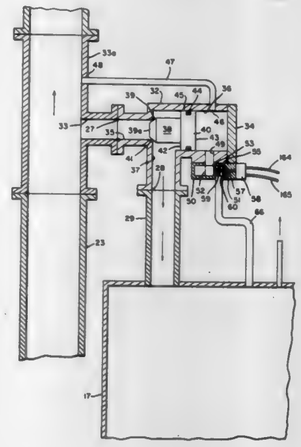
circumferentially spaced main blades mounted on one side of said base plate, each blade extending substantially radially with respect to said hub and comprising a pair of converging walls projecting from the upper surface of the base plate whereby each blade is of inverted V-shape in cross-section, one of the walls providing a leading surface and the other wall providing a trailing surface with respect to the intended direction of rotation of said fan, each blade having a blade extension extending upwardly from the line of convergence of said walls, one of said walls forming main blade portions and one of said walls forming an auxiliary blade support, said extension being curved forwardly with respect to the direction of rotation of said fan to form an elongated scoop along the distal edge of each blade, at least one relatively short blade of lesser height then said main blade being mounted on the outer peripheral side of the base plate on which the main blades are mounted and disposed in equally spaced relation between a pair of adjacent said main blades, which relatively short blade has a curved portion inclined in the direction of the curve of the leading edge of the extension of the main blade forming the scoop, and in which a relatively circular flat outer ring member is disposed over a flat upper surface of said relatively short blade forming the upper outer periphery of said fan and the inclined portion of said blade extends beyond the inner periphery of the ring member.

4,521,155
TURBOCHARGER COMPRESSOR HOUSING
Norbert L. Osborn, 402 W. Grauwyler, Irving, Tex. 75061
Continuation of Ser. No. 917,065, Jun. 19, 1978, abandoned. This application Jun. 6, 1980, Ser. No. 157,196
Int. Cl.³ F04D *29/42*
U.S. Cl. 415—190 **9 Claims**



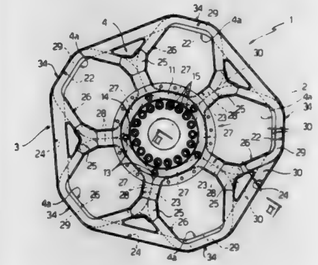
1. In a turbocharger having a compressor housing with an inlet port, a circumferential chamber surrounding said inlet port and leading to a compressor exhaust port, and a compressor rotor mounted for rotation in the housing for compressing air entering the inlet port and discharging the compressed air into the chamber for exhaust through the exhaust port, said compressor housing comprising:
an outer housing defining the inlet port and the circumferential chamber around the inlet port,
a wall insert including a tubular throat with a disc attached at one end of the tubular throat transverse thereto, said disc having an aperture corresponding to an opening in the throat and said throat engageable within the inlet port when said insert is mounted to said housing,
means for attaching said insert within said outer housing with said insert forming one wall of the circumferential chamber and forming a circumferential passageway between the compressor rotor and the circumferential chamber for channeling compressed air from the rotor to the chamber, wherein said attachment means comprises rivet protrusions integrally formed and extending from the disc and corresponding to and facing apertures in the wall of the outer housing circumferentially spaced around the inlet port, said rivet protrusions adapted for insertion into said apertures to join said insert to said outer housing,
said inlet port having an inside surface with a first portion remote from said wall insert having a varying diameter converging toward the compressor rotor,
a second portion adjacent the compressor rotor diverging in diameter toward the compressor rotor, and
wherein the tubular throat of said insert has an inside surface converging in diameter toward the disc and an outside surface diverging in diameter toward the disc to mate with the diverging inside surface of the inlet port of said outer housing.

4,521,156
SELF-PRIMING PUMP SYSTEM HAVING DIAPHRAGM-TYPE FLOW SENSOR
Pellegrino E. Napolitano, Middletown, N.J., assignor to Hudson Engineering Company, Bayonne, N.J.
Filed Dec. 16, 1982, Ser. No. 450,366
Int. Cl.³ F01B *25/00*
U.S. Cl. 415—11 **11 Claims**



1. In a self-priming pump system including a liquid pump, a suction tank in communication with the pump, a discharge line connected to the pump and including a check valve positioned downstream of the pump a distance sufficient to provide a column of priming liquid, and a priming valve having an inlet in communication with the discharge line and an outlet in communication with the suction tank and positioned between the pump outlet and the check valve, the priming valve responsive to liquid flow from the pump to automatically permit flow of the priming liquid from the discharge line to the suction tank when suction at the pump inlet is lost, the improvement comprising:
a. a piston housed within the priming valve and slidably positioned within a cylinder, one face of said piston directly exposed to the liquid in the discharge line at the discharge line static pressure, and the other face of said piston exposed to the liquid in the discharge line at the discharge line static pressure via the priming valve, the area of said one face of said piston being greater than the area of said other face to maintain the priming valve in a closed condition;
b. a conduit connecting the one face of said piston to the suction tank;
c. a pilot valve blocking said conduit; and
d. flow sensing means to sense liquid flow through the pump and operatively connected with said pilot valve to cause it to open under a given flow condition to relieve the pressure on the one face of said piston to cause the priming valve to open responsive to the given flow condition.

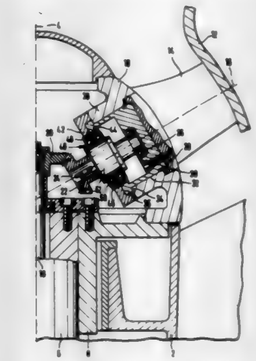
4,521,157
HELICOPTER ROTOR HUB
Vittorio Caramaschi, Gallarate, and Pier L. Castelli, Busto Arsizio, both of Italy, assignors to Costruzioni Aeronautiche Giovanni Agusta S.p.A., Italy
Filed Mar. 2, 1983, Ser. No. 471,343
Claims priority, application Italy, Mar. 11, 1982, 67302 A/82
Int. Cl.³ B64C *11/06*
U.S. Cl. 416—134 A **6 Claims**



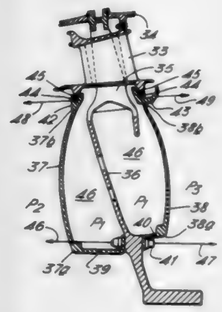
1. A helicopter rotor hub of plate-like plan form having a plurality of apertures (**4***a*) uniformly distributed about a central axis and each closed radially outwardly by a respective bridge (**34**) extending peripherally of the said plate permitting the connection of a respective blade to the plate, characterised by the fact that it includes an inner support structure (**2**) coaxial with the said axis, an outer annular frame (**3**) extending along the said bridges (**34**), and an intermediate lobe structure (**4**) rigidly connected both to the said inner structure (**2**) and to the said outer frame (**3**); the said intermediate structure including a plurality of annular elements (**26**) each of which comprises an annular band of oriented synthetic fibres and having a portion (**29**) extending along a respective said bridge (**34**) and a further portion (**27**) connected to the said inner structure (**2**).

4,521,158
FLUID-FLOW MACHINE
Kurt G. Fickelscher, Frankenthal, Fed. Rep. of Germany, assignor to Balcke-Duerr AG, Ratingen, Fed. Rep. of Germany
Filed Aug. 31, 1983, Ser. No. 528,225
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1982, 3233078
Int. Cl.³ F03B *3/14*
U.S. Cl. 416—160 **18 Claims**

1. A fluid-flow machine comprising:
a hub rotatable about an axis,
a bearing support member fixed to said hub for rotation therewith,
a plurality of blade members mounted on said bearing support member and distributed symmetrically around said hub axis, each of said blade members having a blade-root which is pivotably received in an open-ended housing formed in said bearing support member, and
adjusting means for pivoting said blade-roots and blades about a blade-root axis to adjust the angle of the blade, said adjusting means comprising for each housing and blade-root member a reduction gear drive shaft and a self-locking reduction gear drivingly interposed between the drive shaft and the blade-root,
each said reduction gear drive shaft being rotatably mounted in a bearing supported on the associated blade-root for rotation relative to said blade-root about an axis parallel to said blade-root axis, and said reduction gear drive shaft being rotatable by turning of an adjusting shaft which drives a gear wheel fixed to the drive shaft.



4,521,159
LOAD DISTRIBUTION MEMBER
George Pask, Derby, England, assignor to Rolls-Royce Limited, London, England
Filed May 20, 1983, Ser. No. 496,669
Claims priority, application United Kingdom, Jun. 10, 1982, 8216915
Int. Cl.³ F01D *11/00*
U.S. Cl. 416—174 **5 Claims**



1. Two load distribution members defining a chamber therebetween, said chamber being operationally interposed between regions of high and low fluid pressure, said chamber further having an interior containing fluid at a pressure which is higher than that of fluid in said regions of high and low fluid pressure, each of said load distribution members comprising:
an annular diaphragm having an inner circular edge and an outer circular edge of greater diameter, said diaphragm having a configuration when interposed between and subjected to said regions of high and low fluid pressure of a general shape of a part-toroid of a complete thin shelled toroid having a circular cross-section area of revolution, said part-toroid having an axis co-axial with axes of said inner circular edge and said outer circular edge;
first and second ring members respectively engaging said inner circular edge and said outer circular edge to provide radial restraint of said inner circular edge and said outer circular edge so that radial components of forces exerted upon said ring members by said diaphragm as a result of fluid pressure difference between said regions of high and

low pressure fluid pressure are absorbed by said ring members as hoop stresses;

support means attached to at least one of said ring members to contain any axial components of force of said at least one of said ring members by said diaphragm, distribution of magnitude and direction of axial forces being predetermined by said configuration and shape of said part-toroid of said diaphragm when subjected to said regions of high and low fluid pressure;

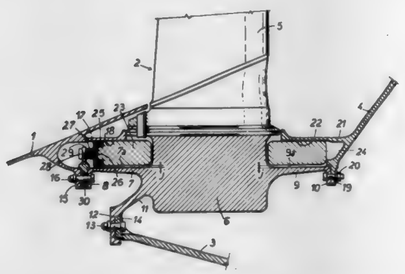
and said two load distribution members having an arrangement such that magnitude and direction of axial components of force exerted upon said support means by said ring members engaging each of said annular diaphragms are distributed between each of said ring members in a manner pre-determined by configurations of the part-toroid shapes of each of said annular diaphragms.

4,521,160

ROTORS OF ROTATING MACHINES

Jean G. Bouiller, Brunoy, and Marcel R. Soligny, Chevilly-Larue, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, France

Continuation of Ser. No. 358,865, Mar. 17, 1982, abandoned, which is a continuation of Ser. No. 116,528, Feb. 1, 1980, abandoned. This application Sep. 8, 1983, Ser. No. 529,938
Claims priority, application France, Feb. 8, 1979, 79 03191
Int. Cl.³ F01D *5/06*
U.S. Cl. 416—218 **13 Claims**



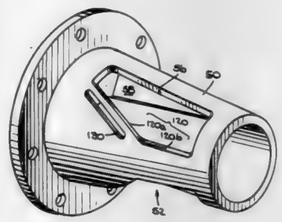
1. In a turbine apparatus having a fan wheel with a plurality of turbine blades attached about its outer periphery, an upstream structure attached to one side of the fan wheel and a downstream structure attached to the other side of the fan wheel, the improved device for containing fragments of the fan wheel in case of bursting comprising: (a) a first annular extension formed on the one side of the fan wheel defining a first external cylindrical surface; (b) a second annular extension formed on the other side of the fan wheel defining a second external cylindrical surface; (c) a first containment ring having high tensile strength in the circumferential direction disposed coaxially about the first annular extension, the first containment ring being disposed radially outwardly of the first external cylindrical surface so as to define a circumferentially open space therebetween; (d) first means to attach the first containment ring and the fan wheel to the upstream structure to prevent relative rotation therebetween; (e) a second containment ring having high tensile strength in the circumferential direction disposed coaxially about the second annular extension, the second containment ring being disposed radially outwardly of the second external cylindrical surface so as to define a circumferentially open space therebetween; and (f) second means to attach the second containment ring and the fan wheel to the downstream structure to prevent relative rotation therebetween.

4,521,161

NOISE CONTROL FOR CONICALLY PORTED LIQUID RING PUMPS

Ole B. Olsen, Newtown; Charles W. Bilik, Norwalk; Herbert H. Johnson, Georgetown, and Charles M. Jozepaitis, Bridgeport, all of Conn., assignors to The Nash Engineering Company, Norwalk, Conn.

Filed Dec. 23, 1983, Ser. No. 564,881
Int. Cl.³ F04C *19/00*
U.S. Cl. 417—68 **7 Claims**



1. A liquid ring pump comprising:

an annular housing;

a rotor rotatably mounted in the housing and having a frusto-conical bore concentric with the rotor axis; and

a frusto-conical port member disposed in the bore and fixedly mounted relative to the housing, the port member including (1) an intake port, (2) a first discharge port located beyond the intake port in the direction of rotor rotation and having a closing edge including a segment which is inclined in the direction of rotor rotation from a first relatively large diameter circumference portion of the port member to a second relatively small diameter circumference portion of the port member, the first and second circumference portions being axially spaced from one another along the rotor axis, and (3) a second discharge port spaced from the first discharge port and located beyond the inclined closing edge segment but before the intake port in the direction of rotor rotation, the second discharge port being a longitudinal slot substantially parallel to the inclined closing edge segment.

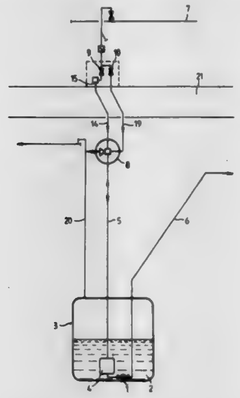
4,521,162

PUMPING SYSTEM

Francis J. Parkinson, Warrington, England, assignor to British Nuclear Fuels plc, Warrington, England

Filed May 7, 1984, Ser. No. 607,448
Claims priority, application United Kingdom, May 24, 1983, 8314320
Int. Cl.³ F04F *1/02, 1/14;* F04B *23/14*
U.S. Cl. 417—138 **4 Claims**

1. A fluidic pumping system comprising a vessel for a liquid to be pumped, a reverse flow diverter positioned at a level below the level of the liquid to be pumped, a charge vessel and a delivery pipe with the reverse flow diverter inserted therebetween, compressed gas supply means for the charge vessel and control means for effecting alternate pressurising and venting of the charge vessel to effect pumping of the liquid, the control means including a conduit communicating with the charge vessel and means for generating signals along the conduit for detecting the liquid level at at least one position in the operating cycle.

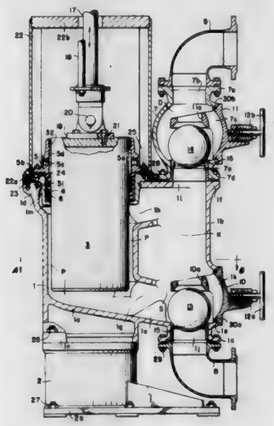


4,521,163

OSCILLATING DISPLACEMENT PUMP

Friedrich R. R. Stahlkopf, Büchen, Fed. Rep. of Germany, assignor to O.T. Pumpen GmbH & Co. KG, Fed. Rep. of Germany

Filed Jun. 23, 1983, Ser. No. 506,903
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1983, 8312806[U]
Int. Cl.³ F04B *31/02, 15/02;* F16J *15/18*
U.S. Cl. 417—238 **22 Claims**



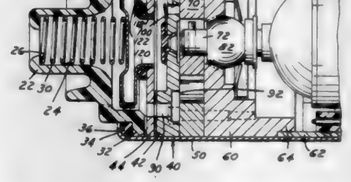
1. An oscillating displacement pump, particularly for pumping a liquid medium which is viscous and abrasive or loaded with solid particles, said pump being preferably equipped with a piston drive acted upon by a hydraulic pressure medium and driving a displacement unit having the form of a plunger piston (3), the stroke and/or stroke frequency of which piston drive is constant or variable, which displacement pump has a connecting space (K), which connects a suction valve space (S) with a pressure valve space (D) in such a way that the connection is preferably straight lined and direct, which connecting space (K) is located outside of the displacement unit space (P) and is traversed by the pumped medium in such a way that the geodetic height of the medium increases; and two connecting channels (1*g*, 1*h*) which, independent of the position of the displacement unit (3), at any given time, are connected with each other through the displacement unit space (P) and in which a suction valve side connecting channel (1*g*) connects the displacement space (P) on one hand in the area of a housing floor (1*a*) and by way of a downward incline with the suction valve side end of the connecting space (K) and a pressure valve side connecting channel (1*h*) connects the displacement unit space (P) on the other hand by way of an upward incline with the pressure valve side end of the connecting space (K), said pump further including a sealing housing (4 or 4*a*), a pressure sleeve 5 or 5*a*), a sealing element (6 or 6*a*) structurally adapted to a diameter (ϕ D, ϕ d) of said plunger piston (3), and a recess (5*d*) formed over the entire inner bore circumference of the pressure sleeve (5 or 5*a*), said recess forming, in conjunction with the plunger piston (3), an annular chamber (5*e*) provided with opposing connection openings (5*c*).

4,521,164

ROTARY FUEL PUMP WITH PULSE MODULATION

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Jan. 23, 1984, Ser. No. 573,285
Int. Cl.³ F04B *39/02, 49/08;* F16L *55/04*
U.S. Cl. 417—307 **2 Claims**



1. In a rotary fuel pump which includes an elongate housing on a main axis having a main inlet housing at one end and a main outlet housing at the other end, that improvement which comprises:

(a) a rotary pump adjacent the main inlet housing rotating on said main axis,

(b) an electric motor to drive said pump positioned between said pump and said main outlet,

(c) a centrally apertured disc adjacent said pump disposed in a plane transverse to said main axis,

(d) means forming a secondary pump outlet opening to space between said pump and said disc,

(e) an inlet chamber formed in said main inlet housing having one end open to said disc,

(f) a damper relief valve disposed in said inlet chamber comprising a damper chamber formed of flexible material having a first wall fully enclosing said damper chamber and a second wall spaced from said first wall and annularly sealed thereto, said second wall having an opening communicating with the central opening in said disc and open to said secondary pump outlet, and

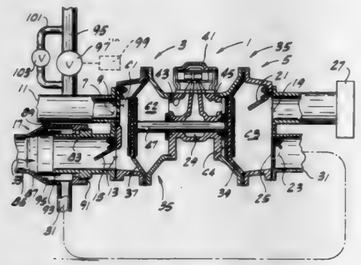
(g) a compression spring positioned in said inlet chamber to bear axially against said first wall, said second wall being sealed against said disc, said damper chamber being movable by pressure in said secondary pump outlet against said spring to relieve pump outlet pressure to said main inlet through the aperture in said disc.

4,521,165

APPARATUS FOR PUMPING FLUENT SOLID MATERIAL

Avrom R. Handleman, Webster Groves, Mo., assignor to Semi-Bulk Systems, Inc., Overland, Mo.

Filed Aug. 31, 1984, Ser. No. 646,011
Int. Cl.³ B65G *53/08;* **F04B** *15/02, 43/06*
U.S. Cl. 417—393 **14 Claims**



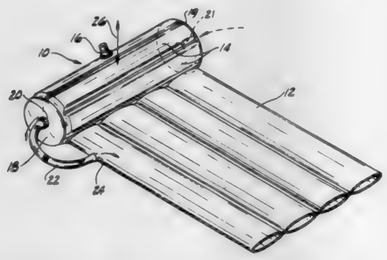
1. Apparatus for pumping fluent solid material comprising:
a first expansible chamber pump having an inlet with a check valve for intake of material from a supply thereof on an intake stroke of said first pump and an outlet with a check valve for discharge of the material on a discharge stroke of said first pump;
a line for delivery of material from the outlet of said first pump;
a second expansible chamber pump having an inlet with a check valve for intake of gas on an intake stroke of said second pump and an outlet with a check valve for discharge of gas on a discharge stroke of said second pump;
means interconnecting the pumps for operation of the second pump through a discharge stroke on an intake stroke of the first pump and through an intake stroke on a discharge stroke of the first pump; and
a gas line interconnecting the outlet of the second pump to said material delivery line downstream from and adjacent the outlet of the first pump whereby on each discharge stroke of the first pump the second pump takes in gas and on each intake stroke of the first pump the second pump pumps gas to said material delivery line behind the material delivered into said line through the outlet of said first pump on the preceding stroke of said first pump.

4,521,166

INFLATABLE AIR PUMP

William E. Phillips, 6015 Varna Ave., Van Nuys, Calif. 91401

Continuation-in-part of Ser. No. 317,436, Nov. 2, 1981, abandoned. This application Apr. 28, 1982, Ser. No. 372,639
Int. Cl.³ F04B *43/08, 45/06;* **A47C** *27/08*
U.S. Cl. 417—478 **26 Claims**



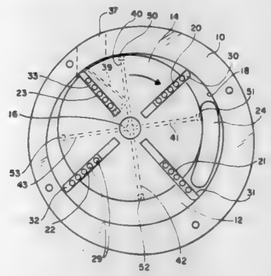
1. An inflatable pump comprising:
a plurality of inflated chambers collectively and substantially exclusively defining a completely enclosed internal chamber, said plurality of inflated chambers collectively and substantially exclusively forming a self-supporting, resilient container; and
valve means disposed in said container to selectively permit fluid to ingress and egress said internal chamber; whereby an extremely lightweight, compact, collapsible pump is devised.

4,521,167

LOW FRICTIONAL LOSS ROTARY VANE GAS COMPRESSOR HAVING SUPERIOR LUBRICATION CHARACTERISTICS

Robert J. Cavalleri, 1605 Gran Via, Orlando, Fla. 32825, and William E. Clark, 401 Hyder St., NE., Palm Bay, Fla. 32907

Continuation-in-part of Ser. No. 272,754, Jun. 11, 1981, abandoned. This application Apr. 8, 1983, Ser. No. 483,178
Int. Cl.³ F04C *18/00, 29/02*
U.S. Cl. 418—82 **9 Claims**



1. A low frictional loss, rotary vane gas compressor utilizing a housing having a generally elliptical cavity therein, and a rotor disposed in said cavity, with the axis of rotation of said rotor being offset from the central axis of said cavity, said housing having an inlet passage and a discharge passage, each in contact with said cavity, said rotor having a plurality of radial slots in equally spaced relation about its periphery, a slidable vane of minimal weight being disposed in each of said slots, with the outer tip of each vane being in close proximity to an inner stator wall that defines the outer boundary of said cavity, said vanes serving to define a plurality of chambers in said cavity, which chambers undergo significant volume changes as they move about said cavity during rotation of said rotor, said vanes thus cooperating with said inner stator wall to compress gas entering said inlet passage, such that the gas thereafter leaving through said discharge passage is at a higher pressure, means for providing a film of lubricant on said inner stator wall, latter means including the use of a plurality of radial passages defined in said rotor, with a metering nozzle located on the outer end of each such radial passage, such that the quantity and dispersion of the lubricant flow therefrom will be controlled in a desired manner, the outer tips of said vanes each possessing a compound contour that interacts with such film of lubricant to effect a good seal with said inner stator wall, while minimizing friction.

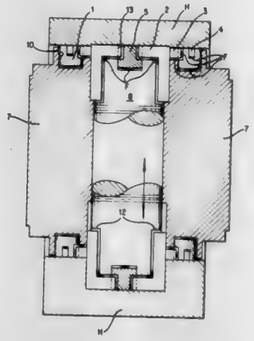
4,521,168

SEALING MEANS FOR A ROTARY PISTON ENGINE

Peter B. Kathmann, Hamburg, Fed. Rep. of Germany, assignor to RMC Rotary Motor Company AG, Zug, Switzerland

Continuation of Ser. No. 101,222, Dec. 7, 1979, abandoned. This application Aug. 30, 1982, Ser. No. 413,072
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1978, 2853423
Int. Cl.³ F01C *19/04, 19/08*
U.S. Cl. 418—137 **7 Claims**

1. In a rotary piston engine, the combination of a housing having a cylindrical internal surface; a rotor mounted in said housing for rotation about an axis which is parallel to the axis of said internal surface, said rotor having first and second end portions, a peripheral surface between said end portions and a diametrically extending bore provided in said peripheral surface between said end portions; and elongated body reciprocably installed in said bore and having first and second end portions each adjacent to said internal surface; and sealing means interposed between said housing, said rotor and said elongated body, said sealing means comprising (a) annular first sealing elements surrounding said peripheral surface at the opposite sides of said bore, sealingly engaging said housing adjacent to the respective axial ends of said internal surface and arranged to rotate with said rotor, (b) substantially U-shaped second



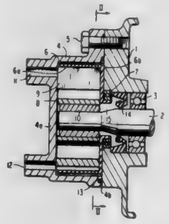
sealing elements each having a central portion interposed between one end portion of said elongated body and said internal surface and two outer portions extending in substantial parallelism with the axis of said bore at the opposite sides of said elongated body, said second sealing elements being arranged to rotate with said rotor as well as to reciprocate with said elongated body with reference to said rotor, and (c) third sealing elements extending between sealingly engaging said first sealing elements and the outer portions of said second sealing elements and arranged to rotate with said rotor, said outer portions of said second sealing elements being arranged to slide relative to the respective third sealing elements in response to reciprocation of said elongated body in said bore as a result of rotation of said rotor with reference to said housing.

4,521,169

VANE PUMP WITH INTERMEDIATE ROTARY CASING AND DRIVE CLUTCH

Hitoshi Ogawa, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1984, Ser. No. 594,133
Claims priority, application Japan, Mar. 31, 1983, 58-49053[U]
Int. Cl.³ F04C *18/348*
U.S. Cl. 418—69 **6 Claims**



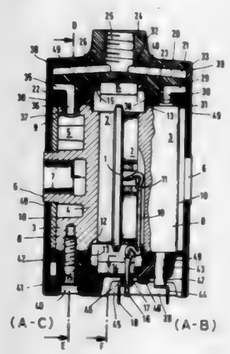
1. A vane type pump, comprising:
(a) a frame member (**1**),
(b) a housing (**4**) having a cylindrical inner surface and secured to said frame member,
(c) a rotor (**8**) eccentrically disposed in said housing with respect to a center thereof,
(d) a drive shaft (**2**) rotatably supported by the frame member and disposed concentrically within said rotor,
(e) means for operatively coupling said shaft to said rotor, said coupling means comprising a one-way clutch (**10**) disposed between said shaft and said rotor for connecting the rotor to the shaft when the rotational speed of said shaft is higher than a predetermined value, and for releasing the rotor from the shaft when the rotational speed of said shaft is lower than the predetermined value,
(f) a plurality of radial slots (**8***a*) formed in a peripheral surface of said rotor,
(g) a plurality of vanes (**9**) slidably disposed in said slots, said vanes being centrifugally extended from said slots by the rotation of said rotor,
(h) an intermediate casing (**6**) rotatably disposed between said housing and said rotor and having a cylindrical inner surface (**6***a*) with which outer ends of said vanes are slidably engaged upon centrifugal extension, and
(i) an inlet port (**11**) and an outlet port (**12**) of said pump communicating with a space between said rotor and said casing, whereby the frictional drag of the vane ends along the inner surface of the casing rotates the casing to thereby reduce the degree of sliding between the vane ends and the casing and attendantly the wear of the vane ends.

4,521,170

POWER SEMICONDUCTOR COMPONENT FOR LIQUID COOLING

Erwin Klein, Heddesheim, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie. AG, Mannheim-Kaefertal, Fed. Rep. of Germany

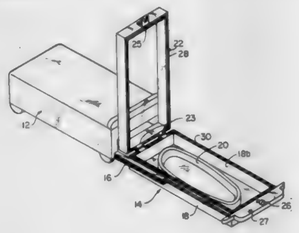
Filed Sep. 17, 1982, Ser. No. 419,832
Claims priority, application European Pat. Off., Sep. 19, 1981, 81107465
Int. Cl.³ H01L *23/34, 23/46*
U.S. Cl. 357—81 **10 Claims**



1. Power semiconductor component for liquid cooling, comprising a semiconductor crystal disc having at least one pn-junction and two main electrodes; two thermally and electrically conducting multicontacts each being connected to a respective one of said main electrodes; cooling capsules each including a wall, a bottom and a cover defining an interior space, and cooling rods disposed on said bottoms in said interior space, said bottoms being in the form of thermally and electrically conducting heat sink discs each being connected to a respective one of said multicontacts, said cooling capsules having openings formed therein for receiving and discharging

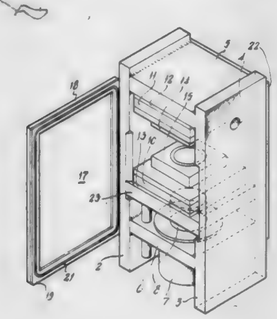
coolant, and said covers having electrical connecting eyes formed thereon; an inner liquid-tight housing surrounding said semiconductor crystal disc including a ceramic ring, additional ring-shaped parts and said heat sink discs; and an outer insulating housing including two ceramic half-shells having hydraulic connecting eyes formed thereon with holes formed therein, and a multibranch canal system for conducting coolant through said interior space and around said interior liquid-tight housing between said holes formed in said hydraulic connecting eyes and said openings formed in said cooling capsules.

4,521,171
FOOT PATTERN DEVICE
David Noonan, Jr., 227 Linden St., Manchester, N.H. 03104
Filed Mar. 28, 1984, Ser. No. 594,322
Int. Cl.³ B29C *17/00*
U.S. Cl. 425—2 **5 Claims**



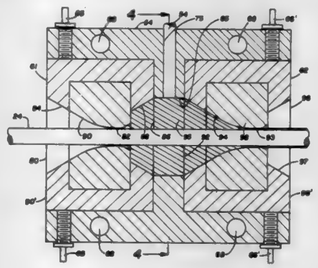
1. A foot pattern device comprising:
a cavity having a base and a wall portion;
a foot form in said cavity on said base;
a frame releasably securable to said base for gripping a deformable sheet between the lower edge of said frame and the upper portion of said wall portion;
means for heating said deformable sheet; and
clamp means for holding said frame tightly to said wall portion with said deformable sheet between them as a foot is pressed on said warmed deformable sheet into said foot form.

4,521,172
MOULDING MACHINES
Barrie W. Gilbert, Stonnall, England, assignor to Bipel Limited, Sutton Coldfield, England
Filed Jun. 21, 1983, Ser. No. 506,473
Claims priority, application United Kingdom, Jul. 3, 1982, 8219310
Int. Cl.³ B29C *3/00*
U.S. Cl. 425—73 **10 Claims**



1. A compression moulding press having an external supporting frame in the form of a box constituted by two said walls defining press sidewall tension members and spaced apart by an integral press top member coextensive with the side walls and a bottom table member reaction surface coextensive with the side walls, and a back member between the press top member, the bottom table member and the two side members to define therebetween a moulding area for the press accessible from outside the press through an aperture defined between edge portions of said side walls and members, together with door means co-operable with said edge portions to close said aperture to create a closed chamber from and integral with said external supporting frame, whereby said side walls, press top member, bottom table member, back member and door means defined a sealed space including said moulding area which can be at least partly evacuated.

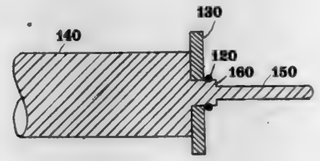
4,521,173
APPARATUS FOR MANUFACTURING MAGNET WIRE
G. Daniel Hilker; Verne H. Lausen; Jessie H. Coon; James E. Bodette; Jerry L. Grimes; Roger D. Wright; Donny R. Disque, and Keith D. Bultemeier, all of Fort Wayne, Ind., assignors to Phelps Dodge Magnet Wire Co., New York, N.Y.
Division of Ser. No. 258,690, Apr. 29, 1981,. This application Sep. 1, 1983, Ser. No. 528,564
Int. Cl.³ B29F *3/10*; B05D *5/12*
U.S. Cl. 425—113 **14 Claims**



1. An apparatus for the manufacture of coated filaments such as magnet wire comprising a die apparatus, a filament pay-out device, a coated filament take-up device, said die apparatus being positioned between said pay-out and take-up devices to receive a moving filament trained from said pay-out device to said take-up device, said die apparatus including an entrance die and exit die and a die block, said die block being between said dies, said entrance die having an entrance opening and an exit opening, said entrance die having a throat portion and a diverging interior wall portion, said throat portion being smaller than said exit opening, said throat portion being larger than said filament, said throat portion being connected to said entrance opening, said throat portion being connected by said diverging interior wall portion to said exit opening, said exit die having an entrance opening and an exit opening, said exit die having a throat portion and a converging interior wall portion, said throat portion being smaller than said entrance opening, said throat portion being larger than said filament, said throat portion being connected to said exit opening, said throat portion being connected by said converging interior wall portion to said entrance opening, said die block having an interior passage communicating with said exit opening of said entrance die and said entrance opening of said exit die, said diverging interior wall portion of said entrance die and said interior passage of said die block and said converging interior wall portion of said exit die defining together a die chamber, said die chamber being fillable with flowable but hardenable material, said flowable material in said die chamber supporting said filament within said die apparatus concentricly of said throat portion of said exit die, a reservoir of said flowable material, operatively connected to said die apparatus for filling said central die chamber with said flowable material, said

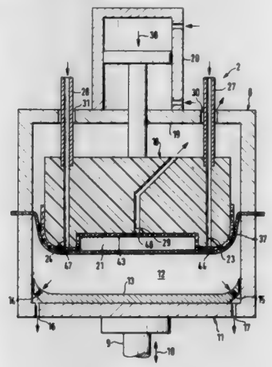
reservoir maintaining said flowable material within said die chamber at elevated pressures.

4,521,174
ADJUSTABLE DOUGH MANIPULATOR
Murray Kornhauser, 620 Argyle Rd., Wynnewood, Pa. 19096
Continuation of Ser. No. 419,132, Sep. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 279,226, Jun. 30, 1981, abandoned. This application Feb. 23, 1984, Ser. No. 582,807
Int. Cl.³ A21C *1/08*
U.S. Cl. 425—194 **1 Claim**



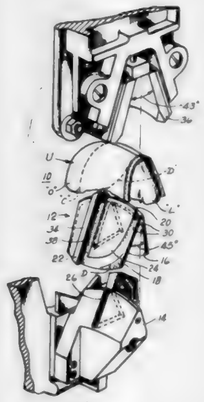
1. A dough manipulator adapted for manually controlling the thickness of dough comprising a roller with handles, and means for maintaining said roller at a predetermined height above a substantially flat surface, said means consisting of two spacer rings positioned at the ends of said roller;
said means for maintaining each spacer ring in position consisting of an elastic member seated in a groove at a predetermined distance from the end of said roller.

4,521,175
APPARATUS FOR PRODUCING CONTAINERS FROM THERMOPLASTIC SHEET MATERIAL
Emmerich Medwed, Wolfertschwenden, Fed. Rep. of Germany, assignor to Multivac Sepp Haggenmuller KG, Wolfertschwenden, Fed. Rep. of Germany
Division of Ser. No. 242,356, Mar. 10, 1981, Pat. No. 4,397,804. This application Feb. 22, 1983, Ser. No. 468,371
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 8007086[U]
Int. Cl.³ B29C *17/04*
U.S. Cl. 425—403 **12 Claims**



1. A device for producing containers from thermoplastic sheet material comprising a molding die having a projecting peripheral portion and/or a recessed central portion directed, in use, towards said sheet material, said molding die being provided with a plurality of first bores adjacent said peripheral portion and a second bore displaced from said first bores in a direction towards the center of said central portion, said second bore forming a venting bore connected with the environment, a cooling air source and means for connecting said cooling air source with said first bores, whereby in use a stream of cooling air flow is directed against said thermoplastic sheet material from a region thereof adjacent to said peripheral portion directed to the inner region of said central portion and vented through said second bore to cool said sheet material progressively from said regions thereof adjacent said peripheral portions towards said central portion.

4,521,176
SHOE UPPER CAVITY SHELL
George J. Bouzianis, Ipswich, and Donald B. McIlvin, Danvers, both of Mass., assignors to USM Corporation, Farmington, Conn.
Filed Sep. 28, 1984, Ser. No. 656,076
Int. Cl.³ B29F *1/00*; B29D *27/00*
U.S. Cl. 425—521 **9 Claims**

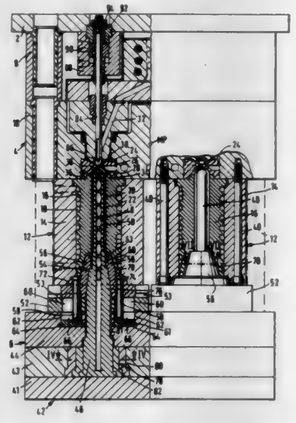


1. In a mold apparatus for a shoe resin applying machine in which a shoe upper has a resin ejected into a heel pocket between an inner layer and an outer layer of that upper having a male mold apparatus which is caused to press the treated upper into a female mold, wherein the improvement comprises:
a shell mold matable over the distal portion of said male mold apparatus and arranged to correspond to the configuration of the shoe upper being worked upon.

4,521,177
MULTIPLE INJECTION MOULDING APPARATUS
Michael G. Blank, Wuppertal, and Horst E. Hammerschmidt, Hattingen, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Koppern FmbH & Co. KG, Hattingen, Fed. Rep. of Germany
Continuation of Ser. No. 433,450, Oct. 8, 1982, abandoned. This application Apr. 5, 1984, Ser. No. 597,551
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1981, 3140711; Jul. 31, 1982, 3238743
Int. Cl.³ B29C *1/00*; B29F *1/022*
U.S. Cl. 425—533 **9 Claims**

1. A multiple injection mould for preforms provided with a bottle neck socket, said preforms having application for the manufacture of bottles by a blast method, the mould including a fixed plate on the nozzle side of the injection moulding machine; a plurality of outer moulds, each of which defines a substantially cylindrical outer section of a preform; a plurality of mould elements recessed into the fixed plate, said mould elements defining the mould contour which forms the base of the preform, each of said mould elements also including a filling channel; a core-carrying plate movable within the injection moulding machine on to which there are fixed a plurality

of cores which respectively engage said outer moulds; pairs of mould end plates movable at right angles to the axis of said outer moulds, said mould end plates having an internal contour dimensioned for moulding the socket of the bottle neck; an intermediate plate on which said mould end plates are mounted and which is adjustable relative to said core carrying plate in order to withdraw said cores out of the preforms; a plurality of inner housings in each of which one of said outer moulds is formed; a plurality of separate external housings which respectively enclose said inner housings, each of said external housings being secured to said fixed plate; a separate pair of said mould end plates being assigned to each of said outer moulds;



each pair of mould end plates having an outer frusto-conical surface, said outer moulds having internal frusto-conical surfaces which respectively cooperate with said outer frusto-conical end plate surfaces, each of said mould end plates also including an inner frusto-conical surface which is coaxial with the socket of the bottle neck formed by the preform, said mould end plates acting, respectively, in conjunction with outer frusto-conical surfaces on said cores; a plurality of separate guides, each extending at right angles to the direction in which the injection mould opens, each pair of said mould end plates being mounted in said guides; and a common hydraulic drive for a plurality of adjacent pairs of said mould end plates to open and close the pairs of said mould end plates.

4,521,178

APPARATUS FOR PRODUCING UNDERCUT TUBULAR SYNTHETIC PLASTIC ARTICLES

Anton Anger, Linz, Austria, assignor to Österreichische Schiffswerften Aktiengellschaft Linz-Korneuburg, Linz-Korneuburg, Austria

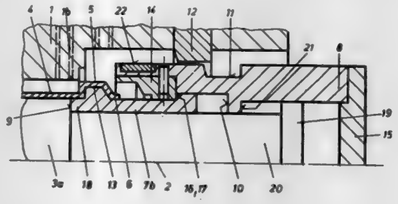
Continuation of Ser. No. 157,684, Jun. 9, 1980, abandoned, which is a continuation of Ser. No. 956,782, Nov. 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 707,628, Jul. 22, 1976, Pat. No. 4,127,632. This application Jul. 24, 1981, Ser. No. 286,314

Claims priority, application Austria, Jul. 29, 1975, 5878/75; Oct. 10, 1975, 7770/75

Int. Cl.³ B29C *7/00*

U.S. Cl. 425—548 **11 Claims**

1. In an apparatus for the production of tubular articles of the type wherein two outer annular portions having first inner diameters flank an undercut intermediate annular portion having a larger second inner diameter, particularly in an injection molding machine for thermoplastic synthetic plastic materials, the combination of a mold having an open-and-shut multipartite housing; a core separate from and spacedly surrounded by said housing and defining therewith an annular cavity having a configuration matching the configuration of said articles, said core including an external ring-shaped projection with an outer diameter corresponding to said second inner diameter and two smaller portions flanking said projection and having outer diameters corresponding to said first inner diameters, said core being composed of a tubular first component and a second component, said second component being axially slidably surrounded by said first component; means for opening and closing said housing; means for introducing into said cavity a charge of plasticized synthetic plastic material which fills said cavity and is thus converted into an article of said type while said housing is closed, said housing determining solely



the external configuration and said core determining solely the internal configuration of the article in said cavity; means for maintaining at least one outer portion of the article on said core in a state in which said one outer portion can undergo elastic deformation in open position of said housing; and means for moving said core and the article thereon relative to each other axially of said core and in a direction to force said projection through said one outer portion while said housing is open whereby said one outer portion expands and thereupon contracts so that its inner diameter is again less than said second inner diameter.

4,521,179

INJECTION MOLDING CORE RING GATE SYSTEM

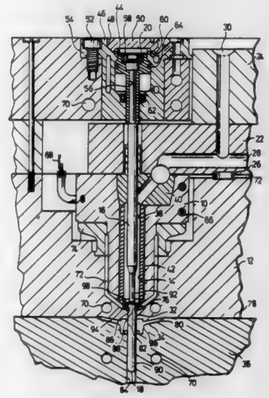
Jobst U. Gellert, 7A Prince St., Georgetown, Ontario, Canada L7G 2X1

Continuation-in-part of Ser. No. 470,192, Feb. 28, 1983, abandoned. This application Jan. 4, 1984, Ser. No. 568,048

Claims priority, application Canada, Feb. 24, 1983, 422305

Int. Cl.³ B29F *1/03, 1/08*

U.S. Cl. 425—548 **12 Claims**



1. In an injection molding system for filling a cavity defined between a cool cavity plate and a cool movable mold platen with an opening therethrough, an elongated valve pin with a tip end which extends through a gate leading to the cavity, through the cavity, and into a bore in the movable mold platen, the gate, the opening through the cavity, and the bore in the

movable mold platen being in alignment and substantially equal in diameter, valve pin actuating mechanism which reciprocates the valve pin between a rearward closed position and a forward open position in which the valve pin extends further through the opening through the cavity, a melt passage which extends through a manifold and around the valve pin to convey pressurized melt from a molding machine to the gate, the valve bin having an elongated head portion adjacent the tip end which extends from a reduced neck portion, the head portion being substantially equal in diameter to the gate, the opening through the cavity, and the bore in the movable mold platen, the reduced neck portion extending past the gate in the open position to provide for the flow of pressurized melt into the cavity,

the improvement wherein the gate extends through a land in the cooled cavity plate and the head portion of the valve pin extends a considerable distance through the cavity into the bore in the movable mold platen, whereby in the retracted closed position contact between the head portion of the valve pin and the surrounding land of the cool cavity plate provides thermal separation between the hot neck portion of the valve pin and the head portion of the valve pin extending through the cavity, and sufficient contact is provided between the movable mold platen and head portion of the valve pin received in said bore to rapidly cool the melt surrounding the valve pin in the cavity.

4,521,180

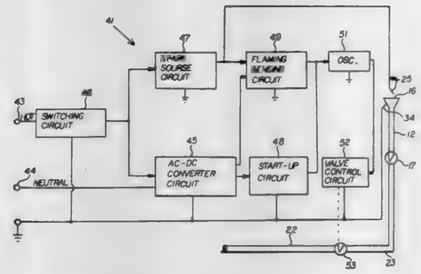
LABORATORY BURNER APPARATUS

Carl W. Walter, Holliston, and William J. Riordan, Shrewsbury, both of Mass., assignors to Kidde, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 445,215, Nov. 29, 1982, abandoned. This application Jun. 11, 1984, Ser. No. 619,771

Int. Cl.³ F23N *5/24*

U.S. Cl. 431—25 **12 Claims**



1. Laboratory burner apparatus comprising:
a burner made from electrically conductive material and adapted for positioning on a counter, said burner comprising an inlet for connection to a gas source and an outlet for feeding gas to a flame;
an electrical power supply comprising an AC supply having hot, neutral, and ground terminals;
an electrically operated valve for controlling the flow of fuel to said burner;
an igniter means energizable by said supply to ignite fuel emanating from said outlet;
igniter activation means for producing either ignition periods during which said igniter means is energized by said supply or non-ignition periods during which said igniter is deenergized, said activation means comprising manual activation means for initiating each of said ignition periods;
said igniter activation means further comprising ground proving means for insuring the integrity of said ground terminal prior to each said ignition period, whereby said igniter means is not energized in the absence of a ground connection;
flame sensing means for detecting the presence of flame at said outlet; and
valve control means for opening said valve only during said ignition periods and periods during which flame is detected by said sensing means.

4,521,181

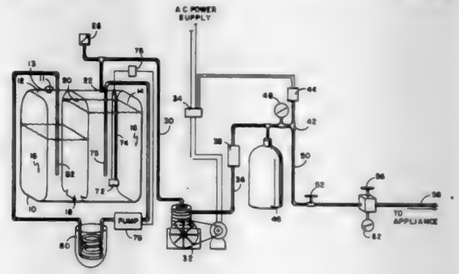
FUEL FUME GENERATOR KIT

Richard A. Delage, 58 Old Pool Rd., Biddeford, Me. 04005

Filed Apr. 26, 1984, Ser. No. 603,924

Int. Cl.³ F23D *11/44*

U.S. Cl. 431—207 **8 Claims**



1. A fuel fume generator kit comprising:
a tank adapted to contain liquid fuel;
a baffle disposed in said tank;
an entry chamber formed in said tank to one side of said baffle;
a vacuum chamber formed in said tank on the other side of said baffle from said entry chamber;
means to enter said fuel into said entry chamber;
means for fuel to pass from said entry chamber to said vacuum chamber while maintaining separate atmospheres in said entry chamber and in said vacuum chamber;
means to heat the fuel in said tank;
means to cause fuel in said vacuum chamber to turn to a fumed state; and
means to cause said fuel fumes to be delivered under pressure to a device to be operated by such fuel.

4,521,182

METHOD AND APPARATUS FOR HEATING PARTICULATE MATERIAL

Albert R. Collins, Ontario, Calif., assignor to Grefco, Inc., Bala Cynwyd, Pa.

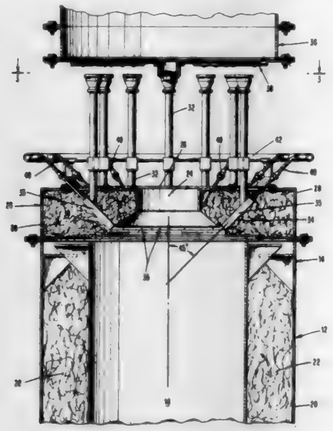
Filed Jan. 21, 1982, Ser. No. 341,490

Int. Cl.³ F27B *14/00, 15/00;* **C04B** *31/22*

U.S. Cl. 432—13 **21 Claims**

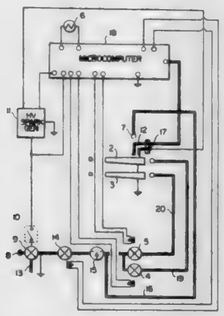
1. A method for expanding particulate perlite ore comprising the steps of:
(a) directly a flame downwardly a distance of from two to twelve feet along the central axis of a vertically disposed cylindrical furnace having an unimpeded central portion;
(b) introducing the perlite ore into a plurality of conduits disposed at a plurality of locations distributed radially around said flame at the upper end of said furnace;
(c) injecting compressed air into said conduits in a direction parallel to said conduits; and
(d) placing said perlite ore directly into said flame by injecting said compressed air and perlite ore downwardly and toward the central axis of said furnace directly into the

unimpeded central region of said furnace, whereby said perlite ore and said compressed air are mixed with said



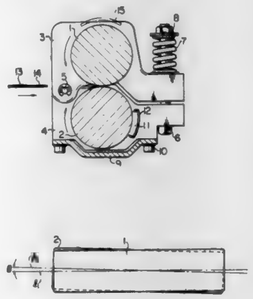
flame as said flame passes downwardly through said furnace.

4,521,183
COOKING APPLIANCE
Masayoshi Hirai, Nara; Junzo Tanaka, Fujiidera, and Katsuroh Ueda, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
PCT No. PCT/JP82/00439, § 371 Date Jul. 7, 1983, § 102(e) Date Jul. 7, 1983, PCT Pub. No. WO83/01828, PCT Pub. Date May 26, 1983
PCT Filed Nov. 11, 1982, Ser. No. 516,604
Claims priority, application Japan, Nov. 12, 1981, 56-182060
Int. Cl.³ F27B *9/40*; F23M *1/00*
U.S. Cl. 432—37 **2 Claims**



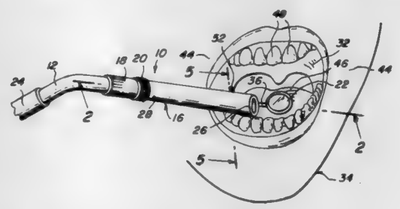
1. A cooking appliance comprising: a heating chamber for receiving a heating load, a heating means for heating said heating chamber, an input means for providing a preset temperature input, a temperature sensor for detecting the temperature in said heating chamber, and a control means including a microcomputer for controlling the heat output and heating time of said heating means in response to signals from said temperature sensor and said input means, wherein temperatures detectible by said temperature sensor are classified by means contained within said microcomputer into at least three levels, namely, an upper limit temperature, a middle temperature, and a lower limit temperature according to said preset heating temperature and wherein said heat output of said heating means is changed in a stepwise fashion according to said temperatures at the respective levels so as to control said heating chamber with respect to said preset heating temperature; and wherein when said temperature being detected by said temperature sensor is respectively said upper limit temperature, said middle temperature and said lower limit temperature, said heating means develops no heat output, half its full heat output and its full heat output, respectively, thereby controlling the atmosphere in said heating chamber so as to be at said preset heating temperature.

4,521,184
PRESSURE FIXING DEVICE
Abe Samuels, Chicago, Ill.; Keitaro Yamashita, Saitama, and Yoshitaka Sasaki, Kumagaya, both of Japan, assignors to Hitachi Metals, Ltd., Japan and Speed-O-Print Business Machines Corp., Chicago, Ill.
Filed Oct. 12, 1983, Ser. No. 541,350
Int. Cl.³ G03G *15/00*; F27B *9/28*
U.S. Cl. 432—60 **3 Claims**



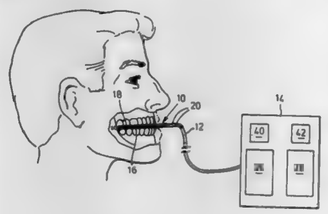
1. A pressure fixing device comprising:
a pair of pressure rolls formed of metal maintained in pressing contact with each other and allowing a support member supporting thereon a toner image to pass therebetween, wherein at least the pressure roll coming into contact with said toner image of said pair of pressure rolls has a surface coarseness in the range 1.9 μm(Ra) to about 2.7 μm(Ra), the device further comprising cleaning means adapted to come into contact with the pressure roll not coming into contact with said toner image, and
means for heating the pressure roll coming into contact with said toner image to a temperature below 80° C.

4,521,185
HIGH VOLUME ORAL EVACUATOR
Alan P. Cohen, 50 Mill Rd., Eastchester, N.Y. 10709
Filed Aug. 22, 1983, Ser. No. 525,446
Int. Cl.³ A61C *1/00, 3/00*
U.S. Cl. 433—31 **1 Claim**



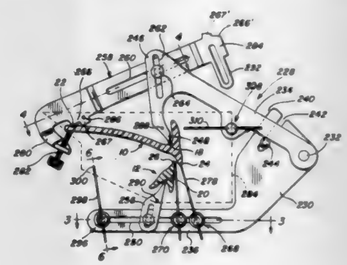
1. A high volume oral evacuator which comprises:
(a) a tubular handle adapted to be connected to a source of vacuum;
(b) a tubular tip member;
(c) a rigid sleeve member having a bevelled tapered intake end with other end secured over said tip member and extending outwardly beyond outer end of said tip member;
(d) means providing a swivel joint of said tip member with said handle whereby said tip member may be freely rotated relative to said handle to variously position the bevelled intake end of said sleeve member within a mouth of a patient;
(e) an operating ring fixed to said tip member containing said swivel joint in position to be manipulated for turning said tip member relative to said handle by fingers of a hand of an operator holding said handle; and
(f) a mirror connected at an angle to the bevelled tapered intake end of said sleeve member, wherein said mirror further comprises a shaft pivotally supported on said sleeve member and adjacent to the bevelled intake end thereof, that further comprises a means for flipping over said mirror and locking said shaft in a stationary position so that in a down position said mirror can be used as a retractor for cheeks and tongue and in a up position as a viewing tool for the upper teeth, wherein said means for flipping over said mirror and locking said shaft in a stationary position comprises;
(i) a reduced threaded shaft member affixed to end of said shaft of said mirror;
(ii) a arm having a transverse threaded aperture in enlarged end thereof that is threadably mounted onto said reduced threaded shaft member so that said arm can flip over said mirror via said shaft of said mirror;
(iii) a nut threadably mounted onto said reduced threaded shaft member to secure said arm thereon; and
(iv) at least one arm holding ear portion affixed to said rigid sleeve member on either side of said shaft of said mirror so that said arm holding ear portion thus prevents said arm from moving therefrom.

4,521,186
SYSTEM FOR DETERMINING THE FIRST PREMATURITY CONTACT OF DENTAL OCCLUSION
Harold Wodlinger, 614 Yorkhill Blvd., Thornhill, Ontario, Canada L4J 3J7, and Hart V. Katz, 23 Wyvern Rd., Willowdale, Ontario, Canada (M2K 2K3)
Filed May 17, 1983, Ser. No. 495,555
Int. Cl.³ A61C *9/00*
U.S. Cl. 433—71 **9 Claims**



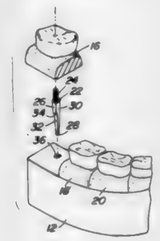
1. A sensor for determining the first dental occlusion prematurity comprising first and second planar portions, said first planar portion having a layer of an insulating material with a plurality of elongate parallel ribs extending longitudinally of said portion, adjacent pairs of ribs defining channels therebetween, conducting elements located in these channels, the second portion having a layer of a planar conducting material, the first and the second portions also having a dilatant layer of boronated methylvinylsiloxane polymer on one side thereof and having substantially the same shape thereas, said polymer being deformable from one position to another position and retaining its deformation thereat whereby in use the first and the second portions are adapted to be inserted in the mouth of a patient such that the first and second portions are located opposite each other; the ribs separating the conducting elements in the first planar portion from the conducting layer of the second planar portion.

4,521,187
DENTAL ANALYZER
James A. Casper, 1830 S. 8th Ave., Yuma, Ariz. 85364
Continuation-in-part of Ser. No. 469,399, Feb. 24, 1983, Pat. No. 4,460,339. This application Jun. 15, 1984, Ser. No. 621,245
Int. Cl.³ A61C *9/00*
U.S. Cl. 433—72 **9 Claims**



1. For use in analyzing reference points in a median plane extending through upper and lower dentures fixed in occlusal relationship to each other, a denture analyzing instrument comprising a planar base adapted to be aligned with said median plane, a pivot mounted on said base, a pivot arm pivotally connected to the base by said pivot, said base having an elongated portion, a contact tip fixed to the pivot arm, adjustable means respectively mounted on the pivot arm and the elongated portion of the base for contact with the dentures at the reference points in the median plane, and means for locking the adjustable means in positions contacting at least two of the reference points while the contact tip contacts a third of the reference points on the upper denture in said median plane, said three of the reference points defining a denture spacing triangle.

4,521,188
DOWEL PIN FOR DENTAL MODELS
Steven Metzler, Cherry Hill, N.J., assignor to National Keystone Products Co., Philadelphia, Pa.
Filed Oct. 14, 1983, Ser. No. 542,175
Int. Cl.³ A61C *19/00*
U.S. Cl. 433—74 **4 Claims**



1. A dowel pin for use in a dental model, comprising a stem adapted to be embedded in a die, and a body portion coupled to said stem and extending axially therefrom, said body portion being generally frusto-conical in shape and having a first facet thereon facing laterally outwardly with respect to the longitudinal axis of said body portion, a second facet on said body portion facing laterally outwardly with respect to said body portion and disposed obliquely with respect to said first facet so that said facets intersect, and a third facet on said body

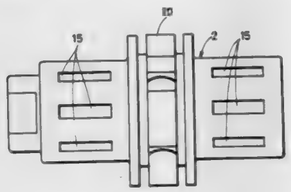
portion extending transversely with respect to the axis of said body portion and intersecting said first and second facets, said first facet extending for substantially the length of said body portion, and said second facet extending for more than half of the axial length of said body portion so that said third facet is disposed at a location in the upper half of said body portion and facing toward said distal end.

4,521,189
DENTAL HANDPIECE
Joseph P. Lares, Redwood City, and Mark Cowell, San Carlos, both of Calif., assignors to Lares Research, San Carlos, Calif.
Filed Nov. 3, 1983, Ser. No. 548,431
Int. Cl.³ A61C *1/10*
U.S. Cl. 433—84 **8 Claims**



6. A dental handpiece comprising a first casing symmetrical about an axis, a hub extending coaxially from said first casing and having an exterior circular-cylindrical surface concentric with said axis, means forming a plurality of axially spaced fluid outlets in said exterior surface, a second casing symmetrical about said axis, a sleeve extending coaxially within said second casing and having an interior circular-cylindrical surface journalled with uniform rubbing clearance in said exterior circular-cylindrical surface, means in said sleeve forming a plurality of axially spaced fluid inlets in said interior surface and respectively adapted to communicate with said outlets, means for supplying fluid at a relatively high pressure to the endmost ones of said outlets, and means for supplying fluid at a relatively low pressure to intermediate ones of said outlets, whereby the clearance space between the casings and the difference in pressure between the fluid in said endmost outlets and the fluid in said intermediate outlets serve to substantially confine the fluid in said intermediate outlets.

4,521,190
AIR BEARING DEVICE IN DENTAL HANDPIECE
Shozo Nakayama, and Sekiya Ogino, both of Kyoto, Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan
Filed Jul. 27, 1983, Ser. No. 517,948
Claims priority, application Japan, Jul. 28, 1982, 57-132895
Int. Cl.³ A61C *1/05*
U.S. Cl. 433—132 **3 Claims**



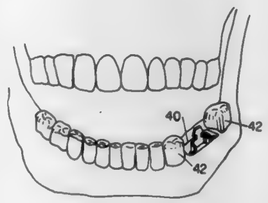
1. An air bearing device in a dental handpiece of the type in which a turbine rotor having a cutting tool shaft set therethrough is journaled by a bearing disposed with a radial gap and a thrust gap between said rotor and said bearing wherein:
said radial gap being defined radially by peripheral walls comprising the inner peripheral wall of said bearing and the outer peripheral wall of said rotor, and being defined longitudinally by said radial gap at one end and by the end of said bearing at the other end;
said radial gap is provided with a plurality of partially enlarged longitudinal gaps in said peripheral walls serving as air pools;
each said partially enlarged gap being isolated from one another and from said ends; and
the longitudinal length of said enlarged gap is larger than the peripheral width thereof.

4,521,191
CONDENSING INSTRUMENT FOR PACKING AND CONDENSING IN CONNECTION WITH PLACEMENT OF DENTAL COMPOSITE RESIN RESTORATIVE MATERIALS
Lars E. M. Ehrnford, Malmö, Sweden, assignor to Austenal International, Inc., Chicago, Ill.
Filed Jan. 3, 1984, Ser. No. 567,557
Int. Cl.³ A61C *3/08*
U.S. Cl. 433—164 **20 Claims**



1. A condensing instrument for packing and condensing in connection with placement of dental composite resin restorative materials, characterized in that at least one functional member (**4** and/or **5**) of the instrument consists of a metal alloy having a coating (**6** and **7**) of ceramic material which provides the working surface (**8** and **9**) of the functional member.

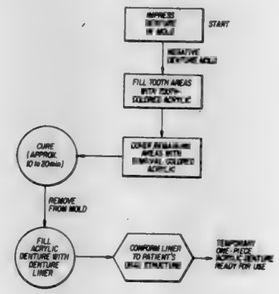
4,521,192
ORAL IMPLANT FOR OVERSIZED DENTAL SUPPORT OPENINGS
Leonard I. Linkow, 1530 Palisade Ave., Fort Lee, N.J. 07024
Continuation-in-part of Ser. No. 418,244, Sep. 14, 1982, abandoned. This application Jul. 21, 1983, Ser. No. 516,184
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **26 Claims**



1. An oral implant for permanently implanting an artificial tooth supporting structure in at least one opening in an alveolar ridge crest of a patient in which a support for a natural or artificial tooth was previously located, said opening having an upper rim and being oversized with respect to that in which a tooth support is normally positioned, comprising:

an integral support adapted to be fitted horizontally in the oversized opening, said support having a lateral dimension that is adjustable by plastic deformation sufficient to permit the support to be wedged tightly against the alveolar walls of the opening, said lateral dimension being defined by two parallel lateral side portions of the support adapted to contact the alveolar walls in generally parallel planes below the upper rim of the opening; and
at least one post extending from the support in a direction opposite the oversized opening when the implant is installed, said post being adapted for the mounting of an artificial tooth.

4,521,193
METHOD AND KIT FOR CONSTRUCTING AN AESTHETIC AND FUNCTIONAL TEMPORARY DENTURE
Robert A. Cialone, 475 Shunpike Rd., Chatham, N.J. 07928
Filed Aug. 28, 1981, Ser. No. 297,468
Int. Cl.³ A61K *6/08*
U.S. Cl. 433—199 **10 Claims**



1. A method of making a temporary denture for a denture user, comprising the steps of:
impressing the outer surfaces only of an existing permanent denture of the user into a settable molding composition to form a mold containing an impression of those surfaces;
removing the denture from the mold;
filling the tooth area only up to the gingival margin of the impression in molding composition with a quick cure tooth colored polymerizable acrylic composition;
covering the remaining area of the impression in the mold with a thin layer of pink colored quick-cure polymerizable acrylic composition;
allowing the acrylic composition to cure;
removing the thus-formed acrylic denture shell from the mold;
lining the inner surface of the thus-formed acrylic denture shell with a soft curable denture liner;
conforming the liner to the conformation of the contacting surfaces of the mouth; and
allowing said liner to set in the conformed shape, thereby forming the temporary denture.

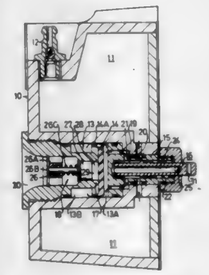
4,521,194
METHOD FOR REMOVING INCIPIENT CARIOUS LESIONS AND/OR STAIN FROM TEETH
William D. Myers, 5855 Wingcroft Ct., Birmingham, Mich. 48010, and Terry D. Myers, 25334 Lyncastle La., Farmington Hills, Mich. 48018
Filed Dec. 22, 1983, Ser. No. 564,387
Int. Cl.³ A61C *5/00*
U.S. Cl. 433—215 **3 Claims**

1. A method for removing an incipient carious lesion and/or stain from a tooth comprising the steps of:
aiming a pulsed laser so that the output from the laser impinges upon the incipient carious lesion and/or stain,
repeatedly activating the laser until the incipient carious lesion and/or stain is removed from the tooth,



wherein said laser has a power output in the range of one to one hundred millijoules cm^2, a beam diameter of substantially 50–2000 microns and a pulse duration of several picosecond.

4,521,195
DEVICE FOR SIMULATING THE REPORT EFFECT OF A BLANK CARTRIDGE WHEN FIRING SMALL ARMS
Kurt E. L. Moberg, Box 94060, S-541 04 Skövde, Sweden
PCT No. PCT/SE83/00174, § 371 Date Dec. 30, 1983, § 102(e) Date Dec. 30, 1983, PCT Pub. No. WO83/03893, PCT Pub. Date Nov. 10, 1983
PCT Filed May 2, 1983, Ser. No. 574,029
Claims priority, application Sweden, May 3, 1982, 8202762
Int. Cl.³ F42D *7/00*
U.S. Cl. 434—16 **5 Claims**



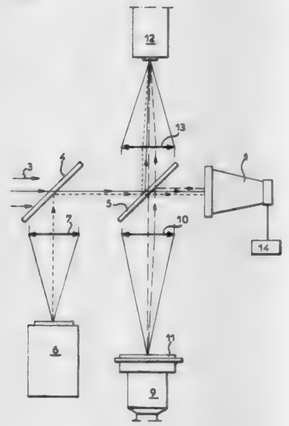
1. A device for simulating the report effect of a blank cartridge when firing small arms, comprising a pressurized gas container (**11**) and a dosing chamber (**13**) that are mutually communicable via a communication which can be opened and closed by means of a first valve (**16**), the dosing chamber having an outlet (**18,30**) opening out into the surrounding atmosphere and which can be opened and closed with the aid of a second valve (**14**), the first and second valves being adapted such that when one is closed the other is opened and vice versa, the first valve being adapted to be actuated by the intermediary action of a weapon trigger so that actuation of the trigger results in closing the first valve and opening the second valve for momentary exhaust of a predetermined quantity of gas from the dosing chamber (**13B**) through the outlet while generating the intended sound shock.

4,521,196

METHOD AND APPARATUS FOR FORMATION OF A FICTITIOUS TARGET IN A TRAINING UNIT FOR AIMING AT TARGETS

René Briard, Orgeval; Christian Saunier, Ermont, and Guy Canova, Marly-le-Roi, all of France, assignors to Giravions Dorand, France

Filed Jun. 9, 1982, Ser. No. 386,778
Claims priority, application France, Jun. 12, 1981, 81 11574
Int. Cl.³ G09B *9/00*
U.S. Cl. 434—20 **10 Claims**



1. A training unit for aiming at targets and having an orientable line of sight, comprising means for forming the image of a fictitious target in the field of view of said unit, wherein said image-forming means comprises a screen for visual display of luminous images, means for generating target signals in order to produce target signals defining successive images of a fictitious non-pointlike target as a function of the shape and continuous relative displacement of said target at least in distance from the unit and/or in angular position with respect to the line of sight, means for causing the displacement of a luminous point on the screen by means of said signals in order to display each of the images thus defined on said screen, and means for projecting the images thus formed in the field of view of the unit, the speed of displacement of the luminous point being sufficient to ensure persistence of perception of said point throughout the time required for forming an image, said means for generating target signals comprising a computer for producing said successive images in the form of a series of linear segments and for delivering in respect of each segment three values corresponding respectively to the time derivatives of two rectangular coordinates defining the position of the luminous point and to the time of displacement of the said luminous point at a predetermined speed for describing said segment.

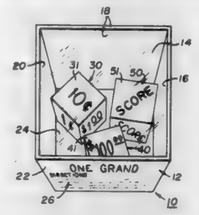
4,521,197

MONEY CALCULATION GAME

Rebecca G. Lumpkins, 817 S. 18th Ave., Maywood, Ill. 60153

Filed Apr. 24, 1984, Ser. No. 603,191
Int. Cl.³ G09B *19/02;* **A63F** *9/04*
U.S. Cl. 434—110 **14 Claims**

1. A money recognition and computation game for play by two or more players, comprising three block members, each having a plurality of faces; two of said block members being main members which have monetary amounts on their faces, said amounts corresponding to common currency denominations and the other being a lead member which has symbols indicating scoring or no scoring on at least some of its faces, whereby these members, when caused to be thrown by the players in successive turns or innings and then comes to rest with said member's upward faces determined in a random manner, the players may add or not add the resulting monetary amount shown by the upper faces of the two main members to



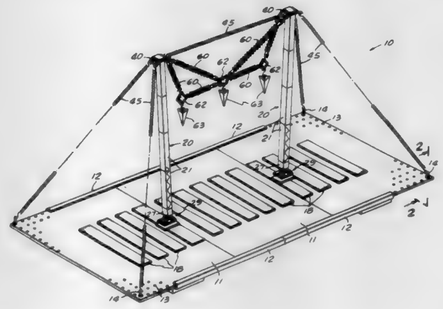
the score of the throwing player, depending upon whether a symbol indicating scoring or no scoring is present on the upper face of said lead member.

4,521,198

INSTRUCTION KIT FOR USE IN MAKING FEASIBILITY STUDIES FOR ERECTING TEMPORARY POWER LINE SUPPORTS

Keith E. Lindsey, La Canada, Calif., assignor to Lindsey Manufacturing Company, Azusa, Calif.

Filed Jul. 8, 1983, Ser. No. 512,118
Int. Cl.³ G09B *9/00*
U.S. Cl. 434—224 **20 Claims**



1. An instruction kit of miniature modular restoration components adapted for use in making feasibility studies of different modes of erecting temporary powerline supports while restoring damaged powerline tower supporting means, said kit comprising:

a baseboard;

a multiplicity of tower components having the ends thereof provided with a separable coupling fitting adapted to seat a complementary shaped coupling fitting at the end of another one of said tower components;

said tower components including a plurality of gimbal components having a base at one end thereof and a separable coupling fitting at the other end thereof shaped and sized to seat a selected one of said tower components;

a plurality of guy lines;

a plurality of guy line anchor components a selected one of which is separably mountable on the upper end of each tower assembly formed by an end-to-end assembly of a selected number of said tower components;

readily separable means for anchoring a tower assembly to a selected area of said base board; and

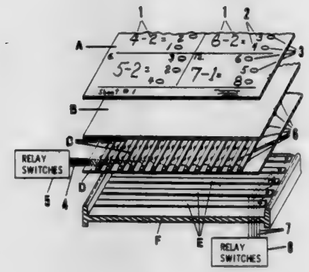
a plurality of guy lines adapted to be connected between outer areas of said baseboard and the said guy line anchor components assembled to the upper end of said tower assemblies and effective to support at least one of said tower assemblies in a desired generally upright position.

4,521,199

COMPUTER ASSISTED TEACHING MACHINE THAT USES TWO SETS OF CONDUCTIVE STRIPS

J. Richard Harte, 10 West Concord, Kansas City, Mo. 64112

Filed Nov. 23, 1983, Ser. No. 554,692
Int. Cl.³ G09B *7/06*
U.S. Cl. 434—339 **11 Claims**



1. A teaching and testing apparatus that provides students with immediate feedback as to the correctness or incorrectness of their responses to true-false, multiple choice, or cross matching questions and answers by the use of: a computer and related hardware and software, said computer and related hardware being electrically linked with said teaching and testing apparatus; where said teaching and testing apparatus incorporates two different sets of conductive strips; said two different sets of conductive strips having the individual conductive strips in each set arranged in the same plane; and where the two sets of conductive strips are organized in two different but parallel planes, with one set of conductive strips being located above the other; and where instructional or testing sheets containing a variety of indicia and response areas are positioned in a third plane that is above and parallel to the two preceeding planes; and where downward pressure at any response area on or in a testing or an instructional sheet causes a deflection of one of the conductive strips in one of the sets of conductive strips, said deflection resulting in a switching action that relays information to the computer, which in conjunction with other information tells the computer which response area on or in a testing or instructional sheet was responded to by the student, said computer having been previously programmed to operate in a teaching mode and to know which response areas are correct responses and which are incorrect response areas; and after evaluating this particular response, the computer sends information back to the student as to the correctness or incorrectness of this particular response on this particular instructional sheet.

4,521,200

SURFBOARD TYPE BOAT CONVERTIBLE INTO SAILBOAT OR BUOY

Ubaldo Fatello, via Filangieri n. 14, 10128 Turin, Italy

Filed Sep. 30, 1983, Ser. No. 538,028
Claims priority, application Italy, Oct. 14, 1982, 53811/82[U]; Nov. 17, 1982, 53932/82[U]
Int. Cl.³ B63H *16/08*
U.S. Cl. 440—23 **5 Claims**

1. A surfboard type boat convertible into a sailboat or buoy, comprising:

a floating board in the form of an annular disk formed of a shell of plastic material;

an annular body of foamed plastic material contained therein, said shell preventing the penetration of water into said disk;

a cone-shaped keel having an annular base flange extending to the edge of said shell and secured thereto;

a foam plastic material filling said keel and defining an ejector tube seat;

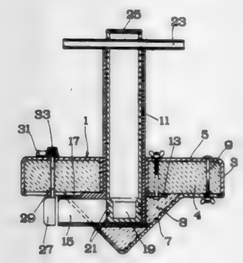
a propelling assembly including a cylinder extending through and upwardly from and perpendicularly of said floating board;

a flange on said cylinder for securing said cylinder to said floating board and a lateral tubular nozzle at one end of said cylinder forming an ejection tube;

said nozzle extending perpendicular to the axis of said cylinder and support within said keel seat;

said cylinder being a tube of hard and polished plastic material;

a propelling piston slidably mounted and sealed within said cylinder and made of a tube of plastic material;



said piston being closed at the bottom;

a handle bar extending perpendicularly through said piston at its upper end and projecting laterally therefrom on both sides permit it to be gripped by the user;

a rudder underlying and secured to said floating board downstream of said nozzle;

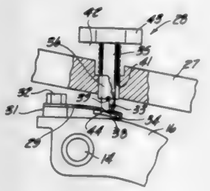
and a transverse control bar located on the upper surface of said floating board connected to said rudder, said control bar being operable by the users heels.

4,521,201

STEERING DEVICE FOR AN OUTBOARD MOTOR

Eifu Watanabe, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

Filed Feb. 17, 1983, Ser. No. 467,304
Claims priority, application Japan, Feb. 22, 1982, 57-26140
Int. Cl.³ B63H *25/02*
U.S. Cl. 440—55 **7 Claims**



1. In a steering device for an outboard motor or the like comprising a first member adapted to be affixed to a vessel, a second member journalled for steering movement relative to said first member, the improvement comprising releasable means for releasably restraining said second member against steering movement relative to said first member comprising a pair of positively interengaging elements cooperating to prevent steering movement of said second member relative to said first member upon normal forces being exerted to said second member and to release the interengagement between said elements upon the exertion of greater than normal forces to said second member, said interengaging elements being positioned to interengage when said second member is only in a specific orientation relative to said first member and wherein said

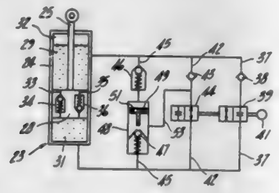
interengaging elements offer no resistance to steering movement when the second member is in other than that one position, and means for manually releasing the interengagement between the elements, comprising means for permitting one of the elements to be moved relative to its interengaged position with the other of the elements to a released position wherein said elements do not interengage and means for retaining said one element in its released position.

4,521,202

TILT LOCKING SYSTEM FOR SHIP PROPELLERS

Ryoji Nakahama, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

Filed Apr. 1, 1983, Ser. No. 481,315
Claims priority, application Japan, Apr. 26, 1982, 57-68750
Int. Cl.³ B63H *5/12*
U.S. Cl. 440—61 **14 Claims**



1. In a tilt locking and shock absorbing arrangement for a marine outboard trim comprising a drive member supported for tilting movement relative to a hull of an associated watercraft about a substantially horizontally disposed tilt axis, a hydraulic assembly comprising a cylinder and a piston slidably supported in said cylinder and dividing said cylinder into first and second chambers, means for operatively interposing said hydraulic assembly between said hull and said drive member for relative movment of said piston and said cylinder upon tilting movement of said drive member about said tilt axis, first passage means including pressure responsive absorber valve means for permitting flow from said first chamber to said second chamber upon the application of a predetermined force tending to cause said drive member to tilt up about said tilt axis, and second passage means including pressure responsive relief valve means for permitting flow from said second chamber to said first chamber upon the exertion of a predetermined force to effect tilt down of said drive member, the improvement comprising means for permitting said drive member to be tilted up about said tilt axis to a raised position and to be retained in said raised position comprising third passage means extending between said first and second chambers, first manually operated valve means for controlling the flow through said third passage means, and first check valve means in said third passage means for permitting flow from said first chamber to said second chamber when said first manually operated valve means is opened and for precluding flow from said second chamber to said first chamber through said third passage means when said first manually operated valve means is opened.

4,521,203

TOY CONSTRUCTION KIT

Lee M. Rothenberg, Jr., Homewood, Ill., assignor to International Honeycomb Corporation, Park Forest South, Ill.

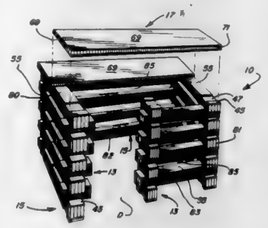
Continuation of Ser. No. 455,856, Jan. 5, 1983, abandoned. This application Apr. 23, 1984, Ser. No. 602,630
Int. Cl.³ E04B *1/10;* **A63H** *33/00*
U.S. Cl. 446—106 **7 Claims**

1. A toy construction kit for erecting life-size playhouses comprising:

a plurality of kraft paper building blocks having a pair of opposite surfaces and being substantially square in section, said building blocks comprising a composite, three-tier honeycomb structure between said opposite surfaces, and

a recess formed in each of said opposite surfaces, said recess being substantially shallower than the distance between said opposite surfaces,

each said building block honeycomb structure comprising a main body section and flat riser sections secured to said main body sections to form said opposite surfaces, said main body section and said riser sections each comprising



a separate honeycomb core, and said riser sections defining the sides of said recesses, each said honeycomb core comprising a plurality of individual cells having a longitudinal axis extending transversely of said opposite surfaces,

whereby a building block can accommodate and interlock with another building block in said recesses so that said opposite surfaces are always in vertically spaced relationship with the next adjacent block,

the vertical spacing between blocks permitting the entry of ambient air and light into a playhouse built of said bblocks.

4,521,204

REMOTELY-CONTROLLED TOY VEHICLE

Christopher C. Wiggs, 64 Goldborough Crescent, Chingford, London E4, and Christopher J. C. Taylor, 1017 Latchmere Rd., London, SW. 11, both of England

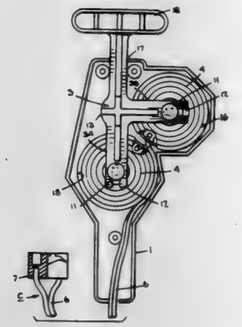
Filed Apr. 26, 1984, Ser. No. 604,107
Claims priority, application United Kingdom, Apr. 29, 1983, 8311768
Int. Cl.³ A63H *13/00*
U.S. Cl. 446—198 **6 Claims**

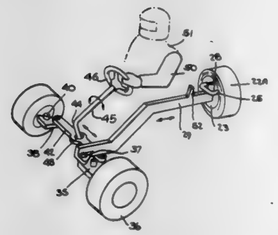
1. A remote control system for a toy vehicle having a steering mechanism and a d-c motor for driving the vehicle, the motor being connected to a battery through a three-position switch having a neutral position, a forward travel position in which the battery voltage is applied to the motor in one polarity, and a reverse travel position in which the battery voltage is applied to the motor in the opposite polarity, said system comprising:

A. a handset provided with first and second master diaphragm chambers and a handle-operated torsion bar so coupled to the master chamber that when the torsion bar is shifted by its handle from side to side, the first master chamber is either compressed or expanded; and when the torsion bar is twisted by its handle clockwise or counterclockwise, the second chamber is either compressed or expanded, said torsion bar being provided at its end with a slot that is slidably engaged by a stud projecting from the diaphragm of the first master chamber, said bar having a side arm provided at its end with a slot that is slidably engaged by a stud projecting from the diaphragm of the second master chamber;

B. first and second slave diaphragm chambers disposed in said vehicle, the first slave chamber being operatively coupled to said steering mechanism to cause steering in a direction that depends on whether this chamber is compressed or expanded, said second slave chamber being operatively coupled to said switch to cause said switch to assume said forward or reverse position depending on whether this chamber is compressed or expanded; and

C. a pneumatic tether line coupling said first and second handset master chambers to the first and second slave





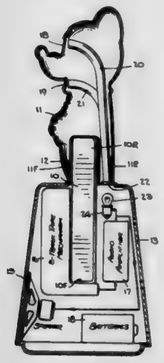
chambers, said line being formed by a pair of flexible pipes.

4,521,205

SOUND TAPE PLAYER HAVING AN ANIMATED CHARACTER

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed May 30, 1984, Ser. No. 615,380
Int. Cl.³ A63H *3/28*
U.S. Cl. 446—302 **9 Claims**



1. A tape player in combination with sound magnetic tape packages, the combination comprising:

A a three-dimensional character joined to each of said packages and functioning as a handle therefor, said character having eye openings covered by translucent elements;

B light guides extending from an optical inlet on said character to said elements to conduct light thereto;

C a tape player whose case has a light outlet therein and is provided with a slot to receive a tape package whereby when the package is inserted therein the character is exposed to view and said optical inlet is then in registration with said light outlet, said player housing within said case a playback mechanism which is operatively coupled to the inserted package to drive the tape and to produce an audio signal in accordance with the recording on the tape, which signal is fed to an amplifier whose output is applied to a sound producer; and

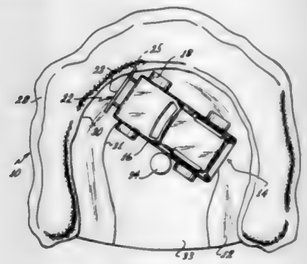
D a light emitter coupled to the output of the amplifier and placed behind the light outlet, the light generated by said emitter being modulated by said signal to produce light pulses which are conveyed to the eye elements to impart animation to the character in synchronism with the reproduced sound.

4,521,206

TRACK FOR TOY VEHICLES

Gary M. Saffer; Gérard L. Lambert, both of Torrance, and Howard R. Stern, El Segundo, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 27, 1983, Ser. No. 565,307
Int. Cl.³ A63H *18/02*
U.S. Cl. 446—444 **4 Claims**



1. A curved track for use with a self-propelled toy vehicle having wheels and a body, comprising in combination:

a surface portion over which the toy vehicle travels, said surface portion being formed so that said toy vehicle traveling around said track is tilted;

a wall portion upstanding from said surface portion and having a curved inner surface in the form of a semi-circle which defines the curved portion of the track;

a post portion upstanding from said surface portion and positioned at the geometric center of the semi-circle whereby as said vehicle enters the curved portion of the track, the forward part of a first side of said vehicle body contacts said curved inner surface, and a rear part on a second side of said vehicle body, opposite the first side, contacts said post portion, causing said vehicle to pivot about said post portion in a direction which assists said vehicle in negotiating said curved portion of said track;

a lip integral with and projecting inwardly from said wall portion at a predetermined distance above said surface portion to form a recess around the inner periphery of said track; and

a bumper, including a brush bar and a guide rod connected to and extending across the front of said toy vehicle, said brush bar contacting and sliding along said lip and said guide rod being positioned beneath said lip as said vehicle travels around said track to prevent the wheels of said vehicle from climbing up from said track.

4,521,207

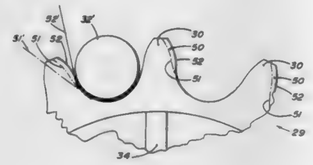
INCREMENTALLY VARIABLE TRANSMISSION

Royce H. Husted, 711 Lakeside, Wheaton, Ill. 60187, assignor to Royce H. Husted, Wheaton and Samuel Shiber, Mundelein, both of, Ill.

Continuation-in-part of Ser. No. 387,618, Jun. 11, 1982, Pat. No. 4,493,678, which is a continuation-in-part of Ser. No. 310,506, Oct. 13, 1981, abandoned. This application Jan. 10, 1983, Ser. No. 456,736

Int. Cl.³ F16H *9/10, 9/24, 9/02, 55/30*

U.S. Cl. 474—56 **6 Claims**



1. A variable sprocket comprising in combination:
an axle,
a drive flange mounted on said axle,
an indexing flange rotatably mounted on said axle opposite of said drive flange and having a plurality of spiral-wavy-cams,
two sprocket-segment-planets and at least two idler-planets connected to said flanges,
coupling means for transmitting force between said sprocket-segment-planets and said drive flange,
cam followers attached to said planets for engaging with and following said spiral-wavy-cams,
said spiral-wavy-cams comprising a series of alternating depressions and hills which move said planets closer and further to and from said axle, respectively, as said planets slide along said spiral-wavy-cams,
a chain made of links wrapping approximately one half of the periphery of said variable-sprocket,
said sprocket-segment-planet having means for positively engaging said chain, said means comprising at least one tooth having an incline at a point of contacting said chain, said incline being steep so as to prevent said chain from disengaging from said tooth while said tooth carries chain's load.

4,521,208

TENSION-ADJUSTING DEVICE FOR TOOTHED DRIVING BELTS SUBJECTED TO WIDE TEMPERATURE DIFFERENTIALS

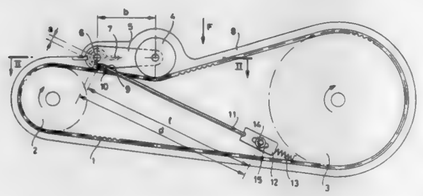
Carlo Doveri, Pontedera, Italy, assignor to Piaggio & C. S.p.A., Genova, Italy

Filed Jul. 20, 1982, Ser. No. 400,087

Claims priority, application Italy, Jul. 23, 1981, 23094 A/81

Int. Cl.³ F16H *7/08*

U.S. Cl. 474—101 **6 Claims**



1. A device for adjusting the pull of a driving belt, more particularly a toothed belt controlling a timing shaft in an internal combustion engine, running on at least two sheaves borne by a supporting member exposed to thermal expansion, comprising a tensioning idler mounted on a movable member on the supporting member for acting in one direction upon the belt, there being provided urging means for preventing movement of said movable member in a direction opposite to said one direction, said preventing means being thermally expansible in response to the temperature of said supporting member in order to allow displacement of the movable member by an extent substantially corresponding to the variation of the sag of the belt as originated by the thermal expansion of the supporting member.

4,521,209

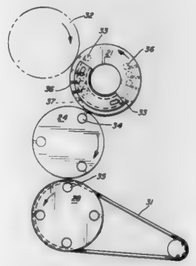
APPARATUS AND METHOD FOR TRANSVERSE FOLDING OF WEBS

Allen J. DuFresne, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Apr. 22, 1983, Ser. No. 487,569

Int. Cl.³ B65H *45/22*

U.S. Cl. 493—432 **12 Claims**



1. A folder for transversely folding web material comprising a frame,
a first vacuum roll rotatably mounted on said frame and equipped with at least two vacuum ports spaced equally circumferentially about the surface of said first vacuum roll for maintaining segments of said web material against the roll surface and means operatively associated with said first vacuum roll for selectively applying and withdrawing vacuum from said ports, and
a second vacuum roll rotatably mounted on said frame adjacent said first vacuum roll and equipped with vacuum port means adapted to receive said web segments therefrom and transversely fold the same incident to transfer of each web segment from said first to said second vacuum roll, means for rotating said second vacuum roll at a surface speed slower than the surface speed of said first vacuum roll.

4,521,210

EYE IMPLANT FOR RELIEVING GLAUCOMA, AND DEVICE AND METHOD FOR USE THEREWITH

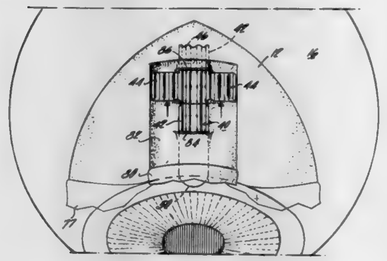
Vernon G. Wong, 10908 Rosemont Dr., Rockville, Md. 20852

Filed Dec. 27, 1982, Ser. No. 453,357

Int. Cl.³ A61M *27/00;* **A61B** *17/00*

U.S. Cl. 604—8 **28 Claims**

25. The method of providing an eye implant for relieving excess eye pressure, comprising:
cutting a flap in and through the conjunctiva to expose the underlying sclera from a position adjacent to the limbus to a position above the underlying choroid;
cutting part-way through said exposed sclera to form a scleral flap and to define an underlying scleral bed extending from a position adjacent the limbus to a position adjacent the choroid;
making an anterior incision through said scleral bed adjacent to the limbus to form a sclerotomy;
making a posterior incision through said scleral bed on the side of said anterior incision toward the choroid to form another sclerotomy;
providing a thin prosthetic implant device of biocompatible material having at least one surface channel extending along its length;
inserting one end of said device through said first incision, and along a path between the ciliary body and the sclera, into the peripheral angle of the anterior chamber of the eye, until the opposite end of said device lies between said anterior and posterior incisions;
thereafter sliding said device lengthwise in the posterior direction, inserting said opposite end of said device



through said posterior incision, and continuing said sliding motion until said opposite end enters the suprachoroidal space;
thereafter, suturing said device to the scleral bed while said one end of said device is in said peripheral angle and said opposite end is in said suprachoroidal space, and successively closing said scleral flap and said conjunctival flap.

28. A surgical implant device for use in the eye to relieve excess eye pressure, comprising:
a thin body of biocompatible material having at least one externally-open surface channel of a length to extend from the limbal angle of the anterior chamber of the eye toward the choroid of the eye, at least as far as the ciliary body.

4,521,211

PARENTERAL AGENT DISPENSING EQUIPMENT

Felix Theeuwes, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

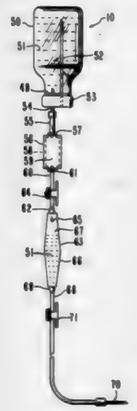
Division of Ser. No. 377,831, May 13, 1982, Pat. No. 4,439,183, which is a continuation-in-part of Ser. No. 310,047, Oct. 9, 1981,. This application Feb. 3, 1984, Ser. No. 576,572

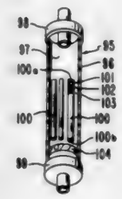
The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.

Int. Cl.³ A61M *5/14*

U.S. Cl. 604—85 **13 Claims**

1. A formulation chamber for use in a parenteral delivery system, comprising:
(a) a wall surrounding an internal space;
(b) an inlet for admitting a fluid into the chamber;
(c) an outlet for letting a fluid leave the chamber; and,
(d) a multiplicity of hollow fibers in the chamber, the hollow fibers comprising:
(1) a wall surrounding a lumen in the fiber, said fiber having a pair of openings disposed from each other; and,





(2) a beneficial parenterally administrable agent in the lumen that is delivered into fluid that enters the formulation chamber and contacts the fiber.

4,521,212

SOLUTION ADMINISTRATION SET

Rick R. Ruschke, McHenry, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

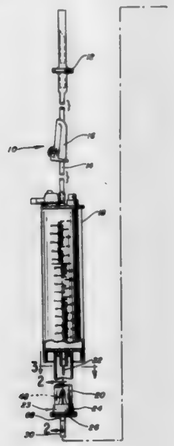
Filed Aug. 3, 1982, Ser. No. 404,810

Int. Cl.³ A61M *5/14*

U.S. Cl. 604—126 **13 Claims**

1. A parenteral solution administration set having tubular means for conveying solution from a supply source toward the vascular system of a patient, comprising:
a metering chamber measuring aliquots of solution for administration;
a drip chamber connected to said metering chamber and having upper and lower ends positioned below said metering chamber;
said drip chamber including, at its lower end, a porous, hydrophilic filter member having a pore size sufficiently small to prevent air at a predetermined maximum pressure from passing through said filter member when wet, while permitting the flow of parenteral solution therethrough, said filter member being operative at the lower end of the drip chamber to control flow out of said lower end and to

be submerged by liquid held in the drip chamber during operation thereof;



said metering chamber and drip chamber being free of any air-blocking membrane therebetween, whereby back priming of the set is enabled.

4,521,213

LIQUID DRAINAGE SYSTEM WITH HINGED CUP-SHAPED VALVE

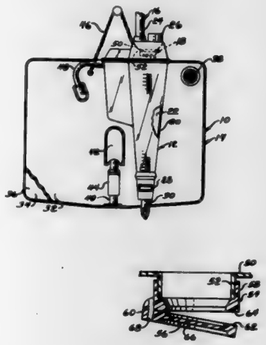
Carl J. Steigerwald, Wauconda, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Feb. 10, 1983, Ser. No. 465,375
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—323 **7 Claims**

1. A liquid drainage system, comprising:

a receptacle having a chamber to receive liquid, and a depending annular wall in an upper portion of the receptacle; and

A valve comprising a cup-shaped member of elastic material having a lower wall extending across the cup-shaped member, an upper annular wall extending from said lower wall, with an upper portion of said valve annular wall being snugly received on a lower portion of the receptacle wall, and a hinge member extending outwardly from the cup-shaped member at one side of the lower wall, said cup-shaped member having a slit extending through the cup-shaped member to the hinge member at a location



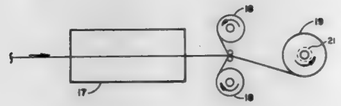
slightly above the lower wall, said slit defining a valve seat above the lower wall with the lower wall serving as a valve element which may sealingly engage against the seat, with said hinge member connecting the lower wall and valve annular wall, wherein said hinge member has a vertical opening spaced from an outer portion of the hinge member and extending therethrough, with said slit extending to the opening to define a pair of hinges on opposed sides of the opening.

4,521,214

CONTINUOUS GRADIENT DYEING OF PLASTIC RIBBON

Robert Weis, Leominster, Mass., assignor to American Hoechst Corporation, Somerville, N.J.

Division of Ser. No. 429,653, Sep. 30, 1983, Pat. No. 4,442,788.
This application Jan. 9, 1984, Ser. No. 569,427
Int. Cl.³ B05C *3/02*
U.S. Cl. 8—506 **8 Claims**



1. A process for producing in a continuous manner a gradient dyed plastic ribbon, wherein said ribbon is passed longitudinally through a dye bath by a ribbon drive means, the plane of said ribbon is maintained at a substantially constant angle with respect to the dye bath surface during the residence of said ribbon in the dye bath, the liquid level of the dye bath is repetitively varied with time between two pre-determined levels by a liquid level control means and the overall orientation of that portion of the ribbon which is undergoing the dyeing process in the dye bath is substantially level from one end to the other.

4,521,215

POLYVINYL CHLORIDE RESIN PARTICLES DYED WITH CATIONIC DYESTUFFS AND PROCESS OF PREPARATION

William J. Kauffman, Penn Township, Lancaster, and Pamela H. Martin, Warwick Township, Lancaster County, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Apr. 27, 1983, Ser. No. 489,041
Int. Cl.³ D06P *1/41, 3/79*
U.S. Cl. 8—508 **14 Claims**

1. Polyvinyl chloride particles comprising a cationic dyestuff, said particles being obtained from the contacting of a particulate polyvinyl chloride material with a composition consisting essentially of a liquid medium and a cationic dyestuff, said dyestuff being substantially soluble in said liquid medium and said particles being substantially insoluble in said liquid medium.

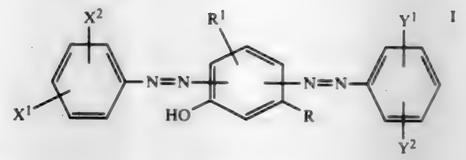
4,521,216

DISAZO DYES

Herbert Armbrust, Gruenstadt; Johannes P. Dix, Neuhofen; Guenter Hansen, Ludwigshafen, and Georg Zeidler, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 478,100
Int. Cl.³ C09B *31/062, 33/044, 33/06, 33/08*
U.S. Cl. 8—639 **7 Claims**

1. A disazo dye of the formula:



wherein

R is hydroxyl, amino or amino which is substituted by branched or unbranched C_1–C_{15} alkyl;

R^1 is hydrogen or C_1–C_{12}-alkyl;

X^1 and Y^1 independently of one another are each C_1–C_{15}-alkoxy, C_1–C_{15}- alkoxy interrupted by oxygen, or carboxylic acid ester, the alcoholic portion of which is C_1–C_{15}-alkyl; and

X^2 and Y^2 independently of one another are each hydrogen, nitro and chlorine.

4,521,217

PHTHALOCYANINE AND AZO DYESTUFF MIXTURES AND THEIR USE FOR DYEING PAPER

Ulrich Beck, Bornheim; Frank-Michael Stöhr, Burscheid, and Horst Nickel, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 6, 1984, Ser. No. 568,854
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1983, 3300896
Int. Cl.³ C09B *47/04, 67/22;* D21H *1/46*
U.S. Cl. 8—639 **6 Claims**

1. A mixture of

(A) a phthalocyanine dyestuff having 1.5–4 cationic and/or basic groups and 0 or 1 sulfonic acid group, and

(B) one eighth to twice its molar amount of a substantive azo dyestuff with a total number of cationic and/or basic groups greater than 2.

4,521,218

PROCESS FOR PRODUCING A COAL-WATER MIXTURE

Edward H. Greenwald, Sr., 92 Nancy La., McMurray, Pa. 15137

Filed Feb. 21, 1984, Ser. No. 581,538
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **12 Claims**

1. In a process for producing a coal-water mixture, the steps comprising:

forming at least first and second coal feed streams comprised of differently-classified coal particle sizes and an aqueous liquid medium,

determining the concentration of the coal particles in the aqueous liquid medium forming each of said coal feed streams, and

mixing together a portion of each coal feed stream in the presence of a dispersing and stabilizing agent to form a coal-water mixture comprised of at least 65% by weight coal particles.

4,521,219

ALCOHOL BASED FUELS CONTAINING CORROSION INHIBITORS

Warren L. Perilstein, Orchard Lake, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 2, 1981, Ser. No. 317,569
Int. Cl.³ C10L *1/08*
U.S. Cl. 44—55 **32 Claims**

1. A liquid fuel for use in internal combustion engines comprising a major amount of a monohydroxy alkanol having from 1 to about 5 carbon atoms, and a corrosion inhibiting amount of a mixture of (a) from about 5 to 95 parts of at least one polymerized unsaturated aliphatic monocarboxylic acid having

from about 16 to 18 carbon atoms per molecule, and (b) from 95 to 5 parts of an aliphatic dicarboxylic acid having from 2 to about 10 carbon atoms.

4,521,220

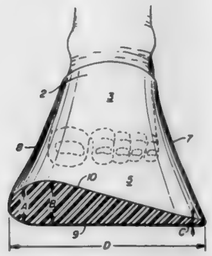
SWIM FIN FOR BREASTSTROKE SWIMMERS

Mark J. Schoofs, 1635 School St., P.O. Box 67, Moraga, Calif. 94556

Continuation of Ser. No. 474,505, Mar. 11, 1983, abandoned. This application Oct. 3, 1984, Ser. No. 657,576

Int. Cl.³ A63B *31/11*

U.S. Cl. 441—64 **2 Claims**



1. A swim fin for use in breaststroke swimming comprising a shoe-like rear compartment for receiving a human foot and a closed widened forward extension from said compartment, said forward extension having a relatively flat bottom surface and a continuously convex upper surface so cambered that the thickness of the extension adjacent its inner side is greater than its thickness at the outer side and generally conforms in cross-sectional shape to the cross section of an airplane wing, said fin having sufficient firmness to hold its shape during passage through water when in use.

4,521,221

METHOD OF PRODUCING A METHANE-RICH GAS MIXTURE FROM MINE GAS

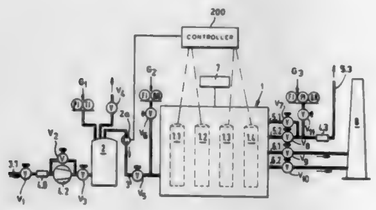
Ekkehard Richter, Essen; Werner Körbächer, Mülheim; Karl Knoblauch, Essen, and Klaus Giessler, Gelsenkirchen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 582,433

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1983, 3306371

Int. Cl.³ C10K *3/00*

U.S. Cl. 48—196 R **6 Claims**



1. A method of producing a product gas having a final methane content of about 50 volume percent which remains substantially constant from a crude gas having a variable but lower methane content by pressure-swing adsorption in at least one adsorber, said method comprising the steps of:

(a) adsorbing methane from said crude gas at an adsorption pressure between substantially 5 and 8 bar on a carbon molecular sieve adsorbent traversed by said crude gas in one direction to produce a waste gas containing only trace amounts of methane;

(b) thereafter expanding said adsorbent to an expansion pressure substantially between 2.5 and 5 bar and substantially midway between the adsorption pressure and a subsequent flushing pressure while discharging a waste gas containing only trace amounts of methane in uniflow to the adsorption;

(c) thereafter expanding the adsorbent to the flushing pressure between substantially 1.1 and 2 bar in counterflow to the adsorption and recovering a first portion of product gas containing about 50 volume percent methane therefrom in a first product stage; and

(d) flushing said adsorbent in counterflow to the adsorption with a waste gas containing only trace amounts of methane from steps (a) or (b) at said flushing pressure to produce a second portion of product gas containing about 50 volume percent methane therefrom, combining said portions of said product gas forming said product gas having said final substantially constant methane content of about 50 volume percent.

4,521,222

RESIN-BONDED GRINDING ELEMENTS WITH DUAL COATED DIAMOND GRIT FOR DRY GRINDING AND WET GRINDING CEMENTED CARBIDE WORKPIECES

Philippe D. St. Pierre, Worthington, and Michael T. Buckner, Columbus, both of Ohio, assignors to General Electric Company, Worthington, Ohio

Filed Sep. 30, 1982, Ser. No. 429,938

Int. Cl.³ B24D *11/00*

U.S. Cl. 51—295 **17 Claims**

1. In a method for grinding a workpiece selected from the group consisting of cemented tungsten carbide and combinations of cemented tungsten carbide and steel with a resin bonded grinding element having metal-coated diamond particles embedded in the grinding surface thereof, the improvement for providing coated diamond particles useful for both dry grinding and wet grinding operations which comprises using diamond particles coated with two layers of metal, the inner layer comprising nickel which comprises between about 40% and 130% by weight of said diamond particles, the outer layer comprising silver which comprises between about 20% and 70% by weight of said diamond particles, the total weight of said coatings not exceeding above about 200% by weight of said diamond particles.

4,521,223

METHOD FOR DETERMINING THE EXISTENCE OF AN OPTIMAL INTERVAL FOR RAPPING THE ELECTRODES OF AN ELECTROSTATIC PRECIPITATOR

Horst Daar, Erlangen, and Franz Alig, Johannesberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Jul. 9, 1984, Ser. No. 628,776

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326040

Int. Cl.³ B03C *3/76*

U.S. Cl. 55—13 **5 Claims**

1. A method for operationally determining the existence of an optimal knocking period for the rapping of the collector electrodes for an electrostatic precipitator, comprising the steps of:

(a) operating the precipitator under dust-free gas flow conditions;

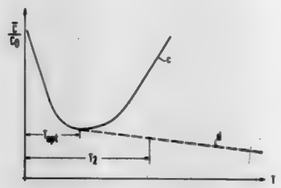
(b) during the execution of step (a), measuring the current flow to and the voltage across at least one pair of the electrodes;

(c) determining, from the measurements of current flow and voltage in step (b), a current-voltage characteristic for dust-free operation of said precipitator;

(d) operating said precipitator under actual use conditions;

(e) during the execution of step (d), measuring the current flow to and the voltage across at least said one pair of said electrodes;

(f) determining, from the measurements of current and voltage in step (e), a current-voltage characteristic for actual use operation of said precipitator; and



(g) comparing the current-voltage characteristic arrived at in step (f) with the current-voltage characteristic arrived at in step (c) to determine whether the electrical resistance of a dust layer accumulated on said electrodes during actual use operation is at least equal to the electrical resistance of pure gas passing between said electrodes during dust-free operation of said precipitator, thereby determining whether an optimal knocking period exists.

4,521,224

SEMIPERMEABLE MEMBRANES PREPARED FROM POLYMERS CONTAINING PENDENT SULFONE GROUPS

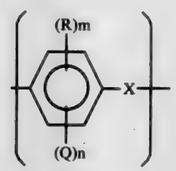
George S. Li, Macedonia, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 357,366, Mar. 12, 1982, Pat. No. 4,427,419. This application Jan. 16, 1984, Ser. No. 570,976 The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.

Int. Cl.³ B01D *53/22*

U.S. Cl. 55—16 **20 Claims**

1. A semipermeable membrane useful for the separation of gases from a mixture containing at least two fractions into enriched fractions of each, the membrane formed from at least one polymer containing a preponderance of arylene units of the formula



(I)

where

each R is independently a C_1–C_8 aliphatic or a C_5–C_7 cycloaliphatic hydrocarbon radical, an aryl radical, an aralkyl radical or an alkaryl radical, each radical being free of a tertiary alpha-carbon atom;

each Q is a radical of the formula



(II)

where R′ is a C_1–C_{20} linear or branched hydrocarbon;

X is a divalent oxygen or sulfur atom or a carbonate group;

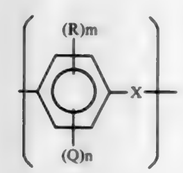
m is an integer of 0–2; and

n is 0–1 with the proviso that n is 1 in at least 10 percent of the arylene units of the polymer.

11. In a process for the separation of gases from a mixture containing at least two gases into two fractions, one fraction being enriched with at least one of said gases and the other fraction being depleted in same, the process comprising:

contacting the gaseous mixture with a semipermeable membrane in such a manner that a portion of the gaseous mixture selectively passes through the membrane resulting in the enriched fraction being on one side of the membrane and the depleted fraction being on the other side of the membrane, the improvement comprising

the use of a semipermeable membrane formed from at least one polymer containing a preponderance of arylene units of the formula

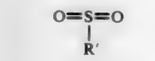


(I)

where

each R is independently a C_1–C_8 aliphatic or a C_5–C_7 cycloaliphatic hydrocarbon radical, an aryl radical, an aralkyl radical or an alkaryl radical, each radical being free of a tertiary alpha-carbon atom;

each Q is a radical of the formula



(II)

where R′ is a C_1–C_{20} linear or branched hydrocarbon;

X is a divalent oxygen or sulfur atom or a carbonate group;

m is an integer of 0–2; and

n is 0–1 with the proviso that n is 1 in at least 10 percent of the arylene units of the polymer.

4,521,225

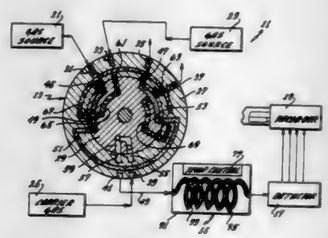
INSTRUMENT AND PROCESS FOR TESTING LANDFILL GAS FOR CHLORINATED HYDROCARBONS

Richard L. Jenkins, Whittier; John A. Pettus, Westminster, and David K. Abner, Sherman Oaks, all of Calif., assignors to Getty Synthetic Fuels, Inc., Signal Hill, Calif.

Filed Oct. 11, 1983, Ser. No. 540,929

Int. Cl.³ B01D *15/08*

U.S. Cl. 55—18 **20 Claims**



1. A method for determining the concentration of chlorinated hydrocarbons in landfill gas comprising:

injecting a carrier gas and landfill gas containing a plurality of chlorinated hydrocarbons into a gas chromatographic separation module which includes a column containing a

column packing capable of separating the chlorinated hydrocarbons;

controlling the temperature of the separation module to separate the chlorinated hydrocarbons from the separation module;

said step of controlling including providing an initial temperature of 0 to 45 degrees celsius for no more than 60 minutes, increasing the initial temperature at a rate of 1 to 5 degrees celsius per minute to a final temperature of from 45 to 130 degrees celsius and holding the final temperature for no more than 60 minutes; and

detecting the concentration of the chlorinated hydrocarbons separated by the column packing.

19. A gas chromatographic system for determining the concentration of chlorinated hydrocarbons in landfill gas, said gas chromatographic system comprising:

a valve including first and second ports connectible to a source of the landfill gas, first conduit means including at least a first receiver, a third port connectible to a source of carrier gas, and a fourth port;

said valve including fifth and sixth ports connectible to a source of a second gas and second conduit means including a second receiver;

said valve having a load position in which said first and second ports are in communication through a flow path which includes said first conduit means and said first receiver and said fifth and sixth ports are in communication through a flow path which includes the second conduit means and the second receiver whereby the landfill gas and the second gas can be loaded into the first and second receivers, respectively, and an inject position in which the third and fourth ports are in communication through a flow path which includes the first and second receivers whereby the gases in the receivers can be carried by the carrier gas through the fourth port;

a gas chromatographic column and a column packing within the column capable of separating the chlorinated hydrocarbons in the landfill gas;

conduit means for coupling the fourth port to the column whereby the column can receive the carrier gas, the landfill gas and the second gas from the fourth port; and

means for detecting the concentration of the chlorinated hydrocarbons separated by the column packing.

4,521,226

METHOD OF AUTOMATICALLY CONTROLLING A DUST-COLLECTING PLANT

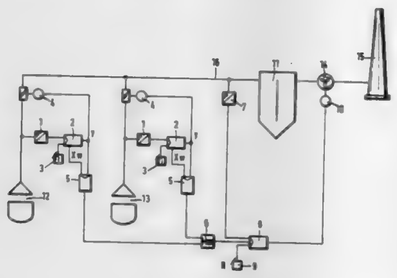
Franz Alig, Johannesberg; Horst Hemmerling, Kronberg, and Franz Neulinger, Erzhausen, all of Fed. Rep. of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 6, 1984, Ser. No. 568,856

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1983, 3301668

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—21 **6 Claims**



1. In a method of automatically controlling a dust-collecting plant, in which a plurality of gas streams are sucked from spaced apart dust sources through a manifold to a dust-collecting unit and the gas is exhausted into an exhaust gas chimney by an automatically controlled exhaust fan, the improvement wherein: a vacuum at each dust source is maintained by an automatic control valve at a predetermined desired value r_i, the pressure drop R across the entire plant is initially adjusted to a predetermined value by an automatic control of the exhaust fan, and the pressure drop R is subsequently changed as follows:

(a) if the vacuum of at least one dust source is lower than r_i although the control valve is entirely opened, the desired value of the pressure drop R is increased until the predetermined vacuum values r_i are reached at all dust sources, and

(b) if the predetermined vacuum values r_i are reached at all dust sources and all control valves are partly closed, the desired value of the pressure drop R is decreased until the control valve of at least one dust source is entirely open.

4,521,227

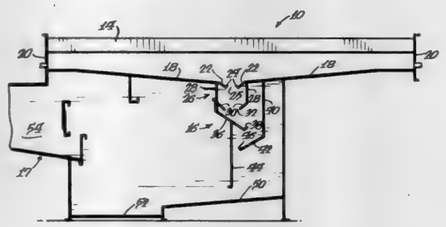
AIR WASHER FOR PAINT SPRAY BOOTH

Donald F. Gerdes, Park Ridge, and Steve E. Telchuk, Wheeling, both of Ill., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Filed Feb. 3, 1984, Ser. No. 576,561

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—225 **18 Claims**



1. In a gas scrubbing device of the down draft type having means for flowing liquid downwardly through the device, means for drawing gas downwardly through the device, means for defining a first scrubber slot for passage therethrough of gas and liquid, an expansion chamber beneath the first slot having downwardly converging bottom walls forming a second scrubber slot below the first slot, a baffle sheet angling laterally downwardly beneath the second slot and cooperating with a spaced apart auxiliary wall to form a third scrubber slot; the improvement comprising:

a second baffle sheet angling downwardly below the third slot for impingement thereon of gas and liquid and for reception thereon of liquid discharged through the third slot; and

a second auxiliary wall extending downwardly below the first baffle sheet opposite the lower end of the second baffle sheet, the lower end of said second baffle sheet being spaced a short distance from said second auxiliary wall and forming therewith a fourth gas scrubber slot, the liquid leaving the first auxiliary wall being collected by said second baffle sheet and impinged thereby against said second auxiliary wall to form at said fourth slot at least one additional curtain of liquid for cleaning additional emissions from the gas.

4,521,228

CONTROL DEVICE FOR AN ELECTROSTATIC PRECIPITATOR

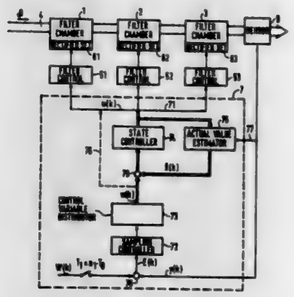
Horst Daar, Erlangen, and Franz Alig, Johannesberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Jul. 9, 1984, Ser. No. 628,777

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326041

Int. Cl.³ B03C *3/68*

U.S. Cl. 55—105 **4 Claims**



1. A device for controlling an electrostatic precipitator having a plurality of filter chambers connected in series to one another, effluent gases at the outputs of each of said chambers having a respective dust density, said plurality of chambers including an input chamber and an output chamber downstream thereof, said device comprising:

field generating means operatively linked to the filter chambers for generating therein electrostatic fields for the collection of dust particles from a stream of air flowing through said chambers;

current regulating means operatively coupled to said field generating means for controlling the flow of electrical current thereto and thereby partially determining the electric field density of the electrostatic fields in said chambers;

sensing means at the outlet of said output chamber for monitoring the dust content of outflowing gas of the precipitator; and

control means operatively linked to said current regulating means for supplying thereto control signals determinative of the amount of current to be fed to said field generating means, said control means including first computing means operatively tied to said sensing means for generating from the loop gains of said chambers and from the difference between a desired particle density of said outflowing gas and an actual particle density thereof detected by said sensing means electrical signals coding control variables representing at least in part desired particle densities at the outlets of said chambers, said control means further including estimating means for forming estimated actual particle densities of effluent gases at the outputs of said chambers, said control means further including second computing means operatively connected to said estimating means, said first computing means and said current regulating means for generating said control signals at least partially in response to the differences between desired particle densities calculated by said first computing means and respective estimated actual particle densities formed by said estimating means.

4,521,229

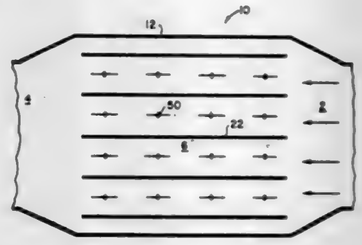
TUBULAR DISCHARGE ELECTRODE FOR ELECTROSTATIC PRECIPITATOR

Robert D. Baker, Vincent; Gerald W. Driggers, Cropwell; Ronald W. Gray, and Lawrence A. Hawkins, both of Birmingham, all of Ala., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 1, 1983, Ser. No. 547,802

Int. Cl.³ B03C *3/08, 3/41*

U.S. Cl. 55—137 **6 Claims**



1. An electrostatic precipitator comprising:

a. a housing defining a precipitator chamber therein and having a dirty gas inlet and a clean gas outlet for conveying a horizontal flow of gas to be cleaned through the precipitator chamber;

b. a collecting electrode assembly comprised of a plurality of collecting electrode plates disposed within the precipitation chamber in spaced vertical planes parallel to the direction of gas flow therethrough;

c. a discharge electrode assembly to which a voltage is applied to generate an electrostatic field comprised of a plurality of discharge electrode subassemblies disposed parallel to and alternately intermediate between collecting electrode plates, each discharge electrode subassembly supporting a plurality of spaced vertically extending discharge electrode members, each of said discharge electrode members comprising an elongated hollow tube extending along a vertically disposed longitudinal axis and having a transverse cross-section having an ellipsoidal configuration, and a plurality of corona discharge pins disposed at spaced intervals along the length of said hollow tube and extending outwardly therefrom in a plane parallel to the collecting electrode plates; and p1 d. said hollow tube discharge electrode members disposed with the longer axis of the ellipsoidal cross-section thereof perpendicular to said collecting electrode plates and the shorter axis of the ellipsoidal cross-section thereof parallel to said collecting electrode plates.

5. A discharge electrode for an electrostatic precipitator comprising:

a. an elongated hollow tubular member extending along a longitudinal axis and having a transverse cross-section having an ellipsoidal configuration; and

b. a plurality of elongated corona discharge pins disposed at spaced intervals along the length of said elongated tubular member and extending outwardly therefrom at an acute angle with respect to the longitudinal axis of said elongated tubular member in a plane through the shorter axis of the ellipsoidal cross-section of said elongated tubular member.

4,521,230

SELF-CLEANING FURNACE FILTER CONSTRUCTION

John C. Strong, 25 Comanche Trail, Malvern, Ohio 44644

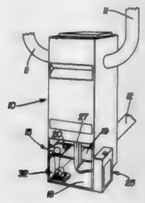
Filed Jul. 26, 1984, Ser. No. 634,598

Int. Cl.³ B01D *46/38*

U.S. Cl. 55—274 **8 Claims**

1. A self-cleaning filter construction for use in a forced air

system of the type in which air is moved by a blower from the system to a remote position through ducts, including a system chamber through which air to be moved passes, a pair of roller members mounted on opposite sides of the chamber, a generally horizontally oriented endless belt-type filter extending and movable between and around the rollers, said filter thereby presenting two surfaces substantially entirely across the chamber and in the path of air flow to filter entrained particles from



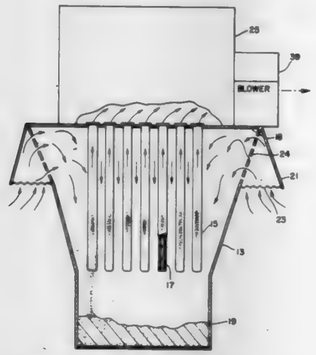
the air means to drive said rollers and endless belt filter, suction manifold means mounted within the chamber having a first and second manifold header, each manifold header having a suction manifold opening, one of said manifold openings being located adjacent to one of the filter surfaces, and the other of the manifold openings being located adjacent to the other of the filter surfaces, and means for applying a suction force to each of said manifold openings.

4,521,231

HIGH CAPACITY GAS FILTER SYSTEM

Norman Z. Shilling, Lancaster, Pa., assignor to General Electric Environmental Services, Inc., Lebanon, Pa.

Filed Nov. 10, 1983, Ser. No. 550,694
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—302 **13 Claims**



1. A high capacity gas filter comprising
a particulate collector hopper;
a housing mounted on said hopper and communicating therewith, said housing comprising
wall means extending outwardly and upwardly from said hopper;
a rigid sheet having a plurality of orifices therein;
gas permeable means interconnecting the upper edges of said wall means about the perimeter of said rigid sheet so as to provide a circumferential gas passage;
a plurality of frames supported by said rigid sheet and extending downwardly from said orifices and into said housing;
a filter bag surrounding each of said frames, the filter bag extending through the housing and terminating at the lower end of the housing;
a clean air plenum mounted above said rigid sheet; and
means for causing gas to pass into said housing through said circumferential gas passage, downwardly and inwardly along said filter bags, through said filter bags and into said plenum without the use of baffles.

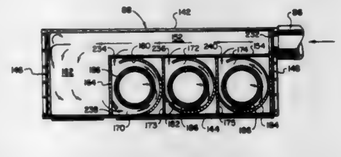
9. A high capacity gas filter comprising
a particulate collector hopper;
a housing having outwardly extending walls mounted on said hopper;
an open hood mounted on said walls about the upper perimeter of said housing so as to provide a circumferential gas passage between the exterior and interior of said housing;
a tube sheet having a plurality of orifices therein mounted on top of said hood so as to cover said housing;
a plurality of frame supported elongated filter bags extending downwardly into said housing from each of said orifices, said filter bags terminating at the lower end of the housing;
a clean air plenum mounted above said rigid sheet; and
means for causing gas to pass through said circumferential passage into the upper area of said housing, downwardly and inwardly along and through said filter bags and into said plenum without the use of baffles.

4,521,232

AIR FILTER UNIT WITH MULTIPLE FILTER CHAMBERS AND PARTICULATE MATERIAL COLLECTION HOPPERS

D. Franklin Howeth, 233 Chuck Wagon Trail, Fort Worth, Tex. 76108

Division of Ser. No. 223,036, Jan. 7, 1981, Pat. No. 4,434,861. This application Oct. 11, 1983, Ser. No. 521,980
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—324 **11 Claims**



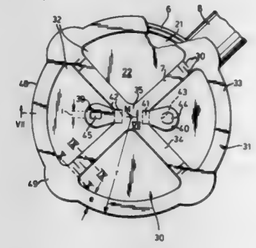
1. Apparatus for collection of particulate material from a continuous flow stream of air or the like, comprising:
a housing including an air inlet chamber formed therein including means defining a separation chamber for separating relatively coarse particulate material from an air flow stream entering said inlet chamber;
means forming an inlet opening into said inlet chamber for conducting an air flow stream laden with particulate material entrained therein into said inlet chamber;
partition means in said housing defining a filter element chamber;
an air filter element disposed in said filter element chamber;
an outlet means for conducting air having passed through the filter element from the housing;
a first opening formed in said partition means for conducting at least a portion of said air flow stream entering said inlet chamber into said filter element chamber, said first opening being disposed so as to divert a lower velocity portion of said air flow stream into said filter element chamber;
said partition means including a second opening for conducting a portion of said air flow stream from said separation chamber into said filter element chamber;
said separation chamber including a first hopper portion for receiving particulate chamber separated from said flow stream, and means for discharging particulate material from said first hopper portion;
a second hopper portion positioned and arranged for receiving particulate material from said filter element chamber, said second hopper portion being separate from said first hopper portion;
a third hopper portion positioned and arranged for receiving particulate material from said inlet chamber, said third hopper portion being separate from said second hopper portion; and
means for discharging particulate material from said third hopper portion into said second hopper portion, said means comprising one way door means between said second and third hopper portions.

4,521,233

DISC COVER FOR A FRYING PAN OR VESSEL

Franz Vossen, Radolfzell, Fed. Rep. of Germany, assignor to Meurer NonFood Product GmbH, Radolfzell, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 481,842
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1982, 3212646; May 6, 1982, 3216952
Int. Cl.³ B65D *51/16*
U.S. Cl. 55—384 **5 Claims**



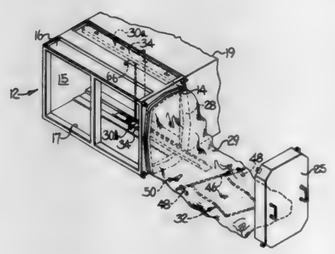
1. A disc-shaped cover for a frying pan comprising a disc including a carrier ring, a plurality of spoke-shaped radial arms connected to said ring and defining open sectors therebetween, said arms having opposed radial edges, and a central region in which said radial arms merge, and a steampermeable filter of fibrous material secured to said disc on one side thereof to cover said open sectors, said filter being secured to said disc by a permanent adhesive means, said arms each having at least one transverse relief cut extending from one radial edge of the respective arm partially across the width of the arm to form a weakening zone permitting limited change in shape of the arm, said adhesive means between the filter and disc being reduced to a narrow zone at said relief cuts to leave an unadhered zone between the filter and disc adjacent said narrow zone.

4,521,234

HOUSING FOR HIGH EFFICIENCY PARTICULATE AIR FILTERS

William C. Peebles, Jr., and Cecil W. Bowers, both of Washington, N.C., assignors to Flanders Filters,Inc., Washington, N.C.

Filed Jul. 19, 1983, Ser. No. 515,370
Int. Cl.³ B01D *46/00*
U.S. Cl. 55—481 **18 Claims**



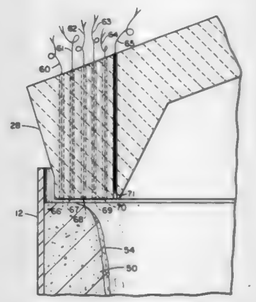
1. In a rectangular filter housing comprising two pairs of opposite side walls, open front and rear ends defining the air flow direction therebetween, a side access door opening in one of said side walls for receiving at least one filter into the interior of the housing and subsequently removing the filter therefrom, sealing means in the housing for engaging one face of each filter therein, and a filter clamping assembly adapted for seating and unseating each filter against said sealing means, the improvement wherein said filter clamping assembly is releasable and removable from the housing to thereby facilitate its repair or replacement, and comprises
a pair of clamping mechanisms, with each of said mechanisms including
(a) a mounting plate having a length sufficient to extend substantially across the side wall of the housing adjacent said door, and
(b) a pressure bar mounted to said mounting plate for movement in a direction laterally with respect to the length direction of said mounting plate and between a laterally extended position and a laterally withdrawn position,
actuating means operatively connected to each clamping mechanism for selectively moving the associated pressure bar laterally between said extended and withdrawn positions, and
means releasably mounting each of said clamping mechanisms to respective ones of the two opposite side walls adjacent said door opening and so that said mechanisms extend transversely across the interior of the housing in general alignment with the door opening, said mounting means including at least one post fixed to each associated side wall of the housing, and an aperture in each mounting plate for receiving said post,
whereby each of said clamping mechanisms and said actuating means may be selectively removed from the interior of the housing.

4,521,235

METHOD AND APPARATUS FOR CONTROLLING WALL LAYER THICKNESS IN A LIQUEFACTION PROCESS

Robert B. Heithoff, LaVale, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 25, 1983, Ser. No. 555,243
Int. Cl.³ C03B *9/14*
U.S. Cl. 65—29 **9 Claims**



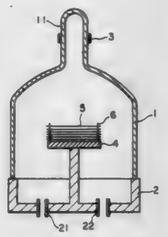
1. A method of thermally liquefying pulverulent materials comprising: maintaining a lining of pulverulent material on a support surface, feeding pulverulent material onto the lining to form a transient layer thereon, heating the transient layer so as to liquefy the transient layer and cause it to flow off the lining, determining the thickness of the lining by measuring temperature at a location spaced from and facing an end of the lining so as to detect temperature changes corresponding to changes in thickness of the lining, and adjusting operation of the lique-

faction process in responses to the measured temperature so as to maintain controlled liquefying conditions.

4,521,236
METHOD FOR PREPARATION OF POROUS GLASS FILM

Minoru Yamamoto, Aichi; Jiro Sakata, and Haruo Doi, both of Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Sep. 2, 1983, Ser. No. 528,789
Claims priority, application Japan, Sep. 6, 1982, 57-154823
Int. Cl.³ C03C *25/06*
U.S. Cl. 65—31 **9 Claims**

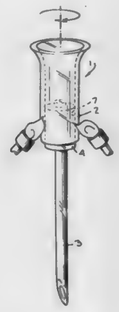


1. A method for preparing a porous glass film comprising:
forming a glass film from sodium borosilicate glass having a composition which can be phase-separated by heat-treatment into a soft phase easily elutable with a hot acid solution and a hard phase not easily elutable with the same solution;
heating said glass film to separate the glass phase into said soft and hard phases;
removing said soft phase from said glass film by eluting the same with said hot acid solution; and
subjecting said glass film to plasma etching in an atmosphere containing at least one gaseous fluorine-containing compound before or after said acid elution of the soft phase to remove the surface layers of said glass film, thereby providing a porous glass film having smooth surfaces and a uniform pore diameter throughout from the surfaces to the inside of said glass film.

4,521,237
GLASS DOSE SYRINGE

Emanuel N. Logothetis, Short Hills, N.J., assignor to Kahle Engineering Co., Union City, N.J.

Filed May 23, 1983, Ser. No. 496,929
Int. Cl.³ C03B *29/00*; A61M *5/32*
U.S. Cl. 65—42 **11 Claims**

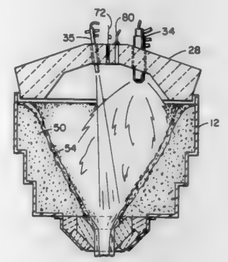


6. A process of making a disposable single use syringe body adapted to receive a complementary plunger having a one unit charge therebetween comprising:
insertably fusing in first sequence a hollow hypodermic needle into a first right circular cylindrical hollow glass tube,
insertably fusing in second sequence said first tube into a second right circular hollow cylindrical glass tube having walls of uniform thickness and a flared end of open construction adapted to receive in sequence said charge and said plunger.

4,521,238
METHOD AND APPARATUS FOR CONTROLLING AN ABLATION LIQUEFACTION PROCESS

Robert B. Heithoff, LaVale, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 25, 1983, Ser. No. 555,256
Int. Cl.³ C03B *5/14*
U.S. Cl. 65—135 **24 Claims**

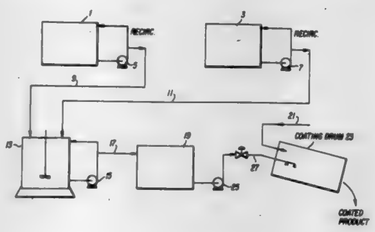


1. A method of liquefying pulverulent material comprising:
feeding pulverulent material onto a melting surface facing a central cavity within a vessel, directing thermal energy toward a major portion of the melting surface from primary combustion means so as to liquefy the material, draining liquefied material from the melting surface through a drain opening at a bottom portion of the cavity, and directing a combustion gas stream from secondary combustion means to a selected minor portion of the vessel interior in the region of the drain opening and below the region toward which the primary combustion means is directed so as to increase pressure in that portion.

4,521,239
COATING AGENT FOR PARTICULATE MATERIALS

Douglas P. Simms, Jackson, Miss., and Joseph M. Dobbs, Austin, Tex., assignors to Mississippi Chemical Corporation, Yazoo City, Miss.

Filed Nov. 29, 1982, Ser. No. 444,882
Int. Cl.³ C05C *1/00*
U.S. Cl. 71—27 **20 Claims**



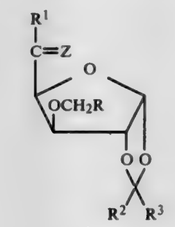
1. A particulate fertilizer provided with a protective coating, comprising:
particles of a fertilizer coated with the reaction product of at least one amine compound which is a primary, secondary or tertiary, straight or branched hydrocarbon chain amine or an amine containing a cyclic hydrocarbon radical and a siloxane having lower alkyl, lower alkoxy, lower alkylamino and/or amino substitution.

4,521,240
5-C-ALKYL-3-O-ARYLMETHYL OR SUBSTITUTED ARYLMETHYL-1,2-O-ALKYLIDENE-α-D-XYLO-PENTODIALDOFURANOSE HERBICIDE DERIVATIVES

William Loh, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 29, 1983, Ser. No. 489,981
Int. Cl.³ A01N *43/08*; C07H *17/04*
U.S. Cl. 71—88 **20 Claims**

1. A compound having the formula:



(I)

wherein:
R is monosubstituted phenyl having its single substituent selected from the group of lower alkyl, and halo;
R^1 is methyl or ethyl;
R^2 and R^3 are independently selected from the group consisting of hydrogen, or lower alkyl; and
Z is oxo or



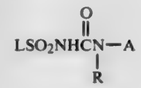
17. A method for treating undesired vegetation which comprises supplying an herbicidally effective amount of a compound of claim 1 to the foliage or growth medium of said vegetation.

4,521,241
HERBICIDAL BENZENESULFONAMIDES

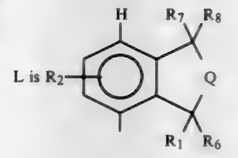
James V. Hay, Newark, and Richard F. Sauers, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 19, 1983, Ser. No. 533,773
Int. Cl.³ C07D *409/12, 405/12, 401/12*; A01N *47/36*
U.S. Cl. 71—92 **18 Claims**

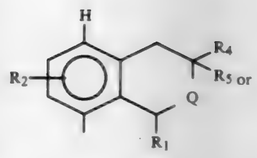
1. A compound having the formula:



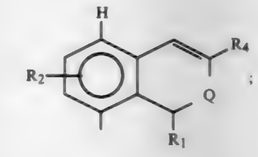
where



L-1

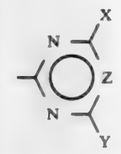


L-2



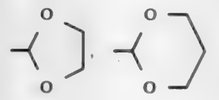
L-3

Q is O, $S(O)_n$ or NR_3;
n is 0, 1 or 2;
R_1 is H, CH_3, Cl or F;
R_2 is H, Cl, Br, C_1–C_3 alkoxy or CF_3;
R_3 is H or C_1–C_4 alkyl;
R_4 is H or CH_3;
R_5 is H or CH_3;
R_6 is H, Cl or F;
R_7 is H, Cl or F;
R_8 is H, Cl or F;
R is H or CH_3;
A is



A-1

X is F, Cl, Br, C_1–C_2 alkyl, C_1–C_2 alkoxy, OCF_2H or CF_3;
Y is H, NH_2, $NHCH_3$, $N(CH_3)_2$, C_1–C_4 alkyl, C_1–C_4 alkyl substituted with 1–3 atoms of (a) F, (b) Cl or (c) Br, CH_2OCH_3, $CH_2OC_2H_5$, C_1–C_4 alkoxy, C_1–C_2 alkylthio, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, $OCH_2CH_2OCH_3$, OCH_2CH_2F, OCH_2CH_2Cl, OCH_2CH_2Br, OCH_2CF_3, $CH(OCH_3)_2$, $CH(OC_2H_5)_2$,



or GCF_2T;
G is O or S;
T is H, CHClF, CHBrF, CF_2H or $CHFCF_3$;
Z is CH;
provided that:
(1) when X is F, Cl or Br, then Y is NH_2, $NHCH_3$, $N(CH_3)_2$, CH_3, OCH_3 or OCF_2H; and
(2) when R_1 is F or Cl, then R_6, R_7 and R_8 are the same as R_1 and Q is O or S; and when R_1 is H or CH_3, then R_6, R_7 and R_8 are H;
and their agriculturally suitable salts.

4,521,242

SUBSTITUTED PHENYL CARBAMATES, HERBICIDAL COMPOSITIONS CONTAINING THE SAME AS ACTIVE INGREDIENT AND METHOD OF CONTROLLING WEEDS

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Takeo Hosogai, and Takashi Nishida, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Aug. 3, 1982, Ser. No. 404,780
Claims priority, application Japan, Oct. 26, 1981, 56-171619
Int. Cl.³ A01N *47/22;* **C07D** *295/20*
U.S. Cl. 71—94 **9 Claims**

3. 2,4-dichloro-5-propargyloxyphenyl 1-piperidinecarboxylate.

4. A method of controlling weeds which comprises applying to the area in which weeds are to be controlled an effective amount of 4-chloro-3-propargyloxyphenyl 1-pyrrolidinecarboxylate.

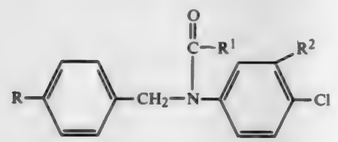
4,521,243

N-CARBONYL-N-(4-SUBSTITUTED BENZYL)-4-CHLOROANILINES

Don R. Baker, Orinda, and Teresa M. Tam, Vallejo, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

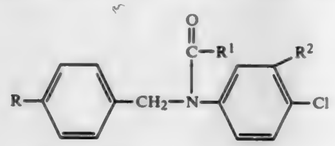
Filed Dec. 15, 1983, Ser. No. 561,854
Int. Cl.³ A01N *37/00, 37/18;* **C07C** *155/02*
U.S. Cl. 71—100 **10 Claims**

1. A compound having the structural formula



wherein R is nitro, chlorine or hydroxy; R^1 is C^1-C^4 alkyl or methylthio; and R^2 is hydrogen or chlorine.

6. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the formula



wherein R is nitro, chlorine or hydroxy; R^1 is C_1-C_4 alkyl or methylthio; and R^2 is hydrogen or chlorine.

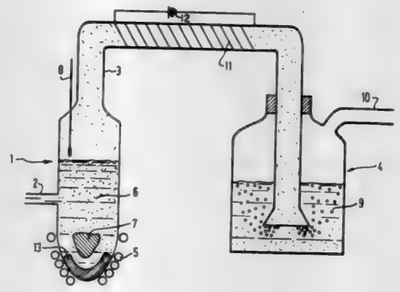
4,521,244

PROCESS OF PRODUCING METAL POWDERS FROM A MOLTEN METAL MATERIAL

Albert-Gilbert Goursat, Voisins-le-Bretonneux; Gilles Vernet, Paris; Jean-Francis Rimbert, Igny; Jean Foulard, Ablon; Thierry Darle, Versailles, and Jean Bigot, Crosne, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Apr. 24, 1984, Ser. No. 603,491
Claims priority, application France, May 4, 1984, 83 07414
Int. Cl.³ B22F *9/00*
U.S. Cl. 75—0.5 B **21 Claims**

1. In a process for producing a metal powder, comprising putting a metal material heated to such temperature that the vapour pressure thereof is at least 1 mm of mercury in contact with a cryogenic fluid in the liquid phase in a closed treatment vessel so as to lower the temperature of said vapour and convert said vapour into solid particles, exhausting from said vessel the cryogenic fluid which contains said solid particles in suspension, separating said particles from said fluid, and collecting them so as to obtain said metal powder; the improvement wherein said metal material is induction heated with a high-frequency current and maintained in levitation in said cryogenic liquid.



4,521,245

METHOD OF PROCESSING SULPHIDE COPPER- AND/OR SULPHIDE COPPER-ZINC CONCENTRATES

Vladimir I. Yarygin, ulitsa Novoshkolnaya, 56, kv. 13.; Jury I. Sannikov, prospekt Lenina, 58/1, kv. 22.; Anatoly I. Panchenko, ulitsa Karbysheva, 26/1, kv. 98.; Anatoly P. Sychev, prospekt Lenina, 60, kv. 16.; Ivan G. Vikharev, ulitsa Kosmicheskaya, 5/1, kv. 20.; Vyacheslav P. Kuur, ulitsa Stakhanovskaya, 59/1, kv. 18., and Mels Z. Toguzov, prospekt Lenina, 24, kv. 14., all of Ust-Kamenogorsk, U.S.S.R.

Filed Nov. 2, 1983, Ser. No. 548,200
Int. Cl.³ C22B *15/00*
U.S. Cl. 75—21 **10 Claims**

1. A method of processing sulphide copper- and/or sulphide copper-zinc concentrates, comprising:

(a) flash smelting, in the presence of oxygen, of a mixture of said concentrates and fluxes selected from the group consisting of basic fluxes and basic fluxes in combination with silicate fluxes; thereby producing a dispersed mixture of highly basic molten slag containing copper and zinc oxides, metallic copper or white matte; said initial concentrates and fluxes being fed for smelting in such ratios that permit production of highly basic slag;

(b) effecting reduction of said copper and zinc oxides, contained in said highly basic molten slag, by means of a solid carbonaceous material with the resultant formation of a vapour-gas mixture, metallic copper and impoverished highly basic slag containing not more than 18 percent by weight of silicon dioxide;

(c) oxidizing the resultant vapour-gas mixture, containing zinc vapour, to zinc oxide;

(d) collecting the resultant zinc oxide.

4,521,246

OPERATING A BLAST FURNACE WITH THE INJECTION OF HOT REDUCING GASES

Nikolas G. Ponghis, Neuville-en-Condroz, and Arthur G. Poos, Embourg, both of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Continuation of Ser. No. 356,792, Mar. 10, 1982, abandoned. This application Sep. 6, 1983, Ser. No. 529,656
Claims priority, application Belgium, Mar. 11, 1981, 887905
Int. Cl.³ C21B *5/06*
U.S. Cl. 75—42 **9 Claims**

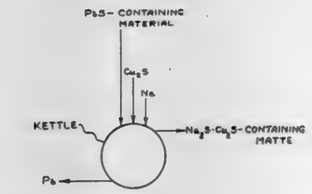
1. A method of operating a blast furnace having a plurality of peripherally spaced tuyeres for feeding gaseous agents into said blast furnace, said tuyeres being located at one level, comprising dividing said plurality of tuyeres into a first group of tuyeres and a second group of tuyeres, injecting through said first group of tuyeres hot reducing gases having a temperature in the range of about 1500° C. to about 2800° C. and consisting essentially of CO and H_2 with small amounts of CO_2 and H_2O, and simultaneously injecting through said second group of tuyeres an oxidizing blast gas consisting essentially of hot air.

4,521,247

LOW TEMPERATURE, NON-SO_2 POLLUTING, KETTLE PROCESS FOR SEPARATION OF LEAD FROM LEAD SULFIDE-CONTAINING MATERIAL

Carl R. Di Martini, Piscataway; Herbert E. Howe, North Plainfield, both of N.J.; William L. Scott, Tampa, Fla., and Leo J. Bulvanoski, Fords, N.J., assignors to ASARCO Incorporated, New York, N.Y.

Continuation of Ser. No. 319,556, Nov. 9, 1981, abandoned, which is a continuation of Ser. No. 132,239, Mar. 20, 1980, Pat. No. 4,333,763. This application Mar. 21, 1983, Ser. No. 475,210
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.³ C22B *13/00*
U.S. Cl. 75—77 **4 Claims**



1. A process for separating lead from a material containing lead sulfide whih comprises:

(a) reacting in a kettle a mixture comprising molten lead, lead sulfide and copper sulfide with metallic alkali metal;

(b) the metallic alkali metal reacting with the lead sulfide to reduce the combined lead of the lead sulfide to metallic lead and forming a matte phase comprising a sulfur compound of the alkali metal and the copper sulfide separating from the molten lead;

(c) the thus-liberated metallic lead reporting in the molten lead, and the sulfur compound of the alkali metal and the copper sulfide being present in the matte phase; and

(d) separating the matte phase from the lead phase.

4,521,248

PROCESS FOR PRODUCING TITANIUM NITRIDE BASE CERMETS WITH HIGH TOUGHNESS

Yoshihiro Yamamoto, Iwakura; Junichiro Suzuki, Gifu, and Minoru Nakamura, Komaki, all of Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Continuation-in-part of Ser. No. 473,653, Mar. 9, 1983,. This application Aug. 20, 1984, Ser. No. 642,946
Claims priority, application Japan, Mar. 16, 1982, 57-41555
Int. Cl.³ C22C *1/05;* **B22F** *3/16, 1/00*
U.S. Cl. 75—238 **22 Claims**

1. A process for producing titanium nitride base cermet with a high toughness comprising the steps of:

admixing 0.5 to 10 parts volume of a carbon powder with a cermet material powder in an amount of 100 parts by volume based on nitrides in the cermet material powder, the cermet material powder essentially consisting of, by weight, 40 to 93% TiN, 2 to 15% of one or more selected from the group consisting of metals of the Group VIa of the periodic table and carbides thereof, 4.7 to 35% of iron group metal, and 0.3 to 10% of AlN with the balance being inevitable impurities,

forming the resultant mixture into a compact, and

sintering the resultant compact,

whereby, when said resultant compact is sintered, said AlN is substantially decomposed.

4,521,249

SILICATE CONTAINING AGENT AND CEMENT SURFACE MODIFIED WITH SAID AGENT

Masamichi Obitsu, Chiba; Takahiro Hori, Funabashi; Toyoji Koinuma, Tokyo, and Yuriko Sakaguchi, Funabashi, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 400,820, Jul. 22, 1982, Pat. No. 4,443,496. This application Dec. 30, 1983, Ser. No. 567,028
Claims priority, application Japan, Jul. 30, 1981, 56-119751
Int. Cl.³ C04B *31/00*
U.S. Cl. 106—12 **11 Claims**

1. An agent for modifying a surface layer of cement structures, which comprises 100 parts by weight of an alkali silicate solution and 0.02 to 1 parts by weight of a water soluble condensate of sodium naphthalene sulfonate and formaldehyde, in which said alkali silicate solution has a SiO_2/M_2O mole ratio of 1 to 50, wherein M represents an alkali metal atom, or a substituted or unsubstituted ammonium cationic radical, and has a SiO_2 content of 5 to 30 weight %.

4,521,250

MIXTURE FOR PREPARATION OF PROTECTIVE AND INSULATING COATINGS ON METALS

Radomir Kuzel, Prague; Josef Broukal, Hradec Kralove, and Vaclav Bouse, Pribram, all of Czechoslovakia, assignors to Universita Karlova, Prague, Czechoslovakia

Filed May 10, 1984, Ser. No. 608,980
Claims priority, application Czechoslovakia, May 10, 1983, 3290-83
Int. Cl.³ C09D *5/14*
U.S. Cl. 106—15.05 **9 Claims**

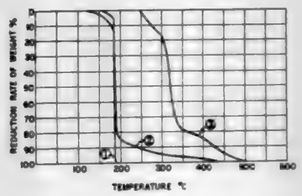
1. A mixture for preparation of protective and insulating coatings on metals and on metal products applied in the form of powder and pastes, said mixture consisting essentially of a residual amount up to 96% by weight of aluminum oxide, 1 to 70% by weight of barium oxide, 1 to 70% by weight of boron oxide, residual amounts to 30% by weight of silicon oxide and residual amounts up to 40% by weight of aluminum fluoride.

4,521,251

LOW-MELTING GLASS PASTE AND CELLULOSE NITRATE THEREFOR

Etsuo Otake, Yokohama; Mamoru Kimura, Himeji; Hiromu Yokota, Himeji, and Tetuo Kanematu, Himeji, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed May 6, 1983, Ser. No. 492,083
Claims priority, application Japan, May 17, 1982, 57-82832
Int. Cl.³ C08L *1/08, 1/18*
U.S. Cl. 106—183 **3 Claims**



1. A glass paste, comprising: glass frit having a softening point of up to 450° C., said glass frit being suspended in a

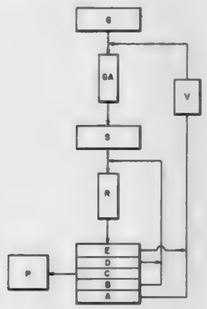
binder, said binder consisting essentially of a solution of high-nitrogen cellulose nitrate having a nitrogen content of from 12.2 to 14.1% and a degree of polymerization in the range of from 100 to 1,000, said high-nitrogen cellulose nitrate being dissolved in an organic solvent having a boiling point in the range of from 100° C. to 250° C.

4,521,252

PROCESS FOR PRODUCING A HIGH-PURITY ISOMALTOSE

Toshio Miyake; Shuzo Sakai, and Takashi Shibuya, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Sep. 21, 1982, Ser. No. 420,702
Claims priority, application Japan, Oct. 26, 1981, 56-171179
Int. Cl.³ C13D *3/12, 3/14*
U.S. Cl. 127—46.3 **12 Claims**



1. A process for the separation of isomaltose from a feed solution by the utilization of an ion exchange resin, comprising:
(a) providing a feed solution containing at least 7% isomaltose based on the weight of the dry solid, the remainder consisting essentially of glucose and isomaltodextrins;
(b) sequentially admitting predetermined volumes of the feed solution and water to a column of a strongly acidic cation exchange resin having sulphonyl groups of an alkali metal or alkaline earth metal form;
(c) sequentially separating the effluents from the column into the following fractions:
a first fraction rich in isomaltodextrins,
a second fraction rich in isomaltodextrins, but highly contaminated with isomaltose,
a third fraction rich in isomaltose,
a fourth fraction rich in isomaltose, but highly contaminated with glucose, and
a fifth fraction rich in glucose;
(d) recovering the third fraction rich in isomaltose;
(e) sequentially admitting into the column:
the second fraction obtained in the step (c),
a feed solution having an isomaltose content of at least 7% based on the weight dry solid, and the remainder consisting essentially of glucose and isomaltodextrins;
the fourth fraction obtained in the step (c) and water; and
(f) repeating steps (c), (d) and (e) in a cyclic manner.

4,521,253

RUST REMOVAL PROCESS

Eugene S. Barabas, Watchung, N.J., assignor to GAF Corporation, Wayne, N.J.

PCT No. PCT/US83/00418, § 371 Date Sep. 27, 1983, § 102(e) Date Sep. 27, 1983, PCT Pub. No. WO83/03429, PCT Pub. Date Oct. 13, 1983
Continuation-in-part of Ser. No. 364,000, Mar. 31, 1982, Pat. No. 4,424,079, and a continuation-in-part of Ser. No. 454,127, Dec. 29, 1982, Pat. No. 4,451,296. This PCT application Mar. 24, 1983, Ser. No. 538,954
The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.
Int. Cl.³ C23G *1/02*
U.S. Cl. 134—3 **15 Claims**

1. Process for removing rust from a rusty metal surface which compises:
(a) applying to said rusty surface a layer of rust removal coating composition consisting essentially of an aqueous solution or dispersion of water soluble or water dispersible copolymer of maleic acid and unsaturated monomer; and
(b) allowing said layer of coating composition to dry whereby rust becomes incorporated into said layer and the layer containing the rust detaches itself from the surface.

4,521,254

CLEANING CONTACT LENSES WITH SOLUTION OF BROMELAIN AND CARBOXYPEPTIDASE

Ronald L. Anderson, and Maria R. Mascio, both of 525 Sunbury Rd., Westerville, Ohio 43081

Continuation-in-part of Ser. No. 232,392, Feb. 9, 1981, abandoned. This application Feb. 5, 1982, Ser. No. 346,013
Int. Cl.³ B08B *3/08;* **C12N** *9/48, 9/50*
U.S. Cl. 134—26 **13 Claims**

1. The method of treating an extended wear contact lens by removing surface deposits and penetratingly adhering aggregations of physiologically encountered debris from said lens comprising:
(a) soaking the lens in an aqueous solution which comprises a principal proportion of bromelain active enzyme and an additional proportion of carboxypeptidase active enzyme suspended in the same aqueous solution and controlling said soaking for a period of time sufficient for the removal of all of the debris from said lens;
(b) rinsing said lens with a separate solution of distilled water; and
(c) placing said lens in a normal saline solution; whereby, said lens becomes cleansed of said deposits and debris.

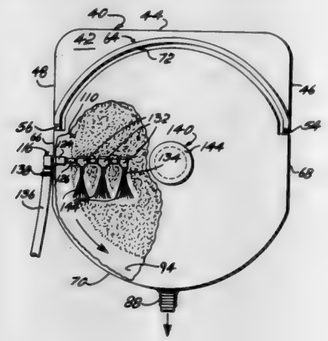
4,521,255

METHOD FOR WASHING A FIBROUS MAT

Willard E. Raymor, 547 NW. Pacific Ave., Chehalis, Wash. 98532, and Peter L. Hedegard, 16800 NE. 31st St., Bellevue, Wash. 98001

Filed Jul. 25, 1983, Ser. No. 517,252
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—33 **7 Claims**

1. A method for removing particles from a fibrous mat, said method comprising:
a. positioning said fibrous mat on a support;
b. said fibrous mat being, substantially, coplanar while positioned on the support and having an external dimension many times greater than the thickness of said fibrous mat;
c. said fibrous mat having a first surface and a second surface on a side of the mat opposite said first surface;
d. directing an aqueous medium to said fibrous mat to contact said first surface and to contact said second surface to remove said particles from said fibrous mat and to rotate said fibrous mat while positioned on the support at



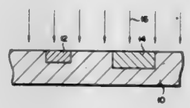
a speed sufficient to cause said particles to leave said fibrous mat due to centrifugal force.

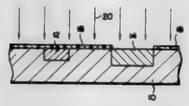
4,521,256

METHOD OF MAKING INTEGRATED DEVICES HAVING LONG AND SHORT MINORITY CARRIER LIFETIMES

Shunichi Hiraki, Hiratsuka; Hiroshi Kinoshita, Yokohama; Kuniaki Kumamaru; Shigeo Koguchi, both of Kitakyushu, and Toshio Yonezawa, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 13, 1983, Ser. No. 531,620
Claims priority, application Japan, Sep. 16, 1982, 57-161243
Int. Cl.³ H01L *21/265, 7/00*
U.S. Cl. 148—1.5 **7 Claims**





1. A process for producing a semiconductor device, comprising the steps of:
irradiating with a radiation beam the entire surface of a semiconductor substrate having a p-n junction, thereby shortening a minority carrier lifetime;
selectively implanting ions in a region wherein the minority carrier lifetime is to be recovered; and
annealing the resultant structure.

4,521,257

PROCESS OF MANUFACTURING STRIP COATED WITH PRECIOUS METAL AS A SEMIFINISHED PRODUCT FOR MAKING ELECTRIC CONTACTS

Hans-Jürgen Gevatter, Heidelberg; Bernhard Müller, Keltern-Ellmendingen, and Hans-Joachim Neese, Eisingen, all of Fed. Rep. of Germany, assignors to Doduco KG Dr. Eugen Durrwachter, Pforzheim, Fed. Rep. of Germany

Filed Feb. 22, 1983, Ser. No. 468,661
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206262
Int. Cl.³ C25D *5/50, 7/06;* **B41B** *3/00*
U.S. Cl. 148—11.5 Q **18 Claims**

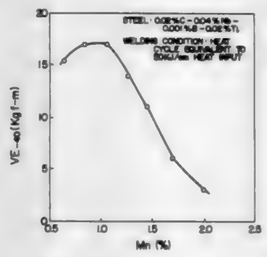
1. The method of manufacturing a semi-finished coated strip material to be used for manufacturing electrical contacts, the strip comprising a base metal substrate made of copper or a copper alloy, a surface layer made of precious metal or a precious metal alloy on selected portion of the substrate and an intermediate layer consisting of a base metal forming a diffusion barrier therebetween, comprising the steps of
depositing said intermediate layer on said substrate strip,
electro-despositing said surface layer on said selected portions of the substrate strip above said intermediate layer,
subjecting the coated strip to at least one heat treatment resulting in a recrystallization of said substrate, said intermediate layer and said surface layer, and
cold-rolling the coated strip so that its thickness is reduced by 10 to 50 percent of the thickness it had before the rolling operation.

4,521,258

METHOD OF MAKING WROUGHT HIGH TENSION STEEL HAVING SUPERIOR LOW TEMPERATURE TOUGHNESS

Hiroshi Tamehiro; Hiroo Mazuda; Mamoru Ohashi, all of Kimitsu, and Yasumitsu Onoe, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 424,780, Sep. 27, 1982, abandoned. This application Dec. 16, 1983, Ser. No. 562,250
Claims priority, application Japan, Oct. 31, 1981, 56-174950
Int. Cl.³ C21D *8/02*
U.S. Cl. 148—12 F **10 Claims**



1. A method of making wrought high tension steel having superior strength, toughness, and weldability which comprises the steps of:
preparing a steel consisting essentially by weight of; 0.005–0.12% C, not more than 0.6% Si, 0.6–1.4% Mn, not more than 0.005% S, 0.005–0.08% Al, 0.01–0.08% Nb, 0.0005–0.002% B, 0.004–0.03% Ti, not more than 0.006% N, at least one element by weight selected from the group consisting of; 0.01–0.08% V, 0.1–1.0% Ni, 0.1–1.0% Cu, 0.1–1.0% Cr, 0.05–0.3% Mo, 0.0005–0.005% Ca, and 0.001–0.03% in total of rare earth metal or metals, and the remainder being Fe and incidental impurities and the Ti and N contained in the steel satisfy the relationship expressed by a formula

$$-0.01\% \leqq Ti - 3.4N \leqq 0.02\%;$$

heating the steel at a temperature within a range of 1,000°-1,200° C.;

rolling the steel with a rolling reduction of not less than 60% at a temperature range of not more than 900° C. and the temperature for terminating the rolling is kept within a range of 640°-850° C.;

cooling the steel, after it has been rolled down, to a predetermined temperature lower than 550° C. with a cooling rate within a range of 10°-40° C./sec.

4,521,259

NITROGEN ANNEALING OF ZIRCONIUM AND ZIRCONIUM ALLOYS

Craig M. Eucken, Linn County, Oreg., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 467,327, Feb. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 203,697, Nov. 3, 1980, abandoned. This application Sep. 17, 1984, Ser. No. 651,298

Int. Cl.³ C21D *1/56*

U.S. Cl. 148—20.3 **6 Claims**

1. A method of continuously annealing zirconium metal and its alloys comprising continuously passing the metal through an annealing furnace containing a nitrogen atmosphere while maintaining said metal at a temperature of from about 1000° F. to 1600° F. for from 0.5 to 10 minutes said time and temperature being inversely proportional and within the formula:

$$\text{Time} = a \times 2.7183^{(Q/R)\ 1/\text{temp } °K.}$$

wherein

$a = 3 \times 10^{-20} - 2 \times 10^{-13}$

$Q/R = 20{,}000\text{-}45{,}000$.

4,521,260

DETONATION-TRANSFER ENERGETIC COMPOSITION

Nancy C. Johnson, Waldorf, and Carl Gotzmer, Jr., Accokeek, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1984, Ser. No. 665,335

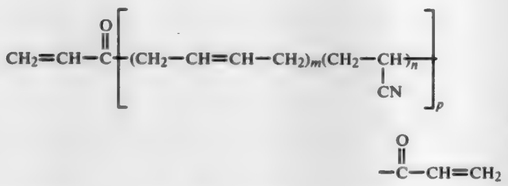
Int. Cl.³ C06B *45/10*

U.S. Cl. 149—19.91 **17 Claims**

1. An energetic composition which comprises, based on total composition weight,

from about 79 to about 84 weight percent of pentaerythritol tetranitrate having a particle size from about one to about four microns; and

from about 16 to about 21 weight percent of a binder system which comprises, based on total binder weight, from about 25 to about 60 weight percent of a vinyl-terminated polybutadiene-acrylonitrile copolymer represented by the formula



wherein m, n, and p have values such that the acrylonitrile content is from about 5 to about 20 percent, the vinyl equivalent weight is from about 1000 to about 1600, and the average molecular weight is from 2500 to about 5000; from about 25 to about 45 weight percent of a crosslinking monofunctional unsaturated ester selected from the group consisting of acrylates and methacrylates, and mixtures thereof, the amount of said ester being less than the amount of copolymer; from about 20 to about 50 weight percent of a plasticizer selected from the group consisting of dioctyl phthalate, maleate and adipate, isodecyl pelargonate, dibutyl phthalate and maleate and mixtures thereof; from about 0 to 1 weight percent of an antioxidant; and from about 0 to about one weight percent of a wetting agent.

4,521,261

DOUBLE BASE PROPELLANT COMPOSITIONS

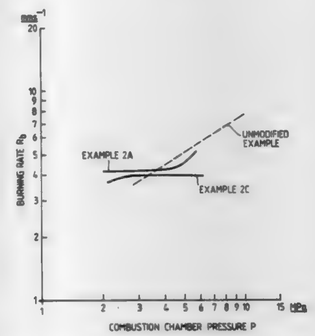
David G. Davies, Waltham Abbey, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Aug. 8, 1984, Ser. No. 638,856

Claims priority, application United Kingdom, Aug. 12, 1983, 8321754

Int. Cl.³ C06B *25/34*

U.S. Cl. 149—92 **18 Claims**



1. A double base propellant composition comprising nitrocellulose, nitroglycerine and a ballistic modifier, said modifier comprising at least one lead compound and at least one copper (II) salt of an aliphatic dicarboxylic acid.

4,521,262

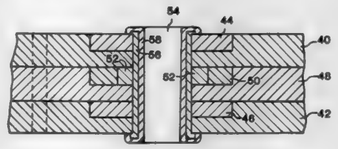
METHOD FOR MASS PRODUCING PRINTED CIRCUIT BOARDS

Peter P. Pellegrino, 216 Edgewood La., Apple Valley, Minn. 55124

Filed Jan. 10, 1983, Ser. No. 439,333

Int. Cl.³ C25D *7/00;* **B05D** *5/00;* **C23F** *1/02;* **B44C** *1/22*

U.S. Cl. 156—150 **10 Claims**



1. A method of making multilayer printed circuit boards comprising

(a) fabricating a plurality of thin printed circuit board layers for later laminating into a multilayer board, each printed circuit board layer being fabricated by the steps of

(i) providing a printed a circuit board blank having an electrically insulative substrate with a predetermined repetitive and interconnected conductive pattern on one surface thereof,

(ii) coating the conductive pattern with a photoresist,

(iii) exposing and developing the photoresist in a predetermined pattern to remove photoresist from those interconnects desired to be opened, and from the conductive pattern in isolation locations in accordance with a predetermined through hole pattern and in locations where board layer interconnection to that circuit is not desired, and in an amount to substantially exceed the through hole size to be later drilled,

(iv) removing the exposed interconnects and isolation locations whereby the remaining portions of said predetermined repetitive and interconnected conductive pattern provides the desired circuit pattern,

(b) aligning the plurality of printed circuit board layers with respect to each other and laminating the layers together using a laminating adhesive which will fill the isolation locations,

(c) drilling the multilayer board to provide the predetermined through hole pattern, and

(d) through plating the through holes with a conductive material, thereby for each hole, making electrical interconnection between all conductive patterns through which the respective through hole passes.

4,521,263

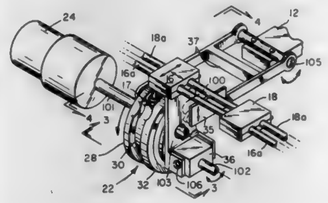
AUTOMATIC SPLICING DEVICE AND PROCESS

Joshua Benin; Helen R. Delp, both of Newark, Del., and Leland L. Krauss, Aston, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 408,418, Aug. 16, 1982, abandoned. This application Aug. 3, 1984, Ser. No. 637,581

Int. Cl.³ A61M *5/00;* **B29C** *27/00*

U.S. Cl. 156—159 **12 Claims**



1. A process for forming a connection between two thermoplastic tubes being held in a side-by-side relationship in a pair of displaced mounting blocks movable relative to each other and movable with respect to a heated cutting means between the blocks comprising: passing the cutting means through the tubes; shifting the blocks to align two different cut tube ends facing each other while maintaining contact between the cut tube ends and the cutting means; and withdrawing the cutting means from contact with the tubes while urging the blocks together, said passing, shifting and urging steps being pivotal orthogonal motions; and controlling the timing of said process to automatically obtain said connection.

2. An apparatus for forming a connection between two thermoplastic tubes comprising: a pair of displaced mounting blocks for holding said tubes in a side-by-side relationship; a heated cutting means located between the blocks, said blocks being movable with respect to each other and with respect to the cutting means; means for providing movement between said mounting blocks and said cutting means, said means for providing movement generating three pivotal orthogonal motions; and a controller coupled to the means for providing movement to control the timing of the operation of the apparatus.

4,521,264

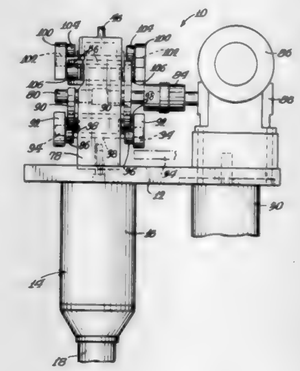
METHOD AND APPARATUS FOR INTERNALLY CUTTING A TUBE OF MATERIAL

Martin Mueller, Wonder Lake, Ill., assignor to Osgood Industries, Inc., Northbrook, Ill.

Continuation-in-part of Ser. No. 451,401, Dec. 20, 1982,. This application May 27, 1983, Ser. No. 498,981

Int. Cl.³ B23D *21/14*

U.S. Cl. 156—184 **20 Claims**



1. An apparatus for cutting a tube of spirally wound material into segments, comprising:

mandrel means upon which said tube of material is spirally wound so that said tube is relatively axially advanced along said mandrel means;

cutter means mounted within said mandrel means including blade means adapted for movement inwardly and outwardly of said mandrel means;

means for cyclically operating said cutter means so that said blade means internally cuts said tube of material into said segments,

said cutter means comprising cutter arbor means rotatably mounted in said mandrel means, blade actuating means disposed within said cutter arbor means and adapted for rotation therewith, and blade means operatively connected with said blade actuating means,

said blade means including a cutting portion adapted for reciprocable movement inwardly and outwardly of said mandrel means attendant to relative axial movement of said blade actuating means and said cutter arbor means,

means for rotating said cutter arbor means and said blade actuating means comprising cutter drive means rotatably mounted in said mandrel means, said cutter drive means supporting said cutter arbor means for rotation within said mandrel means, said rotating means further comprising motor means for rotating said cutter drive means,

said cutter arbor means being mounted for reciprocable axial movement relative to said cutter drive means,

said operating means including cam means for first relatively axially moving said blade actuating means and said cutter arbor means for moving the cutting portion of said blade means outwardly of said mandrel means, said cam means thereafter moving said blade actuating means and said cutter arbor means axially relative to said mandrel means in the direction of tube advancement so that the cutting portion of said blade means moves axially with respect to said mandrel means in the direction of tube advancement during cutting of said tube of material,

said blade means comprising at least one flexible blade having one end connected to said blade actuating means, the other end of which provides said cutting portion,

said cutter arbor means including means for guiding said flexible blade so that relative axial movement of said blade

actuating means and said cutter arbor means is adapted to move said cutting portion inwardly and outwardly of said mandrel means.

4,521,265

PROCESS FOR PREPARING LAMINATED PLATE

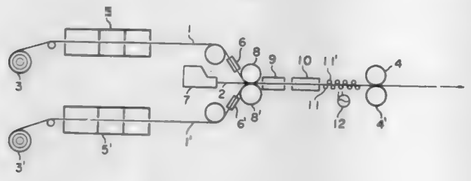
Ichikawa Kunihiko, Machida, and Mishima Kiyoshi, Hachioji, both of Japan, assignors to Mitsubishi Light Metal Industries Limited, Tokyo, Japan

PCT No. PCT/JP81/00352, § 371 Date Jul. 20, 1983, § 102(e) Date Jul. 20, 1983, PCT Pub. No. WO83/01756, PCT Pub. Date May 26, 1983

PCT Filed Nov. 20, 1981, Ser. No. 530,597

Int. Cl.³ B32B *31/22*

U.S. Cl. 156—229 **6 Claims**



1. A process for preparing a laminated plate by laminating metallic sheets on both surfaces of a thermoplastic synthetic resin sheet which comprises

(a) preheating two metallic sheets stretched under a constant tension;

(b) feeding said preheated metallic sheets and said synthetic resin sheet in a molten state to place said synthetic resin sheet between said metallic sheets, between heat-press rolls;

(c) passing said laminated plate among a plurality of rolls arranged in zig-zag positions to form curves of said laminated plate in a degree less than its bending elastic limit; and

(d) cooling said laminated plate to a temperature of said synthetic resin to be at the softening point or lower on the rolls in step (c).

4,521,266

METHOD OF MANUFACTURING CORKS FOR BOTTLES

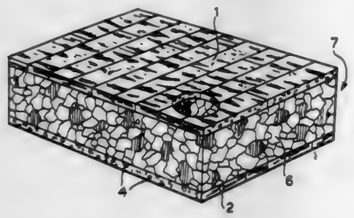
Franco Careddu, Canelli, Italy, assignor to Sugherificio P. Careddu S.p.A., Canelli, Italy

Filed Jul. 15, 1983, Ser. No. 514,124

Claims priority, application Italy, Jul. 15, 1982, 67903 A/82

Int. Cl.³ B32B *31/18*

U.S. Cl. 156—242 **2 Claims**



1. A method of manufacturing corks comprising the steps of:

forming a first and a second sheet from strips of natural cork disposed side-by-side and glued together and with the pores of the cork extending parallel to the plane of the said sheet,

placing said first sheet on the bottom of a mold,

placing a mixture of granulated cork and binder in said mold on said first sheet,

placing said second sheet in said mold over said mixture of cork and binder,

pressing and baking in said mold the composite formed by said two sheets and mixture so as to form a parallelpipedal block having a control core of agglomerated cork and two major surfaces defined by said sheets,

smoothing said two major surfaces of said parallepipedal block, and

punching the said block in a direction perpendicular to its major surfaces to form the corks.

4,521,267

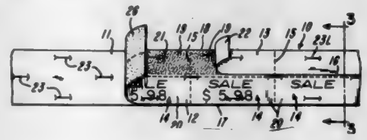
COMPOSITE LABEL WEB AND METHOD OF LABELING

David N. Jacobson, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jun. 21, 1984, Ser. No. 622,927

Int. Cl.³ B32B *7/06*

U.S. Cl. 156—249 **5 Claims**



1. A flexible composite label web for use in a hand-held labeler having a delaminator comprising: a longitudinally extending carrier web, label material carried by the carrier web, cuts separating the label material into a series of labels, a non-tacky adhesive releasably adhering the labels at their undersides to the carrier web, the carrier web having means in a predetermined relationship to the cuts for registering the labels with respect to a label delaminator, a longitudinally extending line of weakening spaced from opposite side edges of the labels and separating the labels into detachably connected first and second label parts, pressure sensitive adhesive on the outer sides of the first label parts, the second label parts being free of adhesive and being adapted to have price data printed thereon, and masking material releasably adhered to a masking of the pressure-sensitive adhesive on the first label parts.

4. Method of labeling using a hand-held labeler having a label delaminator, comprising the steps of: providing a flexible composite label web including a longitudinally extending carrier web, label material carried by the carrier web, cuts separating the label material into a series of labels, a non-tacky adhesive releasably adhering the labels at their undersides to the carrier web, the carrier web having means in a predetermined relationship to the cuts for registering the labels with respect to a label delaminator, a longitudinally extending line of weakening spaced from opposite side edges of the labels and separating the labels into detachably connected first and second label parts, pressure sensitive adhesive on the outer sides of the first label parts, the second label parts being free of adhesive and being adapted to have price data printed thereon, and masking material releasably adhered to a masking of the pressure-sensitive adhesive on the first label parts, providing a labeler having a label delaminator and a toothed driver disposed downstream of the delaminator, threading the carrier web through the labeler to guide the carrier web to the delaminator and thereafter a position in which the carrier web can engage the toothed driver, operating the labeler to dispense one or more labels, removing the masking material from a dispensed label, and attaching the first label part to the underside of a marginal edge of a tag so that the second label part with the price data projects beyond the tag.

4,521,268

APPARATUS FOR DEPOSITION OF FLUID AND GASEOUS MEDIA ON SUBSTRATES

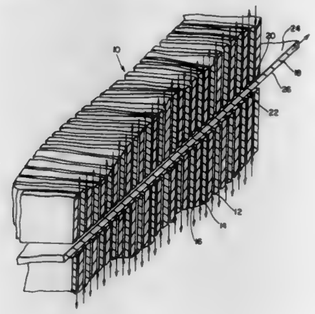
Edward Bok, Burgemeester Amersfoordtlaan 82, 1171 dr Badhoevedorp, Netherlands

Division of Ser. No. 491,318, Apr. 25, 1983, Pat. No. 4,495,024. This application Jul. 9, 1984, Ser. No. 629,303

The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.

Int. Cl.³ B44C *1/22*; B08B *5/04*; C23C *13/08*; B05D *5/12*

U.S. Cl. 156—345 **39 Claims**



1. Apparatus for longitudinal transport and processing of substrates comprising:

a. a housing;

b. an upper block and a lower block superposed with respect to each other and supported by said housing so as to define an elongated longitudinal passage between the opposed faces of said upper block and said lower block;

c. at least one fluid medium supply channel defined within one of said blocks and communicating with a fluid medium supply at one end and extending at its other end into said longitudinal passage, and

d. at least one fluid medium discharge channel defined in one of said blocks and extending into said longitudinal passage;

said supply channel and said discharge channel being positioned so that over at least part of said passage fluid cushions are maintained on both sides of the substrates within said passage.

4,521,269

TIRE BUILDING APPARATUS

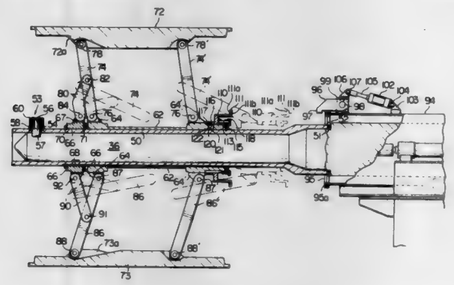
Chiaki Ozawa, Kodaira, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 23, 1983, Ser. No. 565,175

Claims priority, application Japan, Dec. 27, 1982, 57-234713

Int. Cl.³ B29H *17/16*

U.S. Cl. 156—420 **5 Claims**



1. A tire building apparatus comprising,

an axially elongated drive shaft extending in a longitudinal direction of said apparatus and rotatable about its center axis;

a tire building drum comprising an axially elongated retainer sleeve interchangeably received on said drive shaft and rotatable with said drive shaft about the center axis of said drive shaft, a slider sleeve slidably received on said retainer sleeve and rotatable with said drive shaft about the center axis of said drive shaft, a plurality of link members each pivotally connected at its one end to said slider sleeve, and a plurality of arcuate drum segments each equiangularly spaced apart from one another about the center axis of said drive shaft and pivotally connected with the other end of each of said link member, the arcuate drum segments forming a cylindrical shape when held in a radially outermost position with respect to said center axis of said axially elongated drive shaft;

a drive sleeve having an annular end plate fixedly connected thereto and movable along said axially elongated drive shaft with respect to said tire building drum and coaxially surrounding said axially elongated drive shaft;

at least an elongated clutch arm having at its one end a hook portion protruding outwardly of said annular end plate of said drive sleeve and at the other end pivotally connected to said drive sleeve; and

a cylindrical member having a horizontal base portion slidably received on said slider sleeve, and a flange portion radially outwardly extending with respect to said axially elongated drive shaft;

said flange portion of said cylindrical member having a front end face and a rear end face so that the rear end face is brought into engagement with said annular end plate of said drive sleeve while said tire building drum is radially outwardly expanding, and the front end face is brought into engagement with said hook portion of said elongated clutch arm while said tire building drum is radially inwardly contracting.

4,521,270

APPARATUS FOR FORMING SPIRALLY WOUND PIPE

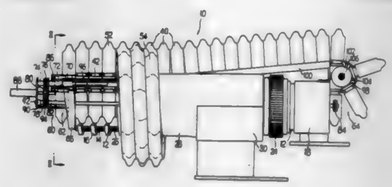
Manfred A. A. Lupke, 92 Elgin St., Thornhill, Ontario, Canada L3T 1W6

Filed Feb. 24, 1984, Ser. No. 583,310

Claims priority, application Canada, Apr. 6, 1983, 425277

Int. Cl.³ B29D *23/04*

U.S. Cl. 156—429 **9 Claims**



1. An apparatus for use in the manufacture of spirally wound pipe, including a helical track and a plurality of independent moldblocks adapted to travel serially along the track so as to define a rotating and axially advancing mandrel surface, characterized by:

(a) the track having a hollow core; and

(b) a block return system comprising:

(i) a block return passage extending along the hollow core of the helical track,

(ii) run-out means for transferring the blocks serially from the helical track to the return passage at a downstream position,

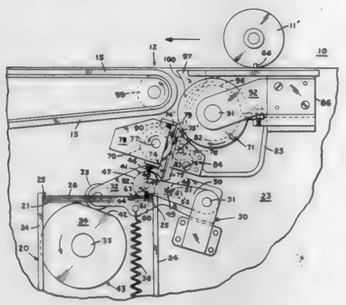
(iii) run in means for transferring the blocks serially from the return passage to the track at an upstream position, and serially through the block return system.

(iv) return drive means for driving the blocks serially through the block return system.

4,521,271
LABELING MACHINES

Helmut Voltmer, Park Ridge; Alfred F. Schwenzer, Totowa, and John D. Spano, Hasbrouck Heights, all of N.J., assignors to NJM, Inc., Fairfield, N.J.

Filed May 28, 1982, Ser. No. 382,940
Int. Cl.³ B65C *9/08*
U.S. Cl. 156—568 **12 Claims**



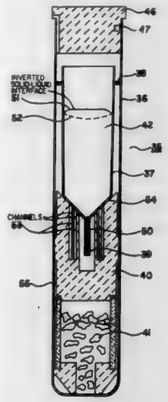
1. In a labeling machine, a hopper for carrying a stack of labels, a label applying station, and means for successively and positively feeding labels from said hopper to said applying station comprising a rotatable turret provided with suction means located adjacent to the leading edge of the terminal label in said hopper and adapted to lift by vacuum such leading label edge out of said hopper and then to mechanically withdraw such label from the hopper, said turret having a curved outer surface of which a portion is stepped inwardly to provide a turret section of reduced radius, including a step adapted to fit around an edge of said hopper, there being vacuum ports located on said curved outer surface behind said step to lift the edge of the label, said turret being supported by means which urge said turret away from said hopper to permit rotation of said turret, said labeling machine further comprising a first guide means defining a given path of travel for the label, a first pressure roll cooperating with said turret to mechanically draw such label from the hopper and to advance the leading edge thereof into the entry end of said first guide means, a rotatable feed roll and a second pressure roll located to coactively engage the label intermediate the ends of its given path through said first guide means and prior to the release of the label by said turret and said first pressure roll, a rotatable glue roll located to receive the label on its peripheral surface as the label is discharged from said first guide means, said turret and its coacting first pressure roll, said feed roll and its coacting second pressure roll, and said glue roll each imparting to the label during their mechanical feed thereof, a corresponding given linear velocity, and means for transferring the glued label from said glue roll to said applying station without substantially diminishing such given linear velocity thereof.

4,521,272
METHOD FOR FORMING AND GROWING A SINGLE CRYSTAL OF A SEMICONDUCTOR COMPOUND

William A. Gault, Ewing Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., New York, N.Y.

Division of Ser. No. 222,444, Jan. 5, 1981, Pat. No. 4,404,172.
This application Dec. 13, 1982, Ser. No. 449,311
Int. Cl.³ C30B *11/02*
U.S. Cl. 156—616 R **1 Claim**

1. A gradient zone freeze method for growing single crystal semiconductor compounds in a crucible having a seed well, a transition region and a main growth region the seed well containing a seed crystal to promote single crystal growth and the transition region and main growth region containing the polycrystalline form of the desired semiconductor single crystal comprising heating the crucible so as to melt the polycrystalline compound and to create and maintain a steep temperature gradient of from 80° to 200° C. in the region of the seed well, a lesser temperature gradient of from 50° to 150° C. in the transition region and a still smaller temperature gradient of

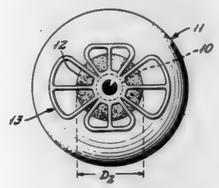


from 5° to 50° C. in the main growth region, slowly cooling the crucible while maintaining the temperature gradients so as to induce crystal growth along a solid-liquid interface initially at the top of the seed crystal and which slowly rises through the transition region and up and through the main growth region.

4,521,273
METHOD OF MAKING A LENS AND HAPTIC ASSEMBLY

Stanley Poler, 78 E. Second St., New York, N.Y. 10003

Division of Ser. No. 124,941, Feb. 26, 1980, Pat. No. 4,377,329.
This application Sep. 20, 1982, Ser. No. 420,108
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; B29C *17/08*
U.S. Cl. 156—630 **9 Claims**



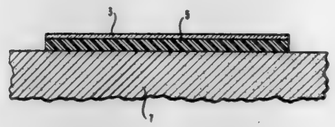
1. The method of making a lens and haptic assembly, which comprises selecting an optically finished lens element and two pieces of transparent sheet material of larger area than the area of the lens element, laminating the sheets to opposite sides of the lens element and to each other over a circumferentially continuous haptic area radially beyond the periphery of the lens element, and fenestrating the haptic area by photographically delineated milling after lamination of said sheet-material pieces to each other and to said lens element.

4,521,274
BILEVEL RESIST

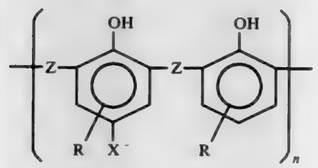
Elsa Reichmanis, and Cletus W. Wilkins, Jr., both of Westfield, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 24, 1984, Ser. No. 613,884
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; B29C *17/08*
U.S. Cl. 156—643 **12 Claims**

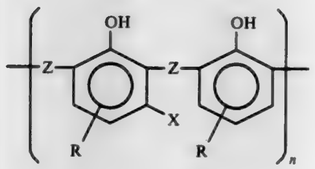
1. A process of fabricating a device comprising the steps of forming a composition including a radiation-sensitive composition on a substrate, patterning at least a portion of said region and further processing said substrate
CHARACTERIZED IN THAT



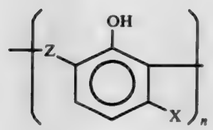
said region comprises a polymer that is represented by the formula



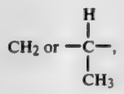
or



or



where Z is

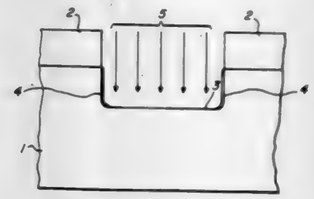


where R is hydrogen or methyl, and where X contains silicon and is chosen so that T_g of said composition is higher than 30° C., and the silicon weight percentage of said composition is at least 5.

4,521,275
PLASMA ETCH CHEMISTRY FOR ANISOTROPIC ETCHING OF SILICON

Andrew J. Purdes, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 395,205, Jul. 6, 1982, Pat. No. 4,450,042. This application Feb. 1, 1984, Ser. No. 576,050
The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/02*
U.S. Cl. 156—643 **14 Claims**

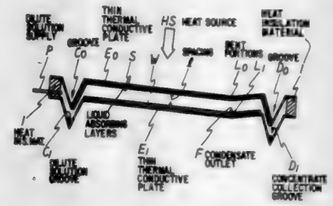


1. A method for anisotropic plasma etching of silicon-bearing material, comprising the steps of:
(a) flowing a gaseous mixture over said material, said mixture including compounds of bromine and chlorine; and
(b) exciting said mixture into a plasma over said material, said bromine compound characterized by plasma formation of bromine-bearing species which passivate said silicon on surfaces of said material not subject to said plasma's ion bombardment, and said chlorine compound characterized by plasma formation of chlorine-bearing species which volatilize silicon.

4,521,276
CONCENTRATING APPARATUS

Kenji Tsumura, Nishinomiya, and Masayuki Yamashita, Osaka, both of Japan, assignors to Oriental Metal Mfg. Co., Ltd., Hyogo, Japan

Filed Apr. 29, 1982, Ser. No. 373,155
Claims priority, application Japan, May 8, 1981, 56-69649
Int. Cl.³ B01D *1/22*
U.S. Cl. 159—1 W **10 Claims**



1. A concentrating apparatus comprising:
a first substantially planar rigid plate having high thermal conductivity and having a first surface adapted to receive heat from a heat source, said first plate having a second surface on the side opposite said first surface provided with a solution-absorbing layer for absorbing a solution supplied thereto for concentration;
a second substantially planar rigid plate having high thermal conductivity and positioned substantially parallel to said first plate and spaced therefrom, and having a first surface facing said second surface of said first plate and provided thereon with a condensate absorbing layer spaced from said solution absorbing layer, said second plate having a second surface on the side opposite said condensate absorbing layer adapted to dissipate heat;
said first and second plates each being formed with a first

groove near an edge thereof, said grooves being positioned in corresponding relation to one another, said groove in the lower of said two plates forming a solution supply groove and said solution absorbing layer being arranged to extend into said solution supply groove;

means for supplying a dilute solution to said solution supply groove to be absorbed by said solution absorbing layer; and

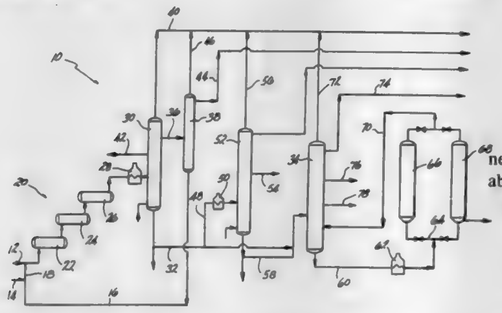
means for withdrawing concentrate and condensate from said apparatus.

4,521,277

APPARATUS FOR UPGRADING HEAVY HYDROCARBONS EMPLOYING A DILUENT

Jose L. Calderon, Caracas, and Ignacio Layrisse, San Antonio de Los Astos Estado Miranda, both of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Feb. 9, 1983, Ser. No. 465,180
Int. Cl.³ C10G *33/00*
U.S. Cl. 196—46 **5 Claims**



1. An apparatus for upgrading a heavy crude oil feedstock characterized by a high specific gravity, high pour point, high viscosity and high metal, sulfur, water, salt and conradson carbon contents for making coke suitable for metallurgical purposes comprising:

(a) a heavy crude oil feedstock inlet line;

(b) a dehydrator downstream of said heavy crude oil feedstock inlet line for receiving crude oil therefrom;

(c) a diluent feed line for feeding a diluent to said heavy crude feedstock in said heavy crude oil feedstock inlet line upstream of said dehydrator;

(d) a desalter downstream of said dehydrator for receiving a mixture of crude oil and diluent from said dehydrator wherein the water content of the mixture of crude oil and diluent from said dehydrator is not more than 1.0 volume percent;

(e) a distillation unit downstream of said dehydrator for receiving a dehydrated and desalted mixture of crude oil and diluent from said desalter wherein said mixture of crude oil and diluent from said desalter has a salt content of not more than 5 PTB;

(f) a splitter means downstream of said distillation unit for receiving the overhead liquid hydrocarbon product from said distillation unit so as to obtain a narrow boiling point diluent; and

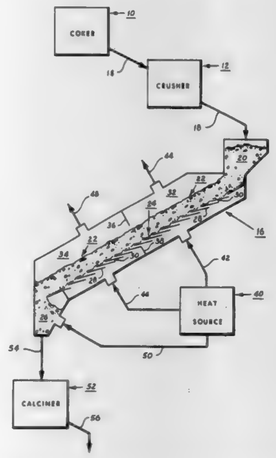
(g) feed lines for feeding said narrow boiling point diluent from said splitter means to said diluent feed line for mixing said diluent with said heavy crude feedstock prior to the dehydrating and desalting of said heavy crude oil and diluent mixture.

4,521,278

METHOD FOR PRODUCING NEEDLE COKE

Arnold E. Kelley, Orange; Michael J. Block, and Milan R. Skripek, both of Fullerton, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 26, 1983, Ser. No. 488,731
Int. Cl.³ C10B *49/06*
U.S. Cl. 201—17 **34 Claims**



1. A method for producing calcined needle coke from green needle coke having a Hardgrove Grindability Index above about 90 comprising:

(a) heating said green needle coke at temperatures between about 875° F. and about 1200° F. for a time between about 10 minutes and about 24 hours, said time being sufficient to effect a reduction in the friability of said green needle coke as determined by a decrease in said Hardgrove Grindability Index; and

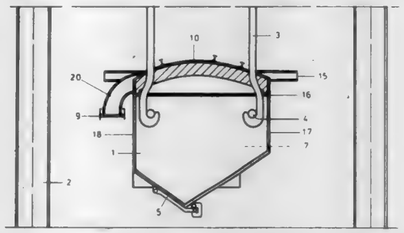
(b) without first allowing the temperature of the heated green needle coke to cool below about 500° F., calcining the heated green needle coke obtained from step (a) at calcination temperatures above about 2000° F.

4,521,279

APPARATUS FOR DRY COOLING COKE

Kurt Lorenz, Hattingen; Engelbert Bruns, Recklinghausen, and Gerd Osterholt, Dorsten, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Feb. 9, 1983, Ser. No. 465,254
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206938
Int. Cl.³ C10B *33/00, 39/00, 39/12*
U.S. Cl. 202—227 **3 Claims**



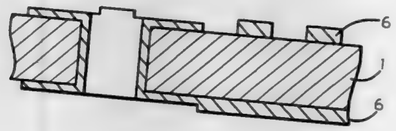
1. A bucket and exhaust line combination for handling hot coke which is connectable to an exhaust system having the exhaust line, comprising a container having a bottom with a discharge opening, a bottom flap closing the discharge opening which is openable to release the coke from the bucket through the discharge opening, said container having an open top with a container rim surrounding the open top, a detachable cover closing the top having a cover rim resting on said container rim and sealing the interior of said container, an exhaust pipe carried by said cover and having one interior end opening into the interior of said cover and said container and an opposite exterior end terminating outside said cover in a downwardly extending exhaust connection for connecting said container to the exhaust line, at least one longitudinally extending girder secured to an exterior of said cover and having cover support portions extending beyond each side edge of said cover, said cover being convex and forming an interior raised portion over the container, said exhaust pipe connected into the interior of said cover adjacent a highest portion of the interior, a water seal having a portion connected to said exhaust line and a portion connected to said exhaust connection for sealing said exhaust line to said exhaust connection, said exhaust pipe extending horizontally from said cover and below a top of said cover, said exhaust pipe terminating at said downwardly extending exhaust connection, and a second longitudinally extending girder spaced laterally of said at least one longitudinally extending girder and having cover support portions extending beyond each side edge of said cover, said cover being convex in a central area thereof and having a pair of flat rim areas on opposite sides of said central area, said at least one longitudinally extending girder connected to a top of one of said flat areas and said second longitudinally extending girder connected to a top of the other flat area, a top of said central area of said cover being above a top of said at least one longitudinally extending girder and said second longitudinally extending girder.

4,521,280

METHOD OF MAKING PRINTED CIRCUITS WITH ONE CONDUCTOR PLANE

Dieter K. Bährle, Schönaich, and Friedrich W. Schwerdt, Herrenberg, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 1984, Ser. No. 616,342
Claims priority, application European Pat. Off., Jun. 1, 1983, 83105433.3
Int. Cl.³ C25D *5/02, 7/00*
U.S. Cl. 204—15 **12 Claims**



1. Method of making printed circuits with one conductor plane, characterized by the following process steps:

(a) laminating a sacrificial foil onto a synthetic resin prepreg;

(b) drilling through-holes;

(c) etching off the sacrificial foil;

(d) laminating a negative photoresist foil onto the surface of the prepreg;

(e) exposure in accordance with the desired conductor pattern, and developing;

(f) sputtering copper on the surface of the photoresist, on the walls and the bottom of the photoresist channels defining the conductors, and on the surface of the drilled holes;

(g) lift-off of copper sputtered onto the surface of the photoresist;

(h) depositing copper on copper sputtered on the photoresist channels and the drilled holes, following the additive method; and

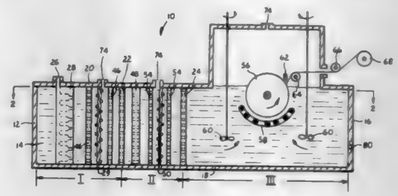
(i) stripping the photoresist.

4,521,281

PROCESS AND APPARATUS FOR CONTINUOUSLY PRODUCING MULTIVALENT METALS

Igor V. Kadija, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Oct. 3, 1983, Ser. No. 538,299
Int. Cl.³ C25C *3/28, 7/00*
U.S. Cl. 204—25 **18 Claims**



1. A process for continuously producing a multivalent metal, said process comprising:

providing a cell having at least one non-metallic porous barrier for separating said cell into a plurality of zones;

introducing a metal species having a first state of valency into one of said zones;

electrolytically reducing said first metal species to a species having a next lower state of valency in said one zone;

passing said species having said next lower state of valency through said at least one non-metallic porous barrier into another of said zones; and

substantially continuously plating said metal onto a cathode in said another zone.

4,521,282

CYANIDE-FREE COPPER ELECTROLYTE AND PROCESS

Robert A. Tremmel, Woodhaven, Mich., assignor to OMI International Corporation, Warren, Mich.

Filed Jul. 11, 1984, Ser. No. 627,715
Int. Cl.³ C25D *3/38*
U.S. Cl. 204—52 R **20 Claims**

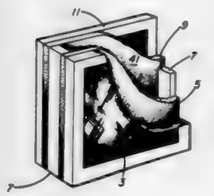
1. An aqueous cyanide-free electrolyte containing copper ions present in an amount effective to electrodeposit copper, a complexing agent present in an amount sufficient to complex an effective amount of the copper ions present, hydroxyl and/or hydrogen ions present in an amount to provide a pH of about 6 to about 10.5, and sulfamic acid and the bath soluble and compatible salts thereof present in an amount effective to increase the anode efficiency during the electrodeposition of copper from said electrolyte.

4,521,283

ELECTRO ORGANIC METHOD AND APPARATUS FOR CARRYING OUT SAME

Stanley R. Pickens, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 478,931, Mar. 25, 1983, Pat. No. 4,472,251. This application Sep. 7, 1984, Ser. No. 648,549
Int. Cl.³ C25C *1/00*
U.S. Cl. 204—59 R **10 Claims**



1. A method of electrolytically forming organic sulfur compounds selected from the group consisting of sulfides, sulfoxides, sulfonic acids and sulfonyls in an electrolytic cell having

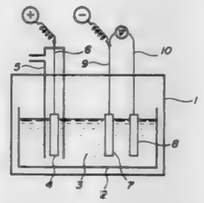
an anode, a cathode, and solid electrolyte means or solid electrolyte means having a porus non-electrode layer on said solid electrolyte means therebetween and in contact with the anode and the cathode, comprising contacting at least one of said anode and cathode with a gaseous sulfur compound selected from the group consisting of sulfur dioxide, sulfur trioxide, hydrogen sulfide, thionyl chloride and sulfuryl chloride, and a reducible organic compound selected from the group consisting of olefins having from 2 to 8 carbons, primary alcohols having from 1 to 6 carbons, secondary alcohols having from 3 to 6 carbons, tertiary alcohols having from 4 to 8 carbons, primary alkyl halides, secondary alkyl halides and aryl halides and imposing an electrical potential from the anode to the cathode.

4,521,284

ELECTROLYTIC METHOD OF PRODUCING A HIGH PURITY ALUMINUM-LITHIUM MOTHER ALLOY

Zenichi Tanabe; Katsuhisa Itoh, and Yoshiaki Watanabe, all of Nagoya, Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Oct. 17, 1984, Ser. No. 661,554
Claims priority, application Japan, Nov. 18, 1983, 58-215989
Int. Cl.³ C25C *3/36*
U.S. Cl. 204—71 **4 Claims**



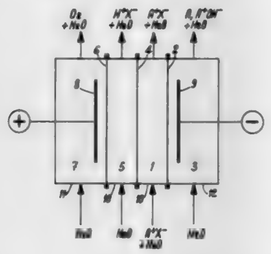
1. A method of producing a high purity aluminum-lithium mother alloy comprising electrolyzing a mixed molten salt consisting essentially of 34 to 64 wt. % of lithium chloride and 66 to 36 wt. % of potassium chloride under a cathodic current density in the range of 0.005 to 1 A/cm², using one or more solid aluminum cathodes, and thereby depositing aluminum-lithium alloys essentially free from alkali metals other than lithium on said cathodes.

4,521,285

ELECTROLYTIC PROCESS FOR THE PREPARATION OF ORGANIC COMPOUNDS

Paolo De Witt, via della Divisione Torino, 57 Rome, and Enrico Benedetto, via P. Ferraris 31, Domodossola Novara, Italy

Filed Nov. 15, 1983, Ser. No. 551,817
Claims priority, application Italy, Nov. 25, 1982, 24432 A/82
Int. Cl.³ C25B *3/00;* **B01D** *57/02*
U.S. Cl. 204—72 **16 Claims**



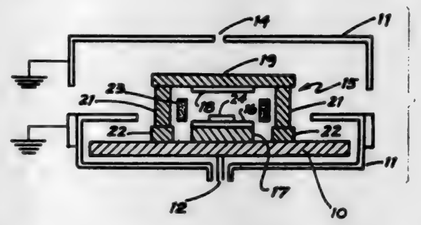
9. The method of forming a quaternary ammonium salt which comprises causing a quaternary ammonium organic ion to migrate through a cation exchange membrane inserted in a multi-compartment electrolytic cell from one side to the other side of said membrane, maintaining a reactive organic acid on said other side of the membrane and reacting said organic acid with said quaternary ammonium organic ion.

4,521,286

HOLLOW CATHODE SPUTTER ETCHER

Christopher M. Horwitz, Summer Hill, Australia, assignor to Unisearch Limited, Kensington, Australia

Filed Mar. 7, 1984, Ser. No. 587,123
Claims priority, application Australia, Mar. 9, 1983, PF8365
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 E **19 Claims**



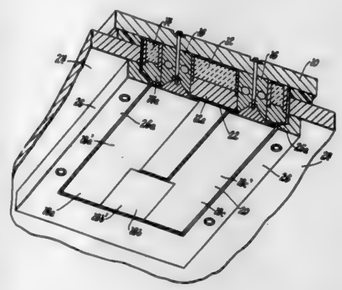
1. A dry process etching or deposition chamber comprising:
a vacuum chamber enclosing two radio frequency electrodes, one of which is formed as a hollow cathode
a source of radio frequency potential connected between said pair of electrodes;
inlet means for introducing a gas into the vacuum chamber, which gas becomes chemically reactive when ionized by a radio frequency discharge to perform etching and deposition processes upon target material positioned on internal surfaces of the hollow cathode.

4,521,287

HIGH RATE SPUTTERING OF EXHAUST OXYGEN SENSOR ELECTRODE

Howard D. Kisner, Wichita Falls, Tex., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 28, 1984, Ser. No. 625,846
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 SP **4 Claims**



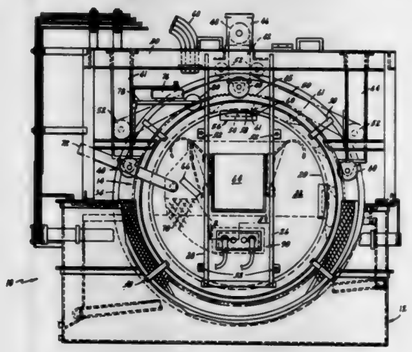
1. In a method of DC magnetron sputtering of an exhaust electrode onto a given surface of a zirconia solid electrolyte exhaust gas oxygen sensor body, opposite from a surface on said body having a previously formed reference electrode, the improvement of:
providing a vacuum chamber having a sputtering cathode assembly that includes a platinum target face and a magnet pair producing a field strength of at least about 500 gauss between magnet poles adjacent the target face;
maintaining a pressure of about less than 10 millitorr in the chamber, of an atmosphere consisting essentially of more than 50% by volume of at least one member selected from the group consisting of nitrogen and oxygen and the balance an inert gas;
disposing the sensor body on a conductive support which exposes the given surface for sputtering and permits the given and opposite surfaces to be maintained at relatively different electrical potentials, and the reference electrode being in low electrical resistance communication with the support, the support being allowed to electrically float with respect to the sputtering cathode and anode, the support being movable across the cathode target face;
sputtering the target face at a sputtering power of about 4–9 kilowatts; and
moving the support across the target face at a rate of about 5–10 cm per minute, effective to move the support through the sputtering region of the chamber and to concurrently deposit a porous platinum exhaust electrode onto the given surface of the sensor body and darken that surface, so that a sensor lean-to-rich response time of less than 100 microseconds and generally equal rich-to-lean response time can be obtained.

4,521,288

CATHODE STRUCTURE FOR CLEANING, PLATING AND/OR COATING APPARATUS

Robert McInnes, 4444 W. Bristol Rd., Flint, Mich. 48507

Continuation-in-part of Ser. No. 600,795, Apr. 6, 1984. This application May 5, 1984, Ser. No. 614,134
Int. Cl.³ C25D *17/20*
U.S. Cl. 204—213 **6 Claims**



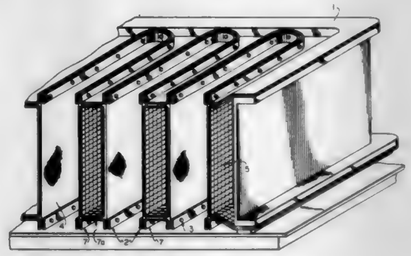
1. In an apparatus for cleaning, plating and/or coating articles, the combination comprising:
a container adapted to contain a liquid treatment material,
a barrel adapted to be at least partially submerged in liquid in said container,
said barrel having a longitudinal axis,
means for rotatably supporting said barrel so that it is partially submerged in liquid in said container,
said barrel having a central opening in one end thereof,
an end wall mounted in fixed position covering the central opening in said one end of said barrel,
cathode structure comprising a cathode,
means fixedly mounting said cathode on the inner side of said end wall,
and a cable connector on the outer side of said end wall to which an electrical cable is adapted to be connected and having means forming an electrical connection with said cathode.

4,521,289

METHOD AND APPARATUS FOR INSTALLATION OF A MEMBRANE TO AN ELECTROLYTIC CELL

Tokuzo Iijima, Kobe; Toshiharu Yamamoto, Akashi; Kazuo Kishimoto; Takamichi Komabashiri, both of Takasago; Toshiji Kano, Kobe, and Akinori Hisanaga, Kakogawa, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 971,430, Dec. 20, 1978, Pat. No. 4,268,373. This application Apr. 24, 1981, Ser. No. 257,416
Claims priority, application Japan, Dec. 26, 1977, 52-178714[U]
The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.
Int. Cl.³ C25B *9/00, 11/02, 13/02*
U.S. Cl. 204—253 **5 Claims**



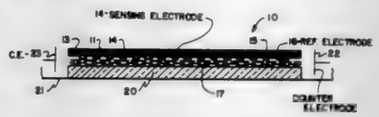
2. A finger type electrolyte cell for the production of chlorine, hydrogen and an alkali metal hydroxide by electrolysis of an aqueous alkali metal chloride solution which cell comprises a plurality of anodes and cathode box providing a cathode between adjacent anodes, and a membrane between adjacent anodes and cathodes, further comprising upper and lower membrane installation frames having collars positioned so as to cover the upper and lower horizontal surfaces of the cathodes not opposing the anodes, cation exchange membranes in a cylindrical shape located substantially parallel to the vertical surfaces of the cathodes, and bolting means for installing and securing the membranes to the collars by bolting said bolting means including press plates with brims.

4,521,290

THIN LAYER ELECTROCHEMICAL CELL FOR RAPID DETECTION OF TOXIC CHEMICALS

Hanumanthiya V. Venkatasetty, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 16, 1984, Ser. No. 590,309
Int. Cl.³ G01N *27/54*
U.S. Cl. 204—412 **22 Claims**



1. A nonaqueous electrochemical cell sensor structure for detection of toxic gas or vapor molecules in the surrounding atmosphere comprising:
an enclosure for electrochemical cell means, said enclosure having an opening on one face for admitting gases and vapors to be sensed from the surrounding atmosphere;
a porous polymer membrane having an outer and an inner surface, a substantial portion of the inner surface of said membrane being coated with an inert thin conducting film which forms a sensing electrode, the outer surface at said opening being in communication with said atmosphere

which may at times contain molecules of gas or vapor sought to be detected;
a reference electrode fabricated on a separate portion of said inner surface by coating said membrane separate portion with a metal/metal ion film;
a counter electrode inert film located beyond the edge of said membrane and electrically separated from said sensing and reference electrodes; and,
a thin layer of nonaqueous electrolyte solution in said enclosure in contact with said electrodes.

4,521,291

COAL EXTRACTION

James W. Clarke, Tewkesbury; Geoffrey M. Kimber, Cheltenham; Terry D. Rantell, Cheltenham, and Colin E. Snape, Cheltenham, all of England, assignors to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 458,838, Jan. 18, 1983, abandoned. This application Apr. 4, 1984, Ser. No. 596,562

Claims priority, application United Kingdom, Feb. 9, 1982, 8203640

Int. Cl.³ C10G *1/00, 1/06*

U.S. Cl. 208—8 LE **6 Claims**

1. A method of extracting coal at a temperature of 400° to 500° C. in the absence of added hydrogen and using a liquid solvent, comprising the use of a solvent which is a mixture consisting essentially of an aromatic polycyclic hydrocarbon which contains three- and/or four-ring molecules and has a minimum boiling point of 270° C. and at least 25% by weight of the aromatic component of a naphthenic polycyclic high boiling hydrocarbon.

4,521,292

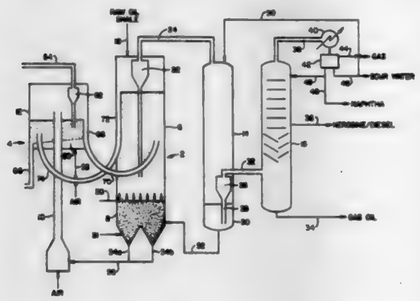
PROCESS FOR IMPROVING QUALITY OF PYROLYSIS OIL FROM OIL SHALES AND TAR SANDS

Byron G. Spars, Mill Valley; Robert J. Klett, San Francisco, and P. Henrik Wallman, Berkeley, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 27, 1982, Ser. No. 453,263

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—11 R **10 Claims**



1. A process for retorting hydrocarbonaceous solid selected from the group consisting of oil shale and tar sand to recover pyrolysis oil of a lower average molecular weight and containing less contamination which comprises:
(a) mixing particulate raw hydrocarbonaceous solid with a particulate heat transfer material to raise the raw hydrocarbonaceous solid to a temperature sufficient to pyrolyze the hydrocarbonaceous fraction;
(b) pyrolyzing the hydrocarbonaceous fraction in a vertical retorting vessel by retaining the mixture of raw hydrocarbonaceous solid and hot particulate heat transfer material therein for a time sufficient to decompose a significant amount of hydrocarbonaceous fraction to form hydrocarbon vapors;
(c) passing a stripping gas through the mixture of hydrocarbonaceous solids and heat transfer material at a velocity sufficient to significantly lower the dew point of the evolved hydrocarbon vapors;
(d) recovering as pyrolysis products from the raw hydrocarbonaceous solid contaminated hydrocarbon vapors and a mixture of hot pyrolyzed solids and heat transfer material;
(e) condensing from said hydrocarbon vapors at a temperature of between 550° F. and 680° F. a high-boiling fraction containing concentrated contaminants, said high-boiling fraction being comprised of at least 90% hydrocarbons having a boiling point above 850° F.;
(f) contacting the contaminated high-boiling hydrocarbon fraction with the hot mixture of pyrolyzed solids and heat transfer material so as to thermally crack the high-boiling fraction and to deposit the contaminants along with coke on the mixture of particles; and
(g) withdrawing a product oil vapor of a lower average molecular weight and having substantially reduced contamination.

4,521,293

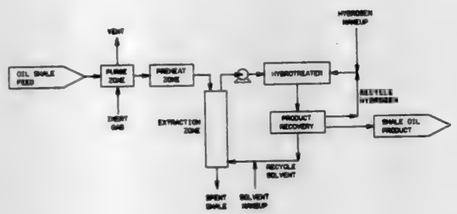
OIL RECOVERY

James Scinta, and Theodore M. Classen, both of Ste. 1107, 1825 K St. N.W., Washington, D.C. 20006

Continuation-in-part of Ser. No. 457,299, Jan. 11, 1983, abandoned. This application Jun. 7, 1984, Ser. No. 618,294

Int. Cl.³ C10G *1/04*

U.S. Cl. 208—11 LE **11 Claims**



1. A process for the recovery of hydrocarbons from oil shale containing said hydrocarbons comprising the steps of:
(1) heating said oil shale to a temperature of at least about 200° C. and at a low to moderate pressure ranging from atmospheric to 200 psia in the absence of a solvent or diluent to effect at least partial decomposition of the kerogen and the release of a significant portion of the hydrocarbons from the oil shale,
(2) contacting the heated oil shale in a countercurrent manner with a hydrocarbon solvent comprising alkanes and cycloalkanes having from 4–10 carbon atoms and aromatic compounds selected from benzene, toluene, xylene, naphthalene, substituted forms thereof, and mixtures thereof at a pressure from about atmospheric to about 500 psia and a temperature in the range of from about 100° to about 300° F. (38°–150° C.) for about 10 to about 300 minutes to yield a hydrocarbon extract, and
(3) hydrotreating the hydrocarbon extract of step (2) under supercritical solvent conditions.

4,521,294

STARTING PITCHES FOR CARBON FIBERS

Seiichi Uemura, Tokyo; Shunichi Yamamoto; Takao Hirose, both of Kamakura; Hiroaki Takashima, Kawasaki, and Osamu Kato, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1982, Ser. No. 366,937

Claims priority, application Japan, Apr. 13, 1981, 56-54305; Apr. 27, 1981, 56-62428; Jul. 27, 1981, 56-116331; Oct. 29, 1981, 56-172077

The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.

Int. Cl.³ C10C *3/00*

U.S. Cl. 208—23 **6 Claims**

1. A starting pitch for carbon fibers, obtained by (A) mixing together 100 **parts by volume of** (1) a heavy fraction oil boiling at not lower than 200° C. obtained by fluidized catalytic cracking of petroleum with 10–200 parts by volume of (2) a hydrogenated oil selected from the group consisting of (a) aromatic nucleus-hydrogenated hydrocarbons prepared from aromatic hydrocarbons of 2–10 rings by hydrogenating the nuclei thereof, (b) a hydrogenated oil obtained by contacting a fraction boiling at 160°–650° C. obtained at the time of steam cracking of petroleum and/or a fraction boiling at 160°–650° C. obtained at the time of heat treating at 370°–480° C. a heavy fraction oil boiling at not lower than 200° C. obtained at the time of steam cracking of petroleum, with hydrogen in the presence of a hydrogenating catalyst to hydrogenate 10–70% of the aromatic nuclei of aromatic hydrocarbons contained in said fraction boiling at 160°–650° C. and (c) a hydrogenated oil obtained by contacting a fraction boiling at 160°–650° C. produced at the time of preparing the starting pitch by heat treatment, with hydrogen in the presence of a hydrogenating catalyst to hydrogenate 10–70% of the aromatic nuclei of aromatic hydrocarbons contained in said fraction boiling at 160°–650° C., to form a mixture of the oils (1) and (2), and then (B) heat treating the thus formed oil mixture at 370°–480° C. under a pressure of 2–50 $Kg/cm^2.G$, the starting pitch so obtained being heat treated to produce a precursor pitch which is melt spun, infusibilized, carbonized or graphitized to obtain the carbon fibers.

4,521,295

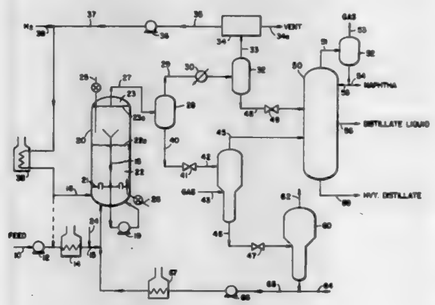
SUSTAINED HIGH HYDROCONVERSION OF PETROLEUM RESIDUA FEEDSTOCKS

Michael C. Chervenak, Pennington; Richard M. Eccles, Princeton, both of N.J., and Govanon Nongbri, Newtown, Pa., assignors to HRI, Inc., Gibbsboro, N.J.

Filed Dec. 27, 1982, Ser. No. 453,260

Int. Cl.³ C10G *65/10*

U.S. Cl. 208—59 **17 Claims**



1. A process for high conversion of petroleum residua containing at least about 25 V % material boiling above about 975° F. to produce lower boiling hydrocarbon liquid products, comprising the steps of:
(a) feeding a petroleum residua feedstock together with hydrogen into a reaction zone containing an ebullated catalyst bed, maintaining said reaction zone at 750°–900° F. temperature, 1000–5000 psig hydrogen partial pressure for liquid phase reaction to produce a hydroconverted material containing a mixture of gas and liquid fractions;
(b) separating said gas fraction from said liquid fractions while maintaining the liquid fraction temperature above about 730° F. to avoid precipitation of asphaltene compounds in the liquid;
(c) pressure-reducing said liquid fraction to a pressure below about 200 psig and flashing vapor from the liquid fraction while maintaining the resulting liquid temperature above a critical temperature of about 730° F. to avoid precipitation of asphaltenes; and
(d) distilling said liquid fractions from step (c) at a vacuum pressure to produce hydrocarbon liquid products having a boiling temperature below about 875° F.

4,521,296

PROCESS FOR THE PRODUCTION OF REFRIGERATOR OIL

Takatoshi Kunihiro, and Koji Tsuchiya, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Jun. 29, 1982, Ser. No. 393,464

Claims priority, application Japan, Jul. 2, 1981, 56-102253

Int. Cl.³ C10G *23/02*

U.S. Cl. 208—87 **9 Claims**

1. A process for producing a high quality refrigerator oil from a vacuum distillate having a boiling point in the range of from 270° to 510° C. obtained from a low grade naphthenic crude oil containing a fraction having a boiling point in the range of from 280° (5% point) to 510° C. (95% point), said fraction having a pour point of less than −20° C., a UOP characterization factor of from 11.20 to 11.45, a sulfur content of from 1.5 to 2.5% by weight, a nitrogen content of from 500 to 1,200 ppm, and a total acid value of from 5 to 9 mgKOH/g, which process comprises the steps of:
(1) contacting said vacuum distillate with a solvent to extract impurities thereby lowering the number of carbon atoms in aromatic ring structure per 100 carbon atoms (% C_A), as determined by a ring analysis, of said fraction to between 10 and 16;
(2) hydrogenating said solvent extracted fraction under the conditions of liquid hourly space velocity (LHSV) of from 0.1 to 0.7 per hour (hr^{-1}), pressure of from 40 to 100 kilograms per square centimeter (kg/cm^2), temperature of from 280° to 350° C., and hydrogen/oil ratio of from 70 to 200 normal cubic meter per kiloliter of oil (Nm^3/kl-oil) in the presence of a catalyst comprising molybdenum and at least one metal selected from the group consisting of nickel and cobalt impregnated on aluminum; and
(3) contacting said hydrogenated oil with a solid adsorbant to remove residual impurities and produce a high quality refrigerator oil having a pour point of less than −25° C., a cloud temperature of less than −15° C. and a hydrochloric acid generation amount as determined by the sealed tube test of less than 10 milligrams per 4 milliliters.

4,521,297

CATALYTIC CONVERSION OF SHALE OIL

Philip J. Angevine, West Deptford; Günter H. Kühl, and Sadi Mizrahi, both of Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,943

Int. Cl.³ C10G *11/05, 47/16, 69/06*

U.S. Cl. 208—89 **14 Claims**

1. A process for converting a feed selected from the group comprising hydrotreated shale oil, hydrotreated heavy shale oil, and gas oil to a fraction containing from about 50 percent to about 95 percent by weight of oil boiling in the 400°–650° F. boiling range comprising contacting said feed at a temperature

of about 650°–825° F., at a pressure of about 500–3000 psig, at a H_2/oil ratio of about 1000–10,000 SCF/B and at an LHSV of about 0.1 to 2.0 with a crystalline metallo-silicate zeolite having a constraint index of about 0.4 to about 5 made by steps comprising forming a reaction mixture containing sources of ions selected from an alkali metal or an alkaline earth metal, an organic nitrogen ion, a trivalent metal from one or more of Groups III through VIII of the Periodic Table, silicon and water, said mixture having the appropriate composition in terms of mole ratios of oxides to form said zeolite, reacting until crystallization is from about 20 percent to about 80 percent complete and adding a source of trivalent metal to the partially crystallized reaction mixture, thereby decreasing the silica-to-trivalent metal oxide ratio in the uncrystallized portion of said reaction mixture and forming an outer shell having the same trivalent metal and a lower silica-to-trivalent metal oxide ratio than the inner core, but having the same crystal structure.

4,521,298

PROMOTION OF CRACKING CATALYST OCTANE YIELD PERFORMANCE

Edward J. Rosinski, Pedricktown, N.J., and Albert B. Schwartz, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 170,220, Jul. 18, 1980, Pat. No. 4,309,280. This application Dec. 16, 1981, Ser. No. 331,428
The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.
Int. Cl.³ C10G *11/02*
U.S. Cl. 208—120 **20 Claims**

1. A process for catalytically cracking a hydrocarbonaceous feedstock comprising the step of contacting the feedstock in a reaction zone under catalytic cracking conditions in the absence of added hydrogen with a catalyst composition comprising a large pore size crystalline aluminosilicate and a matrix and a zeolite component, said zeolite characterized by a particle size less than 5 microns, a mole ratio of oxides of SiO_2:Al_2O_3 greater than about 500 and a Constraint Index of about 1 to 12, said zeolite not being intimately combined with a substantial amount of other solid prior to contact thereof with said catalyst composition, wherein the weight ratio of said zeolite to said large pore size crystalline aluminosilicate and matrix is in the range between about 1 to 10,000 and about 1 to 100.

4,521,299

REMOVAL OF BASIC NITROGEN COMPOUNDS FROM HYDROCARBON LIQUIDS

Edwin N. Givens, Bethlehem, and David S. Hoover, New Tripoli, both of Pa., assignors to International Coal Refining Company, Allentown, Pa.

Filed Oct. 31, 1983, Ser. No. 546,789
Int. Cl.³ C10G *25/00*
U.S. Cl. 208—254 R **6 Claims**

1. A method for reducing the concentration of basic nitrogen compounds in hydrocarbonaceous feedstock fluids comprising the steps of:

(a) providing anthracite coal having active basic nitrogen complexing sites on the surface thereof,

(b) contacting said anthracite coal with air, oxygen or oxygen-enriched air having an oxygen partial pressure of about 0.01 to 50 psi at a temperature of from sub-ambient to 500° F. to activate and form on the surface of said anthracite coal carboxylic acid moiety complexing sites,

(c) contacting said anthracite coal having said activated surface with said hydrocarbonaceous feedstock fluid containing said basic nitrogen compounds at a temperature ranging from ambient up to 500° F. to facilitate attraction of the basic nitrogen compounds to said carboxylic acid moiety complexing sites and formation and adsorption of said nitrogen compounds at said carboxylic acid moiety complexing sites on the surface of said anthracite coal, and

(d) subsequently separating said anthracite coal and the complexes formed thereon from the feedstock fluid to provide a hydrocarbonaceous fluid of reduced basic nitrogen compound concentration.

4,521,300

ORE FLOTATION WITH COMBINED COLLECTORS

Robert M. Parlman, and Clarence R. Bresson, both c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Division of Ser. No. 409,254, Aug. 18, 1982, Pat. No. 4,462,898. This application Feb. 29, 1984, Ser. No. 584,673
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—166 **12 Claims**

1. A composition consisting essentially of both of the following compounds in substantial quantities

(a) sodium isopropyl xanthate

(b) sodium n-butyl trithiocarbonate;

4,521,301

PROCESS OF PRODUCTION OF ORGANIC DITHIO-ACIDS AND THEIR APPLICATION

Jean-Louis Detienne, Pau; Guy Levesque, Ballon, and Pierre Tozzolino, Morlaas, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Division of Ser. No. 368,037, Apr. 13, 1982, Pat. No. 4,455,262. This application Mar. 5, 1984, Ser. No. 586,416
Claims priority, application France, Apr. 15, 1981, 81 07629
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—166 **6 Claims**

1. In a process of using a sulphur-containing material as a collector in the flotation of a mineral selected from the group consisting of galena, chalcopyrite and blende, the improvement which comprises employing as the collector a dithioic acid of the formula

$$RCS_2H$$

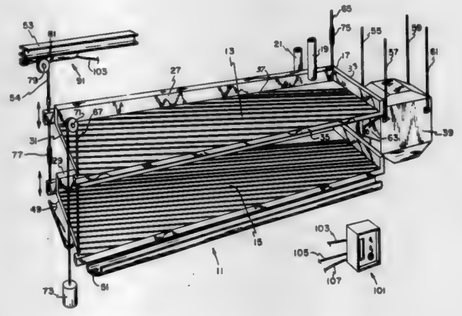
in which R is alkyl or alkenyl, linear or branched, of 4 to 20 carbon atoms which does not contain sulphur, or the sodium, potassium or ammonium salts thereof.

4,521,302

END ELEVATION ADJUSTMENT OF MATERIAL SEPARATING TABLES

Spencer A. Stone, 1405 Three Rivers, E., Fort Wayne, Ind. 46802

Filed Apr. 5, 1984, Ser. No. 597,178
Int. Cl.³ B03B *5/04*
U.S. Cl. 209—441 **8 Claims**



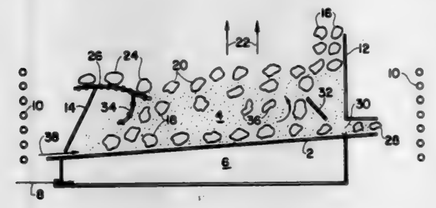
6. In a material separating system having a plurality of pendantly supported decks with head motion devices for imparting a reciprocatory motion to each deck to separate material mixtures supplied to the decks into at least two fractions, a first fraction having a specific gravity above a predetermined value and a second fraction having a specific gravity below the predetermined value, the improvement comprising a plurality of remotely actuable means each for modifying the attitude of a respective deck and therefore also the predetermined specific gravity value by changing the pendant support thereof, and a common control unit for simultaneously actuating the plurality of remotely actuable means to change in unison the separating gravities of respective decks.

4,521,303

SOLIDS SEPARATION IN A SELF-CIRCULATING MAGNETICALLY STABILIZED FLUIDIZED BED

Alfonza Hicks, Trenton, and Jerry E. Hankins, Orange, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 345,048, Feb. 2, 1982,. This application May 7, 1984, Ser. No. 607,409
Int. Cl.³ B03B *5/28*
U.S. Cl. 209—454 **12 Claims**



1. A process for separating a mixture comprising non-magnetizable solids according to the density of said solids which comprises:

(a) contacting said mixture with a separating medium comprising a magnetically stabilized fluidized bed containing an essentially fixed inventory of magnetizable particles circulating within a contacting zone such that the upper portion of said separating medium moves in a direction essentially opposite to that of the lower portion of said separating medium, both portions moving transverse to the flow direction of the fluidizing fluid leaving the upper surface of said separating medium, the circulation of said separating medium being initiated or maintained by the introduction of a fluid in a direction essentially transverse to the flow of the fluidizing fluid leaving the upper portion of the separating medium, said separating medium being stabilized by a magnetic means having a strength sufficient to suppress particle backmixing therein,

(b) separating said mixture into a less dense fraction comprising solids having a density less than the apparent density of the separating medium and a more dense fraction comprising solids having a density greater than the apparent density of the separating medium,

(c) conveying at least a portion of the less dense solids fraction with the upper portion of said separating medium and at least a portion of the more dense solids fraction with the lower portion of said separating medium by the circulatory motion of said separating medium, and

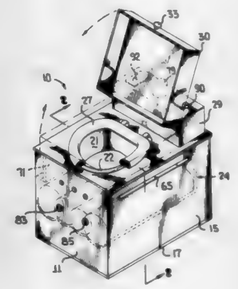
(d) withdrawing at least a portion of the less dense solids fraction from the upper surface of the separating medium and at least a portion of the more dense solids fraction from the lower portion of said separating medium.

4,521,304

APPARATUS FOR BIODEGRADING ORGANIC WASTE

Gary L. Yount, Gettysburg, Pa., assignor to Biocon, Inc., Gettysburg, Pa.

Filed May 3, 1982, Ser. No. 374,273
Int. Cl.³ A47K *11/02*; C02F *11/02*
U.S. Cl. 210—96.1 **25 Claims**



1. A toilet apparatus for biologically converting organic waste material substantially entirely into carbon dioxide, ammonia, and water, said toilet apparatus comprising:

a collecting vessel having a closed bottom, said vessel being adapted to contain a bed of activating conversion material supported by said closed bottom and having a top surface at a predetermined level in said vessel;

stirrer means disposed in said vessel for stirring a mixture of said conversion material and organic waste material admitted into said vessel, said stirrer means being disposed at least partially below said predetermined level; and

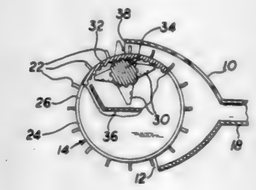
moisture control means for activating and de-activating said stirrer means as a function of the moisture content of said mixture, said moisture control means including a primary moisture sensor disposed in said conversion material in said vessel at a location below said predetermined height in said vessel.

4,521,305

ROTATING SELF-CLEANING SCREEN

Troy M. Deal, 277 Trismen Ter., Winter Park, Fla. 32789

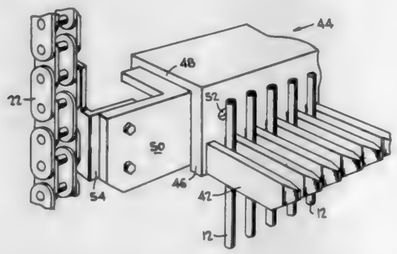
Filed Mar. 28, 1984, Ser. No. 594,199
Int. Cl.³ B01D *33/06, 35/16*
U.S. Cl. 210—158 **4 Claims**



1. A self-cleaning screen for screening a flowing liquid comprising, in combination, a housing defining a flow path, a screen drum rotatably mounted within said housing about an axis transverse to said flow path and having a length and diameter substantially corresponding to the transverse cross-sectional height and width of the flow path, said screen drum having a circumference defined by a plurality of circumferentially spaced longitudinal elements substantially parallel to said axis and a plurality of circumferentially disposed axially spaced ring elements whereby said elements define a screen having adjacent openings, a motor mounted upon said housing continuously rotatably driving said drum during use, an ejector shaft within said drum rotatable about an axis substantially parallel

to and offset from said drum axis, a plurality of radial fingers mounted upon said ejector shaft extendable through said screen openings, and ejector shaft drive means rotating said ejector shaft in synchronization with the rotation of said screen drum to sequentially extend said fingers through said screen openings to clean debris therefrom, said ejector shaft drive means comprising a ring gear concentrically mounted upon said screen drum, a pinion gear concentrically mounted upon said ejector shaft, said ring and pinion gears meshing whereby rotation of said screen drum rotates said ejector shaft.

4,521,306
MECHANICALLY RAKED BAR SCREEN WITH CONVEYOR SYSTEM HAVING ELASTOMERIC RAKES
John T. Day, Winfield, Md., assignor to Rubber Millers, Inc., Baltimore, Md.
Filed Dec. 12, 1983, Ser. No. 560,395
Int. Cl.³ C02C *1/22*
U.S. Cl. 210—159 **7 Claims**



1. A debris removal system for removing debris from a fluid flow channel comprising a bar screen positioned in a fluid flow channel, conveyor means having attached thereto at least one elastomeric rake comprising teeth extending transverse to said conveyor means, said conveyor means being positioned whereby said teeth of said rake mesh with said bar screen for removal of debris from said bar screen, the elastomeric material of said elastomeric rake having a hardness measured on the durometer scale of 80 Shore A through 85 Shore D, and an elongation of at least 75% before failure; said rake further including a backing member for attachment of said rake to said conveyor, said backing member including a vertically extending leg and a horizontally extending leg, said horizontally extending leg terminating in a substantially U-shaped configuration; the legs of said U being constructed and arranged for mating with a member on said conveyor; shield means positioned at the top of said conveyor for preventing debris collected on said teeth from falling into said channel, said U-shaped member constructed and arranged to interrelate with said shield to keep said shield free of debris.

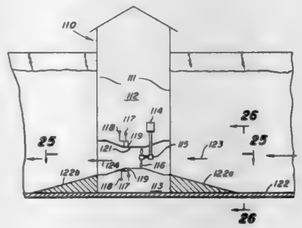
4,521,307
CONSERVATION OF MOMENTUM IN A BARRIER OXIDATION DITCH
John H. Reid, 7 Stansbury Ct., Fredericksburg, Va. 22401
Division of Ser. No. 282,592, Jul. 13, 1981, which is a division of Ser. No. 28,383, Apr. 9, 1979, Pat. No. 4,278,547, which is a continuation-in-part of Ser. No. 848,705, Nov. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 649,995, Jan. 19, 1976, abandoned. This application Sep. 30, 1982, Ser. No. 429,266
Int. Cl.³ C02F *3/20*
U.S. Cl. 210—194 **9 Claims**

1. A barriered pump/aerator for continuously moving and aerating mixed liquor having translational-flow momentum within the endless channel of a barrier oxidation ditch, said barriered pump/aerator comprising:

(a) barrier means for dividing said mixed liquor into an intake body within an intake channel and a discharge body within a discharge channel, said barrier means comprising a pair of spaced-apart vertical walls disposed athwart said endless channel, and sealably attached to the sides of said endless channel;

(b) a discharge passage connecting said intake channel to said discharge channel;

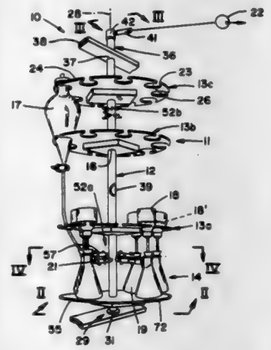
(c) means for conserving a portion of said translational-flow momentum of said continuously moving mixed liquor by



permitting induced flow of said mixed liquor to move from said intake channel into said discharge channel without substantial hinderance, said momentum conservation means comprising a discharge slot coinciding with said discharge passage and extending from said intake channel to said discharge channel; and

(d) a plurality of jet aerators which are disposed within said discharge slot and passage and which discharge in the direction of said induced flow.

4,521,308
ROTARY SUPPORT FOR VACUUM FILTRATION APPARATUS
George H. Brimhall, Jr., Berkeley, and Leonard J. Vigus, Walnut Creek, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.
Filed Aug. 13, 1982, Ser. No. 407,708
Int. Cl.³ B01D *33/00*
U.S. Cl. 210—330 **13 Claims**



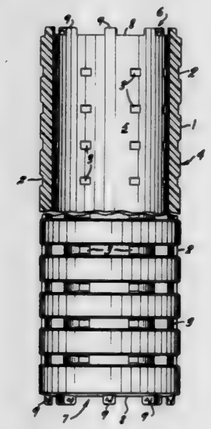
1. In vacuum filtration apparatus having a stand for supporting a plurality of filtration units which include filtrate receiver flasks and having a source of low pressure and means for communicating said filtrate receiver flasks with said low pressure source, the improvement comprising:

means for enabling rotational movement of said stand including the filtration units carried thereon about a predetermined axis, and

means for maintaining said filtrate receiver flasks in communication with said low pressure source during said rotational movement of said stand,

wherein said stand includes a rotatable tubular shaft having an internal passage and at least one shelf mounted thereon, bearing means for supporting said shaft for rotation about said axis, rotating seal means for communicating said low pressure source with said internal passage of said shaft, and means for selectively and individually connecting said filtrate receiver flasks with said internal passage of said shaft.

4,521,309
FILTER CARTRIDGE WITH CASTELLATED SUPPORT AND PROCESS OF MAKING THE SAME
David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.
Continuation of Ser. No. 448,534, Dec. 10, 1982, abandoned, which is a continuation of Ser. No. 335,316, Dec. 29, 1981, abandoned, which is a continuation of Ser. No. 167,979, Jul. 14, 1980, abandoned. This application Mar. 16, 1984, Ser. No. 590,115
Int. Cl.³ B01D *27/06*
U.S. Cl. 210—493.2 **25 Claims**



1. A filter cartridge comprising, in combination:

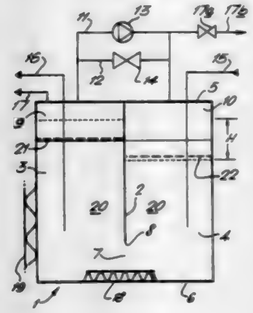
(1) a filter sheet material formed in a tube open at at least one end;

(2) a support having a substantially closed tubular configuration disposed in supporting relation to and substantially coextensive with the tube and supporting the filter sheet material of the tube;

(3) the support having one end at the open end of the tube formed in a castellated configuration, the castellations having uniformly spaced raised portions and recessed portions in a number within the range from four to thirty-six over the 360° of support circumference, and in which the recessed portions have reentrant sides at an angle of less than 90° but not less than 30° to the base of the recessed portion; and

(4) at least one end cap attached to and extending across the open end of the tube of filter sheet material, and having embedded therein at least the castellated end of the support, with end cap material extending into and substantially filling the reentrant recessed portions, thereby fixedly attaching the end cap to the support in a leak-tight seal.

4,521,310
APPARATUS AND METHOD FOR THE TREATMENT OF ORGANIC WASTES
Thomas J. Casey, 22 Ardagh Ave., Blackrock, County Dublin, Ireland
Filed Aug. 30, 1983, Ser. No. 527,745
Claims priority, application Ireland, Aug. 31, 1982, 2115/82
Int. Cl.³ C02F *3/28*
U.S. Cl. 210—603 **12 Claims**



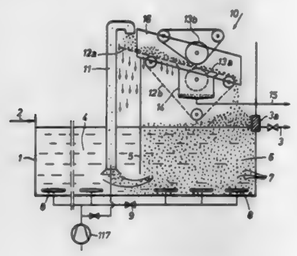
1. Apparatus for the anaerobic conversion of organic waste such as organic waste waters, sewage sludge, slurries and animal manures to biogas using a microbial biomass, said apparatus comprising: a single vessel closed reactor for receiving said organic waste, said reactor comprising a first chamber and a second chamber in liquid communication with each other adjacent their lower ends; a generally vertical partition separating said first chamber and said second chamber, said generally vertical partition being in gas tight communication with the top of the vessel and having an aperture adjacent the bottom thereof; a gas blower for conveying biogas which accumulates in said second chamber to said first chamber with a corresponding displacement of liquid material from said first chamber to said second chamber; and means for rapidly equalizing gas pressure in said chambers with a concomitant rapid reverse displacement of said liquid material from said second chamber to said first chamber whereby a liquid jet is created by said aperture during said rapid reverse displacement of said liquid material thereby sweeping solids in the bottom of said closed reactor into said first chamber at predetermined intervals, resulting in an oscillating flow of liquid material in said reactor and in intimate mixing of said organic waste and said biomass, and means for releasing biogas from either of said chambers.

4,521,311
ACTIVATED SLUDGE SYSTEM WITH INTEGRATED REGENERATOR
Uwe Fuchs, Munich, and Alfred Wildmoser, Haar, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany
Filed Jul. 29, 1983, Ser. No. 518,712
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1982, 3228365
Int. Cl.³ C02F *3/06, 3/08*
U.S. Cl. 210—616 **18 Claims**

1. In a process for the biological purification of wastewater, comprising treating wastewater in a treatment zone in a reactor in the presence of activated sludge and separating the resultant mixture of treated wastewater and activated sludge into purified water and activated sludge, the improvement comprising:

passing said mixture after the treatment zone through a filter zone, arranged within the same reactor as that of the treatment zone, and containing a bed of support particles in an amount equal to about 40 to 80% of the volume of the filter zone, said particles being flexible, open cell,

porous organic polymers, to deposit resultant biomass onto the support particles, with said passing through said filter zone being conducted in a manner such that the degree of turbulence generated is insufficient to disrupt the bed of support particles in the filter zone, said filter zone being aerated during filtering with insufficient turbulence to disrupt the filter bed, and the passing of the mixture comprising flowing the mixture of wastewater and activated sludge upwardly in the filter zone;



transporting the support particles from the bottom area of the filter zone into an area above the filter bed for regeneration, regenerating the resultant loaded support particles and withdrawing biomass separated from the support particles during the regeneration;

withdrawing from said filter zone in a stream resultant purified wastewater; and

passing resultant regenerated support particles free of the biomass downwardly to the filter zone.

4,521,312

APPARATUS AND METHOD FOR SEPARATING A MIXTURE OF THREE LIQUIDS

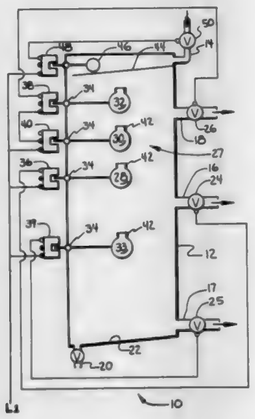
Edward M. Anderson, 2620 E. Medicine Lake Blvd., Minneapolis, Minn. 55441

Continuation-in-part of Ser. No. 374,344, May 3, 1982, Pat. No. 4,436,630. This application Feb. 14, 1983, Ser. No. 466,148

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Int. Cl.³ C02F *1/40*; B01D *21/24, 12/00*

U.S. Cl. 210—744 **13 Claims**



1. Apparatus for physically separating a mixture of three liquids, a first of the liquids being least dense, a second being a medial density liquid and a third being a most dense liquid, said apparatus comprising

(a) an upright liquid container;

(b) means defining a liquid inlet into the container for introduction of the mixture into the container;

(c) means defining a lower outlet for passing the medial density liquid from the container;

(d) a lower float in the container and at an elevational level above the level of the lower outlet;

(e) means in said lower outlet and operatively connected to said lower float for controlling flow through said outlet;

(f) means defining an upper outlet from the container, said upper outlet being at an elevational level above the elevational level of the lower float;

(g) a second float in the container and at an elevational level between the lower float and the upper outlet; and lower and second floats being of similar specific gravities which are more dense than the first liquid but less dense than the second liquid;

(h) means in said upper outlet which are operatively connected to said second float for controlling flow through said upper outlet, said second float and upper outlet flow control means being connected in parallel with said lower float and lower outlet flow control means;

(i) means defining a bottom outlet adjacent a bottom of the container, said bottom outlet having a valve for controlling flow therethrough; and

(j) a bottom float at a level inbetween the lower outlet and the bottom outlet, said bottom float being operatively connected to open only the bottom outlet valve and having a specific gravity greater than the second liquid and less than the third liquid.

4,521,313

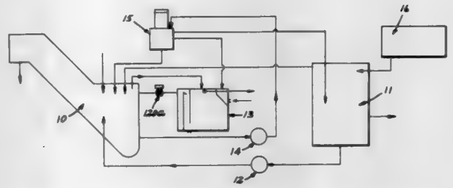
FLUID PURIFICATION SYSTEM

Girma Wolde-Michael, Little Canada, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 368,650, Apr. 15, 1982, abandoned. This application Apr. 25, 1984, Ser. No. 603,776

Int. Cl.³ C02F *1/40*

U.S. Cl. 210—776 **3 Claims**



1. A process for separating apart from each other a heavier fluid, a lighter fluid, and particulate matter contained in a contaminated mixture, said process comprising the steps of:

(a) partially purifying the contaminated mixture by separating relatively heavy particulate matter from the mixture through gravitational settling in a first container and idling the process a pre-determined length of time allowing separable lighter fluid to separate from the mixture and form a layer at the surface of the mixture in the first container;

(b) transferring from a second container, a volume of substantially uncontaminated heavier fluid into the first container in a manner leaving the layer of separated lighter fluid at the mixture surface undisturbed and in sufficient quantity to raise the fluid surface in the first container to a preselected level;

(c) after the pre-selected level is reached, skimming the mixture surface by overflowing a portion of the mixture within the first container into a third container;

(d) concentrating the skimmed fluid in the third container;

(e) subsequent to step (c), transferring a portion of the partially purified contaminated mixture in the first container to a centrifuge;

(f) separating in a single pass through the centrifuge the lighter fluid, the heavier fluid and the suspended particulate matter apart from each other within the centrifuge;

(g) transferring from the centrifuge the lighter liquid to the third container, and the heavier fluid to the second container;

(h) replenishing the heavier fluid contained in the second container by introducing fresh heavier fluid into the second container in sufficient amounts to achieve a preselected level of fluid within the second container;

(i) after step (h), skimming the surface of the replenished heavier fluid in the second container by overflowing a portion of the fluid into the first container; and

(j) after a pre-determined interval of time has elapsed following step (i), refreshing the fluid within the second container by circulating fluid from the first container through the centrifuge, and transferring recovered fluid from the centrifuge to the second container.

4,521,314

METHOD AND DEVICE FOR FILTERING YEAST AND OTHER PLANT CELL MATERIAL ON ROTARY VACUUM FILTER

Per O. Lundin, Sewell's Farm, Barcombe, Lewes, England; Sven Eriksson, Mariekällgatan 14, 151 32 Södertälje, and Ingvar Lundin, Sommarvägen 5, 191 70 Sollentuna, both of Sweden

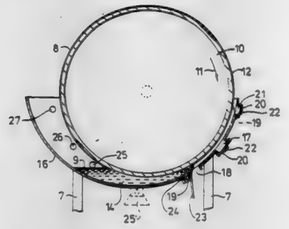
PCT No. PCT/SE81/00222, § 371 Date Mar. 16, 1982, § 102(e) Date Mar. 16, 1982, PCT Pub. No. WO82/00418, PCT Pub. Date Feb. 18, 1982

PCT Filed Jul. 22, 1981, Ser. No. 361,907

Claims priority, application Sweden, Jul. 25, 1980, 8005381

Int. Cl.³ B01D *37/02*

U.S. Cl. 210—777 **8 Claims**



1. A method for filtering a suspension, for example of yeast or other plant cell material, on a rotary vacuum filter (**10**), beneath which a trough (**4**) containing the suspension (**14**) is located, characterized in that, in this combination, a take-off knife (**1,19**) for descaling the filter cake (**8**) resulting from the filtering together with a thin layer of a precoat layer is secured on the trough (**4**); maintaining the level (**9**) of the suspension (**14**) in the trough (**4**) constant a small distance below the take-off knife whereby only a small peripheral portion of the drum is not used for dipping or drying, and moving at least that portion of the trough (**4**) which carries the take-off knife (**1, 19**) by means of a feeding device (**7**) toward the centre of the drum (**12**) of the vacuum filter (**10**) during filtration and while the drum (**12**) is rotating, to thereby provide a successive thin layer descaling of the precoat and obtain a constant dipping angle during filtration.

5. A device for filtering a suspension, for example of yeast or other plant cell material, on a rotary vacuum filter (**10**) comprising a drum (**12**) and beneath the same a trough (**4**) for the suspension and a take-off knife (**1, 19**) for descaling the filter cake resulting from the filtering together with a thin layer of a precoat layer, characterized in that the take-off knife (**1,19**) is removably secured to the trough (**4**), a feeding device supports the trough (**4**) and is operable to move at least that portion of the trough (**4**) which carries the take-off knife (**1, 19**) in the direction toward the centre of the drum (**12**) during rotation of the drum; and that means (**5**; **25–27**) are provided in said trough for maintaining the suspension level, in the trough, constant during movement of the trough and only a small distance below the take-off knife whereby only a small peripheral portion of the drum is not used for dipping and drying.

4,521,315

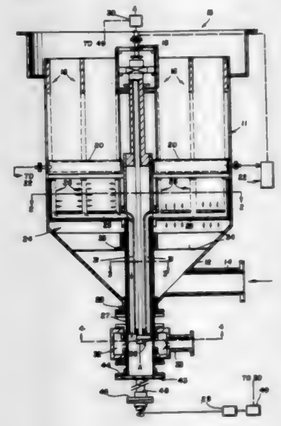
PULP THICKENING UTILIZING STATIONARY SCREENS

Oliver A. Laakso, Haralyn (W.), #2 Middle Rd., Smiths Parish, Bermuda

Filed Jan. 24, 1984, Ser. No. 573,412

Int. Cl.³ B01D *33/06*

U.S. Cl. 210—784 **18 Claims**



1. Apparatus for treating a suspension comprising: an upright cylindrical vessel having a vertical axis; a plurality of annular stationary screens disposed within said vessel and spaced from each other and from said axis; a plurality of radially extending extraction arms physically and hydraulically connected to said stationary annular screens, said extraction arms partitioning said vessel into a plurality of radial segments of substantially the same cross-sectional area, and said screens partitioning each radial segment into a plurality of vertically extending channels; a suspension inlet means mounted below said extraction arms and screens; and

suspension thickening means mounted between said suspension inlet means and said extraction arms and stationary screens, and comprising a plurality of rotatable hollow arms partitioning said vessel into a plurality of radial segments of substantially the same cross-sectional area, and a plurality of annular rotatable screens physically and hydraulically connected to said hollow arms for rotation therewith.

4,521,316

OIL WELL COMPLETION FLUID

Charles F. Sikorski, Plainsboro, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 11, 1983, Ser. No. 474,405

Int. Cl.³ E21B *43/00, 43/26*

U.S. Cl. 252—8.55 R **6 Claims**

1. A high density, corrosion-resistant, solids-free, well-treating fluid consisting essentially of an aqueous solution of at least about 50% by weight tetrapotassium pyrophosphate and a salt selected from the group consisting of monopotassium orthophosphate, dipotassium orthophosphate and tripotassium orthophosphate, said salt being present in amounts sufficient to yield a predetermined pH in said fluid of from about 8.5 to

about 12 and a predetermined specific gravity of at least about 1.65, said fluid having high resistance to recrystallization of the solutes dissolved therein.

4,521,317

PROCESS FOR MANUFACTURING A MICROLATEX IN A CONTINUOUS OIL PHASE BY POLYMERIZATION OF A WATER-SOLUBLE MONOMER IN A WATER-IN-OIL MICROEMULSION, RESULTANT MICROLATICES, AND THEIR USE FOR ENHANCED OIL RECOVERY

Francoise Candau; Yee-Sing Leong, both of Strasbourg; Norbert Kohler, St. Germain en Laye, and Francois Dawans, Bougival, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 8, 1983, Ser. No. 483,318
Claims priority, application France, Apr. 9, 1982, 82 06380
Int. Cl.³ C09K *3/00;* **E21B** *43/20*
U.S. Cl. 252—8.55 D **16 Claims**

1. A process for the treatment of an oil or gas well, wherein an aqueous solution of polymer is injected from the well into the surrounding formation, characterized by the injection of a solution obtained by dispersion into water of a stable and transparent microlatex itself obtained by the following steps:

(a) a stable and transparent microemulsion of the water-in-oil type is prepared by admixing (i) an aqueous phase comprising an aqueous solution of at least one water-soluble vinyl monomer selected from the group consisting of (3-sulfopropyl)-2-vinyl pyridinium betaine, acrylamide and acrylic acid with (ii) an oil phase comprising a hydrocarbon oil with at least one surfactant, in the optional presence of a co-surfactant, the nature and the proportions of the above components being so selected as to satisfy the following two conditions:

(α) the surfactant content of the oil phase is at least 2% by weight, the microemulsion comprises 1–50% by weight of the aqueous phase and 99–50% by weight of the oil phase with respect to the total weight of said aqueous phase and said oil phase and the aqueous phase comprises 5–55% by weight of the water-soluble vinyl monomer and 95–45% by weight of water, and

(β) the mixture of the two phases constitutes a stable and transparent microemulsion,

(b) the microemulsion obtained in step (a) is subjected to polymerization conditions, to form a stable and transparent microlatex of polymer or copolymer with a molecular weight of at least 500,000, and

(c) the resultant stable and transparent microlatex is recovered.

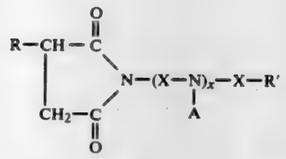
4,521,318

LUBRICANT COMPOSITIONS CONTAINING BOTH HYDROCARBYL SUBSTITUTED MONO AND BISSUCCINIMIDE HAVING POLYAMINE CHAIN LINKED HYDROXACYL RADICALS, AND NEOPENTYL DERIVATIVE

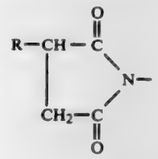
Thomas J. Karol, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,543
Int. Cl.³ C10M *1/48, 3/42*
U.S. Cl. 252—46.7 **13 Claims**

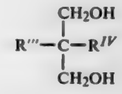
1. A lubricant composition comprising a major amount of a lubrication oil from about 0.06 to 0.07 weight percent based on nitrogen of a hydrocarbyl-substituted mono- and bis-succinimide having polyamine chain linked hydroxyacyl radicals represented by the formula:



in which R is a hydrocarbyl radical having from about 8 to 400 carbon atoms, X is a divalent alkylene or secondary hydroxy substituted alkylene radical having from 2 to 3 carbon atoms, A is hydrogen or a hydroxyacyl radical selected from the group consisting of glycolyl, lactyl, 2-hydroxy-methyl propionyl and 2,2'-bis-hydroxymethyl propionyl radicals and in which at least 30 percent of said radicals represented by A are said hydroxyacyl radicals, x is a number from 1 to 6, and R' is a radical selected from the group consisting of $—NH_2$, —NHA, or a hydrocarbyl substituted succinyl radical having the formula:



in which R has the values noted above; and from about 1 to 3 weight percent of a polyol derivative prepared by the method comprising (a) contacting an aliphatic polyolefin of an average molecular weight between about 250 and 50,000 with P_2S_5 in the presence of between about 0.1 and 5 wt. percent sulfur at a temperature of between about 100° and 320° C., P_2S_5 comprising between about 5 and 40 wt. percent of the reaction mixture, (b) contacting the resultant polyolefin-P_2S_5 reaction product with steam at a temperature between about 100° and 260° C. utilizing at least about a mole ratio excess of steam in respect to said polyolefin-P_2S_5 reaction product, (c) removing inorganic phosphorus acid from the steam treated polyolefin-P_2S_5 reaction product, (d) contacting the inorganic acid free, steam hydrolyzed polyolefin-P_2S_5 reaction product with a neopentyl polyol of the formula:



where R''' and R^{IV} are selected from the group consisting of alkylol and alkyl of from 1 to 20 carbon atoms at a temperature between about 180° and 220° C. in a mole ratio of said inorganic phosphorus acid free, steam hydrolyzed P_2S_5-polyolefin reaction product to said polyol of between about 1:0.33 and 1:2 to form said polyol derivative.

4,521,319

DISPERSANT LUBRICATING OIL ADDITIVES

Timothy R. Erdman, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 243,274, Mar. 13, 1981, Pat. No. 4,410,437, which is a division of Ser. No. 966,179, Dec. 4, 1978, Pat. No. 4,275,006. This application Aug. 2, 1983, Ser. No. 519,784
Int. Cl.³ C10M *1/38*
U.S. Cl. 252—47.5 **3 Claims**

1. A process for preparing a lubricating oil additive which comprises reacting at a temperature of from 20° C. to 200° C. a compound, selected from the group consisting of an oil soluble Mannich base condensation product and an oil soluble borated Mannich base condensation product wherein said oil

soluble Mannich base condensation product and oil soluble borated Mannich base condensation product contain at least one primary or secondary amino group, with SO_2 with from 0.2 to 2 mols of SO_2 for every 2 mols of basic nitrogen present in said oil soluble Mannich base condensation product and oil soluble borated Mannich base condensation product.

2. A lubricating oil additive prepared according to the process of claim 1.

3. A lubricating oil composition comprising an oil of lubricating viscosity and from 0.1 to 10 percent by weight of the additive defined in claim 2.

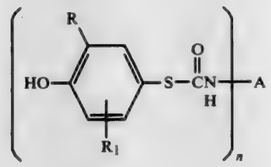
4,521,320

THIOCARBAMATE STABILIZERS

John D. Spivack, and Stephen D. Pastor, both of Spring Valley, N.Y., assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,295
Int. Cl.³ C10M *1/38;* **C07C** *155/02;* **C09K** *15/26*
U.S. Cl. 252—47.5 **16 Claims**

1. A compound of the formula



wherein

R and R_1 are independently hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl, phenyl substituted by alkyl of 1 to 18 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 12 carbon atoms;

n is 1–3, and

when n=1, A is alkyl of 1 to 30 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or lower alkyl substituted benzyl;

when n=2, A is alkylene of from 1 to 10 carbon atoms, cycloalkylene of 5 to 6 carbon atoms, lower alkyl-substituted cycloalkylene of 5 to 6 carbon atoms, lower alkylene-substituted cycloalkylene of 5 to 6 carbon atoms, arylene, biphenylene, hydroxy-substituted arylene or polyoxyalkylene with from 2 to 4 carbon atoms in the repeating unit; and

when n=3, A is arylene, biphenylene, hydroxy-substituted arylene or alkanetriyl of from 3 to 6 carbon atoms.

16. A method for stabilizing an organic material selected from the group consisting of polyolefins, polystyrene, rubbers, polyesters and lubricating oils against oxidative, thermal and actinic degradation which comprises incorporating into said organic material an effective stabilizing amount of a compound of claim 1.

4,521,321

CONVEYOR TRACK LUBRICANT COMPOSITION EMPLOYING PHOSPHATE ESTERS AND METHOD OF USING SAME

Patricia A. Anderson, Acton; Roger G. Hagens, Hamilton, and Dianne M. Roden, Waterdown, all of Canada, assignors to Diversey Wyandotte Inc., Mississauga, Canada

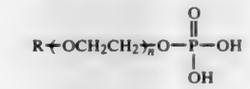
Continuation-in-part of Ser. No. 373,985, May 3, 1982, abandoned. This application Sep. 12, 1983, Ser. No. 531,042
Int. Cl.³ C10M *1/46*
U.S. Cl. 252—49.3 **15 Claims**

1. In a method for lubricating a continuously-moving conveyor system for transporting packages from a first station to a second station and wherein said packages are temporarily detained at said first station while said conveyor moves beneath said packages, and said conveyor system is wetted with an aqueous lubricant composition;

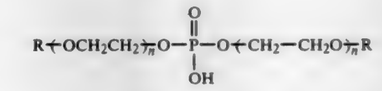
the improvement wherein said aqueous lubricant composition comprises:

A. a phosphate ester component consisting essentially of:

(i) 51 to 100 percent by weight of a mono alkyl phosphate ester of the formula



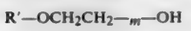
(ii) 0 to 49 percent by weight of a dialkyl phosphate ester of the formula



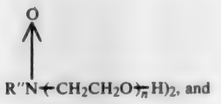
wherein the concentration of said phosphate ester component in said lubricant composition is in the range 1.0×10^{-3} to 3.0×10^{-3} molar;

B. a synergist component selected from the group consisting of:

(i) an alcohol of the formula



(ii) an amine oxide of the formula



(iii) urea, said synergist present in an amount between 10 and 150 percent of the weight of said phosphate ester component;

wherein m and n can have a value of zero through three, R and R' are selected from the group consisting of (i) linear saturated primary alkyl groups, C_{14} through C_{18}, (ii) linear partially unsaturated primary alkyl groups C_{16} through C_{20}, and (iii) a mixture of linear saturated primary alkyl groups C_{12} through C_{20}, wherein the average length of the alkyl substituant is C_{13} through C_{18}, and R'' is a mixture of saturated and unsaturated alkyl groups C_8 through C_{18} having an average chain length C_{12} through C_{18}; and

said lubricant composition being at least partially neutralized with a base whereby its pH is in the range 5.0 through 10.0.

4,521,322

PROCESS FOR MANUFACTURING A PIEZO- OR PYROELECTRIC POLYMER MATERIAL COMPRISING A CROSS-LINKING STEP

Dominique Broussoux, Marcoussis; Hugues Facoetti, Fontenay-Sous-Bois; Francois Micheron, Gif-sur-Yvette, and Lucien Monnerie, Paris, all of France, assignors to Thomson-CSF, Paris, France

Filed Oct. 20, 1983, Ser. No. 543,963
Claims priority, application France, Oct. 22, 1982, 82 17739
Int. Cl.³ B01J *1/10;* **C08F** *8/00*
U.S. Cl. 252—62.9 **11 Claims**

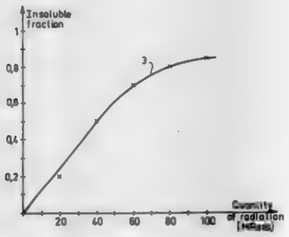
1. A process for manufacturing at least one piezoelectric or pyroelectric element formed from a polymer material capable of acquring piezoelectric or pyroelectric properties comprising

pressing polymer pellets to form polymer sheets

dipping the polymer sheets in water,

stretching the dipped sheets,

electrically polarizing said polymer sheets by applying between the two faces of said sheets an electric orientation field,



irradiating said polymer sheets to obtain a cross-linking rate close to 0.5, and

reheating said polymer sheets to form said element.

4,521,323

POLYCRYSTALLINE FERRITE AND A MAGNETIC HEAD USING THE SAME

Ken Hirota, Toyonaka; Yoshiaki Fujimoto, Miyazaki; Kouichi Watanabe, Miyazaki, and Minoru Sugimura, Miyazaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 27, 1984, Ser. No. 625,353

Int. Cl.³ C04B *35/30, 35/38*

U.S. Cl. 252—62.59 **4 Claims**

1. A polycrystalline Mn-Zn or Ni-Zn ferrite containing from 0.01 to 0.5% by weight of Na and from 0.005 to 0.5% by weight of Zr, and exhibiting a higher critical stress intensity factor, K_{IC}, than said ferrite absent either Na or Zr.

4,521,324

FLUID FOR TRACTION DRIVE

Toshiyuki Tsubouchi, Sodegaura, and Hitoshi Hata, Ichihara, both of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Oct. 7, 1983, Ser. No. 539,980

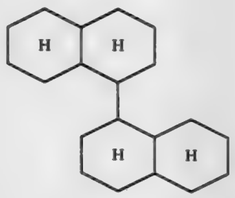
Claims priority, application Japan, Oct. 14, 1982, 57-179078

Int. Cl.³ C10M *1/02;* **C07C** *13/605*

U.S. Cl. 252—73 **10 Claims**

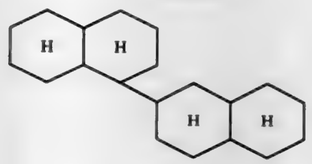
1. A process for improving the coefficient of traction between at least two relatively rotatable elements in a torque transmitting relationship and for maintaining said coefficient of traction substantially constant over a broad range of operating temperatures which comprises introducing between the tractive surfaces of said elements a traction drive fluid comprising as the active component at least one compound selected by the general formulae (I), (II) and (III):

(I)

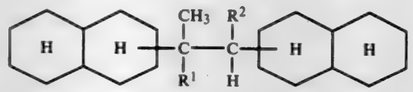


-continued

(II)



(III)



wherein R_1 and R_2 are each a hydrogen or methyl group, said traction drive fluid being essentially free of 2,2'-bisdecalin.

4,521,325

SELECTED N,1-DISUBSTITUTED HYDRAZINECARBOXAMIDES AND THEIR USE AS ANTIOXIDANTS

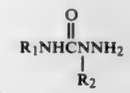
Bonnie B. Sandel, Milford, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Dec. 12, 1983, Ser. No. 560,721

Int. Cl.³ C10M *1/32;* **C10L** *1/22;* **C07C** *133/02*

U.S. Cl. 252—77 **21 Claims**

13. An oxidation-inhibited functional fluid composition comprising a functional fluid containing an effective oxidation-inhibiting amount of an N,1-disubstituted hydrazinecarboxamide having the formula



wherein R_1 is selected from the group consisting of an alkyl containing from 1 to about 20 carbon atoms, an aromatic containing from 6 to about 12 carbon atoms, and cycloalkyl containing from about 5 to about 10 carbon atoms, and wherein R_2 is selected from the group consisting of an alkyl containing from 1 to about 20 carbon atoms and a hydroxyalkyl containing from 2 to about 20 carbon atoms.

4,521,326

THICKENING AGENT BASED ON POLYETHER DERIVATIVES

Karl Seibert, Dueren-Niederau; Klaus Neumann, Kreuzau-Obermaubach; Ernst Spiess, Erftstadt-Gymnich, all of Fed. Rep. of Germany, and Hendrik G. Bruil, Ede, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

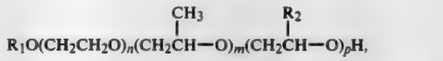
Filed Feb. 28, 1983, Ser. No. 470,803

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1982, 3207613

Int. Cl.³ C11D *1/722;* **C07C** *41/10, 43/10*

U.S. Cl. 252—174.21 **16 Claims**

1. A thickening agent comprising polyether derivatives, said polyether derivatives being of the general formula



wherein R_1 is a substituted or unsubstituted hydrocarbon radical or an alkylphenol radical having 10 or more carbon atoms, n is 10 to 100, m is 0 to 25, and p is 1 to 3, and wherein R_2 is an alkyl radical having 8 to 30 carbon atoms, said polyether derivatives being prepared by the gradual addition of a long-chain 1,2-epoxy having a chain length of 10 to 32 carbon atoms at

temperatures from 100° to 200° C., to either (1) a polyethylene glycol monoether having an average molecular weight of 800 to 5000, the monoether group thereof being a substituted or unsubstituted hydrocarbon radical having at least 10 carbon atoms; or to (2) a polyethylene glycol-polypropylene glycol monoether with an average molecular weight of 850 to 6300, and having repeating ethylene oxide and propylene oxide units each forming a polyethylene glycol and polypropylene glycol block, respectively, the polypropylene glycol block having an average molecular weight of no more than 1300, the monoether group forming the end of the polyethylene glycol block and being a substituted or unsubstituted hydrocarbon radical having at least 10 carbon atoms, and wherein the agent is prepared using 0.1 to 1% by weight of an alkali hydroxide, referring to the total quantity of said long-chain epoxy and said monoether.

4,521,327

NEMATIC LIQUID CRYSTALS AND METHOD FOR PRODUCTION THEREOF

Dietrich Demus, Halle; Hans-Matthias Vorbrodt, Quedlinburg; Anton Hauser, Wettin; Jörg Vogel, Biesenthal, and Horst Zaschke, Halle, all of German Democratic Rep., assignors to VEB Werk für Fernsehelektronik im VEB Kombinat Mikroelektronik, Berlin, German Democratic Rep.

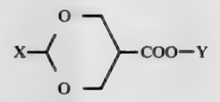
Filed Feb. 3, 1983, Ser. No. 463,377

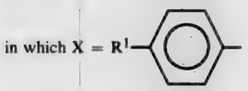
Claims priority, application German Democratic Rep., Feb. 17, 1982, 237467; Feb. 17, 1982, 237468

Int. Cl.³ C09K *3/34;* **C02F** *1/13;* **C07D** *319/06;* **C09K** *11/06*

U.S. Cl. 252—299.61 **38 Claims**

1. A 2-substituted-1,3-dioxane-5-carboxylic acid ester having the general formula





in which X = R^1 and Y = R^2 or R^5

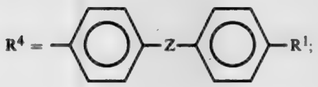
or X = R^3 and Y = R^5

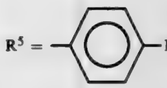
or X = R^3 and Y = R^4

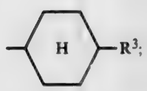
wherein $R^1 = C_nH_{2n+1}$; $C_nH_{2n+1}O$; CN; NO_2;

$R^2 = C_nH_{2n+1}$;

$R^3 = C_nH_{2n+1}$







Z = —COO—;

with n=1 to 10.

14. Trans-2-n-hexyl-1,3-dioxane-5-carboxylic acid-(4-(2,2'-dicyanoethenyl)-phenyl ester).

16. Trans-4-n-hexyl-1,3-dioxane-5-carboxylic acid-(4-cyanoethylphenyl ester).

20. Trans-2-(4-n-hexoxyphenyl)-1,3-dioxane-5-carboxylic acid-(4-(2,2'-dicyanoethenyl)-phenyl ester).

23. 2-n-hexyl-1,3-dioxane-5-carboxylic acid-(4-(4-n-heptoxyphenoxycarbonyl)-2-ethylphenyl ester).

4,521,328

METHOD OF MAKING CARBON MATERIAL

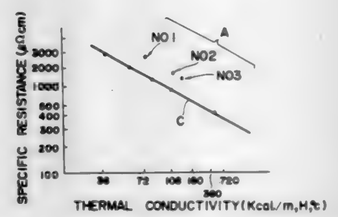
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Aug. 6, 1981, Ser. No. 290,778

Claims priority, application Japan, Aug. 11, 1980, 55-109150

Int. Cl.³ H01B *1/02*

U.S. Cl. 252—502 **8 Claims**



1. A method for the manufacture of an oxygen-impregnated carbon material, comprising the steps of:

(a) impregnating carbonaceous particles with oxygen in an amount of 10 to 1000 ppm by subjecting said particles to a stream of ozone for a predetermined time period; and

(b) sintering a mass of the oxygen-impregnated carbonaceous particles to form said material.

4,521,329

COPPER CONDUCTOR COMPOSITIONS

Vincent P. Siuta, Cherry Hill, N.J., and Joel Slutsky, Williamsville, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 20, 1983, Ser. No. 505,730

Int. Cl.³ H01B *1/02*

U.S. Cl. 252—512 **7 Claims**

1. A printable thick film conductor composition comprising an admixture of finely divided particles of:

(a) metallic copper having an oxide coating which contains at least 0.2% by weight oxygen as a copper oxide coating, the particles having a size range of 0.5–10 μm, average particle size of 1–5 μm and a surface-to-weight ratio of less than 1 m^2/g;

(b) copper oxide having a size range of 0.1–10 μm and average particle size of 0.5–5 μm, the weight ratio of copper oxide particles to oxide-coated copper metal particles being from 0 to 0.15;

(c) an inorganic binder having a softening point of 300°–700° C., a size range of 1–15 μm, the weight ratio of copper oxide in the binder to copper metal particles being from 0 to 0.5, all dispersed in

(d) an organic medium containing not more than 1.0% wt. resin, basis total composition, the total oxygen content of the copper oxides of (a), (b) and (c) being sufficient to provide 1–2% by weight oxygen, basis copper, and the weight ratio of oxygen added as copper oxide in (b) and (c) to copper oxide on the copper metal particles is from 0.2 to 0.5.

4,521,330
NON-AQUEOUS UREA-POLYETHER GEL COMPOSITIONS AND A METHOD FOR THEIR PREPARATION

Franciszek Olstowski, Freeport, and Richard D. Peffley, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 12, 1983, Ser. No. 531,555
Int. Cl.³ C10M *1/20, 1/32, 1/44, 1/50*
U.S. Cl. 252—51.5 R **7 Claims**

1. A method for either increasing the viscosity of or gelling a composition which comprises

(A) from about 10 to about 100%, by weight of at least one relatively high molecular weight polyoxyalkylene-containing material having a molecular weight greater than about 500 and containing at least about 10% by weight of either an internal block or external block of oxyethylene (—O—CH_2—CH_2—) groups; and

(B) from zero to about 90, weight percent of a member selected from the group consisting of

(1) liquid relatively high molecular weight polyoxyalkylene-containing materials containing less than about 10 wt. % oxyethylene groups or an internal or terminal block;

(2) liquid hydrocarbon compounds,

(3) liquid esters,

(4) liquid halogenated hydrocarbon compounds,

(5) liquid organo silicon compounds,

(6) liquid organo phosphorous compounds, and

(7) mixtures thereof;

which process comprises blending with the aforesaid composition a sufficient quantity of

(C) a solution of

(1) a relatively low equivalent weight material having a molecular weight less than about 500 and having from about 2 to about 8 hydroxyl groups per molecule containing

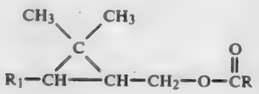
(2) a sufficient quantity of urea to cause either an increase in viscosity over that of either of components (A) or (B) or cause gellation of the resultant mixture of components (A), (B) and (C) in a relatively short period of time.

4,521,331
METHOD OF IMPARTING A PLEASANT ODOR

Jacques Martel, Bondy; Jean Buendia, Le Perreux-sur-Marne, and Francois Nezot, Thiais, all of France, assignors to Roussel Uclaf, Paris, France

Filed Nov. 2, 1982, Ser. No. 438,486
Claims priority, application France, Nov. 10, 1981, 81 21009
Int. Cl.³ C11B *9/00;* **C11D** *3/50;* **A61K** *7/16*
U.S. Cl. 252—522 R **7 Claims**

1. A perfume containing an odorantly effective amount of at least one compound of the formula

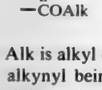


I

wherein R_1 is selected from the group consisting of alkyl of 1 to 8 carbon atoms and alkenyl of 2 to 8 carbon atoms and R is selected from the group consisting of (a) hydrogen, (b) alkyl of 1 to 12 carbon atoms and alkenyl and alkynyl of 2 to 12 carbon atoms optionally substituted with cyano, saturated or unsaturated cycloalkyl or bicycloalkyl of 3 to 12 carbon atoms also optionally substituted with at least one alkyl of 1 to 4 carbon atoms, —CN, —NO_2 or —COAlkyl of 1 to 6 carbon atoms, and optionally interrupted by an oxygen atom or containing a keto group, (c) cycloalkyl of 3 to 12 carbon atoms optionally having at least one double bond and at least one alkyl substituent of 1 to 4 carbon atoms, (d) aryl, arylalkyl, aralkenyl and aralkynyl of 6 to 20 carbon atoms optionally substituted on the aryl ring with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, —NO_2, —CF_3, —CN and —COAlk and

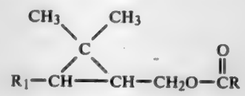


and Alk is alkyl of 1 to 12 carbon atoms and the alkyl, alkenyl or alkynyl being optionally interrupted with an oxygen or containing a ketone group and (e) heteroaryl, heteroaralkyl, heteroaralkenyl and heteroaralkynyl optionally substituted on the aryl ring with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, —NO_2, —CF_3, —CN and —COAlk and



and Alk is alkyl of 1 to 12 carbon atoms and the alkyl, alkenyl and alkynyl being optionally interrupted with an oxygen atom or having a keto group and customary perfumery ingredients.

2. A method of imparting a pleasant odor to a composition comprising adding to the composition a sufficient amount of at least one compound of the formula



I

wherein R_1 is selected from the group consisting of alkyl of 1 to 8 carbon atoms and alkenyl of 2 to 8 carbon atoms and R is selected from the group consisting of (a) hydrogen, (b) alkyl of 1 to 12 carbon atoms and alkenyl and alkynyl of 2 to 12 carbon atoms optionally substituted with cyano, saturated or unsaturated cycloalkyl or bicycloalkyl of 3 to 12 carbon atoms also optionally substituted with at least one alkyl of 1 to 4 carbon atoms, —CN, —NO_2 or —COAlkyl of 1 to 6 alkyl carbon atoms, and optionally interrupted by an oxygen atom or containing a keto group, (c) cycloalkyl of 3 to 12 carbon atoms optionally having at least one double bond and at least one alkyl substituent of 1 to 4 carbon atoms, (d) aryl, arylalkyl, aralkenyl and aralkynyl of 6 to 20 carbon atoms optionally substituted on the aryl ring with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms halogen, —NO_2, —CF_3, —CN and —COAlk and



and Alk is alkyl of 1 to 12 carbon atoms and the alkyl, alkenyl and alkynyl being optionally interrupted with an oxygen or containing a ketone group and (e) heteroaryl, heteroaralkyl, heteroaralkenyl and heteroaralkynyl optionally substituted on the aryl ring with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, —NO_2, —CF_3, —CN and —COAlk and



and Alk is alkyl of 1 to 12 carbon atoms and the alkyl, alkenyl and alkynyl being optionally interrupted with an oxygen atom or having a keto group, to impart a pleasant odor.

4,521,332
HIGHLY ALKALINE CLEANING DISPERSION

David J. Milora, Norristown, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 246,481, Mar. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 153,489, May 27, 1980, abandoned. This application May 3, 1982, Ser. No. 373,924
Int. Cl.³ C11D *3/37, 7/06, 7/16, 7/26*
U.S. Cl. 252—527 **8 Claims**

1. A liquid highly alkaline aqueous cleaning dispersion which resists separation into layers said dispersion containing at least about 40% solids by weight and comprising the following ingredients expressed as percent by weight:

Sodium hydroxide: 10 to 45%

Alkali metal or ammonium salt of polyacrylic acid having a molecular weight within the range of 500 to 12,000: 0.04% to gelling

Alkali metal phosphate builder: 2 to 15%

Nonionic surfactant: 0.3 to 5%

Chelator: 0.25 to 3%

Sodium or potassium carbonate as a bulking agent: 0.5 to 20%

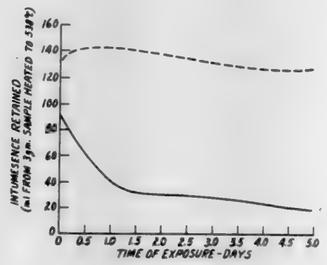
Water: Balance

in which the chelator is one or more members selected from group consisting of sorbitol, gluconic acid, glucoheptonic acid, mannitol, ascorbic acid, sorbose, tannic acid, ethylenediamine tetraacetic acid, sodium chrom glucosate, diglycolic acid, aspartic acid, d-gluconolactone, l-rhamnose, nitrilotriacetic acid, and the sodium or potassium salts of the acids.

4,521,333
INTUMESCENT SILICATES HAVING IMPROVED STABILITY

Joseph Graham, Timothy J. Gennrich, and James A. Laird, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 505,982, Jun. 20, 1983,. This application May 3, 1984, Ser. No. 605,053
Int. Cl.³ C09K *3/28*
U.S. Cl. 252—606 **18 Claims**

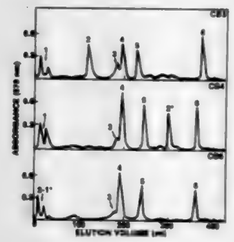


1. An intumescent composition comprising a mixture of alkali metal silicate, represented by the formula $M_2O{:}xSiO_2$ in which M is the alkali metal; at least one oxy boron compound selected from the group consisting of boric acid and borate salts of Group I and II elements; and water; in which the weight ratio x ranges from about 1.5 to about 4, the molar ratio of boron to M is between about 0.2 and about 0.9, and the water comprises about 5 to 15 weight percent of the total composition.

4,521,334
SYNTHETIC POLYPEPTIDE FRAGMENTS

Edwin H. Beachey, Memphis, Tenn., assignor to The University of Tennesse Research Corporation, Knoxville, Tenn.

Continuation-in-part of Ser. No. 402,355, Jul. 27, 1982, Pat. No. 4,454,121. This application Jun. 10, 1983, Ser. No. 503,273
Int. Cl.³ C07C *103/52;* **A61K** *39/00, 37/00*
U.S. Cl. 260—112.5 R **7 Claims**



1. A polypeptide which elicits opsonic antibodies to *Streptococcus pyogenes* and which is not serologically cross-reactive with tissue antigens of the heart, which polypeptide comprises the amino acid sequence

Asn-Phe-Ser-Thr-Ala-Asp-Ser-Ala-Lys
Ile-Lys-Thr-Leu-Glu-Ala-Glu-Lys-Ala-Ala-Leu-A-Ala-B-C-Ala-D-Leu-E-F-Ala-Leu-Glu-G-H-I

wherein

A is Glu or Ala

B is Glu or Arg

C is Lys or Gln

D is Asp or Glu

E is Glu or Asp

F is Lys or Asp

G is Gly or Leu

H is Ala or Glu

I is Hse, Met, Gly-Ala-Hse, or Gly-Ala-Met,

with the proviso that the polypeptide is not any one of the four following sequences:

Ans-Phe-Ser-Thr-Ala-Asp-Ser-Ala-Lys-Ile-Lys-Thr-Leu-Glu-Ala-Glu-Lys-Ala-Ala-Leu-Ala-Ala-Arg-Lys-Ala-Asp-Leu-Glu-Lys-Ala-Leu-Glu-Gly-Ala-I, or

Asn-Phe-Ser-Thr-Ala-Asp-Ser-Ala-Lys-Ile-Lys-Thr-Leu-Glu-Ala-Glu-Lys-Ala-Ala-Leu-Glu-Ala-Arg-Gln-Ala-Glu-Leu-Glu-Lys-Ala-Leu-Glu-Gly-Ala-I,

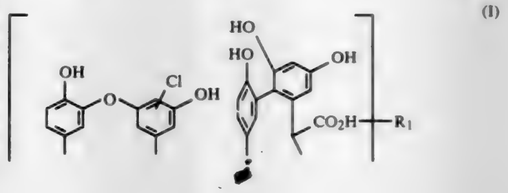
wherein I is Met or Hse.

4,521,335
AGLYCONE AND PSEUDO-AGLYCONES OF THE AAD 216 ANTIBIOTICS

George W. Chan, Bala Cynwyd, and Robert D. Sitrin, Plymouth Meeting, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

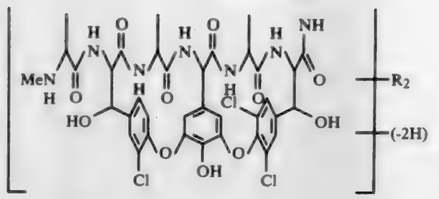
Continuation-in-part of Ser. No. 513,514, Jul. 13, 1983,. This application May 17, 1984, Ser. No. 611,070
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **6 Claims**

1. An antibiotic compound represented by the structural formula (I)



(I)

-continued



wherein R_1 is hydrogen or mannosyl and R_2 is hydrogen or a glycolipid radical of unknown structure with the proviso that at least one of R_1 and R_2 is hydrogen, prepared by the partial acidic hydrolysis of an antibiotic selected from the group consisting of AAD 216 complex, AAD 216A, AAD 216B and AAD 216C.

4,521,336

PROCESS FOR PREPARING LIGNOSULFONATES

Peter Dilling, Isle of Palms, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 16, 1984, Ser. No. 601,047

Int. Cl.³ C07G *1/00*

U.S. Cl. 530—501 **10 Claims**

1. In a process for preparing sulfonated lignins which comprises reacting lignin material with an aldehyde and a sulfite, selected from the group consisting of water soluble sulfites and bisulfites, wherein the improvement comprises the steps of

(a) selectively isolating the lignin material from alkaline black liquor by reducing the black liquor pH such that all but a negligible amount of the lignins having a molecular weight of 5,000 or less remain in solution with the black liquor,

(b) acidifying the lignin material to a pH of from about 1.5 to about 5.0 by washing with sulfuric acid followed by adding water to the lignin material to form a slurry of about 25% solids,

(c) adding to the lignin slurry the sulfite and the aldehyde in a sulfite to aldehyde mole ratio of from about 1.1:0.1 to about 2.5:1.0, which addition produces an initial reaction pH of from about 8.0 to about 9.2, and

(d) the temperature of reaction is raised from ambient to from about 130° C. to about 175° C. for from about 0.5 to about 12 hours.

4,521,337

CHEMICAL PROCESS

Robert Southgate, Warnham, and Pamela Brown, Guildford, both of England, assignors to Beecham Group p.l.c., England

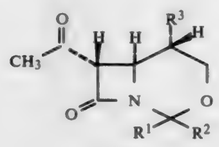
Filed Mar. 14, 1983, Ser. No. 475,247

Claims priority, application United Kingdom, Mar. 16, 1982, 8207619

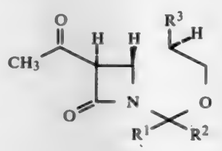
Int. Cl.³ C07D *498/04*

U.S. Cl. 534—560 **8 Claims**

1. A process for the preparation of a compound of the formula (Ia) and/or (Ib):

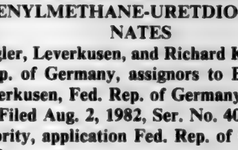


(Ia)



(Ib)

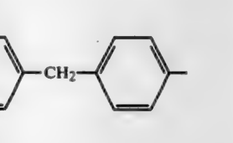
wherein R^1 and R^2 are independently hydrocarbon groups or are joined together so as to form a carbocyclic or heterocyclic ring, said hydrocarbon groups and said heterocyclic rings being unsubstituted or substituted by C_{1-6} alkyl, hydroxy, bromine, chlorine, fluorine, carboxylic acid or salt or ester thereof, azido, tetrazolyl, alkanoyl, alkanoyloxy, aroyloxy, aroyl, aralkanoyloxy, aroxy, amino, protected amino, nitro, C_{1-6} alkoxy, C_{1-6} alkyl, aryl, C_{1-6} alkylthio or arylthio, and R^3 is a hydrocarbon group unsubstituted or substituted by amino, mono, di- or trialkylamino, hydroxyl, alkoxyl, mercapto, alkylthio, arylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano or carboxy; which process comprises the ring-closing cyclization of a compound of the formula (II):



(II)

wherein R^1, R^2 and R^3 are as defined in relation to formulae (Ia) and (Ib).

6. A compound of formula II



(II)

wherein R^1 and R^2 are independenly hydrocarbon groups or are joined together so as to form a carbocyclic or heterocyclic ring, said hydrocarbon groups and said heterocyclic rings being unsubstituted or substituted by C_{1-6} alkyl, hydroxy, bromine, chlorine, fluorine, carboxylic acid or salt or ester thereof, azido, tetrazolyl, alkanoyl, alkanoyloxy, aroyloxy, aroyl, aralkanoyloxy, aroxy, amino, protected amino, nitro, C_{1-6} alkoxy, C_{1-6} alkyl, aryl, C_{1-6} alkylthio or arylthio, and R^3 is a hydrocarbon group unsubstituted or substituted by amino, mono, di- or trialkylamino, hydroxyl, alkoxyl, mercapto, alkylthio, arylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano or carboxy.

4,521,338

PROCESS FOR THE PREPARATION OF LOW MOLECULAR WEIGHT 4,4'-DIPHENYLMETHANE-URETDIONE-DIISOCYANATES

Gerhard Grögler, Leverkusen, and Richard Kopp, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 2, 1982, Ser. No. 404,106

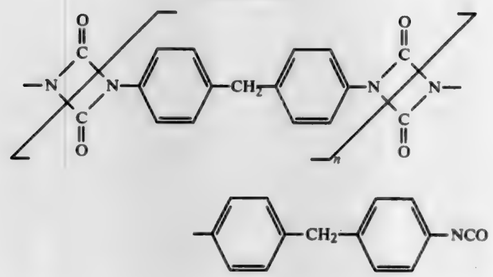
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1981, 3131779

Int. Cl.³ C07D *229/00*

U.S. Cl. 260—239 A **20 Claims**

1. A process for the production of a low molecular weight 4,4'-diphenylmethane-uretdione-diisocyanate corresponding to the formula:

-continued



in which n represents a number from 0 to 1, comprising dimerizing a 4,4'-diphenylmethane-diisocyanate at a temperature less than 50° C. in the presence of a catalyst and in an isocyanate-inert solvent-mixture of non-polar and moderately polar solvents.

4,521,339

ANSATRIENOLS

Noboru Otake, Yokohama; Haruo Seto, Hachioji; Tetsuo Sasaki, Kounosu; Masanori Sugita, Sakado; Yohei Natori, Tokyo, and Noriyoshi Sueda, Kawagoe, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Japan

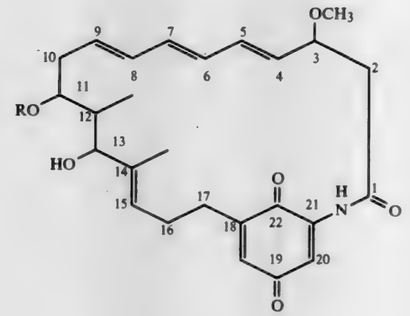
Filed Nov. 24, 1982, Ser. No. 444,474

Claims priority, application Japan, Nov. 27, 1981, 56-189237; Nov. 27, 1981, 56-189238; Dec. 18, 1981, 56-203558

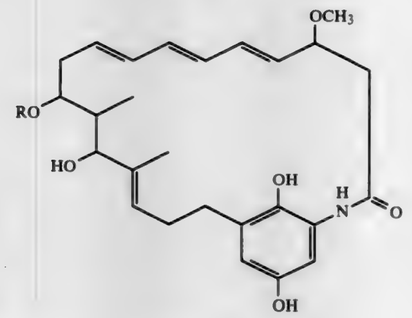
Int. Cl.³ C07D *225/06*; C12P *17/10*

U.S. Cl. 260—239.3 B **4 Claims**

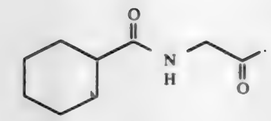
1. A compound of the formula



or



wherein R is hydrogen or a group



4,521,340

PHARMACEUTICALLY ACCEPTABLE SALTS OF THE ANTIBIOTIC C-19393 E_5

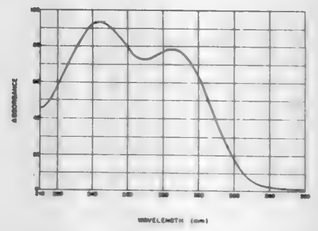
Setsuo Harada, Kawanishi; Susumu Shinagawa, Higashiosaka, and Kazuaki Kitano, Sakai, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 30, 1981, Ser. No. 316,903

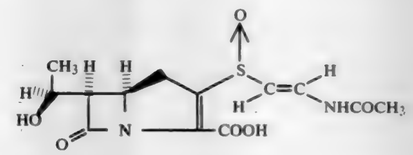
Claims priority, application Japan, Dec. 26, 1980, 55-185450

Int. Cl.³ C07D *487/04*

U.S. Cl. 260—245.2 T **1 Claim**



1. A pharmaceutically acceptable salt of antibiotic C-19393 E_5 of the formula



4,521,341

PROCESS FOR THE PREPARATION OF 1,4-DIAMINO-ANTHRAQUINONE-2-SULPHONIC ACID

Friedrich W. Kröck, Cologne, and Rütger Neoff, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 313,025, Oct. 19, 1981, abandoned. This application Mar. 16, 1984, Ser. No. 590,133

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042241

Int. Cl.³ C07C *143/665*

U.S. Cl. 260—371 **8 Claims**

1. Process for the preparation of 1,4-diamino-anthraquinone-2-sulphonic acid and its salts by reacting 1-amino-4-bromo-anthraquinone-2-sulphonic acid, or its salts, with aqueous ammonia solution at an elevated temperature in the presence of copper catalysts and, if appropriate, in the presence of acid-binding agents, characterised in that the reaction is carried out under a partial pressure of ammonia of at least 5 bar.

4,521,342

PREPARATION OF 2-ALKYL-4,4-DIACYLOXYBUT-2-ENALS

Rolf Fischer, Heidelberg; Hans-Martin Weitz, Bad Durkheim, and Joachim Paust, Neuhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

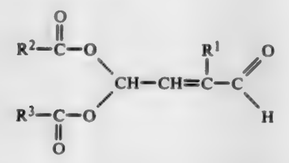
Filed Mar. 7, 1983, Ser. No. 473,096

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 3210706

Int. Cl.³ C09F *5/08, 7/10;* **C11C** *3/00, 3/02*

U.S. Cl. 260—410 **14 Claims**

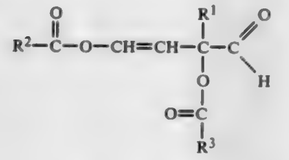
1. A process for the preparation of a 2-alkyl-4,4-diacyloxybut-2-enal of the formula



I

where R^1 is alkyl of 1 to 5 carbon atoms and R^2 and R^3 are each hydrogen, an aliphatic radical of 1 to 15 carbon atoms, a cycloaliphatic radical of 5 to 7 carbon atoms or an aromatic radical, which process comprises:

rearranging a 2-alkyl-2,4-diacyloxybut-3-enal of the formula



II

where R^1, R^2 and R^3 have the above meanings, into the product I by treatment with an aliphatic carboxylic acid in the absence of strong acids at a temperature of about 20° to 200° C. and for a treatment period of about 0.5 to 40 hours.

4,521,343

PROCESS FOR SEPARATING FATTY ACIDS FROM ROSIN ACIDS WITH PHOSPHORUS MODIFIED ALUMINA MOLECULAR SIEVE

Tai-Hsiang Chao, Mt. Prospect, and Michael T. Cleary, Elmhurst, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 4, 1983, Ser. No. 463,771

Int. Cl.³ C11C *1/08;* **C09F** *1/00*

U.S. Cl. 260—419 **14 Claims**

1. A process for separating a fatty acid from a mixture comprising a fatty acid and a rosin acid, which process employs a molecular sieve comprising silicalite in a phosphorus modified alumina matrix the precursor of said molecular sieve comprising silicalite powder dispersed in an alumina hydrosol commingled with a phosphorus containing compound, the phosphorus to aluminum molar ratio in said molecular sieve being from 1:1 to 1:100, which process comprises the steps of:

(a) maintaining net liquid flow through a column of said molecular sieve in a single direction, which column contains at least three zones having separate operational functions occurring therein and being serially interconnected with the terminal zones of said column connected to provide a continuous connection of said zones;

(b) maintaining a retention zone in said column, said zone defined by the molecular sieve located between a feed inlet stream at an upstream boundary of said zone and a raffinate outlet stream at a downstream boundary of said zone;

(c) maintaining a purification zone immediately upstream from said retention zone, said purification zone defined by the molecular sieve located between an extract outlet stream at an upstream boundary of said purification zone and said feed inlet stream at a downstream boundary of said purification zone;

(d) maintaining a displacement zone immediately upstream from said purification zone, said displacement zone defined by the molecular sieve located between a displacement fluid inlet stream at an upstream boundary of said zone and said extract outlet stream at a downstream boundary of said zone;

(e) passing said feed stream into said retention zone at separation conditions to effect the selective retention of fatty acid by said molecular sieve in said retention zone and withdrawing a raffinate outlet stream from said retention zone;

(f) passing a displacement fluid into said displacement zone at displacement conditions to effect the displacement of said fatty acid from the adsorbent in said displacement zone;

(g) withdrawing an extract stream comprising said fatty acid and displacement fluid from said displacement zone;

(h) periodically advancing through said column of molecular sieve in a downstream direction with respect to fluid flow in said retention zone, the feed inlet stream, raffinate outlet stream, displacement fluid inlet stream, and extract outlet and raffinate outlet streams.

4,521,344

CYANO-DICARBOXYLATE

Jacob S. Tou, and Alfred A. Schleppnik, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 413,009, Apr. 30, 1982, Pat. No. 4,442,298. This application Sep. 12, 1983, Ser. No. 531,095

Int. Cl.³ C04C *121/66*

U.S. Cl. 260—465 D **1 Claim**

1. Dimethyl 2-phenyl-3-cyano-6-bromohexane-3,4-dicarboxylate.

4,521,345

AROMATIC COUPLING PROCESS

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 4, 1984, Ser. No. 607,272

Int. Cl.³ C07C *121/75*

U.S. Cl. 260—465 F **11 Claims**

1. A process which comprises reacting a 3-cyano-1-nitrobenzene having a replaceable hydrogen in the 4-position with a phenol having a replaceable hydrogen in the 4-position in an inert solvent and in the presence of a strong base to form a 4-(2-cyano-4-nitrophenyl)phenol.

11. 2,6-Di-t-butyl-4-(2'-cyano-4'-nitrophenyl)phenol.

4,521,346

PROCESS FOR PREPARING CHLORODIPHENYLPHOSPHANE

Hans-Jerg Kleiner, Kronberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 489,812

Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216379

Int. Cl.³ C07F *9/52*

U.S. Cl. 260—543 P **8 Claims**

1. A process for preparing chlorodiphenylphosphane, which comprises reacting triphenylphosphane and dichlorophenylphosphane in the absence of a catalyst at a temperature between about 300° and 700° C.

4,521,347

PROCESS FOR PREPARING CHLOROPHENYLPHOSPHANES

Hans-Jerg Kleiner, Kronberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 489,813

Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216381

Int. Cl.³ C07F *9/52*

U.S. Cl. 260—543 P **7 Claims**

1. A process for preparing a chlorophenylphosphane of the formula

$$(C_6H_5)_nPCl_{3-n}$$

in which n is 1 or 2, which comprises reacting triphenylphosphane and phosphorus trichloride in the absence of a catalyst at a temperature of from about 320° to 700° C.

4,521,348

PHOSPHORUS-CONTAINING CYANOHYDRINE DERIVATIVES

Manfred Finke, Kelkheim, and Rainer Mündnich, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 92,456, Nov. 8, 1979, abandoned. This application Dec. 30, 1983, Ser. No. 565,850

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2849003

Int. Cl.³ C07F *9/32, 9/53;* **C07C** *121/34*

U.S. Cl. 260—940 **2 Claims**

1. Compounds of the formula I



in which

R_1 is alkyl;

R_2 is alkyl;

R_3 and R_4, independently from each other, are hydrogen or $(C_1$–$C_4)$-alkyl;

R_5 is acetyl, ethoxycarbonyl, propionyl, or benzoyl;

X is oxygen or sulfur, and

n is zero or 1.

4,521,349

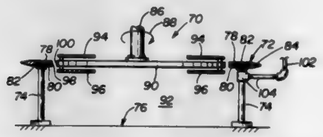
FLUID DIFFUSER FOR GASES AND LIQUIDS

Richard B. Weber; George M. Wilfley, both of Denver, and George M. Wilfley, Castle Rock, all of Colo., assignors to A. R. Wilfley and Sons, Inc., Englewood, Colo.

Filed Jan. 20, 1983, Ser. No. 459,343

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—93 **39 Claims**



1. A fluid diffuser for dispersing a gas or liquid into a body of receiving liquid in which it is immersed, which comprises:

(a) a rotatable shaft;

(b) a thin disk-like member mounted for rotation on said rotatable shaft perpendicular to the axis of rotation thereof, said disk-like member having a top surface, a bottom surface, an outer circumferential surface connecting said top and bottom surfaces and having an outer perimeter, the ratio of the overall diameter of said member to the maximum thickness thereof being at least about 8:1;

(c) a separate stationary fluid-emitting annular ring positioned adjacent but spaced outwardly from the outer perimeter of said disk-like member, said ring having a top wall, a bottom wall, an inner circumference and an outer circumference, said top and bottom walls defining at least one fluid plenum, at least one of said top and bottom walls of said annular ring being porous in at least a portion thereof, with a foraminous surface to permit the passage of fluid through said wall to the outer surface of said ring so that the introduction of fluid into said plenum will cause fluid to flow out through said porous wall to produce small nascent fluid spheroids on said foraminous surface of the annular ring, which nascent spheroids are sheared off to form still finer particles of fluid by the viscous shear forces exerted by said liquid when said disk-like member rotates about its axis of rotation while immersed in said body of receiving liquid, at least the inner portion of the foraminous surface of said at least one porous wall of said at least one plenum lying in generally the same plane as at least the outer portion of the corresponding one of the top and bottom surfaces of said disk-like member; and

(d) a feed line in operative connection with said plenum for fluid to be introduced under pressure into said at least one plenum of said annular ring and from there into the body of receiving liquid as aforesaid.

4,521,350

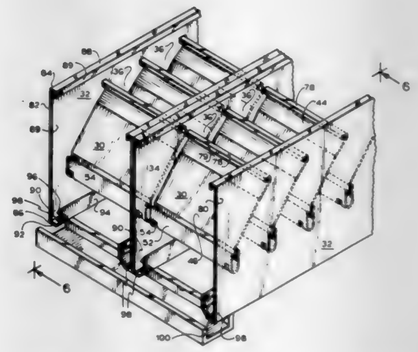
DRAINAGE COLLECTION SYSTEM

Marcel R. Lefevre, Ft. Myers, Fla., assignor to The Munters Corporation, Ft. Myers, Fla.

Filed Jan. 16, 1984, Ser. No. 570,758

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—111 **16 Claims**



1. A drainage collection system for use in an evaporative cooling tower, the drainage collection system being disposed transversely across the flow of air within the cooling tower and below a gas/liquid heat exchanging contact body to receive liquid gravitating therefrom and to collect the same, the drainage collection system comprising:

a plurality of liquid collection plates, the collection plates being arranged in parallel and inclined from the vertical, adjacent ones of the collection plates defining therebetween flow through channels for the substantially unimpeded passage of air therethrough, each of the plates having upper and lower end portions with the upper end portion of each overlapping the lower end portion of a respectively adjacent plate, the plates being shaped over a central portion thereof to form substantially planar sections each having a different predetermined slope, the

slope of some of the sections being selected in dependence upon the distances between the contact body and the plate sections to enable the plates to receive and collect substantially all of the liquid gravitating from the contact body onto the plates, the lower end portion of each of the plates being shaped to form a primary collecting channel extending substantially across the width of its respective plate for collecting liquid directed thereto by the plate, the primary collecting channels having outlet ports formed therein for the drainage of liquid collected thereby; and

a support frame for the collection plates, the frame including substantially vertical side supports disposed on corresponding opposite sides of the collection plates with the collection plates extending between the side supports, the disposition of the plates with respect to the side supports providing the frame with torsional strength, the side supports including lower portions shaped to form troughs disposed below the outlet ports of the collection plates to receive liquid discharged therethrough.

4,521,351

PROCESS FOR PRODUCING LIGHT-TRANSMITTING ELEMENT OF SYNTHETIC RESIN

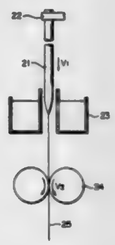
Yasuji Ohtsuka; Yasuhiro Koike, both of Tokyo, and Motoaki Yoshida, Nishinomiya, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Sep. 16, 1983, Ser. No. 533,532

Claims priority, application Japan, Jan. 27, 1983, 58-11954; Jan. 27, 1983, 58-11956

Int. Cl.³ G02B *5/14*

U.S. Cl. 264—1.5 **2 Claims**



1. A process for producing a light-transmitting element of a synthetic resin, which comprises

(1) preparing a mixture composed of at least three monomers, said monomers having a difference in the ease of polymerization under given polymerization conditions, and that monomer in the monomeric mixture which is easiest to polymerize being capable of giving a polymer having a lower refractive index than a polymer from any of the other monomers in the monomeric mixture,

(2) maintaining the monomeric mixture in a predetermined shape, and

(3) thereafter applying to the monomeric mixture maintained in the predetermined shape such polymerization conditions that polymerization begins at the outside portion of the predetermined shape of the monomeric mixture and proceeds gradually toward its inside portion, thereby to form a polymeric article in which the proportion of polymer units derived from the monomer which is easiest to polymerize is largest at said outside portion and gradually decreases toward its inside portion and the refractive index of the article is lowest at said outside portion and gradually increases toward its inside portion;

wherein when three monomers of said monomeric mixture are designated as M_1, M_2 and M_3, the mole ratios of these monomers with each other are represented by $(M_1/M_2)_m$, $(M_1/M_3)_m$ and $(M_2/M_3)_m$, and the reactivity ratios of these monomers to each other are represented in accordance with an ordinary definition by r_{12}, r_{13}, r_{21}, r_{23}, r_{31} and r_{32}, said monomeric mixture contains monomers satisfying the following three formulae

$$\{r_{12}(M_1/M_2)_m+1\}/\{(M_1/M_2)_m+r_{21}\}>1.1,$$

$$\{r_{13}(M_1/M_3)_m+1\}/\{(M_1/M_3)_m+r_{31}\}>1.1,$$

$$\{r_{23}(M_2/M_3)_m+1\}/\{(M_2/M_3)_m+r_{32}\}>1.1,$$

as said at least three monomers.

4,521,352

MICROENCAPSULATION PROCESS

Lawrence T. Hayworth, Basingstoke, England, assignor to Mars, Incorporated, McLean, Va.

PCT No. PCT/GB82/00249, § 371 Date Apr. 6, 1983, § 102(e) Date Apr. 6, 1983, PCT Pub. No. WO83/00449, PCT Pub. Date Feb. 17, 1983

PCT Filed Aug. 9, 1982, Ser. No. 486,955

Claims priority, application United Kingdom, Aug. 11, 1981, 8124563

Int. Cl.³ B01J *13/02*

U.S. Cl. 264—4.3 **11 Claims**

1. A process for microencapsulating an aqueous amine solution, which process comprises emulsifying the aqueous amine solution in a hydrophobic organic liquid to form droplets, reacting the amine with a polybasic acid chloride or anhydride to form a polymer membrane around individual droplets by interfacial polymerization, and then terminating the polymerization reaction by introducing water into the hydrophobic organic liquid by adding to the reaction mixture a solution of water in an organic liquid, which solution of water is wholly miscible with the hydrophobic organic liquid.

4,521,353

PROCESS FOR PRODUCING ENCAPSULABLE GLOBULES

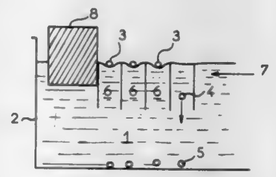
Guy Bonnot, Collognes au Mont d'Or; Pierre Laviolette, Chassieu; Andre Potiron, Maurepas, and Jean-Yves Deysson, Paris, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Filed May 9, 1983, Ser. No. 492,700

Claims priority, application France, May 12, 1982, 82 08288

Int. Cl.³ B29C *6/00*

U.S. Cl. 264—8 **8 Claims**



1. Process for producing generally spherical globules, subsequently encapsulable by means of a film polymerised in situ, applicable particularly to the production of breeding substrates for entomophagous insects in the form of artificial lepidoptera eggs, in which process drops are frozen for their encapsulation, and comprising the stages of:

forming a jet of a substance to be frozen in the form of drops and spraying said jet by dispersion of said jet;

collecting said drops on a grid, provided with cells which is held at the surface of a bath of cryogenic liquid having a density less than that of said substance;

floating said drops on the surface of said bath by a calefaction phenomenon, each drop isolated in a cell of said grid until freezing, so as to form generally spherical frozen globules;

sifting the frozen globules derived from the drops on at least one sieve immersed in the bath beneath said cellular grid.

4,521,354

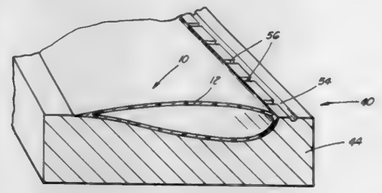
METHOD AND MOLD FOR FABRICATING AN AERODYNAMIC AIRFRAME STRUCTURE

Claude W. Engelke; Gerald E. Sutton, and Steven E. Potter, all of Wichita, Kans., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 361,848, Mar. 25, 1982, abandoned. This application Dec. 23, 1983, Ser. No. 564,850

Int. Cl.³ B29D *27/00*; B29F *1/03, 1/06*

U.S. Cl. 264—46.6 **5 Claims**



1. A method of fabricating an aerodynamic airframe structure and the like using a mold having halves with a cavity formed therein, the cavity designed for receiving an external stiffener skin having injection holes along the length thereof, the mold further having an entrance connected to a runner along one side of the cavity and a series of gates joining the runner to the cavity and indexed with the injection holes, the steps including:

mixing a foam material in a mixing chamber;

introducing the mixed foam material under pressure into the entrance of the mold;

feeding the mixed foam material along the length of the runner and through the gates;

filling the external skin in the cavity from the gates through the injection holes with the foam material, the foam material adhering to the skin and forming an elastic foundation for the external skin; and

curing the airframe structure and removing the halves of the mold therefrom.

4,521,355

METHOD OF PRODUCING CERAMIC WARE

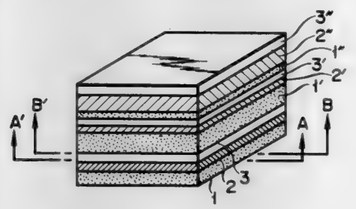
Nobuyuki Kitajima, Tokyo; Yoshinori Tachibana, Kawagoe; Asashi Muraki, and Shinichi Kuzuoka, both of Yokohama, all of Japan, assignors to Toppan Printing Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 397,835, Jul. 13, 1982, abandoned. This application Sep. 19, 1983, Ser. No. 533,882

Claims priority, application Japan, Jul. 29, 1981, 56-118618

Int. Cl.³ C04B *33/34*

U.S. Cl. 264—60 **11 Claims**



1. A method of producing patterned ceramic ware, comprising the steps of adding a polymer flocculant and an inorganic flocculant to each of at least two different aqueous suspensions each containing a fibrous material, a ceramic raw clay and, as required, a colorant such as ceramic picturing pigment, so as to enable the clay, or both clay and colorant, to be adsorbed on the surface of the fibrous material; preparing from the suspensions, by the ordinary wet paper-making method, at least two kinds of ceramic raw material wet sheets differing from each other in color after firing; performing a stacking-cutting operation at least once, in which the different kinds of the wet sheets are alternately stacked; mechanically cutting the stacked wet sheets, using a cutter selected from a circular saw, a fretsaw and an ordinary saw, in a direction not parallel with the surface of the raw material sheet when the water content of the sheets is 20 to 50% by weight; forming the resultant sheet into a desired shape; and subsequently firing the shaped mass.

4,521,356

DECORATIVE FLATWARE HANDLES AND PROCESS FOR THEIR PREPARATION

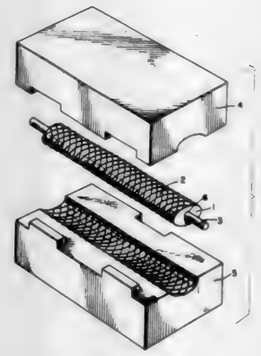
Hartmut Keller; Axel Krauth, and Roswitha Kreiner, all of Selb, Fed. Rep. of Germany, assignors to Rosenthal Aktiengesellschaft, Selb, Fed. Rep. of Germany

Filed May 17, 1982, Ser. No. 379,006

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120152

Int. Cl.³ C04B *41/42*

U.S. Cl. 264—60 **8 Claims**



1. A process for preparing a ceramic flatware handle comprising the steps of:

(a) forming a mixture of powdered ceramic raw materials;

(b) drying the mixture;

(c) intermixing the ceramic mass from 15 to 25 weight percent of a thermoplastic plasticizing mixture comprising 12 to 18 weight percent of a binder and 3 to 7 weight percent of a release agent based on the weight of the ceramic mass;

(d) shaping the resulting plastic mixture into blanks at a temperature from 90° to 150° C;

(e) pressing a relief pattern on the ceramic blanks at a temperature from 60° to 80° C.;

(f) degassing the binder component at a temperature up to about 300° C.; and

(g) firing the handle at a temperature from 1350° to 1550° C.

4,521,357

CARBON BONDED REFRACTORIES

Mark C. Kernion, N. Braddock, and Albert L. Renkey, Bridgeville, both of Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 2, 1983, Ser. No. 490,816

Int. Cl.³ C04B *35/52*

U.S. Cl. 264—63 **3 Claims**

1. Method of making carbon bonded refractory brick consisting essentially of mixing about 1 to 6%, by weight, carbonaceous liquid thermosetting resin, up to about 20%, by weight,

carbonaceous material, up to about 10%, by weight, of one or more powdered metals selected from the group consisting of silicon, magnesium and aluminum, and at least 70%, but less than 100%, by weight, refractory aggregate, pressing the mixture to form shapes, baking the shapes to cure the resin and impregnating the shapes with tar or pitch.

4,521,358

PROCESS FOR THE PRODUCTION OF SILICON NITRIDE SINTERED BODIES

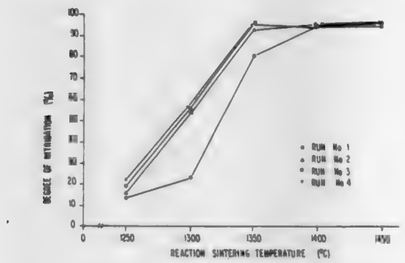
Kazunori Miura; Yoshinori Hattori, and Yasushi Matsuo, all of Aichi, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,283

Claims priority, application Japan, Aug. 12, 1982, 57-139149; Aug. 12, 1982, 57-139150

Int. Cl.³ C04B *35/58*

U.S. Cl. 264—65 **7 Claims**



1. A process for producing a silicon nitride sintered body which comprises molding a mixed powder of 100 parts by weight of metallic silicon with a maximum particle size of 20 μm or less and 0.2 to 2 parts by weight (calculated as chromium oxide) of a chromium component and, thereafter, reaction sintering the above-prepared mold in a nitrogen gas or in a non-oxidizing atmosphere containing nitrogen gas at temperature of 1,300° to 1,500° C.

4. A process for producing a silicon nitride sintered body which comprises molding a mixed powder of 100 parts by weight of metallic silicon with a maximum particle size of 20 μm or less, 0.2 to 1 part by weight (calculated as chromium oxide) of a chromium component, and further 10 to 20 parts by weight of an oxide component of one or more of the oxides of yttrium, lanthanum, cerium, gadolinium and erbium, reaction sintering the above-prepared mold in a nitrogen gas or in a non-oxidizing atmosphere containing nitrogen gas, and thereafter, hot pressing the reaction sintered body.

4,521,359

METHOD OF COEXTRUDING PLASTICS TO FORM A COMPOSITE SHEET

Hsue C. Tsien, Chatham Township, Morris County, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 4, 1981, Ser. No. 327,274

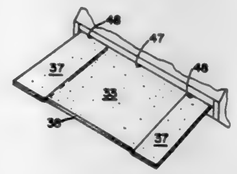
Int. Cl.³ B29D *9/08*

U.S. Cl. 264—104 **16 Claims**

1. A method of producing a composite sheet of dissimilar plastic materials, comprising the steps of:

(a) matching at least two dissimilar plastic materials with respect to their melt indices; and

(b) coextruding said matched plastic materials with a side-by-side orientation while hot and soft to form a composite



sheet having a substantially uniform demarcation therebetween.

4,521,360

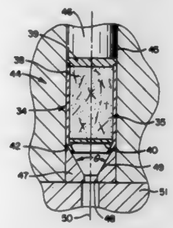
METHODS OF COMPACTION BY INCREMENTAL RADIAL COMPRESSION AND/OR LOW-RATIO EXTRUSION

Robert J. Fiorentino, Worthington, Ohio, assignor to Battelle Memorial Institute, Columbus, Ohio

Filed Sep. 12, 1983, Ser. No. 531,077

Int. Cl.³ B29D *3/02*

U.S. Cl. 264—108 **18 Claims**



1. A method of consolidating particulate materials into a compact, comprising:

a. enclosing the unconsolidated particulate material in a supporting can including a surrounding wall and end closures to confine a first volume of particulate material;

b. applying pressure on one end closure while confining the surrounding wall and forcing the other end closure through a die with a convergent portion having an included angle of convergence of less than about 90°; and

c. continuing the application of pressure on the one end while forcing the surrounding wall through the convergence of the die to provide incremental radical compression of the particulate material as it passes through the die, decreasing the first volume of unconsolidated particulate material to a second volume of particulate material which becomes smaller than the first volume in the convergent portion, and to produce a compact with substantially one hundred percent of the possible compactable density of the consolidated material, the area of cross-section of the particulate compact being between about one and seven times the area of cross-section of the compact passing through the aperture of the die.

4,521,361

AQUEOUS PLASTIC MOLDING COMPOSITIONS BASED ON CERAMIC RAW MATERIALS CONTAINING AIR-DRYING AND SINTERABLE ADDITIVES

Werner Sommer, Bad Soden, Fed. Rep. of Germany, assignor to T+F Kunststuffe fur Tecknik und Freizeit GmbH, Dreieich, Fed. Rep. of Germany

Continuation of Ser. No. 343,542, Jan. 28, 1982, abandoned. This application Aug. 1, 1983, Ser. No. 518,829

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1981, 3103813

Int. Cl.³ B27J *5/00*; D04H *1/54*

U.S. Cl. 264—126 **3 Claims**

1. An aqueous plastic molding composition based on more than 50% of mineral ceramic raw materials and a binder having less than 5% binder polymer present in the form of an aqueous dispersion or solution of organic resin the remainder being sinterable thermoplast and water:

said binder including a dual system including a first member selected from the group consisting of water-soluble, high molecular weight, film-forming agents, and water-dispersed, air-drying high molecular weight, film-forming agents, and a second member comprising water-insoluble thermoplasts of fine particulate form sinterable at temperatures below 250° C., and wherein the ratio of said mineral materials to said organic resin on a dry substance base is in the range of about from about 95:5 to about 60:40 by weight.

4,521,362

METHOD AND APPARATUS FOR MAKING A POLYMERIC COATED LAYER

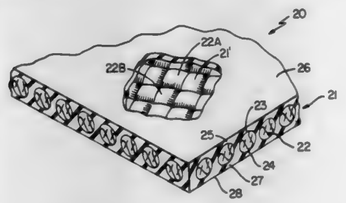
Joseph V. Tassone, Kettering, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 489,924, Apr. 29, 1983, Pat. No. 4,473,521. This application Jun. 4, 1984, Ser. No. 617,041

The portion of the term of this patent subsequent to Sep. 25, 2001, has been disclaimed.

Int. Cl.³ B29G *5/00*

U.S. Cl. 264—136 **24 Claims**



1. In a method of making a polymeric coated layer means comprising the steps of providing a layer of strand means with said strand means disposed in a predetermined pattern, forming said layer of strand means to comprise a first substantially planar layer of strands disposed in superimposed relation with a second substantially planar layer of strands whereby said strands of said first layer are not woven with said strands of said second layer, disposing a liquid polymeric coating on said layer of strand means while said strand means thereof are disposed in said pattern thereof, doctoring said coating, stretching said layer of strand means in one direction after said step of disposing said coating thereon, and drying said coating with a heating meanas to at least a degree thereof that will hold said strand means of said layer thereof in substantially said pattern thereof whereby said coating effectively is the sole securement means securing said strands of said first layer to said strands of said second layer and thereby imparts its flexible characteristic to said securement means between said strands of said first and second layers, the improvement wherein said step of doctoring said coating takes place after said step of stretching said layer of strand means and wherein said step of stretching said layer of strand means takes place after said heating means has dried said coating to at least a degree thereof that the stretching of said layer of strand means causes an outward thickening of said coating from said layer of strand means.

4,521,363

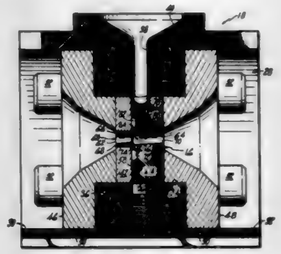
EXTRUSION OF A PLASTIC COATING ABOUT A STRAND

Ralph A. Vogel, Three Rivers, Mich., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Jan. 23, 1984, Ser. No. 573,172

Int. Cl.³ B29F *3/10*

U.S. Cl. 264—174 **5 Claims**



1. In an apparatus for extruding a thin uniform coating of fluent plastic material about a moving strand advancing longitudinally through a die assembly into which a stream of fluent plastic material is forced by an extruder, the improvement wherein said die assembly comprises:

a guide member and an extrusion die member in axially aligned relation with a longitudinally extending continuous bore formed therein through which the moving strand travels from an entry end to an exit end;

the portion of said bore adjacent said entry end being located within said guide member and dimensioned to serve as a guide for moving strand traveling longitudinally through said bore;

the portion of said bore adjacent said exit end being located within said die member and being in the form of a frustrum of a cone with its smaller end at said exit end and its larger end proximate to and in communication with said entry end portion; said exit end being of a size providing a clearance of from about 0.001 to 0.004 inch on the diameter of the moving strand; the frustro-conical inner surface of said exit end portion extending over a length substantially greater than the diameter of the moving strand and being tapered at an included angle of from about 0.5° to 8°; the clearance of said inner surface over the moving strand defining a hydrodynamic pressure centering chamber to cause the plastic material carried by the moving strand to develop hydrodynamic pressure forces effective to maintain the moving strand centered within said exit portion;

a circumferential channel proximate to said guide member which is spaced from and coaxial with said bore to define an annular distribution chamber concentric with said bore;

supply passages of substantially equal lengths leading to circumferentially spaced locations in said distribution chamber for feeding said distribution chamber with plastic material from an extruder; and

a constricted annular feed passage of uniform annular width and length extending radially inward from said distribution chamber to a portion of said bore intermediate the outlet of said entry end portion and the larger end of said exit end portion to direct a thin cross section of the plastic material radially inward onto the moving strand with substantially uniform volumetric flow of the plastic material circumferentially of the moving strand; the axial length of said intermediate bore portion being not substan-

tially greater than the annular width of said feed passage thereby minimizing the application of shear stress to the plastic material which is directed onto the moving strand.

5. A method of extruding a thin uniform coating of fluent plastic material about a strand advancing longitudinally through a die assembly into which a stream of fluent plastic material is forced, said method comprising the steps of:

continuously advancing said strand at a constant speed through an entry end portion of a continuous bore formed in a die assembly; said entry end portion being dimensioned to serve as a guide for the advancing strand;

forcing a stream of fluent plastic material into said die assembly;

dividing said stream of fluent plastic material into equal branch streams;

directing said branch streams to circumferentially spaced points in an annular distribution chamber within said die assembly which is spaced from and concentric with said bore;

combining said branch streams within said distribution chamber to form an annular pool of fluent plastic material of substantially uniform pressure therethrough;

directing a radial stream of fluent plastic material from said distribution chamber radially inward and onto the advancing strand through a constricted annular feed passage of uniform compass extending between said distribution chamber and an intermediate portion of said bore at the outlet of said entry end portion, thereby providing a symmetrical flow of the fluent plastic material onto the advancing strand; and

passing the advancing strand with the radial stream of fluent material adhering thereto through a conically converging exit end portion of said bore which is convergent toward the exit end of said bore at an included angle of from about 0.5° to 8°, thereby effecting a hydrodynamic circumferential centering action upon the fluent plastic material adhering to the advancing strand which centers the latter within said exit end portion.

4,521,364

FILAMENT-LIKE FIBERS AND BUNDLES THEREOF, AND NOVEL PROCESS AND APPARATUS FOR PRODUCTION THEREOF

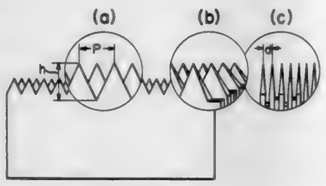
Susumi Norota; Tsutomu Kiriyama; Tadashi Imoto, and Toshinori Azumi, all of Iwakuni, Japan, assignors to Teijin Limited, Tokyo, Japan

Division of Ser. No. 133,288, Mar. 24, 1980, Pat. No. 4,355,075. This application Jul. 2, 1982, Ser. No. 394,891

Claims priority, application Japan, Mar. 27, 1979, 54-35008; Mar. 27, 1979, 54-35009; Jul. 16, 1979, 54-89315; Sep. 4, 1979, 54-112370

Int. Cl.³ D01D *5/088*

U.S. Cl. 264—176 F **5 Claims**



1. A process for producing a bundle of filament-like fibers by extruding a melt of a thermoplastic synthetic polymer through a spinneret having numerous small openings, which comprises extruding said melt from said spinneret, said spinneret having such a structure that discontinuous elevations are provided between adjacent small openings on the extruding side of the spinneret, and the melt extruded from one opening can move to and from the melt extruded from another opening adjacent thereto or vice versa through a depression existing between said elevations; and taking out the extrudates from the small openings while cooling them by supplying a cooling fluid to the extrusion surface of said spinneret or to its neighborhood, said cooling fluid being supplied such that the solidification length (L_f) which is defined as the distance from the surface of the elevations of the spinneret to a point at which the fine fibrous streams have a diameter 1.1 times as large as the fixed fiber diameter, is less than 1 cm, whereby said extrudates are converted into numerous separated fine fibrous streams and solidified.

4,521,365

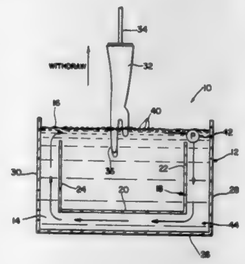
GLOVE MOLDING APPARATUS AND METHOD

Leonard D. Kurtz, Woodmere, N.Y., assignor to Bio Research Inc., Farmingdale, N.Y.

Filed Dec. 20, 1983, Ser. No. 563,450

Int. Cl.³ B29C *13/00*

U.S. Cl. 264—306 **8 Claims**



5. A method for preventing web formation between spaced elements of a mold for gloves or the like comprising the steps of:

dipping the mold in a tank containing a liquid polymer to coat the mold;

circulating a plurality of small objects floating on the surface of the polymer past the coated mold wherein said objects have a diameter of about ¼ inch; and

withdrawing the mold slowly from the tank whereby the small circulating objects move between the elements of the mold and thereby prevent the formation of webs between the elements of the mold.

4,521,366

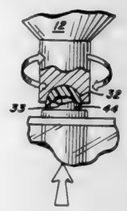
METHOD FOR CLOSING AND SEALING PLASTIC TUBING USING A HOT DIE AND A ROTATING COLD DIE

Joe Mason, Mundelein, and Hermann F. Eckert, Palatine, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 24, 1982, Ser. No. 392,421

Int. Cl.³ B29C *17/00*

U.S. Cl. 264—312 **3 Claims**



1. A method for sealing the open end of a plastic tube comprising the steps of:

inserting the open end of the tube into the cavity of a hot die to heat and soften the plastic while simultaneously deforming the tube walls inwardly until the walls join along a closure line, thereby forming a closed tube end;

withdrawing the heated, softened closed tube end from the hot die;

inserting the heated, softened closed tube end into the cavity of a cold die to cool the closed tube end;

while the closed tube end is being cooled, rotating the cold die about the closed tube end to disrupt the closure line and interfuse the joined tube walls along the closure line to form a homogeneous plastic mass sealing the closed tube end; and

withdrawing the closed and sealed tube end from the cold die when the closed and sealed tube end has substantially hardened.

4,521,367

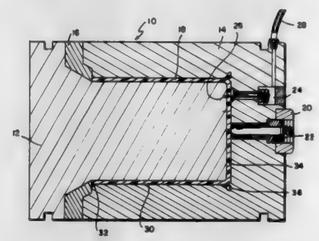
MOLD, PROCESS OF MOLDING, AND ARTICLE MOLDED BY SUCH PROCESS

J. Larry Underwood, c/o Underwood Mold Company, Inc., 104 Dixie Dr., Woodstock, Ga. 30188

Filed Nov. 16, 1981, Ser. No. 321,570

Int. Cl.³ B29F *1/14*

U.S. Cl. 264—318 **13 Claims**



1. A process for molding an article having a flange between a mold core and a unitary mold element which cooperates with the mold core to form a mold space, the flange being formed during the process as a consequence of the existence of an undercut existing in a first surface of the unitary mold element, the process comprising the steps of:

providing a ridge on a second surface of the unitary mold element adjacent the undercut,

injecting a fluid between the unitary mold element and the molded article as the core and unitary mold element separate in such a volume and at such a pressure as will maintain the article in substantially complete and constant contact with the core as the core and article are withdrawn from the unitary mold element, the flange conforming to the unitary mold element wall until the article is free from the unitary mold element, and subsequently

separating the molded article from the mold core.

4,521,368

METHOD OF MAKING INTERNALLY CROSS-RIBBED PLASTICS MATERIAL STRUCTURE

Frank B. Mercer, Blackburn, and Keith F. Martin, Lancashire, both of England, assignors to Netlon Limited, Blackburn, England

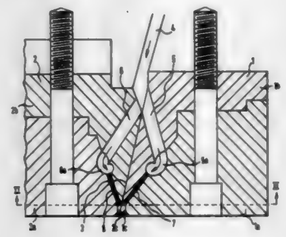
Filed Jul. 1, 1983, Ser. No. 510,253

Claims priority, application United Kingdom, Jul. 6, 1982, 8219458

Int. Cl.³ B29D *23/04*

U.S. Cl. 264—514 **9 Claims**

1. A method of producing a unitary, tubular, plastics material structure, comprising coaxially extruding in a single operation a tubular inner layer, a tubular outer layer and, between the layers, an inner set and an outer set of helical elements, the helices being oppositely handed and the helical elements forming a biplanar mesh, the inner helical elements being united with the inner layer, the inner and outer helical elements being united with each other at their cross-over points, and the outer helical elements being united with the outer layer, in each case



the uniting being performed by integral or confluent extrusion whereby said plastics material structure comprises interconnected spaces between said inner and outer layers, defined between adjacent said helical elements of said inner set and between adjacent said helical elements of said outer set.

4,521,369

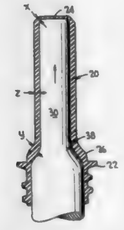
METHOD OF MAKING MOLECULARLY ORIENTED PLASTIC BOTTLES

John A. Marcinek, Westfield, Mass., assignor to Emhart Industries, Inc., Farmington, Conn.

Division of Ser. No. 56,426, Jul. 10, 1979, Pat. No. 4,432,530, which is a continuation-in-part of Ser. No. 863,746, Dec. 23, 1977, abandoned. This application Jan. 3, 1984, Ser. No. 567,517

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—532 **6 Claims**



1. Process of manufacturing a molecularly oriented plastic bottle comprising the steps of (1) providing an injection molded plastic parison having a bottom wall portion, a sidewall portion, a shoulder portion and a neck finish, said bottom wall portion having a flat area and there being an annular corner area joining said bottom wall and sidewall portions, said bottom wall portion having a thickness less than the thickness of said sidewall portion with there being a rapid transition from said flat of said bottom wall to said sidewall portion with said sidewall thickness being substantially constant from said annular corner area to said shoulder portion; (2) positioning said parison in a stretch/blow mold; and (3) stretch/blowing said parison in said blow mold to form a finished bottle.

4,521,370

CONTROL OF NUCLEAR REACTORS

Larry E. Fischer, Los Gatos, and Jackie E. Bean, Santa Clara, both of Calif., assignors to General Electric Company, San Jose, Calif.

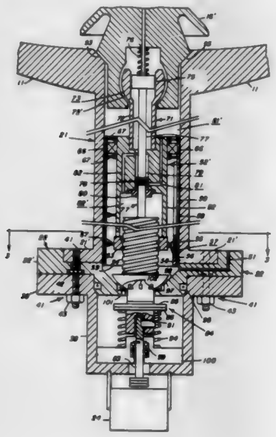
Filed Jul. 8, 1982, Ser. No. 396,394

Int. Cl.³ G21C *19/20*

U.S. Cl. 376—233 **1 Claim**

1. In a vertically oriented control rod drive device posi-

tioned beneath a pressure vessel for selectively inserting a control rod into a nuclear reactor core in said pressure vessel including a tubular drive housing secured to the bottom of said pressure vessel and extending downward therefrom; a lower housing secured to and closing the lower end of said drive housing; a drive piston having an upper head portion and a lower, elongated, annular skirt portion reciprocably disposed in said drive housing including sealing means for providing a fluid seal between said drive piston and said drive housing; an upwardly extending coupling member secured to the top end of said drive piston and including coupling means for releasably coupling said drive piston to said control rod; a coupling release rod coaxially positioned in said connecting member and penetrating into said drive piston and being reciprocable between an upper position and a lower position; latching means secured to said coupling release rod for latching said coupling means to said control rod when said release rod is in its lower



position and for releasing said coupling means from said control rod when said release rod is in its upper position; means for admitting a drive fluid at a pressure higher than the pressure in said pressure vessel to the under side of said drive piston for rapid fluid drive insertion of said control rod into said core; a stabilizing arrangement for preventing movement of said coupling release rod toward its upper position and consequent release of said coupling means during fluid drive of said drive piston comprising: a cylindrical chamber in said drive piston surrounding said release rod; an annular chamber piston in said chamber secured to said release rod for reciprocating therewith; a first fluid passage from the under side of said drive piston to the upper end of said chamber; and a second fluid passage from the upper end of said drive piston to the lower end of said chamber whereby during fluid drive of said drive piston the net force on said chamber piston is downward to maintain said release rod in its lower position whereby said control rod remains coupled to said drive piston.

4,521,371

VESSEL LIQUID LEVEL INDICATION

Daniel A. Peck, South Windsor, and Vincent M. Callaghan, West Granby, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 16, 1981, Ser. No. 331,419
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—245 **15 Claims**

1. In a nuclear steam supply reactor coolant system having a plurality of fluidly connected components including a nuclear reactor vessel, a steam generator, pump means, and pressurizer, each resting on at least one vertical support member which in turn is connected to a respective base, a method of determining the fluid content in the reactor vessel comprising:

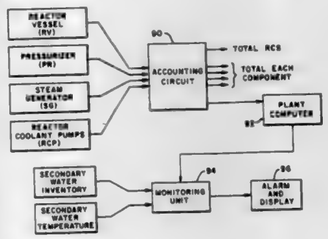
attaching a strain gauge to a vertical support member of each of said components whereby a change in the strain on each support member due to vertical stress is sensed by each gauge;

receiving the output signals of the strain gauges at a central processing location;

calibrating the gauges during the start up testing of the reactor coolant system by recording the output signals indicative of support member strain measured at a variety of plant conditions including,

a. no water in the reactor coolant system,

b. the reactor coolant system filled with water at ambient temperature,



c. the reactor coolant system filled with water at hot operating conditions, and

d. the reactor coolant system filled with water at hot operating conditions with the pressurizer drained;

determining a proportionality constant for the strain gauge output from each component such that the sum of the products of the proportionality constants and the change in respective strain gauge outputs is substantially equal to the change in reactor coolant system fluid content during calibration;

after completing the start up testing, monitoring the strain gauge signals at the central processing location and generating display signals indicative of the total fluid content of the reactor coolant system and the fluid content of at least the reactor vessel component.

4,521,372

APPARATUS AND METHOD FOR MONITORING STORED MATERIAL

William E. Price, Houston, Tex.; Louie A. Galloway, III, Lafayette, La.; Charles B. Lowrey, Beaumont, and Donald R. Lewis, San Antonio, both of Tex., assignors to Nuclear Monitoring Systems & Management Corporation, Houston, Tex.

Filed Aug. 26, 1981, Ser. No. 296,429
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—250 **36 Claims**

8. A storage system for the monitored retrievable storage of radioactive material comprising

a first container for containing radioactive material;

a second container for containing said first container;

a storage cell containing said second container;

a first conduit for transporting a first fluid to a cavity between said first container and said second container when said first container is contained within said second container;

a second conduit for transporting said first fluid from said cavity between said first container and said second container;

pump means connecting said first conduit and said second conduit for moving said first fluid through said first conduit, through said cavity between said first container and said second container, through said second conduit, through said pump means and back into said first conduit in a continuous closed loop of fluid flow, said closed loop of fluid flow through said cavity covering substantially the entire exterior surface of said first container;

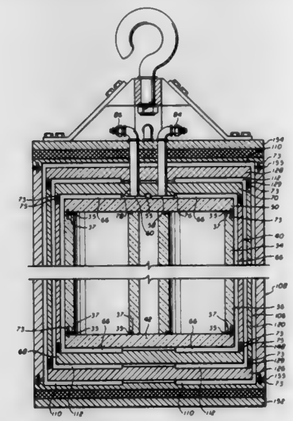
a radiation detector located within said closed loop of fluid flow for measuring the level of radioactivity present in said first fluid flowing through said closed loop of fluid flow;

a detector for detecting a second fluid located within said closed loop of fluid flow for detecting the presence of said second fluid in said first fluid flowing through said closed loop of fluid flow;

a volume measuring unit located within said closed loop of fluid flow for measuring a change in the volume of said first fluid in said closed loop of fluid flow;

a flowmeter located within said closed loop of fluid flow for measuring the rate of flow of said first fluid flowing through said closed loop of fluid flow;

a computer having at least one first input line connected to said radiation detector for transmitting a first signal to said computer when said radiation detector detects the presence of a level of radioactivity in said first fluid flowing through said closed loop of fluid flow that is not within a predetermined range of levels of radioactivity due to leakage of said radioactive material from said first container, said computer having means for monitoring said first input line to detect said first signal and having means to indicate that said computer has detected said first signal on said first input line; and



said computer having at least one second input line connected to said detector for detecting said second fluid for transmitting a second signal to said computer when said detector for detecting said second fluid detects the presence of a volume of said second fluid in said first fluid that is not within a predetermined range of volumes of second fluid, said volume of said second fluid being due to leakage of said second fluid into said closed loop of fluid flow from outside said second container, said computer having means for monitoring said second input line to detect said second signal and having means to indicate that said computer has detected said second signal on said second input line; and

said computer having at least one third input line connected to said volume measuring unit for transmitting a third signal to said computer when said volume measuring unit detects a change in the volume of said first fluid in said closed loop of fluid flow that causes the volume of said first fluid to not be within a predetermined range of volumes, said computer having means for monitoring said third input line to detect said third signal and having means for indicating that said computer has detected said third signal on said third input line; and

said computer having at least one fourth input line connected to said flowmeter for transmitting a fourth signal to said computer when said flowmeter detects a rate of flow of said first fluid flowing through said closed loop of fluid flow that is not within a predetermined range of rates of flow, said computer having means for monitoring said fourth input line to detect said fourth signal and having means for indicating that said computer has detected said fourth signal on said fourth input line; and

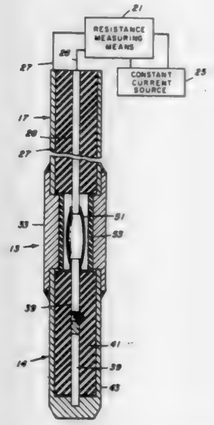
means for retrieving said second container and said first container from said storage cell when leakage of said radioactive material from said first container is detected or when said second fluid from outside said second container is detected.

4,521,373

LIQUID LEVEL SENSOR

James H. Terhune, and John P. Neissel, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 23, 1982, Ser. No. 410,578
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—258 **8 Claims**

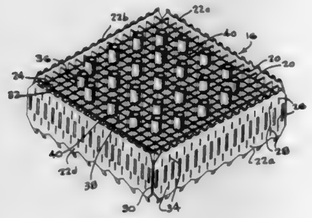


1. A liquid level detector for insertion into the pressure vessel of a nuclear reactor, said pressure vessel suitable for containing liquid and gaseous material, said detector comprising coaxial means for conducting electricity, said coaxial means including an inner conductor and an outer conductor separated by an insulative sleeve, said coaxial means being electrically connected to a source of constant current and a resistance measuring means; a sensing means for responding positively in terms of electrical resistance to an increase in temperature; a heat-conductive and electrically-insulative sleeve means for laterally surrounding said sensing means; an electrically-conductive and heat-conductive jacket means for laterally surrounding said sleeve means, said sensing means and said jacket means being electrically connected at a common end; and thermally limiting means for electrically connecting the outer conductor of said coaxial means with said jacket means, surrounding resilient sleeve means for electrically connecting said inner conductor of said coaxial means with said sensing means, whereby the level of liquid in said pressure vessel is detectable in terms of a variation in resistance of said sensing means.

4,521,374
FUEL GRID WITH SLEEVES WELDED IN NOTCHED GRID STRAPS

Robert Duncan, Columbia, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 1, 1982, Ser. No. 414,232
Int. Cl.³ G21C *3/34*
U.S. Cl. 376—462 **3 Claims**

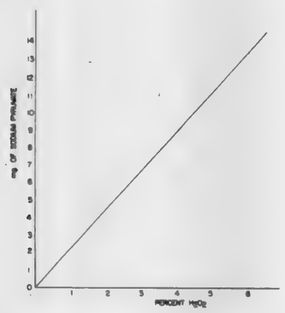


1. A grid and sleeve assembly comprising:
(a) means defining a grid including a first pair of spaced, parallel grid straps extending substantially perpendicularly to a second pair of spaced parallel grid straps, the straps of each pair having the same spacing as the straps of the other pair and thereby defining at least one cell, the straps having generally straight upper edges lying substantially in a common plane;
(b) said straps each having a rectangular notch in a said strap edge thereof located centrally along said strap edge between the straps perpendicular thereto, said notch having a generally straight edge substantially parallel to said strap edge and having a pair of edges substantially perpendicular to said strap edge; and
(c) a cylindrical sleeve having a solid circumferential wall of generally constant inside and outside diameters, said sleeve also having a lower annular end face seated upon said edges of said notches and engaging with an interference fit each of said pairs of edges of said notches of said four straps, with said sleeves welded to a plurality of said straps at said notches.

4,521,375
STERILIZING TREATMENT WITH HYDROGEN PEROXIDE AND NEUTRALIZATION OF RESIDUAL AMOUNTS THEREOF

Robert D. Houlsby, Sunnyvale, Calif., assignor to CooperVision, Inc., Menlo Park, Calif.

Filed Nov. 23, 1982, Ser. No. 444,045
Int. Cl.³ A61L *2/18*
U.S. Cl. 422—29 **25 Claims**

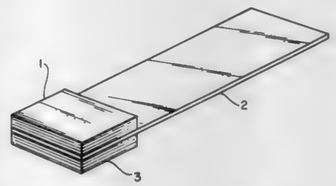


1. A method for sterilizing surfaces which come into contact with living tissue comprising
(a) contacting said surface with an aqueous medium containing a sterilizing amount of hydrogen peroxide, and
(b) subsequently contacting said surface with an amount of pyruvic acid or a water-soluble salt thereof effective to destroy any residual hydrogen peroxide.
19. A sterilization kit for articles which come into contact with living tissue comprising
(a) a container containing a sufficient amount of a hydrogen peroxide-yielding compound effective, when dissolved in a selected volume of water whereby a sterilizing solution is produced, to sterilize a treated article, and
(b) a container containing a sufficient amount of a water-soluble pyruvic acid salt effective to prepare an aqueous solution containing from about 5 to about 50 mg/ml of said salt, and
(c) means for holding said containers substantially immobile in said kit.

4,521,376
GLUTARALDEHYDE INDICATOR

Robert J. Witonsky, Princeton, and Raymond P. Larsson, Denville, both of N.J., assignors to Info-Chem Inc., Fairfield, N.J.

Filed Jun. 13, 1983, Ser. No. 503,892
Int. Cl.³ G01N *31/22, 33/52*
U.S. Cl. 422—56 **30 Claims**

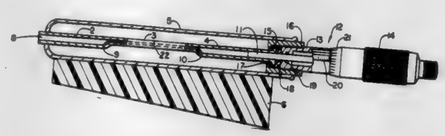


1. An indicator capable of distinguishing between glutaraldehyde sterilant solutions of different glutaraldehyde concentrations, comprising an absorbant medium which has been impregnated with a solution of a sulfite compound and amine compound wherein the amine compound is (1) an amino acid where the amino acid is glycine or lysine; or (2) an ammonium compound and wherein said sulfite and amine compounds are present in an amount effective to distinguish between glutaraldehyde solutions of different glutaraldehyde concentrations.

4,521,377
FLOW THROUGH GAS ANALYZER

John J. Kozacik, 1116 Carney St., Cincinnati, Ohio 45239

Filed Feb. 25, 1982, Ser. No. 352,213
Int. Cl.³ G01N *7/00*
U.S. Cl. 422—92 **10 Claims**

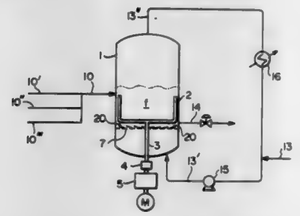


1. A micro fluid analyzer consisting of an elongated transparent analyzer tube having an outer reservoir with an open outer end, a linear capillary tube connected at one end to the inner end of said outer reservoir, and an inner reservoir connected at its inner end to the opposite end of said capillary tube, said reservoirs and said capillary tube lying in tandem relation to each other, displacement means operatively connected to the outer end of said inner reservoir for drawing a carrier fluid placed in the outer reservoir through said capillary tube into the inner reservoir, means for measuring the volume of fluid drawn into the inner reservoir, and reference means in association with said capillary tube for determining the extent of a sample bubble of a fluid to be analyzed which is injected into the carrier fluid in the outer reservoir and drawn through the capillary tube as a concomitant of drawing the carrier fluid into said inner reservoir.

4,521,378
FLUID BED REACTOR SYSTEM COMPOSED OF CYLINDRICAL REACTION VESSEL EQUIPPED WITH DISTRIBUTION PLATE AND AGITATOR

Mitsunori Ichimura; Ryoichi Yamamoto, both of Ichihara, and Katsutoshi Horimoto, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 9, 1983, Ser. No. 473,433
Claims priority, application Japan, Mar. 9, 1982, 57-37830
Int. Cl.³ B01J *8/38, 8/44*
U.S. Cl. 422—135 **3 Claims**

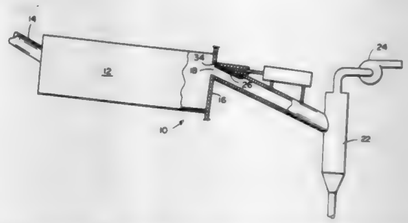


1. A fluid bed reactor system in which an olefin monomer or monomers can be catalytically polymerized in a fluid bed under fluidized conditions and comprising a cylindrical reaction vessel, a distribution plate provided in the lower section of the vessel, an agitator disposed in a fluidized bed above the plate and adapted to cause a rotational flow in the fluidized bed, a fluidizing gas medium supply line means provided below the plate and adapted to cause said fluidized conditions, a catalyst introducing line means adapted to supply a catalyst to the fluidized bed, a fluidizing gas medium recycle line means provided above the fluidized bed in the reaction vessel and adapted to recycle the gas medium to the gas medium supply line means, and a polymer product recovering line means adapted to recover the polymer product from the fluidized bed; characterized in that the distribution plate satisfies the following conditions,
(i) each of a plurality of passage holes provided in the distribution plate for passage of the fluidizing gas medium is covered with a cap having an opening,
(ii) the opening in said cap is provided only on one side of the cap, and the direction (A) of the opening is not opposite to the direction (B) of the rotational flow,
(iii) the direction (A) of the opening varies with the distance (d) from the center (X) of the plate to the center (Y) of the hole,
(iv) the opening direction (A) of the cap or caps at a hole or holes which are located closest to said center of said plate is nearer to the center (X) than is the tangential direction of a circle having the center (X) as a center and the distance ($d_{min.}$) to the hole or holes as a radius,
(v) the opening direction (A) of a cap or caps at a hole or holes which are located furthest from said center of said plate is directed farther from the center (X) than is the tangential direction of a circle having the center (X) as a center and the distance ($d_{max.}$) to the hole or holes as a radius, and
(vi) the opening direction (A) of caps at holes other than the hole or holes specified in (iv) and (v) are displaced from the direction specified in (iv) to the direction specified in (v) according to the distance (d) to these holes.

4,521,379
ROTARY CALCINING SYSTEM WITH CLEANING MEANS

Bennie J. Beane, Wilmington, N.C., assignor to General Electric Company, San Jose, Calif.

Filed Jun. 24, 1983, Ser. No. 507,561
Int. Cl.³ B01J *6/00, 8/08*
U.S. Cl. 422—209 **19 Claims**

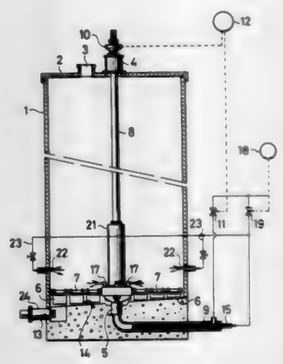


1. An improved rotary calcining system for calcining materials of a tacky consistency having a propensity for adhering, comprising the combination of a rotary cylinder calciner having a fed inlet in an upstream end and an outlet port in a downstream end wall of the cylinder calciner connected with a discharge duct leading therefrom for carrying material from the cylinder calciner, said combination being provided with a reciprocable cleaning plate located within said discharge duct adjacent to the downstream end wall of the cylinder calciner and the outlet port therein and arranged to reciprocally move forward into and backward out from the outlet port and thereby free said port of any adhering material.

4,521,380
APPARATUS FOR DILUTION OF PULP

Shigeo Fujimoto, 3984-24 Imaizumi, Fuji-shi, Shizuoka-ken, Japan

Filed Apr. 26, 1983, Ser. No. 489,411
Claims priority, application Japan, May 7, 1982, 57-75494
Int. Cl.³ B01F *7/20, 15/04;* **D21C** *7/12;* **G05D** *7/06*
U.S. Cl. 422—273 **17 Claims**



1. In a pulp diluting apparatus having a cylindrical vessel, a lid having a pulp inlet therein covering the top of said vessel, a bottom end portion of said cylindrical vessel, an upper bearing mounted on the center of said lid, a lower steady support bearing mounted on the center of said bottom end portion of said cylindrical vessel, a rotary shaft rotatably mounted between said upper bearing and said lower bearing, rods having scraper blades mounted on the lower portion of said rotary shaft, a driving machine connected to said rotary shaft for rotating said shaft, and an outlet in the lower part of said cylindrical vessel beneath said rods for taking the diluted pulp out of said cylindrical vessel, the improvement comprising:

water dischargers mounted on said rotary shaft in the center of said cylindrical vessel at a position above said rods and in positions spaced circumferentially around said rotary shaft and each having a water outlet disposed at a level above said rods and opening radially into the interior of said cylindrical vessel, and a first water supply pipe connected to said water dischargers;

a second water supply pipe disposed at the bottom portion of said cylindrical vessel proximate the center of said bottom end portion and opening generally upwardly into fluid communication with the interior of said cylindrical vessel at a position below said rods, means for supplying water to said second water supply pipe at a pressure at least sufficient for causing said second water supply pipe to discharge an ascending current of water sufficiently strong for pushing a mass of pulp contained within said cylindrical vessel upwardly;

a valve provided in said second water supply pipe;

a torque detector connected with said driving machine for detecting the torque of said driving machine and connected to said valve for operating said valve in response to an increase in torque detected to control the pressure of water supplied to said cylindrical vessel through said second water supply pipe to discharge an ascending current of water capable of pushing the lower portion of the mass of pulp upwardly at least to the position of said water outlets of said water dischargers.

4,521,381

RECOVERY OF RHENIUM

Alan D. Douglas, and Kenneth T. Reilly, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 7, 1984, Ser. No. 669,126

Int. Cl.³ C01G *47/00*

U.S. Cl. 423—49 **4 Claims**

1. A process for recovering rhenium from tungsten and rhenium bearing material, said process comprising:

(a) reacting said tungsten and rhenium bearing material with a mixture of sodium hydroxide and an oxidizing reactant to form a fused solid containing soluble tungsten and rhenium values.

(b) dissolving said fused solid in water to form an alkaline solution comprising tungsten and rhenium values

(c) contacting said solution comprising tungsten and rhenium values with a bed of a strongly basic anion exchange resin to aosorb a major portion of the rhenium values and form a rhenium depleted solution comprising substantially all of the tungsten values,

(d) contacting an organic stripping liquid comprising tributyl phosphate and hydrochloric acid with said anion exchange resin containing the rhenium values to form a liquid organic containing the rhenium values,

(e) contacting water with said resin to form an aqueous solution of rhenium values,

(f) mixing said liquid organic and aqueous solution to form a two phase system consisting of a first organic phase of tributylphosphate and the major portion of the rhenium values and an aqueous phase of hydrochloric acid, water, and the minor portion of the rhenium.

(g) separating said organic phase from said aqueous phase,

(h) removing the major portion of the hydrochloric acid from said aqueous phase to form a solution of perrhenic acid,

(i) mixing said organic phase with aqueous ammonia to transfer essentially all of the rhenium values from said organic phase and to form another two phase system consisting of another organic phase another aqueous phase consisting of essentially all of the rhenium and,

(l) separating said second aqueous phase from said second organic phase.

4,521,382

FORMATION OF COKE FROM HEAVY CRUDE OILS IN THE PRESENCE OF CALCIUM CARBONATE

Michael A. Kessick; Zacharia M. George, and Linda G. Schneider, all of Edmonton, Canada, assignors to Alberta Research Council, Edmonton, Canada

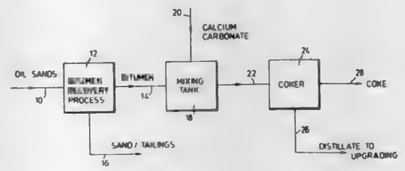
Filed Jun. 9, 1980, Ser. No. 157,938

Claims priority, application United Kingdom, Jun. 8, 1979, 7920001

The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.

Int. Cl.³ C01G *31/00*

U.S. Cl. 423—68 **1 Claim**



1. A process for the recovery of nickel and vanadium values from heavy crude oil or residua having an API gravity of less than 25° C. and sulphur, nickel and vanadium, which comprises:

mixing calcium carbonate with said heavy crude oil or residua,

coking the resulting mixture at a temperature of about 400° to about 500° C. to produce a coke,

combusting said coke to form an ash,

leaching said ash with hydrochloric acid to dissolve nickel and vanadium values therefrom, and

recovering said nickel and vanadium values from the leach liquor.

4,521,383

LIME ADDITION TO HEAVY CRUDE OILS PRIOR TO COKING

Michael A. Kessick; Zacharia M. George, and Linda G. Schneider, all of Edmonton, Canada, assignors to Alberta Research Council, Edmonton, Canada

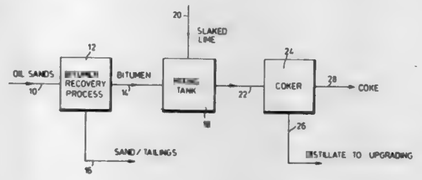
Filed Jun. 9, 1980, Ser. No. 157,939

Claims priority, application United Kingdom, Jun. 8, 1979, 7920001

The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.

Int. Cl.³ C01G *31/00*

U.S. Cl. 423—68 **1 Claim**



1. A process for the recovery of nickel and vanadium values from a heavy oil or residua having an API gravity value of less than 25° and containing nickel, vanadium and sulphur, which comprises:

(a) mixing a calcium compound selected from the group consisting of calcium hydroxide and calcium oxide with said heavy crude oil or residua prior to coking in an amount sufficient to give a molar ratio of calcium to sulphur in the heavy crude oil or residua of about 1:3 to about 1:1;

(b) effecting coking of said heavy crude oil at a temperature of about 450° C. to about 500° C. to produce a coke;

(c) combusting said coke to produce an ash;

(d) leaching said ash with hydrochloric acid to dissolve nickel and vanadium values therefrom, and

(e) recovering said nickel and vanadium values from the leach liquor.

4,521,384

PROCESS FOR THE PRODUCTION OF NEARLY ALUMINIUM CHLORIDE-FREE TITANIUM TETRACHLORIDE FROM TITANIFEROUS RAW MATERIALS CONTAINING ALUMINUM COMPOUNDS

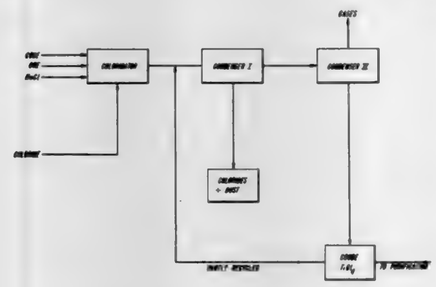
Achim Hartmann, Pulheim, and Hans Thumm, Leverkusen, both of Fed. Rep. of Germany, assignors to Kronos Titan - G.m.b.H., Leverkusen, Fed. Rep. of Germany

Filed Sep. 9, 1982, Ser. No. 416,262

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136289

Int. Cl.³ C22B *1/08*

U.S. Cl. 423—72 **8 Claims**



1. A process for the production of a nearly aluminum chloride-free titanium tetrachloride comprising:

(a) chlorinating in a fluidized bed and in the presence of a reducing agent a finely divided titaniferous raw material which is rich in titanium and which contains impurities including aluminum compounds to form a gaseous reaction mixture containing titanium tetrachloride, aluminum chloride and other impurities;

(b) reacting the aluminum chloide with sodium chloride to form a complex;

(c) subsequent to step (b), subjecting the gaseous reaction mixture containing titanium tetrachloride, aluminum chloride/sodium chloride complex and impurities to a first condensing step whereby aluminum chloride/sodium chloride complex and lower volatility impurities are condensed;

(d) separating the condensate of step (c) from the gaseous reaction mixture;

(e) subjecting the gaseous reaction mixture to a second condensing step whereby the titanium tetrachloride is condensed; and

(f) recovering titanium tetrachloride which contains not more than 0.07% by weight aluminum chloride.

4,521,385

RECOVERY OF TITANIUM VALUES

Hans G. Brandstatter, Welland, Canada, assignor to Ontario Research Foundation, Sheridan Park, Canada

Filed Feb. 28, 1983, Ser. No. 470,070

Claims priority, application United Kingdom, Mar. 2, 1982, 8206846

Int. Cl.³ C01G *23/02*

U.S. Cl. 423—76 **6 Claims**

1. A method for the separate recovery of iron and titanium values in substantially pure form from an iron- and titanium-containing ore or ore concentrate wherein the iron and titanium values are in oxide, carbonate and/or hydroxide form and which also contains gangue constituents comprising at least one oxide selected from the group consisting of silica, alumina, magnesia and lime, which comprises:

blending said iron- and titanium-containing ore or ore concentrate in finely divided form with finely divided carbon in at least a stoichiometric amount to convert said titanium to titanium carbide and said iron to carburized iron containing no more than about 4 wt.% of carbon,

heating said blend in a reaction zone to a temperature of about 1200° to about 2300° C. to initiate and sustain a single step solid-state reducing and carburization reaction to convert substantially all the titanium values to titanium carbide and substantially all the iron values to carburized iron containing no more than 4 wt.% carbon while said gangue constituents remain relatively unaffected, whereby said titanium carbide and carburized iron are obtained in a single treatment step from the ore or concentrate by a solid state reaction,

subjecting said heated blend to magnetic separation to separate a magnetic fraction comprising at least a substantial proportion of the iron values in the form of carburized iron from a non-magnetic fraction comprising at least a substantial proportion of the titanium values in the form of titanium carbide and said relatively unaffected gangue constituents, and

chlorinating said non-magnetic fraction to selectively form titanium tetrachloride from said titanium carbide while leaving substantially unaffected said gangue constituents, thereby achieving separation of the titanium values in substantially pure form.

4,521,386

PROCEDURE FOR OBTAINING HIGH PURITY MAGNESIUM SALTS OR THEIR CONCENTRATE SOLUTIONS FROM SEA WATER, BRINE OR IMPURE MAGNESIUM SALT SOLUTIONS

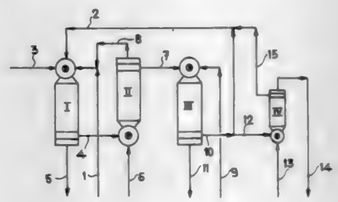
Gustavo D. Nogueira, Daoiz y Velarde 7, Alcala de Henares (Madrid); Jose M. R. Vega, San Ernesto 12, and Eduardo D. Nogueira, Avda. Mediterraneo 47, both of Madrid, all of Spain

Filed Nov. 2, 1983, Ser. No. 547,769

Claims priority, application Spain, Nov. 5, 1982, 517149

Int. Cl.³ C01F *5/00, 1/00*

U.S. Cl. 423—157 **15 Claims**



1. Process for obtaining high purity magnesium salts or concentrate solutions from a liquid, raw material such as sea water, brine water or impure magnesium salt solutions, consisting in:

a treatment stage of the liquid, raw material by chloration and filtration;

followed by an extraction stage of magnesium from the liquid treated in the treatment stage, by placing same in contact with an organic solution containing an extraction agent belonging to a phosphor based organic acid group, the magnesium being exchanged by hydrogen ions which are neutralized by an addition of an alkali, until a required pH is reached, thus producing:

an organic extract containing the magnesium and some impurities,
as well as a first aqueous solution with low magnesium content;
followed by a washing stage where the magnesium organic extract is put into contact with a second aqueous solution having a concentration of magnesium, in order to exchange a co-extracted calcium fraction from the organic extract by the magnesium from the second aqueous solution thus producing:
a washed organic extract which contains the magnesium but no calcium,
and a third aqueous solution which is then incorporated to the extraction stage;
followed by a magnesium re-extraction stage where the washed organic magnesium extract comes into contact with a pure acid or with a solution of the acid with the salt corresponding to the magnesium, at controlled pH, producing:
an organic refined product practically free from magnesium but which contains a small amount of heavy metal,
and a concentrate aqueous solution with high purity magnesium salt corresponding to anion of the acid used;
followed by a regeneration stage where a fraction of the organic refined product comes into contact with a concentrate acid producing:
a discharged organic solution which together with the non-regenerated fraction of the organic refined product are recycled in the extraction stage,
and acid aqueous solution containing the heavy metals; and
a crystallization stage of the concentrate magnesium solution by evaporating excess water, or by common ion effect with an addition of acid, to obtain:
a crystalline pure magnesium salt,
and mother liquors which are recycled in the re-extraction stage.

4,521,387

PURIFICATION OF GASES CONTAINING CO AND/OR CO_2

Franz J. Broecker, Ludwigshafen; Hans Gettert, Gross-Sachsen, and Knut Kaempfer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 18, 1983, Ser. No. 552,930
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243206
Int. Cl.³ B01D *53/36*
U.S. Cl. 423—210 **3 Claims**

1. A process for the purification of a gas containing CO and/or CO_2, in which the compounds H_2S, COS, CS_2, CH_3SH, higher mercaptans, HCN, CHOOH, HCL, Fe Carbonyls, Ni carbonyls and Vanadium carbonyls and unreacted oxygen, said compounds being contained in gases produced by the partial oxidation of fossil fuels, as well as mercury which is present in the hydrogen produced in the electrolysis of alkali metal chlorides are removed by catalytic reaction at elevated temperatures, wherein the gas to be purified is passed directly through a catalyst charge containing a Cu/ZnO catalyst which is prepared by the thermal decomposition of a catalyst precursor of the formula

$$Cu_xZn_y(OH)_6(CO_3)_2,$$

where x+y=5 and x and y are integers or non-integral numbers in the ranges
x=1.0–2.5
y=2.5–4.0
and the space velocity is set at 500–5,000 m^3 (S.T.P.) per m^3 of catalyst per hour.

4,521,388

NO_x REDUCTION IN FLUE GAS

Norman C. Samish, Houston, Tex., and Jack B. Pohlenz, Arlington Heights, Ill., assignors to Shell California Production Inc., Houston, Tex.

Filed Mar. 27, 1984, Ser. No. 594,010
Int. Cl.³ C01B *21/00*; B01J *8/00*
U.S. Cl. 423—235 **3 Claims**

1. A process using NH_3 for reducing the NO_x in a waste gas to a desired level of NO_x while limiting the NH_3 in the treated waste gas to less than 10 parts per million, said process comprising:
splitting the waste gas into two separate streams;
treating one of the streams with an equal mole ratio of NH_3 to NO_x, giving a higher NH_3/NO_x ratio, resulting in a substantial increase in NO_x reduction; and
recombining said two streams to produce a single stream having the desired concentration level of NO_x and NH_3.

4,521,389

PROCESS OF CONTROLLING NO_x IN FCC FLUE GAS IN WHICH AN SO_2 OXIDATION PROMOTOR IS USED

William A. Blanton, Jr., Woodacre, and William L. Dimpel, Oakland, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 308,689, Oct. 10, 1981, abandoned. This application Jan. 31, 1983, Ser. No. 462,171
The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.
Int. Cl.³ C01B *21/00*
U.S. Cl. 423—235 **8 Claims**

1. A process for controlling the oxides of nitrogen in a flue gas, containing said oxides, from the regenerator of a fluid catalytic cracking unit in which the sulfur oxides formed in the regenerator are controlled by means of a circulating sulfur oxide sorbent used in combination with a sulfur dioxide oxidation promoter, said process comprising:
(a) mixing the flue gas at a temperature between about 500° F. and about 1600° F. with a sufficient amount of ammonia or an ammonia-generating compound to provide at least a stoichiometric amount of ammonia relative to the degree of nitrogen oxide control desired; and
(b) passing the mixture of flue gas and ammonia through an oxygen-rich combustion zone having a temperature in the range of from about 1200° F. to about 2000° F. for a time sufficient to significantly lower the amount of nitrogen oxides present in the effluent from the combustion zone relative to that present in the flue gas.

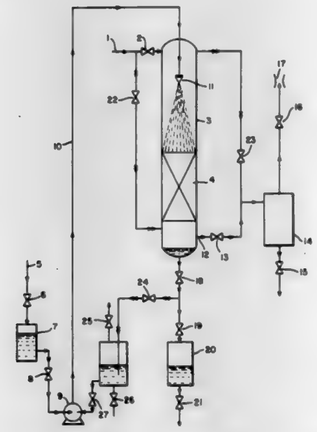
4,521,390

CONTINUOUS PROCESS AND EQUIPMENT FOR THE RECOVERY OF NITROGEN OXIDES FROM NITROUS GASES

Bernhard Mouillé , Pievefitte, and Michel Durand, Angeles Gazon, both of France, assignors to Compagnie Francaise de l'Azote Cofaz, Paris, France

Continuation of Ser. No. 158,142, Jun. 10, 1980, abandoned. This application Oct. 13, 1982, Ser. No. 434,104
Claims priority, application France, Jun. 13, 1979, 79 15147
Int. Cl.³ C01B *21/40*
U.S. Cl. 423—239 **11 Claims**

1. A process for the continuous recovery of nitrogen oxides from atmospheric off-gases called nitrous gases containing between about 500 to 5000 vpm nitrogen oxides which comprises the steps of:
(a) simultaneously passing said gas and water over activated carbon adsorbent in a co-current, countercurrent or cross-flow relationship at a gas spatial velocity between about 100 to 3500h^{-1} and a liquid spatial velocity between about 0.05 to 2h^{-1} and under conditions of pressure between about 0.9 to 12 bars (abs) and temperature between about 2° to 80° C.;



(b) recovering a colorless gaseous effluent having reduced nitrogen oxide content; and
(c) recovering the aqueous nitric acid solution.

4,521,391

METHOD TO IMPROVE YIELDS OF SODIUM HYPOPHOSPHITE

William E. Estes, Ossining, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 13, 1984, Ser. No. 570,477
Int. Cl.³ C01B *15/16, 25/26*
U.S. Cl. 423—307 **2 Claims**

1. A process for increasing the yield of sodium hypophosphite produced by the reaction of phosphorus, sodium hydroxide, water and calcium hydroxide, comprising increasing the H_2O/P_4 molar ratio to within the range of about 38 to about 60.

4,521,392

PROCESS FOR BLENDING PHOSPHORIC ACIDS OF DIFFERING IMPURITY CONTENT

Harold E. Mills; David L. Murdock, both of Lake City; Richard M. Ramer, Gainesville, and Francis M. Sale, Lake City, all of Fla., assignors to Occidental Chemical Agricultural Products, Inc., Tampa, Fla.

Continuation-in-part of Ser. No. 215,885, Dec. 5, 1980, Pat. No. 4,376,756. This application Mar. 14, 1983, Ser. No. 475,275
The portion of the term of this patent subsequent to Mar. 15, 2000, has been disclaimed.
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—317 **33 Claims**

1. Process for producing a blended phosphoric acid having an R-value no greater than about 0.86, where the R-value is one hundred times the ratio of the MgO analysis by weight divided by the P_2O_5 analysis by weight of said acid, said process comprising blending a sufficient amount of at least one purified dihydrate process phosphoric acid having an R-value less than about 0.86 with at least one dihydrate process phosphoric acid having an R-value greater than about 0.86 to produce a blended phosphoric acid having an R-value no greater than about 0.86, wherein said purified dihydrate process phosphoric acid is purified by aging a dihydrate process phosphoric acid for sufficient time to allow an effective amount of solid magnesium-containing impurities to precipitate therefrom and thereby forming said purified dihydrate process phosphoric acid having an R-value no greater than about 0.86 for blending with said dihydrate process phosphoric acid having an R-value greater than about 0.86.

4,521,393

METHOD OF MANUFACTURING β TYPE SILICON NITRIDE WHISKERS

Hajime Saito, 1088-193, Aza-Hirago, Ohaza-Fujieda, Nisshin-Cho, Aichi-Gun, Aichi Pref., and Tetsuro Urakawa, Kariya, both of Japan, assignors to Toshiba Ceramics Co. Limited, Tokyo and Hajime Saito, Aichi, both of, Japan

Filed Jun. 26, 1984, Ser. No. 624,702
Claims priority, application Japan, Apr. 18, 1984, 59-76450
Int. Cl.³ C01B *21/068*
U.S. Cl. 423—344 **9 Claims**

1. A method of manufacturing β type silicon nitride whiskers, which comprises preparing a mixture of silica, carbon, and cryolite in a molar ratio of 1:(2~10):(1/12~$\frac{1}{4}$), reacting said mixture in a mixed gas atmosphere of N_2 and NH_3 obtained by adding NH_3 to N_2, in a molar ratio of not higher than 1/5 based on N_2 by heating the mixture at a temperature of 1,250°–1,450° C., said NH_3 being present in an amount sufficient to effect a higher content of β type silicon nitride than that produced by said method in the absence of NH_3.

4,521,394

CONVERSION OF GASES TO USEABLE PRODUCTS

Hassan Windawi, Arlington Heights; Gene R. Grieger, Rolling Meadows, and Warren R. Oakdale, Morton Grove, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 498,624, May 27, 1983, abandoned. This application Mar. 21, 1984, Ser. No. 592,048
Int. Cl.³ C01C *1/04*
U.S. Cl. 423—363 **7 Claims**

1. A process for the conversion of hydrogen and nitrogen to ammonia which comprises reacting said hydrogen and nitrogen at reaction conditions which include a temperature in the range of from about 500° C. to about 700° C. and a pressure in the range of from about 100 to about 1000 atmospheres in the presence of a catalyst comprising an iron-containing compound admixed with elemental copper and aluminum-, potassium- and vanadium-containing compounds to form and recover said ammonia.

4,521,395

PROCESS FOR OXIDATION AND AMMOXIDATION

Thomas C. Kuechler, Maryland Heights; Jerry R. Ebner, St. Charles, and Tao P. Li, Chesterfield, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 18, 1983, Ser. No. 553,203
Int. Cl.³ C01C *1/02*
U.S. Cl. 423—376 **6 Claims**

1. A process for the ammoxidation of methanol to hydrogen cyanide comprising feeding to an ammoxidation reactor operated at ammoxidation reaction conditions including a temperature of 200° to 600° C. a feed comprising methanol, ammonia, and oxygen and wherein said ammoxidation reactor contains a fluidized bed of ammoxidation catalyst consisting essentially of B_aPO_x wherein a is 0.8 to 1.25 and x is the total number of the oxygen atoms in the oxides of the other atoms, and hydrogen cyanide in high yields is produced in the ammoxidation reactor as a product of the process.

4,521,396

Patent Not Issued For This Number

4,521,397

PROCESS FOR PRODUCING CALCIUM HYPOCHLORITE HYDRATE CRYSTALS

Keiichi Nakaya, Chiba, and Kunio Sato, Ichihara, both of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jul. 20, 1983, Ser. No. 515,547
Claims priority, application Japan, Aug. 4, 1982, 57-135133
Int. Cl.³ C01B *11/04*
U.S. Cl. 423—474 **10 Claims**

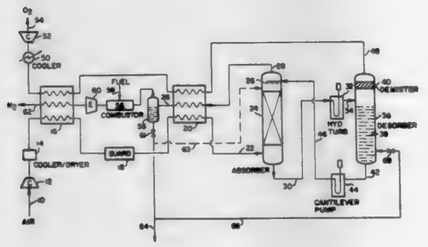
1. A process for producing calcium hypochlorite hydrate crystals, which comprises continuously supplying basic calcium hypochlorite slurry and chlorine gas to a reactor, and reacting them at a temperature of from 20° to 50° C. under a condition that a chlorination rate is maintained from 92 to 98.5% and a crystallization velocity of calcium hypochlorite hydrate crystals in the reactor is controlled to be not greater than 200 kg/m³.hr.

4,521,398

CONTROLLED TEMPERATURE EXPANSION IN OXYGEN PRODUCTION BY MOLTEN ALKALI METAL SALTS

Donald C. Erickson, Annapolis, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 18, 1983, Ser. No. 514,742
Int. Cl.³ C01B *13/02*
U.S. Cl. 423—579 **12 Claims**



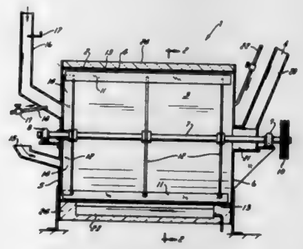
1. In a continuous process for producing oxygen by the repeated steps of contacting a feed air stream with a molten solution of alkali metal nitrate and nitrite oxygen acceptor which becomes oxidized, separately releasing the oxygen from the oxidized oxygen acceptor so as to regenerate the oxygen acceptor and generate product oxygen, recycling the regenerated oxygen acceptor and removing an oxygen-depleted gas stream, the improvement comprising reducing the temperature of the oxygen-depleted gas stream by heat exchange with the feed air stream, condensing residual entrained oxygen acceptor from the oxygen-depleted gas stream, combusting of said gas stream with a fuel to elevate its temperature and expanding the gas stream through a turbine to recover power.

4,521,399

METHOD AND APPARATUS FOR THE PRODUCTION OF LEAD OXIDE

Benjamin F. McKinney, Indianapolis, Ind., assignor to Oxide & Chemical Corporation, Indianapolis, Ind.

Filed Apr. 29, 1983, Ser. No. 490,149
Int. Cl.³ C01G *21/02*
U.S. Cl. 423—620 **5 Claims**



1. The method of producing litharge with varying free lead content in a horizontal cylindrical reactor having inlet means for the supply of lead, air and water, an outlet for the removal of litharge, a pair of horizontally disposed blades rotatable within the reactor and about the axis thereof, and means for driving the blades to break the supply of lead into fine particles and disperse the lead within the reactor, said method comprising the steps of:

a. preheating the reactor;
b. supplying lead to the inlet means for introduction into the reactor;
c. creating a flow of air through the reactor to oxidize the lead particles and transport the litharge to the outlet;
d. utilizing substantially the entire blade edge-reactor interface to provide a uniform oxidation and attrition zone over the full length and interior surface of the reactor; and,
e. controlling the rotational speed of the blades to maintain the incompletely oxidized particles within the oxidation and attrition zone and to effect centrifugal classification of the litharge within the reactor for transport to the outlet.

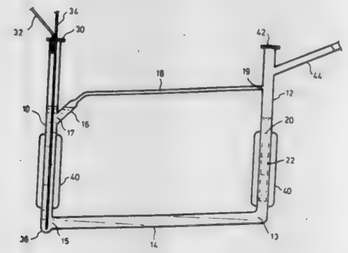
4,521,400

AGITATOR APPARATUS

Thomas D. Hodgson, Abingdon, and William R. Foot, Poole, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Sep. 27, 1982, Ser. No. 424,250
Claims priority, application United Kingdom, Sep. 29, 1981, 8129387
Int. Cl.³ B01F *11/00*
U.S. Cl. 423—658.5 **10 Claims**

1. An apparatus for oscillating, agitating and circulating a liquid dissolvent for dissolving a solid object, the apparatus comprising, a vessel for containing a liquid dissolvent for the solid object and comprising two upwardly extending chambers and two vertically displaced ducts each connected between respective ports in the two chambers, the upper duct comprising a first portion extending acclivitously from the upper duct port in one said chamber and a second portion of smaller diameter than the first portion extending from the first portion to the upper duct port in the other chamber, means to support the solid object within the liquid, and means for applying a greater gas pressure above the liquid in said one chamber than is applied above the liquid in the other chamber whereby in operation the surface of the liquid in the one chamber initially



above the upper duct port thereof is oscillated by the effect of the gas pressure in a cycle in which the liquid surface falls below the upper duct port and said gas above the liquid surface escapes through the upper duct, and the liquid surface subsequently rises above the upper duct port to complete the cycle, such that the liquid dissolvent oscillates over the solid object.

4,521,401

CONSTANT RELEASE RATE SOLID ORAL DOSAGE FORMULATIONS OF QUINIDINE

James M. Dunn, Littleton, Colo., assignor to Verex Laboratories, Inc., Englewood, Colo.

Division of Ser. No. 455,192, Jan. 3, 1983,. This application Feb. 16, 1984, Ser. No. 580,933
Int. Cl.³ A61K *9/22, 9/26*
U.S. Cl. 424—19 **8 Claims**

1. A constant order release solid oral dosage formulation of quinidine or a pharmaceutically acceptable salt thereof, said formulation comprising: a therapeutically effective amount of quinidine or a pharmaceutically acceptable salt thereof; from about 0.5 to 6.0 weight percent of one or more cellulose derivatives selected from the group consisting of cellulose acetate phthalate, hydroxypropylmethylcellulose, ethyl cellulose, and microcrystalline cellulose; from about 2.5 to 35 weight percent of a hydrogenated vegetable oil; from about 1 to 20 weight percent of carboxypolymethylene; from about 0.5 to 4.0 weight percent of fumed silicon dioxide and from about 0.4 to 3.0 weight percent of a tabletting lubricant.

4,521,402

CONSTANT RELEASE RATE SOLID ORAL DOSAGE FORMULATIONS OF HYDRAZINE

James M. Dunn, Littleton, Colo., assignor to Verex Laboratories, Inc., Englewood, Colo.

Division of Ser. No. 455,192, Jan. 3, 1983,. This application Feb. 17, 1984, Ser. No. 581,368
Int. Cl.³ A61K *9/22, 9/26*
U.S. Cl. 424—19 **8 Claims**

1. A constant order release solid oral dosage formulation of hydralazine or a pharmaceutically acceptable salt thereof, said formulation comprising: a therapeutically effective amount of hydralazine or a phramaceutically acceptable salt thereof; from about 0.5 to 6.0 weight percent of one or more cellulose derivatives selected from the group consisting of cellulose acetate phthalate, hydroxypropylmethylcellulose, phthalate ethyl cellulose, and microcrystalline cellulose; from about 2.5 to 35 weight percent of a hydrogenated vegetable oil; from about 1 to 20 weight percent of carboxypolymethylene; from about 0.5 to 4.0 weight percent of fumed silicon dioxide and from about 0.4 to 3.0 weight percent of a tabletting lubricant.

4,521,403

CHEMOTHERAPEUTIC METHOD FOR TREATING PERIODONTAL DISEASE

Gilbert I. Simon, 1111 Midland Ave., Bronxville, N.Y. 10708, and Roy T. Witkin, 23 Broadview Rd., Westport, Conn. 06880

Continuation-in-part of Ser. No. 459,525, Jan. 20, 1983, abandoned, which is a continuation-in-part of Ser. No. 145,590, May 1, 1980, abandoned. This application Dec. 30, 1983, Ser. No. 565,661
Int. Cl.³ A61K *7/20, 31/79, 33/18, 31/755*
U.S. Cl. 424—51 **6 Claims**

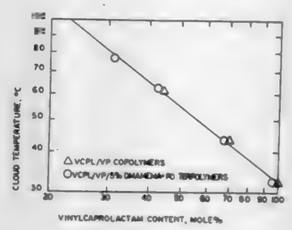
1. A method of controlling *Actinomyces viscosus, Bacteroides intermedius and Bacteroides gingivalis* microorganisms implicated in diseases of the periodontium which comprises applying two "swishes" of an oral lavage to the periodontium for a period of time totalling 20–40 seconds, and sufficient to thoroughly wet the tissues of the gum, expectorating each, and thereby to destroy or inactivate the microorganisms, each "swish" being an oral lavage in the form of an aqueous solution containing from about 0.5 to about 10.0% by weight of hydrogen peroxide and from about 0.05 to about 2.0% by weight of iodine derived from a povidone-iodine complex by the hydrogen peroxide.

4,521,404

POLYMERIC HAIR PREPARATION

Donald H. Lorenz, Basking Ridge; Edward J. Murphy, Wayne, and John M. Rutherford, Jr., Kinnelon, all of N.J., assignors to GAF Corporation, Wayne, N.J.

Continuation-in-part of Ser. No. 292,329, Aug. 13, 1981, abandoned. This application Nov. 10, 1982, Ser. No. 440,648
Int. Cl.³ A61K *7/09;* A45D *7/00;* C08F *226/10*
U.S. Cl. 424—71 **10 Claims**



1. In a hair conditioning composition containing a polymer, said polymer derived from polymerization of vinyl pyrrolidone and an ammonium derivative monomer having from 6 to 12 carbon atoms selected from the group consisting of dialkylaminoalkyl methacrylamide, dialkyl dialkenyl ammonium halide and a dialkylamino alkyl methacrylate or acrylate, wherein the improvement comprises incorporating therein a substantially major amount, based on said monomers, of N-vinyl-ε-caprolactam monomer to provide a hair conditioning agent having a number average molecular weight between about 20,000 and about 700,000.

3. A hair conditioning polymer comprising between about 17–32 weight % N-vinyl pyrrolidone, between about 65–80 weight % N-vinyl-ε-caprolactam, between about 3–6 weight % of an ammonium derivative monomer having from 6 to 12 carbon atoms, selected from the group consisting of dialkyl aminoalkyl methacrylamide, dialkyl dialkenyl ammonium halide and a dialkylamino alkyl methacrylate or acrylate and between about 0–5 weight % stearyl methacrylate.

4,521,405

METHODS AND MATERIALS FOR TREATMENT OF DISEASE STATES INVOLVING IMMUNOLOGICAL FACTORS

John McMichael, P.O. Box 81, Cambridge Springs, Pa. 16403, assignor to John McMichael, Cambridge Springs, Pa.

Filed May 17, 1982, Ser. No. 378,752
Int. Cl.³ A61K *39/165*
U.S. Cl. 424—92 **9 Claims**

1. A method for alleviating the symptoms of a multiple sclerosis disease state comprising administering to the disease victim an effective amount of a composition comprising a mixture of histamine and inactivated, attenuated measles virus or an immunologically active fraction thereof.

4,521,406

ANTITUMOR AGENT

Yasuo Kawamura, Kyoto; Tadashi Nishiyama, Kadoma; Tomiyoshi Itoh, Suita, and Takuo Sakai, Sakai, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed May 20, 1981, Ser. No. 265,563
Claims priority, application Japan, May 22, 1980, 55-68300
Int. Cl.³ A61K *37/48, 31/70, 31/505*
U.S. Cl. 424—94 **5 Claims**

1. An antitumor agent for use against solid tumors sensitive to 5-fluorousacil in humans comprising a combination of 5-fluorocytosine and cytosinedeaminase, said agent containing cytosindeaminase in an amount of 0.03 to 1.0 IU per milligram of 5-fluorocytosine whereby 5-fluorouracil is formed.

4,521,407

TREATMENT OF ACQUIRED IMMUNE DEFICIENCY SYNDROME WITH THYMUS EXTRACT

Russell W. Pelham, E. Weymouth; Charlotte S. Redden, Natick, both of Mass.; Aliza Eshkol, Tel-Hashomer, Israel, and Gerald E. Stiles, Duxbury, Mass., assignors to Serono Pharmaceutical Partners, Randolph, Mass.

Filed Aug. 29, 1983, Ser. No. 527,569
Int. Cl.³ A61K *35/26*
U.S. Cl. 424—95 **8 Claims**

1. A method of stimulating the cellular immune system in a person having acquired immune deficiency syndrome by administering to such person an immunopotentiating effective amount of a calf thymus extract, which extract shows, upon electrophoresis on polyacrylamide gel at pH 8.6, two main characteristic bands with an Rf of about 0.25 and 0.44.

4,521,408

ANTIBIOTICS-859A AND PRODUCTION THEREOF

Edward O. Stapley, Metuchen, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 14, 1982, Ser. No. 368,339
Int. Cl.³ A61K *35/00;* **C12P** *1/06*
U.S. Cl. 424—115 **8 Claims**

1. The Antibiotics-859A, produced by the controlled aerobic fermentation of *Streptomyces griseoruber* ATCC 39068 in an aqueous nutrient medium at a temperature range of 20° to 30° C., a pH range of 7.0 to 9.0 and a time range of from 24 to 200 hours, which has the following characteristics in its essentially pure form:

(a) white, slightly deliquescent powder.
(b) soluble in water,
(c) insoluble in lower alkanols,
(d) tlc (CH_2Cl_2/MeOH/AcOH/H_2O 60:30:5:5) R_f=0.50
(e) UV$\lambda_{Max}^{H_2O}$258, E%=208
(f) Characteristic IR (Kbr) as shown in FIG. **1**,
(g) Characteristic proton NMR (D_2O) as shown in FIG. **2** with data as follows: Peaks at δ=0.77 (d, J=6), 1.23 (d, J=6), 1.27 (d, J=8), 1.37 (d, J=6), 2.03 (acetate), a complex pattern including peaks at=2.60, 2.67, 2.68, 2.76, 2.88, 2.91, 2.94 and 2.98, 3.09 (s), a group including multiplets centered at=4.12, 4.27, 4.45, 4.54, 4.56 and 4.18, 1.81 (HOD peak), 5.46 (d, J=8), 5.87 (d, J=8), and a pattern including peaks at 5.96, 6.01, 6.07, 6.13 and 6.75, 6.84 (t), 7.07 (d, J=8), 7.42 (d, J=8) and a complex pattern at=7-.2-7.4 (chemical shifts δ in ppm, coupling constants J in Hertz (Hz),
(h) the spectrum from ^{252}Cf pulse desportion mass spectrometry shows ions up to m/e 827 $(M+Na)^+$ which corresponds to a M.W. of 804,
(i) the electron impact mass spectrum of the product from treatment of the antibiotic with N,N-bis-tri-methylsilyltrifluoroacetamide shows characteristic peaks in the high mass region at m/c 1178, 1106, 1036, (746+4 to 6 (C_3H_8Si)); 999, 927, 955, (639+3 to 5 (C_3H_8Si)); 791, 719, 647 (431+2 to 4 (C_3H_8Si)); 840, 768 (522+3 to 4 (C_3H_8Si)),
(j) derivatization products from acid hydrolysis of the Antibiotics-859A give mass spectral evidence for the presence of uracil, tyrosine, phenylalanine, alanine and α, β-diaminobutyric acid.

4,521,409

USE OF GROWTH HORMONE TO ENHANCE RUMINANT MAMMARY DEVELOPMENT

Dale E. Bauman, Ithaca, N.Y., and Kris Sejrsen, Havndal, Denmark, assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,638
Int. Cl.³ A61K *37/00, 35/55*
U.S. Cl. 514—21 **6 Claims**

1. A method of increasing the quantity of mammary parenchyma in a ruminant which comprises administering a mammary parenchyma growth stimulating amount of a ruminant growth hormone to said ruminant between about the onset of puberty and about the first parturition, thereby increasing milk production during subsequent lactations.

4,521,410

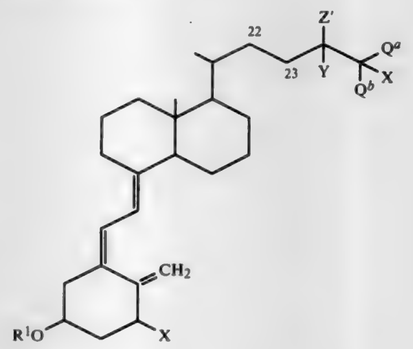
VITAMIN D GLYCOSYL ORTHOESTERS

Michael F. Holick, and Sally A. Holick, both of Sudbury, Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed May 3, 1984, Ser. No. 607,117
Int. Cl.³ A01N *31/00;* **A61K** *31/70*
U.S. Cl. 514—26 **29 Claims**

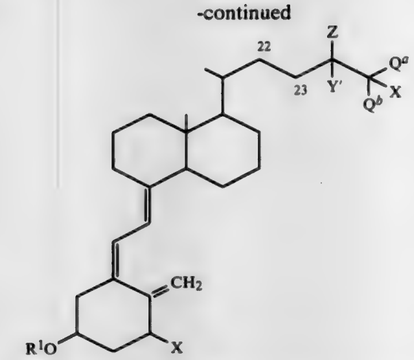
1. A compound selected from the group consisting of formula (IA) and (IB):

(IA)



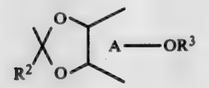
-continued

(IB)



wherein the bond between carbons C-22 and C-23 is single or double;
Y is hydrogen, F, $-CH_3$ or $-CH_2CH_3$;
Z is F, H or X;
Y' is H, $-CH_3$ or $-CH_2CH_3$;
Z' is F or H;
Q^a is CF_3 or CH_2X;
Q^b is CF_3 or CH_3;
X is selected from the group consisting of hydrogen and OR^1, where R^1 is hydrogen or an orthoester glycoside moiety of the formula (II)

(II)



where A represents a glucofuranosyl or glucopyranosyl ring; R^2 is hydrogen, lower alkyl, aralkyl, or aryl; and R^3 is hydrogen or a straight or branched chain glycosidic residue containing 1–100 glycosidic units per residue;
with the proviso that at least one said R^1 is an orthoester glycoside radical of formula (II).

29. A method of treating calcium metabolic disorders in an animal which comprises administering to said animal an amount sufficient to regular calcium and phosphorous homeostasis in said animal, of a compound of any of claims **1**, or **10–28**.

4,521,411

ANALGESIC COMPOSITION

Theodora Koloff, 248 Nine Mile Rd., Ferndale, Mich. 48220

Filed Nov. 4, 1983, Ser. No. 548,659
Int. Cl.³ A61K *35/78*
U.S. Cl. 424—195.1 **3 Claims**

1. A process for making a topical analgesic composition, comprising the steps of:

(a) forming an extract by mixing about 100 grams of ground or shredded *cotinus* leaves, about 90 grams of ground or shredded sassafras root, and about 150 grams of ground or shredded oak tree bark, with about one gallon of 70 percent wine spirit alcohol;
(b) allowing the admixture step (a) to stand for at least two weeks;
(c) dissolving about 50 grams benzocain, an amount of a procaine component containing an amount of procaine equivalent to about 50 grams of procaine hydrochloride, and about 50 grams menthol, in that order in said extract; and
(d) separating said extract by filtering the product of step (c).

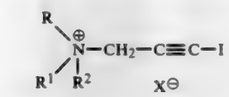
4,521,412

PESTICIDAL IODOPROPARGYLAMMONIUM SALTS

Hans-Georg Schmitt; Paul Reinecke, both of Leverkusen; Wilfried Paulus, Krefeld; Hermann Genth, Krefeld, and Walter Radt, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,899
Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218176
Int. Cl.³ A01N *43/64, 33/12;* **C07D** *487/12*
U.S. Cl. 514—244 **11 Claims**

1. An iodopropargylammonium salt of the formula



in which
R and R^1 each independently is alkyl having 1 to 20 carbon atoms,
R^2 is alkyl having 4 to 20 carbon atoms, benzyl, phenethyl, or benzyl or phenethyl which is alkyl and halogen substituted, or a ferrocenylmethyl radical, or
R, R^1 and R^2, together with the nitrogen atom, form the Urotropin radical, and
$X^\ominus$ is an anion.

8. A pesticidal composition comprising a pesticidally effective amount of an iodopropargylammonium salt according to claim **1** in admixture with a diluent.

9. A method of combating pests which comprises applying to the pests or to a pest habitat a pesticidally effective amount of an iodopropargylammonium salt according to claim **1**.

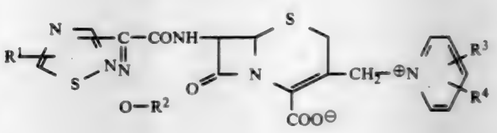
4,521,413

CEPHEM COMPOUNDS

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Sep. 2, 1982, Ser. No. 414,471
Claims priority, application United Kingdom, Sep. 14, 1981, 8127663; Dec. 14, 1981, 8137680; Jul. 1, 1982, 8218982
The portion of the term of this patent subsequent to Apr. 26, 2000, has been disclaimed.
Int. Cl.³ C07D *501/38;* **A61K** *31/545*
U.S. Cl. 514—203 **16 Claims**

1. Cephem compounds of the formula:



wherein
R^1 is amino or a protected amino group;
R^2 is lower alkyl which may be substituted with one carboxy, lower alkenyl, lower alkynyl, cyclo (lower) alkyl or cyclo (lower) alkenyl;
R^3 is lower alkylamino, N-(lower) alkanoyl (lower) alkylamino, di (lower) alkylamino, sulfo (lower) alkylamino, hydroxy (lower) alkylamino, N-(lower) alkanoylhydroxy (lower) alkylamino, alkanoyloxy (lower) alkyl, alkenoyloxy (lower) alkyl, lower alkoxy (lower) alkoxy (lower) alkyl, di (lower) alkylamino (lower) alkyl, lower alkylthio (lower) alkyl, lower alkylthio, lower alkoxy, lower alkoxy (lower) alkoxy, hydroxy (lower) alkoxy, lower alkanesulfonyl (lower) alkyl, hydroxy (lower) alkylthio, di (lower) alkylamino (lower) alkylthio, tetrazolyl, tetrazolylthio, tetrazolylthio (lower) alkyl or dihydro-

triazinylthio (lower) alkyl substituted with oxo, hydroxy and lower alkyl; and

R^4 is hydrogen or lower alkyl; and pharmaceutically acceptable salts thereof.

4,521,414

OPHTHALMIC COMPOSITIONS AND THEIR USE FOR TREATING ELEVATED INTRAOCULAR PRESSURE AND GLAUCOMA

George C. Y. Chiou, College Station, Tex., and Hsin-Kuang Liu, Boston, Mass., assignors to The Texas A&M University System, College Station, Tex.

Filed Jun. 18, 1981, Ser. No. 272,889
Int. Cl.³ A61K *27/00*
U.S. Cl. 514—229 **17 Claims**

1. A method of reducing aqueous humor formation and intraocular pressure in mammals having ocular hypertension which comprises topically administering to a hypertensive eye an ophthalmologically acceptable amount, effective for lowering intraocular pressure, of a compound selected from R-(+)-1-tert-butylamino-3-[(4-morpholino-1,2,5-thiadiazol-3-yl)oxy]-2-propanol and ophthalmologically acceptable acid addition salts thereof.

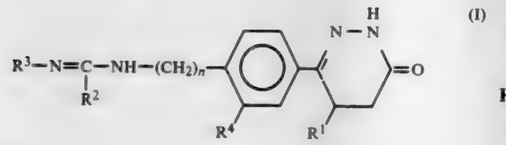
4,521,415

6-(SUBSTITUTED PHENYL)-4,5-DIHYDRO-3(2H)-PYRIDAZINONE COMPOUNDS

Tsutomu Katakami; Nobuyuki Fukazawa; Hajime Iizuka, all of Kanagawa; Takashi Nishina, Chiba; Joji Kamiya, Chiba; Yasuhito Tanaka, Chiba, and Takuo Nakano, Kanagawa, all of Japan, assignors to Mitsui Toatsu Kagaku Kabushiki Kaisha, Tokyo, Japan

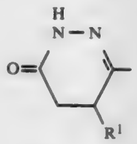
Filed Dec. 28, 1982, Ser. No. 454,021
Claims priority, application Japan, Dec. 28, 1981, 56-209938
Int. Cl.³ C07D *237/04*; A61K *31/50*
U.S. Cl. 514—252 **22 Claims**

1. A 6-(substituted phenyl)-4,5-dihydro-3(2H)-pyridazinone compound of the formula:



(I)

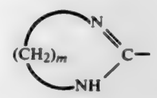
wherein R^1 is a lower alkyl group; R^2 is a hydrogen atom, a lower alkyl group, a lower alkylthio group or the grouping R^5—NH— where R^5 is a lower alkyl group; R^3 is a phenyl group, a pyridyl group, a benzyl group, a lower alkyl group or a substituted phenyl group carrying at any desired position on the benzene ring thereof the grouping:



where R^1 has the same meaning as given above; R^4 is a hydrogen atom or a halogen atom; n is 0 or 1; and when both R^2 and R^3 are lower alkyl groups, R^2 and R^3 may be combined together with the bridging member



between them to form the structure:



where m is 2 or 3, or a physiologically acceptable acid-addition salt thereof.

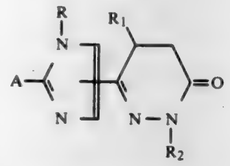
4,521,416

4,5-DIHYDRO-6-[(SUBSTITUTED)-1H-IMIDAZOL-4-YL OR 5-YL]-3(2H)-PYRIDAZINONES AND 6-[(SUBSTITUTED)-1H-IMIDAZOL-4-YL OR 5-YL]-3(2H)-PYRIDAZINONES

Ila Sircar, and James A. Bristol, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 22, 1983, Ser. No. 477,697
Int. Cl.³ A61K *31/50*; C07D *237/06*
U.S. Cl. 514—252 **10 Claims**

1. A compound of the formula



wherein is a single or double bond; A is hydrogen, lower alkyl, phenyl, phenyl substituted by lower alkyl, halo or trifluoromethyl, or pyridinyl; R, R_1, and R_2 are independently hydrogen or lower alkyl, and pharmaceutically acceptable acid addition salts thereof.

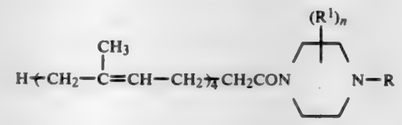
4,521,417

GERANYLGERANYLACETAMIDE COMPOUNDS HAVING A PIPERAZINE RING, SALTS THEREOF, PHARMACEUTICAL COMPOSITIONS CONTAINING SAID COMPOUNDS, AND METHOD OF TREATING ULCERS IN MAMMALS

Hiromasa Nakamoto, Takaoka; Michitaka Ogawa, Uozu; Muneo Kobayashi, Toyama; Yuki Nogami, Toyama; Kazuo Kumamoto, Toyama; Hiroko Murakami, Toyama; Yoichi Ninagawa, Hasaki; Yoshiaki Omura, Mitsu, and Masao Mizuno, Kurashiki, all of Japan, assignors to Nihon Iyakuhin Kogyo Co., Ltd., Toyama and Kuraray Co., Ltd., Kurashiki, both of, Japan

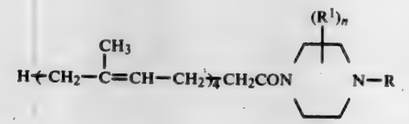
Filed Jun. 6, 1983, Ser. No. 501,391
Claims priority, application Japan, Jun. 7, 1982, 57-96341
Int. Cl.³ A61K *31/495*; C07D *241/04*
U.S. Cl. 514—255 **18 Claims**

1. A geranylgeranylacetamide compound having a piperazine ring represented by the formula



wherein R represents a member selected from the class consisting of a hydrogen atom, C_1–C_5 alkyl groups which are unsubstituted or mono-substituted by a halogen atom, C_2–C_5 alkenyl groups and C_7–C_8 aralkyl groups, R^1 represents a C_1–C_3 alkyl group and n represents 0, 1 or 2,
or a pharmaceutically acceptable acid addition salt thereof.

18. A method for the treatment of an ulcer in a mammal, which comprises administering to said subject an effective amount of a geranylgeranylacetamide compound having a piperazine ring represented by the formula



wherein R represents a member selected from the class consisting of a hydrogen atom, C_1–C_5 alkyl groups which are unsubstituted or mono-substituted by a halogen atom, C_2–C_5 alkenyl groups and C_7–C_8 aralkyl groups, R^1 represents a C_1–C_3 alkyl group and n is 0, 1, or 2,
or a pharmaceutically acceptable acid addition salt thereof.

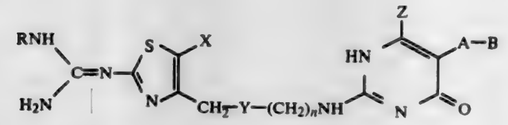
4,521,418

GUANIDINOTHIAZOLYL DERIVATIVES

Thomas H. Brown, Tewin, and Graham J. Durant, Welwyn Garden City, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Feb. 12, 1980, Ser. No. 120,807
Claims priority, application United Kingdom, Feb. 21, 1979, 7906070
Int. Cl.³ A61K *31/505*; C07D *419/14, 417/14*
U.S. Cl. 514—272 **8 Claims**

1. A compound of the formula



in which R is hydrogen, C_1–C_6 alkyl, C_1–C_6 alkanoyl or benzoyl; X is hydrogen, chlorine, bromine or C_1–C_6 alkyl; Y is sulphur or methylene; n is 2 or 3; Z is hydrogen or lower alkyl; A is C_1–C_5 alkylene or $-(CH_2)_pW(CH_2)_q-$ where W is oxygen or sulphur and p and q are such that their sum is from 1 to 4; B is heteroaryl selected from imidazolyl, pyrimidyl, pyrazinyl, pyridazyl, 5-amino-1,3,4-thiadiazolyl, 1,3-dioxolopyridyl and benzimidazolyl, or B is 6-(2,3-dihydro-1,4-benzodioxinyl), or 4- or 5-(1,3-benzodioxolyl); and pharmaceutically acceptable acid addition salts thereof.

8. A method of blocking histamine H_2-receptors which comprises administering to an animal in need thereof in an effective amount to block said receptors a compound of claim 1.

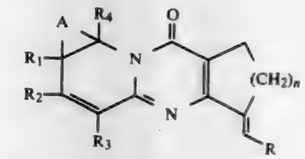
4,521,419

CONDENSED CYCLOALIPHATIC DERIVATIVES OF SUBSTITUTED PYRIDO[1,2-a]PYRIMIDINES AND METHODS OF TREATING ALLERGIC CONDITIONS, PEPTIC ULCERS AND INHIBITING GASTRIC ACID SECRETION WITH THEM

Gianfederico Doria, Milan; Carlo Passarotti, Gallarate; Pier P. Lovisolo, and Ada Buttinoni, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

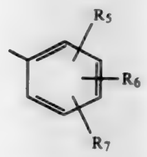
Filed Apr. 27, 1983, Ser. No. 489,057
Claims priority, application United Kingdom, Apr. 29, 1982, 8212429; Apr. 6, 1983, 8309259
Int. Cl.³ A61K *31/505*; C07D *471/04*
U.S. Cl. 514—267 **10 Claims**

1. A compound of general formula (I)

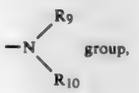


(1)

wherein
n is 1 or 2;
R_1 represents a hydrogen or a halogen atom, a C_1–C_4 alkyl group, a —CN group, a $-CONH_2$ group or a $-COOR_8$ group, wherein R_8 represents hydrogen or a C_1–C_6 alkyl group, unsubstituted or substituted by di(C_1–C_4)-alkylamino;
each of R_2, R_3 and R_4 independently represents a hydrogen or a halogen atom, a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group or a C_3–C_4 alkenyloxy group;
A completes a bond, thereby providing a double bond or, when R_1 is $-COOR_8$ wherein R_8 is as defined above, A may represent also a $-CH_2-$ group, thereby providing a cyclopropane ring fused to the pyrido ring;
R is (a) furyl, thienyl or pyridyl; or (b) a group of formula



wherein
each of R_5, R_6 and R_7 represents, independently, a hydrogen or a halogen atom, hydroxy, formyloxy, C_2–C_8 alkanoyloxy, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro or a



group,

wherein each of R_9 and R_{10} independently represents hydrogen, C_1–C_4 alkyl, formyl or C_2–C_8 alkanoyl, or adjacent groups represented by two of R_5, R_6 and R_7, taken together, form a C_1–C_3 alkylenedioxy group; or the pharmaceutically acceptable salts thereof.

8. A method of treatment of allergic conditions in a patient in need of such treatment, said method comprising administering an anti-allergic effective amount of the compound according to claim 1.

9. A method for the treatment of peptic ulcers in a patient comprising administering an anti-ulcerogenic effective amount of the compound according to claim 1.

10. A method for inhibiting gastric acid secretion in a patient comprising administering to the patient a gastric acid secretion inhibitory effective amount of the compound according to claim 1.

4,521,420

OXOQUINAZOLINE CARBAMATES

Fritz Maurer, Wuppertal; Wilhelm Brandes, Leichlingen; Karl-Heinz Kuck, Langenfeld; Paul Reinecke, and Hans Scheinpflug, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

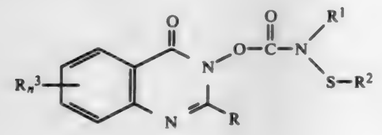
Filed Aug. 1, 1983, Ser. No. 518,867

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228871

Int. Cl.³ A61K *31/505;* **C07D** *239/90*

U.S. Cl. 514—259 **9 Claims**

1. An oxoquinazoline carbamate of the formula



in which

R represents hydrogen, straight-chain or branched alkyl, alkoxy, alkoxyalkyl, alkylthio or alkylthioalkyl, each having up to 6 carbon atoms per alkyl radical, halogenoalkyl having up to 3 carbon atoms and up to 7 identical or different halogen atoms, or aryl which has 6 to 10 carbon atoms and is optionally monosubstituted or polysubstituted by identical or different substituents selected from alkyl having up to 4 carbon atoms, halogenoalkyl having up to 3 carbon atoms and up to 5 halogen atoms, and halogen,

R^1 represents straight-chain or branched alkyl having up to 6 carbon atoms,

R^2 represents halogenoalkyl having up to 3 carbon atoms and up to 7 identical or different halogen atoms,

R^3 represents straight-chain or branched alkyl having up to 4 carbon atoms, or halogen, and

n represents a number from 0 to 3.

8. A method of combatting fungi which comprises administering to such fungi or to a fungus habitat a fungicidally effective amount of a compound according to claim **1**.

4,521,421

TREATMENT OF SEXUAL DYSFUNCTION

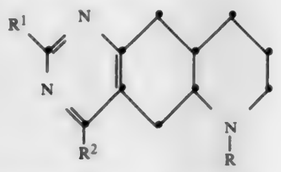
Mark M. Foreman, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 26, 1983, Ser. No. 535,474

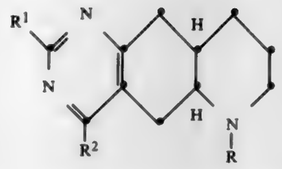
Int. Cl.³ A61K *31/505*

U.S. Cl. 514—267 **10 Claims**

1. A method for treating sexual dysfunction in mammals suffering from such dysfunction and in need of treatment which comprises administering to said mamals an effective dose of a trans-(±)-racemate of the formula



or of a stereoisomer thereof of the formula



wherein R is C_1–C_3 alkyl or allyl, R^1 is NH_2, NHR^3 or NR^4R^5 and R^2 is H, Cl, Br or CH_3; wherein R^3 is methyl, ethyl, n-propyl, C_1–C_3 alkyl-CO, phenyl-CO wherein said substituents are 1 or 2 members of the group; Cl, F, Br, CH_3, C_2H_5, CH_3O, C_2H_5O and CF_3; and R^4 and R^5 are individually methyl, ethyl or n-propyl; and pharmaceutically acceptable acid addition salts thereof.

4,521,422

ARYL AND HETEROARYL[7-(ARYL AND HETEROARYL)PYRAZOLO[1,5-a]PYRIMIDIN-3-YL]METHANONES

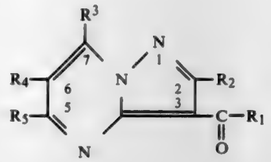
John P. Dusza, Nanuet, N.Y.; Andrew S. Tomcufcik, Old Tappan, N.J., and Jay D. Albright, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 506,966, Jun. 23, 1983, abandoned. This application May 24, 1984, Ser. No. 612,812

Int. Cl.³ C07D *487/04;* **A61K** *31/505*

U.S. Cl. 514—258 **31 Claims**

1. A compound selected from those of the formula:



wherein R_1 is selected from the group consisting of unsubstituted phenyl; phenyl mono- or di-substituted by halogen, alkoxy(C_1–C_3) or alkyl(C_1–C_3); phenyl mono-substituted by trifluoromethyl, alkylthio(C_1–C_3), alkylamino(C_1–C_3), dialkylamino(C_1–C_3), methylenedioxy, alkylsulfonyl(C_1–C_3) or alkanoylamino(C_1–C_3); naphthalenyl; thiazolyl; biphenyl; thienyl; furanyl; pyridinyl; substituted thiazolyl; substituted biphenyl; substituted thienyl; and substituted pyridinyl wherein the substituents are selected from one or two of the group consisting of halogen, alkoxy(C_1–C_3) and alkyl(C_1–C_3); R_2, R_4 and R_5 are each selected from the group consisting of hydrogen and alkyl(C_1–C_3); and R_3 is selected from the group consisting of unsubstituted phenyl, phenyl mono-substituted by halogen, trifluoromethyl, alkoxy(C_1–C_3), amino, alkyl(C_1–C_3), alkylamino(C_1–C_6), dialkylamino(C_1–C_3), alkanoylamino(C_1–C_6), N-alkyl(C_1–C_6)alkanoylamino(C_1–C_6), cyano or alkylthio(C_1–C_3); furanyl; thienyl; pyridinyl; and pyridine-1-oxide.

4,521,423

7,8,9,10-TETRAHYDROBENZO[H]QUINOLIN-9-AMINE DERIVATIVES AND COMPOSITIONS AND METHODS FOR TREATING DEPRESSION EMPLOYING THEM

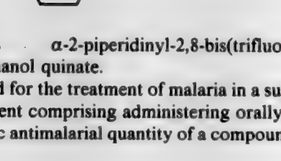
Andre A. Asselin, St. Laurent, Canada, and Leslie G. Humber, North Brunswick, N.J., assignors to Ayerst, McKenna & Harrison, Ltd., Montreal, Canada

Filed Oct. 31, 1983, Ser. No. 547,318

Int. Cl.³ A61K *31/47;* **C07D** *221/10*

U.S. Cl. 514—290 **4 Claims**

1. A compound of the formula



in which R^1 and R^2 each independently is lower alkyl, or a therapeutically acceptable acid addition salt thereof.

3. A pharmaceutical composition in unit dosage form for treating depression which comprises the compound of claim **1**, or a therapeutically acceptable acid addition salt thereof, and a pharmaceutically acceptable carrier.

4. A method for treating depression comprising administering to a host in need thereof an antidepression effective unit of the compound of claim **1**.

4,521,424

QUINATE SALTS OF THE ANTIMALARIAL COMPOUND MEFLOQUINE

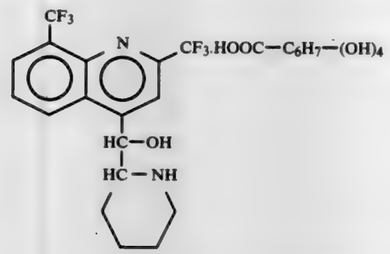
Jean F. Rossignol, Philadelphia, Pa., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Feb. 27, 1984, Ser. No. 584,183

Int. Cl.³ C07D *401/06;* **A61K** *31/47*

U.S. Cl. 514—314 **6 Claims**

1. A compound represented by the following structural formula (I):



(I)

which is α-2-piperidinyl-2,8-bis(trifluoromethyl)-4-quinolinemethanol quinate.

6. A method for the treatment of malaria in a subject in need of said treatment comprising administering orally or by injection a nontoxic antimalarial quantity of a compound of claim **1**.

4,521,425

AGENTS AFFECTING THE PRODUCTION OF HORMONES IN LIVING MAMMALS

Davide R. Grassetti, 26 Northgate Ave., Berkeley, Calif. 94708

Continuation-in-part of Ser. No. 307,237, Nov. 2, 1981, abandoned. This application Aug. 31, 1983, Ser. No. 528,226

Int. Cl.³ A61K *31/455*

U.S. Cl. 514—350 **2 Claims**

1. The method of treating a mammal to decrease its blood cortisol level which comprises administering to a mammal in need of such treatment an amount of 6-mercaptonicotinic acid, its alkali metal salts or its lower alkyl esters effective to reduce the blood cortisol level of said mammal.

4,521,426

PESTICIDAL BICYCLOOXYHETEROCYCLYL AROYL UREAS

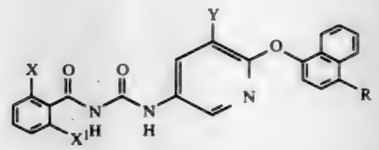
Paul A. Cain, Cary, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1982, Ser. No. 428,994

Int. Cl.³ C07D *213/64;* **A01N** *43/40*

U.S. Cl. 514—346 **45 Claims**

1. A compound of the formula:



wherein X and X' are halo or lower alkoxy, Y is hydrogen, halo or lower alkyl, and R is hydrogen, halo, or lower alkoxy.

4,521,427

APPETITE SUPPRESSANT AND METHOD OF APPLICATION THEREOF

Ronald S. Nietupski, 16500 Spaniel Dr., Lockport, Ill. 60441

Filed May 17, 1983, Ser. No. 495,436

Int. Cl.³ A61K *31/44*

U.S. Cl. 514—354 **5 Claims**

1. A method of appetite suppression which comprises administration by inhalation to a person in need thereof, a volatile appetite suppressant composition comprising an effective amount 2-acetylpyridine.

4,521,428

ANOREXIGENIC TRIFLUOROMETHYLPHENYLTETRAHYDROPYRIDINES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Dino Nisato, Pavia; Marco Frigerio, Mantova, and Giovanna F. Miranda, Milan, all of Italy, assignors to Sanofi, Paris, France

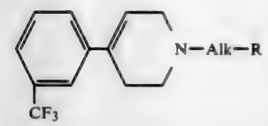
Filed Aug. 16, 1983, Ser. No. 523,565

Claims priority, application France, Aug. 16, 1982, 82 14169

Int. Cl.³ C07D *401/06;* **A61K** *31/44*

U.S. Cl. 514—277 **12 Claims**

1. A 4-(3-trifluoromethylphenyl)-1,2,3,6-tetrahydropyridine of formula



wherein R represents an unsubstituted or by an alkyl group of from 1 to 4 carbon atoms substituted pyridyl, pyridyl 1-oxide or naphthyl group and Alk represents a straight or branched chain alkylene group of from 2 to 4 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

4,521,429

VINYLAZOLES AND THEIR USE FOR CONTROLLING FUNGI

Norbert Meyer, Ladenburg; Bernd Zeeh; Ernst Buschmann, both of Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

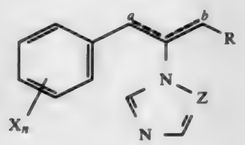
Filed Jan. 26, 1982, Ser. No. 342,933

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103068

Int. Cl.³ A01N *43/50, 43/64;* **C07D** *233/60, 249/08*

U.S. Cl. 514—383 **12 Claims**

1. Vinylazoles of the formula



(I)

where R is alkyl of 1 to 7 carbon atoms, phenyl or halogen-substituted phenyl where the double bond occupies position b and is n-propyl, isopropyl, tert.-butyl, n-butyl, n-pentyl, n-hexyl, n-heptyl, phenyl or halogen substituted phenyl where the double bond occupies position a, X is hydrogen, halogen, alkyl of 1 to 4 carbon atoms or phenyl, Z is N or CH and n is an integer from 1 to 5, and plant-tolerated acid addition salts and metal complexes thereof.

12. A process for combating fungi, wherein a fungicidally effective amount of a vinylazole of the formula I as defined in claim 1 is allowed to act on the fungi, or materials, areas, plants or seed threatened by fungus attack.

4,521,430

1,5-BENZOTHIAZEPIN-4-ONE, THEIR PHARMACEUTICAL COMPOSITOINS, AND METHODS OF USE

Tokuro Oh-ishi, Tokyo; Mikio Takeda; Hiromichi Nakajima, both of Urawa, and Taku Nagao, Tokyo, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

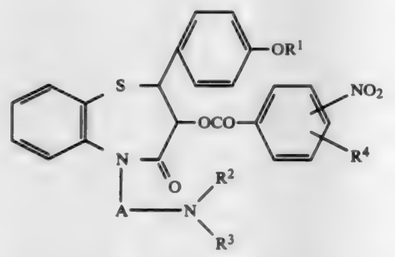
Filed May 25, 1984, Ser. No. 614,743

Claims priority, application United Kingdom, Jun. 11, 1983, 8316032

Int. Cl.³ A61K *31/555;* **C07D** *281/02*

U.S. Cl. 514—211 **15 Claims**

1. A compound of the formula:



(I)

wherein R^1 and R^2 are each lower alkyl, R^3 is hydrogen, lower alkyl or hydroxy-lower alkyl, R^4 is hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylthio or nitro, and A is lower alkylene, or a pharmaceutically acceptable acid addition salt thereof.

14. A method of producing a cerebral vasodilating effect on a warm-blooded animal comprising administering to said warm-blooded animal an effective amount of the compound claimed in claim 1.

4,521,431

AMINOALKYL FURAN DERIVATIVE

Derek L. Crookes, Hertford, England, assignor to Glaxo Group Limited, London, England

Continuation of Ser. No. 307,575, Oct. 1, 1981, abandoned. This application Aug. 9, 1982, Ser. No. 406,710

Claims priority, application United Kingdom, Oct. 1, 1980, 8031634

Int. Cl.³ A01K *31/34;* **C07D** *307/52*

U.S. Cl. 514—471 **18 Claims**

1. Form 2 ranitidine hydrochloride characterised by an infra-red spectrum as a mull in mineral oil showing the following main peaks:

3260	1075
3190	1045
3100	1021
2560	1006
2510	991
2470	972
1620	958
1590	810
1570	800
1263	760
1230	700
1220	660
1195	640
1163	620 cm^{-1}
1130	

17. A method of treating condition mediated through histamine H_2-receptors which comprises administering to a patient an effective amount of a compound as claimed in claim 1 to relieve said condition.

4,521,432

PHYSIOLOGICALLY ACTIVE SUBSTANCE FA-5859, ITS DERIVATIVE, THEIR PRODUCTION AND USE

Tsuneo Kanamaru, Takatsuki; Susumu Shinagawa, Higashiosaka, and Mitsuko Asai, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

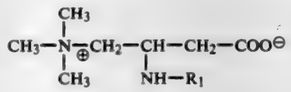
Filed Nov. 17, 1982, Ser. No. 442,368

Claims priority, application Japan, Nov. 26, 1981, PCT/JP81/00355; Jul. 28, 1982, PCT/JP82/00291; Oct. 15, 1982, PCT/JP82/00409

Int. Cl.³ C07C *87/30;* **A61K** *31/24, 31/195*

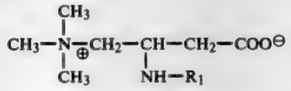
U.S. Cl. 514—556 **4 Claims**

1. A compound of the formula:



wherein R_1 is a hydrogen atom or an acetyl group, or a pharmacologically acceptable salt thereof.

4. An antidiabetic agent which contains an antidiabetically effective amount of the formula



wherein R_1 is a hydrogen atom or an acetyl group, or a pharmacologically acceptable salt thereof, and conventional carrier.

4,521,433

PROCESS FOR CHEESE MAKING

Peter M. Linklater, Randwick, and George W. Browning, Coogee, both of Australia, assignors to The Commonwealth of Australia, Belconnen, Australia

Filed Oct. 11, 1983, Ser. No. 540,994

Claims priority, application Australia, Oct. 13, 1982, PF6328

Int. Cl.³ A23C *19/00*

U.S. Cl. 426—36 **3 Claims**

1. A process of making cheese having a desired pH which comprises the steps of

(a) coagulating milk,

(b) cutting the coagulum to produce curd and whey,

(c) continuously monitoring the pH of the whey by withdrawing a sample of whey from said curd and whey,

(d) continuously treating the sample of whey to remove fines by

(i) passing the whey upwardly up a settling tube such that the rate at which the whey passes upwards is less than the rate of settling of the fines, and

(ii) filtering the treated sample of whey to further remove fines, resulting in a turbid whey sample;

(e) mixing an indicator with said treated filtered whey sample, the indicator

(i) having an absorbance at the wavelength in the visible region characteristic of a coloured form of the indicator,

(ii) having substantially no tendency to bind to milk proteins in said whey sample, and

(iii) having a pK_a value in the region 5.5 to 7.1;

(f) determining the optical absorption of said indicator-whey mixture, and deriving the pH of the whey sample from said absorption;

(g) separating the curd and whey at a desired pH; and

(h) further processing the separated curd into cheese having the desired pH.

4,521,434

FERMENTATION METHOD AND COMPOSITIONS INCLUDING A LACTOBACILLUS SPECIES STRAIN

Mark A. Matrozza, Sarasota, Fla., assignor to Microlife Technics, Inc., Sarasota, Fla.

Filed Sep. 27, 1982, Ser. No. 423,601

Int. Cl.³ C12N *1/20;* **A23L** *1/31*

U.S. Cl. 426—59 **12 Claims**

1. A bacterial concentrate for fermenting meat to produce sausage which consists essentially of:

(a) a biologically pure culture of cells of a Lactobacillus having the essential identification characteristics of Lactobacillus sp. NRRL-B-15,036 which cells ferment dextrose to produce lactic acid and are unsable to ferment lactose and sucrose to produce lactic acid, wherein the concentrate contains at least about 1×10^8 cells per ml in a nutrient medium and is in a storage stable form; and

(b) a stimulatory food grade metal salt in an amount sufficient to accelerate fermentation in meat by the Lactobacillus to produce fermented sausage.

4,521,435

HAMBURGER-TYPE MEAT PATTIES

Leo Peters, 750 Plymouth Rd., SE., Grand Rapids, Mich. 49506

Continuation-in-part of Ser. No. 221,896, Dec. 31, 1980, abandoned. This application Mar. 4, 1983, Ser. No. 472,108

Int. Cl.³ A23L *1/31*

U.S. Cl. 426—92 **13 Claims**

1. A fried hamburger-type meat patty, with a coating on said patty that seals in substantially all of said patty's original raw weight juice, said coating being invisible and inseparable from the meat of said patty and including at least 30% by weight dry powdered egg whites.

4,521,436

REHYDRATABLE RICE PRODUCT

Wen C. Lou, Yorktown Hgts., and Charles V. Fulger, Millwood, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jul. 27, 1983, Ser. No. 517,862

Int. Cl.³ A21D *2/00, 10/00;* **A23L** *1/10*

U.S. Cl. 426—104 **22 Claims**

1. A composition for the production of a rehydrateable rice product consisting of from 90.0 to 99.5 percent by weight of ungelatinized rice selected from the group consisting of rice flour, rice milk, head rice and mixtures thereof, from 0.2 to 5.0 percent by weight of an aerating agent, and from 0.1 to 3.5 percent by weight of an emulsifier.

4,521,437

POUCHES OF ETHYLENE/OCTENE-1 COPOLYMER FILM CONTAINING A FLOWABLE MATERIAL

William J. Storms, Oshawa, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Jun. 2, 1983, Ser. No. 500,386

Claims priority, application United Kingdom, Jun. 2, 1982, 82016100

Int. Cl.³ A23G *9/04;* **B32B** *27/34, 27/08*

U.S. Cl. 426—130 **13 Claims**

1. A pouch containing a flowable material, said pouch being made from a sealant film in tubular form and having transversely heat-sealed ends, said sealant film being made from a material comprising about 50 to 100 parts of a linear copolymer of ethylene and an octene-1 having a density of from 0.916 to 0.930 g/cm^3 and a melt index of 0.3 to 2.0 dg/min, and from 0 to 50 parts by weight of at least one polymer selected from the group consisting of a linear copolymer, of ethylene and a C_4–C_{10} α-olefin having a density of from 0.916 to 0.930 g/cm^3 and a melt index of from 0.3 to 2.0 dg/min, and a high-pressure polyethylene having a density of from 0.916 to 0.924 g/cm^3 and a melt index of from about 1 to 10 dg/min, said sealant film being selected on the basis of providing (a) pouches with an M-test value substantially smaller at the same film thickness, than that of pouches made with film of a blend of 85 parts of a linear ethylene/butene-1 copolymer having a density of about 0.919 g/cm^3 and a melt index of about 0.75 dg/min and 15 parts of a high pressure polyethylene having a density of about 0.918 g/cm^3 and a melt index of 8.5 dg/min, or (b) an M(2)-test value of less than about 12%, for pouches having a volume of from greater than 1.3 to 5 liters, or (c) M(1.3)-test value of less than about 5% for pouches having a volume of from 0.1 to 1.3 liters.

4,521,438

COFFEE EXTRACT DECAFFEINATION METHOD

Bary L. Zeller, Pleasantville, N.Y.; William W. Kaleda, Westwood, N.J., and Fouad Z. Saleeb, Pleasantville, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 29, 1983, Ser. No. 537,143

Int. Cl.³ A23F *5/22*

U.S. Cl. 426—271 **12 Claims**

1. A method of decaffeinating a caffeine-containing coffee extract which comprises:

(a) combining caffeic acid with a caffeine-containing coffee extract so as to form an insoluble colloidal, caffeic acid/-caffeine complex;

(b) growing crystals of the insoluble caffeic acid/caffeine complex which can be separated from the liquid;

(c) separating the insoluble caffeic acid/caffeine complex crystals from the decaffeinated liquid.

4,521,439

BLANCHING PROCESS

Bengt L. Bengtsson, Bjuv; Peter Palmlin, and Bertil K. Saldert, both of Halsingborg, all of Sweden, assignors to Nestec, S.A., Vevey, Switzerland

Filed Mar. 8, 1984, Ser. No. 587,534

Claims priority, application European Pat. Off., May 4, 1983, 83104381.5

Int. Cl.³ A23L *1/00*

U.S. Cl. 426—509 **10 Claims**

1. A process for blanching vegetables comprising subjecting the vegetables to a first blanching step for a period of from 1 to 30 seconds at a temperature from 90° C. to 100° C. in water or steam and then to a second blanching step for a period of from 1 to 60 minutes at a temperature from 45° C. to 90° C. in water.

4,521,440

WATER-IN-OIL EMULSIONS

Gabriël J. T. Lansbergen, s'Gravenzande, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 27, 1983, Ser. No. 566,123

Claims priority, application Netherlands, Dec. 30, 1982, 8205047

Int. Cl.³ A23D *3/00, 3/02, 5/00*

U.S. Cl. 426—602 **30 Claims**

1. Edible water-in-oil emulsion comprising an aqueous phase emulsified in a fat phase, fat constituting 30 to 84% by weight of the total emulsion and comprising:

(i) b 15–60% of a structure-imparting hard fat component, consisting essentially of a mixture of triglycerides obtained by random interesterification of a substantially completely hydrogenated fat (a) which is rich in C_8–C_{14} fatty acid residues or by random interesterification of 60–90% of a non-hydrogenated fat (a) and 10–40% of a fat (b) in which 40–100% of the fatty acid residues are saturated and mainly contain 16–22 carbon atoms;

(ii) 40–85% of an oil which does not substantially contribute to the consistency of the emulsion within the temperature range from 5° to 35° C. and which is substantially free of solid fat crystals at 10° C;

(iii) 0–25% of an oil hydrogenated to a melting point of from 30° to 45° C.; and

wherein the ratio of linoleic acid to the sum of saturated and trans fatty acids is at least 0.4 and the sum of components (i), (ii) and (iii) being equal to 100%.

4,521,441

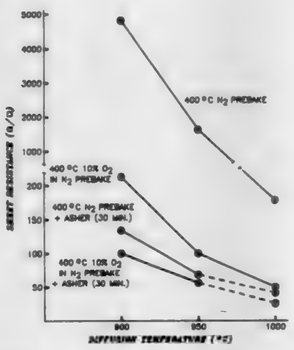
PLASMA ENHANCED DIFFUSION PROCESS

Dervin L. Flowers, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1983, Ser. No. 562,679

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—38 **15 Claims**



1. A process for doping a semiconductor substrate which comprises the steps of: applying spin-on dopant material to said substrate; heating said material to a first temperature; plasma treating said material to enhance the conductivity of diffused regions formed therefrom; and heating said substrate to a second temperature higher than said first temperature.

4,521,442

RADIANT ENERGY COLLECTOR HAVING PLASMA-TEXTURED POLYIMIDE EXPOSED SURFACE

C. Richard Guarnieri, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 393,952, Jun. 30, 1982, Pat. No. 4,478,209. This application May 9, 1984, Ser. No. 608,467

Int. Cl.³ F24J *3/02*; B05D *3/14*

U.S. Cl. 427—38 **14 Claims**

1. A method for imparting increased absorptivity and reduced emissivity for radiant energy of a material which comprises coating said material on at least a portion of the surface thereof exposed to radiant energy with polyimide and surface texturizing said polyimide whereby the polyimide coated material exhibits increased absorptivity and reduced emissivity for radiant energy.

4,521,443

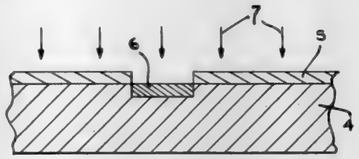
INTEGRATED OPTICAL WAVEGUIDE FABRICATION BY ION IMPLANTATION

Ishverlal K. Naik, Rancho Palos Verdes, and Ronald G. Eguchi, Lakewood, both of Calif., assignors to Northrop Corporation, Hawthorne, Calif.

Filed May 7, 1984, Ser. No. 607,499

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—38 **6 Claims**



1. A method for fabricating an optical device in a silicon dioxide substrate, comprising:

bombarding a selected area of the substrate with nitrogen ions to implant the ions in a region of the substrate below the selected area so as to raise the index of refraction of the region; and

heating the substrate to anneal the substrate so as to repair a substantial portion of any damage to the atomic structure of the substrate caused by the ion bombardment.

4,521,444

METHOD OF PROVIDING A METAL LAYER ON A SUBSTRATE

Johannes J. Ponjee; Johan W. A. Nelissen, and Christiaan J. A. Verwijlen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 5, 1983, Ser. No. 558,402

Claims priority, application Netherlands, Dec. 10, 1982, 8204783

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—41 **4 Claims**

1. A method of providing a metal layer on a hydrophilic surface of a substrate by means of a bonding intermediary selected from the group consisting of alkoxysilylalkylthiols, alkoxysilylalkylamines and chlorosilylalkylthiols comprising exposing said surface of said substrate with an atmosphere in which said bonding intermediary is present in vapor form until a monomer layer of said intermediary of a thickness of at most 15 molecules is formed on said hydrophilic surface and providing, by vapor deposition a metal layer of a thickness of 50–300 nm on the exposed surface of the resultant layer of said intermediary.

4,521,445

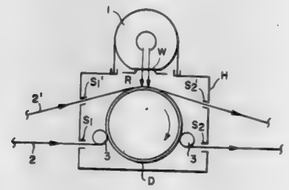
METHOD AND APPARATUS FOR ELECTRON CURING ON A COOLED DRUM

Sam V. Nablo, Lexington, and Edwin P. Tripp, III, Wilmington, both of Mass., assignors to Energy Sciences, Inc., Woburn, Mass.

Filed Apr. 22, 1983, Ser. No. 487,461

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—44 **27 Claims**



1. A method of transfer-coating electron-beam-curable material, that comprises, drawing over the external surface of a rotating metal drum a first web carrying such material, drawing a second web past the drum in contact with the first web at a predetermined region adjacent to the external surface of the drum, and directing electron-beam radiation upon said region from a location external to the drum to cure said material and transfer the same to said second web.

3. A method of transfer-coating electron-beam-curable material, that comprises applying said material to the external surface of a rotary metal drum, rotating said drum past a region where elctron-beam radiation is directed upon the external surface of the drum from a location external to the drum to cure said electron-beam-curable material, and providing sufficient shielding in the material of the drum itself to prevent appreciable radiation generated by the stopping of the electron beam radiation in said electron-beam-curable material and the drum from passing through the drum to the side of the drum opposite to said region and to reduce the radiation level at said side of the drum to no more than 2.5 mr/hr for electron-beam radiation up to 300 KEV energy level.

4,521,446

METHOD FOR DEPOSITING POLYSILICON OVER TiO_2

Donald J. Coleman, Jr., Plano; Roger A. Haken, Richardson, and Chung S. Wang, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 344,563, Feb. 1, 1982, abandoned. This application Nov. 30, 1983, Ser. No. 557,382

Int. Cl.³ H01L *21/316*

U.S. Cl. 427—86 **9 Claims**

1. A method for depositing polysilicon on TiO_2, comprising the steps of:

depositing a layer of TiO_2; annealing said TiO_2 layer in hydrogen to provide an appropriate surface for the deposition of polysilicon; and

depositing polysilicon on said annealed TiO_2,

thereby providing a polysilicon layer which is not hazy.

4,521,447

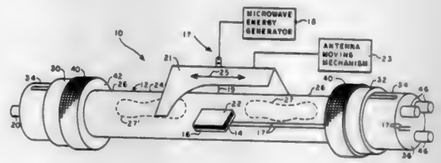
METHOD AND APPARATUS FOR MAKING LAYERED AMORPHOUS SEMICONDUCTOR ALLOYS USING MICROWAVE ENERGY

Stanford R. Ovshinsky, Bloomfield Hills; Stephen J. Hudgens, Southfield, both of Mich., and Marc A. Kastner, Newton Lower Falls, Mass., assignors to Sovonics Solar Systems, Solon, Ohio

Division of Ser. No. 435,068, Oct. 18, 1982, abandoned. This application Dec. 23, 1983, Ser. No. 565,033

Int. Cl.³ B05D *3/02, 3/06, 5/12*

U.S. Cl. 427—45.1 **21 Claims**



1. A process for depositing amorphous alloy materials in layered form onto a receiving surface comprising:

providing at least one source of microwave energy;

providing at least two reaction bases, each said gas containing at least one alloying element to be deposited onto said receiving surface;

selectively exciting said reaction gases with said microwave energy to create from said reaction gases sequentially excited species containing said alloying elements to be deposited to form at least one region or layer of amorphous alloy material; and

depositing said alloy in a plurality of alternating sublayers onto said receiving surface to form said amorphous alloy material region.

4,521,448

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

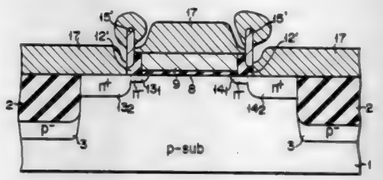
Yoshitaka Sasaki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 3, 1983, Ser. No. 471,651

Claims priority, application Japan, Mar. 16, 1982, 57-41331

Int. Cl.³ H01L *21/283*

U.S. Cl. 427—88 **26 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

forming a thin film on a semiconductor body on which a protruding pattern is formed, with said thin film covering both the sides and the top of said protruding pattern;

performing a selective anisotropic etching on said thin film for a distance corresponding to said thin film thickness, thereby removing a portion of said thin film including that portion covering the top of said protruding pattern and leaving a portion of said thin film covering said sides of said protruding pattern, thus forming a thin film pattern surrounding at least a portion of the protruding pattern;

etching at least a top part of the protruding pattern while

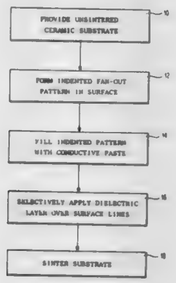
leaving said thin film pattern to extend upwardly from the surface of said semiconductor body;
forming a conductive film covering the semiconductor body including said thin film pattern; and
dividing said conductive film into portions by removing said thin film pattern.

4,521,449

PROCESS FOR FORMING A HIGH DENSITY METALLURGY SYSTEM ON A SUBSTRATE AND STRUCTURE THEREOF

Anthony F. Arnold, and Arnold F. Schmeckenbecher, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1984, Ser. No. 612,296
Int. Cl.³ H05K *3/12, 3/46*
U.S. Cl. 427—96 **15 Claims**



1. A process for forming a high density solder pad and fan-out metallurgy system for electrically connecting an integrated circuit semiconductor device to a support substrate comprising,
providing an unsintered green ceramic substrate with an internal metallurgy system including a matrix of vias on the top surface filled with conductive metal paste,
forming indented areas in the top surface of said green ceramic substrate that are interspersed between said vias, and indented lines that are joined to the indented areas and radiate generally outwardly forming a fan-out configuration,
filling the indented areas and lines with a conductive metal paste,
screening a dielectric layer of ceramic material on the top surface of said substrate that covers said indented lines but leaves said vias and said indented areas exposed, and
sintering the substrate.

4,521,450

METHOD OF INCREASING THE ELECTRICAL CONDUCTIVITY OF CELLULOSE-BASED MATERIALS OR OTHER IMPREGNABLE MATERIALS

Robert Bjorklund, Linköping; Hans Gustavsson, Västerås; Ingemar Lundström, Linköping, and Bertil Nygren, Västerås, all of Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Jun. 20, 1983, Ser. No. 505,856
Claims priority, application Sweden, Jun. 22, 1982, 8203863; Feb. 1, 1983, 8300529
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—121 **10 Claims**

1. A method of increasing the electrical conductivity of a solid, impregnable material which comprises the steps of
(1) providing a chemical compound containing a metal ion which is capable of changing its valence in said solid, impregnable material, said chemical compound being capable, during the polymerization of a pyrrole compound selected from the group consisting of pyrrole and N-methylpyrrole and mixtures thereof, of providing the produced polymer with a higher electrical conductivity than that of said solid, impregnable material,
(2) adding a pyrrole compound selected from the group consisting of pyrrole and N-methylpyrrole mixtures thereof to said solid, impregnable material from step (1), and
(3) allowing said pyrrole compound in the solid, impregnable material from step (2) to polymerize.

4,521,451

ENCAPSULATED MAGNETIC RECORDING DISK

Jerome M. Eldridge, Saratoga, and Andrew M. Homola, Morgan Hill, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1983, Ser. No. 538,029
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—130 **5 Claims**

1. A process for preparing a magnetic recording member comprising the steps of
preparing a liquid mixture containing an organic solvent, magnetic particles and one or more organometallic compounds, at least one of the organometallic compounds containing silicon,
applying said liquid mixture to a nonmagnetic thermally stable substrate,
heating said applied mixture to a temperature sufficient to form a melted glass material from the organometallic compound,
and cooling said melted glass material to heremetically encapsulate said magnetic particles.

4,521,452

GEL-FORMING COMPOSITIONS AND THE USE THEREOF

Ronald E. Highsmith, 28 E. Austin St., Skaneteles, N.Y. 13152

Continuation-in-part of Ser. No. 88,126, Oct. 25, 1979, abandoned. This application Feb. 26, 1981, Ser. No. 238,489
Int. Cl.³ B05C *1/16;* **B05D** *5/10*
U.S. Cl. 427—136 **28 Claims**

1. A uniform dispersion of a water soluble acrylamide polymer or copolymer useful for reducing or eliminating the flow of water through surfaces and earthen formations, having a molecular weight of from about 10^2 to about 10^7 in the water insoluble reaction product of a water soluble aldehyde of the formula

$$(OHC)_aR_b$$

wherein
(a) R is selected from the group consisting of H, aliphatic, and substituted aliphatic and arylaliphatic wherein the aryl group is not adjacent an OHC group,
(b) a is an integer of 1 or more, and
(c) b is 0 or 1, with the proviso that
(d) a is 1 when R is H and
(e) when b is 0, a is 2
with a water soluble primary amine of the formula

$$(H_2N)_cR'_d$$

wherein
(a) R′ is selected from the group consisting of H, aliphatic and substituted aliphatic and arylaliphatic wherein the aryl group is not adjacent an H_2N group,
(b) c is an integer of 1 or more, and
(c) d is 0 or 1, with the proviso that
(d) c is 1 when R′ is H, and
(e) when d is 0, c is 2,
which polymer or copolymer, aldehyde and amine components are present in adequate proportions to form a polymeric gel.

26. A method of preventing water permeation of a porous

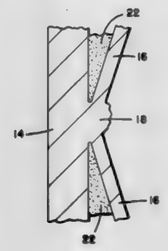
structural material which comprises applying to said structural material a dispersion as described in claim 1 and allowing said dispersion to react to form a polymeric gel.

4,521,453

HEATING/COOLING COIL SEALING

Kieran Mulcahy, Kildare, Ireland, assignor to Loctite (Ireland) Ltd., Dublin, Ireland

Filed Jan. 27, 1984, Ser. No. 574,500
Int. Cl.³ B32B *35/00;* **B05D** *3/02*
U.S. Cl. 427—140 **10 Claims**



1. A method of sealing a porosities in a corroded heating or cooling jacket of a reactor vessel, the method comprising:
(a) draining the heating or cooling fluid from said jacket;
(b) washing and drying the interior of said jacket;
(c) filling the jacket with a curable liquid sealant composition under pressure sufficient to cause the composition to permeate the porous areas in the jacket, but insufficient to burst the jacket, said composition being curable at temperatures between about 75° C. and 100° C. and having viscosity and surface tension properties which permit the jacket porous areas to be penetrated at pressures below the burst strength of the jacket;
(d) draining excess sealant from the jacket; and
(e) heating the jacket to or above the cure temperature of the composition and maintaining that temperature for sufficient time to ensure total polymerization of the reactive liquid.

4,521,454

METHOD OF PRODUCING HEAT-REFLECTING GLASS PLATE BY COATING WITH TITANIUM OXIDE FILM

Takayoshi Kandachi; Seiki Okino; Toshiharu Yanai, and Katsuto Tanaka, all of Matsusaka, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Feb. 6, 1984, Ser. No. 577,379
Claims priority, application Japan, Feb. 12, 1983, 58-20563
Int. Cl.³ B05D *5/06, 3/02*
U.S. Cl. 427—168 **4 Claims**

1. A method of coating a glass plate surface with a titanium oxide film to produce a heat-reflecting glass plate, the method having the step of spraying a solution of a thermally decomposable organic compound of titanium in an organic solvent onto a surface of a glass plate which is at such an elevated temperature that said compound in the sprayed solution decomposes on the glass plate surface to form titanium oxide,
characterized in that said compound is a chelate compound of titanium formed by coordination of two chelate ligands, which are selected from the group consisting of acetylacetone and ethyl acetoacetate, and two nonchelate ligands, which are a polyhydric alcohol, to a titanium atom.

4,521,455

PROCESS AND EQUIPMENT FOR THE PRODUCTION OF ALLOYED COPPER WIRE ROD BY CONTINUOUS CASTING

Sipos Domokos, Budapest, Hungary, assignor to Csepel Muvek Femmuve, Csepel, Hungary

Filed Jan. 20, 1983, Ser. No. 459,415
Claims priority, application Hungary, Feb. 23, 1982, 536/82
Int. Cl.³ B05D *3/12;* **B05C** *3/02*
U.S. Cl. 427—178 **9 Claims**

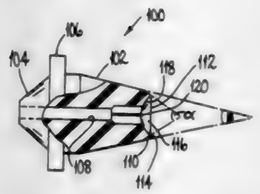
1. A process for the continuous casting of a copper alloy wire rod comprising the steps of simultaneously:
(a) charging a continuous flow of molten pure copper into a crucible;
(b) forming with said pure copper in said crucible a molten copper alloy by a continuously loading into said crucible alloying material for admixture with said pure copper;
(c) passing a core-rod of said alloy through said crucible at a defined casting speed whereby said molten alloy crystalizes on the surface of said core-rod, and;
(d) regulating the rate at whch said alloying material is loaded into said crucible in correspondence to the casting speed of said rod to maintain said molten alloy at a given proportion of pure copper and alloying material, and
thereafter working said crystallized rod to form said wire rod.

4,521,456

APPLICATOR NOZZLE

Raymond Hanson, Rearsby, England, assignor to USM Corporation, Farmington, Conn.

Filed Aug. 22, 1983, Ser. No. 525,122
Claims priority, application United Kingdom, Aug. 20, 1982, 8224033
Int. Cl.³ B05B *11/00*
U.S. Cl. 427—207.1 **3 Claims**



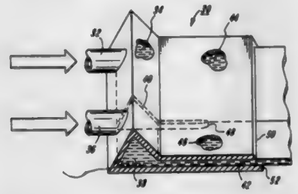
1. A method of applying a band of liquid adhesive composition to a surface of a workpiece using a frusto-conical applicator nozzle having an orifice with a semi-spherical depression therein and a circular lip therearound, comprising:
supplying liquid composition to the orifice so that the composition flows through the orifice providing a reservoir of composition in the semi-spherical depression, with the frusto-conical applicator nozzle tilted with respect to the work bringing part of the circular lip and the surface of the workpiece substantially into contact so that the reservoir of composition forms a pool on the surface of the workpiece,
causing the flexible applicator portion to flex so that the applicator portion is deformed by contact with the workpiece surface, and
bringing about relative movement between the applicator nozzle and workpiece so that composition from the pool is spread in a band on the surface by the applicator portion, the pool preceding the part of the lip which is substantially in contact with the surface of the workpiece considering motion of the applicator relative to the workpiece.

4,521,457

SIMULTANEOUS FORMATION AND DEPOSITION OF MULTIPLE RIBBON-LIKE STREAMS

Philip P. Russell, El Cerrito, Calif.; Tyan-Faung Niu, Endwell, N.Y., and Frederic A. Holland, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 420,997
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—286 **9 Claims**



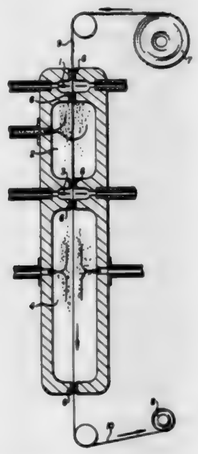
1. A process for applying to a surface of a support member at least one ribbon-like stream of a first coating composition side-by-side to and in edge contact with at least one second ribbon-like stream of a second coating composition comprising providing a source for said ribbon-like streams, establishing relative motion between said surface of said support member and said source of said ribbon-like streams, simultaneously constraining and forming said ribbon-like streams parallel to, side-by-side to and spaced from each other, contacting adjacent edges of said ribbon-like streams prior to applying said ribbon-like streams to said surface of said support member, and continuously applying said ribbon-like streams to said surface of said support member whereby said ribbon-like streams extend in the direction of relative movement of said surface of said support member and said source of said ribbon-like streams to form a continuous unitary layer having a boundary between said side-by-side ribbon-like streams on said surface of said support member.

4,521,458

PROCESS FOR COATING MATERIAL WITH WATER RESISTANT COMPOSITION

Richard C. Nelson, 31 Sunrise Crescent, Pointe Claire, Quebec, Canada

Filed Apr. 1, 1983, Ser. No. 481,300
Int. Cl.³ B05D *3/00*
U.S. Cl. 427—294 **9 Claims**



1. A continous process for coating a porous fabric sheet in a number of enclosed chambers not exposed to air, comprising the steps of:

linearly feeding the sheet through a first slit into an enclosed preparation chamber,

applying hot volatile liquid to the sheet in the preparation chamber,

feeding the sheet through a second slit into an enclosed vacuum chamber to remove moisture, air and other impurities and remaining volatile fluids from the sheet,

linearly feeding the sheet through a third slit into an enclosed coating chamber,

applying a liquid coating to the sheet in the coating chamber,

feeding the sheet through a fourth slit into an enclosed further processing chamber to dry and cure the coating on the sheet, and

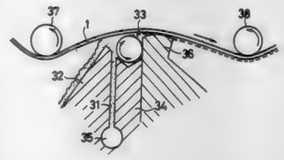
leaving the further processing chamber by a fifth slit.

4,521,459

COATING METHOD AND APPARATUS

Hideo Takeda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 19, 1983, Ser. No. 495,929
Claims priority, application Japan, May 19, 1982, 57-83236
Int. Cl.³ B05D *3/12*
U.S. Cl. 427—359 **10 Claims**



4. Apparatus of the extruder type for coating a web with a coating solution comprising: a coating solution supplying extruder outlet at the upper portion of a supply slot, a coil bar disposed at the rear of and adjacent to the supply slot and a smoother arranged at the rear of the coil bar and adjacent to the coil bar, wherein immediately after a coating solution is applied to a web which is continuously run surplus coating solution is scraped off and the web is subjected to smoothing by the smoother directly without undergoing a gaseous phase.

5. The apparatus of claim 4 further comprising a holder for said coil bar, one wall of said holder forming a wall of said supply slot.

4,521,460

AQUEOUS N-METHYLOLHYDRAZIDE-CONTAINING POLYMER DISPERSION

Shmuel Dabi, 218 N. 2nd St., Highland Park, N.J. 08904; Peter Loewrigkeit, 498 Vance Ave., Wyckoff, N.J. 07481, and Kenneth A. Van Dyk, 6 Fox Trail, Deertrail Lake, Stockholm, N.J. 07460

Filed Jun. 10, 1983, Ser. No. 503,336
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—385.5 **18 Claims**

1. A stable aqueous dispersion of a room temperature curing polymer effective for forming films resistant to water and organic solvents, said polymer being a water-dispersible vinyl addition polymer containing pendant N-methylolhydrazide groups effective to cause the polymer to undergo self-condensation, cross-linking, hardening and curing in situ on a substrate when said dispersion is applied to the substrate and dried at ambient temperatures, said dispersion being free of interfering groups which would prematurely react with the pendant N-methylolhydrazide groups and/or interfere with the self-condensation, cross-linking, hardening and curing of the dispersion when applied to a substrate and dried at ambient temperatures, said pendant N-methylolhydrazide groups being present in an amount such that premature self-condensation and cross-linking do not take place in the dispersion.

11. A method of preparing a stable aqueous dispersion of a room temperature curing polymer effective for forming films resistant to water and organic solvents comprising: forming a reaction mixture of formaldehyde and an aqueous dispersion of a precursor water-dispersible vinyl addition polymer containing a proportion of pendant hydrazide groups which, when N-methylolated, is effective to cause the polymer to undergo self-condensation, cross-linking, hardening and curing in situ on a substrate when said dispersion is applied to the substrate and dried at ambient temperatures, the formaldehyde being present in amount to N-methylolate said proportion of pendant hydrazide groups, said reaction mixture being free of interfering groups which would prematurely react with the pendant hydrazide groups and/or interfere with the self-condensation, cross-linking, hardening and curing of the dispersion, said pendant hydrazide groups being present in an amount such that premature self-condensation and cross-linking do not take place in the reaction mixture.

4,521,461

SILOXANE-POLYESTER COMPOSITIONS

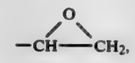
James McVie, and Derek W. Butler, both of Barry, Wales, assignors to Dow Corning Limited, Barry, Wales

Filed Apr. 25, 1984, Ser. No. 603,796
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—387 **5 Claims**

1. A composition which comprises (1) a siloxane-polyester copolymer resin having an average of at least two ≡SiOM and/or ≡COH groups per molecule, wherein M represents H or an alkyl group having from 1 to 4 carbon atoms, (2) one or more organic solvents for the siloxane-polyester copolymer (3) a silane of the general formula

$$ZSi(OY)_{3-a}^{X_a}$$

wherein Z represents an organic group composed of carbon, hydrogen and oxygen having therein at least one group of the formula



X represents a methyl group or a phenyl group, Y represents an alkyl or an alkoxyalkyl group having less than 5 carbon atoms and a has a value of 0 or 1, and (4) a titanium chelate which is a dialkoxytitanium bis-(acetylacetonate), a dialkoxytitanium bis-(ethylacetoacetate) or mixtures thereof.

5. A process for coating a substrate which comprises applying to a substrate a composition as claimed in claim 1 and thereafter curing the applied composition.

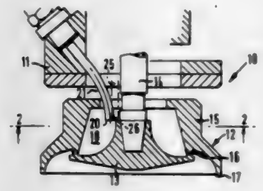
4,521,462

ROTARY ATOMIZER FOR COATING WORKPIECES WITH A FINE LAYER OF LIQUID MATERIAL, AND A METHOD OF OPERATING THE SAID ATOMIZER

Kenneth R. Smythe, Farnborough, United Kingdom, assignor to Sale Tilney Technology Plc., Weybridge, United Kingdom

Filed Jul. 30, 1984, Ser. No. 635,619
Claims priority, application United Kingdom, Aug. 2, 1983, 8320827
Int. Cl.³ B05D *1/02*
U.S. Cl. 427—421 **9 Claims**

1. A rotary atomizer for coating workpieces with a fine and even layer of liquid coating material, comprising an atomizing device having a discharge edge, means for rotating said atomizing device, a liquid feed tube connectible to a source of coatng liquid and terminatng in an outlet within said atomizing device, and means for controlling the rate of flow of said liquid in the feed tube such that the flow is intermittent and produces drops at said outlet, characterised in that there is provided a gas or air supply tube having an outlet disposed adjacent the outlet of the liquid feed tube within the atomizing device and connectible to a source of pressurized gas or air, the relative



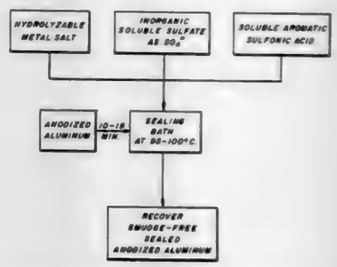
positions of said outlets being such that in use a regulated stream of gas or air is directed at or adjacent the liquid outlet so as to break up drops of said liquid appearing at the outlet into smaller droplets and deflect them towards the internal wall of the said atomizing device upstream of said discharge edge.

4,521,463

ONE STEP SEALING PROCESS

John H. Powers, Lower Burrell, and Edward G. Remaley, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 18, 1982, Ser. No. 409,072
Int. Cl.³ B05D *1/18*
U.S. Cl. 427—435 **16 Claims**



1. In a process for sealing anodized aluminum without necessitating an additional desmudging step to remove smudge formed in the sealing process, the improvement comprising immersing the anodized aluminum for 10 to 15 minutes in a sealing bath maintained at a temperature of 95 to 100° C. and consisting essentially of from 2 to 8 grams per liter of a hydrolyzable metal salt selected from the group consisting of acetate or sulfate salts of nickel, cobalt, aluminum, copper, lead, zinc and alkali metals; from 0.5 to 1.5 grams per liter of soluble inorganic sulfate as $SO_4^{=}$; and from 0.25 to 1.5 grams per liter of a soluble salt of a formaldehyde condensation of an aromatic sulfonic acid.

4,521,464

DECORATIVE PLATE APPARATUS

G. Paul Chapman, Marietta, Ga., assignor to Decorative Designs, Inc., Atlanta, Ga.

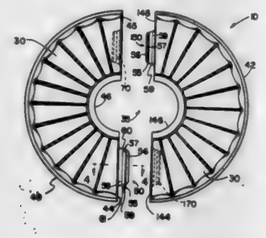
Filed Sep. 14, 1983, Ser. No. 531,954
Int. Cl.³ B32B *3/00, 3/02*
U.S. Cl. 428—33 **5 Claims**

1. A decorative plate apparatus, comprising:

a first plate section having a substantially flat back side and an inner surface comprising two planar sections separated by an arcuate section, wherein one of said two planar sections includes an integrally formed male extension

projecting outwardly from said inner surface and downwardly from said back side, and the other of said two planar sections includes an integrally formed female receptacle protruding inwardly of said inner surface and downwardly of said back side; and

a second plate section having a substantially flat back side and an inner surface comprising two planar sections separated by an arcuate section, wherein one of said two planar sections includes an integrally formed male extension projecting outwardly from said inner surface and downwardly from said back side, and the other of said two



planar sections includes an integrally formed female receptacle protruding inwardly of said inner surface and downwardly from said back side,

whereby twisting said plate sections about an axis perpendicular to said inner surfaces engages said male extension of said first plate section with said female receptacle of said second plate section, and further engages said male extension of said second plate section with said female receptacle of said first plate section, thereby securing said first plate section to said second plate section to provide a unitary plate.

4,521,465

COATED COMPOSITE MATERIAL FOR LINING PASSAGES

Walter Schröer, Leverkusen, Fed. Rep. of Germany, and Gyula Wlasitsch, Gyoer, Hungary, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany and Graboplast, Gyoer, Hungary

Filed Jul. 18, 1983, Ser. No. 514,918

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1982, 3227679

Int. Cl.³ B32B *31/00*

U.S. Cl. 428—35 **18 Claims**

1. A composite material laminate comprising:

(i) a textile layer

(ii) a gas and water-impermeable-plastic film comprising

(ii-a) a layer of filler-containing polyurethane-urea coating composition derived from blocked NCO prepolymers having a functionality of at least 2.10 and aliphatic and/or cycloaliphatic polyamines having an NCO/NH_2 ratio of from 1.3:1 to 0.95:1 and containing about 5 to about 40% relative to the weight of the composition of inorganic fillers and

(ii-b) a layer of a substantially linear, thermoplastic polyurethane-urea coating derived from a linear NCO-prepolymer having a functionality of from 1.95 to 2.06 and aliphatic and/or cycloaliphatic polyamines having an NCO/NH_2 ratio of from 1.30:1 to 0.95:1 said (ii-a) and said (ii-b) being joined together undetachably, said (ii-a) facing said (i) and said (ii-b) being remote from said (i), said (ii-a) and said (ii-b) being further characterized in that they are formed by coating the corresponding high solid systems comprising blocked NCO-prepolymers and aliphatic or cycloaliphatic polyamines, in the direct or transfer coating process.

4,521,466

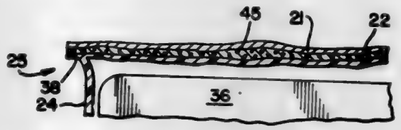
CELLULAR SEAL COATING

Leonard A. White, Gurnee, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Sep. 12, 1983, Ser. No. 530,891

Int. Cl.³ B32B *3/12, 5/18*

U.S. Cl. 428—35 **19 Claims**



1. A solventless method for providing seal coatings, comprising:

formulating a bonding composition, including finely divided, electrostatically chargeable bonding agent particles that are activatable to a state at which the bonding agent particles adhere preassembly members together, said bonding agent composition further including a blowing agent that develops gas bubbles when the bonding composition is activated to said state at which the bonding agent particles adhere preassembly members together;

electrostatically depositing said bonding composition onto a preassembly member; and

activating said deposited bonding composition in order to seal said preassembly member with a cellular bond, said activating step including activating said blowing agent within the bonding composition to thereby impart cellular properties to said cellular bond.

15. An article having a seal coating, comprising:

an assembly member having a panel that includes a seal coating thereon, said seal coating being a cellular bond that includes a bonding agent having gaseous cells interspersed therewithin; and

said cellular bond is formed from a bonding composition including bonding agent particles and a blowing agent that develops gas bubbles when the bonding composition is activated to a state at which said bonding agent particles form the seal coating, said bonding agent particles being electrostatically chargeable.

4,521,467

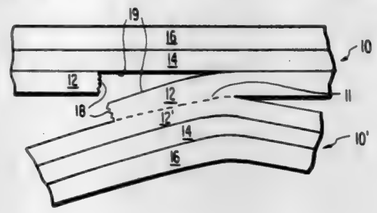
ULTRASONICALLY-SEALABLE PEELABLE SEAL

Kenneth R. Berger, Grapevine, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Dec. 12, 1983, Ser. No. 560,120

Int. Cl.³ B32B *27/08*; B65D *73/00*

U.S. Cl. 428—35 **17 Claims**



1. A package seal which is ultrasonically-sealable and maintains a peelable seal feature, the peelable seal comprising:

(a) a sealing layer of resin material which is ultrasonically-sealable, but is not readily heat-sealable,

(b) a backing layer for the sealing layer, the backing layer being of a higher melting point resin than the sealing layer, the interlayer adhesion between the backing layer and the sealing layer being below the strength required to break the sealing layer.

4,521,468

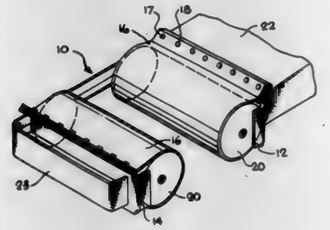
DEFORMABLE PAD FOR TREE CLAMPING JAWS

Richard W. Brandt, Yuba City, Calif., assignor to Orchard Machinery Corporation, Yuba City, Calif.

Filed Jan. 19, 1984, Ser. No. 572,675

Int. Cl.³ B32B *1/02*

U.S. Cl. 428—35 **15 Claims**



1. A deformable pad for clamping jaws of a tree shaking machine comprising,

a bark protective, resilient container means for cushioning a tree mounted in a jaw support of a tree shaking machine, said container means having a fitting disposed therein forming an exterior porthole opening to a central cavity, said central cavity more than 90% filled with high abrasion resistant polymer rods impregnated with a dry, high-melting temperature lubricant, said rods having dimensions in the range of one to seven millimeters.

4,521,469

CASING FOR ELECTRONIC COMPONENTS

Sheldon H. Butt, Godfrey, Ill.; Edward F. Smith, III, Madison, and F. Dennis Gyurina, West Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 443,793, Nov. 22, 1982,. This application May 31, 1984, Ser. No. 615,606

Int. Cl.³ B65D *65/28*

U.S. Cl. 428—35 **5 Claims**

1. A casing adapted to contain an electrical or electronic component, comprising:

a copper or copper alloy leadframe;

an adhesion primer on the surface of said leadframe, said adhesion primer comprising a substantially uniform glassy and substantially pore-free phosphate coating; and

a plastic material comprising an epoxide resin bonded to said leadframe to form said casing, said resin forming a strong adhesive bond to said leadframe, said epoxide resin containing a mold release agent.

4,521,470

DIMENSIONALLY HEAT RECOVERABLE ARTICLE

Noel M. M. Overbergh, Bertem; Jos Doucet, Kessel-Lo, and Jan Vansant, Heverlee, all of Belgium, assignors to N.V. Raychem S. A., Belgium

Filed Jul. 27, 1983, Ser. No. 517,542

Claims priority, application United Kingdom, Jul. 26, 1982, 8221539

Int. Cl.³ B29C *27/00*

U.S. Cl. 428—36 **20 Claims**

1. An article for enclosing at least part of an object, comprising:

a dimensionally heat-recoverable cover adapted to be recovered about the object;

a layer of a heat-softenable adhesive adapted to contact the object;

an intermediate layer of a thermoplastic polymeric material located between the cover and the heat-softenable adhesive, the polymeric material bonding to both the cover and adhesive during recovery of the cover, which material has a melting or softening point that is higher than that of the heat-softenable adhesive and has a thickness that is greater than that of the heat-softenable adhesive.

15. A method of enclosing at least part of an object, comprising the steps of:

(a) installing around the object a layer of a heat-softenable adhesive;



(b) installing over the heat-softenable adhesive a layer of a thermoplastic polymeric material having a thickness greater and a melting or softening point higher than those of the heat-softenable adhesive;

(c) installing over the thermoplastic material a dimensionally heat-recoverable cover; and

(d) causing recovery of the cover, and softening of the heat-softenable adhesive and of the thermoplastic polymeric material such that the polymeric material bonds with the cover and the adhesive.

4,521,471

PROCESSES AND ARTICLES FOR REMOVING TYPEWRITER INKS

Duane F. Merrill, Ballston Spa, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Sep. 15, 1982, Ser. No. 418,338

Int. Cl.³ A61F *13/02*

U.S. Cl. 428—40 **9 Claims**

1. An article for removing vertically cohesive ink from a substrate comprising:

(a) a backing material and

(b) a silicone pressure sensitive adhesive composition cured to one side of said backing material, said pressure sensitive adhesive composition comprising the co-condensation reaction product of a mixture containing 100 parts by weight of a trimethyl chain-stopped MQ resin having an M to Q ratio ranging from approximately 0.5 to 1.0:1, and 44–57 parts by weight of a dimethylpolysiloxane gum having a penetration ranging from approximately 500 to 1,200 millimeters at 25° C. and wherein the adhesive has a greater affinity for the vertically cohesive ink than for the substrate and has a greater internal cohesion than external adhesion.

4,521,472

FABRIC AND METHOD OF MANUFACTURE USING SELVAGE BANDS

Kenneth A. Gold, 29 Wildwood Gardens, Port Washington, N.Y. 11050

Continuation of Ser. No. 119,129, Feb. 6, 1980, Pat. No. 4,341,829. This application Jun. 22, 1982, Ser. No. 390,960

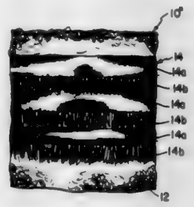
The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.

Int. Cl.³ B32B *29/00*

U.S. Cl. 428—53 **7 Claims**

1. A non-woven fabric including, as a primary component, a

fringed selvage band of the type obtained as a by-product of the manufacture of certain-woven fabrics, said non-woven



fabric further including a non-woven backing material to the surface of which said selvage band is secured.

4,521,473

CARPET WITH FUSION-CUT THROUGH BORE AND ITS MANUFACTURE METHOD

Takao Sakamoto, and Tadafumi Abe, both of Akishima, Japan, assignors to Tachikawa Spring Co., Ltd., Japan

Filed Oct. 21, 1983, Ser. No. 544,413
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—82 **9 Claims**



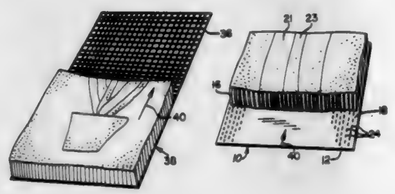
1. A carpet comprising:
a napped portion including a thermally weldable base cloth provided on a rear surface of the napped portion;
a through bore having a desired shape and formed at a suitable position in the carpet, said through bore being defined by a wall which establishes a circumferential edge portion of said napped portion adjacent said wall; and
a hem member consisting essentially of a thermally weldable synthetic resin film having first and second portions integrally adhered to said base cloth along said wall of said through bore and covering said circumferential edge portion of said napped portion adjacent to said wall of said through bore, respectively.

4,521,474

CARRIER AND METHOD FOR PROVIDING YARN FOR LATCH HOOK RUG KITS AND THE LIKE

Edward Berman, 1080 South Downing St., Seaside, Oreg. 97138

Division of Ser. No. 091,550, Nov. 5, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 211,309
Int. Cl.³ B32B *3/02*
U.S. Cl. 428—93 **6 Claims**



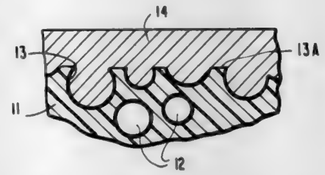
1. A kit including material for assembling a handmade rug and the like, comprising:
(a) mesh backing fabric for receiving a plurality of pieces of yarn to be tied thereto in making a latch hook rug and the like;
(b) a carrier consisting essentially of a pliable sheet including means defining a plurality of perforations therein for removably holding pieces of yarn; and
(c) a plurality of pieces of yarn, each of said pieces of yarn being bent into a "U" shape and having each end thereof extending through a respective one of said perforations, said perforations being sufficiently small to frictionally retain said ends, thereby removably holding said pieces of yarn in said carrier, and said plurality of pieces of yarn being sufficient in number for tying to said mesh backing to complete said latch hook rug and the like.

4,521,475

METHOD AND APPARATUS FOR APPLYING METAL CLADDING ON SURFACES AND PRODUCTS FORMED THEREBY

Louis M. Riccio, 161 Hollow Rd., Malvern, Pa. 19355, and Alexander Bosna, 814 Washington St., Cape May, N.J. 08204

Continuation-in-part of Ser. No. 481,412, Apr. 1, 1983,. This application Dec. 20, 1983, Ser. No. 563,430
Int. Cl.³ B32B *3/06, 3/20*
U.S. Cl. 428—142 **24 Claims**



1. In a marine surface protected from marine growth by an external layer of a thermally sprayed metal selected from copper and copper based alloys, the improvement wherein a layer of an adhesive resin is between said surface and said external layer of metal, a plurality of fractured inorganic hollow spheres in the interface between said resin and said external metal layer forming undercuts, nooks and crannies, said external layer of metal being constituted by a layer of solidified thermally sprayed metal particles sprayed in a molten state and filling and interlocking with said undercuts, nooks and crannies.

3. The invention defined in claim 1 including a first metal layer with metal particles selected from copper and copper-nickel alloys embedded in said adhesive layer and said layer of thermally sprayed metal particles is sprayed in a molten state at a high velocity on said first metal layer.

7. The invention defined in claim 3 wherein said first metal layer and said thermally sprayed layer have a combined thickness of at least 3 mils.

8. The invention defined in claim 7 wherein said first metal layer is thinner than said thermally sprayed metal layer.

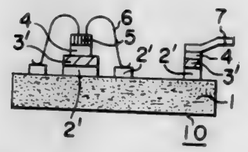
4,521,476

HYBRID INTEGRATED CIRCUIT AND PREPARATION THEREOF

Shinichiro Asai; Kazuo Katoh, and Tatsuo Nakano, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1983, Ser. No. 506,589
Claims priority, application Japan, Aug. 19, 1982, 57-142726
Int. Cl.³ B32B *3/00;* **C23B** *1/08;* **H01L** *27/10*
U.S. Cl. 428—209 **7 Claims**

1. A hybrid integrated circuit, comprising:
an aluminum-copper clad foil on an insulating layer, wherein the upper metal foil of said aluminum-copper clad foil is etched into a predetermined circuit pattern by an etching agent which selectivity dissolves only the metal of said upper metal foil and then the lower metal foil is etched into a predetermined circuit pattern by an etching agent which selectivity dissolves only the metal of said lower metal foil, thereby forming a device having an aluminum



circuit pattern and a copper circuit pattern, a semiconductor element connected to said aluminum circuit through an aluminum wire or a gold wire and a circuit element soldered to said copper circuit.

4,521,477

MULTILAYER FIBRE MAT AND PROCESS FOR ITS PRODUCTION

Günter H. Kiss, Gustav-Freytag-Strasse 7, D-1000 Berlin 33, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,900
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139854; Sep. 6, 1982, 3233385
Int. Cl.³ B29J *5/04;* **B32B** *31/12, 31/20;* **D04H** *1/58*
U.S. Cl. 428—282 **17 Claims**

1. A multilayer fiber mat for the eventual production of mouldings in a die by later applying pressure to the fiber mat while obtaining moulding temperature in a temperature range of from about 170° to 210° C. to form the moulding, the mat comprising:
two cover layers formed of woody fibrous material and a proportion of thermosetting synthetic resin which can be pressed in the temperature range of 170° to 210° C., and
a central layer sandwiched between the cover layers which is formed of woody fibrous material containing a thermoplastic bonding agent additive the resistance to oxidation of which is inadequate within said temperature range;
said two cover layers containing about 10 to 30% of the total fibrous material of the mat with the central layer containing the remainder thereof, and
the relatively high proportion of thermosetting resin in said cover layers compared to said central layer preventing deterioration of the thermoplastic bonding agent in said central layer during moulding,
so that moulded mats of high quality can be produced notwithstanding the inclusion of said oxidation-sensitive thermoplastic bonding agent additive in the central layer.

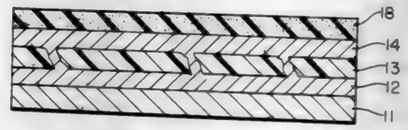
11. A process for the production of the multilayer mat of claim 1 comprising the steps of pouring fibrous mat material in layers onto a conveyor belt and levelling and compacting the material prior to demoulding, the improvement comprising first furnishing fibrous material intended for all three layers together with a thermoplastic bonding agent additive; then, prior to applying the fibrous material to a conveyor belt, branching off a quantity of the fibrous material intended for the cover layers from the total fibre flow while providing the branched-off fibrous material with the thermosetting synthetic resin; and supplying the component fibre quantities for the individual layers to a conveyor belt in corresponding sequence.

4,521,478

IN SITU ROOFING COMPOSITE AND METHOD

John P. Hageman, 42 Susan Dr., Closter, N.J. 07624

Filed Aug. 20, 1984, Ser. No. 642,576
Int. Cl.³ B32B *3/10, 5/02, 5/18, 11/02*
U.S. Cl. 428—287 **18 Claims**



1. A built-up, in situ roofing composite, comprising:
a first layer of water-proofing ingredients applied to a roof substrate, said ingredients selected from a group consisting of asphalt, modified asphalt and coal tar;
at least a single ply of non-woven polyester sheeting overlaying said first layer;
a second layer of water-proofing ingredients applied over said polyester, said second layer flowing through said polyester and melding with said first layer to form a built-up composite membrane which is affixed to said substrate; and
an insulating, heat-resistant layer of material disposed over said built-up composite membrane forming a roofing composite that is substantially split-resistant.

4,521,479

SURFACE TREATMENT FOR TACK REDUCTION OF ELASTOMER SURFACES

Ralph A. Maglio, Wadsworth, and John W. Fieldhouse, Mogadore, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 26, 1983, Ser. No. 498,380
Int. Cl.³ B32B *23/04, 25/04*
U.S. Cl. 428—326 **8 Claims**

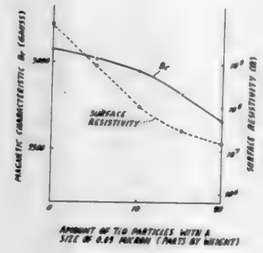
1. A method of reducing the surface tack of an EPDM elastomer which comprises coating the surfaces of the EPDM elastomer with particulate cellulose.

4,521,480

MAGNETIC RECORDING MEDIA OF THE HIGH RECORDING DENSITY TYPE COMPRISING BOTH TITANIUM MONOXIDE AND MAGNETIC ALLOY POWDERS IN A MAGNETIC LAYER

Kuniharu Fujiki, Mito, Japan, assignor to Victor Company of Japan, Limited, Japan

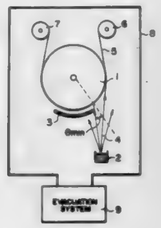
Filed Aug. 9, 1983, Ser. No. 521,578
Claims priority, application Japan, Aug. 10, 1982, 57-137890
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—328 **6 Claims**



1. A magnetic recording medium of the high recording density type comprising a support and a magnetic recording layer formed on at least one side of said support, said magnetic

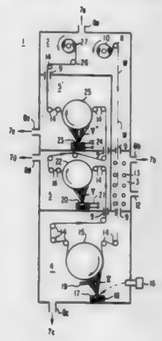
recording layer comprising a dispersion in a binder, of magnetic alloy particles and TiO particles, wherein said TiO particles are present in an amount from 0.1 to 20 weight percent of said magnetic alloy particles and have an average size of from 0.01 to 5 microns.

4,521,481
MAGNETIC RECORDING MEDIUM
Makoto Nagao, and Akira Nahara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan
Filed Sep. 26, 1983, Ser. No. 536,050
Claims priority, application Japan, Sep. 29, 1982, 57-170650
Int. Cl.³ G11B *5/64, 5/66*
U.S. Cl. 428—336 **5 Claims**



1. A magnetic recording medium comprising: a non-magnetic substrate and a least one layer of obliquely deposited magnetic crystals which contains, as a main constituent, a Co-Ni based alloy containing Cr in an amount within the range of 2 to 8 atom % and which is obliquely deposited on said non-magnetic substrate in such a manner that the minimum angle of incidence of a vapor stream of a magnetic material with respect to the line normal to said non-magnetic substrate is 45° or less to form a film on said substrate having a curved columnar structure.

4,521,482
MAGNETIC RECORDING MEDIUM
Yoshihiro Arai, and Akira Nahara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 364,273, Apr. 2, 1982, abandoned. This application Dec. 19, 1983, Ser. No. 563,014
Claims priority, application Japan, Apr. 2, 1982, 57-49884
Int. Cl.³ H01F *10/02;* B05D *5/12*
U.S. Cl. 428—336 **11 Claims**



1. A magnetic recording medium having a layer of an organic polymer formed on an oblique vapor deposited magnetic metal film and a layer of a higher aliphatic acid and/or an ester thereof being formed on said polymer layer, wherein both said organic polymer layer and said higher aliphatic acid and/or ester thereof layer are formed by vacuum deposition, ion plating, ion sputtering or plasma polymerization, and wherein said organic polymer layer has a thickness of about 10 to 250 Å and said layer of aliphatic acid and/or ester thereof has a thickness of about 20 to 400 Å.

4,521,483
VINYLIDENE FLUORIDE RESIN FILAMENT AND PRODUCTION THEREOF
Tohru Sasaki; Hiroyuki Endoh, both of Iwaki, and Seiichi Ohira, Kita-Ibaraki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 25, 1984, Ser. No. 573,684
Claims priority, application Japan, Feb. 2, 1983, 58-15783
Int. Cl.³ D02G *3/00;* B32B *23/00;* B29F *3/10*
U.S. Cl. 428—373 **16 Claims**

1. A composite fiber comprising at least a two layer structure of a sheath and a core, each layer comprising a vinylidene fluoride resin, the core portion having an inherent viscosity of at least 1.10 dl/g and the sheath portion having an apparent viscosity lower than that of the core portion, said composite fiber having an birefringence of at least 36.0×10^{-3}.

4,521,484
SELF-CRIMPING POLYAMIDE FILAMENTS
George T. C. Li, Ridgeway, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jun. 7, 1984, Ser. No. 618,105
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—374 **4 Claims**

1. A sheath-core bicomponent synthetic filament capable of forming a helical crimp upon relaxation consisting essentially of an oriented poly(hexamethylene adipamide) sheath comprising from 35% to 50% by weight of the filament and an eccentrically located ternary copolyamide core which consists essentially of at least about 60% by weight of hexamethylene adipamide units, from about 15% to 30% by weight of hexamethylene isophthalamide units and from about 5% to 10% by weight of hexamethylene terephthalamide units, the ratio of the weight percentages of the hexamethylene isophthalamide units to the hexamethylene terephthalamide units being from 1.5 to 6.0.

4,521,485
ELECTRICAL INSULATION
Stephen L. Tondre, Menlo Park, and Hans E. Lunk, Fremont, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Continuation-in-part of Ser. No. 418,355, Sep. 15, 1982, abandoned. This application Sep. 27, 1983, Ser. No. 536,919
Int. Cl.³ B32B *15/00;* H01B *7/00*
U.S. Cl. 428—383 **18 Claims**

1. An insulated electrical article, comprising
(a) a conductor;
(b) a melt-shaped inner insulating layer comprising a first organic polymer component which is a cross-linked fluorocarbon polymer containing more than 10% by weight fluorine, and
(c) a melt-shaped outer insulating layer which contacts the inner insulating layer and which comprises a second organic polymer component which is a substantially linear aromatic polymer having a glass transition temperature of at least 100° C. and which comprises units of the formula

—Ar—Q—

wherein
Ar is a polyvalent aromatic radical and
Q is a radical of the formula

—O—

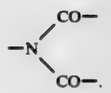
—S—

$-SO_2-$

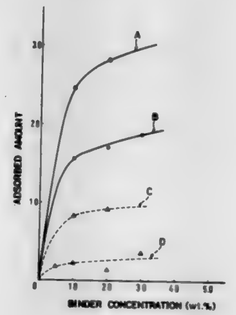
—CO—

—NH.CO—

—COO— or



4,521,486
MAGNETIC RECORDING MEDIUM
Yoshinobu Ninomiya, Naruse; Masashi Somezawa, Sendai, and Akira Hashimoto, Tagajyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 8, 1982, Ser. No. 396,302
Claims priority, application Japan, Jul. 13, 1981, 56-109129
Int. Cl.³ G11B *5/68*
U.S. Cl. 428—407 **6 Claims**



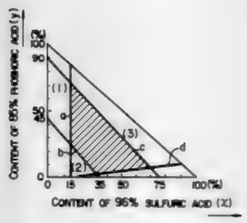
1. A magnetic recording medium comprising a non-magnetic substrate and a magnetic layer formed thereon composed mainly of magnetic powder and a binder, said binder containing a binder component being adsorbed on a surface of said magnetic powder in an amount more than 1.5 mg per square meter of the surface area of said powder measured in 3 weight % solution in methyl ethyl ketone solvent, and said magnetic layer having a pigment volume concentration of said magnetic powder between 60 and 75%.

3. A magnetic recording medium according to claim 1, in which said binder component is polyurethane resin or polyurethane resin having a hydrophilic group in the molecule of said resins.

4,521,487
PARTICULATE POLYOLEFIN EXPANSION MOLDING MATERIAL
Tatsuyuki Mitsuno, and Masashi Yamamoto, both of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Japan
Filed Sep. 21, 1984, Ser. No. 652,994
Claims priority, application Japan, Sep. 21, 1983, 58-175487
Int. Cl.³ C08J *9/16*
U.S. Cl. 428—407 **6 Claims**

1. A particulate polyolefin expansion molding material comprising a particulate polyolefin having a bulk density of 0.45 g/cc or more and a mean particle size of 150 to 2,000μ, said particles having coated on the surface thereof at least one layer comprising a solid decomposable expanding agent, a binder selected from the group consisting of olefinic polymers, petroleum resins and polyalkylene glycols and a filler.

4,521,488
POLYACETAL RESIN COMPOSITION EXCELLENT IN HEAT STABILITY AND SURFACE PROCESSABILITY AND PROCESS FOR SURFACE TREATING SAME
Yoshihiro Hattori, Kawasaki; Takashi Watanabe, Ayase, and Kunio Maeda, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 251,936, Apr. 7, 1981, Pat. No. 4,464,435, which is a continuation-in-part of Ser. No. 86,534, Oct. 19, 1979, abandoned. This application Jan. 17, 1984, Ser. No. 571,677
Claims priority, application Japan, Oct. 25, 1978, 53-130479; Aug. 17, 1979, 54-104102
Int. Cl.³ B32B *15/08*
U.S. Cl. 428—409 **11 Claims**



1. A process for roughening the surface of a molded product of a polyacetal resin composition excellent in heat stability and surface processability comprising (1) blending (a) about 100 parts by weight of polyacetal resin, (b) about 2 to about 35 parts by weight of a carbonate, phosphate or acetate of a metal belonging to Group II of the periodic table or a mixture thereof and (c) about 0.01 to about 20 parts by weight of a polymer, a copolymer or a mixture thereof of a compound selected from the group consisting of unsaturated polyester, alkyl ester of acrylic acid or methacrylic acid, amide of acrylic acid or methacrylic acid, triallyl cyanurate, diallyl phthalate, vinyl acetate and divinylbenzene; (2) molding the resulting polyacetal resin composition into the desired configuration; and (3) conditioning the resulting molded product by dipping said molded product in an aqueous solution containing sulfuric acid.

4,521,489
LOW TEMPERATURE CURE COATING SYSTEM SUITABLE FOR METAL AND PLASTIC SUBSTRATES
John W. Rehfuss; Louis S. Hazelwood; Martin B. Price, and Robert W. Zilke, Jr., all of Louisville, Ky., assignors to Reliance Universal, Inc., Louisville, Ky.
Continuation of Ser. No. 470,782, Mar. 1, 1983, abandoned, which is a continuation-in-part of Ser. No. 348,604, Feb. 12, 1982, abandoned. This application Jun. 13, 1984, Ser. No. 619,699
Int. Cl.³ B32B *27/36*
U.S. Cl. 428—412 **1 Claim**

1. A metallic or plastic article having applied thereto a base coating, comprising a dried, non-acid catalyzed, thermoplastic polymer which has a glass transition temperature in the range of about 21° to 51° C. and a minimum film-forming temperature in the range of about 10°–55° C. and having applied over said base coating a top coating cured at temperatures below about 66° C., said top coating being formed from an aqueous coating composition consisting essentially of (a) about 52–78.5% by weight of an aqueous dispersion binder of polymerized ethylenically unsaturated monomers having a combined glass transition temperature in the range of about 26°–60° C., said binder being comprised of a copolymer of about 3–10% by weight of a hydroxy functional copolymerizable monomer, about 4–9%

by weight of an amide functional copolymerizable monomer, about 0–2.0% by weight of an acid monomer, and about 93 to 79%, by weight of other monomers copolymerizable therewith, wherein the polymeric dispersion is stable in a pH range of about 1.0–10 and reactable with a crosslinking system; (b) about 1.5–8% by weight of a surfactant mixture containing at least about 50% by weight based upon the total mixture of nonionic surfactants, and the amount of surfactant in the composition being sufficient to render the composition dispersion stable throughout the pH range of about 1.0 to 10; and (c) about 40% by weight of a crosslinking system formed from a mixture of alkoxy alkyl urea-formaldehyde and alkoxy alkyl melamine-formaldehyde crosslinking agents.

4,521,490

TWO-PART EPOXY COMPOSITION

Alphonsus V. Pocius, Maplewood, and William J. Schultz, Vadnais Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Aug. 11, 1983, Ser. No. 522,419
Int. Cl.³ B32B *15/08;* **C08L** *75/04*
U.S. Cl. 428—416 **17 Claims**

1. An epoxy resin composition comprising:

a. a curable epoxide group-containing compound having one or more oxirane groups,

b. in-situ polymerized, colloidally-dispersed, elastomeric particles insoluble in said epoxide group-containing compound, said elastomeric particles comprising a polymer having a glass transition temperature of 25° C. or less and is selected from polymers derived from at least one of (1) ethylenically-unsaturated group-containing monomers and (2) diisocyanates and coreactive difunctional compounds that are curable to elastomeric compounds, and

c. a poly(oxyhydrocarbolene)diamine compound as curing agent.

4,521,491

FLAME-RETARDED COPPER-CLAD LAMINATE

Masayuki Oizumi, Ohtsu; Masaharu Abe, Kobe, and Yasuo Fushiki, Takatsuki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 326,359, Dec. 1, 1981, abandoned. This application Jan. 18, 1984, Ser. No. 572,126
Claims priority, application Japan, Dec. 2, 1980, 55-170450
Int. Cl.³ B32B *15/08*
U.S. Cl. 428—458 **12 Claims**

1. In a flame-retarded copper-clad laminate suitable for use as a printed circuit board comprising a plurality of cellulosic fiber paper substrate layers each impregnated with an unsaturated polyester resin and a copper cladding adhesively bonded to at least one side thereof, the improvement wherein the unsaturated polyester resin contains:

(a) 1 to 12% by weight of bromine attached to an aliphatic and/or alicyclic backbone component of said unsaturated polyester resin;

(b) 5 to 25% by weight of bromine attached to an aromatic backbone of said resin and/or attached to an aromatic flame retardant admixed with said unsaturated polyester resin; and

(c) the total bromine content not exceeding 30% by weight of the laminate.

4,521,492

LIGHT REFRACTIVE COATED PAPERBOARD

Robert L. Allen, Park Ridge, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 5, 1982, Ser. No. 365,538
Int. Cl.³ B32B *15/12, 29/04*
U.S. Cl. 428—464 **8 Claims**

5. A light refractive packaging material for packaging grease or oil-containing substances, said material comprising:

(a) a paperboard substrate;

(b) a first layer of a non-leafing silver colored ink printed on one surface of said paperboard substrate;

(c) a second layer of a highly pigmented white ink printed directly onto said first layer of said non-leafing silver colored ink; and

(d) said first and second ink layers combining to mask the appearance of grease or oil stains on said one surface of said paperboard substrate, which stains are the result of grease or oil permeating said paperboard substrate from the surface thereof opposite said one surface.

4,521,493

FIBER FILTER AND STABILIZER FORMULATION

Jay B. Class, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 12, 1984, Ser. No. 570,115
Int. Cl.³ C08G *93/00;* **C09J** *5/00;* **A24C** *5/50;* **C08L** *93/04*
U.S. Cl. 428—498 **14 Claims**

1. A resin-modified polymeric composition of an aqueous emulsion or dispersion of

(A) a component of at least one wholly or partly hydrogenated rosin ester esterified with glycerin or pentaerythritol, or a polyterpene resin component; said component having a molecular weight not exceeding about 2000 with a drop softening point of about 60° C.–95° C.; and

(B) a hardener component comprising at least one of an acetate or acrylate homopolymer, copolymer or terpolymer;

the ratio of (A)-to-(B) components falling within the range of about 5–30:95–70 weight percent solids upon substantial removal of water therefrom.

4,521,494

STYRENE-ACRYLIC LATEX CONTAINING A HETERO-UNSATURATED MONOMER AND PAPER-COATING COMPOSITIONS PRODUCED THEREFROM

Inder Mani, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 384,812, Jun. 3, 1982, abandoned. This application Oct. 19, 1983, Ser. No. 543,550
Int. Cl.³ C08L *33/02*
U.S. Cl. 428—514 **8 Claims**

1. A coated paper article in the form of a fibrous sheet coated on at least one surface with a paper-coating composition comprising a pigment, and an emulsion polymerized latex copolymer comprising (a) an ester of an ethylenically unsaturated carboxylic acid and a saturated alcohol, and (b) a hetero-unsaturated monomer selected from the group consisting of (1) an allyl acrylate or allyl methacrylate in an amount from about 0.05 to about 3.0 percent based on total monomer weight, or (2) a croytl acrylate or croytl methacrylate in an amount from about 0.20 to about 5.0 percent based on total monomer weight; said composition further characterized in that said pigment is present in an amount from about 99 to about 77 weight percent based on total dry solids.

4,521,495

PROCESS FOR COATING A WOODY SUBSTRATE AND PRODUCT

Kenneth G. Hahn, Jr., Hinckley, Ohio, assignor to SCM Corporation, New York, N.Y.

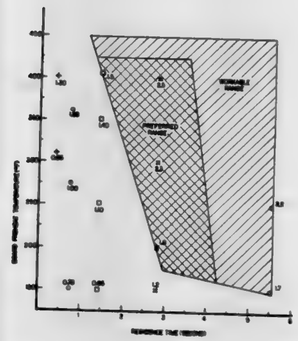
Continuation-in-part of Ser. No. 547,982, Nov. 2, 1983, abandoned. This application Jun. 25, 1984, Ser. No. 624,051
Int. Cl.³ B32B *21/04, 21/06*
U.S. Cl. 428—537.1 **5 Claims**

1. A process for applying a low viscosity aqueous coating to a woody substrate having uneven, decorative or patterned surfaces wherein the surface of the wood is flooded with an aqueous coating, the excess coating is stripped with an air knife and the residual coating of the substrate is cured by baking, which comprises:

(a) preheating the wood substrate to a temperature in the range of from about 225° F. to about 425° F. prior to application of a low viscosity aqueous coating

(b) flooding the surface of the substrate with the said coating;

(c) allowing the coating to remain in contact with the said preheated surface for a residence time period, from about



0.1 seconds, to about 10.0 seconds, sufficient to allow a partial coalescence of the coating in contact with the ridge area and to produce an adhered coating over the surface prior to removing the excess coating

(d) removing the excess coating by the direct action of an air knife

(e) curing the adhered coating to produce a cured film of substantially uniform depth.

4,521,496

STRESS RELIEVED METAL/CERAMIC ABRADABLE SEALS

Raymond V. Sara, 26446 Sweetbriar Dr., North Olmstead, Ohio 44070

Division of Ser. No. 171,830, Jul. 24, 1980, Pat. No. 4,379,812, which is a division of Ser. No. 973,553, Dec. 27, 1978, Pat. No. 4,243,169. This application Apr. 7, 1983, Ser. No. 482,993
Int. Cl.³ B22F *5/00, 7/04*
U.S. Cl. 428—551 **6 Claims**

1. A turbine engine seal structure comprising a multi-layer metal/ceramic abradable composite bonded to a deformable metal substrate, which is curved in one plane to a predetermined radius such that the thermal stresses of bonding said metal/ceramic composite to said substrate will cause said substrate to assume a desired radius after said bonding, with stiffeners added to said substrate after said bonding.

4,521,497

ELECTROCHEMICAL GENERATORS AND METHOD FOR THE OPERATION THEREOF

Pentti J. Tamminen, Espoo, Finland, assignor to LTH Associates, Ltd., Cambridge, Mass.

Filed May 18, 1984, Ser. No. 611,963
Int. Cl.³ H01M *2/00*
U.S. Cl. 429—27 **34 Claims**

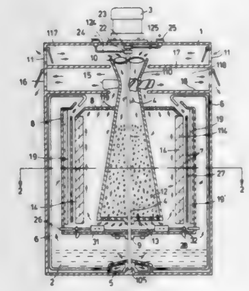
1. An electrochemical generator comprising:

an anode electrode having at least one surface;

a cathode electrode having at least one surface, said electrodes being mounted with their respective surfaces being in substantially parallel planes and spaced from each other by a predetermined distance;

an electrolyte flowing between the surfaces of said electrodes; and

means for rotating said electrodes about an axis and adapted to cause a substantial centrifugal force to be applied to at



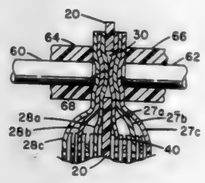
least one of said surfaces in a direction substantially perpendicular thereto.

4,521,498

THROUGH-THE-PARTITION INTERCELL CONNECTION AND METHOD

Tristan D. Juergens, Conifer, Colo., assignor to Gates Energy Products, Inc., Denver, Colo.

Filed Jul. 22, 1982, Ser. No. 400,775
Int. Cl.³ H01M *10/34*
U.S. Cl. 429—59 **4 Claims**



1. A sealed lead-acid gas recombining battery comprising a monobloc container having at least two substantially cylindrical cell compartments in close tangential proximity separated by an intercell partition, cell packs contained in a substantially snug fit within the compartments and comprising at least one positive plate and at least one negative separated from each other by a separator of compressible highly acid-absorbent material compressed against the plates, and an acid electrolyte substantially fully absorbed within the plates and separators of the cell, and the partition being provided with an aperture and a through-the-partition intercell connection comprised respectively of a plurality of malleable current collector tabs integral with the positive plate(s) of a cell pack of one compartment and a plurality of current collector tabs integral with the negative plates(s) of a cell pack of the adjoining cell compartment fused together at said aperture, said current collector tabs being formed of lead having a Brinell hardness (10 mm/31.2 kg–120 sec.) of less than about 10 kg/mm^2 and at least one of said tabs on each side of the partition being bent toward the aperture along a substantially smooth curve forming a bend angle with its corresponding plate of less that about 60°, and separator material being interposed between adjacent current collector tabs.

4,521,499

HIGHLY CONDUCTIVE PHOTOELECTROCHEMICAL ELECTRODES AND USES THEREOF

Jay A. Switzer, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 19, 1983, Ser. No. 496,284

Int. Cl.³ H01M *6/36*; C25B *1/02, 3/00*

U.S. Cl. 429—111 **63 Claims**

51. A photoelectrochemical cell employing a photoelectrode comprising a conductive coating material selected from the group consisting of Tl_2O_3, CdO, PbO_2, Cr_2O_3, RuS_2, $PtCoO_2$, $PdCoO_2$, $PdRhO_2$, and $PdCrO_2$, on a substrate containing a semiconductor material.

52. The cell defined in claim **51** comprising a photovoltaic cell.

4,521,500

LEAK-PROOF ALKALINE CELL

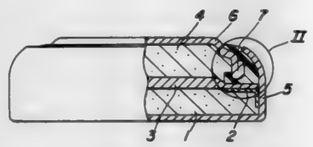
Osamu Watanabe, Toyonaka, Japan, assignor to Hitachi Maxell Limited, Osaka, Japan

Filed Dec. 1, 1982, Ser. No. 446,038

Claims priority, application Japan, Dec. 4, 1981, 56-195990; Dec. 4, 1981, 56-195992

Int. Cl.³ H01M *2/08*

U.S. Cl. 429—174 **5 Claims**



1. A leak-proof alkaline cell comprising positive and negative electrode materials, a member for accommodating said positive electrode materials, a member for covering said negative electrode materials and a gasket made of a polyamide provided between the members, characterized in that a sealant comprising asphalt and a ethylene-vinyl acetate copolymer in an amount of 0.5 to 25% by weight of said asphalt is interposed between said gasket and at least one of said members.

4,521,501

METHOD FOR REDUCING DEGRADATION OF AN OPTICAL IMAGE IN AN EXPOSURE LIGHTHOUSE

Frank T. D'Augustine, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 14, 1983, Ser. No. 513,399

Int. Cl.³ G03C *5/04*

U.S. Cl. 430—24 **11 Claims**

1. In a method for exposing a layer of photosensitive material on a support to an image of light produced with light emitted from a light source below said layer and passed upwardly through an optical element, the additional steps for reducing the degradation of said image of light resulting from extraneous matter normally deposited on said optical element from the ambient atmosphere, said steps comprising

(a) positioning a sheet of optically-transparent, optically-neutral material above said optical element,

(b) and moving said positioned sheet with respect to said optical element during said exposing step in a direction having a substantial component transverse to said upwardly-passing light.

4,521,502

COLOR RECORDING METHOD

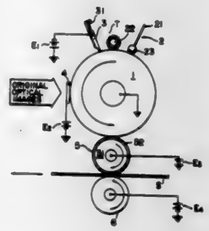
Katsuo Sakai, and Hiromi Demizu, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 16, 1982, Ser. No. 450,375

Claims priority, application Japan, Dec. 28, 1981, 56-211026

Int. Cl.³ G03G *13/01*

U.S. Cl. 430—42 **6 Claims**



1. A color recording method for recording images in color, comprising the steps of:

forming a uniform mixture of three types of translucent photoconductive toner particles in three primary colors in a hopper which holds said toner particles therein;

supplying said mixed toner particles from said hopper onto a doner member which is an electrically conductive doner roller;

forming a layer having a predetermined thickness of said uniform mixture of three types of translucent photoconductive toner particles on said doner member by a doctor blade means while applying a predetermined voltage of a first polarity to said layer of said toner particles through said doctor blade means;

subjecting the layer of the mixture of said photoconductive toner particles to a color image exposure, thereby selectively decreasing the electric resistivities of said toner particles in patterns corresponding to the color image exposure;

applying a predetermined voltage of a second polarity opposite to the first polarity across the layer of said photoconductive toner particles in the direction of thickness thereof during a period in which said photoconductive toner particles which have been made electrically conductive by the color image exposure thereto still maintain their decreased resistivities, at which resistivities charge injection into said photoconductive toner particles with decreased electric resistivities is possible, thereby forming a charge distribution in the layer of said photoconductive toner particles corresponding to the color image exposure;

separating the layer of said photoconductive toner particles into a charge-injected portion and a non-charge-injected portion in accordance with charge distribution; and

transferring said non-charge-injected portion onto a recording medium.

4,521,503

HIGHLY PHOTOSENSITIVE AQUEOUS SOLVENT-DEVELOPABLE PRINTING ASSEMBLY

Alan J. Herbert, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 11, 1984, Ser. No. 609,286

Int. Cl.³ G03G *13/28*

U.S. Cl. 430—49 **18 Claims**

1. A photoimageable printing assembly comprising:

(a) an electroconductive support, and

(b) a dual layer photosensitive construction comprising

(1) a photoresist lower layer sensitive to radiation in the wavelength range of 250 to 450 nm, said photoresist being soluble or dispersible in an aqueous solvent only, in either the exposed or unexposed areas, and

(2) a photoconductive upper layer comprising zinc oxide in a water-soluble or water-dispersible binder, said layer being sensitive to radiation above 250 nm, and said layer being dispersible in an aqueous solvent.

4,521,504

COMPOSITE PHOTOSENSITIVE MATERIAL FOR USE IN ELECTROPHOTOGRAPHY

Seiitj Sakuma, Tokyo, and Shuichi Karasawa, Kokubunji, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 76,095, Sep. 17, 1979, abandoned. This application Jun. 17, 1981, Ser. No. 274,620

Claims priority, application Japan, Sep. 22, 1978, 53-117273; Dec. 28, 1978, 53-163059; Dec. 28, 1978, 53-163060; Dec. 28, 1978, 53-163062

Int. Cl.³ G03G *5/12*

U.S. Cl. 430—57 **1 Claim**

1. A dichromatic electrophotography process, which comprises: providing a composite photosensitive material comprising an electrically conductive substrate layer made of a metal selected from the group consisting of Au, Pt and Pd, a first photoconductive layer made of As_2Se_3 laminated on said electrically conductive substrate layer, said first photoconductive layer being capable of absorbing and being rendered photoconductive by visible radiation having a first wavelength range, said first photoconductive layer possessing the properties that it can be charged only in one polarity in relation to said substrate and permits light decay, a second photoconductive layer laminated on said first photoconductive layer, said second photoconductive layer being capable of transmitting visible radiation of said first wavelength range and being capable of absorbing and being rendered photoconductive by visible radiation of a second wavelength range which is different from said first wavelength range, the sensitivity ratio of said second photoconductive layer to said first photoconductive layer being in the range of from 1 to 20 when said second photoconductive layer is irradiated with white light so that the sensitivity of said second photoconductive layer is its sensitivity to white light and the sensitivity of said first photoconductive layer is its sensitivity to white light minus the second wavelength range, said first and second photoconductive layers being capable of holding electric charges of opposite polarities with respect to each other and each being capable of accepting and also retaining surface potentials sufficient to develop an electrostatic latent image with toner; applying a first electrostatic charge of a polarity opposite to said one polarity to the second layer in the dark to form a charge of the opposite polarity on said second layer and to cause a second charge of said one polarity to be injected from said electrically conductive substrate layer into said first layer; then applying a second electrostatic charge of said one polarity to the second layer wherein the second electrostatic charge is of lower magnitude than said first electrostatic charge; and then radiating a light image onto said second layer capable of rendering photoconductive a partial region of a single one of said first photoconductive layer and said second photoconductive layer while leaving another partial region of said single photoconductive layer nonconductive whereby to form an electrostatic latent image in which the nonconductive region has a different polarity than the conductive region of said single photoconductive layer; and then developing said electrostatic latent image with two differently colored toners of opposite polarities.

4,521,505

ELECTROSTATOGRAPHIC SUSPENSION DEVELOPER AND PROCESS FOR THE PRODUCTION THEREOF

Wolfgang Podszun, Cologne; Walter Simm, Leverkusen; John Goossens, Cologne, and Carlhans Süling, Odenthal, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 23, 1983, Ser. No. 525,625

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1982, 3232062

Int. Cl.³ G03G *9/12*

U.S. Cl. 430—112 **16 Claims**

1. An elecrostatographic suspension developer which suspends, as a toner, polymer-sheathed pigment particles in an electrically insulating carrier liquid having a volume resistance of at least 10^9 Ohm-cm and a dielectric constant of less than 3, and which optionally contains a dissolved control substance, characterised in that the toner has a particle size of from 0.2 to 2 μm and has a sheath consisting of cross-linked precipitation polymer which is formed from:

(A) at least 25 parts, by weight, of a (meth)acrylate having from 8 to 24 carbon atoms in the alcohol moiety,

(B) from 2 to 50 parts, by weight, of a cross-linker,

(C) from 2 to 50 parts, by weight, of a (meth)acrylate having from 1 to 7 carbon atoms in the alcohol moiety; and

(D) from 0 to 25 parts, by weight, of vinyl or vinylidene monomer which may be copolymerised with (A) and (C) and is different from (A) and (C),

the total of the weight quantities being 100 in each case, and in that from 25 to 90%, by weight, of the toner consists of the cross-linked precipitation polymer.

4,521,506

MONOAZO PYRIDINOL DYES CHELATED OR CAPABLE OF BEING CHELATED WITH METAL IONS AND THEIR USE FOR IMAGE PRODUCTION

Rudolf Stolzenburg, Langenfold; Peter Bergthaller, Cologne; Gerhard Wolfrum, Leverkusen, and Jürgen Strauss, Cologne, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 5, 1984, Ser. No. 617,499

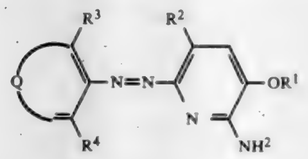
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1983, 3322058

Int. Cl.³ G03C *1/40, 5/51*

U.S. Cl. 430—241 **3 Claims**

3. The method of producing a light-stable magenta image by dye diffusion processing of an imagewise exposed color photographic recording material containing, associated with at least one light-sensitive silver halide emulsion layer, a non-diffusible color providing compound while in contact with a supported image receptor layer,

the method comprising the step of releasing from said non-diffusible color providing compound under alkaline development conditions a diffusible magenta dye corresponding to the following formula



I

wherein

Q represents the group required for completing a phenyl or naphthyl group,

R^1 represents H,

R^2 represents H, halogen or an alkyl- or aryl-sulphonyl group, and

R^3 and R^4 (identical or different) represent H or a substituent incapable of chelate formation,

and transferring at least part of said released azo dye to said image receptor layer and forming complexes with metal ions.

4,521,507

MULTI-LAYER LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Toshifumi Iijima, and Kiyoshi Yamashita, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 453,475

Claims priority, application Japan, Dec. 29, 1981, 56-212995

The portion of the term of this patent subsequent to May 1, 2004, has been disclaimed.

Int. Cl.³ G03C *1/46, 1/08*

U.S. Cl. 430—503 **20 Claims**

1. A multi-layer light-sensitive silver halide color photographic material having a plurality of light-sensitive silver halide emulsion layers on a support and having color couplers in said material, each of said silver halide emulsion layers having sensitivity to light at different spectral regions, wherein at least 80% of the total number of silver halide grains contained in at least one of said silver halide emulsion layers comprise 5–30% of silver halide grains having grain sizes greater than 0.8μ and 95–70% of silver halide grains smaller than 0.65μ.

4,521,508

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Tadao Sugimoto; Hideo Ikeda; Hiroyuki Mifune, and Koki Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 7, 1983, Ser. No. 549,515

Claims priority, application Japan, Nov. 8, 1982, 57-196494

Int. Cl.³ G03C *1/28*

U.S. Cl. 430—567 **15 Claims**

1. A silver halide photographic light-sensitive material, comprising:

a support base having thereon:

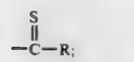
a silver halide emulsion layer; and

a protective layer;

wherein the light-sensitive material contains a photosensitive halide emulsion, an inside fogged silver halide emulsion, and a disulfide compound represented by the general formula (I):

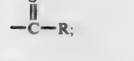
$$A—S—S—B \quad (I)$$

wherein A and B independently represent an alkyl group, an aralkyl group, an aryl group, a heterocyclic group or



wherein R represents a alkyl group, an aryl group, an aralkyl group, a heterocyclic group or an amino group;

wherein at least one of A or B represents a heterocyclic group or



and

wherein the disulfide compound represented by general formula (I) is present is an amount effective to improve maximum density and gamma of an image.

4,521,509

METHOD FOR DEGRADING DNA

Stephen J. Benkovic, State College, Pa.; Scott D. Putney, Brigaton, and Paul R. Schimmel, Lexington, both of Mass., assignors to Research Corporation, New York, N.Y.

Filed Nov. 24, 1982, Ser. No. 444,304

Int. Cl.³ C12Q *1/68;* **C12P** *19/34;* **C12N** *15/00, 1/00;* **G01N** *31/14;* **C07H** *21/02, 21/04*

U.S. Cl. 435—6 **28 Claims**

1. A method for the asymmetric degradation of DNA comprising

(a) generating DNA fragments by the application of restriction endonucleases

(b) end-blocking one terminus of each of said fragments by the introduction of a thionucleotide analog protecting group said protecting group being capable of inhibiting exonuclease activity

(c) specifically degrading the non-protected terminus of said end-blocked fragment by the application of exonucleases.

24. In a method for the sequencing of DNA wherein chain growth is terminated the improvement comprising generating single stranded DNA of fixed length by:

(a) generating DNA fragments by the application of restriction endonucleases Dde I and Pvu I,

(b) end blocking the Dde I generated terminus by introduction of 2′ deoxyadenosine 5′-O-(1-thiotriphosphate) by treatment with DNA polymerase I,

(c) degrading the strands containing the unprotected 3′ termini with Exonuclease III for a sufficient period of time to effect the complete degradation of said strand,

(d) recovering the remaining single strand of DNA.

4,521,510

HYBRIDOMA CELL LINES AND MONOCLONAL ANTIBODIES TO THEOPHYLLINE

John E. Geltosky, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 406,554, Aug. 9, 1982,. This application Jan. 3, 1984, Ser. No. 567,890

Int. Cl.³ C12P *21/00;* **C12N** *5/00;* **G01N** *33/54;* **A23J** *1/00*

U.S. Cl. 435—7 **11 Claims**

1. A composition comprising a hybrid continuous cell line producing IgG isotype antibody to theophylline having 5% or less cross-reactivity with caffeine wherein the cell line is a hybrid of a spleen cell from a mouse immunized with an 8-substituted theophylline-carrier conjugate and a mouse myeloma cell.

4,521,511

CATALYZED COLORIMETRIC AND FLUOROMETRIC SUBSTRATES FOR PEROXIDASE ENZYME DETERMINATIONS

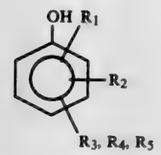
Robert L. Stout, Overland Park, Kans., assignor to Enzyme Technology Company, Overland Park, Kans.

Filed Sep. 22, 1982, Ser. No. 421,263

Int. Cl.³ C12Q *1/28;* **G01N** *33/52, 33/54*

U.S. Cl. 435—28 **5 Claims**

1. In a system for developing a characteristic color in the presence of a peroxidase enzyme, said system including a peroxide oxidizing agent and 2,2′-azino-di(3-ethyl-benzthiazolone-6-sulfonic acid), the improvement which comprises a rate accelerator added to the system at a level of from about 1 microgram to about 1 milligram and said rate accelerator being selected from the group consisting of vanillin and compounds of the formula



wherein R_1 is a halogen, a halogen-substituted phenoxy compound, a hydroxyphenone or a carboxylic acid or alkyl ester thereof; R_2 is hydrogen, hydroxy, a halogen, substituted and unsubstituted alkyl groups having from 1–6 carbon atoms, inclusive, an amino group, or a carboxylic acid or alkyl ester thereof; and R_3, R_4 and R_5 are respectively a halogen or hydrogen.

4,521,512

MICROORGANISM IDENTIFICATION TECHNIQUE

Robert E. Silman, London, England, assignor to AMB Systems Corp., San Diego, Calif.

Continuation-in-part of Ser. No. 341,810, Jan. 22, 1982,. This application Sep. 28, 1982, Ser. No. 426,196

Claims priority, application United Kingdom, Oct. 1, 1981, 8129683

Int. Cl.³ C12Q *1/16, 1/04*

U.S. Cl. 435—35 **13 Claims**

1. A method for identifying microorganisms that are obligate parasites present in host cells comprising the steps of:

A adding to a specimen of said microorganisms that are obligate parasites present in host cells and host cells a radioactively emissive agent that is incorporated and metabolized therein to produce a mix of radioactively emissive protein products in a manner that depends on the metabolic mechanism of the microorganisms and host cells;

B separating said emissive emissive protein products;

C detecting the separated emissive protein products to derive a characteristic pattern functioning as an identifier for the microorganisms; and

D comparing said identifier of the microorganisms with a collection of identifiers representing known microorganisms to determine the identity of the microorganisms in the specimen.

4,521,513

PROTECTION AGAINST DENTAL CARIES

Roy R. B. Russell, Bromley, Northern Ireland, assignor to The Secretary of State of Social Services in Her Britannic Majesty's Government of the United Kingdon of Great Brtian and Northern Ireland, London, England

PCT No. PCT/6B82/00168, § 371 Date Feb. 3, 1983, § 102(e) Date Feb. 3, 1983, PCT Pub. No. WO82/04396, PCT Pub. Date Dec. 23, 1982

PCT Filed Jun. 4, 1982, Ser. No. 466,336

Claims priority, application United Kingdom, Jun. 19, 1981, 8118886

Int. Cl.³ C12P *21/00;* **A61K** *39/40, 39/09;* **X12R** *1/46*

U.S. Cl. 435—68 **3 Claims**

1. A process for producing an antigen preparation, for use in the reduction or prevention of dental caries, from bacteria of the group *Streptococcus mutans* genetic group I, the preparation being substantially free from any heart cross reactive antigens derivable from *Streptococcus mutans,* wherein the process comprises growing bacteria of the group *Streptococcus mutans* genetic group I in a culture medium to produce a cell culture, removing at least the cell walls from the cell culture to leave a protein solution and separating the antigen preparation from the protein solution by a method of separation which comprises contacting the protein solution with immobilized antibody, washing unwanted materials from the immobilized antibody under such conditions that the antigen preparation is retained on the immobilized antibody and eluting the antigen preparation from the immobilized antibody under such conditions that the antibody remains in an immobilized state and the antigen preparation retains its antigenicity, wherein the immobilized antibody has a specificity for one or more antigenic proteins which have the following properties: they

(a) are present on the cell walls of strains of *Streptococcus mutans* genetic group I;

(b) are destroyed or extracted by treatment of said cell walls with boiling aqueous sodium dodecyl sulphate (SDS) solution (10 gm per liter) for 10 minutes but remain associated with said cell walls after treatment of the walls with aqueous SDS solution (10 gm per liter) at 15° C.;

(c) have a molecular weight of 70,000±5,000 by SDS-polyacrylamide gel electrophoresis (SDS-PAGE);

(d) are destroyed by proteolytic enzyme;

(e) have an isoelectric point of 4.45±0.24; and

(f) do not cross react with heart tissue.

4,521,514

PROCESS FOR PRODUCING AN ADDITION COMPOUND OF A DIPEPTIDE ESTER AND AN AMINO ACID ESTER

Kiyotaka Oyama, Hikari; Shigeaki Irino, Tokuyama; Tsuneo Harada, Shinnanyo, and Masao Nakamura, Yokohama, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo; Ajinomoto Co., Inc. and Sagami Chemical Research Center, both of Tokyo, all of, Japan

Filed Jul. 22, 1983, Ser. No. 516,344

Claims priority, application Japan, Jul. 23, 1982, 57-128420

Int. Cl.³ C12P *21/02;* **C07C** *103/52*

U.S. Cl. 435—70 **12 Claims**

1. A process for producing an addition compound of a dipeptide ester and an amino acid ester comprising reacting aspartic acid and benzyloxycarbonyl chloride in an aqueous solution in the presence of a base to prepare a solution containing N-benzyloxycarbonyl aspartic acid, reacting separatedly phenylalanine with methanol in the presence of an acid to produce phenylalanine methyl ester, substituting excess methanol with water to convert it to an aqueous solution of phenylalanine methyl ester, admixing it with the above-prepared aqueous solution containing N-benzyloxycarbonyl aspartic acid, adding a proteolytic enzyme into the resulting mixture liquor under conditions, under which no substantial deactivation of the enzyme occurrs, reacting N-benzyloxycarbonyl aspartic acid with phenylalanine methyl ester to deposit an addition compound of N-benzyloxycarbonyl-α-L-aspartyl-L-phenylalanine methyl ester and phenylalanine methyl ester and recovering the addition compound.

4,521,515

BACTERIAL STRAIN FOR PURIFYING HYDROCARBONS POLLUTION AND PURIFICATION PROCESS

Kosei Hata, Osaka, Japan, assignor to Seiken Kai Foundation Juridical Person, Japan

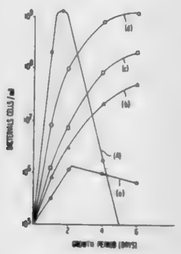
Filed Oct. 21, 1981, Ser. No. 313,405

Int. Cl.³ C12N *1/26, 1/20, 1/36, 15/00;* **C10G** *32/00;* **C12R** *1/38*

U.S. Cl. 435—248 **16 Claims**

1. A biologically pure culture of a Pseudomonas bacterium having all the identifying characteristics of Ferm BP-63, BP-64 or a mixture of BP-63 and BP-64 which exhibits an accelerated growth when hydrocarbons are added during a logarithmic growth phase of a growth curve which is generated during cultivation of the bacterium in a Stephanson Wetham trophic culture medium, and which emulsifies a hydrocarbon and brine

solution so that the solution becomes nearly transparent through a cloudy state by emulsification and wherein the



bacteria perishes after conclusion of assimilation of said hydrocarbons within about the period required for multiplication.

4,521,516

STRAIN OF *CLOSTRIDIUM ACETOBUTYLICUM* AND PROCESS FOR ITS PREPARATION

Christopher J. Lemme, Worth, and Jeffrey R. Frankiewicz, Lombard, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Nov. 18, 1982, Ser. No. 442,805

Int. Cl.³ C12N *1/20, 15/00, 1/36;* **C12P** *7/26, 7/28, 7/36, 7/34, 7/16;* **C12R** *1/145*

U.S. Cl. 435—253 **6 Claims**

1. A process for preparing an asporogenic strain of *C. acetobutylicum* which comprises growing a seed culture from a spore-forming strain of *C. acetobutylicum*, inoculating a growth medium with the seed culture, and cultivating the inoculated growth medium under continuous conditions at a dilution rate sufficient to prevent accumulation of acetone and butanol in the medium for a sufficient time to form an asporogenic strain, and isolating the asporogenic strain.

6. A biologically pure culture of *C. acetobutylicum*, ATCC 3923.

4,521,517

COMPOST AERATION SYSTEM

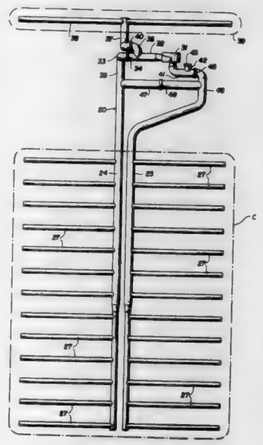
L. Paul Gauthier, Falls Church, Va., assignor to Gauthier, Alvarado & Associates, Inc., Falls Church, Va., a part interest

Filed Apr. 25, 1983, Ser. No. 488,435

Int. Cl.³ C12M *1/00, 1/04;* **C05F** *11/08*

U.S. Cl. 435—313 **2 Claims**

1. A compost aeration system comprising a pair of elongated parallel main header pipes having spaced bottom moisture drain openings along their lengths, a plurality of branch lateral aeration pipes connected with the outer side of each main header pipe in spaced relationship along the length of the main header pipe, each branch lateral aeration pipe having plural opposite side air distribution apertures spaced along the length of the branch lateral aeration pipe and also having bottom spaced moisture drain apertures along the length of the branch lateral aeration pipe, said air distribution apertures of each branch lateral aeration pipe being graduated in size along the length of each branch lateral aeration pipe with the smaller apertures toward the inner end of each branch lateral aeration pipe and the larger apertures toward its outer end, a one-way non-reversible air blower disposed near corresponding ends of main header pipes, an air delivery pipe for the blower connected between an inlet of the blower and one end of one main header pipe, an air discharge pipe for the blower connected between an outlet of the blower and one end of the other main header pipe, a transfer pipe connected between the main header pipes, an ambient air inlet connected in said air delivery pipe for the blower between the blower and said one main header pipe, an adjustable damper in said air delivery pipe between said ambient air inlet and one end of said transfer pipe, an adjustable damper in said ambient air inlet, an adjustable damper in said air discharge pipe, and another adjustable damper in said transfer pipe, whereby air from the blower containing varying amounts of ambient air can be circulated continuously in opposite directions through the main header pipes and through the compost pile or may be forced in the



same direction through both main header pipes and blown outwardly through a compost pile to atmosphere or may be drawn by the blower in an opposite direction through both main header pipes and inwardly through a compost pile from the ambient atmosphere.

4,521,518

MULTI-PURPOSE BLOOD DILUENT AND LYSING AGENT FOR DIFFERENTIAL DETERMINATION OF LYMPHOID-MYELOID POPULATION OF LEUKOCYTES

James H. Carter, Ft. Lauderdale; Stephen L. Ledis, Hialeah, and Harold R. Crews, Miami, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation of Ser. No. 159,782, Jun. 16, 1980, Pat. No. 4,346,018. This application Jul. 6, 1982, Ser. No. 395,530

The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.

Int. Cl.³ G01N *33/48;* **C09K** *3/00*

U.S. Cl. 436—10 **12 Claims**

1. A multi-purpose isotonic blood diluent comprising a cell stabilizing mixture of:
1. N-(2-acetamido)iminodiacetic acid,
2. Procaine hydrochloride,
3. at least one cell membrane stabilizer selected from the group consisting of:
dimethylolurea,
hexamethylenetetramine, and
N-hydroxymethylacetamide,
4. at least one germicide selected from the group consisting of:
chlorhexidene diacetate,
dimethylolurea, and
sodium 1-hydroxypyridine-2-thione, and
5. sodium sulfate and sodium chloride, in an osmotically balanced and substantially neutral solution.

2. A method which comprises the steps of:
I. treating a blood sample with an isotonic diluent comprising a cell stabilizing mixture of:
1. N-(2-acetamido)iminodiacetic acid,
2. Procaine hydrochloride,
3. at least one cell membrane stabilizer selected from the group consisting of:

dimethylolurea,
hexamethylenetetramine, and
N-hydroxymethylacetamide,
4. at least one germicide selected from the group consisting of:
chlorhexidene diacetate,
dimethylolurea, and
sodium 1-hydroxypyridine-2-thione, and
5. sodium sulfate and sodium chloride, in an osmotically balanced and substantially neutral solution, and then

II. lysing with a reagent comprising a mixture of an aqueous solution of at least one quaternary ammonium salt detergent and an alkali metal cyanide, said quaternary ammonium salt and said alkali metal cyanide being present in a concentration range which is effective to give a differential determination of lymphoid and myeloid populations of leukocytes followed by determination of hemogram values, particularly in automatic particle counting systems.

4,521,519

REAGENT FOR THE PRECIPITATION OF APO-B-CONTAINING LIPOPROTEINS

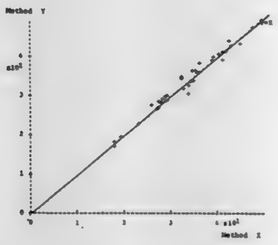
Brigitte Draeger, Tutzing, and Joachim Ziegenhorn, Starnberg, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Apr. 19, 1982, Ser. No. 369,382

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117455

Int. Cl.³ G02N *33/48*

U.S. Cl. 436—17 **27 Claims**



1. Reagent for the precipitation of apo-B-containing lipoproteins, comprising 0.2 to 3 grams of phosphotungstic acid per liter and at least 2 mmols of magnesium ions per liter in aqueous solution.

4,521,520

METHOD FOR IN HOUSE OCCULT BLOOD TESTING

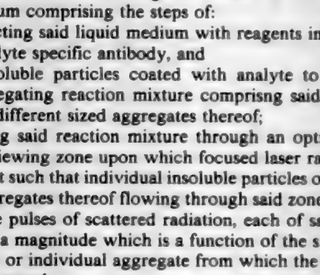
Stanley E. Jacke, Malvern, Pa., assignor to SmithKline Diagnostics, Inc., Sunnyvale, Calif.

Filed Apr. 7, 1983, Ser. No. 483,083

Int. Cl.³ A61B *5/00;* **G01N** *33/50*

U.S. Cl. 436—66 **7 Claims**

1. A method for determining the presence of occult blood in fecal matter which comprises:
suspending, via a multi-support suspension device, an absorbent test sheet from a seat of a toilet for the reception of fecal matter, said multi-support suspension device being configured to permit on-site rotation of said test sheet upon removal of one of said supports and
said sheet carrying a test reagent;
defecating onto said test sheet;
removing one of said supports and flipping said sheet over and exposing the underside of said sheet;



applying a developing solution to a portion of the underside of said sheet; and
observing whether a portion of said sheet is dyed blue.

4,521,521

PARTICLE REAGENT SIZE DISTRIBUTION MEASUREMENTS FOR IMMUNOASSAY

Scot D. Abbott, Wilmington, Del., and Michael A. G. Luddy, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 11, 1983, Ser. No. 474,483

Int. Cl.³ G01N *33/54*

U.S. Cl. 436—517 **11 Claims**

1. A method for determining the amount of an analyte in liquid medium comprising the steps of:
A. contacting said liquid medium with reagents including:
(1) analyte specific antibody, and
(2) insoluble particles coated with analyte to form an aggregating reaction mixture comprisng said particles and different sized aggregates thereof;
B. flowing said reaction mixture through an optically defined viewing zone upon which focused laser radiation is incident such that individual insoluble particles or individual aggregates thereof flowing through said zone produce discrete pulses of scattered radiation, each of said pulses having a magnitude which is a function of the size of the particle or individual aggregate from which the radiation was scattered;
C. collecting said discrete pulses of radiation scattered from said viewing zone in a volume defined by a cone having an apex at said viewing zone and having a central axis substantially perpendicular to the incident focused laser radiation; and
D. analyzing said discrete pulses of scattered laser radiation to determine the size distribution of said insoluble particles and individual aggregates thereof in said reaction mixture as a function of time subsequent to contacting said liquid medium with said reagents thereby determining the amount of said analyte initially present in said liquid medium.

4,521,522

OPTICAL SPECIFIC BINDING ASSAY WITH REFLECTION OF POLARIZED ELECTROMAGNETIC RADIATION

Kurt I. Lundström, Faergaregatan 10, S-582 52 Linkoeping, Sweden; Hans R. Arwin, Linkoeping, Sweden; Erwin Rieke, Seeheim-Jugenheim, Fed. Rep. of Germany; Günter Sielaff, Bensheim, Fed. Rep. of Germany, and Norbert Hennrich, Darmstadt, Fed. Rep. of Germany, assignors to Kurt I. Lundstroem, Linkoping, Sweden

Filed Sep. 7, 1982, Ser. No. 415,510

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135196

Int. Cl.³ G01N *33/54, 33/78, 21/21*

U.S. Cl. 436—525 **11 Claims**



1. A method for the quantitative determination of a component of an organic system comprising a specifically bonding receptor component and a substance component which can be specifically bonded by the receptor, comprising

incubating one of the components, after it has been immobilized on the surface of a material having a refractive index effectively different from that of the organic system, with the other specific component;

irradiating said surface with an effective beam of electromagnetic radiation which is polarized parallel to the plane of incidence, the angle of incidence of the radiation being approximately equal to or equal to the angle Φ at which the intensity of the radiation reflected from said surface, prior to said immobilization, reaches a minimum; and measuring the intensity of the reflected radiation as a measure of the concentration to be determined.

4,521,523

METHODS OF INTRODUCING FLUORINE INTO GLASSES

Patrick F. Aubourg, Granville, and Barbara L. Fabricant, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 435,029, Oct. 18, 1982, abandoned. This application Dec. 30, 1983, Ser. No. 566,779

Int. Cl.³ C03C *1/00, 3/04*

U.S. Cl. 501—30 **7 Claims**

1. A method of introducing fluorine into glasses characterized by high fluorine retention in said glasses and by low processing costs, comprising:

a. preparing a pulverized, fluorine-containing frit;

b. preparing a glass batch comprising said pulverized frit, which said pulverized frit provides substantially all of said fluorine in said glass batch; and

c. melting said glass batch to form a fluorine-containing glass.

7. A method of introducing fluorine into glasses characterized by high fluorine retention in said glasses and by low processing costs, comprising:

a. preparing a pulverized, fluorine-containing frit comprising about 52 to about 57 weight percent silicon dioxide, about 14 to about 15 weight percent Al_2O_3, about 22 to about 24 weight percent calcium oxide, and about 6 to about 10 weight percent fluorine;

b. preparing a glass batch comprising about 4 to about 29 weight percent of said pulverized frit, which said pulverized frit provides substantially all of said fluorine in said glass batch; and

c. melting said glass batch to form a fluorine-containing glass in which said glass said fluorine retention is about 76 to about 100 weight percent of said fluorine in said glass batch.

4,521,524

CONTRAST ENHANCEMENT FILTER FOR COLOR CRT DISPLAY DEVICES

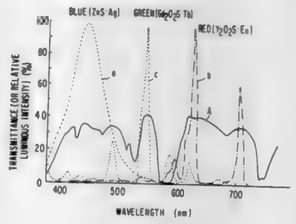
Toshiharu Yamashita, Tokyo, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,664

Claims priority, application Japan, Sep. 21, 1981, 56-147797

Int. Cl.³ C03C *3/04, 3/10;* **H01J** *29/86*

U.S. Cl. 501—64 **7 Claims**



1. A glass filter for contrast enhancement in color CRT display devices consisting essentially of

100 parts by weight of a base glass consisting essentially of, in % by weight

3 to 70% SiO_2,

0 to 40% B_2O_3,

0 to 23% Al_2O_3

0 to 23% R_2O (R_2O being at least one component selected from the group consisting of Li_2O, Na_2O and K_2O),

2 to 35% RO (RO being at least one component selected from the group consisting of MgO, CaO, SrO, BaO, ZnO and PbO),

0 to 10% TiO_2,

0 to 10% ZrO_2,

0 to 35% La_2O_3 and

5 to 40% Nd_2O_3,

0.01 to 1.0 parts by weight of CuO, and

at least one coloring component selected from the group consisting of 6 parts by weight or less CeO_2, 3.5 parts by weight or less MnO_2, 0.15 parts by weight or less CoO, 3.0 parts by weight or less Fe_2O_3, 1.5 parts by weight or less NiO and 5.0 parts by weight or less Pr_6O_{11}.

4,521,525

SILICON NITRIDE BODIES

Martin Y. Hsieh, Palo Alto, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 29, 1984, Ser. No. 614,895

Int. Cl.³ C04B *35/52*

U.S. Cl. 501—98 **3 Claims**

1. A composite consisting essentially of, in percent by weight: from about 20% to about 40% of a hard material selected from the group consisting of titanium carbide, titanium nitride, and mixtures thereof, from about 3% to about 7% lanthanum aluminate, and the balance silicon nitride.

4,521,526

METHODS FOR REPROCESSING COBALT CATALYSTS USED IN HYDROCARBOXYLATION

Peter Hofmann, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 203,393, Nov. 3, 1980, abandoned. This application Jul. 25, 1983, Ser. No. 516,435

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949939; Dec. 12, 1979, 2949878

Int. Cl.³ B01J *31/40;* **C07C** *67/38;* **C11C** *3/02;* **C09F** *5/08*

U.S. Cl. 502—24 **13 Claims**

1. A method for reprocessing a cobalt catalyst from cobalt salts of carboxylic acids, said catalyst mixed with the reaction product of olefins, carbon monoxide, and an alkanol, comprising:

(a) treating said catalyst and reaction product with counterflow air at a temperature of about 20°–150° C. to produce an oxidized catalyst;

(b) separating said oxidized catalyst from said reaction product by distillation;

(c) hydrogenating said separated oxidized catalyst at about 20°–300° C. and an H_2 hot pressure of about 50–500 bars with an added solvent to form a hydrogenated cobalt catalyst and filtering said hydrogenated cobalt catalyst under an inert gas to obtain said hydrogenated cobalt catalyst in pyrophoric form;

(d) treating said hydrogenated cobalt catalyst with an aqueous dispersion of a carboxylic acid having 1 to 4 carbon atoms at a temperature of 20°–100° C. to form a cobalt salt of said carboxylic acid;

(e) separating said cobalt salt; and

(f) recirculating said cobalt salt as said cobalt catalyst with a recovery of 98.4–99% of said cobalt catalyst.

5. A method for reprocessing cobalt catalyst from cobalt salts of carboxylic acids used in the reaction of olefins with carbon monoxide and an alkanol, comprising:

(a) reacting said olefins with said carbon monoxide and said alkanol in the presence of said cobalt catalyst to form a reaction output;

(b) oxidizing said reaction output with countercurrent oxygenated gas at a temperature from about 20°–150° C. to form a pretreated reaction output containing oxidized catalyst; (c) carrying out a stepwise distillation of said pretreated reaction output, separating an ester fraction and leaving a distillation sump product containing a cobalt residue including said oxidized catalyst;

(d) hydrogenating said cobalt residue at a temperature between about 20° and 300° C. and a hydrogen pressure of about 50–500 bars with added solvent to form metallic cobalt;

(e) separating said metallic cobalt obtained by filtration under an inert gas to obtain said metallic cobalt in pyrophoric form;

(f) reacting said separated metallic cobalt with an acid to form a cobalt salt; and

(g) recirculating said carboxylic acid salt as said cobalt catalyst with a recovery of 98.4–99% of said cobalt catalyst.

6. The method of claim 5, further comprising transforming said cobalt salt into a second cobalt salt.

4,521,527

MOLDED IRON CATALYST AND ITS PREPARATION

Gerhard Frank, Hirschberg; Peter Rudolf, Neuhofen; Gerald Neubauer, Weinheim; Manfred Ohlinger, Frankenthal; Hans J. Wilfinger; Emil Pfannebecker, both of Schifferstadt, and Paul Duffner, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 18, 1983, Ser. No. 524,319

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1982, 3231192

Int. Cl.³ B01J *23/78, 23/74;* **C07C** *5/12, 87/14*

U.S. Cl. 502—184 **4 Claims**

1. A molded iron catalyst having an indentation hardness greater than 300 kp/cm² which consists essentially of metallic iron particles having a degree of reduction of ≧95% and obtained from anisometric γ-iron oxide particles by contact with hydrogen at ≦500° C., and 1 to 5% by weight of graphite as a lubricant.

2. The catalytic material of claim 1, wherein the iron oxide used contains less than 0.1% by weight, calculated as sodium oxide, of alkali.

4. A process for the preparation of a molded iron catalyst comprising the following steps:

(a) reducing anisometric γ-iron oxide particles with hydrogen at from 250° to 500° C. to metallic iron particles having a degree of reduction of ≧95%;

(b) stabilizing the metallic iron particles by treatment with a mixture of air and nitrogen while maintaining a temperature of not more than 100° C. and achieving a degree of reduction of not less than 80%;

(c) pelletizing the stabilized metallic iron particles together with 1 to 5% by weight of graphite to form moldings; and

(d) activating said moldings by treatment with hydrogen at ≦500° C. achieving a degree of reduction of ≧95%.

4,521,528

PREPARATION OF ZIRCONIUM PHOSPHATE ACTIVATED CARBON ADSORBENT

Julius L. Kovach, 2948 Brookdown Dr., Worthington, Ohio 43085

Filed Oct. 28, 1983, Ser. No. 546,371

Int. Cl.³ B01J *27/14, 31/02, 27/20*

U.S. Cl. 502—208 **10 Claims**

1. A method for preparing a homogenous activated carbon/zirconium phosphate or hafnium phosphate product in situ which comprises:

(a) mixing a carbonaceous organic material, a zirconium or hafnium compound, and phosphoric acid or a phosphate salt; and

(b) heat-treating said mixture under conditions to convert said carbonaceous material into activated carbon and to convert said zirconium or hafnium compound into zirconium phosphate or hafnium phosphate.

4,521,529

CATALYST FOR CRACKING KEROSENE

C. H. Hsie, Fong Shan, Taiwan, assignor to Son Su Kung, Fong Shan, Taiwan

Filed Sep. 4, 1984, Ser. No. 646,858

Int. Cl.³ B01J *27/02, 29/00, 29/06, 23/62*

U.S. Cl. 502—217 **5 Claims**

1. A catalyst capable of cracking kerosene under low temperature and pressure comprising: (A) kerosene; (B) metal powder mixture of chromium powder, copper powder, lead powder, zinc powder, nickel powder, manganese powder in an amount of 12 to 13 parts by weight per 100 parts of weight of said kerosene; (C) sulfuric acid in an amount of 15 to 30 parts by weight per 100 parts by weight of said kerosene; (D) inorganic powder mixture of aluminum oxide powder, serpentine powder, alum powder, magnesium oxide powder, limestone powder, slake lime powder, silica powder, and granite powder in an amount of 150 to 170 parts by weight per 100 parts by weight of said kerosene.

4,521,530

CATALYST OF PALLADIUM, COPPER AND NICKEL ON A SUBSTRATE

Victor F. Zackay, New Canaan, Conn., and Donald R. Rowe, Bowling Green, Ky., assignors to Teledyne Industries, Inc., Teledyne Water Pik, Fort Collins, Colo.

Filed Jun. 15, 1983, Ser. No. 504,517

Int. Cl.³ B01J *23/72, 23/89*

U.S. Cl. 502—218 **13 Claims**

1. An oxidation catalyst consisting essentially of palladium, nickel, and copper on a substrate.

4,521,531

CATALYST FOR ANTHRAQUINONE HYDROGEN PEROXIDE PROCESS

John S. Coates, Chesapeake City, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 15, 1983, Ser. No. 523,190
Int. Cl.³ B01J *29/06, 29/12*
U.S. Cl. 502—242 **2 Claims**

1. A process for preparing a palladium-on-silica catalyst, the process comprising

(a) preparing an aqueous slurry of 20–30% by weight of amorphous particulate silica, the particles having an average particle size of 90–110 microns, at least 95% by weight of the particles being larger than about 44 microns and substantially no particles being larger than about 250 microns;

(b) adding to the slurry of (a) enough of a solution of a water-soluble palladium salt in acid to give the particulate silica a palladium content of 0.1–2% by weight, and enough of a solution of an additive water-soluble salt of zirconium, thorium, hafnium, cerium, titanium or aluminum in acid to give the particulate silica an additive salt content (measured as the oxide) of 0.025–0.5% by weight;

(c) bringing the pH of the slurry of (b) to about 0.8–1.0;

(d) bringing the pH of the slurry of (c) to about 2.3–2.7 and the temperature to 65°–75° C.;

(e) bringing the pH of the slurry of (d) to about 3.8–4.2 and holding it there for 5–25 minutes;

(f) bringing the pH of the slurry of (e) to about 6.8–7.2 and holding it there for 5–15 minutes;

(g) reducing the palladium salt thus deposited on the silica to palladium metal;

and then

(h) freeing the slurry of (g) of residual salts and then separating the catalyst from the slurry.

4,521,532

MONOLITHIC CATALYTIC CONVERTER FOR IMPROVED THERMAL PERFORMANCE

Byong K. Cho, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 23, 1984, Ser. No. 602,747
Int. Cl.³ B01J *35/04*
U.S. Cl. 502—439 **3 Claims**

1. A monolithic honeycomb structure for treatment of automotive exhaust gas comprising a plurality of open-ended channels having interconnected walls extending longitudinally through the structure, said channels being formed to provide a periodic pattern of different cross-sectional gas flow areas such that each channel has a plurality of neighboring channels of different gas flow cross-sectional area to induce different flow velocities of the exhaust gas in adjacent channels, and to thereby produce temperature gradients between the adjacent channels to promote heat transfer in the transverse direction between them.

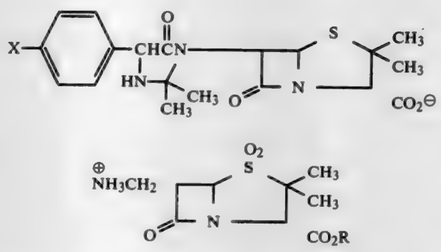
4,521,533

SALTS OF 6-ALPHA-(AMINOMETHYL)PENICILLANIC ACID 1,1-DIOXIDE ESTERS AND BETA-LACTAM ANTIBIOTICS

Ernest S. Hamanaka, Gales Ferry, and John G. Stam, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

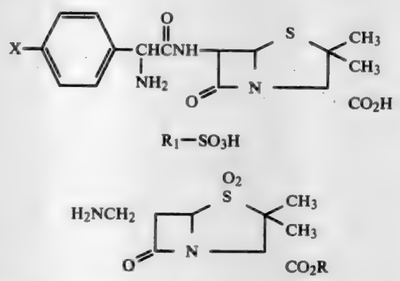
Filed Jul. 12, 1984, Ser. No. 630,147
Int. Cl.³ A61K *31/675, 31/43;* **C07D** *499/26*
U.S. Cl. 514—80 **16 Claims**

1. Salts of the formula



wherein X is selected from the group consisting of hydrogen and hydroxy, and R is an ester forming residue readily hydrolyzable in vivo.

7. Salts of the formula



wherein X is selected from the group consisting of hydrogen and hydroxy, R is an ester forming residue readily hydrolyzable in vivo; and R_1 is selected from the group consisting of hydroxy, and A—SO_3H, A—CO_2H and A—PO_3H_2 where A is selected from the group consisting of alkylene having two to four carbon atoms, phenylene and cycloalkylene having from five to six carbon atoms.

15. A pharmaceutical composition in dosage unit form for treating infectious bacterial diseases which comprises an antibacterially effective amount of a salt according to claim 1 or 7 and a pharmaceutically acceptable carrier therefor.

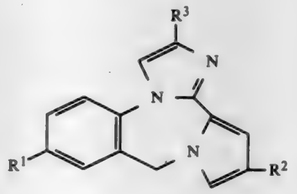
4,521,534

IMIDAZO[2,1-A]PYRROLO[2,1-c][1,4]BENZODIAZEPINE DERIVATIVES, METHODS OF PREPARATION AND USE

Jean A. Gauthier, Montreal; Katherine Voith, Dorval, and André A. Asselin, St. Laurent, all of Canada, assignors to Ayerst, McKenna & Harrison, Ltd., Montreal, Canada

Filed Dec. 19, 1983, Ser. No. 562,905
Int. Cl.³ A61K *31/55;* **C07D** *487/22*
U.S. Cl. 514—219 **16 Claims**

1. A compound of the formula



(I)

in which R^1 is hydrogen, halo or lower alkyl; R^2 is hydrogen or CS-R^4 wherein R^4 is 4-morpholinyl, 4-thiomorpholinyl, 1-pyrrolidinyl, 1-piperidinyl, 4-(lower alkyl)-1-piperazinyl or 4-(4-fluorophenyl)-1-piperazinyl; and R^3 is hydrogen or lower alkoxycarbonyl, or a therapeutically acceptable acid addition salt thereof.

14. A method of reducing food intake in a mammal, which comprises administering to the mammal an effective food intake reducing amount of a compound of claim 1, or a therapeutically acceptable acid addition salt thereof.

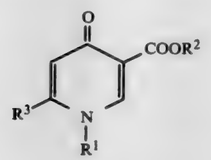
4,521,535

4-PYRIDONE-3-CARBOXYLIC ACID DERIVATIVES

Alexander E. Wick, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 187,878, Sep. 17, 1980, abandoned, which is a continuation of Ser. No. 002,474, Jan. 10, 1979, abandoned. This application Apr. 19, 1982, Ser. No. 369,778
Claims priority, application Switzerland, Jan. 18, 1978, 51278/78; Nov. 15, 1978, 11734/78
Int. Cl.³ A61K *31/435;* **C07D** *213/80*
U.S. Cl. 514—222 **5 Claims**

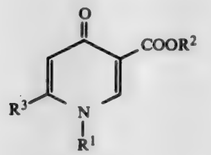
1. A compound of the formula



I

wherein R^1 is C_{1-8}-alkyl, C_{3-10}-cycloalkyl, C_{3-10}-cycloalkyl-C_{1-6}-alkyl, C_{1-6}-alkoxy or C_{1-6}-alkoxy-C_{1-6}-alkyl; R^2 is hydrogen or C_{1-6}-alkyl; R^3 is phenethyl or styryl, which is substituted by R^4, R^5 and/or R^6; R^4 and R^5, independently, are halogen, trifluoromethyl, hydroxy, C_{1-6}-alkoxy, C_{1-6}-alkylthio, C_{1-6}-alkyl, amino, acylamino, C_{1-6}-alkylamino, di-C_{1-6}-alkylamino, nitro or a 5-membered or 6-membered heterocycle linked via ring N- or C-atom or R^4 and R^5 taken together are C_{1-6}-alkylenedioxy; R^6 is C_{1-6}-alkoxy,
or a pharmaceutically acceptable salt thereof.

5. A pharmaceutical composition comprising a compound of the formula



I

wherein R^1 is C_{1-8}-alkyl, C_{3-10}-cycloalkyl, C_{3-10}-cycloalkyl-C_{1-6}-alkyl, C_{1-6}-alkoxy or C_{1-6}-alkoxy-C_{1-6}-alkyl; R^2 is hydrogen or C_{1-6}-alkyl; R^3 is phenethyl or styryl, which is substituted by R^4, R^5 and/or R^6; R^4 and R^5, independently, are halogen, trifluoromethyl, hydroxy, C_{1-6}-alkoxy, C_{1-6}-alkylthio, C_{1-6}-alkyl, amino, acylamino, C_{1-6}-alkylamino, di-C_{1-6}-alkylamino, nitro or a 5-membered or 6-membered heterocycle linked via ring N- or C-atom or R^4 and R^5 taken together are C_{1-6}-alkylenedioxy; R^6 is C_{1-6}-alkoxy,
or a pharmaceutically acceptable salt thereof and a carrier material.

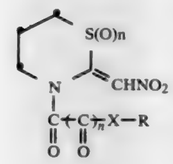
4,521,536

PESTICIDAL NITROMETHYLENE DERIVATIVES

Martin Harris, Sittingbourne, England, assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 8, 1984, Ser. No. 578,144
Claims priority, application United Kingdom, Feb. 17, 1983, 8304386; Apr. 26, 1983, 8311358; Sep. 23, 1983, 8325539
Int. Cl.³ C07D *279/04;* **A01N** *43/86*
U.S. Cl. 514—226 **3 Claims**

1. A compound of the formula



wherein n is zero or one, m is zero or one, X is oxygen or sulfur and R is alkyl, alkenyl or alkynyl of up to six carbon atoms optionally substituted by one or more halogen, or by hydroxy; mercapto; formyloxy; thioformyl; or alkanoyloxy, alkanoylthio, alkoxy, alkylthio, alkoxyalkoxy, or haloalkoxy wherein the alkyl moiety contains from one to four carbon atoms; or phenyl optionally substituted by one or more of halogen and alkyl of from one to four carbon atoms.

3. An insecticidal composition, that comprises an effective amount of a compound of claim 1 together with an inert carrier, optionally a surface-active agent.

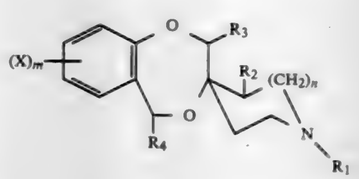
4,521,537

SPIRO[2H-1,4-BENZODIOXEPIN-3(5H)4'-PIPERIDINE AND -3'-PYRROLIDINE] COMPOUNDS AND THEIR USE AS ANTIHYPERTENSIVE AGENTS

Raymond W. Kosley, Jr., Bridgewater, and Robert J. Cherill, Somerset, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Continuation-in-part of Ser. No. 410,155, Aug. 20, 1982, Pat. No. 4,405,631. This application Apr. 2, 1984, Ser. No. 595,781
The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.
Int. Cl.³ C07D *491/113;* **A61K** *31/455*
U.S. Cl. 514—302 **89 Claims**

1. A compound of the formula



wherein

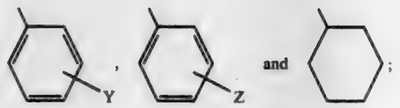
m is zero, 1 or 2;

n is zero or 1;

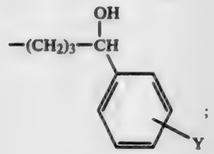
(a) a C_1 to C_5 branched or straight chain alkyl group;

(b) a terminally substituted C_1 to C_5 branched or straight chain alkyl group, or a terminally substituted C_2 to C_5 branched or straight chain alkenyl group, or a terminally substituted C_4 alkynyl group, wherein the terminal substituents are one or two substituents independently selected from the group consisting of

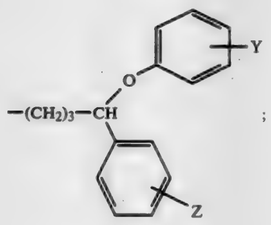
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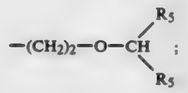
(c)



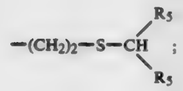
(d)



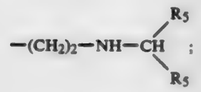
(e)



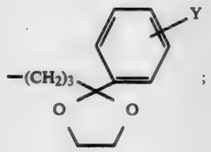
(f)



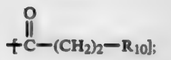
(g)



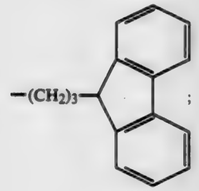
(h)



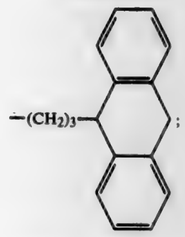
(i)



(j)



(k)



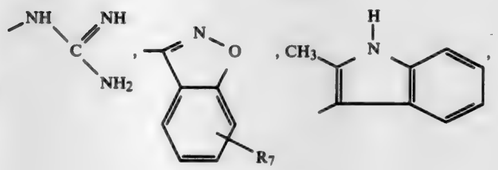
(l) a C_1 or C_2 alkylene group terminally substituted by

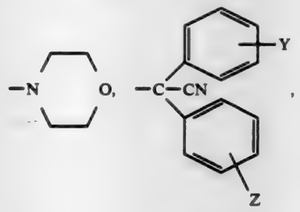


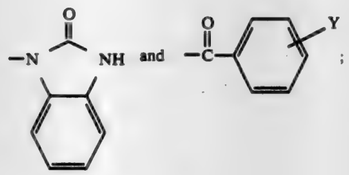
or C_3 to C_5 cycloalkyl;

(m) a C_2 to C_3 straight chain alkylene group terminally substituted by one substituent selected from the group consisting of

$-OH$, $-CN$, $-NR_{12}R_{13}$,

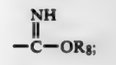






$-CN$; (n)

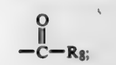
(o)



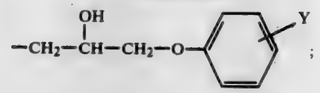
(p)

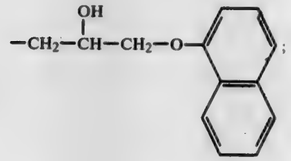


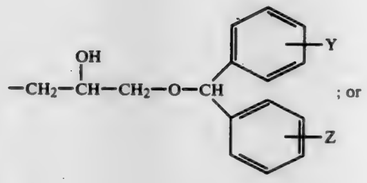
(q)

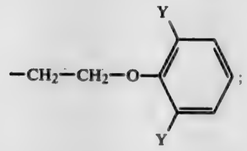


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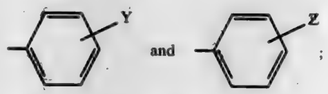




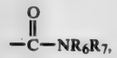




R_2 is hydrogen when n=0 or R_2 is hydrogen or a C_1 to C_3 straight chain alkyl group when n=1;
R_3 is hydrogen or a C_1 to C_3 straight chain alkyl group,
R_4 is hydrogen or a C_1 to C_3 straight chain alkyl group;
each R_5 substituent is independently selected from the group consisting of



X is Cl, F, Br, I, $-NO_2$, $-CF_3$, $-NR_6R_7$,

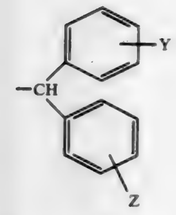


C_1 to C_6 branched or straight chain alkyl, —CN, $-O-R_6$, $-SR_7$, $-SO_3R_7$,

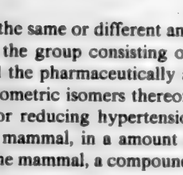


$-NHCOR_8$, $-SO_2R_9$ or $-SOR_9$ where
R_6 is hydrogen or a C_1 to C_6 straight chain alkyl group;
R_7 is hydrogen or a C_1 to C_6 straight chain alkyl group;
R_8 is a C_1 to C_6 branched or straight chain alkyl group;
R_9 is a C_1 to C_6 straight chain alkyl group; provided that when m=2, the X-substituents can be the same only when X is selected from the group consisting of Cl, F, Br, I, C_1 to C_6 branched or straight chain alkyl or $-O-R_6$;
Y and Z are the same or different and are independently selected from the group consisting of H, Cl, F, Br, I, $-NO_2$, $-CF_3$, C_1 to C_4 straight chain alkyl, alkoxy containing C_1 to C_4 straight chain alkyl, acyl or $-NH_2$;
R_{10} is

(r)



(s)



R_{12} and R_{13} are the same or different and are independently selected from the group consisting of hydrogen, methyl and ethyl; and the pharmaceutically acceptable salts and optical and geometric isomers thereof.

(t)

85. A method for reducing hypertension in a mammal by administering to a mammal, in a amount sufficient to reduce blood pressure in the mammal, a compound as defined in claim **1**.

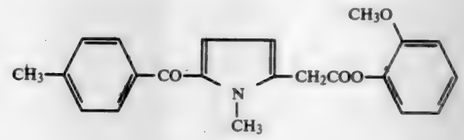
4,521,538

(u) **ESTER OF THE 1-METHYL-5-P-TOLUOYLPYRROLE-2-ACETIC ACID HAVING ANTIINFLAMMATORY, MUCOLYTIC AND ANTITUSSIVE PROPERTIES, PROCESS FOR ITS PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM**

Alessandro Baglioni, Rome, Italy, assignor to Medosan Industrie Biochimiche Riunite S.p.A., Albano Laziale, Italy

Filed Mar. 4, 1983, Ser. No. 472,255
Claims priority, application Italy, Mar. 5, 1982, 47938 A/82
Int. Cl.[3] **C07D** *207/323;* **A61K** *31/40*
U.S. Cl. 514—423 **3 Claims**

1. A compound, 1-methyl-5-p-toluoylpyrrole-2-acetic acid guaiacyl ester having the formula



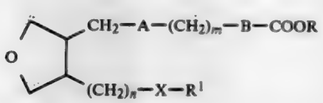
4,521,539

TETRAHYDROFURANYL SUBSTITUTED ETHERS

Jagabandhu Das, Plainsboro, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 10, 1984, Ser. No. 609,054
Int. Cl.[3] **A61K** *31/34;* **C07D** *307/16*
U.S. Cl. 514—461 **19 Claims**

1. A compound of the structure



including all stereoisomers thereof, wherein A is $(CH_2)_2$, CH=CH or a single bond; B is a single bond or —CH=CH—; m is 1 to 8; n is 1 to 4; X is O or



wherein n' is 0, 1 or 2; R is H, lower alkyl or alkali metal; and

R^1 is lower alkyl, aryl, arylalkyl, cycloalkyl, cycloalkylalkyl or lower alkenyl.

11. A method of inhibiting arachidonic acid-induced platelet aggregation and broncho-constriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim **1** or a pharmaceutically acceptable salt thereof.

4,521,540

PROCESS FOR PRODUCING DIMETHYL ETHER FORM SYNTHESIS GAS

Ronald Pierantozzi, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 22, 1984, Ser. No. 592,324
Int. Cl.³ C07C *27/06*
U.S. Cl. 518—717 **5 Claims**

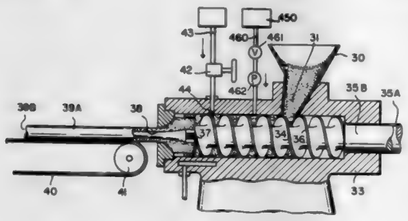
1. In a Fischer Tropsch Process for converting synthesis gas comprising carbon monoxide and hydrogen to oxygenated hydrocarbons, said conversion being effected by reacting carbon monoxide and hydrogen in the gas phase over a metal carbonyl cluster catalyst, for a time and at a temperature sufficient to form said oxygenated hydrocarbon, the improvement for selectively forming dimethyl ethyl which comprises utilizing an alkali metal salt of a manganese-iron carbonyl cluster supported on a zirconia-alumina support.

4,521,541

PROCESS FOR FORMING FUNCTIONAL FLUID AND SOLID-CONTAINING THERMOPLASTIC FILMS, USES THEREOF AND PROCESS FOR PRODUCING SAME

Howard J. Rutherford, Kinnelon, and Donald A. Withycombe, Lincroft, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Feb. 9, 1983, Ser. No. 465,313
Int. Cl.³ B29D *27/00*
U.S. Cl. 521—79 **9 Claims**



1. A process for preparing a perfume-containing foamed polymeric article of manufacture utilizing apparatus comprising a single screw or a twin screw extruder comprising an extruder barrel, said extruder barrel having a multiplicity of barrel segments, located within the extruder barrel, one or two parellel extruder screws, said extruder barrel having a first orifice at the location of a first extruder segment, a second orifice located at a second barrel segment at least one barrel segment downstream from said first barrel segment, and a third orifice located at a third barrel segment at least one barrel segment downstream from said second barrel segment, comprising the steps of:

(i) extruding a thermoplastic resin with a volatile perfume composition which is compatible with said thermoplastic resin, by adding said thermoplastic resin at said first orifice of said extruder and adding said perfume composition at said second orifice of said extruder, while simultaneously adding downstream from said second orifice, at said third orifice, a gaseous blowing agent selected from the group consisting of nitrogen and carbon dioxide; and

(ii) then pelletizing the product so extruded

the temperature range in the extruder being from about 160° up to about 240° C.; the feed rate of the resin being from about 80 up to about 300 lbs. per hour into the extruder; the pressure of the gaseous blowing agent at said third orifice being from about 80 up to about 150 psig; the feed rate range of perfume composition at said second orifice being between 1 and 35 percent of the feed rate range of said resin; said thermoplastic resin being compatible with said perfume composition.

6. The product prepared according to the process of claim **1**.

4,521,542

ARYLSULPHONYL HYDRAZONES AS BLOWING AGENTS

Ernst Roos, Odenthal, and Klaus Kircher, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 619,612
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1983, 3322320
Int. Cl.³ C08J *9/06*; C07C *143/825*
U.S. Cl. 521—89 **4 Claims**

1. A process for the production of a cellular polymer which comprises using as a blowing agent an arylsulphonyl hydrazone corresponding to the following general formula:

$$Ar(SO_2—NH—N=R)_x \quad (I)$$

wherein

Ar represents a benzene, naphthalene, diphenyl, diphenyl ether, diphenyl sulphone or diphenylene oxide radical which may be substituted one or more times by methyl and/or chlorine;

R represents the residue of an aldehyde or ketone without the carbonyl oxygen atom; and

x represents 1 or 2.

4,521,543

NON-FLAMMABLE RIGID FOAM AND ITS USE AS A BUILDING MATERIAL

Erich Rühl, Saalburgstrasse 65, 6382 Friedrichsdorf/Ts., Fed. Rep. of Germany, and Johann Thenner, Pohlheim, Fed. Rep. of Germany, assignors to Erich Rühl, Fed. Rep. of Germany

Division of Ser. No. 555,403, Nov. 28, 1983,. This application Jul. 31, 1984, Ser. No. 636,233
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1982, 3244779
Int. Cl.³ C08J *9/14*
U.S. Cl. 521—103 **4 Claims**

1. A non-flammable rigid foam on the basis of phenolic resin and for furane resin, containing aluminium hydroxide as a filler, the resin component being formed by reaction of phenolic resin, furfuryl alcohol and a sulpho acid as curing agent, wherein

the mass ratio of resin substance: filler substance is at least 1:2,5 and up to 1:3,2 and the bulk density is from 50 kg/m³ to 450 kg/m³ and the resin compound is the reaction product obtained by the reaction with one another of

50–62 mass parts resolic resin

0–15 mass parts furanic resin

25–40 mass parts furfuryl alcohol

0.5–1.5 mass parts foam stabiliser

including 14–17 parts by mass per 100 parts by mass of resin component + filler substance of a curing agent mixture composed of

7–50 mass parts phosphoric acid

12–17 mass parts boron hydrofluoric acid

6–7 mass parts p-toluene sulphonic acid or p-phenol sulphonic acid and

32–35 mass parts water.

4,521,544

POLYURETHANE FOAM FROM CELLULOSIC PRODUCTS

Richard B. Kennedy, Ridgefield, Conn., assignor to Patrick J. Crehan and Richard J. Fricke, both of Ridgefield, Conn.

Filed Feb. 24, 1983, Ser. No. 469,280
The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.
Int. Cl.³ C08L *1/00*; C08J *9/00*
U.S. Cl. 521—107 **10 Claims**

1. A polyurethane foam made by reacting together a polyisocyanate, a catalyst, a cellulosic material, and an aqueous solution of a carbohydrate.

4,521,545

LATENT CATALYSTS FOR THE ISOCYANATE POLYADDITION REACTION

Dimitrios Kerimis, Cologne; Rudolf Hombach, Leverkusen; Peter Müller, Odenthal-Blecher, and Manfred Dollhausen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,178
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1983, 3328661
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—107 **9 Claims**

1. A composition which is storage stable at room temperature which crosslinks very quickly when exposed to a temperature of 60° C. or higher comprising:

(a) an organic polyisocyanate,

(b) a compound containing at least two isocyanatereactive groups and having a molecular weight of from 400 to 10,000 and

(c) an ammonium salt of an amine and alkylating ester of an acid of phosphorus latent heat-activatable catalyst.

4,521,546

GRAFT COPOLYMERS FROM VINYL MONOMERS AND POLYURETHANE OLIGOMERS AND POLYURETHANES PREPARED THEREFROM

James M. O'Connor, Clinton, and Donald L. Lickei, Wallingford, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation of Ser. No. 333,209, Dec. 21, 1981, abandoned. This application Jul. 6, 1983, Ser. No. 511,371
Int. Cl.³ C12P *7/58, 13/02*; C08F *283/04*
U.S. Cl. 521—137 **26 Claims**

1. A process for preparing a graft copolymer comprising:

(a) reacting at least one organic polyisocyanate with at least one polyol having an average equivalent weight from about 100 to about 6000 in an equivalent ratio of NCO to OH from about 1.02/1 to about 2/1 to yield an isocyanate-terminated prepolymer;

(b) reacting said isocyanate-terminated prepolymer with at least one isocyanate reactive group-containing unsaturated monomer in sufficient proportions to form a polyurethane oligomer having a final free NCO content from about 0% to about 1% by weight and having terminal reactive unsaturation; and

(c) copolymerizing said polyurethane oligomer with at least one ethylenically unsaturated monomer in the presence of at least one polyol and in the presence of a catalytically effective amount of a free radical catalyst at a temperature from about 80° C. to about 170° C. to form a dispersion of a graft copolymer of said oligomer and said monomer in a polyol medium.

4,521,547

HIGHLY FLAME RESISTANT RIGID URETHANE-ISOCYANURATE FOAM COMPOSITIONS

James J. Anderson, Richmond, Va., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 4, 1984, Ser. No. 567,996
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—137 **9 Claims**

1. A composition curable to a highly flame resistant polymer foam comprising:

I. a blowing agent;

II. a polyester polyol prepared by

(a) transesterification, with a glycol of molecular weight from about 60 to about 400, of a residue remaining after dimethyl terephthalate and methyl p-toluate have been removed from the product of oxidation of p-xylene in the preparation of dimethyl terephthalate; or

(b) esterification, with an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide, and mixtures thereof, of a carboxyl functional residue resulting from the removal of terephthalic acid from the mixture obtained by the oxidation of p-xylene in the preparation of terephthalic acid.

III. a propylene oxide adduct of a di(lower alkyl)pyrophosphoric acid;

IV. a polymeric polyisocyanate; and

V. an isocyanurate catalyst; in which the NCO:OH mole ratio is 3:1 to 6:1.

4,521,548

PREPARATION OF POLYETHER POLYOLS

Jimmie D. Christen, Lake Jackson, and Henry B. Taylor, III, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 12, 1983, Ser. No. 484,132
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—167 **19 Claims**

1. A process for neutralizing an alkaline catalyst in a crude polyether-containing polyol comprising contacting a polyol having a hydroxyl number of at least about 175 with formic acid under reaction conditions such that the reaction products of the formic acid and the catalyst are soluble in the polyol.

4,521,549

HIGH VOLTAGE INSULATING MATERIALS

Richard J. Penneck, Lechlade, England, assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 109,249, Jan. 3, 1980, Pat. No. 4,399,064, which is a continuation of Ser. No. 434,126, Jan. 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 81,558, Jan. 16, 1970, abandoned. This application Aug. 12, 1983, Ser. No. 522,821
Claims priority, application United Kingdom, Oct. 17, 1969, 51119
The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.
Int. Cl.³ C08G *47/00*; H01B *3/00*; C04B *35/10*
U.S. Cl. 523—173 **40 Claims**

1. Electrically insulating material suitable for high voltage applications which comprises one or more polymers and from about 29% to about 75% by weight of an anti-tracking filler system comprising: (a) a hydrate of alumina having a specific surface area of at least about 2 M^2/g, measured by the BET method, and (b) a compound selected from the group consisting of oxides, mixed oxides, and mixtures of oxides, wherein said compound contains at least one element selected from the group consisting of transition series elements, lanthanide series elements, and nontransuranic actinide series elements, components (a) and (b) being present in said anti-tracking filler system in amounts such that said electrically insulating material has an initial tracking voltage of at least about 2.5 kilovolts when

tested according to ASTM-D 2303-68 liquid Contaminant Inclined Plane test.

4,521,550

METHOD FOR OBTAINING STRONG ADHESIVE BONDING OF COMPOSITES TO DENTIN, ENAMEL AND OTHER SUBSTRATES

Rafael L. Bowen, Gaithersburg, Md., assignor to American Dental Association Health Foundation, Washington, D.C.

Continuation-in-part of Ser. No. 457,029, Jan. 10, 1983,. This application Jul. 25, 1983, Ser. No. 516,956

Int. Cl.³ A10N *1/02;* **A65K** *5/00;* **C09K** *3/00*

U.S. Cl. 523—116 **27 Claims**

1. A method for preparing the surface of dentin or enamel for adhesion of composite materials or resins, which method comprises:

(a) contacting with the surface of the dentin or enamel an aqueous solution comprising at least one acidic salt containing a polyvalent cation which is capable of changing valence by unit steps and which can bind to dentin or enamel surface sites, and at least one anion which forms a relatively water-insoluble precipitate or precipitates with calcium and which contains at least one carboxyl group;

(b) contacting with the surface of the dentin or enamel a solution comprising N-phenylglycine in a solvent; and

(c) contacting with the surface of the dentin or enamel a solution comprising at least one compound selected from the group consisting of (1) the addition reaction product of pyromellitic acid dianhydride and 2-hydroxyethyl methacrylate, (2) the addition reaction product of 3,3',4,4'-benzophenonetetracarboxylic dianhydride and 2-hydroxyethyl methacrylate, and (3) 4-methacryloxyethyltrimellitic anhydride.

4,521,551

DENTURE FIXATIVE COMPOSITION CONTAINING PARTIALLY NEUTRALIZED COPOLYMERS OF MALEIC ACID OR ANHYDRIDE AND ALKYL VINYL ETHERS WHICH ARE OPTIONALLY PARTIALLY CROSSLINKED

Tiang-Shing Chang, Westfield, and Lucy J. Zientek, Bayonne, both of N.J., assignors to Block Drug Company, Inc., Jersey City, N.J.

Filed Dec. 2, 1983, Ser. No. 557,737

Int. Cl.³ A61K *5/00;* **C08L** *1/26;* **C09J** *3/04, 3/14*

U.S. Cl. 523—120 **17 Claims**

1. A denture fixative composition comprising a denture fixative excipient and an effective denture fixative amount of a mixture of a water soluble partially neutralized and partially crosslinked lower alkyl vinyl ether-maleic acid or anhydride copolymer, a 1% aqueous solution of which has a pH of at least about 4.5 and said copolymer containing at least about 30% unreacted initial carboxyl groups, and at least one hydrophilic polymer, said composition developing when contacted with saliva a high degree of tack and viscous musilage and which spreads over the denture-mucosa interface to fill the gaps so as to provide a suction-type seal.

4,521,552

PROCESS FOR MAKING AN EMULSION POLYMER

Reiner Schnee, Darmstadt-Arheilgen, and Jürgen Masanek, Pfungstadt, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Feb. 11, 1983, Ser. No. 465,775

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207113

Int. Cl.³ C08L *3/00*

U.S. Cl. 523—313 **5 Claims**

1. A method for making a stable water-in-oil emulsion of a water soluble polymer, which method comprises,

(1) in a first reaction stage, producing free radicals in a stable oil-in-water emulsion comprising an aqueous solution of at least one water soluble monomer emulsified in oil in the presence of a water-in-oil emulsifier and maintaining said emulsion under conditions free of backmixing until polymerization of said monomer or monomers is initiated and then,

(2) in a second reaction stage, completing said initiated polymerization in the presence of free radical initiators while turbulently agitating said emulsion.

4,521,553

ANTI-STATIC HIGHLY-PLASTICIZED POLYVINYLCHLORIDE

Paul Fitton, Bristol, and Peter J. Holland, Frodsham, both of England, assignors to Dycem Limited, Bristol, England

Filed Apr. 13, 1984, Ser. No. 599,976

Int. Cl.³ C08K *3/04*

U.S. Cl. 523—333 **5 Claims**

1. A process for preparing a composition which comprises 99.5 to 75% by weight of highly plasticised polyvinylchloride (PVC) which consists of 15 to 45% by weight of polyvinylchloride (as herein defined) and 55 to 85% by weight of a plasticiser, and from 0.5 to 25% by weight of carbon fibres, said process comprising mixing PVC resin with an initial quantity of plasticiser under high shear conditions to obtain an initial homogeneous mixture, and blending this initial mixture with a slurry comprising carbon fibres and further plasticiser under low shear conditions to obtain a final homogeneous mixture, and curing said final homogeneous mixture.

4,521,554

POLYBUTYLENE TEREPHTHALATE MOLDING COMPOSITION WITH HIGH COLD IMPACT STRENGTH AND AMENABLE TO THERMOPLASTIC PROCESSING

Michael Dröscher, Dorsten; Christian Gerth, Haltern, and Klaus Burzin, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels AG, Marl, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 582,645

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1983, 3306008

Int. Cl.³ C08L *67/02*

U.S. Cl. 523—522 **14 Claims**

1. A thermoplastically processable molding composition of high cold impact strength, comprising

(A) 66–95% by weight of polybutylene terephthalate of a viscosity number (J), according to DIN [German Industrial Standard] 16 779, Part 2, of 70 to 240 cc/g, and

(B) 34–35% by weight of the addition reaction product of

(a) 99–75% by weight, based on the total weight of component (B), of an ethylene/α-olefin/diene terpolymer comprising 45–75 percent by weight of ethylene, 20–45 percent by weight of a C_{3-8}-α-olefin, and 2–10 parts by weight of a C_5–C_{20}-cyclic or acyclic unconjugated alkane diene, wherein the terpolymer has a Mooney viscosity, ML 1+4 at 100° C., measured according to DIN 53 523, of 30–130, and

(b) 1–25% by weight, based on the total weight of component (B), of bicyclo[2,2,2]-2,3;5,6-dibenzooctadiene-(2,5)-dicarboxylic acid-(7,8)-anhydride.

4,521,555

PLASTISOLS HAVING CARBON DUST FILLERS

Rainer Blum, Ludwigshafen-Edigheim; Max Seitz, Münster-Wolbeck, and Friedrich Kaczinski, Münster, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 368,309, Apr. 14, 1982, Pat. No. 4,444,837, which is a continuation-in-part of Ser. No. 106,859, Dec. 26, 1979, abandoned. This application Jan. 13, 1984, Ser. No. 570,307

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855919

Int. Cl.³ C08K *3/04*

U.S. Cl. 524—63 **6 Claims**

1. A plastisol comprising a dispersion of fine-particulate synthetic resin in plasticizers, said fine particulate synthetic resin comprising a vinylchloride homopolymer, a copolymer of vinylchloride and another vinyl compound selected from the group consisting of vinylidene chloride, vinyl acetate, and vinyl propionate, said plastisol having a specific gravity of about 1.1 to 1.3 and containing 9 to 90% by weight of a filler consisting essentially of coke dust, coal dust, or mixtures thereof having a particle size of about 0.5 to 1000 microns.

4,521,556

COLORED POLYESTER COMPOSITIONS

L. Jane Adams, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 575,242, Jan. 30, 1984, abandoned. This application Jul. 16, 1984, Ser. No. 631,287

Int. Cl.³ C08K *5/16*

U.S. Cl. 524—88 **9 Claims**

1. Colored polyester compositions comprising: (1) a linear thermoplastic polyester derived from

(a) a diol, wherein at least a major portion of which is ethylene glycol, and

(b) crude terephthalic acid containing at least one impurity selected from the group consisting of about 1,000 to about 10,000 parts 4-carboxybenzaldehyde, about 1,000 to about 10,000 parts p-toluic acid, about 0 to about 11,000 parts benzoic acid, and about 20 to about 300 parts cobalt, said parts being per million parts of polyester, wherein at least one of said impurities is a color-forming impurity, and (2) a color-forming component comprising a coloring amount of one or more colorants compatible with said polyester.

4,521,557

FLAME RETARDANT COPOLYETHERESTERS

James M. McKenna, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

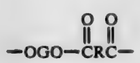
Filed Jun. 23, 1983, Ser. No. 507,206

Int. Cl.³ C08K *5/34*

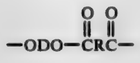
U.S. Cl. 524—94 **10 Claims**

1. A flame retardant copolyetherester elastomer composition which comprises

(a) a copolyetherester elastomer consisting essentially of 10–75% by weight long-chain ester units having the general formula



and 25–90% by weight short-chain ester units having the general formula



wherein R is a divalent radical remaining after removal of carboxyl groups from an aromatic dicarboxylic acid having a molecular weight less than about 300; D is a divalent radical remaining after removal of hydroxyl groups from a diol having a molecular weight less than about 250; and G is a divalent radical remaining after removal of terminal hydroxyl groups from a poly(alkylene oxide)glycol having a carbon to oxygen ratio of about 2.0–4.3 and a number average molecular weight of 400–4000,

(b) about 15–35 parts per hundred parts copolyetherester of N,N-ethylenebis(tetrabromophthalimide),

(c) about 0.25–0.75 parts of antimony trioxide per part of N,N'-ethylenebis(tetrabromophthalimide), and

(d) about 2–20 parts per hundred parts of copolyetherester elastomer of fumed colloidal silica.

4,521,558

RUBBER-METAL ADHESION PROMOTERS

Syed K. Mowdood, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 27, 1984, Ser. No. 584,180

Int. Cl.³ C08K *5/52*

U.S. Cl. 524—145 **9 Claims**

1. A composite comprising a rubber composition with a metal reinforcing element embedded therein, wherein said rubber composition contains from about 0.05 to about 10 parts per hundred parts of rubber by weight of at least one adhesion promoter selected from the group consisting of allyl phosphite esters and allyl phosphate esters.

4,521,559

PHENOLIC ANTIOXIDANTS

Kirkwood S. Cottman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 349,358, Feb. 16, 1982, Pat. No. 4,414,408, which is a continuation of Ser. No. 192,583, Sep. 30, 1980, abandoned, which is a continuation of Ser. No. 24,752, Mar. 28, 1979, abandoned, which is a continuation of Ser. No. 525,440, Nov. 20, 1974, abandoned. This application Jun. 27, 1983, Ser. No. 507,822

Int. Cl.³ C08K *5/36*

U.S. Cl. 524—289 **8 Claims**

1. A polymer composition containing an antioxidant amount of at least one compound comprising the reaction product of a polyphenolic selected from the group consisting of:

2,2'-methylene-bis-(4-methyl-6-tert.-butylphenol);

2,2'-methylene-bis-(4-ethyl-6-tert.-butylphenol);

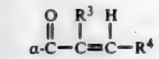
2,2'-thio-bis-(4-methyl-6-tert.butylphenol);

2-(3,5-ditert.-butyl-4-hydroxybenzyl)-4-methylphenol;

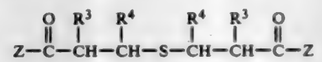
2-(3,5-ditert.-butyl-4-hydroxybenzyl)phenol;

2-(3,5-ditert.-butyl-4-hydroxybenzyl)-5-methylphenol and 2-(3,5-ditert.-butyl-4-hydroxybenzyl)-4-isopropylphenol;

with an ester forming compound of the structural formula:



which is then joined through a sulfur atom to form compounds having the structural formula:



wherein Z is a phenoxy radical derived from the group of polyphenolics listed herein: R^3 R^4 are selected from the group consisting of hydrogen and alkyl radicals of 1 to 2 carbon atoms and α is selected from the group consisting of chlorine, iodine and bromine.

4,521,560

THERMOPLASTIC POLYESTER MOULDING COMPOSITION CONTAINING FLAME RETARDANT AND MAGNESIUM SULFATE

Franz Breitenfellner, Bensheim, Fed. Rep. of Germany, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 378,300, May 14, 1982, abandoned. This application Jun. 30, 1983, Ser. No. 509,502

Claims priority, application Switzerland, May 25, 1981, 3406/81

Int. Cl.³ C08K *3/30, 5/06*

U.S. Cl. 524—371 **10 Claims**

1. A thermoplastic polyester moulding composition which comprises, based on the total composition,

(a) 40 to 95% by weight of a thermoplastic polyester,

(b) 5 to 60% by weight of finely particulate calcined magnesium sulfate, and

(c) 3 to 25% by weight, based on the polyester, of a flameproofing additive, which is a mixture of decabromodiphenyl oxide and antimony trioxide.

4,521,561

VINYL ACETATE/ETHYLENE COPOLYMER EMULSIONS EXHIBITING BOTH PARTIALLY- AND FULLY-HYDROLYZED POLYVINYL ALCOHOL COMPATIBILITY

Mary L. Hausman, Barto, and William E. Lenney, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 29, 1984, Ser. No. 584,589

Int. Cl.³ C08F *2/30, 18/08;* **C08L** *31/04*

U.S. Cl. 524—459 **13 Claims**

1. In a vinyl acetate/ethylene copolymer emulsion comprising an aqueous colloidal dispersion of a copolymer at 40 to 60 wt% solids and containing 60 to 95 wt% vinyl acetate and 5 to 40 wt% ethylene prepared by the emulsion polymerization of vinyl acetate and ethylene in the presence of a polyvinyl alcohol, the improvement for providing a vinyl acetate/ethylene copolymer emulsion that exhibits both partially- and fully-hydrolyzed polyvinyl alcohol compatibility and enhanced plasticizer thickening which comprises performing the copolymerization in the presence of a stabilizing amount of a polyvinyl alcohol stabilizing system consisting essentially of a polyvinyl alcohol having a 3 to 6 mole% vinyl acetate content and a polyvinyl alcohol having a 10 to 14 mole% vinyl acetate content in a ratio that yields about an 8 to 10 mole% average residual vinyl acetate content.

4,521,562

POLYCARBONATE RESIN IMPACT MODIFIED WITH POLYOLEFINS AND CONTAINING PARAFFIN DERIVATIVES

Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Continuation of Ser. No. 221,706, Dec. 31, 1980, abandoned. This application Jul. 13, 1982, Ser. No. 397,718

Int. Cl.³ C08L *69/00;* **C08K** *5/10*

U.S. Cl. 524—490 **4 Claims**

1. A polycarbonate composition comprising in admixture, a high molecular weight aromatic carbonate polymer and a minor amount of a polyolefin and a paraffin of the following formula:

$$C_nH_{2n+1}R$$

wherein n has a value of from about 8 to about 60, and which is characterized by a straight or branched carbon chain and R is H or a carboxylic acid ester which is unreactive with polycarbonate, said polyolefin and paraffin derivative in quantities which reduce the melt viscosity and provide better impact resistance after aging at elevated temperature than either the polyolefin or paraffin derivative alone, said polyolefin derivative present from about 3.5 to about 8.0 parts per hundred parts of aromatic carbonate polymer and said paraffin derivative present in from about 0.1 to about 1.5 parts per hundred parts of aromatic carbonate polymer.

4,521,563

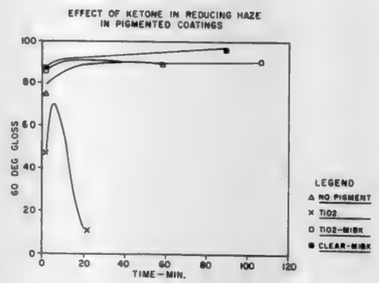
LOW TEMPERATURE CURE, PIGMENTED COATED COMPOSITION

Howard R. Lucas, Danbury, Conn., assignor to American Cyanamid Company, Stamford, Conn.

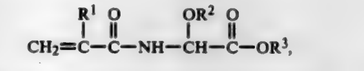
Continuation-in-part of Ser. No. 529,238, Sep. 6, 1983, abandoned. This application Oct. 30, 1984, Ser. No. 665,513

Int. Cl.³ C08J *39/00;* **C08K** *39/00*

U.S. Cl. 524—555 **12 Claims**



1. A low temperature cure, pigmented coating composition comprising (a) a crosslinkable, solvent borne, solution polymer containing from about 1 to 100 weight percent of repeating units derived from an activated ester-containing vinyl monomer of the formula



wherein the R^1 group is selected from H and CH_3, the R^2 group is selected from alkyls of 1–6 carbon atoms, cycloalkyls of 5–6 carbon atoms, and 2-hydroxyalkyls of 2–6 carbon atoms, and the R^3 group is selected from alkyls of 1–6 carbon atoms, cycloalkyls of 5–6 carbon atoms, and 2-hydroxyalkyls of 2–6 carbon atoms; with any balance of repeating units derived from one or more copolymerizable ethylenically unsaturated comonomers; combined with (b) an amine/aminal equilibrium mixture, the equilibrium being between a crosslinking agent having a plurality of primary amine groups, each capable when in the free amine form of replacing the OR^3 moiety by nucleophilic substitution, and a hemiaminal formed from a hemiaminal-forming, volatile ketone and said crosslinking agent; said hemiaminal being present in an amount sufficient to produce a crosslinked polymer when said primary amine groups are in said free amine form;

wherein the coating composition contains a sufficient amount of pigment for a coating prepared therefrom to manifest improved gloss.

4,521,564

COVALENT BONDED ANTITHROMBOGENIC POLYURETHANE MATERIAL

Donald D. Solomon, Spring Valley; Charles W. McGary, Centerville, and Vincent J. Pascarella, Dayton, all of Ohio, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 10, 1984, Ser. No. 578,909

Int. Cl.³ C08H *1/00;* **A61F** *1/00;* **C08B** *37/10*

U.S. Cl. 525—54.1 **23 Claims**

1. An antithrombogenic polyurethane polymer which comprises:

(a) a polyurethane substrate;

(b) a polymeric amine selected from the group of a polyvinyl amine, a polyalkylenimine having 2 to 4 carbon atoms per amine unit and mixtures thereof covalently bonded to said polyurethane substrate; and

(c) an antithrombogenic agent covalently bonded to said polymeric amine.

2. The antithrombogenic polyurethane polymer of claim 1 wherein the antithrombogenic material is selected from the group consisting of heparin, prostaglandins, urokinase, streptokinase, sulfated polysaccharide, albumin and mixtures thereof.

4,521,565

AQUEOUS DISPERSION

Hirotaka Toaba, Ohimachi; Masatoshi Mikumo, Kamiitabashi, and Masahiro Asami, Ohimachi, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 337,336, Jan. 6, 1982, Pat. No. 4,415,703. This application Aug. 10, 1983, Ser. No. 521,866

Claims priority, application Japan, Jan. 13, 1981, 56-3506; Jan. 13, 1981, 56-3507; Apr. 16, 1981, 56-57500; Aug. 28, 1981, 56-135939

Int. Cl.³ C08G *59/02*

U.S. Cl. 525—64 **12 Claims**

1. An aqueous coating composition comprising a mixture of:

(A) a hydrophilic epoxy compound having at least two epoxy groups in the molecule, and

(B) an aqueous dispersion which dispersion has been prepared by emulsion polymerizing, under radical polymerization conditions, at least one radical-polymerizable, ethylenically unsaturated monomer I, in the presence of water and a dispersion stabilizer, said dispersion stabilizer being a high molecular weight polymeric product consisting essentially of a hydrophilic polymer chain portion and an oleophilic polymer chain portion which is highly compatible with the polymer of monomer I, so that said oleophilic polymer chain portion is entangled with the particles of the polymer of said monomer I in the composition, and said hydrophilic polymer chain portion is present in the aqueous phase of the composition, said dispersion stabilizer having functional groups reactive with the epoxy groups of said hydrophilic epoxy compound.

4,521,566

POLYPROPYLENE COMPOSITIONS HAVING IMPROVED IMPACT STRENGTH PROPERTIES AT LOW TEMPERATURES AND PROCESS FOR PREPARING SAME

Paolo Galli, and Mario Spataro, both of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Oct. 13, 1982, Ser. No. 434,110

Claims priority, application Italy, Oct. 14, 1981, 24475 A/81

Int. Cl.³ C08F *297/08;* **C08L** *23/16*

U.S. Cl. 525—247 **2 Claims**

1. A polypropylene composition having a high impact strength at low temperatures, comprising:

(A) 100 parts by weight of polypropylene having an isotacticity index higher than 90;

(B) 8–25 parts by weight of a copolymeric fraction soluble in xylene at 23° C. consisting of an amorphous ethylene-propylene copolymer containing from 20 to 80% by weight of ethylene;

(C) 2–10 parts by weight of a fraction consisting of a crystalline ethylene-propylene copolymer exhibiting a polyethylene type crystallinity and containing from 50 to 90% by weight of ethylene;

the total content of polymerized ethylene in said composition ranging from 4 to 20% by weight and the ratio by weight of total polymerized ethylene to fraction (B) being lower than 1.

2. A process for producing a composition according to claim 1 by polymerization of propylene and ethylene-propylene mixtures either continuously or discontinuously in consecutive steps including at least a step of stereoregular homopolymerization of propylene and a step of copolymerization of ethylene-propylene mixtures, which comprises carrying out the polymerization by the aid of a stereospecific coordination catalyst comprising a titanium compound supported on a magnesium dihalide in an active form having a surface area larger than 3 m^2/g and/or having an X-ray spectrum in which the line of maximum intensity appearing in the spectrum of nonactivated magnesium dihalde is broadened or substituted by a halo, under conditions in which in the homopolymerization step a polypropylene having an isotacticity index higher than 90 is formed in an amount ranging from 65 to 90% by weight of the final product, in the copolymerization step the conditions are selected so that an amorphous ethylene-propylene copolymer extractable with xylene at 23° C. is formed in such an amount that the ratio by weight of the total polymerized ethylene to such amorphous copolymer is lower than 1, and the total content of polymerized ethylene in the final product ranges from 4 to 20% by weight.

4,521,567

METHOD FOR MAKING IMPACT RESISTANT MOLDING COMPOSITIONS

Peter J. Arndt, Seeheim-Jugenheim; Walter Ludwig, Bensheim-Auerbach; Manfred Munzer, Bensheim; Werner Siol, and Franz Wenzel, both of Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 637,863

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 3329765

Int. Cl.³ C08L *51/00;* **C08F** *265/04, 265/06*

U.S. Cl. 525—261 **21 Claims**

1. A method for making an impact resistant molding composition, which method comprises polymerizing, in a first stage, a monomer mixture comprising from 70 to 100 percent by weight of methyl methacrylate, 0 to 30 percent by weight of an ester formed between acrylic acid and an aliphatic alcohol having from 1 to 8 carbon atoms and/or an ester formed between methacrylic acid with an alcohol having from 2 to 8 carbon atoms, and from 0 to 10 percent by weight of at least one further different vinyl monomer copolymerizable with the aforementioned comonomers, to form a hard phase polymer having a glass transition temperature above 25° C., the polymerization in said first stage being carried out in the presence of an oil soluble free radical initiator and of an organosulfur chain transfer agent having at least two thiol groups per molecule, and then in a second stage adding, to said hard phase polymer, monomers forming a rubbery phase and further polymerizing the mixture of monomers and polymer to completion in the presence of a graft crosslinking agent, the monomers of said rubbery phase being monomers the homopolymers of which have a glass transition temperature below 25° C.

4,521,568

SEQUENTIALLY PRODUCED MULTILAYER ACRYLIC RESIN COMPOSITION

Kyoichiro Mori, Tokyo, and Hiroyuki Hirano, Yokohama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Jun. 1, 1982, Ser. No. 383,567

Claims priority, application Japan, Jun. 3, 1981, 56-84307

Int. Cl.³ C08F *265/06*

U.S. Cl. 525—309 **11 Claims**

1. A sequentially produced multilayer acrylic resin composition which comprises:

(A) a relatively hard first stage layer having a glass transition temperature of at least 25° C., polymerized from methyl methacrylate alone or a monomer mixture comprising a predominant proportion of methyl methacrylate by an emulsion polymerization process;

(B) a relatively soft second stage layer, polymerized in the presence of a product containing the relatively hard first

stage layer from a monomer mixture comprising (B-1) a predominant proportion of at least one alkyl acrylate, (B-2) a minor proportion of at least one monomer selected from the group consisting of copolymerizable monoethylenically unsaturated monomers and copolymerizable polyfunctional crosslinking monomers, and (B-3) 0.1% to 5.0% by weight, based on the weight of the monomer mixture, of a polyfunctional graftlinking monomer by an emulsion polymerization process; said relatively soft second stage layer being characterized as exhibiting a glass transition temperature of not higher than 25° C. if the monomer mixture is polymerized in the absence of the product of the relatively hard first stage layer; and

(C) a relatively hard third stage layer, polymerized in the presence of a product containing the relatively soft second stage layer and the relatively hard first stage layer from methyl methacrylate alone or a monomer mixture comprising a predominant proportion of methyl methacrylate; said relatively hard third stage layer being characterized as exhibiting a glass transition temperature of at least 25° C. if the monomer or monomer mixture is polymerized in the absence of the product containing the relatively soft second stage layer and the relatively hard first stage layer, and further characterized as having decreasing molecular weights from the innermost portion to the outermost portion.

4,521,569

IMPACT STYRENE POLYMER

Robert A. Bubeck, and Charles B. Arends, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 497,942, May 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 225,297, Jan. 15, 1981, abandoned, which is a continuation-in-part of Ser. No. 136,583, Apr. 1, 1980, abandoned, which is a continuation-in-part of Ser. No. 25,126, Mar. 29, 1979, abandoned. This application Dec. 19, 1983, Ser. No. 562,922

Int. Cl.³ C08K *5/01*

U.S. Cl. 525—316 **3 Claims**

1. In a process for the preparation of an impact resistant alkenyl aromatic polymer wherein a stream is provided, the stream containing a polymerizing alkenyl aromatic monomer, a reinforcing rubber dissolved therein, initiating polymerization of the alkenyl aromatic monomer either thermally or by a free radical generating initiator in the presence of dissolved rubber to cause the rubber to form a plurality of rubber particles, therein subsequently polymerizing an additional amount of the alkenyl aromatic monomer to form alkenyl aromatic resinous polymer having a desired amount of rubber dispersed therethrough as a plurality of particles, and subsequently removing from the stream at least a major portion of the unreacted alkenyl aromatic monomer and organic solvent, the improvement which comprises employing as the solvent from about 2 to about 20 weight percent based on the total weight of the stream, an aliphatic hydrocarbon composition having a solubility parameter from about 6 to about 7.7 and boiling within the range of 99° C. to 170° C., to thereby provide a polymer with improved resistance to cracking under stress in the presence of oil.

4,521,570

MODIFIED EPOXY RESIN AND COMPOSITION

Shoji Watanabe; Kimio Inoue, and Kiyoshi Okitsu, all of Ohtake, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 385,211, Jun. 4, 1982, abandoned. This application Mar. 1, 1984, Ser. No. 583,794

Claims priority, application Japan, Jun. 19, 1981, 56-94876; Aug. 20, 1981, 56-131377

Int. Cl.³ C08L *67/04*

U.S. Cl. 525—415 **11 Claims**

1. A lactone-modified epoxy resin which is the reaction product obtained by effecting ring-opening polymerization of from 3 to 95 parts by weight of ε-caprolactone, in the presence of from 97 to 5 parts by weight of an epoxy resin having terminal unreacted epoxy groups and having at least one hydroxyl group in the epoxy resin molecule, at a temperature of from 100° to 240° C., in the presence of a catalytically effective amount of a catalyst effective for polymerizing ε-caprolactone and selected from the group consisting of titanium compounds, organotin compounds and stannous halides, the conditions being effective to form poly(ε-caprolactone) as a side chain bonded to the epoxy resin molecule at the location of said hydroxyl group or groups, said poly(ε-caprolactone) side chain having a terminal primary hydroxyl group at the end thereof remote from said epxoy resin molecule.

4,521,571

PROCESS FOR PREPARING POLYESTER ELASTOMERS

Takatsugu Ishido, and Takeshi Horikawa, both of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Jul. 11, 1984, Ser. No. 630,451

Claims priority, application Japan, Jul. 25, 1983, 58-135385

Int. Cl.³ C08G *63/76*

U.S. Cl. 525—437 **12 Claims**

1. A process for preparing a polyester elastomer which comprises the step of polymerizing a dicarboxylic acid containing mainly an aromatic dicarboxylic acid, or an ester-forming derivative thereof, with a low molecular weight glycol containing mainly 1,4-butanediol and a polyoxyalkylene glycol, at least 10 wt. % of the polyoxyalkylene glycol being a poly (oxy-2-methyl-1,3-propylene)diol.

9. A polyester elastomer which has been obtained by a process as defined in claim 1.

4,521,572

EPOXY RESIN MODIFIED POLYETHER POLYOLS FROM MIXED INITIATORS

Michael Cuscurida, and Bruce W. Peterson, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 22, 1984, Ser. No. 582,241

Int. Cl.³ C08L *61/14;* **C08G** *65/08*

U.S. Cl. 525—507 **20 Claims**

1. A modified mixed initiator polyol being produced by the process comprising

reacting a mixture of initiators comprising 60 to 90 wt.% of a trifunctional partially alkoxylated initiator and 10 to 40 wt.% of a secondary partially alkoxylated initiator having an active hydrogen functionality of from 4 to 8 with an epoxy resin having an average of at least 1.8 reactive 1,2-epoxy groups per molecule and one or more alkylene oxides in such a manner that the epoxy resin is added internally along the length of the polyol chain.

4,521,573

CATALYST IMPREGNATED ON FINE SILICA, PROCESS FOR PREPARING, AND USE FOR ETHYLENE POLYMERIZATION

Kiu H. Lee, South Charleston, W. Va., and Gary S. Cieloszyk, Somerville, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 163,959, Jun. 30, 1980, Pat. No. 4,405,495. This application Jul. 25, 1983, Ser. No. 516,932

Int. Cl.³ C08F *4/02, 210/02*

U.S. Cl. 526—125 **14 Claims**

1. In a process for producing ethylene copolymer containing ≧90 mol percent of ethylene and ≦10 mol percent of one or more C_3 to C_8 alpha olefins wherein said copolymer is produced in granular form at a density of ≧0.91 to ≦0.94 with a Ti containing catalyst at a productivity level of ≧5 ppm of titanium per million parts of copolymer by a process which comprises copolymerizing ethylene with at least one C_3 to C_8 alpha olefin in a reactor at a temperature of about 30° to 105° C. under a pressure of up to about 1000 psi in the gas phase by contacting the monomer charge with, in the presence of about 0 to 2.0 mols of hydrogen per mol of ethylene in the gas phase reaction zone, particles of a catalyst composition comprising a precursor composition of the formula

$$Mg_mTi_1(OR)_nX_p[ED]_q$$

wherein R is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical, or COR′ wherein R′ is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical,

X is selected from the group consisting of Cl, Br, I or mixtures thereof,

ED is an electron donor compound,

m is ≧0.5 to ≦56,

n is 0, 1 or 2,

p is ≧2 to ≦116, and

q is ≧2 to ≦85,

said precursor composition being impregnated in a porous support in a weight ratio of 0.1:1 to 0.33:1 and being

first partially activated outside of said reactor with >0 to <10 mols of activator compound per mol of Ti in said precursor composition, and

then completely activated in said reactor with ≧10 to ≦400 mols of activator compound per mol of Ti in said precursor composition,

said activator compound having the formula

$$Al(R'')_cX'_dH_e$$

wherein X′ is Cl or OR‴, R″ and R‴ are the same or different and are C_1 to C_{14} saturated hydrocarbon radicals, d is 1 to 1.5, e is 1 or 0 and c+d+e=3,

said electron donor compound being a liquid organic compound in which said precursor composition is soluble and which is selected from the group consisting of alkyl esters of aliphatic and aromatic carboxylic acids, aliphatic ethers, cyclic ethers and aliphatic ketones,

the improvement which comprises employing as said support throughout the polymerization silica having a particle size distribution within the range of from 2 microns to 80 microns and an average particle size of from 20 microns to 50 microns.

4,521,574

INCORPORATION OF FUNCTIONALIZED MONOMERS

Dennis B. Patterson, Akron; Dane K. Parker, Massillon, and Lloyd D. Hess, Jr., Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 27, 1984, Ser. No. 584,054

Int. Cl.³ C08F *2/26*

U.S. Cl. 526—204 **8 Claims**

1. A process for forming a polymer comprising the aqueous emulsion polymerization of:

(A) at least one functionalized monomer that contains a polymerizable vinyl group; with

(B) at least one copolymerizable conjugated diene monomer selected from the group consisting of butadiene-1,3, 2-chlorobutadiene-1,3, isoprene, piperylene and conjugated hexadienes; and optionally

(C) at least one vinyl monomer selected from the group consisting of styrene, α-methylstyrene, divinylbenzene, vinyl chloride, vinyl acetate, vinylidene chloride, methyl methacrylate, ethyl acrylate, vinylpyridine, acrylonitrile, methacrylonitrile, methacrylic acid and acrylic acid;

the ratio of functionalized monomer to conjugated diene to vinyl monomer can range from 5:75:20 to 95:5:0 parts per hundred based on total monomers;

the improvement which comprises polymerizing the monomers in the presence of from 8 to 30 parts of an ionic soap per 100 parts of total organic components, (monomers and cosolvents) and 40–80 parts of dichloromethane, tetrahydrofuran or combinations thereof based on 100 parts of total monomers.

4,521,575

TETRAFLUOROETHYLENE-ETHYLENE TYPE COPOLYMER

Shinichi Nakagawa, Nara, and Kiyohiko Ihara, Osaka, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Feb. 2, 1984, Ser. No. 576,426

Claims priority, application Japan, Feb. 12, 1983, 58-21808; Feb. 12, 1983, 58-21809

Int. Cl.³ C08F *210/02, 214/18*

U.S. Cl. 526—206 **19 Claims**

1. A copolymer comprising 40 to 60% by mole of monomeric units of tetrafluoroethylene, 60 to 40% by mole of monomeric units of ethylene and 0.1 to 20% by mole of monomeric units of at least one monomeric compound selected from the group consisting of 2-trifluoromethylpropylene and 2-methyl-1,1,3,3,3-pentafluoropropylene.

4,521,576

CONTINUOUS POLYMERIZATION OF CHLOROPRENE

Rüdiger Musch, Bergisch Gladbach; Wilhelm Göbel, Leverkusen; Wolfgang Konter, Neuss, and Wilfried Nolte, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 354,790, Mar. 4, 1982, abandoned, which is a continuation of Ser. No. 201,920, Oct. 29, 1980, abandoned. This application Nov. 30, 1983, Ser. No. 556,580

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1980, 3002711

Int. Cl.³ C08F *36/18, 20/20*

U.S. Cl. 526—213 **9 Claims**

1. Process for the continuous polymerization of chloroprene or chloroprene with up to 50% by weight of one or more comonomers which are copolymerization with chloroprene in an aqueous alkaline emulsion at 0° to 70° C. to a monomer conversion of at most 85% and followed by working-up latices to solid rubbers,

wherein the aqueous emulsion contains from 0.4 to 0.9 parts by weight of potassium hydroxide, from 2.8 to 3.3 parts by weight of a potassium salt of disproportionated abietic acid, from 0.4 to 0.8 parts by weight of condensation products of naphthalene sulphonic acid and formaldehyde, and 100 to 130 parts by weight of water, all quantities being based on 100 parts by weight of monomer, and in the absence of polymeric fatty acids.

4,521,577

LIQUID POLYMERIZABLE COMPOSITIONS OF A CARBONATE OLIGOMER, AN ALLYLCARBONATE AND VINYL ACETATE

Ugo Romano, Vimercate; Fiorenzo Renzi, Gorgonzola; Franco Rivetti, Schio, and Claudio Gagliardi, S.Donato Milanese, all of Italy, assignors to Enichimica S.p.A., Milan, Italy

Filed Jan. 6, 1984, Ser. No. 568,726

Claims priority, application Italy, Jan. 13, 1983, 19085 A/83

Int. Cl.³ C08F *218/00*

U.S. Cl. 526—261 **7 Claims**

1. A liquid polymerizable composition having outstanding mechanical and optical properties, comprising:

(a) from 10% to 90% by weight of oligomer of the formula

$$CH_2{=}CH{-}CH_2{-}O{-}\underset{\underset{O}{\|}}{C}{-}O(R{-}O{-}\underset{\underset{O}{\|}}{C}{-}O)_n{-}CH_2CH{=}CH_2$$

wherein R is the residue of diethylene glycol and n is varied from 2 to 10, said oligomer being obtained by

reacting diallylcarbonate with diethylene glycol in a molar ratio of the former to the latter of about 2:1;

(b) a compound selected from the group consisting of bis(allylcarbonate) of diethylene glycol; bis(allylcarbonate) of bis(hydroxymethyl)tricyclodecane; bis(allylcarbonate) of 1,4-butanediol; bis(allylcarbonate) of cyclohexanedimethanol; and tris(allylcarbonate) of tris(hydroxyethyl-)isocyanurate said compounds being obtained by reaction of diallylcarbonate with an alcohol selected from the group consisting of diethylene glycol; bis(hydroxymethyl)tricyclohexanedimethanol; or tris(hydroxyethyl-)isocyanurate, respectively, in a molar ratio of diallylcarbonate to alcohol of about 12:1; or a member of the group consisting of diallyl terephthalate and triallylcyanurate; and

(c) vinyl acetate.

4,521,578

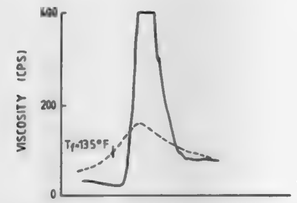
COMPOSITION AND METHOD OF PREPARATION OF NOVEL AQUEOUS DRILLING FLUID ADDITIVES

Robert G. Chen; Arvind D. Patel, and Thomas E. Sample, Jr., all of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 26, 1983, Ser. No. 536,464

Int. Cl.³ C08F *12/30, 4/06, 4/46*

U.S. Cl. 526—288 **27 Claims**



1. A water-soluble terpolymer having utility as a stabilizer and deflocculant for aqueous drilling fluids comprising the reaction product of:

(a) 5 to 50% by weight of a salt of tetrahydrophthalic acid;

(b) 10 to 70% by weight of acrylic monomer; and

(c) 5 to 50% by weight of a salt of 2-acryl-amido-2-methyl-propane sulfonic acid.

5. A water-soluble graft copolymer having utility as a stabilizer and deflocculant for aqueous drilling fluids comprising:

(a) 5 to 70% by weight of lignosulfonate;

(b) 5 to 50% by weight of a salt of tetrahydropthalic acid;

(c) 10 to 70% by weight of acrylic monomer; and

(d) 5 to 50% by weight of a salt of 2-acryl-amido-2-methyl-propane sulfonic acid.

4,521,579

HIGH MOLECULAR WEIGHT WATER-SOLUBLE POLYMERS USEFUL IN DEOILING SAND AND ROCK MASSES

Friedrich Engelhardt; Hermann Schmitz, both of Frankfurt am Main; Walter Gulden, Hofheim, and Jörg Hax, Wiesbaden, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

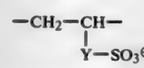
Continuation of Ser. No. 283,497, Jul. 15, 1981, abandoned. This application Mar. 29, 1983, Ser. No. 480,010

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1980, 3027422

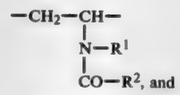
Int. Cl.³ C08F *228/02*

U.S. Cl. 526—287 **5 Claims**

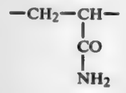
1. Water-soluble copolymers which consist essentially of a random distribution of 5 to 60% by weight of units of the formula



2 to 40% by weight of units of the formula



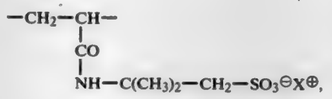
and 38 to 93% by weight of units of the formula



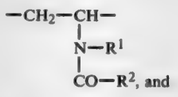
and partial hydrolysates thereof,

wherein when R^1 is hydrogen, R^2 is hydrogen, methyl or ethyl, Y is —CO—NH—$C(CH_3)_2$—CH_2— or a direct bond, and $X^{\oplus}$ is a cation; when R^1 and R^2 are identical or different, each is hydrogen, methyl, ethyl or, together with trimethylene, Y is —CO—NH—$C(CH_3)_2$—CH_2— and $X^{\oplus}$ is a cation;

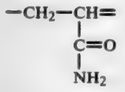
with the proviso that the water-soluble copolymers may not consist of a random distribution 5 to 60% by weight of units of the formula



5 to 40% by weight of units of the formula



38 to 80% by weight of units of the formula

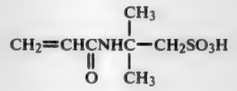


wherein R^1 and R^2 are identical or different and each is hydrogen, methyl or ethyl

and $X^{\oplus}$ is a cation,

produced by Trommsdorff-Norrish copolymerizing at 0° to 130° C. an aqueous mixture of monomers selected from

(a) 5 to 60 parts by weight of 2-acrylamido-2-methylpropanesulfonic acid of the formula

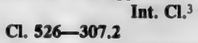


wherein the sulfonic acid is neutralized with base, 2 to 40 parts by weight of a vinylacylamide of the formula

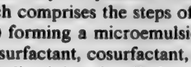


and 38 to 93 parts by weight of acrylamide,

(b) 5 to 60 parts by weight of vinylsulfonic acid of the formula

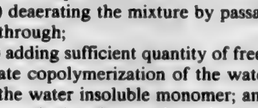


wherein the sulfonic acid is neutralized with base, 2 to 40 parts by weight of a vinylacylamide of the formula



and 38 to 93 parts by weight of acrylamide, and

(c) 5 to 60 parts by weight of 2-acryl-2-amido-2-methylpropanesulfonic acid of the formula



wherein the sulfonic acid is neutralized with base, 2 to 40 parts by weight of a vinylacylamide of the formula

and 38 to 93 parts by weight of acrylamide, with the proviso that vinylsulfonic acid is a reactant, or said vinylacrylamide is a reactant in an amount of 2 to 5 parts by weight, or acrylamide is a reactant in an amount of 80 to 93 parts by weight.

4,521,580

MICROEMULSION PROCESS FOR PRODUCING ACRYLAMIDE-ALKYL ACRYLAMIDE COPOLYMERS

S. Richard Turner, Rochester, N.Y.; Donald B. Siano, Fanwood, and Jan Bock, Bridgewater, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 454,238, Dec. 29, 1982, abandoned. This application Aug. 29, 1983, Ser. No. 526,990

Int. Cl.³ C08F *20/56*

U.S. Cl. 526—307.2 **10 Claims**

1. A free radical microemulsion copolymerization process for the formation of a copolymer of acrylamide and a waterinsoluble alkyl acrylamide corresponding to the formula below which comprises the steps of:

(a) forming a microemulsion concentrate which includes a surfactant, cosurfactant, and oil for hydrocarbon solvent;

(b) dissolving the alkyl acrylamide into this concentrate;

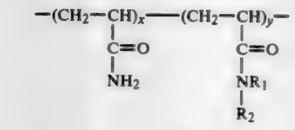
(c) adding the water or brine containing the water soluble monomer to said concentrate to form a clear homogeneous microemulsion reaction mixture having microemulsion droplets of about 100 to 1000 A;

(d) deaerating the mixture by passage of an inert gas therethrough;

(e) adding sufficient quantity of free radical initiator to initiate copolymerization of the water soluble monomer and the water insoluble monomer; and

(f) continuing the copolymerization reaction for a sufficient time at a sufficient temperature to form said copolymer without phase separation occurring or the formation of substantial amounts of particulates, said copolymer having

an intrinsic viscosity of about 1 to about 10 dl/g said copolymer having the formula:



wherein R_1 is an alkyl or cycloalkyl group having about 6 to 22 carbon atoms, R_2 is the same or different alkyl group as R_1, or hydrogen, x is about 90.0 to about 99.9 mole %, and y is about 10.0 to about 0.1 mole%.

4,521,581

POLYMER POLYOL PREPARED BY CROSSLINKING A LOW MOLECULAR WEIGHT POLYMER IN A POLYOL

Richard J. G. Dominguez, and Michael Cuscurida, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,344

Int. Cl.³ C08G *18/22, 18/67;* **C08L** *75/00*

U.S. Cl. 528—57 **11 Claims**

1. A method for making polymer polyols comprising

(a) polymerizing an ethylenically unsaturated monomer with an anionic catalyst in a selected medium to a low molecular weight liquid polymer,

(b) mixing the polymer from (a) in a polyol which is different from the medium of (a), and

(c) crosslinking the polymer in the polyol.

4,521,582

THERMOPLASTIC POLYURETHANES HAVING A HIGH HEAT STABILITY, BASED ON NAPHTHYLENE DIISOCYANATE, THEIR PRODUCTION AND THEIR USE

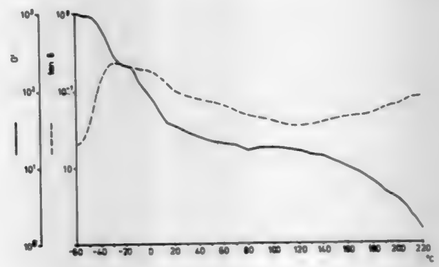
Wilhelm Goyert, and Jürgen Winkler, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 2, 1984, Ser. No. 637,242

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 3329775

Int. Cl.³ C08G *18/76, 18/32*

U.S. Cl. 528—67 **22 Claims**



1. A process for the preparation of a thermoplastically processible polyurethane elastomer comprising

(i) reacting at least one substantially linear polyhydroxyl compound having a molecular weight of from about 550 to about 10,000 with a substoichiometric amount of at least one first diisocyanate to obtain an OH-prepolymer, and

(ii) reacting said OH-prepolymer with a naphthylene-1,5-diisocyanate and a chain lengthener mixture,

said first diisocyanate being any diisocyanate other than naphthylene-1,5-diisocyanate, said chain lengthener mixture

being comprised of diols and polyols having molecular weights of from 62 to 500, said chain lengthener mixture being characterized in that between about 70 and about 92 equivalent percent of its OH groups are derived from said diols and in that between about 30 and about 8 equivalent percent of its OH groups are derived from polyols having a functionality of three and/or higher than three, said diols are being selected from the group consisting of hydroquinone-di-(β-hydroxyethylether), butane diol-1,4 and hexane diol-1,6, with the proviso that in mixtures containing either butane diol-1,4 or hexane diol-1,6 such mixtures contain co-diols which provide from about 15 to about 50 equivalent percent of said OH groups which are derived from diols only, said co-diols having a molecular weight of from 62 to 500.

4,521,583

CURABLE EPOXY RESIN COMPOSITIONS

Dalip K. Kohli, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 9, 1984, Ser. No. 578,402
Int. Cl.³ C08G 59/44
U.S. Cl. 528—119 **25 Claims**

1. A heat curable composition comprising
(a) an epoxy prepolymer or combination of prepolymers having more than one epoxide group per molecule, and
(b) a curing catalyst for said epoxy consisting essentially of
(i) an amount effective to cure said epoxy of a bisurea compound comprising the reaction product of an organic diamine with at least two moles, per mole of organic diamine, of an aryl monoisocyanate, alone, or in further combination with
(ii) an amount effective to cure said epoxy of an amine functional aromatic curing agent.

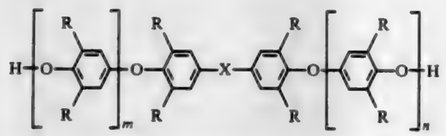
4,521,584

PROCESS FOR THE PRODUCTION OF BIFUNCTIONAL POLYPHENYLENE ETHERS

Walter Heitz, Kirchhain, and Wilhelm Risse, Marburg, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 583,652
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1983, 3308421
Int. Cl.³ C08G 65/44
U.S. Cl. 528—214 **5 Claims**

1. A process for the production of bifunctional polyphenylene oxides:



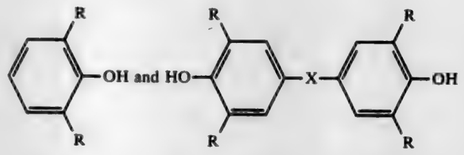
where R is the same or different at each position and is an alkyl moiety containing from 1 to 4 carbon atoms or an aryl moiety containing up to 6 carbon atoms, X is



-O-,



-S- or SO_2-, where R^1 is hydrogen or an alkyl radical containing from 1 to 4 carbon atoms, and m and n are integers of from 1 to 200, comprising,
(1) introducing a metal compound catalyst into an organic solvent and oxidizing the catalyst in the presence of oxygen; then
(2) adding a mixture of phenols,



where R is the same or different at each position, and reacting the mixture in the presence of oxygen at a temperature of from −80° C. to 100° C. and at a pressure of 0–15 bar.

4,521,585

POLYESTERS AND THEIR MANUFACTURE FROM ACIDS AND GLYCOL CARBONATES

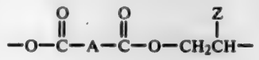
Joelle R. Thomsen, and David R. Fagerburg, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 405,795, Aug. 6, 1982, abandoned, which is a continuation-in-part of Ser. No. 291,609, Aug. 10, 1981, abandoned. This application Jun. 30, 1983, Ser. No. 509,532
Int. Cl.³ C08G 63/00
U.S. Cl. 528—271 **5 Claims**

1. The process for preparing prepolymer of an inherent viscosity of from about 0.008 to about 0.20 as calculated from the equation

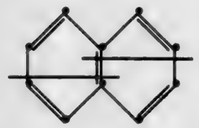
$$\{n\}_{0.50\%}^{25°C} = \frac{\ln \frac{t_s}{t_o}}{C}$$

where:
(n)=inherent viscosity at 25° C. at a polymer concentration of 0.50 g/100 ml. of solvent;
ln=natural logarithm;
t_s=sample flow time;
t_o=solvent-blank flow time; and
C=concentration of polymer in grams per 100 ml. of solvent =0.50,
having the same or different repeating units of the formula



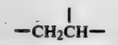
wherein A is



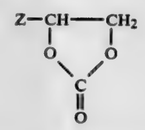


or mixtures thereof in any proportion, and wherein up to about

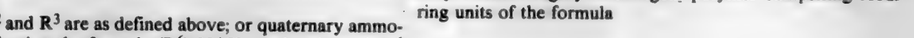
50 mole percent of A is replaced with the hydrocarbon chains of 2–18 carbons of one or more aliphatic dicarboxylic acids of a modifying acid component (ADAC) consisting of one or a mixture of aliphatic dicarboxylic acids of 4–20 carbons, and Z is H or a group selected from cyclohexyl and straight or branched alkyl of 1–6 carbons, provided that the carbon of said Z group which is attached to the



moiety contains at least one hydrogen atom bound to said carbon, said process comprising reacting one or a mixture of compounds of the formula



with one or a mixture of terephthalic acid (TPA), 1,4-cyclohexanedicarboxylic acid (CHDA), isophthalic acid (IPA), or naphthalene dicarboxylic acid (NDA), and up to about 50 mole percent of said aliphatic dicarboxylic acid component (ADAC), at a temperature of from about 150° C. to about 250° C. wherein the mole ratio of the ethylene carbonate (EC) to TPA, CHDA, or NDA is from about 1 to about 2, the mole ratio EC:IPA is from about 1 to about 1.8, the mole ratio EC:ADAC is from about 1 to about 2, and the mole ratio of the ethylene carbonate to each of the acids is from about 1.25 to about 3.0, in contact with from about 0.05 mole % to about 5.0 mole percent based on total moles of carbonate reactant of an amine component selected from one or a mixture of: trialkylamines having the formula R_3N wherein each R is an independently selected alkyl group, linear or branched of 1 to 18 carbons; tetraalkyl nitrogen substituted diamines having the formula $R^2R^3N—R^1—NR^4R^5$ wherein R^1 is straight or branched alkylene of 1–8 carbons, and each of R^2, R^3, R^4 and R^5 is independently selected from straight or branched alkyl of 1–8 carbons;



wherein R^2 and R^3 are as defined above; or quaternary ammonium salts having the formula $(R^6)_4N^+X^-$, wherein each R^6 group is independently selected from linear or branched alkyl of 1–18 carbons, and one of which is benzyl, and wherein X^- is hydroxide or a carboxylate anion.

4,521,586

PROCESS FOR PREPARING HIGH MOLECULAR WEIGHT COMPOUNDS

Takeshi Fujita; Shigeo Mori, both of Kyoto; Hironori Kataoka, Yamatokoriyama, and Akira Taniuchi, Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Mar. 17, 1983, Ser. No. 476,155
Claims priority, application Japan, Mar. 17, 1982, 57-43340; Apr. 13, 1982, 57-62164
Int. Cl.³ C08G 63/42, 63/66, 59/00
U.S. Cl. 528—297 **7 Claims**

1. A process for preparing high molecular weight compounds which comprises addition-polymerizing an alkylene oxide containing ethylene oxide to an organic compound having at least two active hydrogens to produce a polyhydroxyl compound having an average molecular weight of not less than 1,000, and reacting said polyhydroxyl compound with an esterifying agent selected from the group consisting of polycarboxylic acids, anhydrides thereof and lower alkyl esters thereof by means of esterification or interesterification reaction at a temperature of 80° to 250° C. under a reduced pressure of 0.001 to 20 mm Hg to chemically bond the molecules of said polyhydroxyl compound to each other, thereby producing a high molecular weight compound which has an average molecular weight of more than 20,000 and is soluble in solvents and moldable.

4,521,587

COMPOSITION FOR TREAD RUBBER OF TIRES

Hiroshi Furukawa, Kobe, and Yuichi Saito, Nishinomiya, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe and Sumitomo Chemical Company, Limited, Osaka, both of, Japan

Continuation of Ser. No. 496,913, May 23, 1983, abandoned, which is a continuation of Ser. No. 324,547, Nov. 24, 1981, abandoned. This application Feb. 6, 1984, Ser. No. 576,799
Claims priority, application Japan, Dec. 2, 1980, 55-170647
Int. Cl.³ C08F 136/08
U.S. Cl. 526—340.2 **2 Claims**

1. A tire having a tire tread portion, said tire tread portion being a rubber obtained by curing a rubber composition consisting essentially of (a) a minor amount of a tire tread rubber additive, and (b) a major amount of a synthetic isoprene rubber having a 3,4-bonding content of 25–50% by mol and an intrinsic viscosity of at least 2.0 in toluene at 30° C.

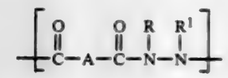
4,521,588

OPTICAL DEVICE INCLUDING BIREFRINGENT POLYHYDRAZIDE POLYMER

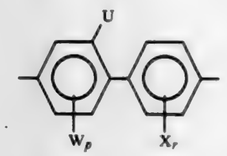
Howard G. Rogers, Weston; Ruth C. Bilofsky, Lexington, both of Mass.; Russell A. Gaudiana, Merrimack, N.H., and Ronald A. Sahatjian, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 238,054, Mar. 2, 1981, Pat. No. 4,446,305. This application Apr. 18, 1984, Ser. No. 601,610
Int. Cl.³ C08G 73/08
U.S. Cl. 528—363 **4 Claims**

1. An optical device including a transparent molecularly oriented highly birefringent polymer, said highly birefringent polymer comprising repeating molecular units exhibiting high electron density substantially cylindrically distributed about the long axes of the polymer and the repeating units thereof, said highly birefringent polymer being substantially optically uniaxial exhibiting only two indices of refraction, said molecularly oriented highly birefringent polymer comprising recurring units of the formula

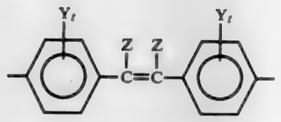


wherein R and R^1 are each hydrogen, alkyl, aryl, alkaryl or aralkyl, and A is a divalent radical selected from the group consisting of
(1) a radical



where U is a substituent other than hydrogen, each W is hydrogen or a substituent other than hydrogen, p is an integer from 1 to 3, each X is hydrogen or a substituent other than hydrogen and r is an integer from 1 to 4, said U, W_p and X_r substitution being sufficient to provide said radical with a non-coplanar molecular configuration; and

(2) a radical



where each of Y and Z is hydrogen or a substituent other than hydrogen and each t is an integer from 1 to 4, with the proviso that when each said Z is hydrogen, at least one said Y substituent is a substituent other than hydrogen positioned on the corresponding nucleus ortho with respect to the



moiety of said radical, said Z and Y_t substitution being sufficient to provide said radical with a non-coplanar molecular configuration.

4,521,589

LINEAR POLY(3-ALKYL-2,5-THIENYLENE) POLYMER

Takakazu Yamamoto, Yokohama; Akio Yamamoto, Tokyo, and Kenichi Sanechika, Yokohama, all of Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan

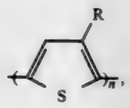
Continuation of Ser. No. 432,374, Sep. 30, 1982, abandoned. This application Jan. 4, 1984, Ser. No. 568,276

Claims priority, application Japan, Feb. 26, 1982, 57-29082

Int. Cl.³ C08G *75/00;* **C08F** *28/06*

U.S. Cl. 528—380 **18 Claims**

1. A linear poly(3-alkyl-2,5-thienylene) polymer consisting essentially of the repeating unit having the formula:



wherein R represents a lower alkyl group, and n is 20–100.

4,521,590

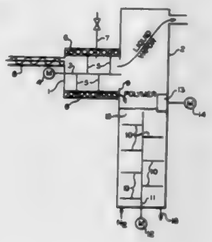
PARTICLE FORM EVAPORATION OF POLYMER-LIQUID MIXTURES

Richard E. Elliott, and William R. King, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 29, 1982, Ser. No. 427,220

Int. Cl.³ C08F *6/14, 6.06*

U.S. Cl. 528—502 **18 Claims**



1. A process comprising introducing a mixture into a mechanically agitated bed of hot polymer particles; wherein said mixture comprises a liquid and a polymer not substantially dissolved in said liquid; and wherein said mixture is a latex produced in an emulsion polymerization process.

4,521,591

OIL-SOLUBLE DISAZO DYES AND THEIR USE IN COLOR-PHOTOGRAPHIC RECORDING MATERIALS FOR THE SILVER DYE BLEACH PROCESS

Gérald Jan, and John Lenoir, both of Fribourg, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

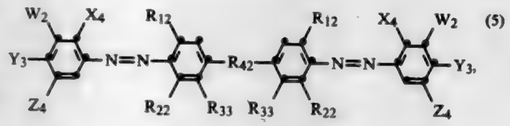
Filed Feb. 8, 1982, Ser. No. 346,785

Claims priority, application Switzerland, Feb. 20, 1981, 1145/81

Int. Cl.³ C09B *35/10, 35/215, 35/233, 35/28*

U.S. Cl. 534—821 **4 Claims**

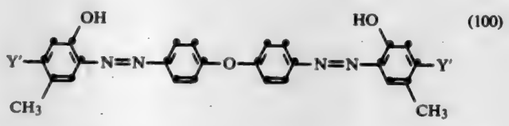
1. A compound of the formula



(5)

in which

X_4 is $-NHCOM_{12}$ or $-NHP(O)(OG_{12})_2$, in which M_{12} is alkyl having 1 to 16 carbon atoms, which is unsubstituted or substituted by carbalkoxy having 2 to 5 carbon atoms or by methoxy or ethoxy, and in which G_{12} is alkyl having 1 to 4 carbon atoms, or X_4 is hydroxyl, Z_4 is hydrogen, alkyl or alkoxy having 1 to 8 carbon atoms or $-CH_2CO_2R_{53}$, in which R_{53} is alkyl having 1 to 4 carbon atoms, $-C_2H_4O)_2-CH_3$ or $-C_2H_4O-CH_3$, or Z_4 is $-(OC_2H_4)n_2-OU_{12}$ or $-NL_{21}COM_{32}$, in which U_{12} is hydrogen or alkyl having 1 to 4 carbon atoms, n_2 is 1 or 2, L 21 is hydrogen or alkyl having 1 to 4 carbon atoms and M_{32} is alkyl having 1 to 8 carbon atoms, R_{33} is hydrogen or methyl or, if R_{42} is a direct chemical bond, the two radicals R_{33} are hydrogen or methyl or form together a link member of the formula $-CH_2-$ or $-CO-$, W_2 is hydrogen or methyl, Y_3 is N-alkylsubstituted or N,N-dialkylsubstituted amino, the alkyl moieties each containing 1 to 8 carbon atoms and being unsubstituted or substituted by methoxy, ethoxy, acetoxy, hydroxyl or cyano, or Y_3 is $-NHCOM_{22}$, in which M_{22} is alkyl having 1 to 4 carbon atoms, methoxy or $-O-(C_2H_4O)-n_2-CH_3$, in which n_2 is 1 or 2, R_{12} and R_{22} independently of one another are hydrogen, chlorine, bromine, cyano, nitro or methylsulfone, R_{42} is a direct chemical bond, or a link member of the formula $-O-$, $-CO-$, $-SO_2-$, $-(CH_2)m_2-$, in which m_2 is an integer from 1 to 6, or $-CH=CH-$, and at least one of the substituents W_2, Y_3 and Z_4 is other than hydrogen, and X_4 is different from hydroxyl, if Z_4 is hydrogen, and Z_4 is different from methyl, tert.-butyl and 1-hexyl, if R_{42} is the direct chemical bond, $-O-$, $-CH_2-$ or $-CH=CH-$, or the compounds of the formula



(100)

wherein Y' is $-OC_2H_4CH(CH_3)_2$, $OC_2H_4OC_4H_9$, $-(OC_2H_4)_2OCH_3$ or $-OC_3H_7$.

4,521,592

COMPOUNDS FOR THERAPEUTIC OR DIAGNOSTIC USE, A PROCESS AND INTERMEDIATES FOR THEIR PREPARATION

Jan E. Dahmén, Åkarp; Hans G. Magnusson, Staffanstorp, and Kaj B. Martensson, Lund, all of Sweden, assignors to Svenska Sockerfabriks AB, Malmö, Sweden

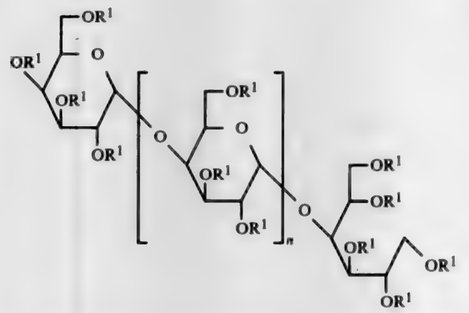
Filed Sep. 17, 1982, Ser. No. 419,314

Claims priority, application Sweden, Oct. 23, 1981, 8106279-6; Apr. 2, 1982, 8202144-5

Int. Cl.³ C07H *15/04*

U.S. Cl. 536—4.1 **9 Claims**

1. A compound having the formula (I):



(I)

wherein R^1 is hydrogen or acetyl; and n is an integer of up to 10 including zero.

4,521,593

PROCESS FOR OBTAINING LACTO-N-NORHEXAOSYL CERAMIDE

Michel Martin, Geneva, Switzerland, assignor to Laboratoire Lucchini S.A., Geneva, Switzerland

Filed Dec. 15, 1982, Ser. No. 450,183

Claims priority, application Switzerland, Dec. 17, 1981, 8056/81

Int. Cl.³ C07H *1/06*

U.S. Cl. 536—55.3 **3 Claims**

1. A process for obtaining lacto-N-norhexaosyl ceramide of formula:

Galβ1→4GlcNAcβ1→3Galβ1→4GlcNAcβ1→
3Galβ1→4Glc→Cer,

from raw gangliosides isolated from human placental tissue dissolved in an organic solvent wherein the gangliosides are precipitated therefrom by adding ethyl acetate, the impurities remaining in the organic solvent and separating the purified gangliosides, containing in approximately equal proportions sialyl esters of hematoside, paragloboside and lacto-N-norhexaosyl ceramide.

4,521,594

PROCESS FOR PRODUCING SODIUM CARBOXYMETHYLCELLULOSE

Tetuo Kanematu, Himeji, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 496,752, May 20, 1983, abandoned. This application Jun. 20, 1984, Ser. No. 622,391

Int. Cl.³ C08B *11/20*

U.S. Cl. 536—98 **7 Claims**

1. A method of treating a starting sodium carboxymethylcellulose to improve its dispersibility in water, said starting sodium carboxymethylcellulose having a ratio of equivalents of free carboxyl groups/sodium carboxylate of at least 0.01/100, and a 1% aqueous solution of said starting sodium carboxymethylcellulose having a pH in the range from 6.0 to 7.5 and a viscosity of at least 100 cPs, which comprises the steps of: heating said starting sodium carboxymethylcellulose at a temperature in the range of from 100° to 170° C., for a period of time effective to partially react the free carboxyl groups of said sodium carboxymethylcellulose with hydroxyl groups of said sodium carboxymethylcellulose to obtain a modified, cross-linked sodium carboxymethylcellulose which is water-soluble, does not form lumps when it is placed in water and exhibits improved dispersibility when it is placed in water, and wherein an aqueous solution of said modified sodium carboxymethylcellulose has a lower viscosity than an aqueous solution of said starting sodium carboxymethylcellulose.

4,521,595

PROCESS FOR THE PURIFICATION OF ESTERS

Herbert Stühler, and Engelbert Krempl, both of Burgkirchen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 16, 1982, Ser. No. 399,195

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1981, 3128696

Int. Cl.³ C07H *1/06*

U.S. Cl. 536—127 **8 Claims**

1. A process for the purification of a liquid ester of essentially an aliphatic carboxylic acid and a monohydric or polyhydric alcohol from the residual amounts of said alcohol which may be either dispersed or dissolved in the liquid ester, said process comprising:

(a) adding to the liquid ester, while stirring, 0.01 to 20% by weight, relative to the weight of the ester to be purified, of a water-soluble etherified polysaccharide in a solid form and keeping the liquid ester in contact with the etherified polysaccharide for about 5 to about 120 minutes at about 15° to about 90° C. to take up said residual amounts of alcohol, and

(b) separating the purified and still liquid ester from etherified polysaccharide in solid form,

said water-soluble etherified polysaccharide being selected from the group consisting of the alkyl, hydroxyalkyl, and carboxylalkyl ethers of cellulose, starch, and guar, wherein the alkyl group has 1 to 3, the hydroxyalkyl group has 2 to 4, and the carboxyalkyl group has 2 to 3 carbon atoms.

5. A process as claimed in claim 1, wherein the ester to be purified is the reaction production of essentially a monocarboxylic fatty acid having 4 to 22 carbon atoms and of an alcohol selected from the group consisting of glycerol, diglycerol to decaglycerol, sorbitol and sorbitan as well as their oxethylates having 1 to 20 ethylene oxide units per molecule, and the oxethylates of glucose, lactose and sucrose having 1 to 20 ethylene oxide units per molecule.

4,521,596

FLUORORESIN-CONTAINING COATING COMPOSITION

Tatsushiro Yoshimura, and Shigetake Tominaga, both of Osaka, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 24, 1982, Ser. No. 423,189

Claims priority, application Japan, Sep. 28, 1981, 56-154180

Int. Cl.³ C08K *3/10*

U.S. Cl. 524—406 **10 Claims**

1. An aqueous coating composition comprising a fluororesin, and (a) molybdic acid or its salt, (b) phosphoric acid or its salt, (c) ammonium hydroxide and (d) colloidal silica, the weight ratio of the fluororesin to the total amount of the ingredients (a), (b), (c) and (d) being 90:10 to 20:80 and the molar ratio of (a) molybdic acid or its salt as converted to MoO_3, (b) phosphoric acid or its salt as converted to orthophosphoric acid, (c) ammonium hydroxide and (d) colloidal silica being 1:1:1:1 to 1:20:15:20.

4,521,597

PROCESS FOR PRODUCING SULFONYLUREAS HAVING A HERBICIDAL ACTION

Haukur Kristinsson, Bottmingen, and Werner Töpfl, Dornach, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

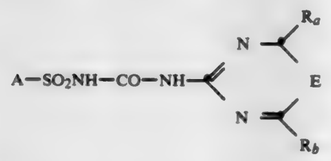
Filed Oct. 14, 1983, Ser. No. 542,312

Claims priority, application Switzerland, Oct. 25, 1982, 6202/82

Int. Cl.³ C07D *251/18, 251/46, 251/52, 239/69*

U.S. Cl. 544—3 **5 Claims**

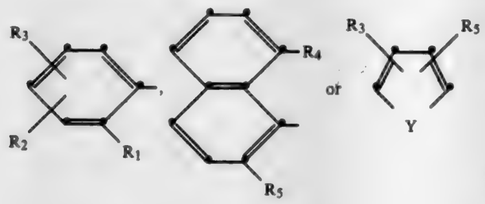
1. A process for producing sulfonylureas which have a herbicidal action and an action regulating plant growth, and which correspond to the formula I



(I)

wherein

A is a radical of the formula



Y is oxygen, sulfur or



R_1 is hydrogen, halogen, nitro, trifluoromethyl, C_1–C_5-alkyl, C_1–C_5-alkoxy, $—COR_7$, $—S(O)_m—C_1$–C_5-alkyl, $—SO_2R_{10}$, XR_{11} or $—OSO_2C_1$–C_5-alkyl,

R_2 is hydrogen, fluorine, chlorine, bromine, nitro, C_1–C_5-alkyl, C_1–C_5-alkoxy, trifluoromethyl, C_1–C_5-haloalkoxy or $—COR_7$,

R_3 is hydrogen, fluorine, chlorine, bromine, nitro, methoxy or trifluoromethyl,

R_4 is hydrogen, halogen, nitro, C_1–C_5-alkyl, methoxy, $—COR_7$ or $—SO_2NR_8R_9$,

R_5 is hydrogen, fluorine, chlorine, bromine, nitro, C_1–C_5-alkyl, C_1–C_5-alkoxy, trifluoromethyl, $—S(O)_mC_1$–C_5-alkyl, $—COR_7$ or $—SO_2NR_8R_9$,

R_6 is hydrogen, fluorine, methyl or methoxy,

R_7 is hydrogen, C_1–C_5-alkyl, C_1–C_5-haloalkyl, C_1–C_5-alkoxy, C_1–C_5-haloalkoxy, C_2–C_{10}-alkoxyalkoxy, C_3–C_5-alkenyloxy, C_3–C_5-alkynyloxy, phenoxy, benzyloxy, C_1–C_5-alkylthio or $—NR_8R_9$,

R_8 is hydrogen, C_1–C_5-alkyl, cyanoalkyl having a maximum of 5 carbon atoms, methoxy, ethoxy or C_3–C_5-alkenyl,

R_9 is hydrogen, C_1–C_5-alkyl or C_3–C_5-alkenyl, or

R_8 and R_9 together with the nitrogen atom binding them form a 5- or 6-membered, saturated heterocycle which can contain an oxygen or sulfur atom as ring member,

R_{10} is C_1–C_5-haloalkoxy or $—NR_8R_9$,

R_{11} is C_1–C_5-alkyl which is substituted by halogen, C_1–C_5-alkoxy, $—S(O)_mC_1$–C_5-alkyl, $—S(O)_mC_1$–C_5-haloalkyl or C_2–C_5-alkenyl which can be substituted by one of the above radicals,

X is oxygen or $—S(O)_m—$,

m is zero, one or two,

E is the methine group or nitrogen,

R_a is hydrogen, halogen, C_1–C_5-alkyl, C_1–C_5-haloalkyl, C_1–C_5-alkoxy, C_1–C_5-haloalkoxy, C_1–C_5-alkylthio, C_2–C_{10}-alkoxyalkyl or C_2–C_{10}-alkoxyalkoxy,

R_b is the same as R_a or is an amino group

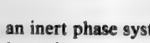


wherein

R_c is hydrogen, methyl or ethyl, and

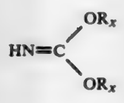
R_d is hydrogen, methyl, ethyl or methoxy,

and also the salts of these compounds, which process comprises condensing a sulfonyl chloride of the formula II



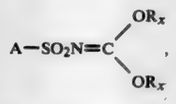
(II),

in an inert phase system or organic solvent, in the presence of at least the equimolar amount of a base as acid-binding agent and at a temperature of 0° to 100° C., with an imidocarbonic acid ester of the formula III



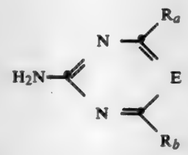
(III)

in which R_x is C_1–C_5-alkyl; isolating the formed sulfonylimidocarbonic acid diester of the formula IV



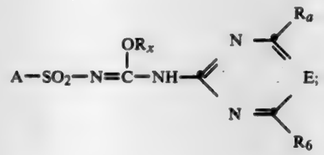
(IV)

reacting it then in an inert solvent in the presence of a strong base, at a temperature of between 0° and 100° C., with a 2-aminopyrimidine or 2-aminotriazine of the formula V



(V)

to give a sulfonylisourea of the formula VI



(VI)

and subsequently converting this in the presence of a hydrogen halide in an inert solvent, at a temperature of 0°–100° C., into a sulfonylurea of the formula I; and finally isolating this as such or as a salt.

4,521,598

3-AZIDOCEPHALOSPORINS

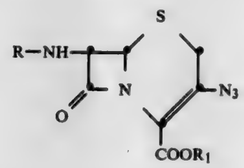
Douglas O. Spry, Mooresville, and Wayne A. Spitzer, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 28, 1983, Ser. No. 536,468

Int. Cl.³ C07D *501/14;* **A61K** *31/545*

U.S. Cl. 544—16 **12 Claims**

1. The compound of the formula



wherein

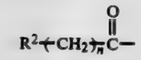
R is an acyl group of the formula



wherein

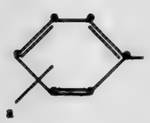
R^1 is C_1–C_4 alkyl, C_1–C_4 alkyl substituted by halogen or cyano;

or R is an aroyl or aralkanoyl group of the formula



wherein

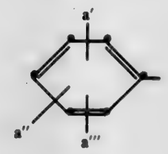
R^2 is phenyl or a mono substituted phenyl group of the formula



wherein

a is halogen, amino, hydroxy, C_1–C_4 alkyl, C_1–C_4 alkoxy, cyano, hydroxymethyl, aminomethyl, carboxamido, carboxymethyl, or C_1–C_4 alkoxycarbonylmethyl;

or R^2 is a di- or tri-substituted phenyl group of the formula

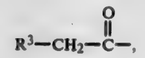


wherein

a', a'', and a''' are independently hydrogen, halogen, hydroxy, C_1–C_4 alkyl, or C_1–C_4 alkoxy; and

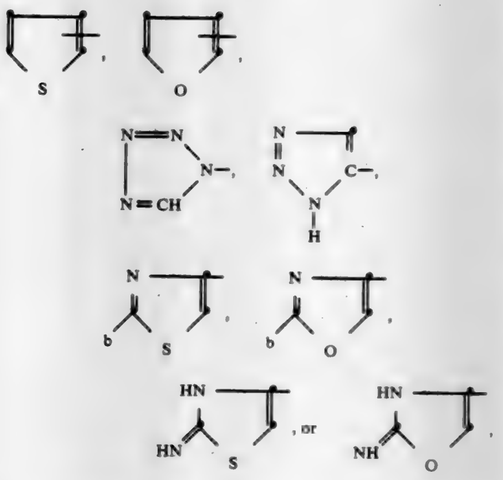
n is 0 or 1;

or R is a heteroarylalkanoyl group of the formula



wherein

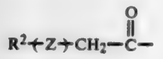
R^3 is



wherein

each b is amino, protected amino, C_1–C_3 alkyl or phenyl;

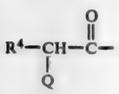
or R is an aryloxyacetyl or arylthioacetyl group of the formula



wherein

R^2 has the same meanings as defined above and Z is O or S;

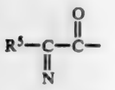
or R is an α-substituted aralkanoyl or heteroarylalkanoyl substituted group of the formula



wherein

R^4 is R^2, as defined above, and in addition is thienyl, furyl, or 1,4-cyclohexadienyl; Q is hydroxy, formyloxy, carboxy, the sulfo group $—SO_3H$, or amino;

or R is an oximino-substituted aralkanoyl or heteroarylalkanoyl group of the formula



OR^6

wherein

R^5 is R^2 and R^3 as each is defined above, and R^6 is hydrogen or C_1–C_3 alkyl;

R_1 is hydrogen or a carboxy protecting group;

and when R_1 is hydrogen the pharmaceutically acceptable non-toxic salts thereof.

4,521,599

PROCESS FOR THE PREPARATION OF 1,3-OXAZINE-4-ONES

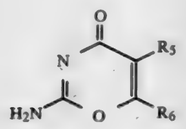
Harvey I. Skulnick; Herman W. Smith; Robert J. Smith, and Wendell Wierenga, all of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 512,497, Jul. 11, 1983, Pat. No. 4,495,349. This application Sep. 17, 1984, Ser. No. 651,494

Int. Cl.³ C07D *265/02*

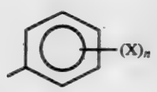
U.S. Cl. 544—97 **4 Claims**

1. A process for the preparation of a compound having the formula



III

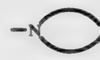
wherein R_5 is hydrogen or bromine and R_6 is a member selected from the group consisting of



III$_6$

wherein n is a number of from 0 to 3, inclusive; and

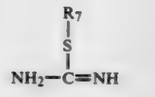
X is hydroxy, alkyl of from 1 to 8 carbon atoms, inclusive; alkoxy of from 1 to 5 carbon atoms, inclusive; alkylthio of from 1 to 5 carbon atoms, inclusive; halogen; $—NX_1X_2$; aminoalkyl of from 1 to 3 carbon atoms, inclusive; nitro; benzyl; aryl; furyl; pyridyl, or thiophene, and wherein X_1 and X_2 are the same or different and are alkyl of from 1 to 8 carbon atoms, inclusive; or taken together with -N are a saturated cycloalkylamino group



wherein n' is 3, 4, 5 or 6 or dialkyl substituted cycloalkylamino, wherein each alkyl is from 1 to 3 carbon atoms, inclusive;

which comprises a process selected from

step (a) contacting an acid salt of alkylthiopseudourea of formula



VI

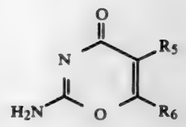
wherein R_7 is alkyl of from 1 to 3 carbon atoms, inclusive; with a compound having the formula



V

wherein R_6 is as defined above, and R_2 is alkyl of from 1 to 8 carbon atoms, inclusive;

in the presence of a strong base to prepare the compound

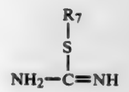


III

wherein R_5 is hydrogen, and R_6 is defined above;

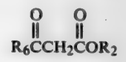
or

step (a) contacting an acid salt of alkylthiopseudourea of formula



VI

wherein R_7 is alkyl of from 1 to 3 carbon atoms, inclusive; with a compound having the formula

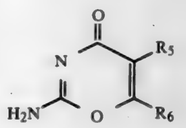


V

wherein R_6 is as defined above, and R_2 is alkyl of from 1 to 8 carbon atoms, inclusive;

in the presence of a strong base; and

step (b) contacting the product of step (a) with a brominating agent to prepare the compound



III

wherein R_5 is bromine, and R_6 is defined above.

4. A process according to claim 1 wherein the compound III prepared is

2-amino-6-phenyl-1,3-oxazine-4-one;

2-amino-5-bromo-6-phenyl-1,3oxazine-4-one; or

2-amino-6-m-fluorophenyl-1,3-oxazine-4-one.

4,521,600

TRIETHYLENEDIAMINE PREPARATION VIA PHOSPHATE CATALYSTS

James E. Wells, Ardmore, and Victoria Eskinazi, Boothwyn, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 24, 1982, Ser. No. 381,232

Int. Cl.³ C07D *487/08*

U.S. Cl. 544—352 **8 Claims**

1. In methods for the synthesis of organic compounds by condensation reactions in the presence of phosphate catalysts, the improvement for producing triethylenediamine which comprises effecting condensation of an amine selected from the group consisting of hydroxyethyl piperazine, ethanolamine and N-aminoethylpiperazine in the presence of a catalyst comprising a mixture of a pyrophosphate, a monohydrogen phosphate or dihydrogen phosphate of strontium and a pyrophosphate, a monohydrogen phosphate or dihydrogen phosphate of barium.

4,521,601

PRACTICAL TOTAL SYNTHESIS UNNATURAL ENANTIOMERS OF OPIUM-DERIVED MORPHINANS

Kenner C. Rice, Rockville, Md., assignor to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

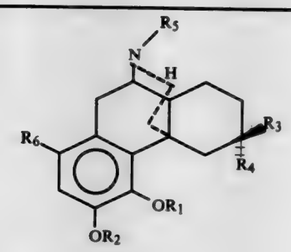
Continuation-in-part of Ser. No. 265,469, May 20, 1981, Pat. No. 4,410,700, which is a continuation-in-part of Ser. No. 165,690, Jul. 3, 1980, abandoned. This application Mar. 23, 1983, Ser. No. 477,970

The portion of the term of this patent subsequent to Jan. 11, 2000, has been disclaimed.

Int. Cl.³ C07D *489/02, 221/28, 217/20*

U.S. Cl. 546—45 **1 Claim**

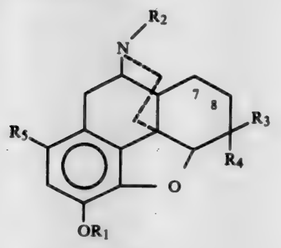
1. In the preparation of compounds 23 and 24



23

wherein

R_1 = H or lower alkoxy and
R_2 = H or lower alkoxy and
R_3 = H or OH or lower alkoxy and
R_4 = H or OH or lower alkoxy and
$R_3 + R_4$ = =O and
R_5 = H, methyl or lower alkyl or lower alkmonaryl and
R_6 = H, Br, or Cl



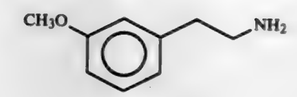
24

wherein

R_1 = H or lower alkoxy and
R_2 = H, methyl or lower alkyl or alkmonoaryl and
R_3 = H, OH or lower alkoxy and
R_4 = H, OH or lower alkoxy and
$R_3 + R_4$ = =O and
R_5 = H, Br or Cl and
An optional 7,8-double bond indicates coverage of the unnatural codeine series.

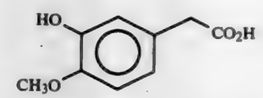
by a total synthesis method, the steps which comprise:

(a) heating a mixture of an amine compound of the formula 4



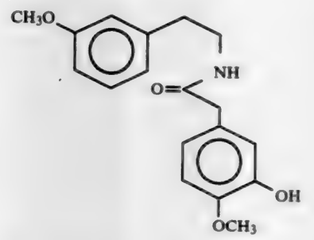
4

and pure acid compound, formula 5



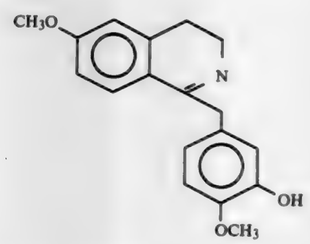
5

at 200° C. for about 2 hours under argon or other inert gas to obtain amide compound 6 of the following formula



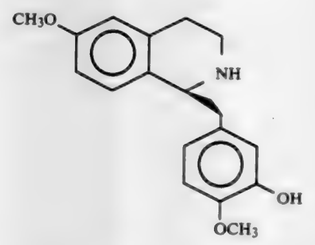
6

(b) contacting compound 6 with phosphorous oxychloride to produce the 1,2-dehydro derivative of compound 7 shown below:

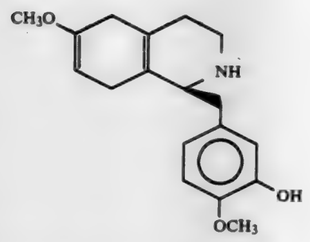


which need not be isolated;

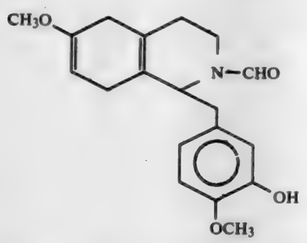
(c) neutralizing the 1,2-dehydro derivative of compound 7 with aqueous ammonia and reducing with sodium cyanoborohydride or sodium borohydride to give racemic 7 which is then resolved by optically active acids to the compound tetrahydroisoquinoline (+)-7 to (−)-7



(d) treating of (−)-7 with lithium or sodium in liquid ammonia as a reducing agent to give hexahydroisoquinoline, compound (−)-8

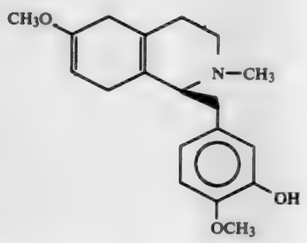


and formylating compound (−)-8 to give 10

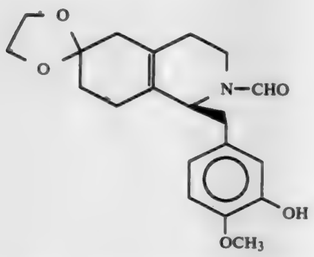


and introducing a protective group for the nitrogen in the subsequent steps of the reaction where the reagent for formylation of 8 to 10 is phenylformate chloral or ethyl formate

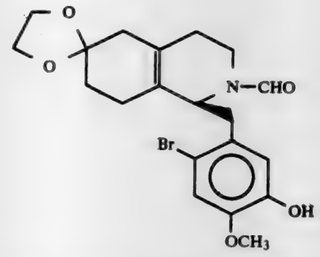
(e) alternately, N-methylating compound (−)-7 or (−)-8 by treatment with methyl halides or sulfonate to give the N-methyl derivative of 7 or compound 9



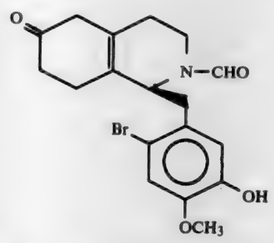
(f) contacting compound 10 with ethylene glycol in dry methane sulfonic acid in dry tetrahydrofuran to afford the ketal product, 11



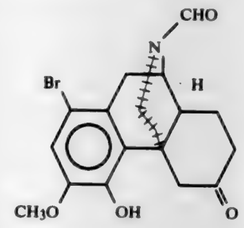
(g) brominating of ketal 11 with N-bromoacetamide (NBA) to give bromo ketal 12



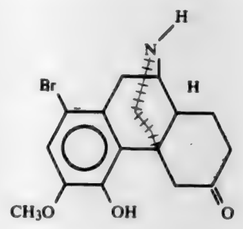
(h) deketalizing bromo ketal 12 with aqueous formic acid to yield beta, gamma unsaturated ketone 13



(i) treating beta, gamma unsaturated bromo ketone 13 with a super acid alone or with ammonium fluoride HF complex with trifluoromethanesulfonic acid to give 1-bromo-N-formylnordihydrothebainone (+)-17

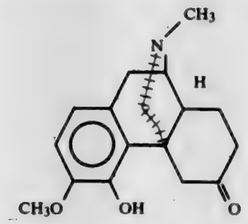


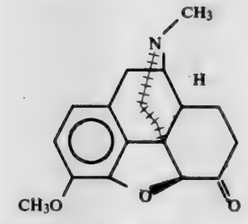
(j) acid hydrolyzing 1-bromo-N-formylnordihydrothebainone (+)-17 with aqueous acid and methanol to give the intermediate 1-bromonordihydrothebainone, compound (+)-18



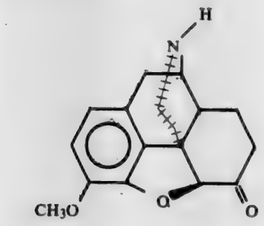
(k) converting intermediate (+)-18, 1-bromonordihydrothebainone, to dihydrothebainone (+)-19, a codeine precursor by hydrogenation in the presence of formaldehyde with palladium on carbon catalyst in 2-normal (2N) acetic acid containing sodium acetate; or

(l) treating intermediate (+)-18 with bromine in acetic acid or chloroform followed by treating with sodium hydroxide to close the oxide bridge and afford as an intermediate (+)-1-bromonordihydrocodeinone which need not be isolated but is hydrogenated in the presence of formaldehyde to give dihydrocodeinone (+)-22, a codeine precursor or





(m) alternately, converting compound (+)-18 into compound (+)-21, nordihydrocodeinone



by bromination in acetic acid followed by treating with an aqueous base to close the oxide bridge, and hydrogenating the unisolated intermediate with palladium on carbon catalyst in 2-norman (2N) acetic acid containing sodium acetate.

4,521,602

PREPARATION OF PYRIDINES OR PYRROLES FROM α,ω-DINITRILES

Walter Rebafka, Eppelheim; Gerd Heilen, Speyer; Klaus Halbritter, Mannheim, and Wolfgang Franzischka, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 347,162, Feb. 9, 1982, abandoned. This application Jun. 9, 1983, Ser. No. 502,522

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1981, 3104765

Int. Cl.[3] **C07D** *211/10, 213/08, 207/32*

U.S. Cl. 546—184 **5 Claims**

1. A process for the preparation of pyridine or pyrrole or their lower alkyl-substituted products which comprises: reacting unsubstituted glutarodinitrile, lower alkyl-substituted glutarodinitrile, unsubstituted succinodinitrile or lower alkyl-substituted succinodinitrile or mixtures thereof with a 2- to 100-fold excess of gaseous hydrogen, said reaction being conducted in the gas phase, at essentially atmospheric pressure, in the presence of a conventionally supported or unsupported platinum-metal hydrogenation catalyst, and at a temperature above 150° C. but below the decomposition temperatures of the dinitrile reactant and the resulting reaction product.

4,521,603

CONTINUOUS PROCESS FOR THE PRODUCTION OF POLYBROMOPYRIDINE COMPOUNDS

Max M. Boudakian, Pittsford, N.Y., assignor to Olin Corporation, Cheshire, Conn.

Filed Feb. 1, 1983, Ser. No. 462,845

Int. Cl.[3] **C07D** *213/61, 213/72, 213/80, 211/84*

U.S. Cl. 546—304 **9 Claims**

1. A continuous process for producing a polybromopyridine compound which comprises:

a. admixing a polychloropyridine compound with an anhydrous water soluble solvent selected from the group consisting of glacial acetic acid and lower aliphatic alcohols having from 1 to about 4 carbon atoms in a first reaction zone to form a solution of the polychloropyridine compound;

b. introducing hydrogen bromide gas into the solution of polychloropyridine compound while maintaining the solution at a temperature in the range of from about 70° to about 140° C. to produce a solution of the corresponding polybromopyridine compound;

c. cooling the solution to a temperature in the range of from about 5° to about 35° C. to precipitate the polybromopyridine compound from the anhydrous water soluble solvent;

d. separating the polybromopyridine compound from the anhydrous water soluble solvent in a separation zone; and

e. returning the anhydrous water soluble solvent to the first reaction zone.

4,521,604

HETEROCYCLIC DIHALOACETAMIDES, AND HERBICIDES WHICH CONTAIN ACETANILIDES AS HERBICIDAL ACTIVE INGREDIENTS AND THE DIHALOACETAMIDES AS ANTAGONISTIC AGENTS

Peter Plath, Ludwigshafen; Wolfgang Rohr, Wachenheim; Volker Schwendemann, Wiesenbach, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

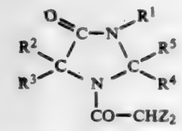
Filed May 10, 1982, Ser. No. 376,744

Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119077

Int. Cl.[3] **A01N** *9/02;* **C07D** *233/32, 241/08*

U.S. Cl. 548—301 **2 Claims**

1. Heterocyclic dihaloacetamides of the formula



(I)

where R^1 is hydrogen or alkyl of 1 to 4 carbon atoms, R^2 is hydrogen or methyl, R^3 is hydrogen or alkyl of 1 to 3 carbon atoms, R^4 is hydrogen, alkyl of 1 to 4 carbon atoms or cyclohexyl, R^5 is hydrogen or methyl, Z is chlorine or bromine and n is 0, or where R^2 together with R^3 is pentamethylene, or where R^4 together with R^5 is tetramethylene or pentamethylene.

4,521,605

CARBAZOLE COMPOUNDS AND PROCESS FOR PREPARING THE SAME

Hideo Okazaki, Tokyo; Hiroshi Imagome, Urawa; Susumu Suzuka, Yono, and Kiyoshi Sakai, Numazu, all of Japan, assignors to Hodogaya Chemical Co., Ltd. and Ricoh Company, Ltd., both of Tokyo, Japan

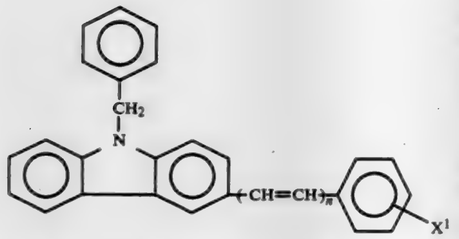
Filed Sep. 24, 1982, Ser. No. 423,420

Claims priority, application Japan, Oct. 3, 1981, 56-157879

Int. Cl.[3] **C07D** *209/86*

U.S. Cl. 548—440 **10 Claims**

1. A carbazole compound having the formula



wherein X^1 represents hydrogen, a C_{1-4} alkyl group, a C_{1-4} alkoxy group, a halogen atom, a nitro group, an amino group, a C_{1-4} alkylamino group or a benzylamino group; and n is an integer 1 or 2.

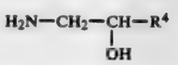
4,521,606

5-INDOLYL SUBSTITUTED AMINOETHANOLS

Andre A. Asselin, St. Laurent; Danilo A. Crosilla, Ile Bizard, and Leslie G. Humber, Dollard-des-Ormeaux, all of Canada, assignors to American Home Products Corp., New York, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,888
Int. Cl.³ C07G *209/08*
U.S. Cl. 548—503 **3 Claims**

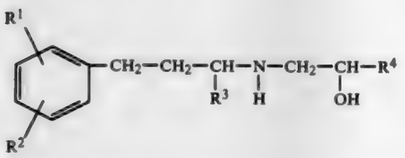
1. A compound of the formula



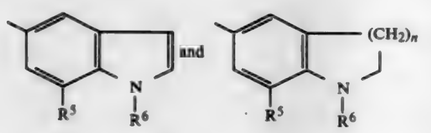
in which R^4 is a heterocycle selected from the group consisting of

wherein n is the integer 1 or 2; R^5 is cyano, aminocarbonyl, methylthio, methylsulfinyl, methylsulfonyl or aminosulfonyl; and R^6 is hydrogen or lower alkyl.

3. A process for preparing a compound of the formula



in which R^1 and R^2 each is hydrogen, halogen or lower alkoxy, or adjacent R^1 and R^2 are joined together to form a methylenedioxy chain; R^3 is lower alkyl containing one to three carbon atoms; and R^4 is a heterocycle selected from the group consisting of

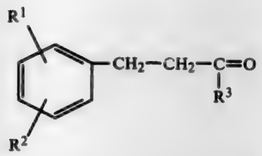


wherein n is the integer 1 or 2; R^5 is cyano, aminocarbonyl, methylthio, methylsulfinyl, methylsulfonyl or aminosulfonyl; and R^6 is hydrogen or lower alkyl; or a therapeutically acceptable acid addition salt thereof which comprises condensing a corresponding compound of formula X



(X)

in which R^4 is as defined herein with a corresponding compound of formula XI



(XI)

in which R^1, R^2 and R^3 are as defined herein, followed by the subsequent hydrogenation of the resulting enamine intermediate.

4,521,607

CHROMANYL GLYCINES

Yoshikazu Oka, Kawanishi; Kohei Nishikawa, Kyoto, and Akio Miyake, Hirakata, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 238,821, Feb. 27, 1981, abandoned. This application Apr. 2, 1982, Ser. No. 365,038
Int. Cl.³ C07D *307/82, 311/68*
U.S. Cl. 549—39 **15 Claims**

1. A compound of the formula

wherein

R^1 and R^2 independently represent hydrogen, halogen, C_{1-4}alkyl, hydroxyl, C_{1-4}alkyloxy or C_{7-9}arlkyloxy, or R^1 and R^2 jointly represent C_{1-4}alkylenedioxy;

R^3 and R^4 independently represent hydrogen or C_{1-4}alkyl;

R^5 is hydrogen, C_{1-4}alkyl or $—CH_2SR^7$ wherein R^7 is hydrogen, C_{2-4}alkanoyl or benzoyl;

R^6 is hydrogen, C_{2-4}alkanoyl or benzoyl, or R^6 and R^7 join to form a single bond;

X is —O— and

n is 2, 3 or 4,

or a pharmaceutically acceptable salt thereof.

4,521,608

SEPARATION OF 1,8-CINEOLE BY FORMING A COMPLEX WITH HYDROQUINONE

Peter W. D. Mitchell, Freehold, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Filed May 12, 1983, Ser. No. 494,108
Int. Cl.³ C07D *311/02*
U.S. Cl. 549—397 **7 Claims**

1. A method of separating 1,8-cineole from mixtures of said 1,8-cineole with 1,4-cineole and terpene hydrocarbons, which comprises; reacting the 1,8-cineole with solid anhydrous hydroquinone to form a crystalline complex which is insoluble in said mixture; separating the insoluble complex; and dissociating the separated complex to recover the 1,8-cineole.

4,521,609

CYCLOALKANE EPOXIDES PRODUCED BY AIR OXIDATION OF CYCLOALKENES OVER LEAD ZIRCONATE AS CATALYST

John R. Sanderson; Lewis W. Watts, Jr., both of Austin; Steven H. Vanderpool, New Braunfels, and Terry L. Renken, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 1, 1983, Ser. No. 510,143
Int. Cl.³ C07D *301/06*
U.S. Cl. 549—533 **2 Claims**

1. A method for the production of cycloalkane epoxides comprising

reacting a cycloalkane having 5 to 16 carbon atoms with oxygen in the presence of lead zirconate as catalyst at a concentration of from 0.0001 to 1 wt% where acetic acid is also present at a temperature in the range of about 50° to 150° C.

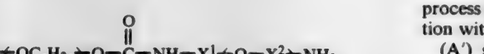
4,521,610

POLY(OXYALKYLENE) AMINOETHER CARBAMATES AS DEPOSIT CONTROL ADDITIVES

Frank Plavac, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 30, 1982, Ser. No. 429,695
Int. Cl.³ C07C *125/065*
U.S. Cl. 560—27 **8 Claims**

1. A compound of the formula



wherein n is an integer from 1 to 10; g is an integer from 2 to 5; j is an integer such that the molecular weight of the compound is in the range of about 500 to 10,000; R is a hydrocarbyl group of from about 1 to 30 carbon atoms; and X^1 and X^2 are the same or different substituents selected from the group consisting of (A) alkylene groups containing 1 to 6 carbon atoms; (B) arylene groups of from 6 to 12 carbon atoms; and (C) groups selected from (A) and (B) and substituted with groups selected from hydroxyl, alkoxyl, nitrile, amino, and alkyl and/or aryl groups substituted with substituents selected from hydroxyl, alkoxyl, nitrile, amino groups; and wherein X^2 can vary independently within the groups consisting of (A), (B) and (C) up to n times.

4,521,611

POLYESTER POLYOL BLEND FROM PHTHALIC ANHYDRIDE BOTTOMS

George Magnus, Arlington Heights, Ill., assignor to Stepan Chemical Company, Northfield, Ill.

Continuation-in-part of Ser. No. 381,298, May 24, 1982, abandoned. This application Jun. 27, 1983, Ser. No. 507,532
Int. Cl.³ C07C *69/80, 69/76*
U.S. Cl. 560—91 **3 Claims**

1. An ester polyol composition characterized by:

(A) containing on a 100 weight percent total composition basis—

(1) from about 2 to 35 weight percent of at least one polyol of the formula:

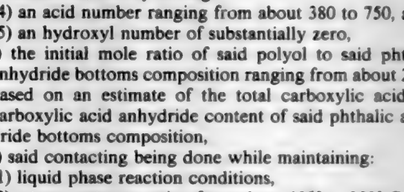


wherein

R′ is a divalent radical selected from the group consisting of:

(a) alkylene radicals each containing from 2 through 6 carbon atoms

(b) radicals of the formula:



R^2 is a radical selected from the group consisting of:

(c) radicals of the formula:

R^3 is an alkylene radical containing from 2 through 3 carbon atoms, and

n is an integer of from 1 through 3,

(2) from about 7.0 to 45 weight percent of acetone insolubles,

(3) from about 40 to 85 weight percent of esters produced by the reaction of phthalic anhydride with said polyol,

(B) having an hydroxyl number ranging from about 190 to 600,

(C) having an acid number ranging from about 0.01 to 7,

(D) having a saponification value ranging from about 295 to 425,

(E) having a viscosity ranging from about 10,000 to 150,000 centipoises at 25° C. measured with a Brookfield viscometer with a #6 spindle operating at about 10 rpm,

said ester polyol composition having been produced by the process of contacting a phthalic anhydride bottoms composition with at least one said polyol,

(A′) said phthalic anhydride bottoms composition being characterized by containing on a 100 weight percent total basis:

(1) from about 50 to 95 weight percent of phthalic acid anhydride,

(2) from about 1 to 20 weight percent of at least one compound selected from the group consisting of trimellitic acid and trimellitic acid anhydride, and

(3) from about 3 to 40 weight percent of unknown acetone insolubles, and by having

(4) an acid number ranging from about 380 to 750, and

(5) an hydroxyl number of substantially zero,

(B′) the initial mole ratio of said polyol to said phthalic anhydride bottoms composition ranging from about 2 to 4 based on an estimate of the total carboxylic acid and carboxylic acid anhydride content of said phthalic anhydride bottoms composition,

(C′) said contacting being done while maintaining:

(1) liquid phase reaction conditions,

(2) a temperature ranging from about 190° to 250° C., and

(D′) said contacting being continued until:

(1) the hydroxyl number of the resulting mixture reaches a value ranging from about 190 to 600, and

(2) the acid number of the resulting mixture reaches a value ranging from about 0.01 to 7.

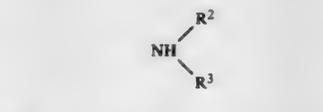
4,521,612

PROCESS FOR THE SEPARATION OF ESTERS

Rudolf Soós; Rezso Kolta; Sándor Zoltán, and Mária Tary, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Oct. 10, 1984, Ser. No. 659,320
Claims priority, application Hungary, Oct. 10, 1983, 3496/83
Int. Cl.³ C07C *69/743*
U.S. Cl. 560—124 **5 Claims**

1. Process for the selective separation of an ester of the formula II



II

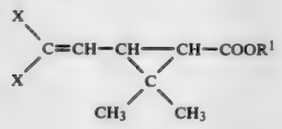
wherein

A stands for —CH=CH—COOR[1], —CH_2OCH_2COOR[1], —$CH_2OCH[CH(CH_3)_2]$—CH=CX_2 or —CH-$_2OCH[CH(CH_3)(CH_2X)]$—CH=CX_2

X is halogen,

R^1 represents an alkyl group of 1 to 5 carbon atoms,

from mixtures containing the cyclopropane carboxylic acid esters of the formula I



I

in addition to the said esters of the formula II which comprises reacting the said mixture with an amine of the formula III

III

wherein

R^2 stands for hydrogen, amino, oxyalkyl of 2 to 5 carbon atoms, or aminoalkyl of 2 to 5 carbon atoms or alkyl of 1 to 6 carbon atoms,

R^3 represents hydrogen oxyalkyl of 2 to 5 carbon atoms or aminoalkyl of 1 to 5 carbon atoms or

R^2 and R^3 together represent a —$CH_2CH_2OCH_2CH_2$— group, then removing the acid amides formed from the esters of the formula II by washing the mixture with water or removing the esters of the formula I by distillation.

4,521,613

4(HYDROCARBYLTHIO)ACETOACETIC ESTERS

Alan O. Pittet, Atlantic Highlands; Thomas F. Courtney, Jr., Oakhurst, and Ranya Muralidhara, Fair Haven, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,575

Int. Cl.[3] C07C *149/20*; A23L *1/226*

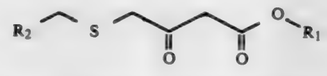
U.S. Cl. 560—152 **6 Claims**

1. The 4(hydrocarbylthio)acetoacetic ester having the structure:



wherein R_1 represents cis-3-hexenyl and R_2 is selected from the group consisting of hydrogen and ethyl.

4. The 4(hydrocarbylthio)acetoacetic ester having the structure:



wherein R_1 is selected from the group consisting of ethyl and isobutyl and R_2 is vinyl.

4,521,614

CARBONYLATION OF MONOOLEFINS

Jean Jenck, Villeurbanne, France, assignor to Rhone-Poulenc Chimie De Base, Courbevoie, France

Filed May 3, 1983, Ser. No. 491,040

Claims priority, application France, May 7, 1982, 82 08120

Int. Cl.[3] C07C *67/38*

U.S. Cl. 560—193 **21 Claims**

1. A process for the preparation of a linear ester, which comprises reacting an alcohol and carbon monoxide with a monoolefin in the presence of a catalytically effective amount of cobalt and a tertiary nitrogen base, said reaction being carried out in an aromatic hydrocarbon reaction medium bearing from 1 to 3 nuclear substituents, and said substituents comprising cyano or a radical of the formula R—Y— having up to 20 carbon atoms, wherein Y is a direct valence bond, an oxygen atom, a sulfur atom, a carbonyl group or a carbonyloxy group (—CO—O—), with R being bonded to the oxygen of the group —CO—O—, and R is alkyl, aralkyl or aryl, or a cyano substituted such R—Y— radical, or a radical R—Y— which includes one of the divalent bridges —O—, —CO— or —CO—O— along its skeletal carbon chain, with the proviso that at least one of said substituents is either cyano or a radical R—Y— wherein Y is other than a direct valence bond.

4,521,615

PREPARATION OF CARBOXYLIC ACID-CONTAINING MONOETHER AND POLYETHER POLYOL ADDITION PRODUCTS

Richard L. Frentzel, Guilford, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Mar. 16, 1983, Ser. No. 475,785

Int. Cl.[3] C07C *67/08, 69/60*

U.S. Cl. 560—198 **6 Claims**

1. A process for making carboxylic acid-containing monoether and polyether polyol addition products comprising the step of:

(a) reacting at least one polyhydroxy-containing monoether or polyether compound with an ethylenically unsaturated dicarboxylic acid selected from the group consisting of maleic acid, fumaric acid, and mixtures thereof in the presence of a peroxy-type free-radical initiator, said weight ratio of said polyhydroxy-containing monoether or polyether compound to said acid being from about 99:1 to about 70:30.

4,521,616

METHOD FOR THE PREPARATION OF FLUOROANTHRANILIC ACIDS

Michael J. Fifolt, Grand Island, N.Y., and Arthur M. Foster, Birmingham, Mich., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,574

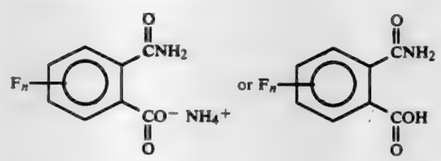
The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.

Int. Cl.[3] C07C *101/42*

U.S. Cl. 562—456 **23 Claims**

1. A process for the preparation of fluoroanthranilic acids comprises

reacting ammonium fluorophthalamate or a fluorophthalamic acid of the formula



where n is 1 or 2 with an alkali metal or alkali earth metal hypochlorite to form a fluoroanthranilic acid.

4,521,617

PROCESS FOR PREPARING PURE ALKYL 1-HYDROXY-2-NAPHTHOATES

Theodor Papenfuhs, Frankfurt am Main, and Heinrich Volk, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

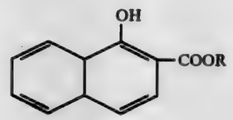
Filed Mar. 1, 1984, Ser. No. 585,189

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1983, 3307637

Int. Cl.[3] C07C *51/43*

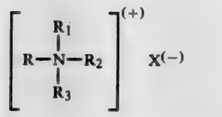
U.S. Cl. 562—467 **1 Claim**

1. A process for preparing pure alkyl 1-hydroxy-2-naphthoates of the formula (I)



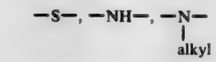
(I)

in which R denotes straight-chain or branched alkyl of 1 to 5 carbon atoms, which comprises adjusting, with mineral acid, to pH 5.5–6.5 an aqueous solution of monoalkali and/or dialkali metal salts of 1-hydroxy-2-naphthoic acid obtained by carboxylating an alkali metal 1-naphtholate by the Kolbe-Schmitt method, followed by treatment with water, or by dissolving, in aqueous alkali metal hydroxide solution, 1-hydroxy-2-naphthoic acid prepared in this way but isolated, then adding a surface-active cationic compound (1) of the general formula (II)

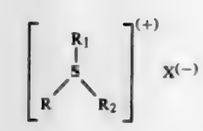


(II)

in which R, R_1, R_2 and R_3 each denote identical or different, straight-chain or branched aliphatic radicals of 1 to 30 carbon atoms which are saturated or contain 1, 2 or 3 carbon-carbon double bonds and which can contain 1 to 3 hetero atoms or groupings from the series consisting of —O—,

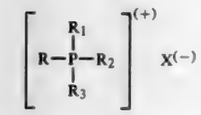


and quaternized nitrogen atoms, and/or carboxamide groups, and which, furthermore, can contain in terminal positions, ionic substituents, or hydroaromatic carbocyclic or cycloaliphatic radicals which each have 4 to 8 ring carbon atoms and can bear aliphatic side chains of 1 to 12 carbon atoms or halogen atoms, or aralkyl radicals where the alkyl radical contains 1 to 30 carbon atoms and the aryl radical is a phenyl or naphthyl radical which can be substituted in the aromatic nucleus by hydroxyl groups, lower alkyl groups, lower alkoxy groups and/or halogen atoms, or aryl radicals which can be substituted on the aromatic nucleus by hydroxyl, lower alkoxy, lower alkyl, carboxamide or sulfonamide groups or halogen atoms, the total number of the carbon atoms of R, R_1, R_2 and R_3 being at least 8 and two or three of the aliphatic radicals R, R_1, R_2 and R_3 on the quaternary nitrogen atom being capable of forming together with the nitrogen atom a heterocyclic ring which may contain double bonds and onto which a benzene nucleus can be fused and in which $X^{(-)}$ represents one equivalent of an inorganic or organic acid, or (2) of the general formula (III)



(III)

in which R, R_1, R_2 and $X^{(-)}$ have the meanings mentioned in the definition of formula (II), but where the total number of carbon atoms of R, R_1 and R_2 is at least 6 and two of the aliphatic radicals R, R_1 and R_2 together with the sulfur atom can form a heterocyclic ring which may contain double bonds, or (3) of the general formula (IV)



(IV)

in which R, R_1, R_2, R_3 and $X^{(-)}$ have the meanings given in the definition of formula (II), where the total number of carbon atoms of R, R_1, R_2 and R_3 is at least 8 and two or three of the aliphatic radicals R, R_1, R_2 and R_3 can form together with the phosphorus atom a heterocyclic ring which may contain double bonds, in each case in an amount of 0.5 to 5% by weight relative to the amount of 1-hydroxy-2-naphthoic acid present in the solution, separating or filtering off the solid or liquid precipitates quantitatively formed from the resins present at temperatures of 50° C. to 100° C. if desired after addition of adsorbents and/or filtering aids and esterifying with dialkyl sulfate the pure monoalkali metal salt of 1-hydroxy-2-naphthoic acid present in aqueous solution at pH 5.5–6.5 and temperatures between 30° and 80° C.

4,521,618

PROCESS FOR PREPARING ACRYLIC OR METHACRYLIC ACID

Dietrich Arntz; Günter Prescher, both of Hanau; Werner Burkhardt, Brachttal; Johannes Heilos, Seligenstadt, and Reinhard Manner, Maintal, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 390,446, Jun. 21, 1982,. This application Oct. 18, 1983, Ser. No. 542,964

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 3125062

Int. Cl.[3] C07C *51/32*

U.S. Cl. 562—535 **1 Claim**

1. In a process for preparing acrylic acid or methacrylic acid by oxidizing acrolein or methacrolein, the improvement which comprises using as the catalyst an abrasion-resistant coated catalyst formed of an inert support which has a rough surface and a particle size of 0.5 to 6 mm and a coating of active catalyst material enclosing this support and anchored in it,

said catalyst having been made by a process comprising agitating a bed of the support and spraying thereon a suspension of the starting material for the coating while partially removing the suspending medium by a gas stream at a temperature of 20–250° C., essentially constant residual moisture of the coating being maintained, drying and heat-treating for 0.05 to 5 hours at 320°–450° C., wherein a mixing motion is imparted to the support bed by mechanical action and the support bed is simultaneously loosened by blowing in from below a fluidizing, mixing-intensifying gas stream; providing a suspension of a precursor of the catalytically active material which is an oxidic powder of the composition $Sb_{1\text{-}60}Mo_{12}V_{0.5\text{-}25}W_{0.1\text{-}12}Mo_{0\text{-}12}O_x$ in which M denotes at least one of the elements lead, silver, copper, tin, titanium or bismuth, which suspension contains a binder, is passed countercurrent to the gas in this bed at a rate which increases with increasing

thickness of the coating, the amounts of suspending medium drawn off and sprayed being maintained in a substantially constant ratio which is determined by the particular combination of support and precursor used, the thermal expansion coefficients of support and of dried pulverulent precursor being so chosen that they differ by at most 15%, and wherein after the spraying-on has been completed the coating is densified by continuing the increased mixing motion, the mechanical mixing motion is then stopped, the material is dried in a continuing gas stream and finally heat-treated.

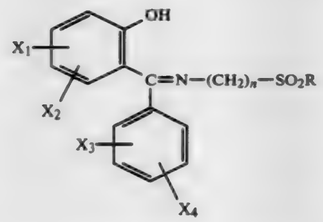
4,521,619

THERAPEUTICALLY USEFUL SULPHUR-CONTAINING BENZYLIDENE DERIVATIVES

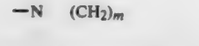
Jean-Pierre Kaplan, Bourg la Reine, France, assignor to Synthelabo, Paris, France

Filed Nov. 17, 1983, Ser. No. 552,901
Claims priority, application France, Nov. 29, 1982, 82 19982
Int. Cl.³ C07C *143/80, 143/64;* A61K *31/40;* C07D *211/54*
U.S. Cl. 514—315 **7 Claims**

1. A benzylidene derivative of the formula:



wherein n represents an integer from 1 through 4, R represents an amino radical, a monoalkylamino group containing 1 through 4 carbon atoms in the alkyl radical, a dialkylamino group containing 1 through 4 carbon atoms in each alkyl radical, or when n represents 2, 3 or 4 a group



in which m represents 4 or 5, or a group —OM in which M represents an alkali metal or alkaline earth metal, and X_1, X_2, X_3 and X_4 each represent, independently of one another, a hydrogen atom, a halogen atom, or an alkyl radical of 1 through 6 carbon atoms.

4,521,620

ACRYLAMIDE SYNTHESIS FROM AN OIL-IN-WATER EMULSION CONTAINING ACRYLONITRILE

Kenneth G. Phillips, River Forest, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Continuation of Ser. No. 213,279, Dec. 5, 1980, abandoned, which is a continuation of Ser. No. 97,287, Nov. 26, 1979, abandoned. This application Dec. 9, 1981, Ser. No. 329,010
Int. Cl.³ C07C *102/08*
U.S. Cl. 564—128 **6 Claims**

1. A method of producing acrylamide from acrylonitrile in the presence of a metallic conversion catalyst which comprises contacting an oil-in-water emulsion of acrylonitrile, said water phase being the continuous phase and containing up to 7% acrylonitrile and said oil phase being the dispersed phase and containing the remaining acrylonitrile to be converted to acrylamide, with a metallic conversion catalyst, whereby a substantial portion of the acrylonitrile is converted to acrylamide which remains in the aqueous phase of the oil-in-water emulsion, and then an additional low HLB emulsifier is added to invert the oil-in-water emulsion to a water-in-oil emulsion containing acrylamide.

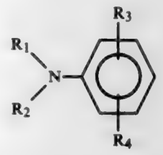
4,521,621

NOVEL SQUARAINE SYSTEMS

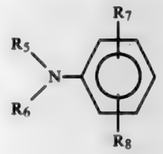
John F. Yanus, Webster, and William W. Limburg, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 5, 1983, Ser. No. 557,795
Int. Cl.³ C07C *85/00, 85/02, 85/06*
U.S. Cl. 564—307 **7 Claims**

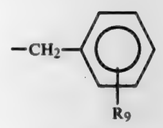
1. A process for synthesizing an unsymmetrical squaraine composition comprising forming a mixture comprising squaric acid, a primary alcohol having a boiling point between about 150° C. and about 190° C., a first tertiary amine having the formula:



and a second tertiary amine having the formula:



wherein R_1, R_2, R_5 and R_6 are independently selected from the group consisting of alkyl radicals having from 1 to 4 carbon atoms, phenyl radicals, and radicals having the formula:



and R_3, R_4, R_7 and R_8 are independently selected from the group consisting of H, CH_3, CH_2CH_3, CF_3, F, Cl, Br, and COOH wherein at least one of R_3 and R_4 are different than R_7 and R_8 if R_7 and R_8 are located on the same relative position on the aromatic ring as R_3 and R_4 and wherein R_9 is selected from the group consisting of H, alkyl radicals having from 1 to 4 carbon atoms, F, Cl, Br, COOH, CN and CF_3, and heating said mixture in vacuo below the boiling points of said primary alcohols, said first tertiary amine and said second tertiary amine to form said unsymmetrical squaraine composition.

4,521,622

PROCESS FOR PRODUCING AROMATIC AMINE

Naoki Andoh, and Shuetsu Fujiwara, both of Yokohama, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1984, Ser. No. 576,956
Claims priority, application Japan, Feb. 15, 1983, 58-22052; Aug. 24, 1983, 58-154418; Oct. 31, 1983, 58-202771
Int. Cl.³ C07C *85/04*
U.S. Cl. 564—406 **14 Claims**

1. A process for producing an aromatic amine from an aromatic halide and ammonia, characterized by comprising the following steps (1), (2) and (3):

step (1): reacting the aromatic halide with ammonia in the presence of water using a catalyst comprising a copper compound as the main constituent,

step (2): extracting the aromatic amine from the reaction mixture obtained in step (1) without depositing and separating the copper component contained in the reaction mixture, and

step (b 3): depositing copper compounds by addition of an alkali metal hydroxide and/or an alkaline earth metal hydroxide to the raffinate aqueous solution which is obtained in step (2), and separating the same.

4,521,623

2,2-BIS[(2-HALO-4-AMINOPHENOXY)PHENYL]-HEXAFLUOROPROPANE

Robert J. Jones, Hermosa Beach, and Glenn E. C. Chang, Redondo Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 483,024, Apr. 7, 1983,. This application Feb. 17, 1984, Ser. No. 581,391
Int. Cl.³ C07C *87/48*
U.S. Cl. 564—430 **2 Claims**

1. 2,2-bis[(2-halo-4-aminophenoxy)phenyl]hexafluoropropane.

4,521,624

PROCESS FOR MAKING CYCLIC AMINES

Philip F. Jackisch, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 16, 1984, Ser. No. 601,032
Int. Cl.³ C07C *85/00, 85/08*
U.S. Cl. 564—446 **17 Claims**

1. A process for the reductive amination of a saturated cyclic ketone which comprises reacting said saturated ketone with an amine in the presence of hydrogen and a hydrogenation catalyst whereby said saturated cyclic ketone is converted to the corresponding cyclic amine.

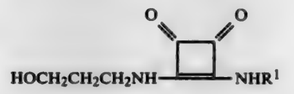
4,521,625

DIOXOCYCLOBUTENE COMPOUNDS

Thomas H. Brown, Tewin, and Rodney C. Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Sep. 26, 1983, Ser. No. 535,468
Claims priority, application United Kingdom, Oct. 2, 1982, 8228207; Nov. 13, 1982, 8232468
Int. Cl.³ C07C *87/45*
U.S. Cl. 564—461 **4 Claims**

1. A compound of the formula (I):



(I)

wherein R^1 is hydrogen or a C_{1-6}alkyl group.

4,521,626

PREPARATIONS OF ALKANOLAMINES

Larry D. Kershner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 384,813, Jun. 3, 1982, Pat. No. 4,465,837. This application Apr. 19, 1984, Ser. No. 602,041
Int. Cl.³ C07C *85/20*
U.S. Cl. 564—487 **9 Claims**

1. A process for preparing monoisopropanolamine, diisopropanolamine or a mixture thereof comprising:

(a) contacting urea and propylene carbonate in the presence of an initiator at a temperature of from about 120° C. to about 200° C. to thereby prepare 5-methyl-2-oxazolidinone, 5-methyl-3-(2-hydroxypropyl)-2-oxazolidinone or mixtures thereof, and

(b) hydrolyzing the 5-methyl-2-oxazolidinone, 5-methyl-3-(2-hydroxypropyl)-2-oxazolidinone or mixture thereof.

4,521,627

METHOD OF PREPARING ALKALI METAL SALTS OF ORGANIC DIAMINES

Peter W. D. Mitchell, Freehold, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Filed Feb. 6, 1984, Ser. No. 577,514
Int. Cl.³ C07C *87/14*
U.S. Cl. 564—511 **5 Claims**

1. A method of preparing alkali metal salts of organic diamines, which comprises; reacting said metal with a molar excess of said diamine in the presence of a catalytic proportion of a transition metal compound at a temperature of from about 20° C. to reflux temperature for the reaction mixture.

4,521,628

RECOVERY OF ARYLBORANES

John J. Ostermaier, Orange, Tex., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Jul. 11, 1983, Ser. No. 512,686
Int. Cl.³ C07F *5/02*
U.S. Cl. 568—1 **6 Claims**

1. A process for the recovery of arylboranes from their adducts which adducts are dissolved in a basic aqueous solution comprising neutralizing the adduct in at least two stages wherein up to about 90% of the adduct present in the solution is neutralized in the first stage to an initial pH and at least a portion of the remainder of the unneutralized adduct present in the solution is neutralized in the second stage to a final pH which is lower than the initial pH.

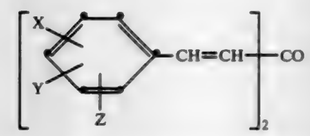
4,521,629

METHOD FOR THE PREPARATION OF 1,5-BIS-ARYL-1,4-PENTADIEN-3-ONES

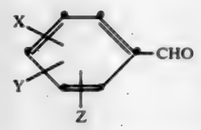
Nicholas A. Cortese, Jr., Trenton, N.J., and William H. Gastrock, Vicksburg, Miss., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 29, 1984, Ser. No. 626,168
Int. Cl.³ C07C *45/61*
U.S. Cl. 568—313 **9 Claims**

1. A method for the preparation of a compound of formula:

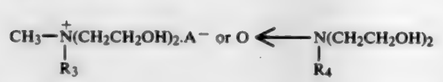


wherein X, Y, and Z each are independently haloalkyl, C_1–C_3 alkoxy, C_1–C_3 haloalkoxy, halogen, NO_2, CN, R_1R_2N—, or $R_1R_2NO_2S$—; R_1 and R_2 each are hydrogen or C_1–C_3: alkyl; comprising: admixing 2 molar equivalents of an aldehyde of formula:



wherein X, Y, and Z are as herein above defined; with an inert solvent C_5–C_8 aliphatic hydrocarbons, petroleum distillates, benzene, toluene, or xylene; water, and with an amount of from

3 mol % to 25 mol % of the above aldehyde a base of an alkali metal hydroxide, carbonate, or bicarbonate as an aqueous solution; adding to the above mixture of from 1 to 1.1 molar equivalents of acetone, and from 1% by weight to 10% by weight on the weight of the above aldehyde, a phase transfer agent selected from formula:



wherein R_3 is $-(CH_2)_{11}CH_3$, $-(CH_2)_8CH{=}CH-(CH_2)_7CH_3$, or $-(CH_2)_{17}CH_3$; R_4 is tallowyl or $-(CH_2)_{11}CH_3$; A is Cl, Br, or I; at a temperature range of from 20° C. to 55° C. over a period of time of from one to three hours; stirring the mixture at 20° C. to 55° C. for one to three hours; diluting the mixture with a C_1–C_3 alcohol, and adjusting the pH of the thus obtained mixture with a mineral acid in the range of from pH 5 to pH 1; and then heating the reaction mixture at reflux of from one to three hours, or until the reaction is essentially complete.

4,521,630

PROCESS FOR THE PREPARATION OF ALDEHYDES

Freddy Wattimena, and Hendricus J. Heijmen, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 9, 1983, Ser. No. 521,777

Claims priority, application United Kingdom, Aug. 9, 1982, 8222902

Int. Cl.³ C07C *45/41*

U.S. Cl. 568—435 **16 Claims**

1. Process for the preparation of aldehydes, by the reduction of carboxylic acids or esters, anhydrides or salts thereof, which comprises hydrogenating as feed at least one compound of the general formula R'COOR, wherein R represents a hydrogen atom, an alkyl or an acyl group, or a metal and R' represents an optionally substituted hydrocarbyl group having at most two alpha-hydrogen atoms, provided it has at most one beta-hydrogen atom, in case it has two alpha-hydrogen atoms, in a reaction zone at a temperature of 250° to 550° C. a weight hourly space velocity of 0.1 to 4.0 kg/kg/h and a molar ratio of hydrogen gas to feed compound of more than 0.1 in the presence of a catalyst comprising at least one rare earth metal and iron on a gamma-alumina carrier, wherein the total amount of iron and rare earth metals lies between 0.01 and 0.2 gat/100 g of carrier and the atomic ratio of iron to rare earth metal lies between 0.4 and 4.0; and separating an aldehyde-containing product from said reaction zone.

4,521,631

PROCESS FOR PRODUCING ACETALDEHYDE

Yasuyuki Nishimura; Mutsuo Yamada; Yoshijiro Arikawa; Taiji Kamiguchi; Takanori Kuwahara, and Hirotoshi Tanimoto, all of Kure, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,336

Claims priority, application Japan, Jun. 13, 1983, 58-104291; Mar. 5, 1984, 59-41800

Int. Cl.³ C07C *45/28, 45/33*

U.S. Cl. 568—478 **11 Claims**

1. In the process for producing acetaldehyde by oxygen-oxidizing ethylene in the presence of a metal complex catalyst,

the improvement which comprises using as said metal complex catalyst, a composite catalyst comprising a complex ($M_mX_n.L_l$) capable of forming an oxygen complex by coordination thereof with oxygen and a complex catalyst ($M'_{m'}X_{n'}.L'_{l'}$) capable of forming an ethylene complex by coordination thereof with ethylene, wherein M represents a transition metal belonging to at least one group selected from the group consisting of Group I, Groups IV~VII and iron group in Group VIII of the periodic table; X represents an anion; ligand L represents an organic phosphorous compound; M' represents a transition metal belonging to platinum group in Group VIII of the periodic table; ligand L' represents at least one compound selected from the group consisting of a nitrile, an organic fluorine compound and an organic phosphorous compound; m, m' and n, n' represent a number of atoms of said transition metals M, M' and said anions X, X', respectively; and l and l' represent a number of said ligands L and L', respectively.

4,521,632

PURIFICATION OF AQUEOUS GLYOXAL SOLUTIONS

Gerhard Wickenhaeuser, Birkenheide; Bernd Heida, Boehl-Iggelheim; Fritz Graf, Speyer, and Leopold Hupfer, Friedelsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 23, 1984, Ser. No. 572,948

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1983, 3303010

Int. Cl.³ C07C *45/78, 45/80*

U.S. Cl. 568—492 **14 Claims**

1. In a process for the purification of an aqueous glyoxal solution which contains acids as impurities by treatment with a solution of a tertiary amine in an organic solvent, the improvement which comprises:

preparing as the treating agent a solution which contains from 20 to 60% by weight of a tertiary amine and from 80 to 40% by weight of an alcohol which is not infinitely miscible with water; and

carrying out the treatment by mixing the two solutions at a temperature of from about room temperature up to 60° C. and during a residence time of less than 5 minutes.

4,521,633

BROMINATION PROCESS

Joseph J. Pedjac, Mt. Pleasant, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 19, 1983, Ser. No. 496,037

Int. Cl.³ C07C *41/22*

U.S. Cl. 568—639 **17 Claims**

1. A process for the preparation of perbrominated aromatic compounds comprising adding an aromatic compound to a brominating agent in methylene chloride in the presence of a catalyst at a temperature of about 15° C. or lower and then raising the temperature of the resulting mixture to an elevated temperature in order to achieve substantial perbromination of the aromatic compound.

4,521,634

ETHER CARBINOLS AND PROCESS FOR PREPARING SAME

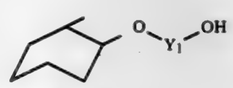
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 533,915, Sep. 19, 1983, which is a continuation-in-part of Ser. No. 507,292, Jun. 23, 1983, abandoned. This application Jan. 26, 1984, Ser. No. 574,150

Int. Cl.³ C07C *43/188, 41/06*

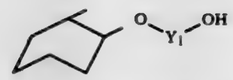
U.S. Cl. 568—665 **3 Claims**

1. The ether carbinol having the structure:



wherein Y_1 is C_4–C_5 alkenylene.

3. A process for producing a compound defined according to the genus:



wherein Y_1 is a moiety selected from the group consisting of:

C_4–C_5 alkylene;

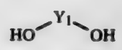
C_4–C_5 alkenylene; and

C_4–C_5 alkynylene

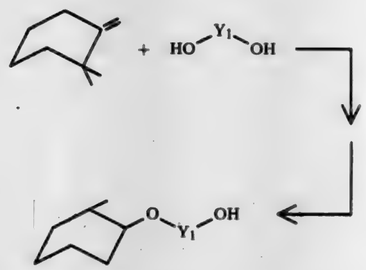
comprising the step of adding to camphene defined according to the structure:



a diol defined according to the structure:



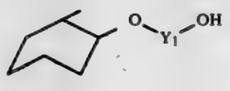
thereby effecting the reaction:



wherein Y_1 represents C_4–C_5 alkylene, C_4–C_5 alkenylene or C_4–C_5 alkynylene; the reaction taking place in the presence of a Lewis acid catalyst at a temperature of from about 60° C. up to about 100° C. at a pressure in the range of from about 1 atmosphere up to about 10 atmospheres; the time of reaction varying from about 2 hours up to about 20 hours; the mole ratio of diol having the structure:



to camphene varying from about 1:2 up to about 3:1 and then recovering the compound having the structure:



from the reaction mass.

4,521,635

BIS(ALPHA-ALKYLBENZYL)ETHER PRODUCTION

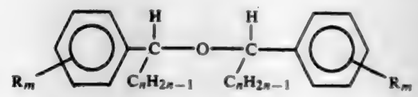
Frank Stevens, Baytown, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 16, 1983, Ser. No. 562,366

Int. Cl.³ C07C *41/09, 43/20*

U.S. Cl. 568—659 **18 Claims**

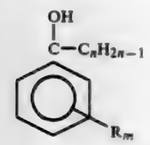
1. Process for the production of bis-(alpha-alkylbenzyl)ethers corresponding to the formula:



(I)

wherein, R is a member selected from the group consisting of lower alkyl, lower haloalkyl, chloro, bromo, sulfo and nitro radicals; m is an interger not greater than 3 and n is an integer of from 1 to 7, inclusive, comprising:

(a) heating, while removing water of dehydration as formed, an alpha alkylbenzyl alcohol of the formula:



(II)

wherein, R, m and n are as defined above, with agitation, at a temperature below about 200° C. in the presence of a mineral acid treated finely divided calcined alumina catalyst, present in catalytic amount, for a time sufficient to effect conversion of at least about 50% of said alcohol to the desired ether and thereby forming a reaction product mixture;

(b) introducing a basic compound capable of neutralizing acidity of said catalyst to the reaction product mixture of Step (a), above, in an amount sufficient to deactivate the catalyst;

(c) separating the deactivated catalyst from the reaction mixture; and

(d) recovering the desired bis(alpha-alkylbenzyl)ether from the reaction product mixture.

4,521,636

PREPARATION OF BIS(ALPHA-ALKYLBENZYL)ETHERS

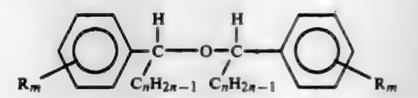
Wayne A. Kriel, Westchester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 16, 1983, Ser. No. 562,365

Int. Cl.³ C07C *41/09*

U.S. Cl. 568—659 **15 Claims**

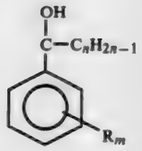
1. Process for the production of bis-(alpha-alkylbenzyl)ethers corresponding to the formula:



(I)

wherein, R is a member selected from the group consisting of lower alkyl, lower haloalkyl, chloro, bromo, sulfo and nitro radicals; m is an integer not greater than 3 and n is an integer of from 1 to 7, inclusive, comprising:

(a) heating, while removing water of dehydration as formed, an alpha alkylbenzyl alcohol of the formula:



(II)

wherein, R, m and n are as defined above, with agitation, at a temperature below about 200° C. in the presence of an aluminum sulfate treated finely-divided calcined alumina catalyst present in catalytic amount, for a time sufficient to effect conversion of at least about 50% of said alcohol to the desired ether and thereby forming a reaction product mixture;

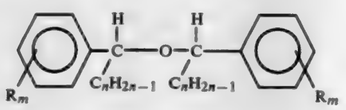
(b) introducing a basic compound to the reaction product mixture of Step (a), above, in an amount sufficient to deactivate the catalyst;

(c) separating the deactivated catalyst from the reaction mixture; and

(d) recovering the desired bis(alpha-alkylbenzyl)ether from the reaction product mixture.

4,521,637
PROCESS FOR THE PRODUCTION OF BIS(ALPHA-ALKYLBENZYL) ETHERS
Frank Stevens, Baytown, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Dec. 16, 1983, Ser. No. 562,364
Int. Cl.³ C07C *41/09*
U.S. Cl. 568—659 **18 Claims**

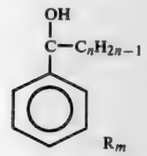
1. Process for the production of bis-(alpha-alkylbenzyl) ethers corresponding to the formula:



(I)

wherein, R is a member selected from the group consisting of lower alkyl, lower haloalkyl, chloro, bromo, sulfo and nitro radicals; m is an integer not greater than 3 and n is an integer of from 1 to 7, inclusive, comprising:

(a) heating, while removing water of dehydration as formed, an alpha alkylbenzyl alcohol of the formula:



(II)

wherein, R, m and n are as defined above, with agitation, at a temperature below about 200° C. in the presence of an aryl sulfonic acid treated finely divided calcined alumina catalyst, present in catalytic amount, for a time sufficient to effect conversion of at least about 50% of said alcohol to the desired ether and thereby forming a reaction product mixture;

(b) introducing a basic compound to the reaction product mixture of Step (a), above, in an amount sufficient to deactivate the catalyst;

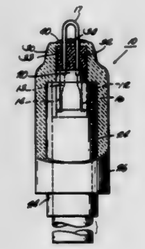
(c) separating the deactivated catalyst from the reaction mixture; and

(d) recovering the desired bis(alpha-alkylbenzyl) ether from the reaction product mixture.

4,521,638
PROCESS FOR PREPARATION OF TERTIARY OLEFINS
Koichi Kida; Tetsuo Aoyama, and Takako Uchiyama, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan
Filed Feb. 16, 1984, Ser. No. 580,633
Claims priority, application Japan, Feb. 26, 1983, 58-31373
Int. Cl.³ C07C *1/00, 1/20*
U.S. Cl. 585—640 **20 Claims**

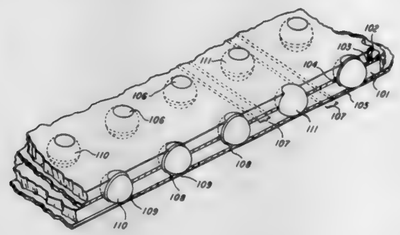
1. In a process for the preparation of tertiary olefins which comprises catalytically decomposing a tertiary ether to a tertiary olefin, the improvement wherein the catalytic decomposition of the tertiary olefin is carried out in the presence of a solid phosphoric acid catalyst which has been calcined at a temperature not lower than 500° C. in an inert gas, said decomposition being carried out in the presence of steam.

4,521,639
REPEATING THERMOCOUPLE
Richard A. Falk, 519 Westminster Dr., Waukesha, Wis. 53186
Filed Oct. 31, 1983, Ser. No. 546,967
Int. Cl.³ H01L *35/02*
U.S. Cl. 136—234 **2 Claims**



1. In a repeating use immersion thermocouple assembly for a molten metal bath including a support tube, a temperature sensing element having a U-shaped projecting tip with spaced legs and a rigid support means in said cavity for supporting said temperature sensing element and enabling manipulation of the element in a molten metal bath, the improvement comprising a refractory fiber sleeve having a cavity at one end thereof for receiving said U-shaped projecting tip, said U-tube extending through said cavity and a thermosetting sand packing filling said cavity and surrounding said U-shaped tube, and a refractory fiber gasket spanning said open end of said sleeve and refractory cement cap over said gasket and sealing the end of said fiber sleeve around the projecting tip and encasing said refractory fiber gasket.

4,521,640
LARGE AREA, LOW TEMPERATURE PROCESS, FAULT TOLERANT SOLAR ENERGY CONVERTER
Jules D. Levine, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 299,695, Sep. 8, 1981, Pat. No. 4,407,320. This application Jul. 21, 1983, Ser. No. 515,841
The portion of the term of this patent subsequent to Oct. 4, 2000, has been disclaimed.
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—250 **5 Claims**



1. A flexible radiant energy converter system comprising:

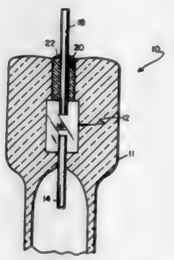
a plurality of substantially spherical cells of semiconductor material, a first portion of each cell being of semiconductor material of one conductivity type and a second portion of each cell being of semiconductor material of the other conductivity type;

a first flexible malleable metal foil sheet having a plurality of perforations formed therethrough;

each of said plurality of substantially spherical cells of semiconductor material being received within a respective perforation in said first flexible malleable metal foil sheet so as to be substantially centered therein with one of said first and second portions of said cell in electrical ohmic contact with said first flexible malleable metal foil sheet; and

a second flexible malleable metal foil sheet disposed in spaced substantially parallel relation to said first flexible malleable metal foil sheet and in electrical ohmic contact with the other of said first and second portions of each of said plurality of cells of semiconductor material.

4,521,641
SOLDER GLASS AND ELECTRICAL DEVICE EMPLOYING THE SAME
Richard G. Snell, Topsfield, and Fredrick A. Loughridge, Ipswich, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Jan. 4, 1984, Ser. No. 568,028
Int. Cl.³ H01J *5/00*; H05K *5/06*
U.S. Cl. 174—50.64 **4 Claims**

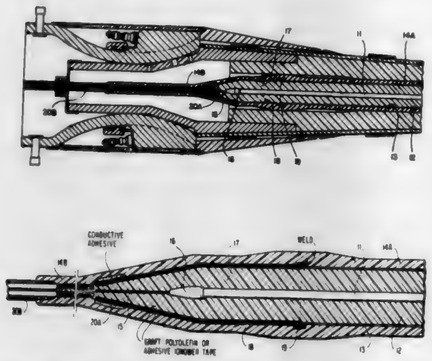


1. A seal for electrical devices comprising a body of substantially fused silica and at least one electrically conductive member sealed therein, said member comprising a proximal portion projecting within said body, an intermediate thin foil portion hermetically sealed within said body, and a distal portion projecting exteriorly of said body, and a capillary passage surrounding said distal portion and extending to said intermediate portion, said capillary passage being substantially filled with a solder glass that is opaque to visible radiation and is not deleterious to molybdenum, said solder glass forming, at elevated temperatures above about 350° C., a molten seal which prevents oxidation of said thin foil portion said solder glass comprising Sb_2O_3, B_2O_3 and V_2O_5.

4,521,642
SEALED CONNECTION CONNECTING AN UNDERSEA COAXIAL CABLE TO A REPEATER AND A METHOD OF MAKING SAME
Jean-Patrick Vives, Calais, France, assignor to Les Cables de Lyon, Lyons, France
Filed Jun. 3, 1981, Ser. No. 270,197
Claims priority, application France, Jun. 5, 1980, 80 12501
Int. Cl.³ H02G *15/14*
U.S. Cl. 174—70 S **4 Claims**

1. A sealed connection between an undersea coaxial line cable and a length of coaxial access cable connected to a repeater; the line cable comprising, in a radially outward direction, in order, an axial conductor, insulation, a return path conductor and an outer insulation sheath; the access cable comprising, in a radially outward direction, in order, an axial conductor, insulation, metal braiding forming a return path conductor, and an outer insulation sheath; and the connection comprising a conical conductive metal connection part for interconnecting the axial conductors, a surface moulded layer of insulating thermoplastic material, conductive connection means for interconnecting the return path conductors of the line cable and the access cable, and means for reconstituting the insulation sheathing between the line cable and the access cable, the improvement wherein said conductive connection

means for interconnecting the return path conductors comprises an aluminum flared tube fitted tightly over the surface-moulded insulation, with a layer of graft polyolefin or adhesive ionomer tape wound helically around the surface moulding and being sandwiched in between the moulding and the flared



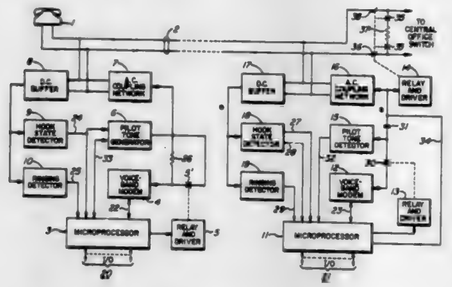
tube, the wider end of the flared tube having a flared rim receiving and being welded to the return path conductor of the line cable, and the narrower end of the flared tube being glued with conductive adhesive to the metal braiding of the access cable.

4,521,643

APPARATUS FOR TRANSMITTING INFORMATION VIA TELEPHONE LINES

Claude R. Dupuis, Kanata, and Lorne C. Hinz, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 18, 1983, Ser. No. 467,585
Claims priority, application Canada, Jan. 10, 1983, 419146
Int. Cl.³ G06B *26/00*; H04M *11/04, 11/06*
U.S. Cl. 179—2 DP **42 Claims**



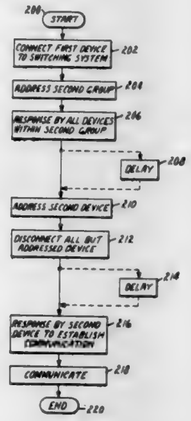
1. Apparatus comprising a telephone subscriber line connected at a first end to a telephone and at a second end to a central office, means for transmitting information via the line when the telephone is on-hook, means for applying a pilot tone to the line at the first end when the telephone is off-hook, means coupled to the line at the first end for detecting the presence of ringing signals on the line, means for selecting one of two frequencies of the pilot tone applied to the line when the telephone goes off-hook in dependence upon the detection of the presence of ringing signals, and means for monitoring the pilot tone at the second end of the line.

4,521,644

METHOD OF ESTABLISHING COMMUNICATION

Samuel Bernard, Jr., Vadnais Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 22, 1983, Ser. No. 525,301
Int. Cl.³ H04M *9/00*
U.S. Cl. 179—2 DP **9 Claims**



1. In a communication system having a plurality of groups and a plurality of devices within at least one of said plurality of groups, where said plurality of devices within said at least one of said plurality of groups are connected by a dedicated line, where communication between said plurality of groups is established by a randomly addressable switching system, where each of said plurality of groups has a unique address within said randomly addressable switching system, where each of said plurality of devices within each of said plurality of groups has a unique identification code within said dedicated line, a method of establishing communication between a first device in a first one of said plurality of groups with a second device which is a selected one of said plurality of devices in a second one of said plurality of groups, comprising:

connecting said first device to said randomly addressable switching system by way of said dedicated line within said first one of said plurality of groups;

group addressing said second one of said plurality of groups;

connecting and group responding to said first device by all of said plurality of devices within said second one of said plurality of groups;

device addressing said second device with its unique identification code;

disconnecting all of said plurality of devices within said second one of said plurality of groups except for said second device; and

device responding by said second device to said first device that communication may commence.

4,521,645

FIRE ALARM SYSTEM

Robert A. Carroll, 441 Neatherwood Crescent Dr., Altamonte Springs, Fla. 32701

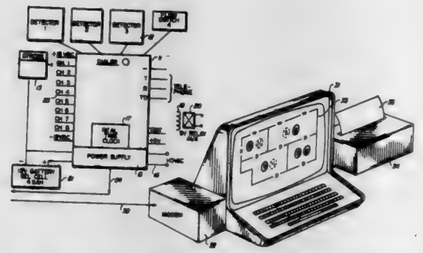
Filed Jun. 16, 1983, Ser. No. 505,371
Int. Cl.³ H04M *11/04*
U.S. Cl. 179—5 R **12 Claims**

1. An alarm system comprising in combination:

a plurality of automatic dialers positioned in a building and each being connected to a telephone line;

a plurality of detectors located in a building, each detector being connected to one of said plurality of automatic dialers for actuating said automatic dialer responsive to said detector being actuated and for generating detector information indicative of the location of said detector;

computer means having a central processing unit microprocessor and storage means therein operatively connected to each of said plurality of automatic dialers over telephone lines for receiving the detector information upon actuation of a detector and for storing and transmitting said detector information, said computer means storage means having additional stored information thereon including data indicating the floor plan of a portion of said building and the location of each detector on said building



floor plan, said computer means having a coupling to the outside of a building for coupling to a portable terminal for displaying the detector information and the additional information indicating the location of each detector on said building floor plan without having to enter the building; and

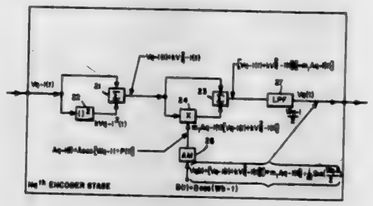
a remote terminal for receiving stored computer information over a phone line from said computer storage means and adapted to receive and store detector information, indicating the location of each detector on said building plan whereby a central alarm system can alert a central station and provide stored information on detector location.

4,521,646

METHODS AND APPARATUS FOR BANDWIDTH REDUCTION

Edward P. Callaghan, 2021 New Hyde Park Rd., New Hyde Park, N.Y. 11040

Continuation of Ser. No. 163,270, Jun. 26, 1980, abandoned, which is a continuation-in-part of Ser. No. 34,845, Apr. 30, 1979, abandoned. This application Dec. 2, 1981, Ser. No. 326,472
Int. Cl.³ G10L *1/00*
U.S. Cl. 375—122 **30 Claims**



1. A method of reducing the bandwidth of an intelligence-bearing signal comprising the steps of:

(a) earmarking said signal by adding thereto a nonlinear signal obtained from said intelligence-bearing signal;

(b) multiplying the earmarked signal resulting from step (a) above with an angle-modulated carrier having a radian carrier frequency numerically equal to the nominal bandwidth of said intelligence-bearing signal thereby to effectively reverse the signal spectrum of said intelligence-bearing signal over a predetermined frequency range;

(c) summing the multiplied signal resulting from step (b) above with the earmarked signal resulting from step (a) above; and then

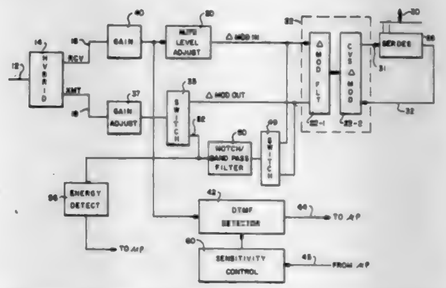
(d) filtering the summed signal resulting from step (c) above in a low-pass filter.

4,521,647

TONE DETECTION SYSTEM AND METHOD

Peter D. Olson, Saratoga, and Samuel R. Hawes, Jr., Palo Alto, both of Calif., assignors to Octel Communications, Inc., San Jose, Calif.

Filed Feb. 17, 1984, Ser. No. 581,283
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—84 VF **6 Claims**



1. In a telephone system, tone detection apparatus comprising

means for connecting an outgoing analog voice signal to a telephone line,

detect means connected to said telephone line for receiving an incoming analog signal to detect first control signals, and

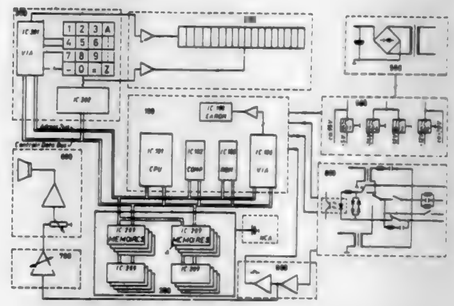
means responsive to said detected signals for filtering second control signals from said outgoing analog signal for a first predetermined period of time, such first predetermined period of time being such as not to effect any human perceptible incoming or outgoing signals.

4,521,648

AUTOMATIC DIALER FOR TELEPHONE NUMBERS

Paul Hegi, Bernex, Switzerland, assignor to Lupa Finances S.A., Luxembourg, Luxembourg

Division of Ser. No. 411,038, Aug. 24, 1982, Pat. No. 4,473,720. This application Jul. 6, 1984, Ser. No. 628,262
Claims priority, application Switzerland, Sep. 23, 1981, 6127/81
The portion of the term of this patent subsequent to Sep. 25, 2001, has been disclaimed.
Int. Cl.³ H04M *1/274*
U.S. Cl. 179—90 B **16 Claims**



1. In an apparatus for automatically output pulsing telephone numbers to a telephone network, said apparatus comprising a

control means, a memory means and a keyboard means, the improvement in which:

said memory means comprises a removable portion for storing telephone number identification information including local network identification for each telephone number;

said memory means comprises a fixed portion for storing local network identification information for said fixed portion;

said keyboard means is adapted to select telephone number identification information for each telephone number stored in said removable portion;

said control means responds to and generates necessary output pulses corresponding to telephone number identification information for each telephone number selected regardless of the coincidence or lack of coincidence of the local network identification information stored in the removable portion and the fixed portion of the memory means.

4,521,649

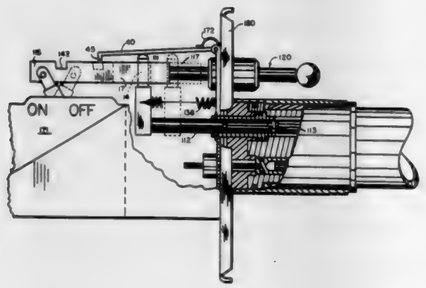
WATERTIGHT ELECTRICAL RECEPTACLE

Gunnar I. Nelson, 100 Lakeshore Dr., Apt. 1656, North Palm Beach, Fla. 33408

Filed Jul. 11, 1983, Ser. No. 501,142

Int. Cl.³ H01H *9/20*

U.S. Cl. 200—50 B **9 Claims**



1. In a waterproof device having means for opening and closing an electrical circuit and an electrical receptacle for receiving an electrical plug, the improvement which comprises:

a housing

plug receiving means, said plug receiving means being fixed to said housing,

a latching member;

electrical pin engaging means, said electrical pin engaging means having a main body region supported for movement within said plug receiving means between a first position and a second position, and a latching member engaging region extending substantially normal to said electrical pin engaging means main body region;

first spring biasing means for biasing said electrical pin engaging means for movement from said first position to said second position;

a circuit breaker;

circuit breaker actuating member, said circuit breaker having a first end which engages said circuit breaker actuating member and a second end which extends outside of said housing, and being mounted for movement from an actuating first position in which said circuit breaker actuating member causes said circuit breaker to be OFF, to a second position in which said circuit breaker actuating member causes said circuit breaker to be ON;

interconnecting means between said circuit breaker actuating member and said electrical pin engaging means, said interconnecting means causing said circuit breaker actuating member to move from said actuating first position to said actuating second position in response to movement of said electrical pin engaging means from said pin first position to said second pin position;

said latching member having a first end supported by said housing and a second end which engages said circuit breaker actuating member and precludes movement of said circuit breaker actuating member toward said second actuating position;

second spring biasing means associated with said latching member to bias said latching member for engagement with said circuit breaker actuating member;

said electrical pin engaging means being moveable in response to the insertion of an electrical pin into said electrical receptacle such that said electrical pin engaging means latching member engaging region causes said latching member to move against its spring bias out of engagement with said circuit breaker actuating member.

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MOUNTING APPARATUS FOR A CONTROL LEVER

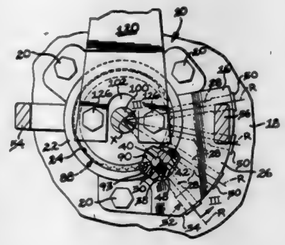
Charles W. Oswald, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/00489, § 371 Date Apr. 19, 1982, § 102(e) Date Apr. 19, 1982, PCT Pub. No. WO83/03577, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 19, 1982, Ser. No. 432,898

Int. Cl.³ B60K *20/00*

U.S. Cl. 200—61.88 **18 Claims**



1. A mounting apparatus (**10**) for a control lever (**12**), comprising:

a support member (**16**) defining a generally cylindrical aperture (**24**) along a central axis (X);

the control lever (**12**) defining a generally cylindrical portion (**90**) having a groove (**92**) disposed therearound and a plurality of indentations (**93**) on the cylindrical portion (**90**) spaced along said groove (**92**) in a common plane (A—A) normal to the central axis (X), the cylindrical portion (**90**), of the control lever (**12**) being rotatably received within the aperture (**24**) of the support member (**16**); and

means (**38**) for positioning the control lever (**12**) both axially and circumferentially within the support member (**16**) by selected engagement with the groove (**92**) and the indentations (**93**).

4,521,651

DIAPHRAGM APPARATUS HAVING A MAGNETICALLY IMPARTED HYSTERESIS CHARACTERISTIC

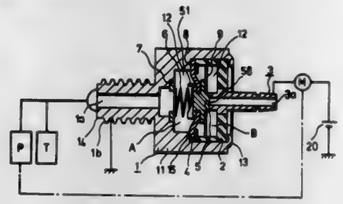
Akio Matsumoto, and Mitsuyoshi Yokota, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1983, Ser. No. 534,506

Claims priority, application Japan, Oct. 12, 1982, 57-155638[U]

Int. Cl.³ H01H *35/40*

U.S. Cl. 200—83 R **13 Claims**



8. Pressure sensitive electrical switching apparatus comprising:

a case having first and second ports, a diaphragm means mounted air tightly within the case for activating and deactivating a switch, said diaphragm means partitioning the case into two chambers respectively connected to said first and second ports, and spring biasing means for biasing said diaphragm means in a first direction,

said spring biasing means fixed to said case at one end thereof and to said diaphragm means at another end thereof,

said diaphragm means fixed at one area thereof to said case and having a movable area,

first and second magnetic means connected to said diaphragm means, said first magnetic means connected to said movable area of said diaphragm means and said second magnetic means connected to said fixed area of said diaphragm means for providing additional force opposing said spring biasing means, thereby establishing a hysteresis in a pressure-position characteristic of said pressure sensitive electrical switching apparatus for a predetermined range of positions of said diaphragm means.

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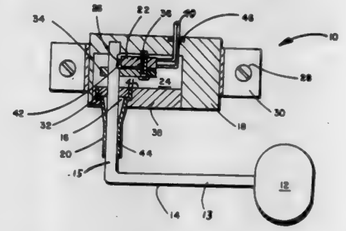
VISUALLY AND MECHANICALLY TESTABLE SUBMERSIBLE COMPOSITE

John E. Durand, 27441 Ganso, Mission Viejo, Calif. 92691

Filed Nov. 2, 1983, Ser. No. 547,938

Int. Cl.³ H01H *35/18*

U.S. Cl. 200—84 B **3 Claims**



1. A visually and mechanically testable submersible composite, comprising:

a switch casing having an interior surface defining a gas filled switch cavity and a cap orifice opening into the switch cavity;

a switch mechanically coupled to a surface defining the switch cavity and having electrical leads potted in a leak tight potting through the surface defining the switch cavity to the outside of the switch casing;

a float;

a float coupling means coupling the float to the switch via the cap orifice to mechanically actuate and control the switch;

a cap having an interior surface disposed around a gas permeable coupling bearing, the cap having an exterior surface substantilly identical to the interior surface of the cap orifice whereby the cap may be inserted into and substantially fill the cap orifice in a substantially gas tight coupling, thereby increasing pressure on the gas in the switch cavity when the cap is inserted; and

a visual and mechanical test means having an interior surface coupled in a leak tight coupling around that portion of the float coupling means which is near but outside of the cap and having an exterior surface coupled in a leak tight coupling around the interior surface of the cap which is disposed around the gas permeable coupling bearing which is disposed around that portion of the float coupling means within the cap orifice.

4,521,653

CIRCUIT BREAKER WITH ARC LIGHT ABSORBER

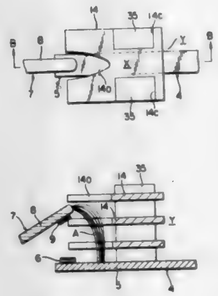
Hajimu Yoshiyasu; Shirou Murata, both of Itami; Fumiyuki Hisatsune, Fukuyama; Shinji Yamagata, Fukuyama, and Junichi Terachi, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1983, Ser. No. 485,070

Claims priority, application Japan, Apr. 15, 1982, 57-64380; Apr. 15, 1982, 57-64381; Apr. 15, 1982, 57-64382; Apr. 15, 1982, 57-64383; Apr. 15, 1982, 57-64388; Apr. 15, 1982, 57-64389; Jun. 15, 1982, 57-90605[U]; Oct. 22, 1982, 57-186306

Int. Cl.³ H01H *33/04, 9/30*

U.S. Cl. 200—144 C **15 Claims**



1. A circuit breaker with an arc light absorber comprising:

a pair of electric contactors contained in an insulating container for opening or closing an electric circuit;

electric conductors extending to said electric contactors and contacts on said conductors; and

a pair of side walls in spaced opposed relation to each other and spaced from each other in a direction transverse to said contactors and spaced from said contactors in the direction in which the arc produced between said contacts when said contactors are opened expands from said contactors and defining a space between them to receive the expanding arc, said side walls having a size for absorbing light from the arc;

said side walls being formed of a heat resistant, electrically insulating, light absorbing material having more than 35% apparent porosity.

4,521,654

HIGH VOLTAGE DISCONNECT SWITCH EMPLOYING PRE-CONTACT PIECES

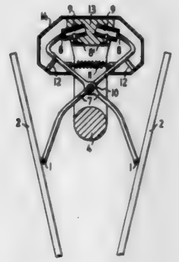
Wolfgang Eberhardt, Kassel-Harlh; Dietrich Hoffmann; Karl Kriechbaum, both of Kassel, and Erwin Rohde, Helsa, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 26, 1983, Ser. No. 536,033

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235353

Int. Cl.³ H01N *33/12*

U.S. Cl. 200—146 R **13 Claims**



1. A high voltage disconnect switch, comprising:

a countercontact piece having switch countercontacts and being arranged for connection to a source of high voltage;

resilient pre-contact pieces insulatingly connected to said countercontact piece and including switch contacts disposed for contacting said switch countercontacts; and

movable primary contact pieces arranged to be movable from a first position of separation from said pre-contact pieces and said countercontact piece to a second position in which said primary contact pieces are in contact with said pre-contact pieces but not with said countercontact piece and to a third position in which said primary contact pieces are in contact with both said pre-contact pieces and said countercontact piece;

wherein said pieces are configured and arranged relative to one another so that during the closing of said switch said countercontacts contact said contacts after said primary contact pieces are moved to the second position and before said primary contact pieces are moved to the third position, and during the opening of said switch said countercontacts separate from said contacts after said primary contact pieces are moved to the second position and before said primary contact pieces are moved to the first position.

4,521,655

ELECTRIC POWER SWITCH WITH SLOTTED COMMUTATION END PLATE

Hiroyuki Okado; Shigeru Masuda, both of Aichi, and Teijiro Mori, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 2, 1983, Ser. No. 463,359

Claims priority, application Japan, Feb. 3, 1982, 57-15749; Feb. 3, 1982, 57-15750; Mar. 19, 1982, 57-43935

Int. Cl.³ H01H *33/20*

U.S. Cl. 200—147 R **13 Claims**

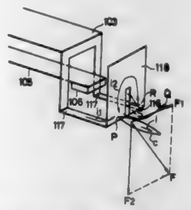
1. An electric power switch, comprising:

(a) a stationary contact (**14**),

(b) a movable contact (**6**) confronting said stationary contact and adapted to be moved into and out of engagement therewith,

(c) an arc runner (**15**) provided proximate said movable contact and electrically connected to said stationary contact, for providing a path of migration for the end of an arc formed when said movable and stationary contact engagement is broken, and

(d) a commutation plate (**3**) disposed near the path of movement of said movable contact, for providing a path of migration for the other end of said arc from said movable contact,



(e) said commutation plate having an end plate for guiding said other end of the arc, and a cut at a central portion of said end plate, whereby said other end of the arc is driven towards the center of said end plate.

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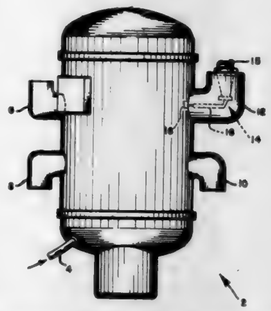
HIGH VOLTAGE GROUNDING DEVICE FOR PRESSURIZED EQUIPMENT

Jon W. Ogland, Millersville, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 8, 1983, Ser. No. 549,532

Int. Cl.³ H01H *33/54*

U.S. Cl. 200—148 B **7 Claims**



1. Safety apparatus for grounding high voltage within a pressurized metallic container to the container comprising:

a protruding metallic conduit affixed to the wall of said container and sealed to prevent loss of gas pressure within said container,

an electrode assembly positioned within said conduit for coupling high voltage to the interior of said container,

a high voltage contact affixed to said electrode, and

a grounding device affixed to the wall of said conduit having a moveable grounding contact,

said grounding contact being selectively adapted to bear against said high voltage contact to discharge high voltage to said container.

4,521,657

CIRCUIT BREAKER WITH INCORPORATED CURRENT TRANSFORMER

Edmond Thuries, Pusignan, France, assignor to Alsthom Atlantique, Paris, France

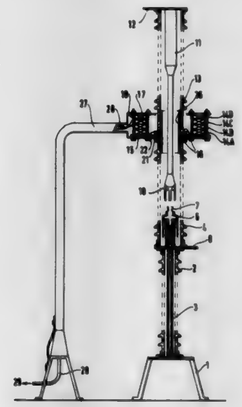
Filed Apr. 22, 1983, Ser. No. 487,472

Claims priority, application France, Apr. 22, 1982, 82 06906

Int. Cl.³ H01N *33/59*

U.S. Cl. 200—148 R **8 Claims**

1. A circuit breaker with incorporated current transformer, the circuit breaker comprising: a stand at ground potential; a first insulating column supported by said stand and filled with a highly dielectric gas; a second insulating column coaxially supported by said first insulating column, said second insulating column serving as a cut-out chamber and including moving contacts; a first current terminal connected to said moving contacts; moving contact drive means operatively associated with said moving contacts; fixed contacts; and a second current terminal connected to said fixed contacts; the improvement comprising a third insulating column supported by said second column and being coaxial with said first and second columns, and at least one magnetic circuit and secondary



winding of a current transformer being disposed around said third column in the vicinity of its connection to said second column, the primary circuit of said current transformer being constituted by a conductor connecting said fixed contacts to said second terminal; and an anti-discharge screen being disposed inside said third column level with the current transformer and wherein a metal tube extends from the junction between said second and third columns and substantially down to ground level and which also serves to house electrical connections between said secondary winding and a measuring apparatus electrically connecting said anti-discharge screen to ground.

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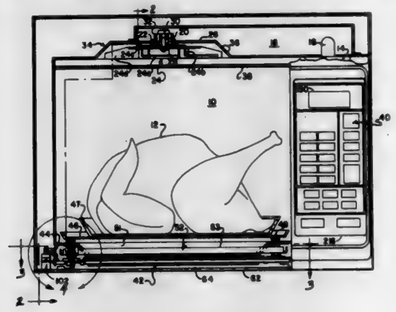
MICROWAVE OVEN SCALE APPARATUS

Alvin D. Wyland, Williamsburg; Duaine W. Smith, Tiffin, and Louis W. Blackburn, Norway, all of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Jan. 16, 1984, Ser. No. 571,157

Int. Cl.³ H05B *6/68*

U.S. Cl. 219—10.55 B **12 Claims**



1. Apparatus coupling weight from a tray in a microwave oven cavity through four holes in the floor thereof to a scale positioned below the floor, comprising:

a horizontal rectangular rigid frame having an aperture adjacent to each of the four corners, said frame being below said floor with said apertures aligning with said four holes in said floor;

a unitary stud inserted through each of said apertures, each of said studs having downwardly extending legs for straddling a support element of said scale, each of said studs having a collar for seating against the underside of said frame, each of said studs having a threaded body for tightening down a nut to seat against the top side of said frame to secure each of said studs to said frame, each of said studs having a threaded head; and

a microwave transparent post having a threaded bottom bore screwed down on each said threaded heads of said studs, each of said posts being adapted for inserting up through one of said holes in said cavity floor to collectively support said tray in said cavity, the height of each of said posts being adjustable by rotation on its respective stud.

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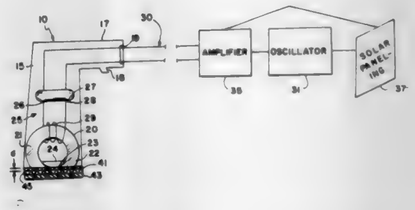
INDUCTION HEATING GUN

John D. Buckley, Newport News; Robert J. Swaim, Hampton; Robert L. Fox, Hayes, and David F. Johnston, Hampton, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 333,536, Dec. 22, 1981, abandoned, and a continuation of Ser. No. 69,429, Aug. 24, 1979, abandoned. This application Jun. 24, 1983, Ser. No. 507,623

Int. Cl.³ H05B *6/08*

U.S. Cl. 219—10.77 **6 Claims**



1. An induction heating apparatus for heating an electrically conductive workpiece through a nonconductive medium having a thickness d comprising:

electrical energy means for providing a line current at a fixed frequency and voltage;

a parallel tank circuit comprising a capacitor and an inductor connected in parallel with the tank circuit connected in parallel with said electrical energy means;

means for focusing the magnetic flux generated by said inductor through a nonconductive medium having a thickness d onto a conductive workpiece;

said means for focusing the magnetic flux generated by said inductor consists of a curved pole piece having two ends with a short gap between the two ends and with the inductor wrapped around the pole piece;

said short gap between the two ends of the pole piece being less than the maximum thickness of said pole piece, and the thickness of the nonconductive medium and the values of the capacitor and inductor being selected such that said parallel tank circuit is operating near resonance; and

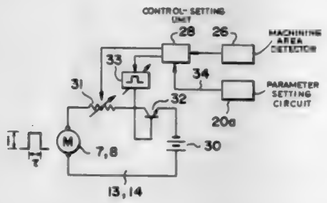
coil means connected across said inductor and located in said gap between two ends of the pole piece for pushing the magnetic flux between the two ends of the pole piece in the direction of the workpiece.

4,521,660

EDM FEED MOTOR CONTROL METHOD AND SYSTEM

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Feb. 17, 1982, Ser. No. 349,512
Claims priority, application Japan, Feb. 18, 1981, 56-23313
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 W **27 Claims**



1. In a method of electroerosively machining an electrically conductive workpiece electrode with a tool electrode spacedly juxtaposed therewith across a dielectric-filled machining gap by applying a series of time-spaced electrical discharge pulses through the gap to remove material from the workpiece electrode, wherein a machining feed between the tool and workpiece electrodes, at least one of which is movable, is effected stepwise by motor means drivingly coupled with the movable electrode and arranged to be incrementally driven to advance the movable electrode in successive steps, thereby continuing electroerosive machining in the workpiece electrode and wherein the instantaneous area of the surface of the tool electrode which is in electroerosive relationship with the workpiece electrode varies as machining progresses, the improvement comprising the steps of:
(a) sensing the varying instantaneous area of said machining surface during the course of said machining feed; and
(b) controlling the rate of driving of said motor means for each step of incremental advance of the movable electrode in accordance with said sensed area of machining surface so as to maintain the amount of advance displacement of said movable electrode in each incremental step substantially constant over successive steps.

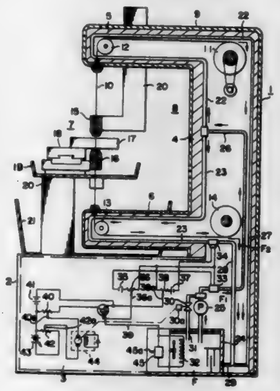
4,521,661

METHOD OF AND APPARATUS FOR HOLDING AGAINST MISPOSITIONING A THERMALLY DEFLECTABLE MEMBER IN AN OPERATING MACHINE TOOL

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Feb. 18, 1982, Ser. No. 349,968
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 W **20 Claims**

1. A method of holding against mispositioning a work element in an operating machine tool in which a thermally deflectable member supporting said work element is disposed in a thermal environment of variable temperature created at least in part by operation of said machine tool so that said member undergoes thermal deflection to variable extent tending to cause the mispositioning of said element, said method comprising the steps of:
(a) passing a fluid through at least one passage formed in said thermally deflectable member of the machine tool performing a machining operation so that said member and said fluid are in heat-exchanging relationship in said operating machine tool; and
(b) establishing, for said machining operation, a preselected difference in temperature between said fluid flowing into said passage and said fluid flowing out of said passage;
(c) controlling at least one of parameters of said flowing fluid, which parameters include the rate of flow of the fluid through said passage and the temperature of the fluid flowing into said passage, so as to maintain said preselected difference in temperature in spite of changes in the temperature of said thermal environment during said machining operation, thereby maintaining the extent of thermal deflection of said member substantially constant while said machine tool is operating.

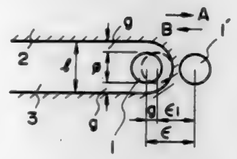


4,521,662

METHOD OF MEASURING FLEXURE VALUE OF WIRE ELECTRODE

Mitsuo Kinoshita, Hachioji, and Haruki Obara, Sagamihara, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP81/00345, § 371 Date Aug. 25, 1982, § 102(e) Date Aug. 25, 1982, PCT Pub. No. WO82/02165, PCT Pub. Date Jul. 8, 1982
PCT Filed Nov. 18, 1981, Ser. No. 413,375
Claims priority, application Japan, Dec. 29, 1980, 55-185432
Int. Cl.³ B23P *1/02, 1/12*
U.S. Cl. 219—69 W **2 Claims**



1. A method of measuring a value of flexure of a wire electrode, the flexure being caused by an electric discharge across a discharge gap, the method comprising the steps of:
(a) detecting by detection means whether or not the wire electrode comes into contact with the workpiece when electric discharge is temporarily stopped at a predetermined measurement point during the course of electric discharge machining along a first direction in a machining groove;
(b) retracting said wire electrode relative to said workpiece in a second direction opposite said first direction along said machining groove until the wire electrode comes out of contact with the workpiece in the case where they lie in contact, a distance of the retraction being measured, or advancing said wire electrode relative to said workpiece in said first direction until the wire electrode comes into contact with the workpiece in the case where they do not lie in contact, a distance of the advance being measured;
(c) calculating the flexure value in accordance with the following where g denotes the size of the discharge gap and ϵ_1 denotes said retraction distance;

$$\epsilon = g + \epsilon_1$$

(where ϵ indicates said flexure value)
(d) moving said wire electrode in a third direction orthogonal to said first machining direction until coming into contact with said workpiece, and measuring the size of the discharge gap from a value of the movement in said third direction.

4,521,663

PROCESS FOR DEPOSIT WELDING AND WEAR RESISTANT COATING ALLOY

Marinus C. Kesting, Spijkenisse, Netherlands, assignor to Swiss Aluminum Ltd., Chippis, Switzerland

PCT No. PCT/CH82/00114, § 371 Date May 16, 1983, § 102(e) Date May 16, 1983, PCT Pub. No. WO83/01588, PCT Pub. Date May 11, 1983
PCT Filed Oct. 28, 1982, Ser. No. 499,758
Int. Cl.³ B23K *9/04, 35/30*
U.S. Cl. 219—76.14 **28 Claims**

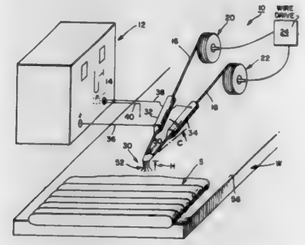
1. Process for depositing wear resistant, protective coatings of highly alloyed ferrous filler metals on base materials of carbon and manganese containing ferrous alloys which find application in particular in the carbon processing industry which comprises providing a base material having a carbon content up to a maximum of 0.22% and a manganese content larger than or equal to 5 times the carbon content, deposit welding directly on said base material using direct current in the ambient atmosphere with a wire or rod shaped filler metal, and selecting the strength of the current according to the diameter of the filler metal wire such that the quotient S wherein S=current/diameter (ampere/mm) is in the range 70–80.

4,521,664

PROCESS AND APPARATUS FOR SURFACING WITH HIGH DEPOSITION AND LOW DILUTION

Robert F. Miller, Dover, Pa., assignor to Teledyne, Inc., York, Pa.

Filed Oct. 26, 1982, Ser. No. 436,816
Int. Cl.³ B23K *9/04*
U.S. Cl. 219—76.14 **13 Claims**



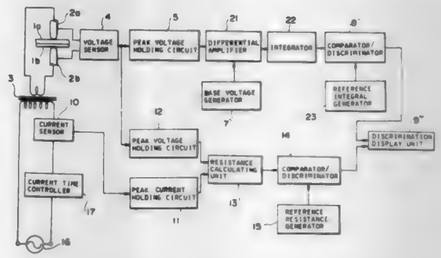
1. A method of surfacing materials comprising the steps of: providing a workpiece to be surfaced, providing a power supply, providing first and second electrode wires formed of material to be deposited on the workpiece, connecting the first electrode wire to a positive circuit of the power supply, connecting the second electrode wire to a negative circuit of the power supply, establishing a wire arc between the first and second electrode wires, the wire arc melting the electrode wires to form surfacing material, establishing a substrate arc between the positive electrode wire and the workpiece, depositing the surfacing material onto the workpiece, and initiating stress relief cracks during the surfacing process.

4,521,665

METHOD AND SYSTEM FOR DETERMINING WELD QUALITY IN RESISTANCE WELDING

Shuji Nakata, Toyonaka; Yoshio Kawaguchi, Yokohama, and Akira Nishimura, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

Division of Ser. No. 268,887, Jun. 1, 1981, Pat. No. 4,434,351. This application Feb. 27, 1984, Ser. No. 569,148
Claims priority, application Japan, Jun. 2, 1980, 55-72830
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—117.1 **10 Claims**



1. A method of determining weld quality in resistance welding independently of variations in current path geometry due to electrode tip deformation, which comprises the steps of:
(a) detecting a plurality of values of an electrode voltage applied to welding electrodes between which the members to be welded are pinched;
(b) detecting a plurality of values of an electrode current flowing between the welding electrodes;
(c) calculating electrode resistance by dividing the electrode voltage by the electrode current;
(d) comparing the calculated electrode resistance immediately before the electrode current is cut off with a predetermined electrode resistance;
(e) comparing the detected electrode voltage values with a predetermined reference electrode voltage;
(f) calculating a sum total of the detected electrode voltage values in excess of the predetermined reference electrode voltage;
(g) comparing the calculated sum total of the detected electrode voltage values in excess of the reference voltage with a predetermined reference value; and
(h) determining that the weld quality is acceptable when both the calculated electrode resistance and the calculated sum total of the detected electrode voltage values lie within the respective allowable ranges therefor.

4,521,666

PLASMA ARC TORCH

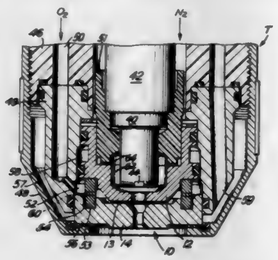
Wayne S. Severance, Jr., Florence, and George T. Rogers, Society Hill, both of S.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 23, 1982, Ser. No. 452,452
Int. Cl.³ B23K *9/00*
U.S. Cl. 217—121 PY **8 Claims**

1. A method of operating a plasma arc torch having a nonconsummable electrode and a first and second arc constricting passageway each coaxially arranged relative to one another comprising the steps of:
forming a high pressure arc plasma between the nonconsummable electrode and the workpiece;
constricting said arc through said first arc constricting passageway;
further constricting said arc through said second arc constricting passageway with said second arc constricting passageway spaced apart from said first arc constricting passageway to form a narrow gap which is between 0.005 and 0.030 inch in dimension;

introducing a stream of only nitrogen gas having a swirl flow pattern around said electrode and through said first and second arc constricting passageways;

introducing a stream of an oxygen containing reactive gas only into said gap and in a swirl flow pattern such that said gas passes through said second arc constricting passage-



way and aspirates into said nitrogen stream with substantially no backflow through the first arc constricting passageway;

adjusting the flow of nitrogen gas relative to the flow rate of said oxygen containing reactive gas to alter the concentration of oxygen in said arc plasma to a total concentration of at least about 40% oxygen by volume.

4,521,667

METHOD FOR THE MANUFACTURE OF A DEVICE FOR THE READ-OUT OF A TWO-DIMENSIONAL IMAGE PATTERN WITH AN ARRAY

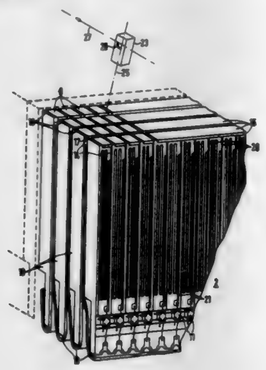
Bertram Sachs, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 5, 1984, Ser. No. 568,479

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1983, 3300831

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LJ **3 Claims**



1. Method for the manufacturing of a device for reading-out a two-dimensional charge image with an array comprising stacked printed circuit boards, each of which is provided on one of its large faces with switch-selected amplifiers to each of which a leak resistance is assigned, and each of which is provided on one of its narrow faces and on a portion of the adjacent large face that is equipped with leak resistances with a thin film of electrically conductive material, comprising the steps of: conducting a laser beam over said narrow sides of said stacked printed circuit boards to divide said thin film on said narrow sides and said large faces into individual electrodes.

4,521,668

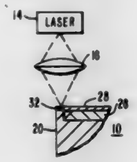
METHOD OF HERMETICALLY LASER SEALING ELECTRONIC PACKAGES

Thaddeus A. Osial, Randallstown; Alexander A. Bosna, Arnold, and Richard J. Kulak, Ellicott City, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 8, 1983, Ser. No. 549,860

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LC **3 Claims**



1. Method of fabricating a hermetically sealed r.f. electronic module comprising a generally box-like package containing r.f. circuitry therein, which package includes side wall portions and top and bottom cover members, with hermetic electrical connectors sealed through the side walls, and r.f. electrical circuit means are disposed within the package, and wherein at least one of the top or bottom cover members is removably connectable to the package with fastener means, which method comprises:

(a) forming a recessed cover member seating portion extending peripherally about one side wall end portion;

(b) mounting the top cover member on the recessed cover member seating portion, and removably fastening said top cover member thereto;

(c) disposing a sealable thin weldable cover sheet over the top cover member, with the cover sheet perimeter portions seating on the side wall end portion perimeter portions.

(d) laser welding the cover sheet perimeter portion to the side wall end portion perimeter portion to hermetically seal the module.

4,521,669

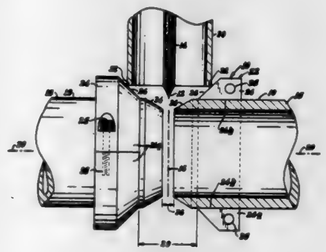
TUBE-WELDING AUXILIARY

Michael R. Porter, R.R. 2, Box 282A, Terre Haute, Ind. 47802, and Ross W. Elliott, R.R. 17, Box 316, Brazil, Ind. 47834

Filed Mar. 9, 1983, Ser. No. 473,528

Int. Cl.³ B23K *9/28*

U.S. Cl. 219—125.11 **4 Claims**



1. A gas tungsten arc welding auxiliary, for use with an electrode having a body portion and an operating point, for supportingly guiding the operating point of the associated electrode of an assembly of electrode, tig torch, and cup, such that the operating point of the electrode is guided over and along a circular work-path of a tube means to be welded by a weld achieved by the operative function of the electrode, tig torch, filler wire, and tube means as a work object, as the tube means and the assembly are relatively rotated about the axis of the tube means, comprising:

a guide body means;

securing means for securing the guide body means to the associated tube means;

the guide body means providing a circular supporting path concentric with the axis of the tube means but spaced axially from the work-path of the weld;

the circular supporting path thereby providing a template-type guide for the operating point of the electrode as the cup is held against the supporting path during relative rotation of the assembly and the tube means, guiding the operating point of the electrode with respect to the tube means and to the work-path thereof, as the said relative rotation causes the relative movement of the assembly and tube means;

in a combination in which the guide body means, and the securing means for securing the guide body means to the associated tube means, comprise a pair of collar members each having a pair of semi-circular open ring bodies whose inner edges seat onto the outer wall of the respective tube-portion, and the two semi-circular ring bodies of each collar member are provided with securing means for securing each respective pair together and securely gripping the respective tube-portion at a selected axial setting to establish the desired weld work-path even though the outer wall of both of the tube-portions is cylindrical and without any axial locator means;

in a combination in which the collar members have a conical surface whose axis is concentric with the axis of the tube means, and provide both a guide of the cup and electrode axially of the associated tube means but also to provide a guide for the cup and electrode so as to be at the desired radial distance from the associated tube means.

4,521,670

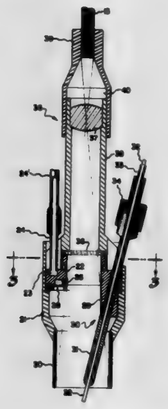
GAS METAL ARC WELDING TORCH WITH VISION SYSTEM

Allen W. Case, Jr., Amsterdam, and Donald C. Peroutky, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,753

Int. Cl.³ B23K *9/10*

U.S. Cl. 219—130.01 **5 Claims**



1. A compact gas metal arc welding torch with an integral vision sensor comprising:

a ring-shaped conductive torch body having internal passages for coolant and cover gas and, near the periphery, electrical power, coolant and cover gas connections;

a housing that encloses and supports said torch body and to which a gas cup is attached;

an integral optical system having an axis that passes through the central region of said torch body and gas cup is comprised of a lens system in a lens housing which is mounted on said torch body, said optical system viewing the workpiece and weld region through the center of said ring-shaped torch body and providing a demagnified image;

means on said torch for transferring said image to a remote control system; and

a slim profile filler wire/electrode guide mounted on said ring-shaped torch body and projecting into said gas cup at an angle to the optical axis to minimize obstruction to passage of light from the weld region to said optical system, and sufficiently far removed from the focal plane that said wire guide is minimized in said image.

4,521,671

ELECTRONIC WELDING APPARATUS

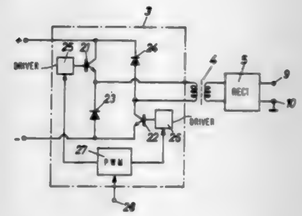
Klaus Fronius, Pettenbach, Austria, assignor to Miller Electric Manufacturing Company, Appleton, Wis.

Filed Oct. 17, 1983, Ser. No. 542,617

Claims priority, application Austria, Oct. 21, 1982, 3867/82

Int. Cl.³ B23K *9/10*

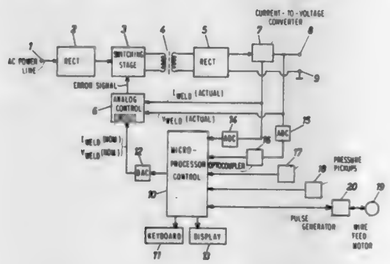
U.S. Cl. 219—130.31 **2 Claims**



1. In an electronic welding apparatus including a control element for controlling at least one welding parameter, such as welding current or welding voltage, the improvement which is characterised in that said control element is a controlled switching mode power supply, wherein an analog control circuit having an output is provided for controlling said switching mode power supply on its primary, the actual values of the welding current and the welding voltage being fed to said analog control circuit, and wherein said switching mode power supply has an output, and further comprising a current-/voltage converter provided at the output of the switching mode power supply for the actual value of the welding current, the actual value of the welding voltage being taken directly at the output of the switching mode power supply, a microprocessor control, the nominal value of said at least one welding parameter being fed to the analog control circuit of said switching mode power supply via said microprocessor control, an entry keyboard and a display both connected to said microprocessor control, a switching stage provided for said switching mode power supply and containing semiconductors as switching means, a pulse width modulator connected to the output of said analog control circuit, and driver stages, said switching means being controlled by said pulse width modulator via said driver stages; wherein said switching stage is designed as an unsymmetrical half-bridge converter constituted by two switching transistors, further comprising diodes arranged in series and a power line rectifier providing a direct current, said two switching transistors being connected in parallel via said diodes and being fed by said direct current provided by said power line rectifier, a transformer provided for said switching mode power supply and having a primary coil and a secondary coil, and connection points of the two switching transistors with said diodes, said primary coil of said transformer being connected between the respective connec-

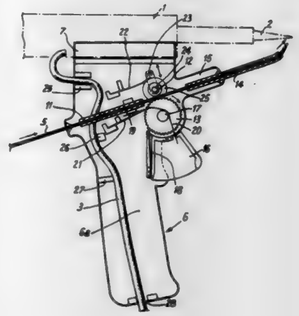
tion points of the two switching transistors with said diodes, said two switching transistors being simultaneously switched on and off by said pulse width modulator of said switching mode power supply via said driver stages, and said pulse width modulator having an input connection connected with the output of said analog control circuit, connection terminals being provided at the output of said switching mode power supply, a secondary rectifier between said secondary coil and said connection terminals, and switch means, bridging said secondary rectifier, for selectively effecting a direct connection between said secondary coil and said connection terminals.

4,521,672
ELECTRONIC WELDING APPARATUS
Klaus Fronius, Pettenbach, Austria, assignor to Miller Electric Manufacturing Company, Appleton, Wis.
Filed Oct. 26, 1982, Ser. No. 436,891
Claims priority, application Austria, Oct. 27, 1981, 4565/81; Jun. 14, 1982, 2295/82; Sep. 30, 1982, 3622/82
Int. Cl.[3] B23K *9/10*
U.S. Cl. 219—130.33 **10 Claims**



1. In an electronic welding apparatus including a control element for controlling at least one welding parameter, such as welding current or welding voltage, the improvement which is characterized in that said control element is a controlled switching mode power supply, wherein an analog control circuit having an output is provided for controlling said switching mode power supply on its primary, the actual values of the welding current and the welding voltage being fed to said analog control circuit, and wherein said switching mode power supply has an output, and further comprising a current-/voltage converter provided at the output of the switching mode power supply for the actual value of the welding current, the actual value of the welding voltage being taken directly at the output of the switching mode power supply, a microprocessor control, the nominal value of said at least one welding parameter being fed to the analog control circuit of said switching mode power supply via said microprocessor control, an entry keyboard and a display both connected to said microprocessor control, a switching stage provided for said switching mode power supply and containing semiconductors as switching means, a pulse width modulator connected to the output of said analog control circuit, and driver stages, said switching means being controlled by said pulse width modulator via said driver stages; and further comprising analog/digital converters, the actual values of said welding current and said welding voltage being fed to said microprocessor control via said analog/digital converters for forming the product of said actual values, and a digital/analog converter, said product being fed as an actual value to said analog control circuit via said digital/analog converter, and an opto-coupler connected between said microprocessor control and said analog/digital converter for the welding voltage for a galvanic separation.

4,521,673
ATTACHMENT FOR SUPPLYING A FILLER WIRE TO AN ELECTRIC SOLDERING IRON OF THE PEN TYPE
Jean-Claude Oury, Villepinte, France, assignor to Societe anonyme dite: Prestinox S.A., Villepinte, France
Filed May 24, 1983, Ser. No. 497,659
Int. Cl.[3] H05B *3/02*; B23K *3/06*
U.S. Cl. 219—230 **16 Claims**



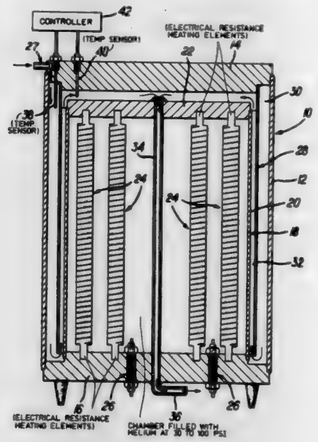
1. A device for supplying a filler wire for an electric soldering iron having a cylindrical body with a conductive lead and a heating tip, comprising:
a support butt;
said butt having an upper part;
said upper part including a housing in the form of a V-shaped groove, said groove being defined by two lateral faces of a dihedron and being adapted to receive and support the cylindrical body of a soldering iron;
flexible length-adjustable means on said butt for fixing the body of the iron in said groove; and
means in said support butt for advancing a filler wire and for guiding the wire in the direction of a heating tip on the body of the soldering iron.

4,521,674
ELECTRIC FLUID HEATER EMPLOYING PRESSURIZED HELIUM AS A HEAT TRANSFER MEDIUM
Harry J. Scanlan, 3 Cedar Pl., Garden City, N.Y. 11530, and Leif Liljegren, 550 Ramapo Valley Rd., Oakland, N.J. 07436
Filed Jan. 18, 1982, Ser. No. 339,858
Int. Cl.[3] H05B *3/78*; F24H *1/10*; H01C *1/026*
U.S. Cl. 219—299 **7 Claims**

1. A fluid heater comprising a closed metal vessel containing substantially pure gaseous helium at a pressure of from about 30 psi absolute to about 100 psi absolute and at least one electrical resistance heating element in the vessel, the vessel having thermally-conducting walls in contact with the helium in the vessel for transfer of heat from the helium to the walls and thence to a fluid outside the walls, the helium being a medium for rapid transfer of heat from the heating element by conduction and convection to the vessel walls.

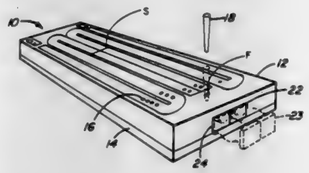
2. A heater according to claim 1 wherein the closed helium-containing vessel is received within a container having an inlet for receiving the fluid to be heated from a supply and an outlet

for discharging the fluid spaced-apart from the inlet, whereby the fluid passes adjacent the walls of the vessel in flowing



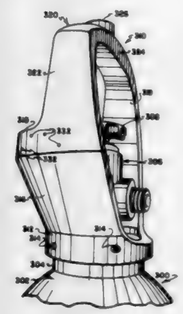
between the inlet and outlet and receives heat from the vessel walls.

4,521,675
CRIBBAGE BOARD
Joseph Yakich, Box 43, Batchawana Bay, Ont., Canada P0S 1A0
Filed Jun. 24, 1983, Ser. No. 507,621
Claims priority, application Canada, Jan. 17, 1983, 419561
Int. Cl.[3] A63F *1/18*
U.S. Cl. 235—90 **3 Claims**



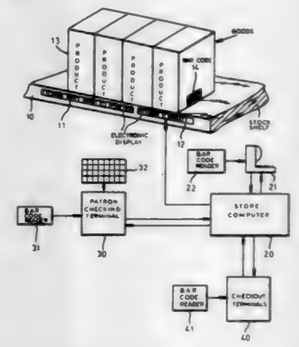
1. A cribbage board comprising:
an elongated board having a plurality of spaced, parallel rows of tally pin receiving sockets in the upper surface thereof, said tally pin receiving sockets being arranged in two sequences, each sequence comprising a first and a second group of sockets;
a skunk line located between said first and second groups of sockets;
an elongated channel in said board;
a pair of elongated sliders located in parallel in said channel, each of said sliders having a plurality of tally pin receiving sockets therein, said plurality of tally pin receiving sockets being in registry with the second group of sockets in the associated sequence on the board, said sliders being movable from an inoperative position and having indicating means thereon visible in the operative position;
means to releasably retain said sliders in the inoperative position;
an additional tally pin receiving socket;
means to cause at least one of said sliders to move from the inoperative to the operative position when a tally pin is inserted into said additional socket and when all the sockets of said second group of sockets associated with said at least one slider are free of tally pins.

4,521,676
ENCODED CAP FOR A PRESSURIZED GAS CYLINDER
Bo Poulsen, Copenhagen, Denmark, assignor to AGA AB, Cleveland, Ohio
Filed Sep. 30, 1982, Ser. No. 428,633
Int. Cl.[3] G06K *17/00*
U.S. Cl. 235—375 **28 Claims**



1. A cylinder data encoding device, comprising:
(a) structure non-removably secured to a pressurized gas cylinder for providing a relatively smooth data encoding surface;
(b) the structure also defining surface discontinuity means including an array of surface discontinuities formed in the surface at selected locations thereon to encode cylinder data;
(c) the surface discontinuities including an array of formations that extend substantially perpendicular to adjacent portions of the smooth surface to provide an encoded presentation of cylinder data that can be understood through interpreting the encoded presentation; and,
(d) the surface discontinuities taking the form of a linear array of surface discontinuities arranged in two side-by-side rows including a plurality of columns, with only one surface discontinuity being provided in each of the columns, whereby a surface discontinuity provided in a selected one of the two rows indicates one of two logic states, and a surface discontinuity provided in the other of the rows indicates the opposite logic state.

4,521,677
PRODUCT CONTROL SYSTEM FOR SUPERMARKETS AND THE LIKE
Herbert S. Sarwin, 511 Milburn Ave., Short Hills, N.J. 07078
Filed Dec. 2, 1983, Ser. No. 557,626
Int. Cl.[3] G06F *15/24, 15/26*
U.S. Cl. 235—385 **9 Claims**



1. In a product handling system for a vending establishment

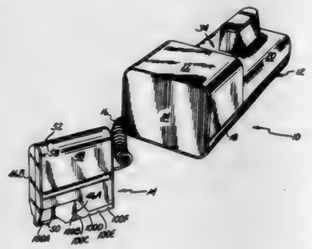
comprising a computer, a checkout terminal linked to said computer, a bar code reader at said checkout terminal for identifying a purchased item, the improvement which comprises a respective electronic display at each of a plurality of shelving rotations for respective items having bar codes, each of said displays being linked to said computer for displaying indicia at least in part assigned to the bar codes of the items stored at the respective shelf sections.

4,521,678

BATTERY-POWERED OPTICAL BAR CODE READER AND VOLTAGE REGULATOR THEREFOR

Arthur J. Winter, Encino, Calif., assignor to Databar Corporation, Eden Praire, Minn.

Filed Jan. 13, 1984, Ser. No. 570,677
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—472 **19 Claims**



1. A battery-powered optical bar code reading system comprising user-actuated power switch means for switching from a first to a second state to initiate operation of the system, a voltage regulator connected to the power switch means for providing a regulated supply voltage from a battery, the voltage regulator being turned on for an initial time interval in response to the power switch means being switched from its said first state to its said second state and remaining turned on thereafter only if a regulator control signal is received, an optical bar code reader powered by the regulated supply voltage for producing an output representative of an optical bar code as relative movement of the reader with respect to the optical bar code occurs, an annunciator for providing a warning in response to an annunciator control signal, and computer means powered by the regulated supply voltage for converting the output of the reader to digital data representative of the optical bar code, the computer means providing said regulator control signal and said annunciator control signal.

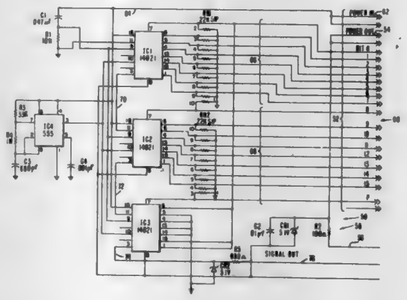
4,521,679

DATA INPUT MODULE

Eric G. Anderson, Rochester, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 19, 1983, Ser. No. 496,041
Int. Cl.³ G06K *19/06*
U.S. Cl. 235—492 **7 Claims**

1. A data input module comprising a power source, a data input jack having plural terminals for simultaneously reading binary information from multiple contacts on a card, the jack having power-out contacts connected to the power source for providing power to power-in contacts on a card, and the jack further having power-in contacts for receiving power from power-out contacts of a card, the input module apparatus further comprising plural integrated circuits and plural conductors severally connecting each contact in the jack to individual contacts of the integrated circuits for providing binary data from the jacks to individual inputs of the integrated circuits, clock means connected to the integrated circuits for providing clocking pulses to the integrated circuits, and means for connecting the power-in contacts in the jack to each of the integrated circuits and the clock means for powering the integrated circuits and the clock means by power from the power source passed into and out of a key card by the power-out



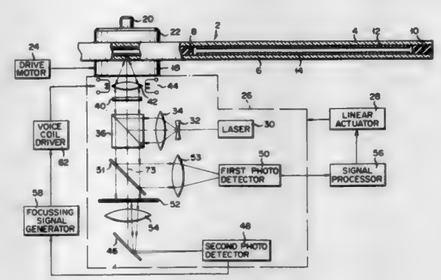
contacts and the power-in contacts in the jack, means for serially connecting the integrated circuits, and means for taking a signal from a last integrated circuit in the series.

4,521,680

SYSTEM FOR FOCUSING A LIGHT BEAM ON A LIGHT REFLECTING SURFACE

Hideo Andō, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 19, 1982, Ser. No. 399,873
Claims priority, application Japan, Jul. 20, 1981, 56-113245; Sep. 17, 1981, 56-146540
Int. Cl.³ G01J *1/36*; G11B *7/00*
U.S. Cl. 250—201 **13 Claims**



10. A system for focusing a light beam on a light reflecting surface, comprising:

an objective lens for converging the light beam, whereby light beam is formed on the light reflecting surface when the objective lens is in the just focusing state, and whereby a beam spot of a larger size than that of the beam waist is formed on the light reflecting surface when the objective lens is in the defocusing state;

a photodetector having a light receiving surface including at least two photosensitive regions and a photoinsensitive region arranged between the two photosensitive regions and detecting no substantial light rays; and

means for transferring a light beam reflected from the light reflecting surface and directing the light beam toward the light receiving surface of the photodetector, whereby the light beam is projected toward at least one of the photosensitive regions when the objective lens is in the defocusing state, wherein

said transfer means includes projection lens means for directing the light beam toward the light receiving surface of the photodetector and means for deflecting the light beam in accordance with the distance between the objective lens and the light reflecting surface, and the light receiving surface of the photodetector is substantially arranged on an image forming plane on which an image of the beam spot corresponding to the beam waist is formed by the objective lens and the projection lens when the objective lens is in the just focusing state, and wherein

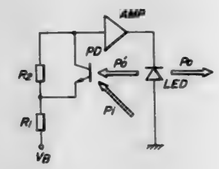
said means for deflecting the light beam includes means for generating a light beam passing parallel to the optical axis of the objective lens.

4,521,681

OPTICAL FUNCTION SEMICONDUCTOR DEVICE

Humio Inaba; Hiromasa Ito, and Yoh Ogawa, all of Sendai, Japan, assignors to Tohoku University, Sendai, Japan

Filed May 24, 1982, Ser. No. 381,842
Claims priority, application Japan, Nov. 25, 1981, 56-187689
Int. Cl.³ G01J *1/32*
U.S. Cl. 250—205 **7 Claims**



1. An optical function semiconductor device comprising:

a light emitting element and an opto-electrical converting element, both of which consist of semiconductors, said light emitting element and said opto-electrical converting element being circularly interconnected optically and electrically;

a controlling semiconductor means for controlling respective input-to-output performances of said light emitting element and said opto-electrical converting element;

the output light of said light emitting element being controlled through said controlling semiconductor means by the electric output of said opto-electrical converting element, said electric output being generated in response to at least the internal incidence of a portion of said output light of said light emitting element; and

whereby the relationship between the incident light on said opto-electrical converting element and said output light of said light emitting element is determined by said respective input-to-output performances controlled through said controlling semiconductor means.

4,521,682

PHOTODETECTING DEVICE HAVING JOSEPHSON JUNCTIONS

Toshiaki Murakami; Yoichi Enomoto, and Takahiro Inamura, all of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed May 7, 1984, Ser. No. 607,509
Claims priority, application Japan, May 14, 1983, 58-84845
Int. Cl.³ H01L *39/22*
U.S. Cl. 250—211 J **2 Claims**

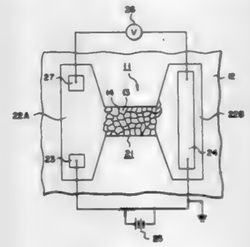
1. A photodetecting device having Josephson junctions, comprising:

an insulating substrate;

a polycrystalline superconductor film formed on said insulating substrate such that Josephson junctions are formed at grain boundaries, said superconductor film having a first region subjected to light illumination, and second and third regions formed contiguously at both sides of said first region such that a width of each of said second and third regions is wider than that of said first region;

means for supplying a predetermined bias current between said second and third regions; and

means for detecting a change in voltage between said second and third regions, one terminal of said means for supplying



and one terminal of said means for detecting being commonly grounded,

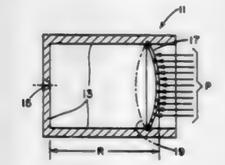
wherein said superconductor film comprises $BaPb_{1-x}Bi_xO_3$ (where $0.32 \leqq \times \leqq 0.35$).

4,521,683

PRESSURE-ACTUATED OPTICAL SWITCH

Glen E. Miller, Redondo, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 20, 1981, Ser. No. 245,719
Int. Cl.³ G01D *5/30*
U.S. Cl. 250—221 **36 Claims**



1. An optical switching element comprising:

(a) a diaphragm of resilient material, said diaphragm having at least one optically reflective surface,

(b) means for supporting said diaphragm for rapid snap-action movement between a spherical concave state and a spherical convex state in response to a condition desired to be sensed,

(c) means for directing a light beam toward said at least one optically reflective surface of said diaphragm, said directing means including a member having an aperture therein through which said light beam passes, said aperture positioned a distance away from said diaphragm equal to the radius of curvature of said diaphragm,

(d) means for receiving said light beam after reflection from said diaphragm,

(e) said diaphragm operative in said concave state to reflect at least a portion of said light beam to said receiving means, and

(f) said diaphragm operative in said convex state to reflect said portion of said light beam away from said receiving means,

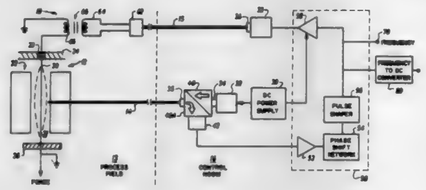
whereby said diaphragm provides a rapid switching element for abruptly making and breaking a light path formed by said light beam between said light directing and receiving means.

4,521,684

OPTICAL MEASUREMENT SYSTEM WITH LIGHT-DRIVEN VIBRATING SENSOR ELEMENT

Anthony C. Gilby, Foxboro; Edward L. Lewis, Sharon, and Everett O. Olsen, Wrentham, all of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Feb. 22, 1982, Ser. No. 350,687
Int. Cl.³ G02B 5/14
U.S. Cl. 250—227 **9 Claims**



1. In an instrumentation system of the type wherein a physical parameter or measurand is to be measured at a sensor site by a sensor having therein an oscillator which includes an electromagnetically driven oscillating resonant element, the resonant frequency of vibration of which is responsive to and related to the measurand, said sensor being located at the measurement site, apparatus for powering oscillation of said sensor and determining said resonant frequency by fiber optic means comprising:

(a) first transducer means located at the sensor site for conversion of radiant energy to electrical energy required for powering the electromagnetically driven oscillating element of the sensor;

(b) radiant energy reflection means associated with the oscillating element for reflecting radiant energy;

(c) variable-power radiant energy source means for powering the oscillating resonant element;

(d) steady power radiant energy source means for providing radiant energy as an optical sense signal;

(e) at least one fiber optic pathway means for conveying the variable power radiant energy to the first transducer means and for conveying steady radiant energy to a point adjacent the reflection means associated with the oscillating element such that portions of the steady radiant energy optical sense signal are periodically reflected at said oscillating element vibrating frequency by said reflection means back along said at least one fiber optic pathway means;

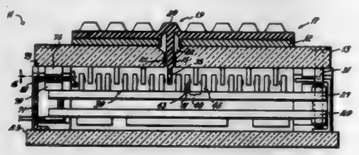
(f) radiant energy level control means for regulating the variable-power radiant energy source output energy level over time in response to the reflected optical sense signal received by the radiant energy level control means.

4,521,685

TACTILE SENSOR FOR AN INDUSTRIAL ROBOT OR THE LIKE

Jack Rebman, Cary, N.C., assignor to Lord Corporation, Erie, Pa.

Filed Mar. 1, 1982, Ser. No. 353,435
Int. Cl.³ G01D 5/34
U.S. Cl. 250—229 **21 Claims**



1. A device for detecting, discriminating and identifying a number of mechanical contact parameters when contacting an object including presence, pressure, pressure pattern, topography, slip, incipient slip and the like comprising:

a touch surface for contacting said object, said touch surface being movable in a horizontal plane;

a plurality of sensitive sites disposed in an array on said touch surface, said sensitive sites being deflected in response to a normal force applied by contact with said object, said touch surface being moved laterally in said horizontal plane in response to a shear force applied by contact with said object;

normal force detection transducer means associated with each of said sensitive sites, said normal force transducer means being operable to sense said deflection of said sensitive sites and produce an electrical signal proportional to the magnitude of said deflection;

shear force detection transducer means associated with said touch surface, said shear force transducer means being operable to sense said lateral motion of said touch surface and produce an electrical signal proportional to said lateral motion;

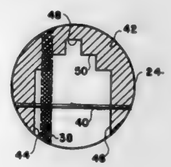
signal processing means operable to receive said electrical signals from said normal force and shear force transducer means and provide information identifying said contact parameters of said object.

4,521,686

LINEWIDTH MEASURING WITH LINEARITY CALIBRATION OF THE T.V. CAMERA TUBE

Vincent J. Coates, Palo Alto; J. Evan Grund, San Jose, and Stephen B. Westrate, Portola Valley, all of Calif., assignors to Nanometrics Incorporated, Sunnyvale, Calif.

Filed May 24, 1983, Ser. No. 497,515
Int. Cl.³ H01J 3/14
U.S. Cl. 250—237 R **5 Claims**



1. In a process employing a television camera tube for the accurate measurement of images projected onto the faceplate of the tube, a method for calibrating the tube output to eliminate the effects of inherent scan non-linearity and magnification variations, said method including the step of:

painting a rectangular grid on the faceplate of the camera tube, said grid including first and second straight parallel fences of known spacing and perpendicular to the direction of the raster scan of said tube, said grid masking the areas between said fences and the arcuate edges of said tube adjacent said fences.

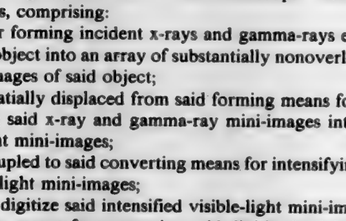
4,521,687

MASS SPECTROMETER

Motohiro Naito, Akishimashi, Japan, assignor to Jeol Ltd., Tokyo, Japan

Filed Jan. 17, 1983, Ser. No. 458,756
Int. Cl.³ B01D 59/44
U.S. Cl. 250—296 **6 Claims**

1. A mass spectrometer comprising an ion source, means for selecting ions produced and accelerated by said ion source according to their mass to charge ratio, a field-free region in which a part of the massselected parent ions form daughter ions, means for creating superimposed electric and magnetic fields at right angles through which parent and daughter ions passed through said field-free region pass, means for charging the intensity of said magnetic field from a first level to a second



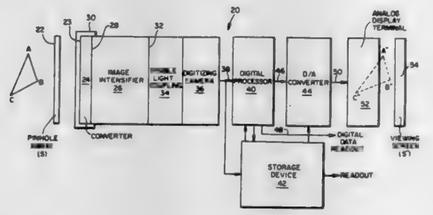
level, and means for sweeping the intensity of said electric field at both magnetic intensity levels.

4,521,688

THREE-DIMENSIONAL AND TOMOGRAPHIC IMAGING DEVICE FOR X-RAY AND GAMMA-RAY EMITTING OBJECTS

Lo I. Yin, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 21, 1983, Ser. No. 459,842
Int. Cl.³ G01T 1/16
U.S. Cl. 250—363 S **62 Claims**



1. An instrument for obtaining quantitative, three-dimensional and tomographic information relating to x-ray and gamma-ray emitting objects, and for the orthoscopic viewing of such objects, comprising:

means for forming incident x-rays and gamma-rays emitted by an object into an array of substantially nonoverlapping mini-images of said object;

means spatially displaced from said forming means for converting said x-ray and gamma-ray mini-images into visible-light mini-images;

means coupled to said converting means for intensifying said visible-light mini-images;

means to digitize said intensified visible-light mini-images;

computing means for processing said digitized mini-images for tomographic and three-dimensional reconstruction of said object; and

viewing means for direct orthoscopic, three-dimensional viewing of the reconstructed x-ray and gamma-ray emitting object.

4,521,689

MODULAR RADIATION-DETECTING ARRAY

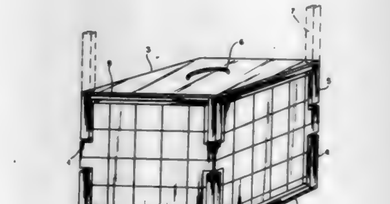
Dennis H. Pritzkow, New Berlin, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Feb. 24, 1983, Ser. No. 469,195
Int. Cl.³ G01T 1/18
U.S. Cl. 250—385 **22 Claims**

1. A detector array for detecting ionizing radiation comprising:

a plurality of detector modules each having a plurality of detector cells containing a radiation-detecting medium, said detector cells being supported between upper and lower insulating substrates;

a pair of substantially parallel support members in spaced-apart relationship for supporting therebetween said plurality of detector modules;



nut plate means secured to upper and lower insulating substrates of each of said plurality of detector modules; and

fastening means for rigidly and releasably attaching said detector modules to said pair of support members, such that each of said nut plates is in parallel contiguity with one of said support members.

4,521,690

METHOD OF AND DEVICE FOR IRRADIATING ANIMALS

Charles A. Sondhaus, 105 Jasmine Creek Dr., Corona Del Mar, Calif. 92625, assignor to Charles A. Sondhaus, Jülich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 82,061, Oct. 5, 1979, Pat. No. 4,318,000. This application Jun. 3, 1981, Ser. No. 269,815
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1978, 2844041
The portion of the term of this patent subsequent to Mar. 2, 1999, has been disclaimed.
Int. Cl.³ G01N 21/00
U.S. Cl. 250—455.1 **12 Claims**

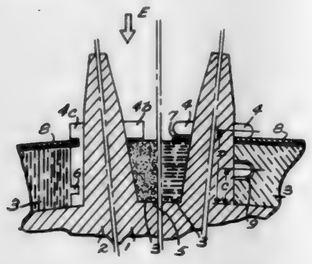
1. A device for the irradiation of animals, especially experimental animals, which comprises a cage for receiving said animals and formed with a ceiling member along the top of said cage, a floor member along the bottom of said cage, an openwork between said members around at least the periphery of said cage, said openwork forming at least side walls of said cage, at least one of said members being formed as a planar irradiator constituting a removable plate formed with radiation sources in the form of radioactive elements distributed over the area of said plate to form a uniform radiation field over the area thereof, and means on said cage for removably holding said plate.

4,521,691

SHIELDING CONTAINER HAVING NEUTRON SHIELDING FOR THE TRANSPORTATION AND/OR STORAGE OF RADIOACTIVE MATERIAL

Richard Christ, Bruchköbel; Erhard Müller, Gründau; Hans-Günther Knackstedt, Langenselbold, and Reiner Laug, Hanau, all of Fed. Rep. of Germany, assignors to Transnuklear GmbH, Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 206,674, Nov. 13, 1980, abandoned.
This application Sep. 23, 1982, Ser. No. 422,167
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 7932570[U]
Int. Cl.³ G21C *19/00*
U.S. Cl. 250—506.1 **6 Claims**



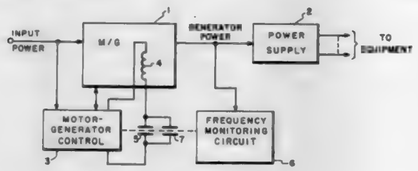
1. A container for radioactive materials which produce gamma and neutron-radiation emissions and residual heat, comprising, in combination, a container body having shielding means for gamma radiation, an exterior surface, a plurality of spaced-apart cooling fins projecting from said exterior surface and connected at one end thereof to said exterior surface of said container body, at least some of said cooling fins having boss means thereon intermediate the ends thereof, neutron shielding means removably disposed on said exterior surface of said container and removably held in place between said cooling fins by said boss means so that, in the event any cooling fin is damaged, said neutron shielding means can be removed to permit access to the portion of said cooling fin between said boss means and said exterior surface of said body.

4,521,692

MOTOR GENERATOR SHUTDOWN CIRCUIT FOR EXTENDED RIDETHROUGH

Luther L. Genuit, Scottsdale, and John R. Nowell, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Apr. 8, 1982, Ser. No. 366,739
Int. Cl.³ H02H *3/46*
U.S. Cl. 290—4 A **3 Claims**



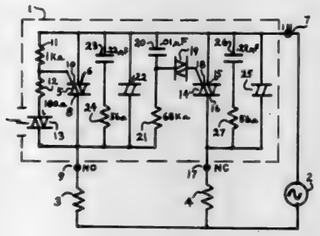
1. A ridethrough power generating system comprising:
(a) motor-generator means, having an input terminal adapted to receive input power, for generating output power;
(b) at least one power supply means for generating at least one form of converted power from said output power;
(c) a motor-generator control means, operatively connected to said input terminal, for providing control of said output power; and
(d) means for monitoring the frequency of said output power to operate in conjunction with said motor-generator control means thereby providing at least one additional control function of said output power.

4,521,693

ELECTRO-OPTICAL SOLID-STATE SPDT RELAY SWITCH

Alan L. Johnson, P.O. Box 45443, Los Angeles, Calif. 90045

Filed Feb. 11, 1983, Ser. No. 439,358
Int. Cl.³ H03K *17/60, 3/42*
U.S. Cl. 307—252 T **4 Claims**



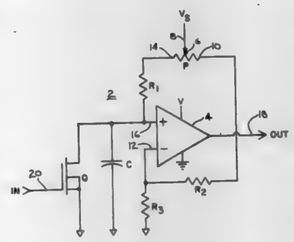
1. An electrical a.c. power-switching relay circuit comprising,
(a) a first power terminal for connecting to an a.c. power source,
(b) a second power terminal for connecting to a first load,
(c) a third power terminal for connecting to a second load,
(d) a first bidirectional switching device having a first anode connected to said first power terminal, a second anode connected to said second power terminal, and a gate connected to light-responsive gating means, and
(e) a second bidirectional switching device having a first anode connected to said first power terminal, a second anode connected to said third power terminal, and a gate connected to a first terminal of voltage-responsive gating means having a second and third terminal connected to the first and second anode, respectively, of said first bidirectional switching device, wherein said voltage-responsive gating means is responsive to the level of voltage present between the first anode and the second anode of said first bidirectional switching device.

4,521,694

COMPARATOR TIMER WITH DUAL FUNCTION ADJUSTMENT

Lawrence J. Ryczek, Nashotah, and William J. Janutka, West Allis, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 30, 1983, Ser. No. 509,952
Int. Cl.³ H03K *5/159*
U.S. Cl. 307—266 **18 Claims**



1. A timer comprising in combination comparator means having a comparing input terminal connected to an RC charging current circuit, and a reference threshold input terminal,

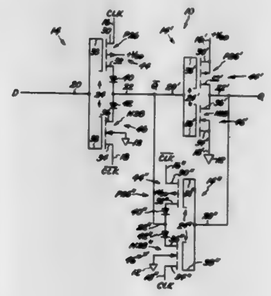
and comparing voltage at said comparing input terminal due to said charging current against threshold trip voltage at said reference terminal, and single means for concurrently changing both charging current and threshold trip voltage for said comparator means.

4,521,695

CMOS D-TYPE LATCH EMPLOYING SIX TRANSISTORS AND FOUR DIODES

Moshe Mazin, and William E. Engeler, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 23, 1983, Ser. No. 478,014
Int. Cl.³ H03K *3/356, 19/096, 23/22;* G11C *19/28*
U.S. Cl. 307—279 **5 Claims**



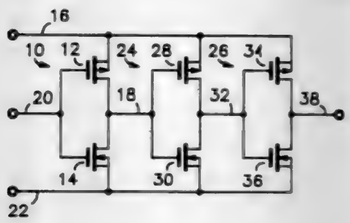
1. A D-type latch having a data input node, a data output node, and a complementary data output node, said latch comprising:
first, second and third inverters each having an input node, an output node, and a pair of inverter voltage supply nodes, each of said first and third inverters capable of being selectively enabled by applying voltage polarity of one sense to its voltage supply nodes and of being selectively disabled by applying voltage polarity of the opposite sense to its voltage supply nodes, the output node of either of said first and third inverters being essentially an open circuit with respect to either logic voltage level when the particular inverter is disabled;
said second inverter voltage supply nodes comprising said latch voltage supply nodes for continuously enabling said second inverter;
said first and third inverter voltage supply nodes comprising complementary clock input nodes such that, when said clock input nodes have applied thereto one set of complementary logic voltage levels for enabling said latch, said first inverter is enabled and said third is disabled, and when said clock input nodes have applied thereto a complementary set of logic voltage levels for not enabling said latch, said first inverter is disabled and said third inverter is enabled;
said first inverter input node comprising said latch data input node;
said first inverter output node comprising said latch complementary data output node and being connected to said second inverter input node;
said second inverter output node comprising said latch data output node; and
said third inverter being cross-coupled with said second inverter in a latching configuration, said third inverter input node being connected to said second inverter output node and said second inverter input node being connected to said third inverter output node.

4,521,696

VOLTAGE DETECTING CIRCUIT

Kuppuswamy Raghunathan, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1982, Ser. No. 395,424
Int. Cl.³ H03K *5/153, 5/24*
U.S. Cl. 307—350 **3 Claims**



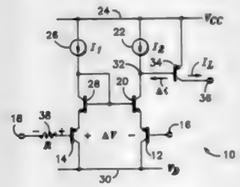
1. In a integrated circuit adapted to receive operating power via first and second supply voltage nodes, a voltage detecting circuit for providing an output signal when an input signal applied to an input node of the integrated circuit exceeds the voltage on the second supply voltage node, comprising:
a first field effect transistor having a source region of a first conductivity type coupled to the first supply voltage node, a drain region of the first conductivity type coupled to an output node, a current channel region of a second conductivity type between the source and drain regions and coupled to the first supply voltage node, and a gate electrode adjacent to but insulated from the current channel region and coupled to the second voltage node; and
a second field effect transistor having a source region of the second conductivity type coupled to the input node, a drain region of the second conductivity type coupled to the output node, a current channel region of the first conductivity type between the source and source and drain regions and coupled to the input node, and a gate electrode adjacent to but insulated from the current channel region and coupled to the second supply voltage node, the on resistance of the second transistor being smaller than the on resistance of the first transistor to provide a voltage swing on the output node substantially between the voltage on the first supply voltage node and a voltage between the voltage on the second supply voltage node and the voltage on the input node.

4,521,697

PNP COMPARATOR CIRCUIT HAVING BETA CURRENT ERROR CANCELLATION

Eric D. Joseph, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1982, Ser. No. 453,389
Int. Cl.³ H03K *5/153, 5/24, 17/72*
U.S. Cl. 307—355 **8 Claims**



1. A comparator circuit having first and second inputs and an output, comprising:
first and second conductors;
first and second transistors of a first conductivity type each having first and second electrodes and a control electrode;

said first electrodes being coupled to said first conductor, said second electrodes being coupled to said second conductor, said control electrodes being coupled respectively to the first and second inputs of the comparator;

a third transistor of said first conductivity type having first and second electrodes and a control electrode, said first electrode being coupled to said first conductor, said second electrode being coupled to the output of the comparator circuit, said control electrode being coupled to said first electrode of said first transistor; and

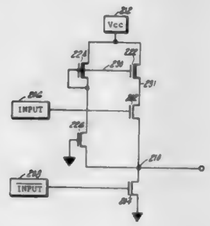
resistive means coupled between said the second input of the comparator circuit and said control electrode of said second transistor wherein any offset voltage produced due to error current flowing from said third transistor into said first transistor is cancelled.

4,521,698

MOS OUTPUT DRIVER CIRCUIT AVOIDING HOT-ELECTRON EFFECTS

Ronald T. Taylor, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 2, 1982, Ser. No. 446,105
Int. Cl.³ H03K *19/003, 17/14, 17/693*
U.S. Cl. 307—450 **3 Claims**



1. An integrated-circuit output circuit for combining logic output signals from first and second logic input terminals to control the voltage on an output node, comprising:

a first output transistor having a first terminal connected to ground, a second terminal connected to said output node and a gate connected to said first logic input terminal; and

a second output transistor having a first terminal connected to said output node, a second terminal connected to a power supply node and a gate connected to said second logic input terminal; characterized in that:

a third output transistor having a gate, said third output transistor being connected between said second terminal of said second output transistor and said power supply node, and further characterized in that compensating means coupled to said output node and substantially responsive only to negative voltage on said output node for controlling said third output transistor controls said gate of said third output transistor to switch the transconductance of said third output transistor between a first transconductance when said voltage on said output node is greater than or equal to ground and a second transconductance when said voltage on said output node is less than ground.

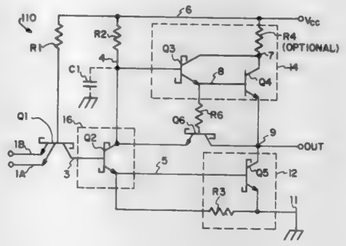
4,521,699

HIGH-SPEED SCHOTTKY TTL GATE APPARATUS

Stanley Wilson, Cupertino, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 10, 1982, Ser. No. 416,450
Int. Cl.³ H03K *19/013, 19/088, 19/092, 17/04*
U.S. Cl. 307—456 **2 Claims**

1. A transistor logic circuit having an input terminal and an output terminal, including a phase splitter transistor, a pull-down circuit, and a pullup circuit; the phase splitter transistor having a base terminal coupled to the input terminal of the logic circuit, an emitter terminal coupled to a reference potential, and a collector terminal coupled to a source of potential, the pulldown circuit being coupled between the output terminal of the logic circuit and the reference potential, the pull-down circuit having an input connected to the emitter terminal of the phase splitter transistor; the pullup circuit including first and second transistor, each having emitter, base, and collector terminals and forming a Darlington output stage, the bse of the first transistor being connected to the collector terminal of the phase splitter transistor, the emitter terminal of the second



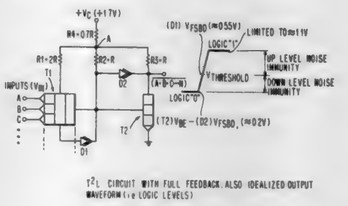
transistor beig connected to the output terminal of the logic circuit, the emitter terminal of the first transistor being connected to the base terminal of the second transistor, the collector terminals of the first and second transistors being coupled to a source of potential, the improvement comprising: a transistor means for speeding up the switching characteristics of said logic circuit, said transistor means having a collector terminal coupled to said output terminal, an emitter terminal coupled to the collector terminal of said phase splitter transistor, and a base terminal coupled to base terminal of the second transistor of said pullup circuit.

4,521,700

TTL LOGIC CIRCUIT EMPLOYING FEEDBACK TO IMPROVED THE SPEED-POWER CURVE

Richard J. Blumberg, Poughkeepsie; Stewart Brenner, Wappingers Falls, and Rocco J. Robortaccio, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,541
Int. Cl.³ H03K *19/003, 19/088*
U.S. Cl. 307—456 **9 Claims**



T²L CIRCUIT WITH FULL FEEDBACK ALSO IDEALIZED OUTPUT WAVEFORM (i.e. LOGIC LEVELS)

1. An improved T^2L circuit employing partial feedback and having enhanced operating characteristics, said improved T^2L circuit comprising:

a first transistor having a collector, base, and at least first, second, and third emitters, said first, second, and third emitters of said first transistor respectively receiving a logical binary input A, B, and C;

a second transistor having an emitter, base, and collector, said emitter of said second transistor being connected to a first potential source, said base of said second transistor being connected to said collector of said first transistor;

a first resistor connected between said base of said first transistor and a second potential source;

second and third resistors serially connected between said base of said second transistor and said collector of said second transistor;

a fourth resistor connected between the junction of said second and third resistors and said second potential source; and

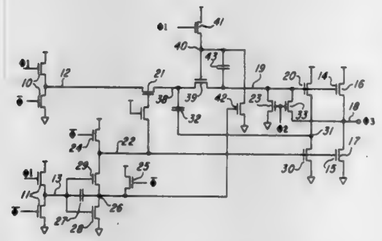
an output terminal connected to said collector of said second transistor, said output terminal manifesting the logical binary function A·B·C.

4,521,701

HIGH-SPEED LOW-POWER DELAYED CLOCK GENERATOR

Chitranjan N. Reddy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 16, 1982, Ser. No. 419,118
Int. Cl.³ H03K *17/04, 17/687*
U.S. Cl. 307—482 **10 Claims**



1. A clock generator circuit for providing a high-level output clock voltage signal at an output node after a delay following an input clock voltage signal applied to an input node, comprising:

an input transistor, a transfer transistor, a grounding transistor, a control transistor, a driver transistor, and a hold-down transistor, each of the transistors having a source-drain path and a gate;

the source-drain path of the input transistor being connected between the input node and a holding node, and means precharging the gate of the input transistor prior to said clock input voltage signal;

the source-drain path of the transfer transistor being connected between the holding node and a drive node, the gate of the transfer transistor being connected to a control node;

the source-drain path of the control transistor connecting the control node to a supply voltage, the gate of the control transistor being connected to receive the clock input voltage signal;

the source-drain path of the grounding transistor connecting the control node to ground, the gate of the grounding transistor receiving a precharge signal prior to the clock input voltage signal;

the source-drain path of the driver transistor connecting the output node to the supply voltage, the gate of the driver transistor being connected to the drive node;

the source-drain path of the hold-down transistor connecting the output node to ground, the gate of the hold-down transistor receiving a precharge signal prior to said clock input voltage;

and delay means connected to pull down the gates of the hold-down transistor and the grounding transistor after a time delay following occurrence of said input clock voltage signal; and

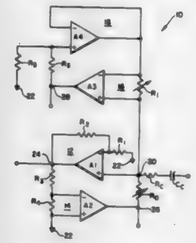
capacitive means coupling the output node to the holding node to bootstrap the voltage on the holding node when the output node voltage rises.

4,521,702

REACTANCELESS SYNTHESIZED IMPEDANCE BANDPASS AMPLIFIER

Leonard L. Kleinberg, Greenbelt, Md., assignor to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 13, 1982, Ser. No. 434,085
Int. Cl.³ H03F *3/34;* **H03G** *9/20;* **H03H** *11/04*
U.S. Cl. 307—520 **11 Claims**



1. An active filter network, comprising:

a pair of active circuits (**12–14, 16–18**) each having first (**A1, A3**) and second (**A2, A4**) operational amplifiers coupled together to provide multiple feedback loops therein;

means (**20**) for applying an input signal directly to a non-inverting input port of each of said first operational amplifiers in each of said pair of circuits;

first resistive means (R_1, R_2) included within a first of said feedback loops for attenuating the amplitude of signals between an output port and inverting input port of said first operational amplifiers (**A1**) in a first of said pair of circuits (**12–14**);

second resistive means (R_3, R_4, R_0) included within said first of said feedback loops in conjunction with said second operational amplifier (**A2**) in said first of said pair of circuits (**12–14**) for attenuating and inverting the amplitude of signals between said output port and non-inverting input port of said first operational amplifier in said first of said pair of circuits; and

third resistive means (R_i, R_5, R_6) included within a second of said feedback loops in conjunction with said second operational amplifier (**A4**) in a second of said pair of circuits (**16–18**) coupled in a voltage follower configuration for attenuating the amplitude of signals between the output port and said non-inverting input port of said first operational amplifier in said first of said pair of circuits;

wherein said resistive means are of a magnitude to tune each of said circuits to operate in the gain versus frequency roll-off region of said second operational amplifier (**A2**) in said first of said pair of circuits (**12–14**) and said first operational amplifier (**A3**) in said second of said pair of circuits (**16–18**), thereby providing an equivalent inductive reactance by said first of said pair of circuits and an equivalent capacitive reactance by said second of said pair of circuits to said input signal at frequencies in said roll-off region.

4,521,703

HIGH SPEED SENSE AMPLIFIER

Andrew G. F. Dingwall, Bridgewater, N.J., assignor to RCA Corporation, Princeton, N.J.

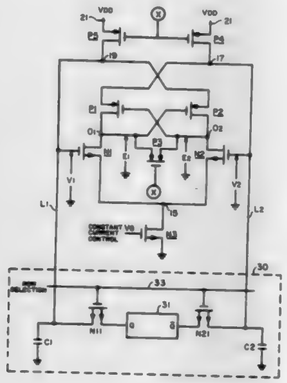
Filed Aug. 30, 1982, Ser. No. 412,807
Int. Cl.³ H03K *5/24, 3/353*
U.S. Cl. 307—530 **10 Claims**

1. In combination with a differential stage having first and second inputs adapted to receive complementary input signals and having first and second differential outputs, the improvement comprising:

first and second transistors, each transistor having first and

second electrodes defining the ends of a conduction path and a control electrode;

means connecting the conduction path of said first transistor between said first input and said second differential output;



means connecting the conduction path of said second transistor between said second input and said first differential output;

means connecting the control electrode of said first transistor to said first differential output; and

means connecting the control electrode of said second transistor to said second differential output.

4,521,704

DIFFERENTIAL AMPLIFYING CIRCUIT

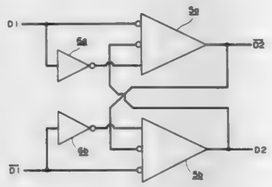
Hirofumi Shinohara; Osamu Tomisawa; Kenji Anami, and Masahiko Yoshimoto, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1983, Ser. No. 462,204

Claims priority, application Japan, Feb. 13, 1982, 57-23127

Int. Cl.³ H03F *3/45*; H03K *5/02*

U.S. Cl. 307—530 **6 Claims**



1. A differntial amplifying circuit including a pair of main amplifying circuits each having at least three input terminals and at least one output terminal, and a pair of auxiliary amplifying circuits each having at least one amplifying input terminal and at least one output terminal, characterzed in that complementary inputs are connected respectively to the amplifying input terminals of said pair of auxiliary amplifying circuits, the outputs of the main amplifying circuits are connected respectively as crossing feedback inputs to at least another pair of amplifying input terminals of said pair of main amplifying circuits, the complementary inputs are also connected respectively to another at least one pair of amplifying input terminals of said pair of main amplifying circuits, and the output terminals of said auxiliary amplifying circuits are connected to a further at least one pair of amplifying input terminals of said main amplifying circuits.

4,521,705

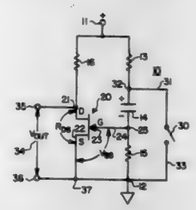
RELIABLE FIELD-EFFECT TRANSISTOR TIMER CIRCUIT

James I. Bartels, Hudson, Wis., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 20, 1983, Ser. No. 515,408

Int. Cl.³ H03K *17/284, 17/687*

U.S. Cl. 307—605 **9 Claims**



1. A reliable timer circuit for connection to a source of direct current voltage, including: charge storage means and impedance means connected in a first series circuit to said direct current voltage source to cause a current flow and to in turn cause a charge to be stored in said charge storage means; depletion mode field-effect transistor means having a drain connection, a source connection, and a gate connection with said drain and source connections coupled in a second series circuit; said gate connection connected to said impedance means; said second series circuit further including second impedance means with said second series circuit connected to said direct current voltage source; said field-effect transistor drain and source connections forming an output circuit for said timer circuit; and switch means including connection means connected to said charge storage means with said switch means being conductive to discharge said charge storage means to bias said field-effect transistor means to a non-conductive state for a fixed interval of time; said non-conductive state of said field-effect transistor means providing said output circuit with an output voltage for said fixed interval of time.

4,521,706

TAPE DRIVING CAPSTAN POWERED WITH A PERMANENT MAGNET MOTOR

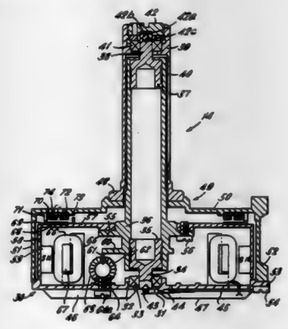
Stefan Kudelski, Chemin de la Croix, and Ernest Rosselet, Assens, both of Switzerland, assignors to Ampex Corp., Redwood City, Calif.

Filed Sep. 15, 1983, Ser. No. 533,095

Claims priority, application United Kingdom, Sep. 17, 1982, 8226572

Int. Cl.³ H02K *7/00*

U.S. Cl. 310—67 R **8 Claims**



1. A capstan for use in a tape transport, comprising:

a base;

a rotatable assembly disposed upright with respect to the base, the rotatable assembly including a cylindrical tape engaging portion and a rotor portion, the said rotor portion being between the cylindrical tape-engaging portion and the base and being of dish-shaped form facing the base, a plurality of magnets being carried at angularly spaced intervals around the inside of the rotor;

a stator winding extending around the base in proximity to said magnets and within said rotor;

a magnetic tachometer mounted above said rotor with respect to the base, the tachometer comprising;

a first magnetically permeable toothed ring carried on said rotatable assembly and coaxial therewith;

a second magnetically permeable toothed ring fixedly mounted relative to the base and in axial register with said first ring, said rings partly defining a magnetic circuit with a flux path extending axially in the region of the teeth, radially of said rings and axially of said rings in a region radially spaced from said teeth, a ring magnet coaxial with said rings for producing flux in said flux path and a sensing coil coaxial with said rings and disposed to link with the flux path.

4,521,707

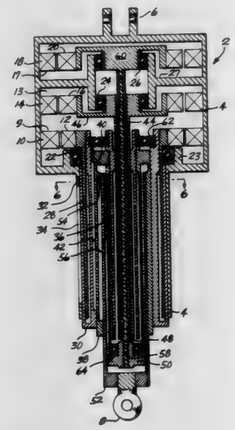
TRIPLE REDUNDANT ELECTROMECHANICAL LINEAR ACTUATOR AND METHOD

Irwin G. Baker, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 12, 1983, Ser. No. 560,971

Int. Cl.³ H02K *7/06*

U.S. Cl. 310—80 **16 Claims**



1. A linear actuator comprising:

a housing;

a plurality of extendible/retractable coaxial stages positioned telescopically with respect to the housing and each other;

a like number of electric motors, each of which has a stator portion attached to the housing, and a rotor portion;

drive transmission means interconnecting each rotor portion and a different one of the stages for converting rotational motion of the rotor portion into linear axial motion of the stage; and

mechanical connection means for mechanically interconnecting the stages with each other to cause each stage, when it moves in a linear axial direction, to carry with it any other stages positioned with respect to it in a given radial direction so that the linear axial displacements of the stages are mechanically summed.

4,521,708

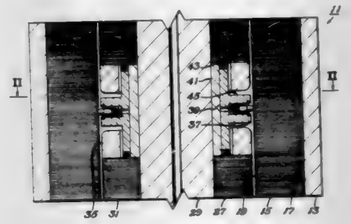
MOTOR BEARING WITH LOCKING PINS

Joseph E. Vandevier, Claremore, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed Mar. 15, 1984, Ser. No. 589,810

Int. Cl.³ H02K *5/16*

U.S. Cl. 310—87 **4 Claims**



1. An elongated electric motor for a submersible pump, comprising in combination:

a housing filled with lubricating fluid;

a stator mounted in the housing and having an inner wall;

a rotatable shaft mounted within the stator;

a rotor composed of spaced-apart rotor sections mounted on the shaft;

a bearing mounted between each of the rotor sections, having an inner diameter and an outer periphery; and

at least one locking element carried by each of the bearings, each locking element being reciprocally located in a passage extending from the inner diameter to the periphery of the bearing, the passage being in communication with hydraulic presure in the inner diameter of the bearing created by rotation of the shaft, the hydraulic pressure urging the locking element outward into engagement with the inner wall of the stator to prevent rotation of the bearing.

4,521,709

DIRECT CURRENT DYNAMOELECTRIC MACHINES WITH AUXILIARY EQUALIZER POLES

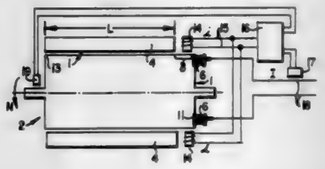
Jacques A. Saint-Michel, Maubeuge; Jean-Pierre Chabrerie, Gif, and Alain Mailfert, Bouxieres Aux Dames, all of France, assignors to Etat Francais, Paris Armees, France

Filed Sep. 8, 1982, Ser. No. 415,994

Claims priority, application France, Sep. 10, 1981, 81 17129

Int. Cl.³ H02K *23/22*

U.S. Cl. 310—186 **11 Claims**



1. A direct current electrodynamic machine comprising a stator and a rotor, said stator containing a ferromagnetic frame defining an internal cylindrical housing for said rotor, at least one field winding, at least one field pole with a radially symmetric axis, said rotor containing a plurality of armature conductors linked at one end of said rotor to a collector ring device, said ring device cooperating with at least one sliding contact arranged on said stator near said field pole, said field pole having at one axial end at least one auxiliary pole arranged in the same radially symmetric plane and at substantially the same radius as said field pole, said auxiliary pole being supplied

a current regulated by at least one operating current of said machine.

4,521,710

COMMUTATOR DEVICE FOR MINIATURE MOTORS

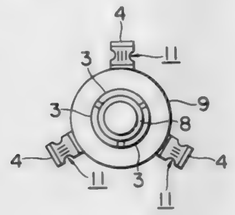
Takaichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co. Ltd., Japan

Filed Dec. 29, 1983, Ser. No. 566,717

Claims priority, application Japan, Dec. 29, 1982, 57-197780[U]

Int. Cl.³ H02K *13/04*

U.S. Cl. 310—234 **6 Claims**



1. A commutator device for miniature motors comprising commutator segments having arc-shaped commutator parts and terminal parts standing upright from said commutator parts; said commutator segments being mounted on an insulating cylinder and said terminal parts being bent to hold lead wires of armature windings, said terminal parts having another portion and a neck portion having a smaller transverse cross-sectional area than the transverse cross-sectional area of said another portion of said terminal part, and means for easily bonding said lead wire is provided on said neck portion to permit said terminal part to be bent at said neck portion to hold said lead wire and to allow said terminal part and said lead wire to be fused together with resistance welding, comprising linear ridges extending in the longitudinal direction of said terminal part.

4,521,711

UNIDIRECTIONAL TRANSDUCER FOR A SURFACE-ACOUSTIC-WAVE DEVICE AND A METHOD OF MAKING SAME

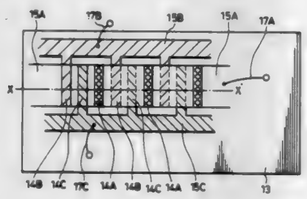
Takeshi Okamoto, and Shoichi Minagawa, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1983, Ser. No. 482,755

Claims priority, application Japan, Apr. 14, 1982, 57-62001; Apr. 14, 1982, 57-62002

Int. Cl.³ H03H *9/25*

U.S. Cl. 310—313 B **8 Claims**



1. A unidirectional transducer for a surface-acoustic-wave device, comprising: a substrate having a surface thereon; a plurality of first electrodes provided on said surface of said substrate at locations which are spaced from each other in a direction by a first predetermined distance; a plurality of second electrodes provided on said surface of said substrate, each said second electrode being spaced in said direction from a respective said first electrode by a second predetermined distance which is substantially one-third of said first predetermined distance; a plurality of third electrodes provided on said surface of said substrate, each said third electrode being spaced in said direction from a respective said second electrode by said second predetermined distance; first and second lead electrodes provided on said surface of said substrate, said first lead electrode being electrically connected to each of said first electrodes and said second lead electrode being electrically connected to each of said second electrodes; a layer of piezoelectric material provided on said surface of said substrate and covering each of said first and second electrodes, said piezoelectric layer having means defining a window therethrough in the region of each said third electrode; and a third lead electrode provided on said piezoelectric layer, said third lead electrode being electrically connected to each said third electrode through the associated window in said piezoelectric layer.

4,521,712

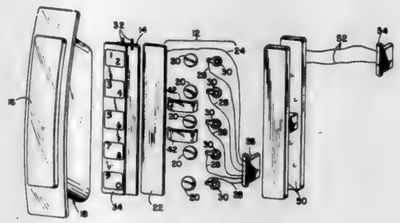
PRESSURE SENSITIVE PIEZOELECTRIC SIGNAL GENERATOR ASSEMBLY

Derrek E. Braun, Royal Oak; Daniel T. Lau, Westland, and Harold Moy, Mt. Clemens, all of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Nov. 25, 1983, Ser. No. 555,268

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—339 **11 Claims**



1. A signal generator assembly comprising:

a piezoelectric subassembly, including a substantially planar, rigid yet manually flexible, substrate member, one or more discrete piezoelectric elements affixed to said substrate member and respective electrical conducting means connected to opposite sides of each said piezoelectric element for developing a signal voltage therebetween in response to deformation of the respective piezoelectric element by an applied force;

a flexible electroluminescent panel;

a plastic housing having a cavity and including a transparent, rigid yet manually flexible, cover element, said cover element being an integral portion of said housing;

said piezoelectric subassembly and said electroluminescent panel being positioned in said housing cavity in mutual force-transmitting relation with said cover element, said electroluminescent panel being interposed between said cover element and said piezoelectric subassembly; and

means disposed in said housing cavity for maintaining said cover element and said piezoelectric subassembly in sealed, force-transmitting relation with said cover element.

4,521,713

SILICON TARGET SUPPORT ASSEMBLY FOR AN IMAGE SENSING DEVICE

Gilbert N. Butterwick, Leola, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 27, 1983, Ser. No. 461,585

Int. Cl.³ H01J *31/26, 31/38*

U.S. Cl. 313—378 **3 Claims**



1. In an image sensing device including a wafer of a semiconductor material having a first surface and a second surface, said first surface having a central portion comprising a membrane, said membrane being surrounded by a rim, said membrane being of lesser thickness than said rim, said second surface having at least one charge storage region, and support assembly means to hold said wafer within said device, the improvement wherein said support assembly means comprises:

target retainer means including a lower support member in contact with said rim portion of said second surface of said wafer near the periphery thereof, an upper tensioning member having a target contact portion which forcibly abuts said rim portion of said first surface of said wafer between said membrane and the periphery thereof thereby tensioning said membrane; and

means for centering and securing said target retainer means within said device.

4,521,714

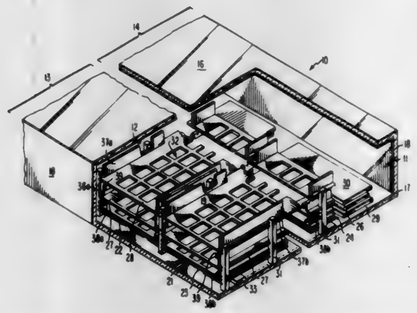
SHIELDED ELECTRON BEAM GUIDE ASSEMBLY FOR FLAT PANEL DISPLAY DEVICES

Frank E. Vaccaro, East Brunswick, and John Kowalik, Trenton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 6, 1982, Ser. No. 447,141

Int. Cl.³ H01J *29/74, 19/40*

U.S. Cl. 313—422 **18 Claims**



1. An electron beam guide assembly for a flat panel display device having a plurality of electron beam propagation channels and a screen for producing a visual image when struck by electrons ejected from said channels, said beam guide assembly comprising:

a pair of parallel spaced electron beam guide meshes, said meshes including at least one column of apertures for propagating electron beams longitudinally along said channels between said beam guide meshes, and at least one additional mesh arranged parallel to and spaced from said beam guide meshes between said guide meshes and said screen;

a plurality of support members spanning the space between said beam guide meshes and said additional mesh and fixedly engaging the edges of said meshes to retain the parallel relationship of said meshes; and

first shield means arranged between said beam guide meshes and said screen, said shield means being fixedly held by said support members at positions displaced along both sides of said column of apertures.

4,521,715

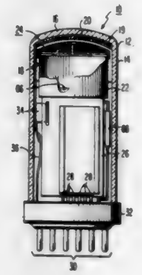
PHOTOEMISSIVE CATHODE FORMED ON CONDUCTIVE STRIPS

Richard D. Faulkner, and Arthur F. McDonie, both of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Aug. 30, 1982, Ser. No. 412,901

Int. Cl.³ H01J *40/06*

U.S. Cl. 313—531 **5 Claims**



1. In an electron tube having an evacuated envelope including a transparent faceplate with an interior surface with a photoemissive cathode thereon, said cathode comprising a plurality of discrete, substantially isolated photoemissive regions, wherein the improvement comprises

a plurality of spaced apart conductive strips disposed on said interior surface of said faceplate, each of said conductive strips contacting several of said plurality of photoemissive regions and electrically interconnecting all of said plurality of photoemissive regions.

4,521,716

HIGH-PRESSURE METAL VAPOR DISCHARGE LAMP

Cornelis A. J. Jacobs; Johannes A. T. Schellen, and Anthonius P. Van Der Vleuten, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 9, 1982, Ser. No. 416,533

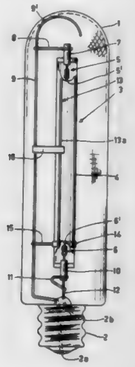
Claims priority, application Netherlands, Sep. 17, 1981, 8104282

Int. Cl.³ H01J *61/54*

U.S. Cl. 313—594 **6 Claims**

1. A high-pressure metal vapor discharge lamp having a discharge vessel comprising a radiation-transmitting wall and first and second main electrodes between which in the operative condition of the lamp the discharge takes place, said main electrodes each having an end directed towards the discharge, the discharge vessel furthermore comprising an external ignition auxiliary means which in the inoperative lamp condition the lamp is connected electrically to said first main electrode and extends from the end of said first main electrode or axially overlaps no more than 3 mm thereof and extends axially to the end of said second main electrode or to axially overlaps no more than 3 mm thereof, and is also present at a distance of at most 1 mm from the wall of the discharge vessel, said external ignition auxiliary means having the portion thereof near said second main electrode tightly engaging said wall, said external ignition auxiliary means includes a strip-shaped part, disposed proximate to said second main electrode, which in the inoperative condition of said lamp said strip-shaped part of the external ignition auxiliary means tightly engages said wall of said

discharge vessel over at least half the circumference thereof, said external ignition auxiliary means comprising a part which is movable with respect to said discharge vessel and which in



the inoperative condition of the lamp extends along the wall of said discharge vessel between the ends of said main electrodes and in the operative condition of said lamp is remote from said wall of said discharge vessel.

4,521,717

APPARATUS FOR PRODUCING A MICROWAVE PLASMA FOR THE TREATMENT OF SUBSTRATES, IN PARTICULAR FOR THE PLASMA-POLYMERIZATION OF MONOMERS THEREON

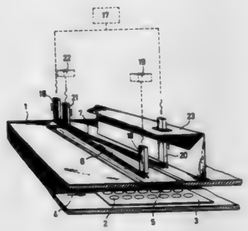
Jörg Kieser, Albstadt, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Nov. 29, 1982, Ser. No. 445,339

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1981, 3141312

Int. Cl.³ H01J *7/46, 19/80*

U.S. Cl. 315—39 **13 Claims**



1. In apparatus for producing a plasma with microwaves for treating one or more substrates arranged on a planar substrate carrier with the plasma, the improvement comprising:

(a) a first elongated slow wave structure for radiating plasma-producing microwaves toward the substrate carrier having a longitudinal axis which is inclined to the plane of the substrate carrier at an acute setting angle; and

(b) a second elongated slow wave structure for radiating plasma-producing microwaves toward the substrate carrier having a longitudinal axis which is inclined to the plane of the substrate carrier at an opposite acute setting angle,

(c) the first and second slow wave structures being side by side on the same side of the substrate carrier,

whereby the intensity of the microwave from the slow wave structures vary oppositely along the axes thereof to minimize the net variation of the plasmas on the substrates.

12. In apparatus for producing a plasma with microwaves for treating one or more substrates arranged on a planar substrate carrier, the improvement comprising:

(a) a first elongated slow wave structure for radiating plasma-producing microwaves toward the substrate carrier having a longitudinal axis which is inclined to the plane of the substrate carrier at an acute setting angle;

(b) a second elongated slow wave structure for radiating plasma-producing microwaves toward the substrate carrier having a longitudinal axis which is inclined to the plane of the substrate carrier at an equal, but opposite acute setting angle,

(c) the first and second slow wave structures being side by side on the same side of the substrate carrier,

whereby the intensity of the microwave from the slow wave structures vary oppositely along the axes of the slow wave structures to minimize the net variation of the plasmas on the substrates;

(d) the slow wave structures each comprising means for defining a median plane of the microwaves therefrom such that the median planes are parallel to each other,

a pair of stringers extending parallel to the axis of each slow wave structure,

(f) crossbars extending transversely between the stringers of each slow wave structure,

(g) the crossbars having crossbars axes in the direction between the stringers of the respective slow wave structures which are spaced from the crossbar axes of the other wave-guide structure,

(h) the median plane of each slow wave structure being normal to the crossbar axes thereof; and

(i) reaction chamber means for permeably receiving the microwaves and containing an ionizable gas, a polymerizable monomer, and means for moving the substrate carrier in a direction transverse to the axes of the slow wave structures,

whereby the monomer is converted to a polymer and deposited as a coating on the substrates.

4,521,718

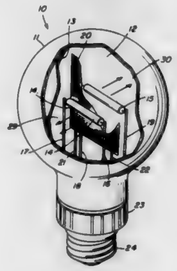
BEAM MODE LAMP WITH VOLTAGE MODIFYING ELECTRODE

Wojciech W. Byszewski, Arlington; A. Bowman Budinger, Westford, and Joseph M. Proud, Wellesley Hills, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 1, 1983, Ser. No. 462,736

Int. Cl.³ H05B *39/00*

U.S. Cl. 315—99 **6 Claims**



1. A beam mode discharge lamp of the type previously operating at approximately 20 volts comprising:

an envelope substantially transparent to visible light and defining a volume;

an electron excitable fill material permeating said volume;

a first discharge electrode and a second discharge electrode arranged within said envelope;

at least one modifying electrode, at least part of which is interposed between said first and second discharge electrodes;

means for applying AC line voltage to said first and second discharge electrodes, said first and second discharge electrodes functioning alternately as cathode and anode and forming electron beams between the discharge electrodes and extending into drift regions beyond the discharge electrodes; and

means for applying negative bias voltage with respect to the then cathode to said modifying electrode sufficient to allow the lamp to operate safely with line voltage between the first and second discharge electrodes.

4,521,719

ION BEAM GUN

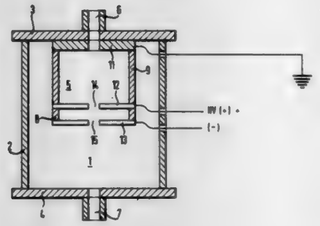
Gerhard Liebel, Munich, Fed. Rep. of Germany, assignor to Technics GmbH Europa, Kirchheim, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,172

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1981, 3134337

Int. Cl.³ H01J *7/24;* **H05B** *31/26*

U.S. Cl. 315—111.81 **6 Claims**



1. Ion beam gun comprising an ionization chamber which is provided with an ionization gas inlet and an ionization gas outlet, two ionization electrodes spaced from and in opposition to each other in the direction of the ion beam for ionizing the ionization gas; an extraction electrode permeable to the ion beams, said extraction electrode being arranged behind said two ionization electrodes in the direction of the ion beam; means for applying a high frequency and a high voltage to said two ionization electrodes, one of said two ionization electrodes, disposed between the other of said two ionization electrodes and said electrodes, and said extraction electrode each being provided with passages arranged in alignment with each other for passage of the ion beam.

4,521,720

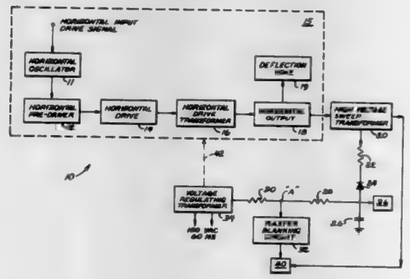
PROJECTION TV CRT BURN PROTECTION

Donald E. Griffey, Skokie, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed May 28, 1982, Ser. No. 383,040

Int. Cl.³ H01J *29/52*

U.S. Cl. 315—386 **7 Claims**



1. In a color projection television system having a horizontal drive circuit for energizing electron beam deflection means in generating horizontal output signals for displacing an electron beam across a phosphor-coated faceplate of a cathode ray tube in said projection color television system, said projection color television system further including high voltage transformer means coupled to said horizontal drive circuit and responsive to said horizontal output signals for generating high voltage signals for initiating and sustaining said electron beam in said cathode ray tube, a system for protecting the faceplate of said cathode ray tube comprising:

voltage sensing means coupled to said high voltage transformer means and responsive to said high voltage signals output therefrom for generating a first control signal when said horizontal output signals are removed from said high voltage transformer means;

raster blanking means coupled to said cathode ray tube and responsive to a second control signal provided thereto for terminating the electron beam in said cathode ray tube; and

a voltage source including an AC-energized voltage regulating transformer coupled to said horizontal drive circuit for providing an energizing voltage thereto and selectively coupled to said raster blanking means and said voltage sensing means for generating and providing a second control signal of increasing magnitude to said raster blanking means in response to said first control signal for rapidly terminating said electron beam when said horizontal drive circuit no longer draws said energizing voltage from said voltage source and said horizontal output signals are no longer provided by said horizontal drive circuit to said high voltage transformer means.

4,521,721

NUMERICAL CONTROL METHOD

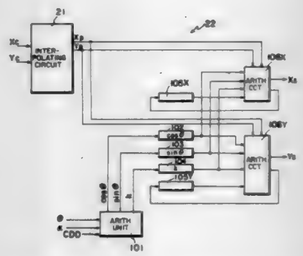
Mitsuo Kinoshita, Hachioji, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan

Filed Jul. 16, 1982, Ser. No. 398,903

Claims priority, application Japan, Jul. 31, 1981, 56-120347

Int. Cl.³ G05B *19/24*

U.S. Cl. 318—573 **15 Claims**



1. A numerical control method for positionally controlling a movable element of a machine tool in such a manner that numerically controlled machining is performed along a projected path obtained by projecting a programmed path, lying on a predetermined plane, onto a plane of projection inclined at a predetermined angle with respect to the predetermined plane, said method comprising the steps of:

(a) entering path data specifying a programmed path on the predetermined plane and angle data specifying the predetermined angle;

(b) performing an interpolation on the basis of the entered path data to produce an output signal indicative of the results of the interpolation; and

(c) subjecting the output signal obtained in step (b) to a projective transformation in accordance with the entered projection angle data to generate a projective transformation output signal specifying the projected path, and posi-

tionally controlling the movable element on the basis of the projective transformation output signal.

4,521,722

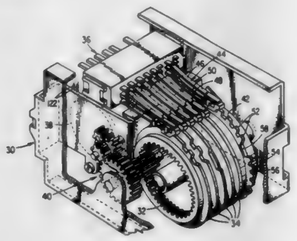
APPLIANCE CONTROLLER

Richard C. Barthel, Chicago, Ill., and Richard D. Roy, Valparaiso, Ind., assignors to The Singer Company, Stamford, Conn.

Continuation of Ser. No. 478,137, Mar. 23, 1983, Pat. No. 4,468,600. This application Mar. 8, 1984, Ser. No. 587,721

Int. Cl.³ G05B *19/06*

U.S. Cl. 318—578 **4 Claims**



1. A controller for an appliance having a plurality of selectively energizeable electromechanical components, comprising:

input means for operator selection of a desired cycle of operation of said appliance;

a motor;

switching means coupled to be driven by said motor and having a plurality of timing cams on a rotating member for controlling the operation of a plurality of switches for applying power to energize said components; and

sequencing means for selectively advancing said switching means including:

means for applying power to said motor;

means on said rotating member for defining incremental positions around said rotating member;

means for detecting movement of said rotating member from one of said positions to the next adjacent position;

means separate from said rotating member and reponsive to the selected operation cycle for defining a program for said rotating member which includes a series of operting steps each including a number of incremental positions to be moved and a time delay of operation; and

means for operating said power applying means to move said rotating member a defined number of incremental positions in accordance with said program.

4,521,723

METHOD AND DEVICE FOR BRAKING AN ASSEMBLY COMPRISING A TWO-PHASE SYNCHRONOUS MOTOR

Oudet Claude, Besancon, France, assignor to Portescap, La Chaux-de-Fonds, Switzerland

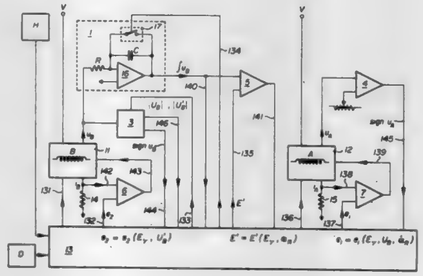
Filed Apr. 3, 1984, Ser. No. 596,276

Claims priority, application Switzerland, Apr. 7, 1983, 1870/83

Int. Cl.³ H02P *8/00*

U.S. Cl. 318—696 **5 Claims**

1. A method for braking an assembly comprising a twophase synchronous electric motor and a device driven mechanically by this motor, the load upon the motor being essentially that of inertia, the motor having a rotor magnetized so as to exhibit 2N poles of alternate polarity, N being a whole number, said poles revolving in the airgaps in at least two separate magnetic stator circuits arranged in accordance with the twophase mode of operation, said magnetic circuits being coupled to respective coils connected to a feeding and switching device arranged for feeding said coils with electric current so that the rotor is driven from one rest position to another, each rest position corresponding with a position of equilibrium capable of being maintained by feeding a coil associated with one or other of the phases of the motor, said method comprising the steps of cutting off the driving current in the coil or coils being fed from the instant when, during the motion of the rotor from a starting position towards a desired position of stoppage corresponding with an angle α_S, the state of feed corresponds with the control of the advance of the rotor towards the position $\alpha_S - 270°/N$; of integrating the voltage u_B induced in the coil or at least one of the coils associated with one of the phases, say, phase B of the motor, between the moment when it is detected that this voltage u_B is passing for the first time through zero since the said cutting-off of the driving current, and the moment when it is detected that the voltage u_A induced in the coil or at least one of the coils associated with the other phase, say, phase A of the motor, is passing for the first time through zero since the start of the integration of the voltage u_B; of storing the result of this integration, E_γ, as well as the absolute instantaneous value $|U_B|$ of the voltage u_B occuring at the moment when the integration ends, this value defining the velocity of the rotor at this moment; of feeding the coil or at least one of the coils associated with the phase A during the interval between the



end of the said integration and the moment at which the rotor reaches a predetermined angular position α_R lying between $\alpha_S - 20°/N$ and $\alpha_S - 70°/N$, with a braking current i_A such that the angular velocity α_R of the rotor at the time of its passage through said position α_R has a desired value chosen on the basis of its velocity corresponding with the stored value $|U_B|$, its own inertia, its load and frictional torques opposing its rotation, so that the rotor can reach the position α_S; of integrating again the voltage u_B induced in the coil or at least one of the coils associated with the phase B, between the moment when u_B is passing for the second time through zero since the said cutting-off of the driving current and the moment when this integral reaches a value corresponding with the angle α_R; of measuring the absolute instantaneous value $|U'_B|$ of the voltage u_B at said latter moment; and of then feeding the coil or at least one of the coils associated with the phase B with a braking current i_B determined by an empirical function of the values E_γ and $|U'_B|$, this function being chosen so that from experience the rotor at the time of its first passing through the rest position which is to be reached, has a desired residual velocity α_S which is very low with respect to α_R or practically zero.

4,521,724

APPARATUS FOR PROCESSING ENERGY REGENERATED BY AN AC MOTOR

Keiji Sakamoto, and Yukio Toyozawa, both of Hachioji, Japan, assignors to Fanuc Ltd., Tokyo, Japan

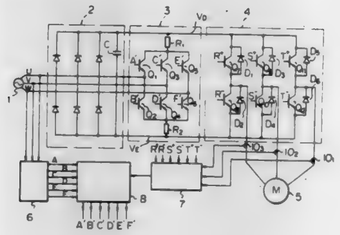
PCT No. PCT/JP83/00162, § 371 Date Apr. 5, 1984, § 102(e) Date Apr. 5, 1984, PCT Pub. No. WO83/04349, PCT Pub. Date Dec. 8, 1983

PCT Filed May 26, 1983, Ser. No. 588,870

Claims priority, application Japan, May 26, 1982, 57-88006

Int. Cl.³ H02P *3/18*

U.S. Cl. 318—762 **6 Claims**



1. An apparatus for processing energy regenerated by an AC motor which comprises:

a rectifier circuit (2) for supplying a direct current to the lines of a DC power source by rectifying an alternating current supplied from an AC power source;

a drive circuit (4) including AC motor driving semiconductor switches (Q_7 to Q_{12}) connected across the lines of said DC power source, said semiconductor switches being rendered conductive upon the receipt of a PWM signal when the AC motor is to be driven so as to supply the electric current from the lines of said DC power source to each of the phases of said AC motor;

a regenerated energy processing circuit connected across the lines of said DC power source, including regenerated energy processing semiconductor switches (Q_1 to Q_6) for returning the energy regenerated by said AC motor to said AC power source, and resistors (R_1 and R_2) for protecting said regenerated energy processing semiconductor switches;

current direction detectors (10_1, 10_2, and 10_3) for detecting the direction of the current flowing through each of the phases of said AC motor;

a regeneration detection logic circuit (7) for producing a regeneration detection signal when said AC motor driving semiconductor switches are nonconductive and when the direction of the current detected by the current direction detectors is opposite to the direction of the current when said AC motor is driven; and

a regeneration drive circuit (8) for driving said regenerated energy processing semiconductor switches responsive to said regeneration detection signal.

4,521,725

SERIES SWITCHING REGULATOR

Charles A. Phaneuf, Stuart, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 2, 1983, Ser. No. 557,676

Int. Cl.³ G05F *1/56*

U.S. Cl. 323—282 **4 Claims**

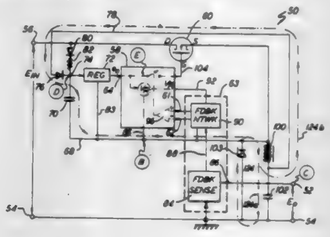
1. Series switching voltage regulator responsive to a source DC voltage signal received between an input terminal and signal ground, for providing a regulated amplitude DC voltage signal between an output terminal and signal ground, comprising:

output filter means, including inductor means connected between the output terminal and a switching bus means;

gated switch means, having a signal input connected to the source DC voltage signal at the regulator input terminal, a signal output connected to said switching bus, and a gate terminal, said gated switching means alternatively connecting and disconnecting the source DC voltage signal to said switching bus in response to a pulse width modulated (PWM) gate signal presented to said gate terminal;

feedback sensing means, for providing a feedback signal indicative of the actual value of the regulated amplitude DC voltage signal;

pulse width modulator means, having a low voltage potential input connected to said switching bus and a high voltage potential input responsive to high voltage potential signals provided thereto from a summing junction, said modulator means responsive to said feedback signal and said high potential signal for providing, in dependence on said feedback signal magnitude, said PWM gate signal to said switch means at a signal amplitude proportional to said high potential signal amplitude; and



bootstrap circuit means, including storage capacitor means responsive to the difference voltage magnitude between said switching bus and said summing junction for storing said difference voltage therein, and signal coupling means connected between said summing junction and the regulator output terminal for maintaining said difference voltage magnitude stored in said storage capacitor means at a minimum value substantially equal to said regulated amplitude DC voltage value, said bootstrap circuit providing to said summing junction, in the presence of each of said gate signals, said high potential signal at an amplitude greater than the source DC signal amplitude, whereby said gate signal amplitude to said switch means gate terminal is greater than said source DC signal amplitude at said switch means signal input.

4,521,726

CONTROL CIRCUITRY FOR A PULSE-WIDTH-MODULATED SWITCHING POWER SUPPLY

Brian J. Budnik, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 322,140, Nov. 17, 1981, abandoned. This application Oct. 3, 1983, Ser. No. 537,555

Int. Cl.³ G05F *1/56*

U.S. Cl. 323—283 **15 Claims**

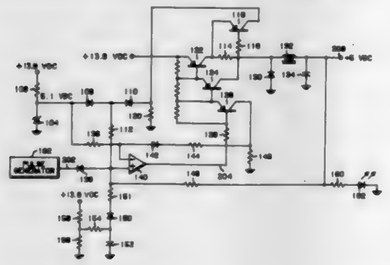
1. Control circuitry for a pulse-width-modulated power supply including switching means responsive to a first state of a control signal for coupling an input voltage from an input voltage source to output means and to a second state of the control signal for decoupling the input voltage from the output means for generating an output voltage, said control circuitry comprising:

a pulse signal source for generating a train of pulses at a predetermined repetition frequency;

a reference signal source for generating a reference voltage;

means, having a first input coupled by input resistor means to the reference voltage and a second input coupled by the output means to the output voltage, for comparing the output voltage to the reference voltage and generating at its output the first state of the control signal in response to each

pulse from the pulse signal source and the second state of the control signal when the magnitude of the output voltage is substantially equal to the reference voltage; and



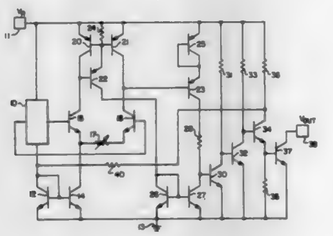
means coupled to the first input of the comparing means for reducing the magnitude of the reference voltage applied thereto by a predetermined amount when the control signal has the second state, said reducing means being disabled in response to the first state of the control signal.

4,521,727

HALL EFFECT CIRCUIT WITH TEMPERATURE COMPENSATION

James H. Atherton, and Silvo Stanojevic, both of Freeport, Ill., assignors to Honeywell Inc.

Filed May 23, 1983, Ser. No. 497,311
Int. Cl.[3] H03K *17/90*
U.S. Cl. 323—294 **17 Claims**



1. A circuit for providing a temperature independent switched output responsive to magnetic field strength comprising:

a Hall effect element having a pair of bias terminals located along a first axis providing for an electrical current therebetween and a pair of output terminals located along a second axis perpendicular to the first axis between which a Hall voltage is generated when said Hall effect element is subjected to a magnetic field having a component along a third axis perpendicular to the first and second axes;

power supply means for supplying a voltage between a supply conductor and a ground conductor;

first connecting means connecting said Hall effect element through its bias terminals between the supply conductor and the ground conductor;

first and second current carrying branches, one of which includes an impedance device;

first control means for controlling the sum of the currents carried by said first and second branches in response to the current through said Hall effect element;

second control means for differentially controlling the currents carried by said first and second branches in response to the Hall voltage; and

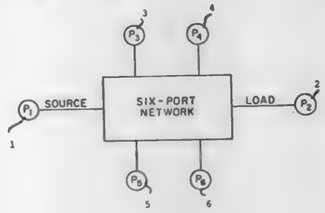
comparison means including an active load device operating such that a current of predetermined magnitude between first and second terminals thereof results in a current of the same magnitude between first and third terminals thereof, the first terminal being connected to the supply conductor and the second and third terminals comprising portions of said second and first branches respectively, said comparison means being operable to produce an output signal dependent on the relative magnitudes of the Hall voltage and the reference voltage and producing a switched output upon occurrence of a predetermined relationship between the Hall and reference voltages.

4,521,728

METHOD AND A SIX PORT NETWORK FOR USE IN DETERMINING COMPLEX REFLECTION COEFFICIENTS OF MICROWAVE NETWORKS

Shihe Li, Quebec, Canada, assignor to Renato Bosisio, Mont-Royal, Canada

Filed Aug. 23, 1982, Ser. No. 410,856
Int. Cl.[3] G01R *27/04*
U.S. Cl. 324—58 R **31 Claims**



1. A six port network for use in determining a complex reflection coefficient associated with a microwave network, comprising:

coupling means mounted between a first port and a second port of the six port network for transmitting microwave energy from a microwave source connected to the first port, to the microwave network connected to the second port, said coupling means including means for providing a first signal representative of the microwave energy supplied to the first port, and a second signal representative of the transmitted microwave energy reflected at the microwave network; and

means for transforming said first and second signals into first, second, third and fourth microwave power readings that can be used for calculating the value of the complex coefficient associated with the microwave network and for supplying said power readings to third, fourth, fifth and sixth ports of the six port network, respectively, said power readings being respectively proportional to $|a|^2$, $|1+ae^{j\phi}\Gamma|^2$, $|1+ae^{j(\phi+120°)}\Gamma|^2$ and $|1+ae^{j(\phi-120°)}\Gamma|^2$, wherein Γ is the complex reflection coefficient associated with the microwave network, a is a constant representing a calibrated parameter of the six port network, a is the microwave energy supplied to said first port, and ϕ is an arbitrary phase angle.

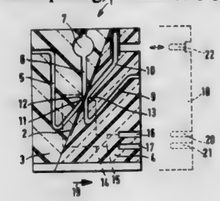
4,521,729

INSTRUMENT FOR MEASURING THE DEFORMING CAPACITY OF RED BLOOD CORPUSCLES

Holger Kiesewetter, Schneebergweg 211, D-5100 Aachen; Heinz Myrenne, Steffensgasse 9, D-5106 Roetgen, and Hans-Gunther Roggenkamp, Kullenhofstrasse 36, D-5100 Aachen, all of Fed. Rep. of Germany

Filed Apr. 28, 1983, Ser. No. 489,672
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1982, 3215719
Int. Cl.[3] G01N *27/00*
U.S. Cl. 324—71.1 **22 Claims**

1. In an apparatus for measuring the deformation capacity of erythrocytes comprising at least one sample vessel, a piece of foil walling said vessel off into two sample spaces, said foil having an opening therethrough for the motion of the liquid placed in the apparatus as a sample, said opening having a diameter smaller that the major quiescent diameter of an erythrocyte, means for producing a pressure head across the said foil in a buffer liquid placed in said vessel for causing a flow of said liquid through said opening, at least two electrodes placed on



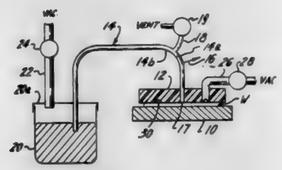
opposite or different sides of said foil, means for supplying said electrodes with voltage, and a voltage measuring system for measuring changes in said voltage at said electrodes on an erythrocyte making its way through said opening in a transit therethrough, wherein said measuring system times said transit.

4,521,730

MERCURY PROBES

Carl Shulman, Edgewater, N.J., assignor to MSI Electronics Inc., Woodside, N.Y.

Continuation-in-part of Ser. No. 226,357, Jan. 19, 1981. This application Sep. 7, 1983, Ser. No. 530,195
Int. Cl.[3] G01R *1/06, 31/26;* H01R *3/04*
U.S. Cl. 324—158 F **20 Claims**



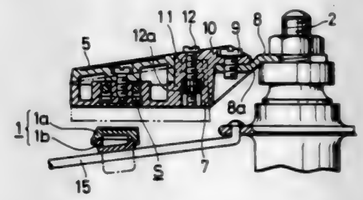
1. Mercury-probe apparatus including a mercury reservoir, an aperture member having a test aperture therein, means for forming a mercury contact to a test wafer placed against said aperture member, and contact-forming means including mercury passage means extending between said test aperture and the mercury in the reservoir, said mercury passage means including a mercury probe segment terminating at said test aperture and said mercury probe segment having a test circuit connection thereto, said mercury contact means also including means for developing a pressure difference between the mercury in the reservoir and the test aperture for causing the mercury to fill said mercury passage means from the reservoir to the test aperture, said mercury probe segment and said reservoir having an electrical connection therebetween at least when said passage means is filled with mercury, and means interposed along said mercury passage means between the reservoir and said mercury probe segment for introducing electrical insulation in place of at least part of said electrical connection.

4,521,731

DETECTOR ATTACHMENT ARRANGEMENT

Takashi Uyeda, and Masaaki Matsumoto, both of Sakai, Japan, assignors to Tsuyama Mfg. Co., Ltd., Japan

Filed Aug. 2, 1982, Ser. No. 404,311
Claims priority, application Japan, Aug. 18, 1981, 56-122702[U]
Int. Cl.[3] G01P *3/48, 3/12*
U.S. Cl. 324—174 **12 Claims**



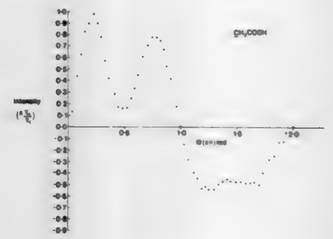
1. An arrangement for the attachment of means for the detection of speed of a wheel comprising a rotary member mounted for rotation with said wheel, said rotary member comprising magnet means arranged therein, and mount means for securing said rotary member to said wheel, and a detector comprising a magnetic flux sensor which operates when it enters a magnetic field generated by said rotary member, said detector being non-rotably clamped to hold said sensor within said magnetic field, said wheel being adapted to be rotatably supported on the hub of a wheel, said detector including an adjuster mechanism that is fixed to said hub, said adjuster mechanism being adjustably fixed relative to the detector so as to adjust the position of the detector relative to said rotary member to a predetermined interval.

4,521,732

PULSE SEQUENCE FOR USE IN PERFORMING NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY

David T. Pegg, 7 Fanfare St., Eight Mile Plain; David M. Doddrell, 30 Belinda Crescent, Springwood, and Max R. Bendall, 274 Ford Rd., Burbank, all of Brisbane, Queensland, Australia

Continuation-in-part of Ser. No. 358,636, Mar. 16, 1982, abandoned. This application Feb. 15, 1983, Ser. No. 466,543
Int. Cl.[3] G01R *33/08*
U.S. Cl. 324—300 **21 Claims**



1. A method of operating a nuclear magnetic resonance spectrometer in relation to a sample comprising two types of heteronuclei, said method comprising applying three sequential radiofrequency pulses to said sample, the first pulse being applied to the first type of nuclei, the second pulse being applied to the second type of nuclei and the third pulse being applied to the first type of nuclei, adjacent pulses being separated by a period and the third pulse being followed by a period during which heteronuclear scalar coupling interactions between the two types of nuclei evolve, and then detect-

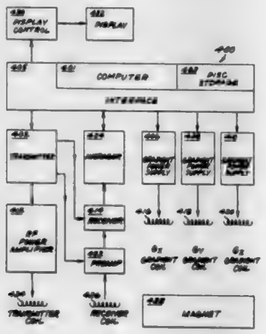
ing and Fourier transforming the free induction decay of the second type of nuclei.

4,521,733

NMR IMAGING OF THE TRANSVERSE RELAXATION TIME USING MULTIPLE SPIN ECHO SEQUENCES

Paul A. Bottomley, Clifton Park, and William A. Edelstein, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 23, 1983, Ser. No. 497,358
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—309 **46 Claims**



1. A method of generating NMR image data using multiple spin echo pulse sequences and multiple angle projections for producing images having an improved signal to noise ratio, comprising:

(a) selectively exciting nuclear spins within a planar slab of a sample and then applying a series of 180° nonselective radio frequency pulses to said sample at spaced time intervals to produce a corresponding series of m spin echo signals in the intervals following said 180° pulses, each spin echo having an associated signal to noise ratio;

(b) said selecting and applying steps being repeatedly performed for a succession of projections with distinct imaging magnetic field gradients being employed for each of said succession of projections;

(c) converting each of said series of spin echo signals in step (a) into a time series of values and averaging temporally corresponding points of said time series to produce an average time series of values representative of all of said spin echoes whereby the signal to noise ratio of said signal is improved by a factor related to the square root of the number m of distinct spin echoes in said series of spin echo signals;

(d) transforming said average time series of values, derived from said m spin echo signals, into frequency domain data representative of NMR spin density data for predetermined spatial projections through said sample, and storing said frequency domain data;

(e) processing said stored frequency domain data from said succession of projections into data representative of nuclear spin density distribution within said planar slab.

4,521,734

PULSED MAIN FIELD NUCLEAR MAGNETIC RESONANCE IMAGING SYSTEM

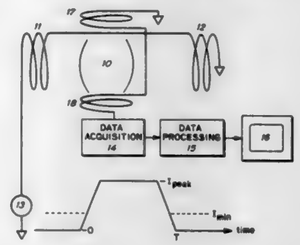
Albert Macovski, 2505 Alpine Rd., Menlo Park, Calif. 94025

Filed Jan. 13, 1983, Ser. No. 457,589
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—313 **12 Claims**

1. In a method for imaging a region of the body using nuclear magnetic resonance where the main magnet has a controllable field amplitude the steps of:

applying gradient fields;

increasing the amplitude of the main magnetic field during the image data acquisition time interval including the excitation and reception intervals for a time shorter than the thermal time constant of the main magnet;



decreasing the amplitude of the main magnetic field during times that image data is not being acquired; and

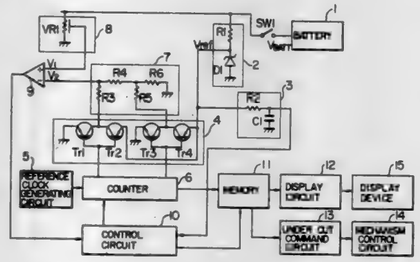
processing the nuclear magnetic resonance signals to provide spatial information for creating an image.

4,521,735

BATTERY VOLTAGE LEVEL DETECTING APPARATUS

Yoshikazu Kageyama, Moriguchi; Sakon Nagasaki, Katano, and Mineo Mino, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 25, 1982, Ser. No. 436,351
Claims priority, application Japan, Oct. 28, 1981, 56-173510; Oct. 19, 1982, 57-183953
Int. Cl.³ G01N *27/46*
U.S. Cl. 324—433 **8 Claims**



1. A battery voltage level detecting apparatus comprising:

a reference voltage generating circuit for generating a predetermined reference voltage unequal to zero voltage and lower than a preselected minimum voltage capable of enabling a load instrument;

a battery voltage detecting circuit connected to a battery for generating a battery detection voltage varying in correspondence to a variation in the voltage of said battery;

a reference clock generating circuit for generating reference clock pulses;

a control circuit receiving said references voltage, said control circuit generating first and second control signals;

a counter responsive to said first control signal to count up or down in synchronism with said reference clock pulses and generate count output signals;

a voltage conversion circuit, responsive to the outputs of said counter and said reference voltage generating circuit, for converting said count output signals to a corresponding digital output signal composed of either a zero voltage or said reference voltage;

a D-A conversion circuit for converting said digital output signal to a corresponding analog output voltage;

a comparison circuit for comparing said battery detection voltage of said battery voltage detecting circuit and said analog output voltage of said D-A conversion circuit to generate a high or low level output signal;

said control circuit being responsive to said high or low level output signal to generate said first control signal and responsive to the changeover of said high or low level output signal between the high and low levels to generate said second control signal and then preset said counter;

a memory circuit connected to said counter and said control circuit and responsive to said second control signal to store data to the count value of said counter; and

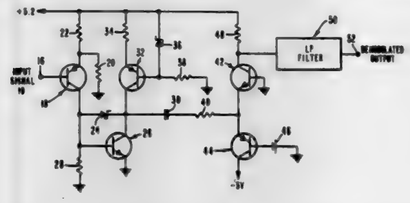
a display circuit for displaying said stored data of said memory circuit on a battery voltage level display device.

4,521,736

DEMODULATOR FOR PULSE WIDTH MODULATED SIGNALS

John O. Ryan, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed May 9, 1979, Ser. No. 37,554
Int. Cl.³ H03D *1/18*
U.S. Cl. 329—102 **9 Claims**



1. A demodulator circuit for demodulating high frequency pulse width modulated signals wherein the input signal information is represented by time-variable pulse widths, comprising the combination of;

capacitor means for receiving a charge which is proportional to the input pulse width;

output switch means coupled to the capacitor means for enabling the capacitor to charge in the presence of an input pulse, and for reading out the capacitor charge simultaneously with enabling the capacitor to discharge upon completion of the pulse; and

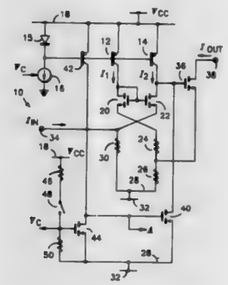
wherein the discharge current represents the charge received by the capacitor means and thus the demodulated signal.

4,521,737

BIPOLAR-MOS CURRENT AMPLIFIER HAVING ACTIVE TURN-OFF CIRCUITRY

Byron G. Bynum, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 22, 1984, Ser. No. 582,357
Int. Cl.³ H03F *3/16*
U.S. Cl. 330—51 **7 Claims**



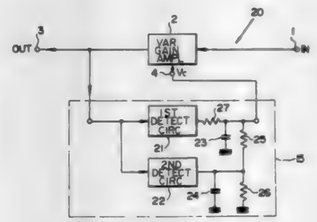
3. In a current amplifier circuit including a current source

4,521,738

GAIN CONTROL CIRCUIT

Kenzo Akagiri, and Masayuki Katakura, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 246,392, Mar. 23, 1981, Pat. No. 4,422,049. This application Sep. 21, 1983, Ser. No. 534,509
Claims priority, application Japan, Mar. 24, 1980, 55-37112
Int. Cl.³ H03G *7/00*
U.S. Cl. 330—134 **19 Claims**



1. A gain control circuit including variable gain amplifier means having input, output and control terminals, and control means for generating a control signal applied to said control terminal for controlling the gain with which said variable gain amplifier means amplifies an input signal applied to said input terminal for providing an output signal to said output terminal, said control means comprising:

first detector means for detecting a signal passed through the amplifier means and providing a first detector output representative of the level of said signal passed through the amplifier means;

second detector means for detecting said signal passed through the amplifier means and providing a second detector output representative of the level of said signal passed through the amplifier means;

first and second capacitors respectively connected at one side thereof to said first and second detector means and at the other side thereof to ground so as to be chargeable by said first and second detector outputs, respectively;

said one side of said first capacitor being connected with said control terminal of the variable gain amplifier means so that the charge on said first capacitor constitutes said control signal;

a first resistor connected between said one sides of said first and second capacitors; and

coupled to a power supply conductor for providing turn on current whenever an operating potential is supplied to the power supply conductor and a circuit responsive to the turn on current for forward biasing an output MOS transistor coupled thereto, an active turn-off circuit for inhibiting turn on of the output MOS transistor due to voltage transients that may occur on the power supply conductor, comprising:

a transistor of a first conductivity type having base, emitter and collector electrodes, said base and emitter electrodes being coupled to the power supply conductor;

a MOS transistor of a second conductivity type having gate, source and drain electrodes, said gate electrode being connected to said collector electrode of said transistor, said drain electrode being connected to the gate electrode of the output MOS transistor;

circuit means for connecting said source of said MOS transistor to a reference potential; and

switch means connected to said gate electrode of said MOS transistor for rendering said MOS transistor non-conducting in response to a circuit turn-on command signal and for rendering said MOS transistor conducting to thereby inhibit the output MOS transistor in response to a circuit turn-off command signal.

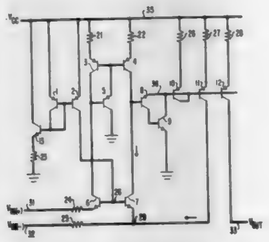
a second resistor connected with said one side of said second capacitor for the discharge of said second capacitor through said second resistor and for the discharge of said first capacitor through said first and second resistors only after substantial discharge of said second capacitor through said second resistor so that the discharge time constant of said first capacitor is varied in accordance with said second detector output.

4,521,739

LOW OFFSET VOLTAGE TRANSISTOR BRIDGE TRANSCONDUCTANCE AMPLIFIER

William A. Peterson, Hanover Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 26, 1983, Ser. No. 498,257
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—257 **5 Claims**



1. A transconductance amplifier comprising:

a differential input stage operative for accepting a voltage signal input and including:

first and second transistors having their base electrodes connected together to receive a common bias signal,

first and second resistors connected in series with first and second emitter electrodes of the first and second transistors respectively, and the first and second resistors being connected to sense the voltage signal input; whereby a series connection of the first resistor, a base emitter junction of the first transistor, a base emitter junction of the second transistor and the second resistor are connected in parallel with the voltage signal input

a current mirror source including third, fourth and fifth transistors and the third and fourth transistors being coupled to supply current to collector electrodes of the first and second transistors respectively, and the fifth transistor being coupled jointly to a base electrode of the third and fourth transistors for controlling a base current therein, and

output means coupled to a node joining the second and fourth transistors and including a sixth transistor for providing a current feedback signal connected to the second emitter.

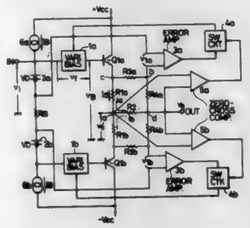
4,521,740

BIAS CURRENT COMPENSATED AMPLIFIER

Kazuaki Nakayama, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 18, 1983, Ser. No. 467,637
Int. Cl.³ H03F *3/26*
U.S. Cl. 330—267 **10 Claims**

1. An emitter-follower type SEPP circuit comprising: first and second amplifying elements connected in and biased in emitter-follower and Class B SEPP configurations; first and second load means coupled, respectively, between output electrodes of said first and second amplifying elements and an output terminal; first and second signal summing means having first inputs coupled to an input terminal and outputs coupled to input electrodes of said first and second amplifying elements, respectively; first and second error signal amplifying means provided for said first and second amplifying elements, respectively, each of said first and second error signal amplifying means having first and second noninverting input terminals and an inverting input terminal, said inverting input terminals being coupled to said output electrodes of said first and second amplifying elements, respectively, and said first and second error signal amplifying means having outputs coupled to second inputs of said first and second signal summing means, respectively; first and second means for level shifting an input signal present on said input terminal coupled between said input terminal and said first noninverting input terminals of said first and second error signal amplifying means, respectively; and first and second means for level shifting an output signal present on said output terminal coupled between said output terminal and said second noninverting input terminals of said first and second error signal amplifying means, respectively; wherein, while said first error signal amplifying means amplifies an error signal developed between its inverting input terminal and its first noninverting input terminal, said second error amplifying means amplifies an error signal developed between its inverting input terminal and its second noninverting input terminal, and while said second error amplifying means amplifies an error signal developed between its inverting input terminal and its first noninverting input terminal, said first error amplifying means amplifies an error signal developed between its inverting input terminal and its second noninverting input terminal.

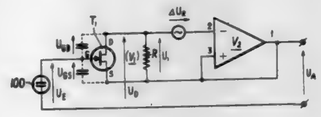


4,521,741

IMPEDANCE TRANSFORMER CIRCUIT

Ernst Ruberl, Guntramsdorf, Austria, assignor to AKG Akustische u.Kino-Geräte Gesellschaft m.b.H., Austria

Filed Oct. 20, 1982, Ser. No. 435,501
Claims priority, application Austria, Oct. 22, 1981, 4523/81
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—277 **16 Claims**



1. An impedance transformer circuit for a capacitive voltage source comprising:

a first amplifier stage having a high input impedance and gain, a load resistance, an output and two inputs;

a second amplifier stage having a high gain, an output, an inverting input and a non-inverting input; and

a reference potential connection;

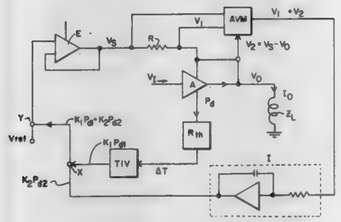
said first stage output connected to said second stage inverting input, said second stage output connected in feedback connection to said second stage non-inverting input and to one of said first stage inputs, said load resistance being controlled by a capacitive voltage source connected between the other of said first stage inputs and said reference potential connection, said reference potential connection not being connected to any input of said first and second amplifier stages, and said load resistance of said first amplifier stage being connected between said inverting and non-inverting inputs of said second amplifier stage.

4,521,742

AMPLIFIER POWER SUPPLY WITH LARGE DYNAMIC HEADROOM

Erik Edvardsen, London, England, assignor to NAD Holding Limited, London, England

Continuation of Ser. No. 327,424, Dec. 4, 1981, abandoned. This application Feb. 22, 1984, Ser. No. 582,013
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—289 **22 Claims**



1. A power supply for use with a power amplifier having a predetermined maximum time-averaged operating power, said power supply comprising,

means capable of supplying power to said amplifier,

means responsive to the instantaneous power dissipated in said amplifier for controlling the power provided by said supplying means to said amplifier so that, under steady-state conditions, the instantaneous power provided to said amplifier is at most equal to said maximum time-averaged operating power, and

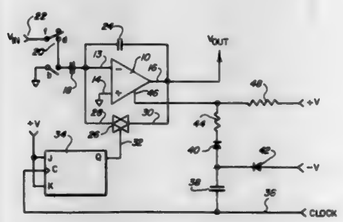
means for delaying the operation of said controlling means for a first predetermined time interval so that the instantaneous power supplied by said supplying means to said amplifier can exceed said predetermined maximum time-averaged operating power for said first predetermined time interval.

4,521,743

SWITCHED CAPACITOR AMPLIFIER

Malcolm L. Heimer, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Dec. 29, 1983, Ser. No. 566,701
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—296 **13 Claims**



1. A switched capacitor amplifier comprising:

an operational amplifier having an inverting input terminal, a non-inverting input terminal, a bias current input terminal, and an output terminal;

a capacitor coupled to said inverting input terminal of said operational amplifier;

timing means coupled to said operational amplifier for providing a plurality of timing cycles;

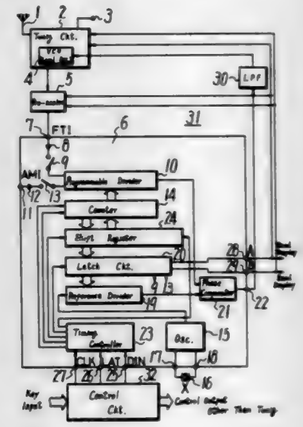
current generating means responsive to said timing means for providing a high bias current only at the beginning of each timing cycle to the bias input terminal of said operational amplifier.

4,521,744

TUNING APPARATUS OF PHASE-LOCKED LOOP TYPE

Takaaki Yamada, Zama; Yukio Tsuda, Atsugi, and Akira Yamakoshi, Saitama, all of Japan, assignors to Sony Corporation, Tokyo

Filed Dec. 17, 1982, Ser. No. 450,793
Claims priority, application Japan, Dec. 22, 1981, 56-207303
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—1 A **4 Claims**



1. A tuning apparatus of the type including a phase-locked loop comprising:

a voltage controlled oscillator which is working as a local oscillator and producing a first output signal;

a phase-locked loop integrated circuit including programmable divider means responsive to said first output signal of said voltage controlled oscillator to produce a second output signal, reference frequency signal generating circuit means producing a third output signal, phase comparator means supplied with said second and third output signals for providing a controlling output to said voltage controlled oscillator in response to said second and third output signals, and memory means; and

control circuit means formed separately from said phase-locked loop integrated circuit for supplying control data to said memory means serially;

said memory means being responsive to control data stored therein to supply said control data in parallel to a selected one of said programmable divider means and said reference frequency signal generating means for fine control of said second and third output signals, respectively.

4,521,745

INTERACTIVE NON-HIERARCHICAL ADAPTIVELY SYNCHRONIZED OSCILLATOR NETWORK AND PHASE LOCKED LOOP OSCILLATOR FOR USE THEREIN

Robert M. Falconer, Ipswich, England, assignor to British Telecommunications, England

Filed Jun. 3, 1982, Ser. No. 384,475
Claims priority, application United Kingdom, Jun. 8, 1981, 8117487
Int. Cl.³ H03L *7/00*
U.S. Cl. 331—2 **11 Claims**

1. A network of at least three terminals each being interconnected to the others by respectively associated incoming and outgoing signal links therebetween, each terminal comprising:

a controlled-frequency oscillator having a control input connection and an output,

a locking circuit means having an output coupled to said control input connection of the oscillator to synchronize

the frequency of the oscillator with the frequency of an incoming signal to the terminal when coupled to a central input of the locking circuit, and

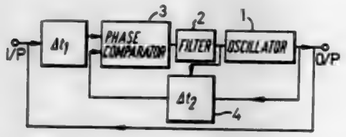
reconfiguration control means operative to monitor a plurality of incoming signals to the terminal on said incoming links thereto and to connect the control input of the locking circuit to any one of said incoming signal links, and to connect or disconnect the local oscillator output to or from the outgoing links from the terminal;

the terminals being interconnected such that each is linked via its respective incoming signal links to an output link of at least one of the other terminals in the network to receive output signals from the respective oscillator in those other terminals;

characterized in that:

the reconfiguration control means in each terminal monitors the received incoming signals on said incoming links and compares the phase of each with that of its own corresponding oscillator output,

when said comparison detects an out-of-phase incoming signal the reconfiguration control means disconnects its own oscillator output from its own outgoing links and



connects the locking circuit control input to one of the incoming signals,

when said comparison does not detect an out-of-phase incoming signal the reconfiguration control means connects its own oscillator output to its own outgoing links,

the reconfiguration control means is further operative to detect whether its oscillator has locked or remains locked to an incoming signal to which it has been connected, and

(i) if so, to connect its oscillator output to its outgoing links, and if there remains another out-of-phase incoming signal, to connect its locking circuit control input to said another out-of-phase incoming signal,

(ii) if it has not locked, to connect its locking circuit control input to any other one of the incoming signal links for which lock has not yet been attempted, until all incoming signal links have been connected without locking, and then to reconnect its own oscillator output to its own outgoing links,

so that the plurality of terminals tend towards stable synchronization provided that a forward path exists directly or indirectly from any one terminal, which then becomes the master, to the remaining terminals, which become the slaves.

4,521,746

MICROWAVE OSCILLATOR WITH TM01δ DIELECTRIC RESONATOR

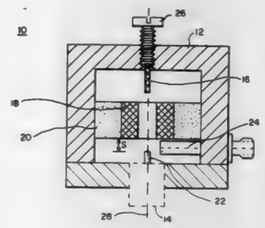
Eugene J. Hwan, San Carlos, Calif., and Darko Kajfez, Oxford, Miss., assignors to Harris Corporation, Melbourne, Fla.

Filed Aug. 31, 1983, Ser. No. 527,953
Int. Cl.³ H01P *7/10*; H03B *5/18*
U.S. Cl. 331—96 **9 Claims**

1. A microwave oscillator comprising

a tubular dielectric resonator operating in a TM01δ mode and having a resonant oscillation frequency,

an adjustable dielectric tuning rod located coaxially to said resonator for tuning to the resonant frequency of said resonator, said resonator and said tuning rod having similar dielectric properties, and



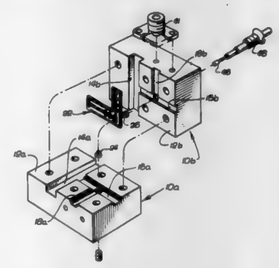
a metal housing for supporting said resonator and said tuning rod.

4,521,747

SUSPENDED STRIPLINE VARACTOR-TUNED GUNN OSCILLATOR

Raghbir S. Tahim, Buena Park; George M. Hayashibara, Wilmington, and Kai Chang, Rancho Palos Verdes, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 11, 1983, Ser. No. 540,471
Int. Cl.³ H03B *9/14*
U.S. Cl. 331—107 SL **8 Claims**



1. A voltage-controlled oscillator with high power output characteristics at millimeter-wavelength frequencies, said oscillator employing integrated-circuit techniques and comprising:

a Gunn diode circuit fabricated as a suspended stripline, and including

an insulating substrate,

a Gunn diode contact pad on a first face of said substrate,

a dc bias input circuit connected to said contact pad and including lowpass filter means, and

an output circuit connected to said contact pad and including an impedance-matching section;

a Gunn diode mounted in electrical connection with said contact pad;

a varactor contact pad on the second face of said substrate opposite said Gunn diode contact pad; and

a varactor diode mounted in substantial alignment with said Gunn diode, in contact with said varactor contact pad.

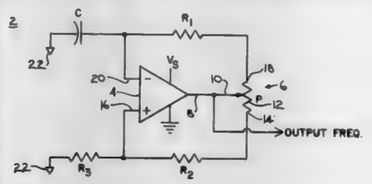
4,521,748

ADJUSTABLE FREQUENCY OSCILLATOR

Lawrence J. Ryczek, Nashotah, and William J. Janutka, West Allis, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 30, 1983, Ser. No. 509,951
Int. Cl.³ H03K *3/023*
U.S. Cl. 331—108 D **16 Claims**

1. An adjustable frequency oscillator comprising in combination comparator means having a comparing input terminal connected to an RC charging current circuit, and a reference threshold input terminal, and comparing voltage at said comparing input terminal due to said charging current against



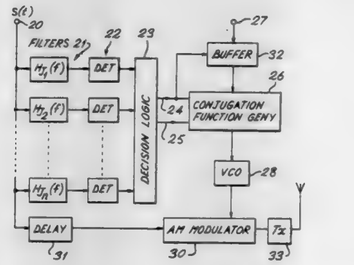
threshold trip voltage at said reference terminal, and single means at the output of said comparator means for concurrently changing both charging current and threshold trip voltage for said comparator means to change the frequency of oscillation of said comparator means output.

4,521,749

SIMULTANEOUS AMPLITUDE AND ANGLE MODULATION USING DETECTION OF COMPLEX ZEROES

Gordon B. Lockhart, Leeds, England, assignor to National Research Development Corporation, London, England

Filed Sep. 20, 1982, Ser. No. 420,572
Claims priority, application United Kingdom, Oct. 1, 1981, 8129654; Dec. 8, 1981, 8137002
Int. Cl.³ H03C *1/00, 3/00*; H03D *5/00*
U.S. Cl. 332—17 **18 Claims**



1. A method of modulating a carrier signal using both amplitude and angle modulation, comprising the steps of

detecting the occurrence, and imaginary root values, of complex zeros in a first modulating signal,

angle modulating the carrier signal on the occurrence of at least some complex zeros, the magnitude of the angle modulation being a function of the respective imaginary root values detected for those zeros and of a second modulating signal having not more than three possible values, and

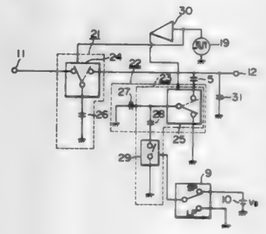
amplitude modulating the angle modulated carrier signal in accordance with the first modulating signal.

4,521,750

CHARACTERISTIC SWITCHING CIRCUIT

Isao Fukushima; Kazuyoshi Kuwahara; Keiichi Itoigawa; Yasunori Kobori, and Hideo Nishijima, all of Katsuta, Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering, Ltd., both of Tokyo, Japan

Filed Apr. 7, 1983, Ser. No. 482,793
Claims priority, application Japan, Apr. 9, 1982, 57-58146
Int. Cl.³ H03H *11/06, 11/40*
U.S. Cl. 333—28 R **8 Claims**



1. A circuit having selectable switching characteristics comprising:

at least one equivalent resistive means for producing a resistance, said resistive means including a first capacitor element having one terminal grounded and a first switching means having first, second and third terminals, another terminal of said first capacitor element being connected with said third terminal of the first switching means, said first switching means being connected between the first and third terminals and between the second and third terminals alternately in response to a clock signal thereby to produce said equivalent resistance between said first and second terminals of the first switching means;

another capacitor element having one terminal grounded; and

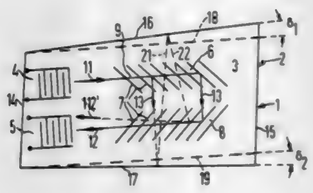
a second switching means connected between said another terminal of said first capacitor element and another terminal of said another capacitor element, said second switching means being opened or closed by a control signal thereby to change the characteristics of said circuit selectively.

4,521,751

ELECTRONIC COMPONENT FUNCTIONING WITH REFLECTED ACOUSTIC WAVES

Gerd Riha, Munich, and Richard Veith, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

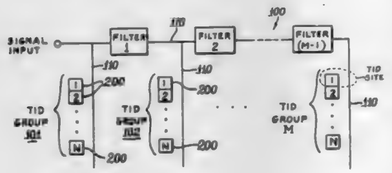
Filed Aug. 4, 1983, Ser. No. 520,451
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1982, 3230566
Int. Cl.³ H03H *9/25, 9/42, 9/64*
U.S. Cl. 333—151 **9 Claims**



1. An electronic component functioning with a reflected acoustic wave, comprising: a substrate body; at least one reflector means on the substrate body with reflector fingers disposed at an oblique angle relative to a propagation direction

of an incoming primary acoustic wave; an input transducer means on the substrate body exciting the acoustic wave; at least one output transducer means on the substrate body having an acoustic wave receiving aperture; the substrate body having two opposite longitudinal edges extending along a primary propagation direction of the acoustic wave proceeding from the input transducer means; a disruptive weave being emitted from said reflector means and being reflected at the opposite edges; and at least one of the opposite edges being aligned at an angle δ deviating from said primary propagation direction so that the opposite edges are non-parallel to one another, and wherein δ is related to $\frac{1}{4}$ arcsin $(n \cdot \lambda)/a$ where a is a length dimension of given length units which is equal to that portion of the aperture of the output transducer means acoustically irradiated by the disruptive acoustic wave, λ is a wave length of the acoustic wave in the same length units as a and proceeding at a surface of the substrate body corresponding to a center frequency, and n is a natural number.

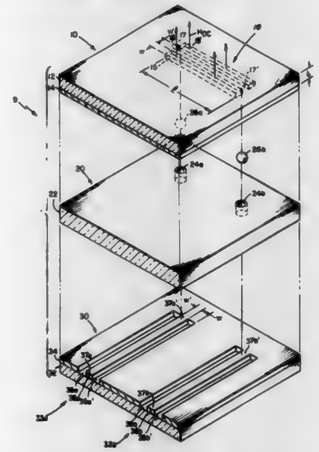
4,521,752
PASSIVE TRANSIENT RECORDING SYSTEMS
David A. Gradl, Des Plaines, Ill., assignor to Q-Dot, Inc., Des Plaines, Ill.
Filed Sep. 30, 1982, Ser. No. 431,609
Int. Cl.³ G11C *11/34*; H03K *5/08*; H03H *17/00*; H01P *9/00*
U.S. Cl. 333—165 **13 Claims**



1. An integrated circuit device for recording pulse shaped signal information, comprising a plurality of threshold integrating devices each comprising means for accumulating charge in a potential well upon application of at least one signal thereto in excess of a predetermined threshold potential value, each of said threshold integrating devices having a different threshold potential value, means for receiving a pulsed signal to be analyzed and for applying said signal to be analyzed to each of said plurality of threshold integrating devices, and means for measuring the amount of charge accumulation in the respective potential wells of each of said threshold integrating devices.

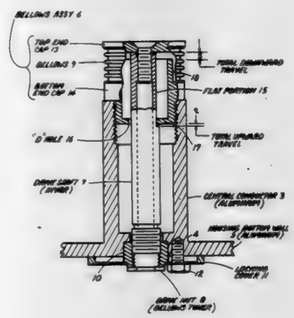
4,521,753
TUNED RESONANT CIRCUIT UTILIZING A FERROMAGNETICALLY COUPLED INTERSTAGE LINE
Ernst F. R. A. Schloemann, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Dec. 3, 1982, Ser. No. 446,532
Int. Cl.³ H01P *1/203, 1/218*
U.S. Cl. 333—204 **9 Claims**

1. A magnetically tuned resonant circuit comprising:
(a) input and output transmission lines comprising:
(i) a first dielectric;
(ii) a first ground plane conductor disposed on a first surface of said first dielectric;
(iii) a pair of strip conductors disposed on said first surface of said first dielectric, and dielectrically spaced from said ground plane conductor with one of said strip conductors being an input strip line and the other one being an output strip line;
(b) an interstage transmission line body comprising:
(i) a second dielectric;
(ii) a second ground plane conductor disposed on a surface of said second dielectric; and
(iii) a strip conductor disposed on said surface of said second dielectric and dielectrically spaced from said second ground plane conductor; and



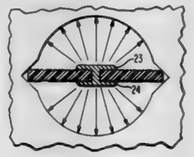
(c) means, including a pair of gyromagnetic resonant bodies, for coupling energy between the input line and output line, with energy fed to the input line being coupled to the interstage line through a first one of the magnetic resonant bodies, said energy propagating along the interstage line and being coupled to the output line through the second one of the magnetic resonant bodies.

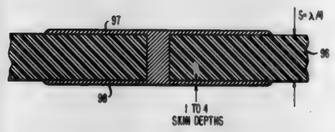
4,521,754
TUNING AND TEMPERATURE COMPENSATION ARRANGEMENT FOR MICROWAVE RESONATORS
Joseph C. Ranghelli, Brooklyn, N.Y., and Joseph A. La Bella, Nutley, N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 29, 1983, Ser. No. 527,627
Int. Cl.³ H01P *7/04*
U.S. Cl. 333—224 **31 Claims**



1. A microwave resonator having an adjustable resonant frequency comprising:
an enclosed resonator housing;
a hollow central conductor having one end fastened to a bottom wall of said housing and extending toward a top wall of said housing, the other end of said central conductor being spaced from said top wall and including an adjustable bellows assembly disposed coaxial of a longitudinal axis of said central conductor; and
a non-rotating, axially movable drive shaft disposed coaxial of said axis within said central conductor, one end of said drive shaft being fastened to said bellows assembly and the other end of said drive shaft being coupled to a drive means disposed in said bottom wall to cause axial movement of said drive shaft to adjust the axial length of said bellows assembly and, hence, the axial length of said central conductor to adjust said resonant frequency;
said drive means including a drive nut threaded onto said other end of said drive shaft and retained in a recess in the outer surface of said bottom wall, rotation of said drive nut axially moving said drive shaft.

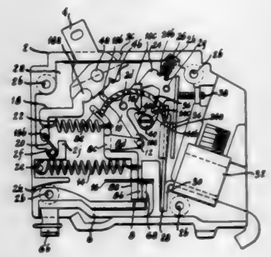
4,521,755
SYMMETRICAL LOW-LOSS SUSPENDED SUBSTRATE STRIPLINE
Eric R. Carlson, Fair Haven, and Martin V. Schneider, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 14, 1982, Ser. No. 388,031
Int. Cl.³ H01P *3/06, 3/08*
U.S. Cl. 333—244 **5 Claims**





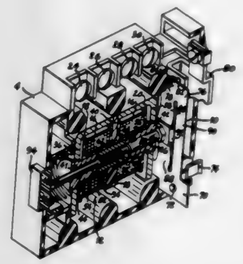
1. A two-conductor, two-terminal transmission line for radio frequency energy comprising:
a cylindrical channel outer conductor formed within a single, integral mechanically rigid continuous material, at least the surface of the cylindrical channel having a continuous metallic conductive material, a planar line inner conductor having a rectangular cross-sectional shape positioned substantially centrally within the cylindrical channel and extending substantially coextensively with the length of the transmission line to form a rigid, inflexible transmission line having precise dimensional control and symmetry of the geometry within the cylindrical channel wherein field energy is evenly distributed in the air region above and below the planar line inner conductor in the cylindrical channel to provide substantially uniform current densities thereby reducing transmission losses in the transmission line, and
transmission line further comprises laterally opposing grooves having a triangular cross-section extending longitudinally in the cylindrical channel and a rigid dielectric member serving as a substrate for supporting and positioning said inner conductor wherein said inner conductor comprises two strips mounted on opposing surfaces of said dielectric member and the thickness of the inner conductor is between one to four skin depths at the frequency of operation.

4,521,756
CIRCUIT BREAKER HAVING INCREASED CONTACT OPENING VELOCITY AT TRIP OPERATION
Kenneth A. Forsell, Port Washington, Wis., assignor to Eaton Corporation, Cleveland, Ohio
Filed Dec. 8, 1983, Ser. No. 559,595
Int. Cl.³ H01H *5/00*
U.S. Cl. 335—21 **19 Claims**



1. An electric circuit breaker comprising a movable contact arm pivotally supported on a latch lever for movement between open and closed contact positions by a pair of springs connected to said contact arm at opposite sides of said contact arm pivotal support for biasing said arm in opposite pivotal directions, operating means having connection with one of said springs and being manually operable for varying the force applied to said arm by said one of said springs to be greater or less than the force applied to said arm by the other of said springs for moving said contact arm in respective opposite rotational directions between said open and closed contact positions, and current responsive trip means normally latching said latch lever and being operable for releasing said latch lever, said springs upon release of said lever providing a unidirectional bias on said latch lever and said contact arm for moving said contact arm to a contact open position.

4,521,757
HIGH SPEED ELECTROMAGNETIC MECHANICAL SWITCH
Jerome K. Hastings, Sussex; James H. Bigelow, and Robert L. Pearson, both of Milwaukee, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio
Filed Aug. 9, 1982, Ser. No. 406,615
Int. Cl.³ H01H *51/24*
U.S. Cl. 335—79 **4 Claims**



1. A high speed electromagnetically actuated electromechanical switch combination, comprising:
a housing;
electrical contact means in said housing, including bistable snap blade means operable between different circuit positions;

a pair of coaxial coils in said housing energizable to create magnetic flux;

a shuttle plunger in said housing axially movable between first and second positions to actuate said snap blade means;

magnetically continuous yoke means in said housing for directing the flux paths of said coils, said yoke means having a first portion spaced from said plunger by a first axial gap when said plunger is in said second position, said yoke means having a second portion spaced from said plunger by a second axial gap when said plunger is in said first position, said yoke means having a third portion spaced from said plunger by a third gap in each of said first and second plunger positions;

such that when said plunger is in said second position and said first coil is energized, a primary flux path is created and extends around said first coil through said yoke means and said plunger and across said first and third gaps, and a secondary flux path is created and extends around both said coils through said yoke means and said plunger and across said first gap, said primary path flux force attracting said plunger to said first position to close said first gap, said secondary path flux force attracting said plunger to remain in said second position; and

such that when said plunger is in said first position and said second coil is energized, a primary flux path is created and extends around said coil through said yoke means and said plunger and across said second and third gaps, and a secondary flux path is created and extends around both said coils through said yoke means and said plunger and across said second gap, said last mentioned primary path flux force attracting said plunger to said second position to close said second gap, said last mentioned secondary path flux force attracting said plunger to remain in said first position, the flux paths from the axial ends of said plunger extending substantially only axially through respective said first and second gaps to said yoke means, said third portion of said yoke means being a central leg extending radially between said coils, said leg having an inner end facing said plunger and separated radially therefrom by said third gap, the axial length of said third gap being no greater than the axial spacing of said coils, the force on said plunger from said primary flux around either said coil always being stronger than the force on said plunger from said secondary flux, preventing residual magnetic latching, such that said plunger moves in either direction responsive to the primary flux in the open gap and actuates said snap blade means without the need for mechanical assistance;

first non-magnetic spacer means axially between said yoke means and said plunger in said first position, the ratio of the axial width of said spacer means to the radial width of said third gap setting the ratio of said second mentioned primary and secondary flux forces such that the primary flux force is greater than the secondary flux force, and the difference therebetween is greater than the mechanical gradient of said snap blade means; and

second non-magnetic spacer means axially between said yoke means and said plunger in said second position, the ratio of the axial width of said second spacer means to the radial width of said third gap setting the ratio of said first mentioned primary and secondary flux forces such that the primary flux force is greater than the secondary flux force, and the difference therebetween is greater than the mechanical gradient of said snap blade means.

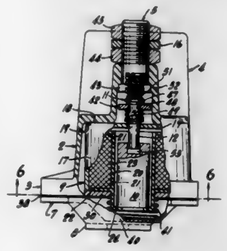
4,521,758

ELECTRIC SOLENOID STRUCTURE

Larry J. Krubsack, Colgate, Wis., assignor to Clum Mfg. Co. Inc., Hartland, Wis.

Filed Aug. 29, 1983, Ser. No. 527,236
Int. Cl.³ H01H *50/02*
U.S. Cl. 335—131 **13 Claims**

10. A solenoid unit for use in a vibrating and shook environment, comprising a plastic molded housing molded in a cup-shape having an open end, said housing having a mounting flange at the open end and a coil section extending from said mounting flange to an inner wall of said coil section and having an integral contact section extending from said coil section, a coil unit located within said coil section and including a cylindrical coil and an armature slidably mounted within said coil,



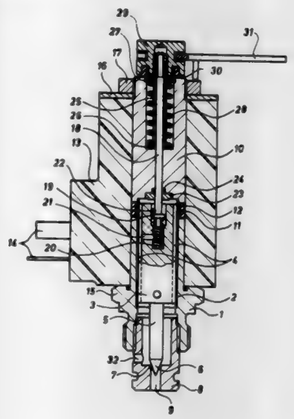
an outer magnetic can formed of a magnetic material and having an outer based portion located abutting said inner wall of said coil section, said can having a bottom coil plate adjacent said open end, said coil plate and said housing having an interlocking means in the form of a ear and corner to positively support said coil unit and prevent rotational movement of said coil unit within said housing.

4,521,759

ACTIVATING MAGNET

Cristoph Gibas, Neunkirchen, Fed. Rep. of Germany, assignor to bso Steuerungstechnik GmbH, Fed. Rep. of Germany

Filed Apr. 17, 1984, Ser. No. 601,299
Claims priority, application Fed. Rep. of Germany, May 11, 1983, 3317226
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—255 **8 Claims**



1. An activating magnet comprising:

a magnet housing, a magnet armature movably housed in the magnet housing, and a pole element

a magnetic coil surrounding the magnet housing;

an activating spring biased between the magnet armature and the pole element;

an activating member arranged on the side of the magnet armature opposite the pole element; and

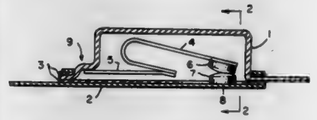
a hand bolt slidably arranged within said magnet housing and connected to the opposite side of the armature as the activating member such that the hand bolt may exert a tensile force on the armature and may also be used to slidably release that tensile force from said armature.

4,521,760

MINIATURIZED CIRCUIT BREAKER

Douglas C. Carbone, Wells, and Philip J. Dennis, Cape Elizabeth, both of Me., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 19, 1983, Ser. No. 533,184
Int. Cl.³ H01H *37/12, 37/54*
U.S. Cl. 337—368 **2 Claims**



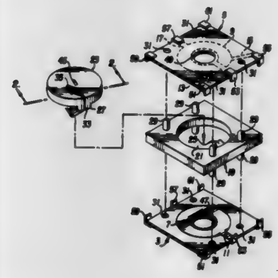
1. A circuit breaker comprising: a two piece metal enclosure, the two metal pieces thereof being electrical terminals and being insulated from each other, one of the metal pieces being a base and the other being a cover, the cover having a step at one end thereof; and a PMB bimetal disposed within the enclosure, the PMB bimetal comprising a cantilever section and a U shaped segment, the U shaped segment having a short leg and a long leg, one end of the cantilever section being fastened to the step, and the other end of the cantilever section being fastened to the short leg of the U shaped segment, and a contact fastened to the long leg of the U shaped segment for making electrical contact with a fixed contact fastened to the base, the cantilever section comprising a high expansion layer and a low expansion layer, the high expansion layer being in contact with the step at the end of the cover.

4,521,761

SMALL OUTLINE POTENTIOMETER

Edward W. Welch, Dallas, Pa., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed Feb. 17, 1984, Ser. No. 581,152
Int. Cl.³ H01C *10/34, 10/30*
U.S. Cl. 338—174 **14 Claims**



1. A potentiometer comprising:

a first substrate having a conductive layer formed thereon;

a second substrate having a resistive layer formed thereon, the first and second substrates being arranged in a spaced-apart facing relationship with respect to each other;

a circular disk-like rotor disposed between the first and second substrates, the rotor including a radial opening formed therein; and

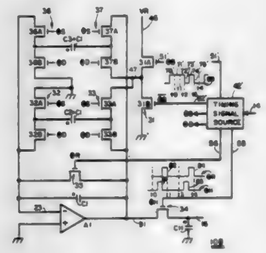
a one-piece conductive wiper formed from a conductive resilient material disposed in the rotor opening, the wiper including a pair of arms having a series of parallel resilient members formed thereon extending above and below the plane of the rotor with the resilient members of one arm arranged to contact the conductive layer of the first substrate and the resilient members of the other arm arranged to contact the resistive layer of the second substrate.

4,521,762

INTEGRATABLE D/A CONVERTER

Christopher W. Kapral, San Carlos, Calif., assignor to GTE Automatic Electric Laboratories, Incorporated, Phoenix, Ariz.

Division of Ser. No. 296,733, Aug. 27, 1981, Pat. No. 4,451,820.
This application Dec. 20, 1982, Ser. No. 455,787
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **12 Claims**



1. The method of converting a digital input word, corresponding to a binary number and having an even number of bits, to an associated analog signal comprising the steps of:

electrically connecting one and other sides of a first capacitor to the inverting input terminal and the output terminal of a differential input operational amplifier means;

electrically connecting the non-inverting input of the amplifier to a ground reference voltage for impressing a virtual ground potential on its inverting input terminal; the amplifier and first capacitor, which is a feedback capacitor, operating as a voltage source;

sequentially impressing one of a prescribed voltage from a voltage source and the ground reference voltage on a bus line for a binary one and zero, respectively, in the associated bit position in the digital word; and

electrically connecting one and other sides of one of second and third capacitors, each having a capacitance equal to that of the first capacitor, to ground and the bus line for sampling the bus voltage, and electrically connecting the one and other sides of the other one of the second and third capacitors to associated sides of the first capacitor for redistributing the charge-voltages on the first capacitor and the other one of the second and third capacitors for each bit of the digital input word.

4,521,763

A-D CONVERTER AND METHOD OF A-D CONVERSION

Yutaka Murao, Yokohama, Japan, and Taira Nishizono, West Bloom Field, Mich., assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

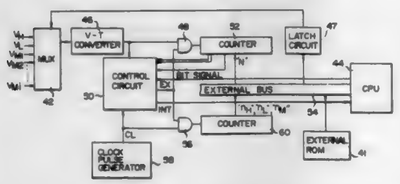
Continuation-in-part of Ser. No. 119,023, Feb. 6, 1980, abandoned, which is a continuation of Ser. No. 918,605, Jun. 23, 1978, abandoned. This application Sep. 17, 1982, Ser. No. 419,571
Claims priority, application Japan, Jun. 24, 1977, 52-75004
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **9 Claims**

3. An A-D conversion method using a V-T converter wherein the voltage level of an input signal and the time period of an oscillated output signal have a linear relationship, and comprising the steps of:

(A) loading a first counter with a specific value,

(B) supplying a first analog input voltage signal of a first voltage level V_L to said V-T converter,

(C) counting, by said first counter, first pulses issued from said V-T converter which correspond to the voltage level V_L of the first analog input voltage signal until the number of pulses counted by said first counter has come to said specific value,
(D) counting, by a second counter, clock pulses issued from a clock pulse generator while said first counter counts first pulses from said V-T converter,
(E) loading the number n_L of clock pulses counted by said second counter into a central processing unit,
(F) loading said first counter with said specific value;
(G) supplying a second analog input voltage signal of a second voltage signal V_H to said V-T converter,
(H) counting, by said first counter, second pulses issued from said V-T converter which correspond to the voltage level V_H of the second analog input voltage signal until the number of pulses counted by said first counter has come to said specific value,
(I) counting, by said second counter, clock pulses issued from the clock pulse generator while said first counter counts second pulses from said V-T converter,
(J) loading the number n_H of clock pulses counted by said second counter into said central processing unit,



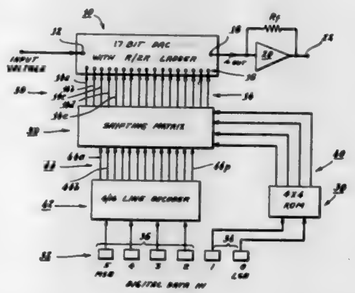
(K) loading said first counter with said specific value,
(L) supplying an analog input voltage signal of an unknown voltage level V_M to be measured to said V-T converter,
(M) counting, by said first counter, third pulses issued from said V-T converter which correspond to the unknown voltage level V_M of the analog signal to be measured until the number of pulses counted by said first counter has come to said specific value,
(N) counting, by said second counter, clock pulses issued from the clock pulse generator while said first counter counts third pulses from said V-T converter,
(O) loading the number n_M of clock pulses counted by said second counter into said central processing unit, and
(P) carrying out the equation

$$M=(n_M-n_L)/(n_H-n_L)\times 2^n$$

by the central processing unit to calculate the digital value M converted from the unknown voltage level V_M on the basis of the pulse information stored in the central processing unit where, 2^n is a full scale of the converted digital value.

4,521,764
SIGNAL-CONTROLLABLE ATTENUATOR EMPLOYING A DIGITAL-TO-ANALOG CONVERTER
David P. Burton, Limerick, Ireland, assignor to Analog Devices Incorporated, Norwood, Mass.
Continuation of Ser. No. 43,174, May 29, 1979, abandoned. This application Dec. 31, 1981, Ser. No. 336,288
Int. Cl.[3] H03K *13/02*
U.S. Cl. 340—347 DA **8 Claims**

1. A digital-to-analog converter providing an attenuation factor varying in accordance with a logarithmic function, comprising:
a resistor network circuit having input and output terminals;
said resistor network circuit comprising a number N of successive stages of progressively differing attenuation values and each arranged to be connected into or out of the circuit to control the total attenuation between said input and output terminals;
said input terminal being connected to the attenuation stage at one end of said successive stages and said output terminal being connected to the attenuation stage at the other end of said successive stages;
means for applying an input signal to said input terminal;
switch means for each of said network stages, respectively, to provide for connecting the corresponding stage into or out of said resistor network circuit between said input and output terminals, to effect attenuation of said input signal in accordance with the selected stages which are switched in between said input and output terminals;
an array of N successive switch control terminals for said switch means respectively with each terminal arranged to receive a corresponding switch-control logic signal for operating the corresponding switch means;
means to receive a digital attenuation-controlling input signal comprising first and second groups of digital control signals;

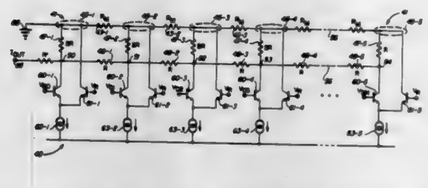


logic-signal-generating means responsive to said first group of digital control signals and operable to develop a corresponding set of logic signals for defining an n-bit code where n is smaller than N; and
shift-position-controlling means responsive to said second group of digital control signals for directing to an n-numbered sequential set of said switch-control terminals the respective individual binary signals of an n-bit code signal as defined by said set of logic signals, said n-numbered sequential set of switch-control terminals being selected from the total array of N successive switch-control terminals in accordance with said second group of digital control signals, said n-bit code signals being applied to said n-numbered set of switch-control terminals and controlling the on/off status of the corresponding n-numbered set of successive switch means to produce the level of attenuation commanded by said digital input signal;
the attenuation of said resistor network providing a transfer function which is a true logarithmic relationship to an accuracy determined by the number "n" preselected for the apparatus.

4,521,765
CIRCUIT AND METHOD FOR REDUCING NON-LINEARITY IN ANALOG OUTPUT CURRENT DUE TO WASTE CURRENT SWITCHING
Anthony D. Wang, and Donald L. Brumbaugh, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.
Continuation-in-part of Ser. No. 421,506, Sep. 22, 1982, Pat. No. 4,468,652, which is a continuation of Ser. No. 250,867, Apr. 3, 1981, abandoned. This application May 4, 1983, Ser. No. 491,600
Int. Cl.[3] H03K *13/02*
U.S. Cl. 340—347 DA **13 Claims**

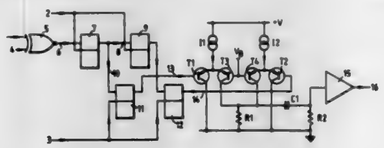
1. In a circuit for converting a multiple bit digital word to an analog current corresponding to a digital number represented by said digital word, a bit circuit comprising in combination:
(a) first current source means for producing a first current;

(b) a first resistor having first and second terminals;
(c) a second resistor having first and second terminals;
(d) a first transistor having a collector, a base responsive to a first bit of said digital word, and an emitter;
(e) a second transistor having a collector, a base having a first reference voltage thereon, and an emitter;
(f) a reference current conductor having a shared node and a distributed resistance on one side of said shared node, said reference current conductor having a second reference voltage thereon;
(g) means for coupling said first terminal of said first resistor and said collector of said second transistor to said shared node;
(h) means for coupling said second terminal of said first resistor and said first terminal of said second resistor to



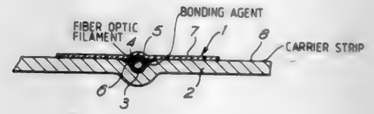
said collector of said first transistor and means for resistively coupling said collector of said first transistor to an output conductor for conducting said analog current; and
(i) means for coupling said first current source means to said emitters of said first and second transistors, said first transistor being responsive to the logic state of said first bit to steer said first current into circuitry including said first and second resistors in order to cause said first current to contribute to said analog current if said first bit is at a first logic level, said first transistor also operating to steer said first current through said second transistor, said shared node, and said distributed resistance if said first bit is at a second logic level, whereby all or at least a substantial portion of said first current flows through said distributed resistance regardless of the logic state of said first bit.

4,521,766
CODE GENERATOR
Michael G. Vry, East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 25, 1982, Ser. No. 436,206
Claims priority, application United Kingdom, Nov. 2, 1981, 8132929
Int. Cl.[3] H03K *13/24*
U.S. Cl. 340—347 DD **6 Claims**



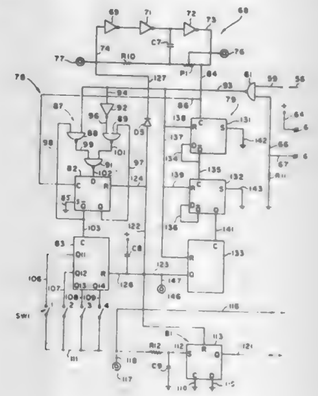
1. A code generator for producing a transmission code in response to an input serial binary code having a bit period T, the code generator comprising means for generating a signal having a first value for a period T/2 located centrally in the bit period in response to a bit of one binary state, means for generating a signal having a second value for the period T/2 in response to a bit of the other binary state, means for generating a signal having the second value during the interval between the T/2 periods of successive bits when two consecutive bits are of the one binary state, means for generating a signal having the first value during the interval between the T/2 periods of successive bits when two consecutive bits are of the other binary state, and means for producing a signal having a value intermediate the first and second values during the interval between the T/2 periods of successive bits when two consecutive bits are of different binary states.

4,521,767
COMPOSITE STRIP
Richard F. Bridge, Coach House, Windmill La., Burlesdon, Hampshire, England
Continuation of Ser. No. 967,645, Dec. 8, 1978, Pat. No. 4,307,386. This application Jun. 18, 1981, Ser. No. 274,723
Claims priority, application United Kingdom, Dec. 9, 1977, 51444/77; May 3, 1978, 40412/77
The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.
Int. Cl.[3] G08B *13/18;* **G02B** *5/14*
U.S. Cl. 340—555 **12 Claims**



1. A composite strip comprising a metal carrier strip having a main portion, means forming a longitudinal groove in said main portion, a plurality of metal barbs or serrations which extend from said main portion and are integral therewith, a fibre-optic filament disposed in said groove, and an adhesive strip applied to the main portion only of the carrier strip so as to overlie said groove and cover the fibre-optic filament without covering said barbs or serrations.

4,521,768
INTRUSION DETECTOR
Ilan Haran, and Dan Haran, both of Ramat Gan, Israel, assignors to Elsec Electronic Security Systems Ltd., Givataim, Israel
Filed Apr. 8, 1982, Ser. No. 366,558
Int. Cl.[3] G08B *13/00*
U.S. Cl. 340—566 **1 Claim**



1. An intrusion detection system for reliably detecting intrusions into an enclosed area comprising:
detecting means for providing signals indicative of intrusions into said enclosed area;
means for determining significant signals indicative of intrusions above a fixed threshold level;
first means for measuring the time length of each of said

significant signals, and for accumulating the measured time lengths of successive significant signals;

means responsive to the accumulated time lengths in said first means reaching a first preselected time length for providing an intrusion-indicating signal;

second means for measuring the time length during which no significant signals are received;

means connected to said second means for resetting said second means, so that the time length measured thereby is reset to zero upon receipt of a significant signal; and

means interconnecting said first and second means for resetting said first means, so that the time length accumulated therein is reset to zero when the measured time length in said second means reaches a second preselected time length, whereby an intrusion-indicating signal is provided only when the accumulated time lengths in said first means reach said first preselected time length prior to the time length during which no significant signals are received, which is measured by said second means reaching said second preselected time length.

4,521,769

DEVICE FOR DETECTING THE FAILURE OF A SENSOR

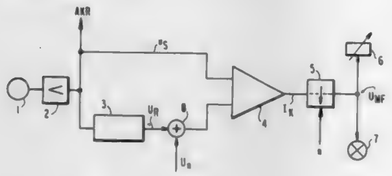
Ingo Dudeck, Weinstadt, and Jürgen Schenk, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,658

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211644

Int. Cl.³ G01L *23/22*

U.S. Cl. 340—635 **6 Claims**



4. A device for detecting failure of a sensor, the sensor being for installation on a rotating machine element,

means for smoothing and rectifying a sensor output signal having a first time period,

means for comparing the sensor output signal with the smoothed and rectified signal to produce a comparator output signal when the sensor output signal exceeds the smoothed and rectified signal,

one-shot multivibrator means receiving the comparator output for producing an output pulse having a second time period exceeding the first time period, and

means generating an output signal when the output pulse vanishes in response to failure of the sensor for actuating at least one of a control device and an alarm device.

4,521,770

USE OF INVERSIONS IN THE NEAR REALTIME CONTROL OF SELECTED FUNCTIONS IN INTERACTIVE BUFFERED RASTER DISPLAYS

James R. Rhyne, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1982, Ser. No. 412,481

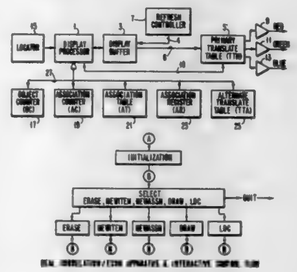
Int. Cl.³ G09G *1/28*

U.S. Cl. 340—703 **7 Claims**

1. A method for editing a display of multicolored objects exhibited by an interactive refresh buffer raster driven display system comprising the steps of:

(a) forming a first concordance of display position and object identity and storing said first concordance in the refresh buffer;

(b) forming a second concordance of object identity and color attributes and storing said second concordance in auxiliary memory;



(c) position selecting at least one display object and specifying an editing function; and

(d) executing the editing function by way of dynamic alteration of those attributes in the second concordance accessed through the position selection and object identity of the first concordance.

4,521,771

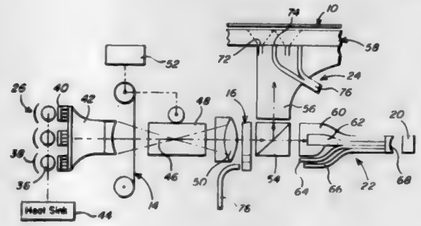
COMBINED STATIC AND DYNAMIC IMAGE DATA DISPLAY SYSTEM

Michael J. Alton, Cupertino, Calif., assignor to Omni Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 100,705, Dec. 4, 1979, abandoned. This application Feb. 24, 1982, Ser. No. 352,033

Int. Cl.³ G09G *3/00, 3/36*

U.S. Cl. 340—705 **17 Claims**



1. In a visual display data-independent system having a source of image data, a display screen, a source of illumination from which a light beam is emitted to transmit images from the data source to the display screen, sensing means for extracting optical data from said light beam, and computer means interfaced with the sensing means for controlling operation of the source of image data, said image data source including a static film and a LCD matrix through which the light beam passes in sequence along a common optical axis, the improvement comprising optical fiber means operatively positioned relative to said source of illumination for receiving said light beam along said common optical axis extending through the source of image data, means for projecting said images, transmitted by the light beam along said common optical axis, to said display screen, means for transmitting portions of said images to the sensing means independently of said projection of the images to the display screen, said LCD matrix having image transmitting dots with predetermined spacing therebetween less than the image resolution of the static film, including resolution compensating optical fiber means operatively positioned along said common optical axis between the LCD matrix and the sensing means, said resolution compensating optical fiber means including a matrix of optical fibers more closely spaced than said predetermined spacing between the image transmitting dots of the LCD matrix, whereby scanning of images formed by the static film through the LCD matrix and the sensing means is performed at resolutions comparable to said image resolution of the static film.

4,521,772

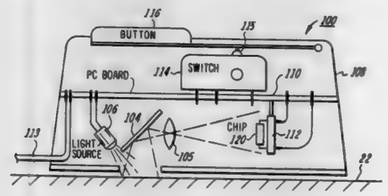
CURSOR CONTROL DEVICE

Richard F. Lyon, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 296,947, Aug. 28, 1981,. This application Jan. 13, 1983, Ser. No. 457,805

Int. Cl.³ G09G *1/00*

U.S. Cl. 340—710 **58 Claims**



1. In a cursor control device to provide an output indicative of the amount and direction of relative of the device, said device including

a housing,

a planar array pattern,

said housing moveable relative to said pattern,

illuminating means mounted in said housing to direct radiation to a portion of said pattern,

sensor array means mounted in said housing to receive and detect radiation reflected from said illuminated pattern portion, said array means comprising a plurality of sensor cells and circuit means coupled to each of said sensor cells to provide a plurality of cell outputs each capable of representing whether a cell has sensed a predetermined quantity of radiation received from said pattern portion and providing a corresponding output signal the output signal of each of said cells coupled to at least one neighborhood cell to permit the alteration of the output of said coupled cells whereby said pattern portion is recognized as one of a limited plurality of predetermined patterns.

4,521,773

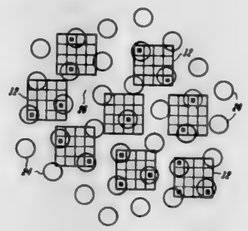
IMAGING ARRAY

Richard F. Lyon, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 28, 1981, Ser. No. 296,947

Int. Cl.³ G09G *1/00*

U.S. Cl. 340—710 **63 Claims**



1. An imaging array comprising a planar array of optical sensor cells each capable of sensing and converting optical radiation into an electrical output signal when any one of said cells has sensed a predetermined quantity of radiation, a field of contrasting features detectable by said sensor array, the difference in the spatial frequency of said contrasting features in said field relative to the spatial relation of said cells productive of an intermediary pattern comprising at least one detected contrasting feature from said field, circuit means coupled to each of said cells to receive said output signals with the output signals of each of said cells coupled with several of said neighboring cells in said array to alter the output of said neighboring cells resulting in the recognition of said intermediary pattern as being one of a limited plurality of predetermined such patterns.

4,521,774

RASTER CRT HAVING BALANCED PEL DISTRIBUTION FOR FLICKER REDUCTION

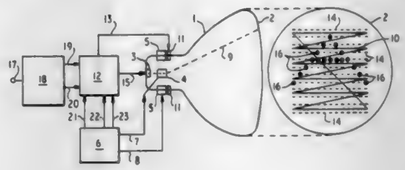
Alan S. Murphy, Chandler's Ford, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1981, Ser. No. 322,819

Claims priority, application European Pat. Off., Nov. 28, 1980, 80304653.1

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—745 **6 Claims**



1. The method of reducing perceived flicker in a CRT display device comprising an electron gun, a display screen, horizontal and vertical deflection means operable to cause an electron beam from said gun to be scanned over said screen progressively in successive basic raster scan lines in successive fields of a predetermined basic raster, and modulation means operable in response to input video information defining a two-dimensional image to modulate the brightness of the beam scanning to produce individual visible picture elements (pels) on the screen, a representation of said two dimesional image being formed thereby as the combination of pels produced during two successive field scans of the basic raster, characterized in

providing auxiliary deflection means operable to deflect the beam transversely of the line scan direction of the basic raster during each basic raster line scan thereof to a currently selected one of a pair of adjacent image scan lines on the screen corresponding to the current basic raster scan line, the image scan lines corresponding to the totality of the basic raster scan lines being spaced apart on the screen and constituting an image raster of twice the line density of said predetermined basic raster,

determining in which of the two successive field scans the pels representing selected portions of said image are to be displayed,

and controlling said auxiliary deflection means in accordance with the physical distribution of successive pels to be generated with respect to the timing of generation of pels by said modulation means whereby any accumulative pel imbalance between the two fields as a result of the pel distribution is minimized.

4,521,775

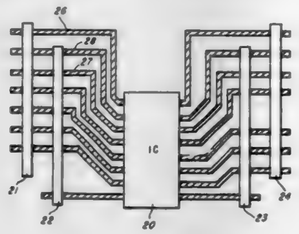
METHOD OF OPERATING A STACKED DISPLAY

Robert T. Noble, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 198,073, Oct. 17, 1980, abandoned. This application Jan. 14, 1983, Ser. No. 458,084

Int. Cl.³ G09G *3/36*

U.S. Cl. 340—784 **1 Claim**



1. A method of operating a stacked display having two display levels in optical series, each level including a plurality of electro-optical segments having an opagueing threshold and being arranged so each segment is coupled to an independent lead and each of the segments of a selected level is coupled to a common lead and comprising the steps of:

applying during a first interval, a first waveform to each electro-optic segment via the independent lead, a second waveform to segments of the first level of the display via its common lead and a third waveform to segments of the second level of the display via its common lead, wherein the voltage potential between the common lead and the independent lead of each segment of said first level is maintained above the treshold level of the electro-optic segment and the voltage potential between the common lead and the independent lead of each segment of said second level is reduced below the threshold level of the electro-optic segment to thus activate said first level and deactivate said second level; and

applying, during a second interval, the first waveform to each electro-optic segment via the independent lead, the second waveform to segments of the second level of the display via its common lead and the third waveform to segments of the first level of the display via its common lead, wherein the voltage potential between the common lead and the independent lead of each segment of said second level is maintained above the threshold level of the electro-optic segment and the voltage potential between the common lead and the independent lead of each segment of said first level is reduced below the threshold level of the electro-optic segment to thus activate said second level and deactivate said first level.

4,521,776

RADIO PAGING DEVICE INCLUDING APPARATUS FOR PREVENTING UNDESIRED DEVICE TURN-OFF

George W. Smoot, Sunrise, and Philip P. Macnak, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 1, 1982, Ser. No. 432,229

Int. Cl.³ G08B *5/22*

U.S. Cl. 340—825.44 **7 Claims**

1. A radio paging device comprising:

receiving means, for receiving radio frequency selective calling message signals transmitted over a communications channel;

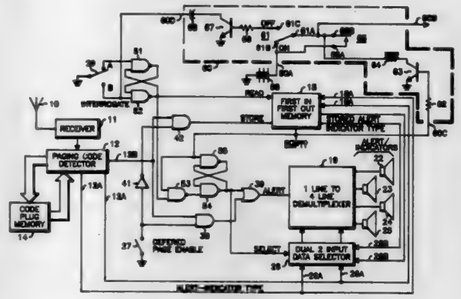
decoding means, coupled to said receiving means, for detecting when selective calling message signals intended for said device are received;

memory means, coupled to said decoding means, for storing said selective calling message signals;

interrogation means, coupled to said memory means, for interrogating said memory means upon command of the user of said paging device to provide output of the selective calling messages signals stored in said memory means in a form understandable to the user;

power supply means, for providing power to said radio paging device;

user actuable switching means, operatively coupled to said power supply means, for selectively switching power to said paging device;



memory checking means, coupled to said memory means and said switching means, for determining if any unread selective calling message signals remain in said memory means when the user attempts to turn off the device, and

turn off prevention means, coupled to said memory checking means and said switching means, for preventing turn off of said device if said memory checking means determines that unread selective calling message signals remain in said memory means when the user attempts to turn off the device.

4,521,777

APPARATUS FOR VISUALLY INDICATING THE CURRENT LOCATION OF AN AUTOMOTIVE VEHICLE

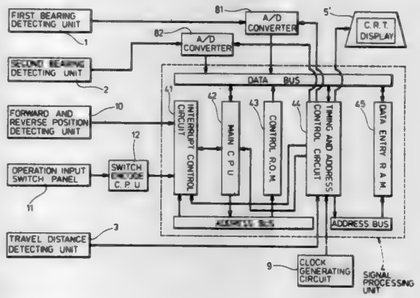
Yukinobu Nakamura; Katsutoshi Tagami, and Tsuneo Takahashi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,274

Claims priority, application Japan, Aug. 21, 1981, 56-130942

Int. Cl.³ G08G *1/12*

U.S. Cl. 340—995 **1 Claim**



1. A current location indicating apparatus for use in an automotive vehicle wherein a current location of said automotive vehicle is arithmetically obtained in terms of two-dimensional coordinates by a signal processing unit on the basis of the outputs from a travel distance detecting unit and a bearing detecting unit, and the current location of said vehicle is visually indicated on the screen of a display from the thus-obtained data in connection with the current location thereof, which comprises, in operative combination:

first bearing detecting means including an earth magnetism sensor as a primary component thereof;

second auxiliary detecting means including a rate type gyroscope or the like; and

signal processing means for continuously monitoring the output from said first bearing detecting means in comparison with the operating state of said second auxiliary bearing detecting means to determine whether or not said earth magnetism sensor of said first bearing detecting means is under the influence of external disturbances for a short period so that the output of said first bearing detecting means can be immediately corrected accordingly, while said vehicle is in motion.

4,521,778

HIGH-RESOLUTION, COHERENT PULSE RADAR

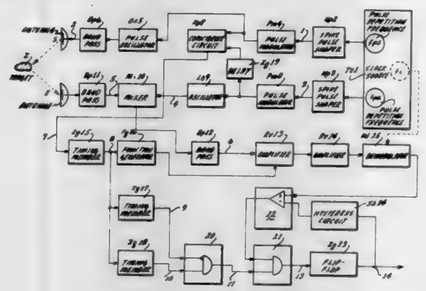
Udo Knepper, Langenargen, Fed. Rep. of Germany, assignor to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Feb. 9, 1982, Ser. No. 347,109

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107444

Int. Cl.³ G01S *13/10*

U.S. Cl. 343—13 R **18 Claims**



1. In a pulse radar procedure for near distance ranges down to the meter range, including a scanning procedure performing time expansion, further including, generating two higly stable base-band pulse trains (1,3) one of which is processed into transmitter pulses (2) and the other, which has a somewhat lower pulse repetition frequency, into scanning pulses (4),

the improvement which comprises

(a) converting both base-band pulse trains (1,3) into microwave pulse trains (2,4) of which the carrier frequency initial phase is determined in time by one of the controlling base-band pulses in such manner the two microwave pulse trains (2,4) always are coherent with respect to the carrier frequency thereof by means of their associated pulse repetition frequency, and

(b) multiplying the received echo signals (5) in a microwave mixer (Mi 10) by the microwave scanning pulses (4), thereby forming time-expanded intermediate frequency signals (6) which are selectively reinforced and demodulated into video signals (12).

4,521,779

PULSE COMPRESSION SYSTEM

Bernard L. Lewis, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 24, 1980, Ser. No. 143,399

Int. Cl.³ G01S *7/30, 13/52*

U.S. Cl. 343—17.2 PC **10 Claims**

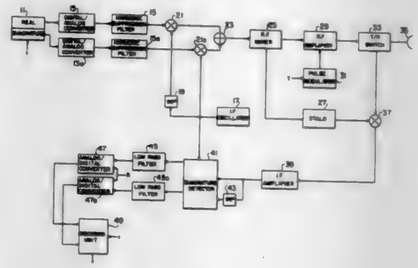
1. A decoding device comprising:

means for providing a decoding phase shift $-\Delta\phi_{k,p}$ to the signal elements of a transmitted phase-coded signal reflected from a reflector to examine a range interval corresponding to the area containing the reflector, wherein

$$\Delta\phi_{k,p}=-(2\pi/N)[k-\tfrac{1}{2}(N-1)][p-\tfrac{1}{2}(N-1)]$$

is the phase of the pth code element in the kth subgroup and

k=0, 1, 2, . . . , N−1



p=0, 1, 2, . . . , N−1, and

N is an even integer; and

means for adding the phase-shifted signal elements at the same time to produce a narrow pulse with an accompanying increase in effective peak signal.

4,521,780

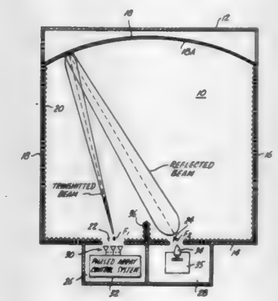
TARGET SIMULATION SYSTEM

Fritz K. Preikschat, 16020 Lake Hills Blvd., Bellevue, Wash. 98008

Filed Oct. 19, 1981, Ser. No. 312,800

Int. Cl.³ G01S *7/40*

U.S. Cl. 343—17.7 **22 Claims**



1. A target simulation system for testing target seekers, said system comprising:

a reflector having a substantially ellipsoidal reflecting surface;

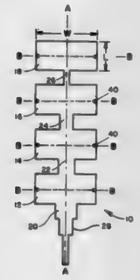
an array of transmitting elements, the center of said array being located at first focal point of said ellipsoidal reflecting surface;

a phased array control system for causing said array to transmit toward said ellipsoidal reflecting surface at least one beam of radiation whose beam axis has a predetermined angle relative to said array, whereby said transmitted beam is reflected by said ellipsoidal reflecting surface to result in a corresponding reflected beam whose beam axis passes through a second focal point of said ellipsoidal reflecting surface; and,

means for mounting the target seeker to be tested so that a receiving means of the target seeker is located at said second focal point of said ellipsoidal reflecting surface, whereby said reflected beam simulates radiation coming from a target at a predetermined angle relative to the

target seeker that is defined by said predetermined angle of the corresponding transmitted beam.

4,521,781
PHASE SCANNED MICROSTRIP ARRAY ANTENNA
Morris Campi, and Arthur R. Sindoris, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 12, 1983, Ser. No. 484,326
Int. Cl.³ H01Q *1/38, 3/26*
U.S. Cl. 343—700 MS **11 Claims**



1. A microstrip array antenna, comprising:
an electrically conductive reference surface;
a layer of dielectric material overlying said reference surface;
a plurality of electrically conductive, spaced apart, radiator elements overlying said layer of dielectric material, each radiator element including at least one radiating edge, and each radiator element having an effective dimension transverse to said radiating edge of approximately one-half wavelength, or a multiple of one-half wavelength, in the underlying dielectric material at a predetermined antenna operating frequency;
microwave supply means for supplying microwave energy to each radiator element at said antenna operating frequency; and
scanning means for phase scanning the antenna beam, comprising:
a plurality of switching means associated respectively with said radiator elements, each switching means being connected between a null point of the associated radiator element and the reference surface, and
switch control means for periodically closing and opening said plurality of switching means.

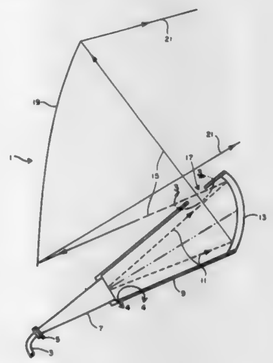
4,521,782
TARGET SEEKER USED IN A POINTER AND TRACKING ASSEMBLY
George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.
Filed May 5, 1983, Ser. No. 491,898
Int. Cl.³ H01Q *3/08*
U.S. Cl. 343—765 **8 Claims**

1. An improved target seeker used in a pointer and tracking assembly, the seeker comprising:
a primary sensing element attached to a movable head, the movable head having a stylus mounted thereon;
a secondary sensing element attached to the front of the head for focusing the electromagnetic energy received onto a detector, the detector attached to the movable head and centered thereon;
an X drive plate oriented in an X axis, the ends of the plate attached to part of a fixed frame of the assembly;
a Y drive plate oriented in a Y axis, the ends of the plate attached to part of a fixed frame of the assembly, the stylus engaged by the X and Y drive plates for moving the head;



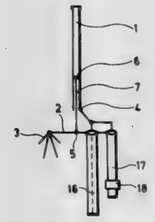
means for rotating the X drive plate around an X axis; and
means for rotating the Y drive plate around a Y axis.

4,521,783
OFFSET MICROWAVE FEED HORN FOR PRODUCING FOCUSED BEAM HAVING REDUCED SIDELOBE RADIATION
Lawrence G. Bryans, Mountain View; Kenneth R. Goudey, Sunnyvale, and William F. Nickerson, San Francisco, all of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.
Filed Sep. 27, 1982, Ser. No. 424,946
Int. Cl.³ H01Q *19/13*
U.S. Cl. 343—781 R **10 Claims**



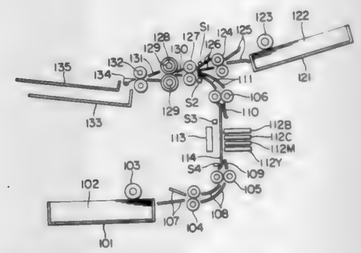
1. An apparatus for producing a focused beam of high-frequency electromagnetic radiation propagating along an axis, comprising in combination:
an electromagnetic horn radiator for producing in response to an input source of electromagnetic energy a first relatively broad beam of electromagnetic radiation propagating away from said horn radiator along a first axis;
a curvilinear electromagnetic reflector located spaced from said horn radiator along said first axis, said reflector being dimensioned and positioned to intercept said relatively broad beam of radiation;
beam-edge defining means extending between said horn radiator and said reflector for limiting and confining said first beam and for preventing the propagation of energy along paths outside the outer edges of said reflector;
said beam-edge defining means being provided with an aperture therethrough in a wall portion thereof between said horn and reflector;
said reflector being shaped and positioned to redirect radiation propagating along said first axis into a sharply defined beam propagating along a second axis extending from said reflector to said aperture, and to bring said radiation to a focus in the region of said aperture.

4,521,784
GROUND-PLANE ANTENNA WITH IMPEDANCE MATCHING
Mihaly Nemet, Budapest, Hungary, assignor to Budapesti Radiotechnikai Gyar, Hungary
Filed Sep. 10, 1982, Ser. No. 416,702
Claims priority, application Hungary, Sep. 23, 1981, 2744/81
Int. Cl.³ H01Q *1/48*
U.S. Cl. 343—846 **5 Claims**



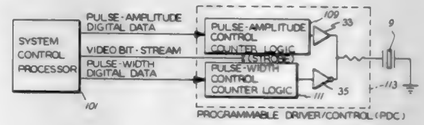
1. Improved ground-plane antenna arrangement comprising:
a vertical resonant quarterwave radiating rod having an upper end and a lower end, said radiating rod being provided at least in part in the form of a hollow tube extending vertically upwardly from said lower end,
an antenna base mechanically coupled to said lower end of the radiating rod and in the operational frequency, said base being electrically isolated from said lower end,
a plurality of counterweight resonant rods extending from and connected with said antenna base and providing a virtual ground-plane for the radiating rod in the height of said base,
an earthing rod having an upper end and a lower end, said earthing rod extending centrally in said hollow tube and being short-circuited at the upper end of said earthing rod with said tube, whereby a short-circuited coaxial line section shorter than the quarterwavelength is formed,
a pair of input terminals adapted for respective connection to a coaxial feeding line having an inner conductor and an outer conductor, said terminals being respectively formed by said lower end of the radiating rod and by said base,
a coaxial open line section having an inner conductor and an outer conductor, and further having an open end and a connected end, said connected end being connected across said input terminals in such a way that the outer conductor is connected to said base and the inner conductor is connected to said lower end of the radiating rod,
said open line section forming an extension of said short-circuited line section and therewith providing a resonant combined line section such that the combined electrical length of the two line sections thereof is in the tolerance range of ±25% of the quarterwavelength,
the input terminals forming tapping points of the so obtained resonant combined line section, whereby the susceptance of the combined line section measurable in the tapping point is capable of at least partially compensating the reactive component of the input impedance of the antenna.

4,521,785
IMAGE FORMING DEVICE
Yohji Matsufuji, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 13, 1983, Ser. No. 503,854
Claims priority, application Japan, Jun. 21, 1982, 57-107246; Jun. 21, 1982, 57-107247; Jun. 21, 1982, 57-107248; Jun. 21, 1982, 57-107249
Int. Cl.³ G01D *9/00*
U.S. Cl. 346—25 **3 Claims**



1. An image forming system comprising:
a recording medium having a substrate and an ink receptive layer laminated on said substrate so that said reception layer can be peeled off from said substrate;
a transfer-receiving member having a substrate and an adhesive layer provided on at least one surface of said substrate;
means for recording an ink image on said ink receptive layer of said recording medium;
means for feeding said recording medium to said recording means;
means for pressure contacting said recording medium with said transfer-receiving member to laminate them;
means for feeding said transfer-receiving member to said pressure contacting means; and
means for separating said recording medium from said transfer-receiving medium with said ink receptive layer adhered to said transfer receiving member.

4,521,786
PROGRAMMABLE DRIVER/CONTROLLER FOR INK JET PRINTHEADS
Lee L. Bain, Arlington, Tex., assignor to Xerox Corporation, Stamford, Conn.
Filed Sep. 20, 1982, Ser. No. 422,404
Int. Cl.³ G01D *15/18;* **H01L** *41/10*
U.S. Cl. 346—140 R **2 Claims**



1. A method of controlling a drop-on-demand ink jet ejector which utilizes an electromechanical transducer to eject droplets in response to a drive pulse which includes the steps of:
(a) providing a supply source of charging potential;
(b) providing charging control means for connecting said supply source of charging potential to said electromechanical transducer, the electromechanical transducer drive pulse having a charging rise time curve due to the capacitance of the electromechanical transducer and the resistance of the charging control means;
(c) applying a charging control pulse to said control means to initiate charging said electromechanical transducer; and

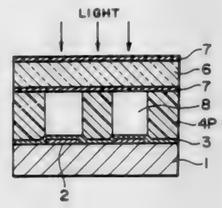
(d) terminating said charging control pulse to said control means during the drive pulse charging rise time so that the amplitude of the potential to which the electromechanical transducer is charged is a function of the width of said charging control pulse, and wherein said charging control pulse width is digitally programmable.

4,521,787

INK JET RECORDING HEAD

Masami Yokota, Hiratsuka; Hiroshi Sugitani, Machida, and Tadayoshi Inamoto, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1983, Ser. No. 502,687
Claims priority, application Japan, Jun. 18, 1982, 57-103723
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **6 Claims**



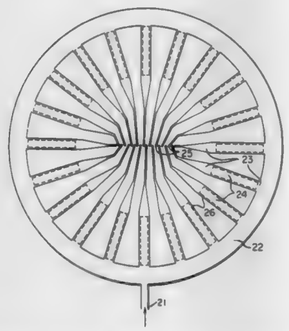
1. An ink jet recording head, comprising a substrate, and a cured film of a photosensitive resin defining ink pathways and a covering over said pathways wherein said covering comprises a flat plate made of a UV-light transmitting material having respective cured films of photosensitive resin adhered on both surfaces thereof.

4,521,788

INK JET PRINTING HEAD

Yoshiaki Kimura, Hachioji; Taketo Nozu, Hino, and Yasuhiko Tanaka, Fuchu, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Dec. 22, 1982, Ser. No. 452,097
Claims priority, application Japan, Dec. 26, 1981, 56-213901
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **7 Claims**



1. An ink-jet printing head for an impulse jet type ink-jet printing apparatus, the printing head comprising:

at least one arcuately-shaped common ink-chamber disposed substantially parallel to a reference plane;

a plurality of ink flow channels connected at one end to said common ink-chamber and extending radially from the inner circumference of said common chamber and substantially parallel to said plane, said common ink-chamber curving toward said ink flow channels and ink being supplied to said ink flow channels from said common ink-chamber;

each of said ink flow channels including (a) a nozzle from which ink is to be ejected dropwise, disposed substantially perpendicularly to said plane and connected to the end of each said ink flow channel opposite to the end connected to said common ink-chamber, (b) a pressure chamber, and (c) a piezoelectric-crystal element disposed on at least one surface of said pressure chamber and having a length to width ratio in the range of not less than 2 to 1 and not greater than 20 to 1.

4,521,789

INK VISCOSITY REGULATION FOR INK JET PRINTER

Koichiro Jinnai, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 30, 1983, Ser. No. 509,491
Claims priority, application Japan, Jul. 5, 1982, 57-116642
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **3 Claims**



1. An ink viscosity regulation apparatus for an ink jet printer in which an electrostrictive vibrator is driven to eject ink from a nozzle of a head so that the ink is separated into a droplet to print out a dot on a recording medium, said apparatus comprising:

means for varying a drive voltage applied to the vibrator;

means for detecting a specific level of the drive voltage at which the droplet is separated from the ink at a shortest distance; and

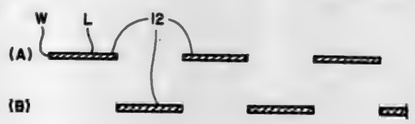
means for comparing said detected drive voltage level with a predetermined reference voltage level and, when the detected level is higher than the reference level, generating a command signal for diluting the ink and, when the detected level is lower than the reference level, generating a command signal for causing the ink to keep a viscosity thereof unchanged.

4,521,790

ELECTROSTATIC PRINTER OF VIDEO PICTURES WITH GREY TONES

Emmanuel M. Allard, Paris, France, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 27, 1982, Ser. No. 453,534
Claims priority, application France, Mar. 24, 1982, 82 05355
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—154 **10 Claims**



1. An electrostatic grey tone printing device having a writing head for use with a dielectric paper, said printing device comprising;

recording electrodes on the writing head having a substantially elongated cross-sectional geometry, such that a width dimension is significantly less than a length dimension, said recording electrodes having a length, L, and a width, W;

complementary electrodes operatively associated with said recording electrodes and having a predetermined cross-sectional geometry;

means for applying a first voltage of one polarity to one or more recording electrodes;

means for applying a second voltage of opposite polarity to one or more associated complementary electrodes; and

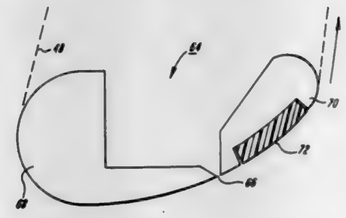
means for advancing the dielectric paper past said complementary and recording electrodes in increments substantially equal to said width of said recording electrodes such that an elementary dot area is defined by advancing the dielectric paper approximately L divided by W times, said recording electrodes being oriented such that their width dimension is parallel to the direction of advancing the paper, and sufficiently small to effect the appearance of grey tone areas.

4,521,791

ION PROJECTION PRINTER WITH PSEUDO-CONTINUOUS BACK ELECTRODE

Gene F. Day, Cupertino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 20, 1983, Ser. No. 505,645
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—159 **3 Claims**



1. An ion projection printing apparatus for printing on one side of a charge receptor sheet and comprising, sequentially in a processing direction, ion projection charging means, development means and fusing means and characterized by including

back electrode means positioned to be located on the opposite side of the sheet from the charging means and development means and to receive the sheet in intimate contact, said electrode means extending from the charging means through the fusing means and having with at least one discontinuity therein extending across said electrode means transversely to the processing direction, said discontinuity being located between the fusing means and the development means, whereby said back electrode acts, in the electrical sense, as if it were continuous but inhibits thermal flow therethrough between the hot fuser means and the cool charging and development means.

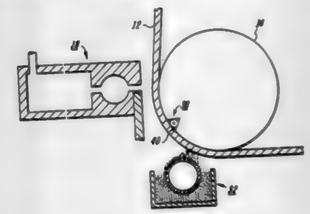
4,521,792

ION PROJECTION PRINTER WITH CHARGE COMPENSATION SOURCE

Lloyd D. Clark, San Francisco; Jean K. Wilcox, El Granada, and Gene F. Day, Cupertino, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1983, Ser. No. 527,705
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—159 **7 Claims**

1. An ion projection printing apparatus for printing on one side of a charge receptor sheet movable in a processing direction and comprising sequentially, in said processing direction, ion projection charging means for delivering imaging ions to said one side of said sheet, development means and fusing means, said charging means and said development means being located on said one side of said receptor sheet, and back electrode means located adjacent the opposite side of said sheet for accelerating and focussing the imaging ions, the apparatus being characterized by including



charge compensating means located on said opposite side of said sheet at a position downstream of said charging means for delivering a countercharge to said opposite side of said sheet.

4,521,793

COLORING METHOD AND COLOR-FORMING MATERIAL

Kazuo Kabashima, and Kyugo Tanaka, both of Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP83/00056, § 371 Date Jun. 30, 1983, § 102(e) Date Jun. 30, 1983, PCT Pub. No. WO83/02920, PCT Pub. Date Sep. 1, 1983
PCT Filed Feb. 25, 1983, Ser. No. 513,969
Claims priority, application Japan, Feb. 27, 1982, 57-029797; Dec. 23, 1982, 57-224860; Dec. 24, 1982, 57-225937
Int. Cl.³ B41M *5/16, 5/18, 5/22*
U.S. Cl. 346—201 **31 Claims**

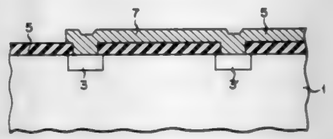
1. A method for coloring an article to be colored, which comprises contacting and reacting, in the article to be colored, (a) at least one aromatically bonded isocyanate compound with (b) at least one imino compound being capable of forming a color by the reaction with said isocyanate compound and having at least one >C═NH group to effect the color formation, wherein at least one of said compounds (a) and (b) is supported on the article to be colored.

4,521,794

ELECTRODE AND SEMICONDUCTOR DEVICE PROVIDED WITH THE ELECTRODE

Katsumi Murase, Iruma, and Yoshihiko Mizushima, Tokyo, both of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Continuation of Ser. No. 304,983, Sep. 23, 1981, abandoned. This application Jul. 3, 1984, Ser. No. 626,487
Claims priority, application Japan, Sep. 30, 1980, 55-137108; Oct. 3, 1980, 55-137674
Int. Cl.³ H01L *45/00*
U.S. Cl. 357—2 **9 Claims**

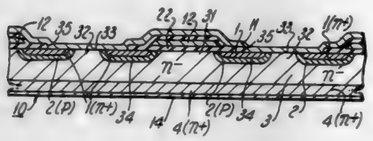


1. An electrode arrangement comprising an amorphous silicon electrode layer disposed on a substrate, said electrode layer consisting essentially of (i) amorphous silicon, (ii) one element of Group IV selected from the group consisting of germanium and tin, and (iii) boron.

4,521,795
INSULATED-GATE FIELD-EFFECT TRANSISTORS

David J. Coe, East Grinstead, and Royce Lowis, Southampton, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 2, 1982, Ser. No. 446,141
Claims priority, application United Kingdom, Dec. 7, 1981, 8136819
Int. Cl.³ H01L 29/78
U.S. Cl. 357—23.4 11 Claims

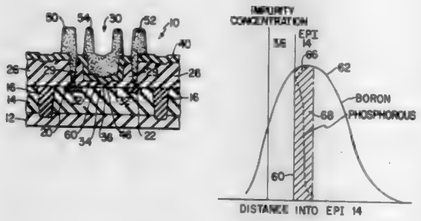


1. An insulated-gate field-effect transistor comprising a semiconductor body having a surface-adjoining source region of one conductivity type which is surrounded in the body by a surface-adjoining second region of the opposite conductivity type, the second region being surrounded in the body by a surface-adjoining third region which is of said one conductivity type and is associated with the transistor drain, an insulating layer on a part of the second region, and a conductive layer on said insulating layer to form an insulated gate of the transistor for capacitively controlling in said part of the second region a conductive channel between the source region and a first part of the third region, characterized in that the third region has a surface-adjoining second part which is remote from the first part, in that an electrode layer extends on said second part of the third region and is connected to said second region, and in that there is provided between said electrode layer and the second part of the third region a Schottky junction having a lower forward voltage drop that the p-n junction between the second and third regions.

4,521,796
MEMORY IMPLANT PROFILE FOR IMPROVED CHANNEL SHIELDING IN ELECTRICALLY ALTERABLE READ ONLY MEMORY SEMICONDUCTOR DEVICE

Kamal Rajkanan, Melville, and Jagir S. Multani, Dix Hills, both of N.Y., assignors to General Instrument Corporation, New York, N.Y.

Continuation of Ser. No. 215,224, Dec. 11, 1980, abandoned. This application Nov. 14, 1983, Ser. No. 550,725
Int. Cl.³ H01L 29/78
U.S. Cl. 357—23.5 14 Claims

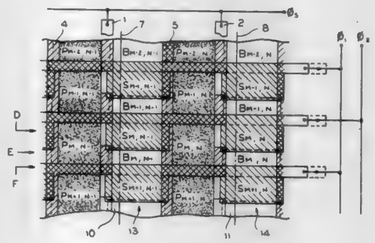


1. An electrically alterable read only memory semiconductor device comprising:
a substrate of a material of a first conductivity type,
source and drain regions of a second conductivity type in said substrate,
a memory gate region between said source and drain including two superimposed layers of insulating material on said substrate in said memory gate region, electrical charges capable of being stored at the interface of said two layers, electrodes connected to said source, drain and the upper layer of insulating material of said gate region, and
the substrate in said memory gate region having therein a first impurity material of a first conductivity type forming a first region of said first conductivity type having a higher conductivity than said substrate, and a second impurity material of a second conductivity type opposite to said first type forming a second region of said first conductivity type disposed between said first region and the surface of said substrate, said second region having a lower conductivity than said first region to tailor the surface concentration profile of the impurity material in the memory gate region of the substrate.

4,521,797
SEMICONDUCTOR IMAGING DEVICE USING CHARGE-COUPLING DEVICE

Eiji Oda, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 16,358, Feb. 26, 1979, abandoned. This application Jan. 11, 1982, Ser. No. 338,362
Claims priority, application Japan, Feb. 27, 1978, 53-22668
Int. Cl.³ H01L 29/78; G11C 19/28
U.S. Cl. 357—24 7 Claims

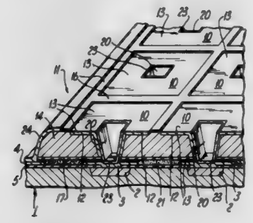


1. A two-dimensional, imaging device comprising a semiconductor substrate of one conductivity type, an orthogonal array of photosensitive regions of an opposite conductivity type formed on said semiconductor substrate, charge transfer channels separating columns of said orthogonal array, gate means also separating columns of said photosensitive regions for enabling a transfer of light-caused charges from said photosensitive region to said charge transfer channels, each of said charge transfer channels including electrodes for charge storage regions and electrodes for potential barrier regions, these two type of electrodes being disposed on but electrically isolated from the semiconductor substrate of said one conductivity type to form buried channel charge coupled devices, one pair of said two types of electrodes being disposed beside one photosensitive region and electrically isolated from each other, another pair of said two types of electrodes adjacent said one pair of two type electrodes being disposed beside another photosensitive region adjacent to said one photosensitive region in the same column of said orthogonal array and electrically isolated from each other, said electrode for the charge storage region of said one pair and said electrode for a potential barrier region of said other pair being electrically connected with each other, means for applying a combination of gate pulses to said gate electrodes and two phases of clock pulses to said charge shift electrodes for transferring charges from said photosensitive areas to said charge transfer channels, and means for alternately applying the two phases of the clock pulses to said charge shift electrodes for shifting the transferred charges along said columns.

4,521,798
INFRA-RED RADIATION IMAGING DEVICES AND METHODS FOR THEIR MANUFACTURE

Ian M. Baker, Romsey, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,835
Claims priority, application United Kingdom, Mar. 27, 1981, 8109778
Int. Cl.³ H01L 27/14, 31/00, 29/06, 23/48
U.S. Cl. 357—30 17 Claims



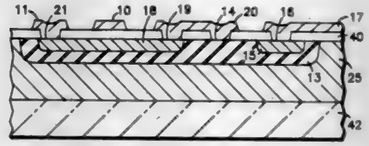
1. An infrared radiation imaging device comprising:
a substrate having a major surface, said substrate comprising a plurality of circuit elements for processing electrical signals;
a conductor pattern at the major surface of the substrate, said pattern being electrically connected to the circuit elements;
a layer of electrically insulating adhesive provided on the major surface of the substrate over the conductor pattern, said layer having a plurality of apertures therethrough to the conductor pattern, each aperture having side walls;
a body of infrared-sensitive material having first and second opposite surfaces, said body being provided on the adhesive layer and being secured to the substrate by the adhesive layer, the first surface of said body contacting only the adhesive layer, said body comprising a plurality of infrared radiation detector elemments and having a plurality of apertures having side walls extending through the body from the second surface to the first surface, said apertures being provided over the apertures in the adhesive layer, each aperture in the body enclosed by a detector element, each detector element comprising a p-n junction formed by a region of a first conductivity type adjacent a portion of the body having a second conductivity type opposite to the first conductivity type, the region of the first conductivity type extending through the infrared-sensitive body at the side walls of the aperture;
a first metallization on the side walls of each aperture, each first metallization electrically contacting the infrared-sensitive body at a region of the first conductivity type and contacting the conductor pattern;
a passivating layer contacting the second surface of the body at locations surrounding each aperture; and
a second metallization contacting the portion of the body having the second conductivity type at part of the second surface of the body not contacted by the passivating layer.

4,521,799
CROSSUNDER WITHIN AN ACTIVE DEVICE

Robert B. Davies, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1982, Ser. No. 453,405
Int. Cl.³ H01L 27/2, 29/72, 27/4
U.S. Cl. 357—51 17 Claims

1. A semiconductor structure comprising:
a semiconductor substrate having a first surface;
an active device located in said substrate, extending to said first surface, and having an emitter region, a base region, and a collector region;
a conductive cross-under, separated from said emitter region and formed in an extension to said base region, having the same conductivity type as said emitter region; and

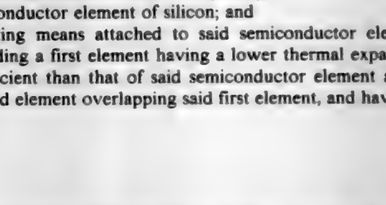


a first conductor passing over said cross-under and insulated therefrom.

4,521,800
MULTILAYER PHOTOELECTRODES UTILIZING EXOTIC MATERIALS

Arthur T. Howe, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 15, 1982, Ser. No. 434,603
Int. Cl.³ H01L 23/48
U.S. Cl. 357—67 8 Claims



1. A multilayer structure which comprises:
(a) an n-type semiconductor;
(b) a first layer which is in direct contact with said n-type semiconductor, wherein said first layer comprises a compound which contains at least one first element in anionic form which is selected from the group consisting of phosphorus, arsenic and antimony, and at least one second element in cationic form which is selected from the group consisting of vanadium, titanium, zirconium, hafnium, niobium and tantalum; and
(c) a second layer comprising a conducting material which is in direct contact with said first layer.

6. A multilayer structure which comprises:
(a) an n-type silicon semiconductor;
(b) a layer of a lanthanide boride which is in direct contact with said n-type semiconductor; and
(c) a layer of conducting material on said lanthanide boride layer.

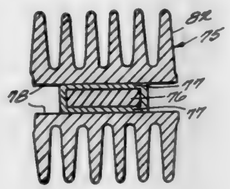
4,521,801
SEMICONDUCTOR DEVICE WITH COMPOSITE LEAD WIRE

Taketoshi Kato, and Akira Onoe, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 23, 1982, Ser. No. 422,143
Claims priority, application Japan, Oct. 9, 1981, 56-160085
Int. Cl.³ H01L 23/36, 23/54, 23/14
U.S. Cl. 357—71 18 Claims

1. A semiconductor device comprising:
a semiconductor element of silicon; and
conducting means attached to said semiconductor element including a first element having a lower thermal expansion coefficient than that of said semiconductor element and a second element overlapping said first element, and having a

higher thermal expansion coefficient than that of said semiconductor element and having a higher electrical conductivity than that of said first element, said first element being made of one material selected from the group consisting of



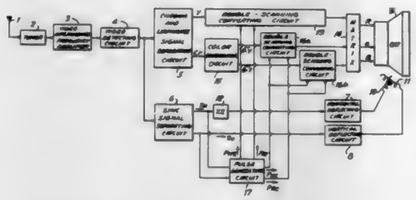
an alloy of about 36% Ni-Fe, an alloy of abut 39% Ni-Fe, an alloy of about 32% Ni - and about 4% Co-Fe, and an alloy of 81 to 85% Fe - about 5% Si - and about 10% Cr-B made by rapid quenching.

4,521,802

DOUBLE-SCANNING NON-INTERLACE COLOR TELEVISION RECEIVER

Yasunari Ikeda, Funabashi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 440,985
Claims priority, application Japan, Nov. 13, 1981, 56-181973
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—11 **22 Claims**



1. A double-scanning non-interlace color television receiver for receiving an interlace color television signal having alternating odd and even fields of scanned lines which are normally interlaced, as displayed, comprising:

receiver means for receiving said interlace color television signal and including means for generating respective chroma and luminance scanning line signals in response thereto;

visual display means; and

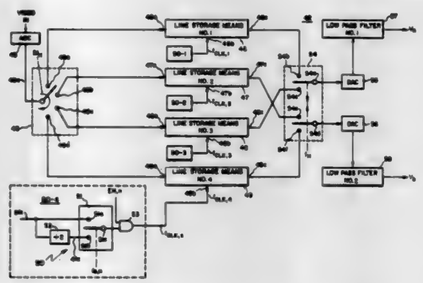
non-interlace converting means including luminance double-scanning means for generating an averaged luminance scanning line signal from each two consecutive luminance scanning line signals of the same field, and for supplying said consecutive luminance scanning line signals and said averaged luminance scanning line signal to said visual display means for display by the latter of each said averaged luminance scanning line signal between the respective two consecutive luminance scanning line signals, and means for supplying to said visual display means color difference signals derived from said chroma scanning line signal corresponding to one of said two consecutive luminance scanning line signals for display by said visual display means in synchronism with said averaged luminance scanning line signal.

4,521,803

SYSTEM FOR COMPATIBLE TRANSMISSION OF HIGH-RESOLUTION TV

Norman C. Gittinger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 7, 1982, Ser. No. 433,562
Int. Cl.³ H04N *9/32*
U.S. Cl. 358—12 **98 Claims**



1. A method for increasing the vertical luminance resolution capacity of a transmitted television signal, comprising the steps of:

(a) providing a television camera having a luminance video output signal of magnitude responsive to the visual luminance value at a raster spot then being scanned by a beam;

(b) scanning the beam through a plurality of lines in a horizontal direction;

(c) scanning the beam through each of a plurality L of different vertically-displaced lines during each of the plurality of horizontal line scans;

(d) generating a like plurality L of substantially simultaneous luminance signals each responsive to the luminance video output signal provided by the camera when the beam is at positions defined by the associated one of the plurality L of vertically-displaced lines; and

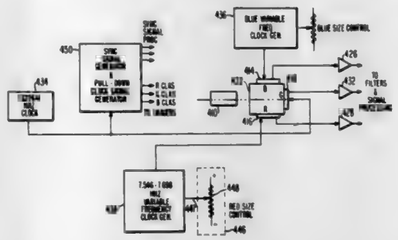
(e) modulating a different characteristic of at least one luminance carrier with each of the plurality L of luminance signals to transmit the increased vertical luminance resolution capacity television signal.

4,521,804

SOLID-STATE COLOR TV CAMERA IMAGE SIZE CONTROL

Sidney L. Bendell, Riverton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 25, 1983, Ser. No. 469,773
Int. Cl.³ H04N *3/15, 9/09*
U.S. Cl. 358—51 **14 Claims**



1. An image size control arrangement for a color television camera, comprising:

first and second solid-state imagers, each including an array of discrete light-responsive regions and a buffer register;

optical means optically coupling a first color component of a scene to be imaged to said first imager and a second color component of said scene to be imaged to a second imager, said first and second color components being imaged to different sizes thereby causing color misregistration;

pull-down clock generating means coupled to said solid-state imagers for establishing the recurrent light integrating intervals of said arrays and for transferring signals representative of said scene from each of said arrays to its corresponding buffer register;

controllable clock signal generating means coupled to said buffer registers for applying respective clock signals to said respective buffer registers for controlling the rates of transfer of signals from said buffer registers, and further including rate control terminal means;

registration control means coupled to said rate control terminal means for controlling the rate of said respective clock signals, thereby controlling said rates of transfer of signals from said buffer register relative to each other so as to apparently change the size of said imaged color components whereby said misregistration is reduced; and

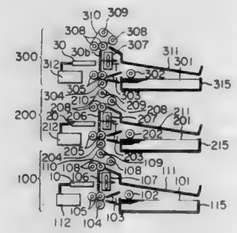
controllable application means coupled to said controllable clock signal generating means and responsive to a change in relative rates of said respective clock signals for controlling the relative times of application of said respective clock signals to said respective buffer registers in a manner so as to prevent movement of the apparent center of said imaged color components when their apparent size is changed.

4,521,805

PRINTING APPARATUS OR SYSTEM

Naoki Ayata, Machida; Seiji Saito, Yokosuka; Hidetoshi Suzuki; Kunitaka Ozawa, both of Tokyo; Noboru Koumura, Narashino, and Koji Kazuma, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1982, Ser. No. 370,464
Claims priority, application Japan, Apr. 24, 1981, 56-61421; Apr. 24, 1981, 56-61422; Apr. 27, 1981, 56-62542; Apr. 28, 1981, 56-63462; Apr. 28, 1981, 56-63463
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **23 Claims**



1. A printing system comprising:

first recording means for recording an image on a recording medium in a first mode;

second recording means for recording an image on a recording medium in a second mode different from said first mode, said second recording means being different from said first recording means; and

selecting means for selecting said first or second recording means to perform a recording operation;

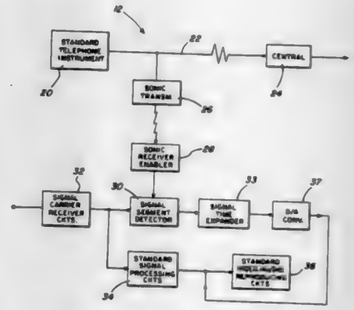
wherein one of said first and second modes is adapted for recording a halftone image.

4,521,806

RECORDED PROGRAM COMMUNICATION SYSTEM

Nicholas F. Abraham, Cape Coral, Fla., assignor to World Video Library, Inc., Fort Worth, Tex.

Filed Aug. 19, 1982, Ser. No. 409,566
Int. Cl.³ H04M *7/18*
U.S. Cl. 358—86 **5 Claims**



1. In a communication system through which a plurality of subscriber stations are linked by telephone network with a common service station at which a plurality of video/audio signal sources are located for transmission of continuous program information, in response to telephone dialed selection signals to the subscriber stations through a common signal carrier path independent of the telephone network, a signal transmission method including the steps of: processing the information sequentially readout at the service station for broadcast during predetermined transmission periods; detecting time-spaced segments of the broadcast program information at each of the subscriber stations corresponding to the selection signals originating therefrom; and sequentially decoding the detected segments of the broadcast program information for real time reproduction thereof at the subscriber stations, including the steps of: storing additional information at the service station corresponding to the segments of the broadcast program information; selecting the additional information in response to reception of said selection signals; inserting the selected additional information during program spacing intervals between the segments of the broadcast program information for broadcast to the subscriber stations in advance of said segments of the broadcast information, registering said selection of the additional information following the program spacing intervals during broadcast of the segments of the program information; and cancelling said registration of previously selected additional information in response to telephoned signals received prior to termination of the spacing intervals.

4,521,807

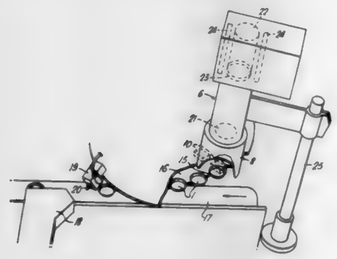
OPTICAL INSPECTION SYSTEM

Michael J. Werson, Eastleigh, England, assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Jul. 13, 1982, Ser. No. 397,716
Claims priority, application United Kingdom, Jul. 17, 1981, 8122146
Int. Cl.³ H04N *7/18, 7/00*
U.S. Cl. 358—106 **12 Claims**

1. An optical inspection system for the inspection of circular workpieces, said inspection system comprising an electronic camera, said electronic camera including an electronically active image receiving surface and an optical system for focusing an image of said circular workpieces on said electronically active image receiving surface; means to move said circular workpieces in to a predetermined position in relation to said optical system of said camera; means for scanning said electronically active image receiving surface in directions extend-

ing substantially radially across said electronically active image receiving surface to produce an output signal; signal analyser means arranged to monitor said output signal corresponding to each of said radial scans to determine the presence at required positions along each of said scans of each element of said workpiece and to determine absence of unexpected elements along each of said scans; and, means to define timing



windows at times during each of said scans corresponding to the required positions along each scan at which said elements of said workpiece are expected, wherein said signal analyser means monitors said output signal corresponding to each scan in accordance with said timing windows to determine the presence or absence of events in each of said timing windows, whereby the presence of any irregularity in said workpiece is detected.

4,521,808

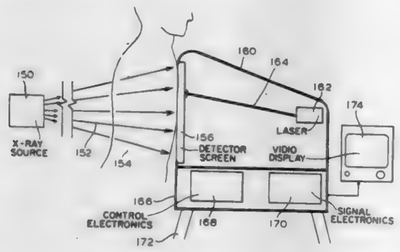
ELECTROSTATIC IMAGING APPARATUS

Poen S. Ong; Alfonso Zermeno; Lee M. Marsh, Jr., all of Houston, Tex.; James M. Hevezi, Rapid City, S. Dak., and Ronald W. Cowart, Houston, Tex., assignors to University of Texas System, Austin, Tex.

Division of Ser. No. 22,989, Mar. 22, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,611

Int. Cl.³ H04N *3/08*

U.S. Cl. 358—111 **19 Claims**



1. A method of recording and reading out a latent image comprising:

exposing a multilayered detector apparatus whose photoconductive layer has no surface potential to a modulated radiation flux capable of producing electron hole pairs, said photoconductive layer being biased by an electric field during said exposure, whereby a modulated surface charge is placed on the photoconductive layer;

scanning said exposed detector with a photon beam whereby said modulated surface charge is at least partially discharged; and

measuring the charging potential of said discharge as a function of time.

4,521,809

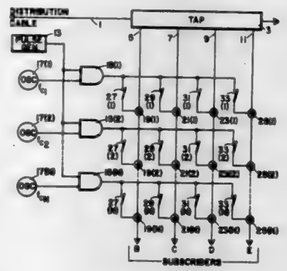
METHOD AND APPARATUS FOR CONTROLLING ACCESS TO SELECTED TELEVISION PROGRAMS

Joseph P. Bingham, Fayetteville, and Douglas J. Hatch, Chittenango, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,209

Int. Cl.³ H04N *7/16;* **H04K** *1/02*

U.S. Cl. 358—120 **10 Claims**



1. A method for controlling subscriber access to selected television programs, said programs having regularly spaced horizontal synchronizing pulses therein and being modulated onto separate carrier waves, each having a different carrier frequency, for transmission as individual channels over a controlled access transmission medium, characterized in that said method comprises the steps:

generating oscillating signals having frequencies substantially equal to the respective carrier wave frequencies of the channels to be controlled and having amplitudes greater than that of the horizontal synchronizing pulses;

cycling said oscillating signals on and off to generate respective pulsed signals in which the duration of said pulses are substantially equal to the duration of said horizontal synchronizing pulses, and the pulse repetition rates of said pulsed signals differ from that of said horizontal synchronizing pulses; and

selectively combining said pulsed signals with the respective carrier waves carrying the programs to be controlled, whereby the television receiver of a subscriber not authorized to receive said respective programs, will interpret said superimposed pulsed signals as valid horizontal synchronizing signals and throw itself out of synchronization with the relevant program, thereby rendering the received picture unviewable.

4,521,810

VIDEO SOURCE SELECTOR

John J. Nigborowicz, Carmel, and Karl L. Friedline, Indianapolis, both of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed May 3, 1983, Ser. No. 491,178

Int. Cl.³ H04N *5/22;* **H03K** *17/00, 17/56*

U.S. Cl. 358—181 **8 Claims**

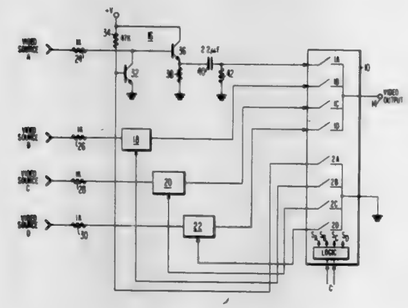
1. A video source selector comprising:

a switch arrangement including first and second groups of switches, each switch having a conduction path coupled between an input and an output, the conduction of respective switches of said first group and of said second group being selectively controlled in pairs in response to a coded selection signal;

said switches of said first group having their inputs coupled to respective ones of a plurality of video signal sources and their outputs coupled in common to an output terminal for selectively conducting video signal from a selected one of said video signal sources to said common output terminal when one of said switches of said first group is rendered conductive in response to said coded selection signal;

each switch of said second group having its input coupled in common to a first reference potential point and providing a respective control signal dependent on the conductive state of said switch at its output; and

a plurality of signal inhibiting elements, each element including a conduction path having one end coupled to a respective one of said video signal sources for selectively inhibiting video signal from passing from said respective video signal sources to said switches of said first group in response to respective ones of said control signal provided at the respective outputs of said switches of said second group.



4,521,811

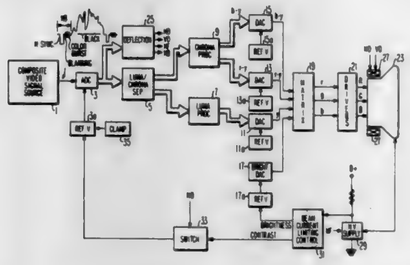
BEAM CURRENT LIMITING ARRANGEMENT FOR A DIGITAL TELEVISION SYSTEM

John W. Stoughton, and Donald H. Willis, both of Marion County, Ind., assignors to RCA Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 606,022, May 2, 1984, abandoned. This application Aug. 30, 1984, Ser. No. 646,033

Int. Cl.³ H04N *5/16, 5/197, 5/21, 9/535*

U.S. Cl. 358—243 **8 Claims**



1. In a digital television system including an analog-to-digital converter for converting a composite television signal, including both luminance and chrominance components, to corresponding digital samples, a digital processing section for digitally processing said digital samples to produce at least first and second groups of digital samples representing respective components of image information, a first digital-to-analog converter for producing a first analog signal corresponding to said first group of digital samples, a second digital-to-analog converter for producing a second analog signal corresponding to said second group of digital samples, a picture tube responsive to said first and second analog signals for producing an image and being capable of generating an excessive beam current in response to said first and second analog signals, apparatus for reducing said excessive beam currents comprising:

beam current control means coupled to said picture tube for generating a control signal representing the beam current generated by said picture tube; and

analog-to-digital control means coupled to said analog-to-digital converter for controlling the range of values of said digital samples representing said analog composite television in response to said beam current representative control signal.

4,521,812

METHOD OF IMPROVING CONTRAST ACCENTUATION

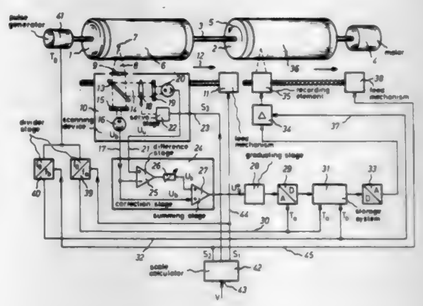
Hans-Georg Knop, Heikendorf, Fed. Rep. of Germany, assignor to Dr.-Ing. Rudolf Hell GmbH, Kiel, Fed. Rep. of Germany

Filed Oct. 19, 1982, Ser. No. 435,255

Claims priority, application European Pat. Off., Oct. 19, 1981, 81108501.8

Int. Cl.³ H04N *1/38*

U.S. Cl. 358—287 **10 Claims**



1. In a method of improving contrast accentuation in electronic reproduction apparatus of the kind in which a composite original comprising both continuous tone areas and linework areas is scanned opto-electronically dot-by-dot and line-by-line to obtain an image signal, at least one surround signal is generated by evaluation of the area surrounding the image dots, and a correction signal which is superimposed on the image signal for contrast accentuation is derived from the surround and image signals, and in which the original is subsequently recorded on a recording medium, the improvement which comprises varying the width of overlap between the image and correction signals continuously, independently of the image dot size, and adjusting said width of overlap to control the effective range of contrast accentuation on the recording medium whereby to optimize the recording of a composite original with substantial elimination of white fringes and edges at the contours of the recorded linework.

4,521,813

RECORDING METHOD IN A FACSIMILE RECEIVER

Takashi Yoshida; Masakatsu Fujie, both of Ibaraki; Junichi Matsuno, Toride, and Hideyuki Ouchi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1982, Ser. No. 446,204

Claims priority, application Japan, Dec. 4, 1981, 56-194509

Int. Cl.³ H01M *1/22*

U.S. Cl. 358—296 **17 Claims**

1. In a variable speed sub-scan system facsimile receiver having a receiving unit for demodulating a coded facsimile signal to an image data, a memory unit for storing the image data, a paper feed unit for feeding a record paper at a variable speed in accordance with a signal from said receiving unit and a recording unit for forming an image on the record paper;

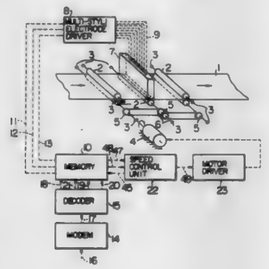
a recording method comprising the steps of;

temporarily storing the image data line by line in said memory unit;

detecting the number of stored lines;

issuing a variable speed command to said paper feed unit in accordance with the detected number of stored lines to

control a paper feed speed by a speed pattern determined by the number of stored line; and



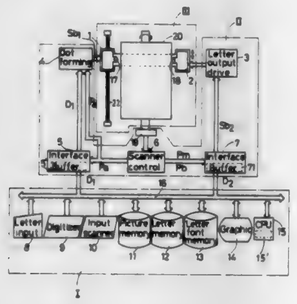
reading out the image signal, one line at a time, from said memory unit for every one line movement of said record paper to record the image on said record paper by said recording unit.

4,521,814

METHOD AND APPARATUS FOR SIMULTANEOUSLY OUTPUTTING A GRAPHIC SIGNAL AND AN ALPHANUMERIC SIGNAL BY USING AN IMAGE REPRODUCING SYSTEM

Yoshio Ono, and Seiya Sakamoto, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Oct. 13, 1983, Ser. No. 541,796
Claims priority, application Japan, Oct. 13, 1982, 57-180462
Int. Cl.³ G04N *1/22*; G01D *15/06*
U.S. Cl. 358—296 **14 Claims**



10. In an apparatus for recording an image on a medium by scanning the medium in a primary scanning direction and feeding recording heads in a sub-scanning direction, the apparatus having two recording heads, the two heads having different scan lengths determined by respective products of numbers and diameters of beam components thereof, the improvement comprising:

synchronizing means for synchronizing movement of said two recording heads, including

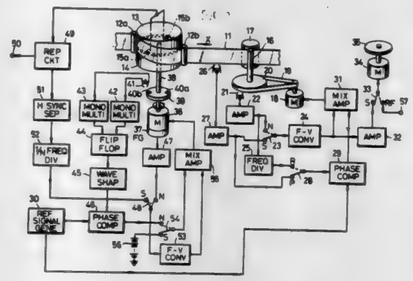
means for feeding said recording heads substantially simultaneously in said sub-scanning direction.

4,521,815

REPRODUCING APPARATUS CAPABLE OF PERFORMING HIGH-SPEED REPRODUCTION OF A VIDEO SIGNAL

Yoshio Tokuyama, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Japan

Filed Jul. 8, 1982, Ser. No. 396,293
Claims priority, application Japan, Jul. 10, 1981, 56-102473[U]; Jul. 10, 1981, 56-102474[U]
Int. Cl.³ H04N *5/783*
U.S. Cl. 360—10.2 **5 Claims**



1. A video signal reproducing apparatus capable of performing high-speed reproduction, said video signal reproducing apparatus comprising:

reproducing means (**13**, **15***a*, **15***b*, **49**) comprising at least one rotary video head (**15***a*, **15***b*) for scanning over a tape (**11**) recorded with a video signal on tracks formed obliquely with respect to the longitudinal direction of said tape and control pulses recorded on a track formed along the longitudinal direction of said tape, said reproducing means reproducing the video signal from said oblique tracks;

tape driving means (**34**, **35**, **16–20**) for causing tape travel at a speed higher than a tape speed upon a normal reproduction during a high-speed reproduction;

a drum motor (**36**) for rotating said rotary video head;

drum motor speed detecting means (**37**) for producing a first rotation detection signal which has a frequency dependent on the rotational speed of said drum motor; and

servo circuit means (**48**, **51–56**) for controlling the rotation of said drum motor so that a reproduced horizontal synchronizing signal within the video signal reproduced by said reproducing means has a constant period which is substantially identical to the period of a horizontal synchronizing signal within the recorded video signal,

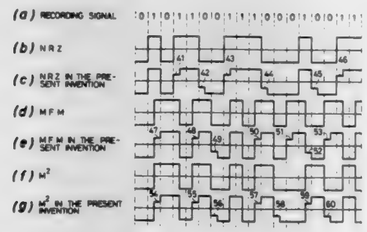
said servo circuit means comprising a single first frequency-voltage converter (**53**) for subjecting an input signal to a frequency-voltage conversion and for supplying an output voltage to said drum motor, a reference voltage source (**56**) for generating a reference voltage having a predetermined constant value, first switching means (**52**, **48**) for selectively supplying the output first rotation detection signal of said drum motor speed detecting means to said first frequency-voltage converter during the normal reproduction and for selectively supplying a periodic signal within the video signal reproduced by said reproducing means to said first frequency-voltage converter during the high-speed reproduction, and second switching means (**54**) for selectively supplying the output reference voltage of said reference voltage source to said drum motor.

4,521,816

MAGNETIC RECORDING METHOD FOR DIGITAL SIGNAL

Akihiko Kougami, Kokubunji; Seiichi Mita, Hachioji; Toru Kirino, Kodaira, and Shusaku Nagahara, Hachioji, all of Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,342
Claims priority, application Japan, Aug. 17, 1981, 56-127780
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—45 **6 Claims**



1. In a magnetic recording method for digital signals having a predetermined bit period wherein magnetic patterns corresponding to the digital signals are recorded on a magnetic medium;

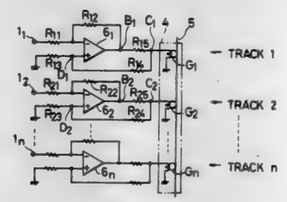
the steps comprising detecting from said digital signals a recording current of an identical polarity which continues for a time at least equal to 1.5 times said bit period of the digital signals, and setting a current reversal amplitude Iv of a current reversal point at which the recording current of said identical polarity is started at a smaller level that the current reversal amplitude Io of the current reversal points from which the recording current will continue with identical polarity for less than 1.5 times the bit period of the digital signals, and wherein said smaller level of the current reversal amplitude Iv continues for a predetermined period of time.

4,521,817

CIRCUIT ARRANGEMENT FOR MAGNETIC RECORDING APPARATUS HAVING A MULTI-TRACK HEAD

Kohhei Sasamura, and Takaro Mori, both of Sagamihara, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jun. 21, 1982, Ser. No. 390,738
Claims priority, application Japan, Jun. 22, 1981, 56-96355
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—46 **1 Claim**



1. A circuit arrangement for recording a plurality of signals on a multi-track by means of a multi-track head on a magnetic recording medium, comprising:

(a) a plurality of recording heads included in the multi-track head;

(b) a plurality of amplifiers responsive respectively to said plurality of signals to be recorded, the output signal from said amplifiers being respectively fed to the heads, each of said amplifiers having an operational amplifier having an inverting input terminal, a noninverting input terminal and an output terminal; and

(c) means for causing each of said amplifiers to function as a constant-current amplifier throughout the entire frequency range of said input signals, said means having first to fifth resistors connected to each of said operational amplifiers, said first resistor being connected between an input terminal from which one of said plurality of signals is fed, and said inverting input terminal, said second resistor being connected between said inverting input terminal and said output terminal, said third resistor being connected between said noninverting input terminal and ground, said fourth resistor being connected between said noninverting input terminal and a first terminal of said head having a second terminal connected to ground, and said fifth resistor being connected between said output terminal and said first terminal of said head, the resistances of said first to fourth resistors being selected to satisfy the relationship of:

$$R_{12}/R_{11}=R_{14}/R_{13}$$

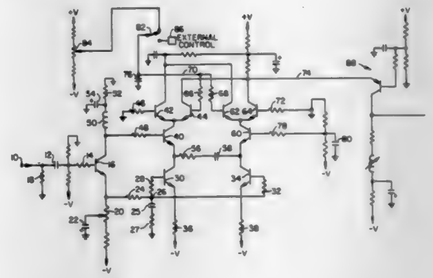
wherein R_{11}, R_{12}, R_{13} and R_{14} are respectively the resistances of said first to fourth resistors.

4,521,818

ONE PLUS DOUBLE OMEGA SQUARED RADIO FREQUENCY EQUALIZER

Barrett E. Guisinger, Saratoga, Calif., assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 324,773, Nov. 25, 1981, Pat. No. 4,405,954. This application Jan. 31, 1983, Ser. No. 462,547
Int. Cl.³ G11B *5/45, 5/02*
U.S. Cl. 360—65 **6 Claims**



1. A circuit for selectively combining an input signal with the same signal after double differentiation to produce a combined output signal in response to a control signal without introducing the control signal into the output signal, the circuit comprising

a first and a second amplifier circuit, each circuit having corresponding separate pairs of input stages and separate pairs of parallel connected, selectively gain controllable output stages driven by the input stages,

a first output terminal,

a second output terminal,

means for connecting corresponding ones of the output stages of the first and second amplifier circuits to supply their outputs to the first output terminal and for connecting the other output stages of each amplifier circuit to supply their outputs to the second output terminal,

control signal means for controlling the gains of opposite ones of the output stages of the first and second amplifier circuits, the other output stages having predetermined, fixed gains,

means for supplying an input signal to corresponding ones of the input stages of both the first and second amplifier circuits, and

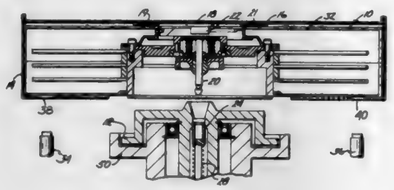
double differentiation means for supplying a second derivative of the input signal in inverted form to the other input stage of the first amplifier circuit and in noninverted form to the other input stage of the second amplifier circuit.

4,521,819

CARTRIDGE LOAD MECHANISM

John W. Elsing, Edina; Gene F. Gorham, Hopkins, and Steven D. Knopp, Bloomington, all of Minn., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Oct. 4, 1982, Ser. No. 432,573
Int. Cl.³ G11B *25/04*
U.S. Cl. 360—97 **8 Claims**



1. A cartridge load mechanism for a cartridge disk drive having a spindle, comprising:

a disk cartridge having a flexible housing and a disk pack mounted therein;

a cartridge cradle having a transverse yoke and means for mounting therein said disk cartridge, the cradle further having an aperture in a bottom through which the disk pack may be lowered into mounting contact with the spindle of the cartridge disk drive;

a nub mounted centrally on said yoke and projecting towards a top of the disk cartridge; said nub adapted to press said disk pack into locking contact with said spindle at a lowermost position by pressing against the top of the disk cartridge flexible housing;

means for constraining the motion of said cartridge cradle to substantially the axial direction vis-a-vis said spindle;

a lever having a crank arm which is affixed to said cradle by means adapted to accommodate disparity in motion between said lever and said cradle; said lever pivotally mounted on said cartridge disk drive;

a hinge pivotally mounted on said cartridge disk drive;

a door fixedly mounted on said hinge;

an arm one end of which is pivotally mounted on said hinge and

the other end of which is pivotally mounted on a second crank arm of said lever;

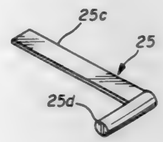
means including said hinge and arm for connecting same to said lever such that partially closing the door causes the arm and lever to lower the cradle to a lowermost position wherein the nub presses the disk pack into locking contact with the spindle and further closing movement of the door moves the cradle back up to an intermediate position wherein the flexible housing top flexes back such that it no longer presses on the disk pack, the disk pack remaining locked onto the spindle, whereby the disk pack is free to spin without rubbing against the housing top.

4,521,820

INSERT FOR BLOCKING OPERATION OF THE DISC WRITE SWITCH IN USE OF COMPUTER DISKETTES

James D. Fann, P.O. Drawer X, Simonton, Tex. 77476

Filed Sep. 30, 1982, Ser. No. 431,630
Int. Cl.³ G11B *23/02*
U.S. Cl. 360—133 **3 Claims**



1. A computer diskette, for use in a computer having a disc drive slot with a door closing the entrance thereto and a disc drive write switch arm adjacent one end of said entrance which controls the read-write-erase function by following into an edge slot adjacent to one corner of said diskette, comprising

a single, thin, flat circular recording disc of magnetic material,

a thin, flat envelope, having an enlarged central opening, enclosing and supporting said disc for rotary movement therein,

said envelope having a notch in one edge portion, adjacent to one corner thereof, adapted to be positioned with said notch at said one end of said entrance and normal thereto, for entrance of the computer disc drive write switch arm thereinto, permitting movement of such switch arm to a selected position permitting the computer to write to the diskette,

a slide strip slidably positioned within said one edge portion substantially coplanar with said envelope and having an outer end portion, extending into said drive slot entrance when positioned in said drive slot, said outer end portion being positioned to be grasped for manual operation from outside the computer disc slot when said diskette is positioned therein for computer operation,

said strip being manually movable longitudinally to one position extending through and blocking said notch and to another position opening said notch said outer end portion extending into said drive slot entrance when in said open position and providing a visual indication that said notch is not write-protected.

4,521,821

OPERATING LEVER APPARATUS

Minoru Kobayashi, and Shigeru Nemoto, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1982, Ser. No. 359,857
Claims priority, application Japan, Mar. 30, 1981, 56-46915
Int. Cl.³ G11B *15/48, 15/18, 17/00*; G05G *11/00*
U.S. Cl. 360—137 **15 Claims**

1. An operating lever apparatus for use in combination with a tape recorder which may be set to various modes, said operating lever apparatus comprising:

a first base plate;

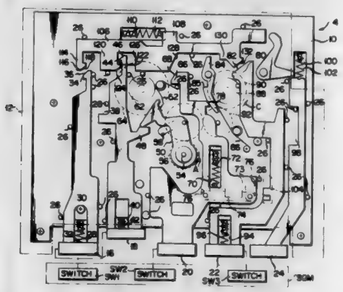
a second base plate spaced from and disposed parallel to the first base plate;

a playback lever disposed between the first and second base plates and being slideably movable between a first position and a second position along and substantially parallel to the first and second base plates, said playback lever setting, upon arriving at its second position, the tape recorder to playback mode;

a recording lever disposed between the first and second base plates and being slideably movable between a first position and a second position along and substantially parallel to the first and second base plates, said recording lever setting, upon arriving at its second position, the tape recorder to recording mode;

a stop lever disposed between the first and second base plates and being slideably movable between a first position and a second position along and substantially parallel to the first and second base plates;

a first auxiliary lever disposed between the first and second base plates and being slideably movable between a first position and a second position along and substantially parallel to the first and second base plates, said first auxiliary lever including means for holding the playback lever in its second position while said first auxiliary lever remains at its first position and said first auxiliary lever releasing the playback lever upon said first auxiliary lever being moved to its second position; and



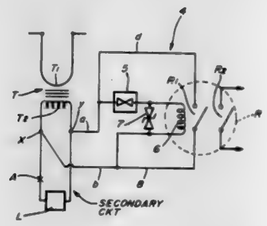
a second auxiliary lever disposed between the first and second base plates and being slideably movable between a holding position and a releasing position along and substantially parallel to the first and second base plates, said second auxiliary lever including means for holding the recording lever in its second position while said second auxiliary lever remains at its holding position, and said second auxiliary lever moving from its holding position to its releasing position responsive to said stop lever moving from its first position to its second position, thus releasing the recording lever from its second position and then moving the first auxiliary lever from its first position to its second position and finally releasing the playback lever from its second position.

4,521,822

CURRENT TRANSFORMER PROTECTION DEVICE

Julien Simard, Brossard, Canada, assignor to Hydro-Quebec, Montreal, Canada

Continuation-in-part of Ser. No. 283,966, Jul. 16, 1981, abandoned. This application Jun. 30, 1983, Ser. No. 509,384
Claims priority, application Canada, Mar. 3, 1981, 372141
Int. Cl.³ H02H *7/04*
U.S. Cl. 361—35 **5 Claims**



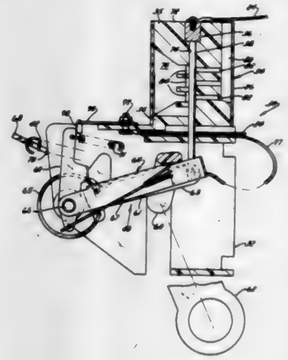
1. A system for protecting the secondary winding of an HV current transformer of a power network against overvoltages caused by an open secondary circuit, said system comprising a shunting device of the mechanical latching type for short-circuiting said secondary winding, a triggering device acting as a crowbar and operative when subjected to a voltage higher than the voltage appearing across the terminals of said secondary winding in normal operating conditions and during a fault on the HV power network, said triggering device being connected in series with a voltage regulator acting as a clamp, and said shunting device being connected in parallel with said voltage regulator whereby said regulator will energize said shunting device to short-circuit said secondary winding of the current transformer.

4,521,823

SUBMERSIBLE PRIMARY CIRCUIT BREAKER

Edwin A. Link, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed Aug. 30, 1982, Ser. No. 412,602
Int. Cl.³ H02H *7/04*
U.S. Cl. 361—38 **5 Claims**



1. In a self-protected transformer including a casing having a coil and core assembly immersed in a dielectric fluid within said casing, the assembly including primary and secondary circuits, the improvement comprising a circuit breaker in the primary circuit, said circuit breaker being immersed in the dielectric fluid and operatively connected to said coil and core assembly, said circuit breaker including trip-free means responsive to predetermined electrical conditions to interrupt the power circuit to the coil and core assembly, said trip-free means includes a U-shaped bimetal and a current transformer mounted on one leg of said bimetal, said current transformer being connected in series with said primary circuit of said transformer whereby said bimetal will respond to the heat generated by the current transformer and/or the magnetic force of the current transformer core.

4,521,824

INTERRUPTER MECHANISM FOR A GROUND FAULT CIRCUIT INTERRUPTER

Robert A. Morris; George W. Kiesel, both of Burlington, and Paul T. Rajotte, Plainville, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Feb. 13, 1984, Ser. No. 579,627
Int. Cl.³ H02H *3/347*
U.S. Cl. 361—45 **19 Claims**

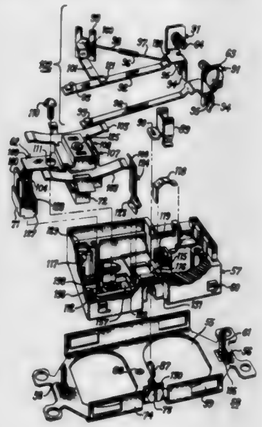
1. A ground fault circuit interrupter comprising:

an apertured molded case;

a trip solenoid and signal processor circuit within said case; and

a pair of fixed and moveable contacts operatively mounted proximate a trip lever and an operating mechanism, said operating mechanism causing said fixed and moveable contacts to become separated upon operation of said trip lever, said operating mechanism including a crossarm member holding said moveable contacts in electrical connection with said fixed contacts against the bias of a pair of moveable contact arms carrying said moveable contacts, said operat-

ing mechanism comprising a moveable crossarm operating member and a moveable button member interconnected by a



latch pin, said crossarm including a latch pin clearance slot and a pair of latch post clearance slots, one on either side of said latch pin clearance slot.

4,521,825

GAS IGNITION CIRCUITS

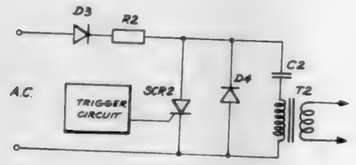
John S. Crawford, Adelaide, Australia, assignor to Technical Components Pty. Ltd., Hendon, Australia

Filed Oct. 17, 1983, Ser. No. 542,858

Claims priority, application Australia, Oct. 20, 1982, PF6437

Int. Cl.³ F23Q *3/00*; F23Y *2/28*

U.S. Cl. 361—253 **9 Claims**



1. A circuit for generating a spark to ignite a gas or other fuel burner, comprising:
- a charging circuit;
- a charge storage capacitor coupled to said charging circuit;
- a spark output transformer connected in series with said capacitor;
- an SCR switching device connected in parallel to said capacitor and transformer for discharging the charge stored in the capacitor; and
- a non-linear positive resistance conductive element connected from the anode to the gate of said SCR;
- so that when the anode voltage reaches the required value a trigger signal is applied via said non-linear conductive element to the gate of said SCR to trigger the discharge of the capacitor by the SCR, whereby said triggering is effected by said SCR without requiring an additional triggering device.

4,521,826

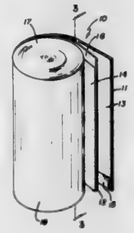
DIELECTRIC FLUID FOR A COMPACITOR

Vandos Shedigian, and Gerald A. Voyles, both of Indianapolis, Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Feb. 25, 1980, Ser. No. 124,283

Int. Cl.³ H01G *4/22*

U.S. Cl. 361—314 **8 Claims**



1. In a capacitor, a dielectric fluid including 0 to about 10 wt. % of an anti-oxidant or mixtures of anti-oxidant, 0 to about 10 wt. % of an epoxide stabilizer or mixtures of epoxide stabilizers, the remainder essentially glyceryl tri(acetoxystearate).

3. A capacitor comprising a pair of electrically conductive electrodes and a dielectric separating the electrodes, the dielectric including a plastic film and the dielectric fluid of claim 1.

4,521,827

HEAT SINK MOUNTING

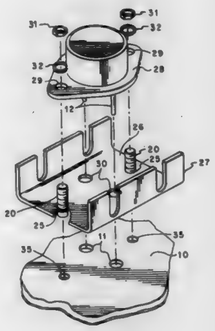
William D. Jordan, Dallas; Roger C. Hundt, Carrollton, and James D. Pritchett, Plano, all of Tex., assignors to Thermalloy, Inc., Dallas, Tex.

Division of Ser. No. 314,202, Oct. 23, 1981, Pat. No. 4,403,102, which is a continuation of Ser. No. 93,281, Nov. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 8,032, Jan. 31, 1979, abandoned. This application Jan. 12, 1983, Ser. No. 457,409

The portion of the term of this patent subsequent to Sep. 6, 2000, has been disclaimed.

Int. Cl.³ H05K *7/20*; F28F *7/00*

U.S. Cl. 361—386 **10 Claims**



1. In combination:
- (a) a heat sink including a substantially flat base portion; and
- (b) at least one mounting stud comprising an elongated shaft with a radially enlarged portion extending radially therefrom intermediate the ends thereof forming the largest diameter of said stud, the end portion of said shaft on one side of said radially enlarged portion extending through a hole in said flat base portion and at least one end portion of said stud coated with a solder-promoting material.

9. In combination:
- (a) at least one mounting stud comprising an elongated shaft with an enlarged flange extending radially therefrom intermediate the ends thereof defining a shaft with a first portion extending in a first direction from said flange and a second portion extending in the opposite direction from said flange, said flange forming the largest diameter of said stud;
- (b) a circuit board with at least the end of said second portion of said shaft fitted within a hole in said circuit board and soldered to said circuit board; and
- (c) part of said second portion of said shaft between said flange and said end portion thereof fitted within the hole in said circuit board enlarged with respect to the end fitted within said circuit board; thereby forming a shoulder for resting on the surface of said circuit board and spacing said flange from the surface of said circuit board.

4,521,828

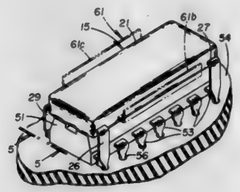
COMPONENT MODULE FOR PIGGYBACK MOUNTING ON A CIRCUIT PACKAGE HAVING DUAL-IN-LINE LEADS

William J. Fanning, Glen Ellyn, Ill., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,662

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—386 **21 Claims**



1. A component module comprising:
- a molded housing having a base with four corners;
- a component encapsulated within said housing and having first and second electrodes;
- a first terminal including an upper portion having a preformed integral bracket means frictionally engaging at least a portion of said first component electrode, and at least partially embedded in said housing, and a lower portion that projects downwardly from a region adjacent one predetermined base-defined corner of said housing in close proximity to said first component electrode; and
- a second terminal including an upper portion having a preformed integral bracket means for frictionally engaging at least a portion of said second component electrode, and at least partially embedded in said housing, and a lower portion that projects downwardly from a region adjacent the base-defined corner of said housing that is diagonally disposed from said one predetermined first terminal corner thereof, the lower portion of said first and second terminals being spaced so as to respectively contact selected correspondingly disposed leads of an associated integrated circuit package, having dual-in-line leads, when said component module is subsequently piggyback-mounted thereon.

4,521,829

DEVICE FOR COOLING A PLURALITY OF INTEGRATED MODULES COMBINED ON A RIGID PRINTED CIRCUITBOARD TO FORM LOGIC CARDS

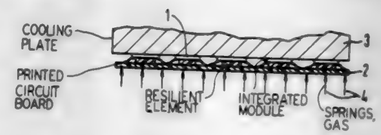
Herrmann Wessely, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 526,372

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 3233491

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—387 **7 Claims**



1. A device which cools a plurality of integrated modules, comprising:
- a rigid printed circuitboard;
- a plurality of integrated modules carried on said rigid printed circuitboard, each of said modules including a planar rear surface facing away from said printed circuitboard;
- a common cooling plate including a highly-planar surface contacting each of said rear surfaces;
- pressure means acting on said rigid printed circuitboard to press said modules against said cooling plate; and
- a plurality of resilient means individually disposed between said rigid printed circuitboard and said modules to individually press said modules against said cooling plate.

4,521,830

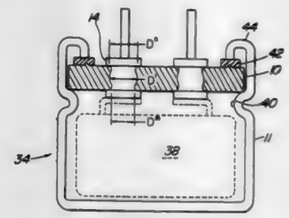
LOW LEAKAGE CAPACITOR HEADER AND MANUFACTURING METHOD THEREFOR

William H. Aultman, Pickens, and Morris T. Reese, Taylors, both of S.C., assignors to Sangamo Weston, Inc., Norcross, Ga.

Division of Ser. No. 334,289, Dec. 24, 1981, Pat. No. 4,458,414. This application Apr. 30, 1984, Ser. No. 605,440

Int. Cl.³ H01G *9/00*

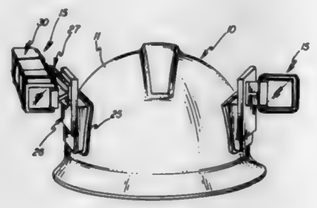
U.S. Cl. 361—433 **4 Claims**



1. A capacitor header for sealing a container open to one end thereof, comprising: a header disposed within and sized to close said open end of said container, said header having the mechanical characteristics of a modulus of elasticity in the range from 50,000 to 200,000 psi and a tensile strength in the range from 3,500 to 80,000 psi, said header having at least one through hole provided therein having a predetermined diameter; and at least one cylindrical terminal formed as a solid, unitary body from an electrically conductive material and having a modulus of elasticity in the range from 2 million to 11 million pounds per square inch and a yield strength in the range from 10,000 to 80,000 psi, said terminal being disposed in said through hole and extending therefrom, said terminal having a portion in contact with said through hole with a diameter

in the range of 0.002 to 0.020 inch larger than said predetermined diameter.

4,521,831
PROTECTIVE HELMET WITH DUAL ADJUSTMENT ILLUMINATION MEANS
John R. Thayer, Ridge Rd., Fabius, N.Y. 13063
Filed Jan. 18, 1984, Ser. No. 571,786
Int. Cl.³ F21L *15/14*; A42B *3/00*
U.S. Cl. 362—32 **9 Claims**



1. In a protective helmet having two sidewalls and an adjustable visor connected to the front thereof for shielding the wearer's face, illuminating apparatus for directing independent beams of light at selective targets at either the front or the rear of the helmet that includes

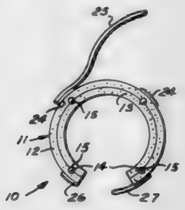
a base member projected outwardly from each sidewall of the helmet, each base member having a guideway formed therein,

a removable carriage having rail means slidably received in the guideway of each base member for detachably securing the carriage in said base,

a lamp support pivotally mounted in each carriage for rotating a lamp mounted therein within a vertical plane adjacent the base, and

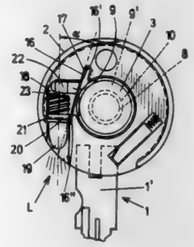
an indexing means acting between each carriage and the associated lamp support for releasably positioning the support within said plane whereby each lamp can be independently directed toward separate targets to either the front or the rear of the helmet without interfering with the adjustable visor.

4,521,832
WRIST STRAP ILLUMINATING DEVICE
Bruce E. Barbour, 41-37 52nd St., Woodside, N.Y. 11377
Filed Jun. 18, 1984, Ser. No. 622,003
Int. Cl.³ F21L *15/08*
U.S. Cl. 362—103 **2 Claims**



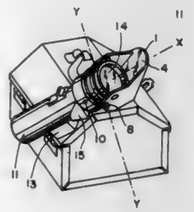
1. A wrist strap illuminating device, comprising, in combination, a main body, an electrical circuit received in said main body with a battery, battery snap switch means received in said main body and a plurality of mating velcro fastener strips secured to said main body.

4,521,833
LIGHT
Heinz Wolter, Meiswinkel 3, D-5067 Kürten, Fed. Rep. of Germany
Filed Aug. 17, 1984, Ser. No. 642,001
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1983, 3330179
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—116 **10 Claims**



1. A light, within whose handle-forming plastic housing (2) a button-cell battery (3) provided with a circumferential and a center surface pole can be brought into the switch-contact position against the force of a compression spring (6), a portion of the center surface pole (MP) of the button-cell battery coming into contact with a portion of a ring-shaped contact blade (9), the compression spring being arranged concentrically to the ring-shaped section (9') which rests on the housing bottom (7) and the circumferential pole of the button-cell battery being in continuous contact (permanent contact) with a contact spring (16) which extends tangentially to the button-cell battery, the width of which spring corresponds at least to the stroke of the button-cell battery, characterized by the fact that the compression spring (6) lies, free of contact, in the opening (10) of the circular ring-shaped section (9') lying on the housing bottom (7) and in switch-contact position of the central-surface pole (MP) of the button-cell battery (3) comes onto the ring-shaped section (9').

4,521,834
ADJUSTABLE REFLECTOR FOR ILLUMINATING DEVICES
Allie E. Orr, 103 Stonewall Rd., Warner Robins, Ga. 31093
Filed Nov. 2, 1983, Ser. No. 547,973
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—139 **21 Claims**



1. An adjustable light reflector for illuminating devices comprising:

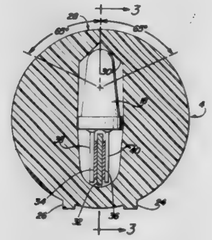
(a) a collar means receiver made onto, or attached thereupon, the casing of an illuminating device, said device provided with a light emitting source, said collar means receiver having a generally cylindrical surface in order to rotatably but frictionally receive a collar means so as to allow both rotary movement and position holding capabilities of the collar means over the collar means receiver on an axis generally concentric to the collar means receiver,

said axis henceforth to be referred to as the X axis, so as to provide, ultimately, a reflective surface with both rotary movement and position holding capabilities on the said X axis; and

(b) a collar means being rotatably but frictionally engaged over the collar means receiver, wherein the collar means has two rotatable attaching means made thereonto, each said rotatable attaching means being rotatably but frictionally engaged with a rotatable attaching means receiver so as to provide, ultimately, the reflective surface with rotary movement and position holding capabilities on an axis established by a line connecting the rotational centers of each of the two said rotatable attaching means to the other, said axis to be henceforth referred to as the Y axis; and

(c) a hood having a reflective surface on the underside of a top surface, two arms attached to either side of the top surface, said arms extending downward from the top surface, each having a rotatable attaching means receiver made onto the arm lower end, wherein each said rotatable attaching means receiver is rotatably but frictionally engaged with a rotatable attaching means, wherein the reflective surface has both rotary movement and position holding capabilities on both the X and Y axes, wherein a moving reflective surface will be presented to a portion, or more, of light rays being emitted from the illuminating device light emitting source during some portion, or more, of rotational movement of the hood on the X axis and on the Y axis, wherein the hood can be rotated on the Y axis between two limits, said limits occurring when the hood, rotated in either direction, contacts the casing, wherein one limit constitutes a hood position hereby defined as the stow position, wherein the reflector mechanism is arranged so as to be clear of the emitted light rays and also not to extend beyond the illuminating device in either direction along the X axis when in said stow position.

4,521,835
FLEXIBLE ELONGATED LIGHTING SYSTEM
Daniel H. Meggs, La Mirada; Herbert G. Gross, Santa Ana, and John T. Greenslade, El Toro, all of Calif., assignors to Gulf & Western, Southfield, Mich.
Filed May 17, 1983, Ser. No. 495,263
Int. Cl.³ F21V *21/00, 5/02*; B64D *47/02*
U.S. Cl. 362—183 **17 Claims**



1. A non-land vehicles lightweight emergency lighting system, comprising:

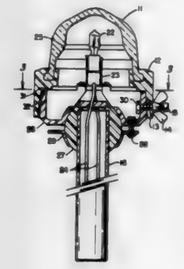
an extruded, elongated, approximately tubular, flexible waterproof housing member having a hollow interior with an upper light transmission portion of a cross-sectional variable thickness, the optical refraction characteristics of the upper light transmission portion providing a directional transmission of light towards a predetermined field angle extending traversely to a longitudinal axis of the housing member that is substantially less than 360°, and a lower mounting portion of a different configuration, the upper and lower portions extending substantially along the entire length of the housing member;

a plurality of light-emitting diodes positioned within the hollow interior of the housing member on a plane intersecting the housing member longitudinal axis and the middle of the upper light transmission portion and spaced along the longitudinal axis of the housing member;

an approximately flat bus strip mounting the light-emitting diodes along one edge and providing common electrical connections to each diode, the bus strip being laterally flexible perpendicular to the plane, the lower portion of the housing member supporting the bus strip so that the light-emitting surfaces of the diodes are operatively positioned adjacent the upper portion of the housing member to primarily distribute the light emitted from the diodes within the predetermined field angle, and

means for providing a pulsed electrical power to illuminate the light-emitting diodes and providing a perceptively constant brightness to prolong the life of the power during an emergency.

4,521,836
ELEVATED AIRPORT RUNWAY, TAXIWAY, OR THRESHOLD EDGE LIGHT WITH SEALED GLASS DOME
Louis Puttemanns, 24 Saint Paulus La., Tervuren 1981, and Jean J. R. Plas, 2 Clos des Trotteurs, Wezembeek 1970, both of Belgium
Filed Jun. 25, 1984, Ser. No. 624,152
Int. Cl.³ F21S *1/14*
U.S. Cl. 362—145 **7 Claims**



1. An elevated airport runway, taxiway, or threshold light comprising

a substantially hollow base having a bottom wall,

a ball joint centrally positioned in the bottom wall of said base and adapted to receive an upstanding conduit, said ball joint comprising adjustable securing means for fixedly positioning said base and said ball joint onto said upstanding conduit,

means supported centrally on said base adapted to receive a light source, and

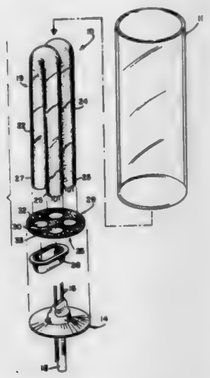
a cover comprising a lower annular portion and a hollow glass dome including a prism portion sealed in said lower annular portion, said lower annular portion having an inner base portion resting on the upper portion of said hollow base,

whereby the apex of said hollow glass dome is positioned a predetermined distance from said inner base portion and said bottom wall of said base, so that the prism portion is in proper registration with respect to said light source.

4,521,837
COMPACT FLUORESCENT LAMP HAVING INCREASED LIGHT OUTPUT
Andre C. Bouchard, Peabody, Mass., assignor to GTE Products Corporation, Stamford, Conn.
Filed Jun. 20, 1984, Ser. No. 622,361
Int. Cl.³ F21S *5/00*
U.S. Cl. 362—216 **3 Claims**

1. A fluorescent lamp comprising: an hermetically sealed outer envelope containing an arc generating and sustaining

medium; an assembly positioned within said envelope, said assembly comprising a pair of U shaped tubes coated on their interior surface with a phosphor, each of said tubes having an electrode end carrying an electrode and an open end; and an arc directing means operatively associated with said ends of



said tubes, said arc directing means comprising a base member mounting said tubes, said base member having a first planar surface facing said tubes and a second planar surface which includes an arc director connecting said open ends of said tubes; and a light reflecting coating on said first planar surface.

4,521,838

TUBULAR ELECTRIC LAMP FIXTURE

Youri Agabekov, 54 bis quai Gustave, Ador, Geneva, Switzerland 1207

Filed Jun. 17, 1983, Ser. No. 502,682
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—219 **3 Claims**



1. A fixture for a plurality of tubular electric lamps, said fixture comprising:

an elongated frame of generally L-shaped cross-section formed of insulating material and comprising a pair of longitudinally extending flanges substantially at right angles to each other, each of said flanges having a front side and a back side, each of said back sides having a groove extending longitudinally the entire length of each of said back sides;

a first and second electrically conductive flat metal bar each having a plurality of integral foldable lamp carrying tabs perpendicularly upstandable from the center of said bars, said tabs having been stamped from the center of said bars, said tabs spaced along the entire length of said metal bars, one such bar extending longitudinally in and lying flat against said groove in said back side of each said flange of said frame such that when tabs are folded upstanding and perpendicular such tabs project through spaced slots along said flange;

said tabs further longitudinally spaced along said fixture such that said tabs in first said bar cooperate with said tabs in said second bar so as to be capable of supporting at least one of said lamps in a position substantially parallel to, overlying, and spaced from said front side of said flanges with an axis lying substantially on the line of juncture of two projected longitudinal planes, one of which planes also includes the longitudinal center line of one of said bars and the other of which planes also includes the longitudinal center line of the other said bar;

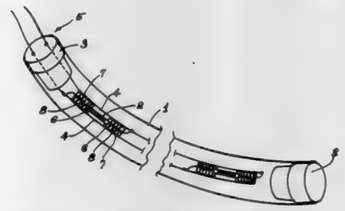
a pair of self-adhesive bands, one such band extending longitudinally along the back side of each of said flanges and overlapping said flat metal bars for electrical insulation thereby securing one of said flat metal bars in each of said grooves of each of said back side of said flanges.

4,521,839

STRIP LIGHTING SYSTEM

Brian A. Cook, 13316 Avenida La Valencia, Poway, Calif. 92064, and Philip G. Quintin, 22 Carpenters Ct., Bodmin, Cornwall, England

Filed Feb. 9, 1984, Ser. No. 578,775
Int. Cl.³ F21V *1/00*
U.S. Cl. 362—238 **10 Claims**



1. A strip lighting system comprising a flexible tube of waterproof material, a string of electrically connected light bulbs contained within said tube and spaced from the wall of the tube to allow flexing of the tube;

means for releasably sealing each end of the tube, means for connecting said string of light bulbs to an electrical power source;

a pair of wire leads extending in parallel along the length of the tube;

means for releasably connecting the light bulbs separately at spaced intervals in parallel across the wire leads,

each light bulb being elongate and having an electrical contact at each end;

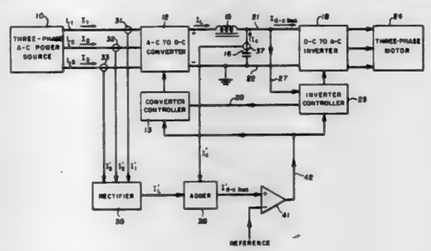
each light bulb connecting means comprising contact mounting means or releasably receiving opposite ends of a light bulb, and means for electrically connecting one of said mounting means to one of said wire leads and the other of said mounting means to the other wire lead.

4,521,840

D-C BUS CURRENT MONITORING SYSTEM

Frederick L. Hoadley, Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 14, 1983, Ser. No. 466,267
Int. Cl.³ H02J *3/36*
U.S. Cl. 363—35 **11 Claims**



1. A monitoring system for monitoring the d-c bus current supplied over a d-c bus to an inverter and received through a low pass filter, having a series-connected filter choke and a shunt-connected filter capacitor, from the output of an a-c to d-c converter, to the input of which converter is applied a-c energy, said monitoring system comprising:

input current sensing means, including at least one a-c current transformer and a rectifier, for sensing the a-c input current to the converter and deriving a d-c signal which is proportional to the d-c current produced at the output of the converter;

capacitor current sensing means, including an a-c current transformer, for sensing the filter capacitor current to derive an a-c signal proportional thereto;

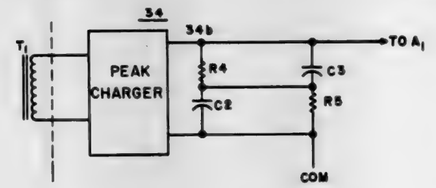
and adding means for adding the two derived signals to produce a d-c signal which is directly proportional to, and very accurately represents, the d-c bus current.

4,521,841

PEAK CHARGING CIRCUIT PROVIDING FOR IMPROVED LOOP GAIN AND COMMON MODE NOISE REJECTION

Neil A. Kamiller, Lakewood, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio

Filed Jul. 28, 1982, Ser. No. 402,629
Int. Cl.³ H02M *1/14*
U.S. Cl. 363—45 **8 Claims**



1. An a-c gain increasing circuit for use in the current control loop of a power supply of the type which includes a switchable power generating means and controls the current in said switchable power means when the amplitude of a signal representative of that current exceeds a predetermined reference said supply including means to sense the current and generate said representative signal, said circuit comprising:

(a) peak charging means responsive to said representative signal for generating a d-c signal whose amplitude is a function of said switchable power means current;

(b) discharge/charge storage means responsive to said peak charging means signal for storing said d-c signal; and

(c) loop gain increasing means connected in series combination with said discharge/charge storage means, said series combination being connected in parallel with said peak charging means, said loop gain increasing means responsive to said peak charging means signal for increasing the a-c gain of said current control loop.

4,521,842

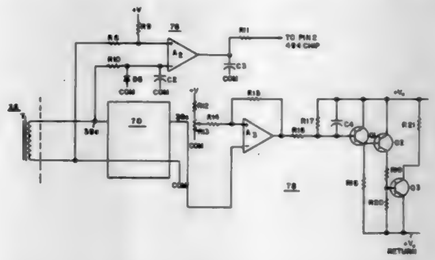
CIRCUIT FOR CONTROLLING THE VOLT-AMPERE CHARACTERISTIC OF A LOAD SHARING POWER SUPPLY AT NO LOAD AND FOR INSERTING A PRELOAD

Neil A. Kammiller, Lakewood, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio

Division of Ser. No. 402,633, Jul. 28, 1982, Pat. No. 4,468,722.
This application Mar. 21, 1984, Ser. No. 591,779
Int. Cl.³ H02P *13/22*
U.S. Cl. 363—71 **11 Claims**

1. A circuit for use in a power supply to control the supply's volt-ampere characteristic in the region where the external load connected to the output of said supply falls between some predetermined relatively small amount and no load such that at least two of said supplies may be connected to said external load so that in said region false indications of malfunctions in supply operation do not arise from said connection said supply having an associated series diode for connecting said output to said external load said supply including means responsive to the voltage across said load and a reference signal to regulate said voltage, said voltage reference signal having a first amplitude when said external load is greater than said predetermined amount and having a second amplitude when said external load falls between said predetermined amount and no load, said circuit comprising:

(a) means for inserting in parallel with said external load a preload, said means including first means responsive to said supply output current and a reference signal representing a first predetermined amplitude of said output



current for generating a signal to connect said preload in parallel with said external load when said output current falls below said first predetermined amplitude and switching means responsive to said connecting signal for inserting said preload; and

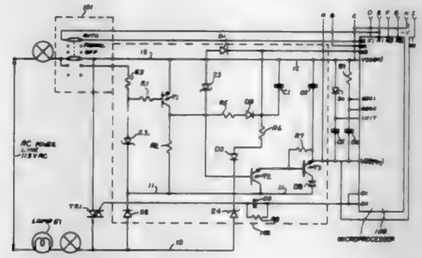
(b) means responsive to the output current of said supply to derive a signal representative thereof and a reference signal having an amplitude representative of said relatively small external load to change said voltage reference signal to said second amplitude when said output current representative signal falls below said signal representative of said relatively small external load to thereby control the volt-ampere characteristic in said region.

4,521,843

PROGRAMMABLE WALL SWITCH FOR CONTROLLING LIGHTING TIMES AND LOADS

Donald E. Pezzolo, Cupertino; James W. Pfeiffer, Santa Clara, and Thomas E. Corder, Martinez, all of Calif., assignors to Intermatic Incorporated, Spring Grove, Ill.

Filed Aug. 16, 1982, Ser. No. 408,330
Int. Cl.³ G01R *21/00*; G06F *15/06*
U.S. Cl. 364—145 **17 Claims**



1. A programmable wall switch for controlling the time for turning on and for turning off a light which comprises:

means for producing from the AC power line a selected DC voltage;

microprocessor means powered by said DC voltage, for turning on a light at any one of several selected times and

for turning off said light at any one of an additional corresponding several selected times, said microprocessor means including means for incrementing said one of several selected times and one of said additional corresponding selected times by random amounts; and

means, responsive to signals from said microprocessor means, for displaying the time.

4,521,844

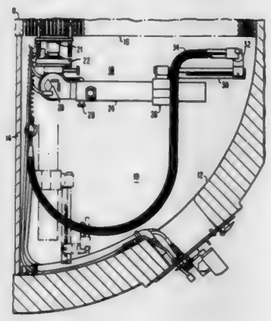
MANIPULATOR CONTROL SYSTEM AND APPARATUS FOR DECONTAMINATING NUCLEAR STEAM GENERATORS

Robert H. Sturges, Jr.; Joseph J. Birsa; Paul H. Dawson, all of Plum Borough, and Roger G. Byford, Washington Township, Armstrong County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 154,703, May 30, 1980, abandoned. This application Jun. 3, 1982, Ser. No. 384,691

Int. Cl.³ G06F *15/46*; B24C *3/32*

U.S. Cl. 364—167 **19 Claims**



1. A control system for adaptably controlling movement of a control arm in a generally curved enclosure of a nuclear steam generator, said control arm being removably attached at a pivot end to a pivot mechanism fixed in location a first predetermined distance from the center of said enclosure and being free for movement at an end having a nozzle configuration movably affixed thereto for directing an abrasive mixture toward at least one curved surface of said enclosure for removal of radioactive contaminates therefrom, said control system comprising:

horizontal drive means for governing horizontal pivotal motion of said control arm about said pivot end;

vertical drive means for governing vertical pivotal motion of said control arm about said pivot end;

axial drive means for governing axial motion of said nozzle configuration along said control arm; and

automatic control means connected to said horizontal, vertical, and axial drive means for automatically controlling both the position of said nozzle configuration relative to said center and the angular velocity of said control arm so as to control the spacing of said nozzle configuration from said surface and the tangential velocity at which said nozzle configuration moves over said surface so as to provide substantially uniform cleaning of said surface.

4,521,845

NUMERICAL CONTROL DEVICE

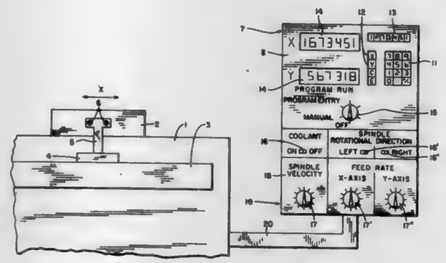
Ernst Schwefel, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Continuation of Ser. No. 39,146, May 15, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 275,747

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821843

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—171 **20 Claims**



20. In a numerical control apparatus for a processing machine having means for executing a plurality of machine functions, said plurality of machine functions including a plurality of miscellaneous machine functions, the invention comprising:

a digital computer including a memory device and means for generating a plurality of digital output signals;

a plurality of manually operated control switches, said control switches including at least one multi-position digital switch operative to produce at least one digital control signal and at least one analog switch operative to produce at least one analog control signal, each control switch associated with one of the plurality of miscellaneous machine functions such that said control switches are operable independent of programming codes, said plurality of manually operated control switches selectively operable during computer-controlled processing of a workpiece for generating at the selected time the associated miscellaneous machine functions;

input and output interfacing means, included in the computer, for interfacing the control switches with the computer and for interfacing the computer with the executing means such that the executing means is responsive to the plurality of output signals to selectively activate and deactivate the plurality of machine functions, said input and output interfacing means including analog-to-digital converter means for digitizing the at least one analog control signal;

first means, included in the computer, for reading the instantaneous state of the control switches during continuous computer-controlled processing of a first workpiece according to processing information stored in the memory device, for storing said states in the memory device during continuous computer-controlled processing of the first workpiece, and for setting said output signals to activate and deactivate the miscellaneous machine functions to correspond to the instantaneous states of the control switches during processing of the first workpiece;

second means, included in the computer, for setting said output signals during computer-controlled processing of additional workpieces, subsequent to processing of the first workpiece, in accordance with previously stored states of the control switches and independent of the instantaneous states of the control switches, such that the miscellaneous machine functions are automatically controlled in the processing of the additional workpieces to duplicate the processing of the first workpiece;

third means, included in the computer, for setting said output signals to correspond to the instantaneous states of the control switches without modifying the control switch state information stored in the memory device such that the miscellaneous machine functions can be manually controlled during the computer-controlled processing of a workpiece without disturbing the contents of the memory device; and

mode designating switch means for selecting one of the first, second, and third means.

4,521,846

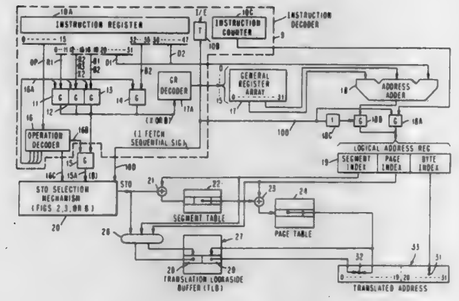
MECHANISM FOR ACCESSING MULTIPLE VIRTUAL ADDRESS SPACES

Casper A. Scalzi, Poughkeepsie, and Richard J. Schmalz, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 20, 1981, Ser. No. 236,387

Int. Cl.³ G06F *9/10, 9/16*

U.S. Cl. 364—200 **23 Claims**



1. Addressing control means in a data processor having a predetermined number of general purpose registers (GRs), any of which may be assigned as a base GR to provide a base address within an address space, an instruction decoder in the processor for providing a base GR address signal that represents the GR address for one of the GRs which contains a base value for a calculation of an effective logical address of a storage operand of an instruction, comprising:

an address space mask register having a plurality of digit positions, the digit positions in the mask register corresponding to the respective GR addresses,

a plurality of address space designating registers, each designating register having an address,

means for loading one or more predetermined digit positions of the mask register with the address(es) of the designating registers to assign one of the designating registers to a particular GR,

means for selecting a digit position in the mask register in response to a base GR address signal from the instruction decoder, the content of the digit position selecting the designating register assigned by the loading means to the digit position,

whereby the GR address represented by the base GR address signal selects an address space designated by the content of the selected designating register.

4,521,847

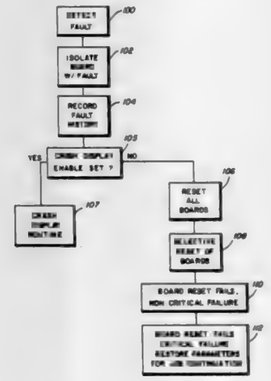
CONTROL SYSTEM JOB RECOVERY AFTER A MALFUNCTION

Richard T. Ziehm, Webster; Stephen P. Wilczek, Fairport; George E. Baker; Raymond R. Husted, both of Rochester; Glen A. Dumas, Henrietta; Keith G. Bunker, Rochester, and George H. Place, Jr., Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 420,995

Int. Cl.³ G06F *11/00*

U.S. Cl. 364—184 **12 Claims**



12. In a machine control having a plurality of control processors including a master processor with a memory for continually storing machine status information and at least one remote processor providing coded transmissions, the master processor memory maintaining status information associated with said remote processor, a method of recovery from a machine malfunction comprising the steps of

(1) the master processor recognizing the existence of a malfunction,

(2) the master processor identifying the remote processor being the source of the malfunction through a coded transmission from the remote processor,

(3) the master processor initializing said remote processor without destroying the status information of the master processor memory,

(4) the master processor downloading the status information from the master processor memory associated with said remote processor to the remote processor after receiving the coded transmission, and

(5) continuing machine operation without loss of machine status in the remote processor.

4,521,848

INTERSYSTEM FAULT DETECTION AND BUS CYCLE COMPLETION LOGIC SYSTEM

Kenneth E. Bruce, Nashua, N.H.; Ralph M. Lombardo, Jr., Lowell, Mass.; Bruce H. Tarbox, Billerica, Mass., and John W. Conway, Waltham, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 956,386, Oct. 31, 1978, abandoned. This application Aug. 27, 1981, Ser. No. 296,931

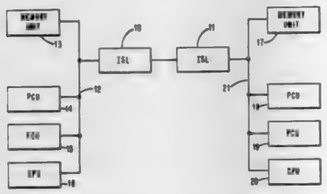
Int. Cl.³ G06F *3/04, 9/46*

U.S. Cl. 364—200 **11 Claims**

1. Communication apparatus for use in a data processing system having plural intersystem communication links (ISL's) for accommodating the transfer of information between plural communication busses, each providing a common information path for data processing devices electrically interfacing therewith, and wherein each of said plural communication busses is in electrical communication with an ISL and ISL's are connected in pairs, comprising:

(a) interface logic means coupling first and second ones of said ISL's to local and remote communication busses, respectively, enabling the transfer of data and control signals therebetween;

(b) first logic means responsive to a data read request initiated from a requesting device coupled to said remote communication bus through means including said first and second ISL's for controlling said interface logic means to apply said data read request to said local bus calling for generation of a responding bus cycle from a target device coupled to said local bus;



(c) timer means for initiating the timing of a predetermined time-out interval in response to the operation of said first logic means; and

(d) second logic means including detecting means responsive to said responding bus cycle and controlled by said timer means for generating and transmitting to said remote bus through said first and second ISL's an invalid data word in the event said responding bus cycle is not detected prior to termination of said time-out interval, whereby said invalid data word signals the existence of an error condition to said requesting device.

4,521,849

PROGRAMMABLE HIT MATRICES USED IN A HARDWARE MONITORING INTERFACE UNIT

Richard P. Wilder, Jr., North Billerica, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Oct. 1, 1981, Ser. No. 307,566

Int. Cl.³ G06F *7/00, 9/00*

U.S. Cl. 364—200 **6 Claims**

1. A data processing system including a main memory subsystem, a plurality of I/O controllers, a central processing unit (CPU) and a cache memory, all coupled in common to a system bus, the system comprising:

a monitor interface unit coupled to said system bus, said central processor unit by a CPU bus, and said cache memory by a cache bus for monitoring information signals and transferring hit signals representative of predetermined signals of said information signals to monitors for generating performance data, said monitor interface unit comprising:

bus selection means for selecting said information signals from said system bus or from said cache bus; wherein said bus selection means comprises:

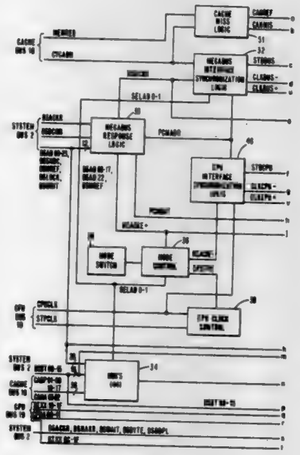
mode switching means for generating a selection signal for selecting said information signals from said system bus or said cache bus; and

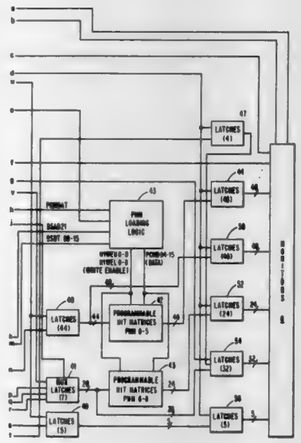
multiplexer means coupled to said mode switching means and responsive to said selecting signal in a first state for selecting system bus signals representative of said information signals from said system bus and said selection signal in a second state for selecting cache bus signals representative of said information signals from said cache bus;

interface input storage means coupled to said bus selection means for temporarily storing said information signals from said system bus and said cache bus and coupled to said CPU for storing said information signals from said CPU bus; wherein said input storage means comprises:

input latch means coupled to said multiplexer means for storing said system bus signals when said multiplexer means is responsive to said system bus and storing said cache bus signals when said multiplexer means is responsive to said cache bus for generating a first set of address signals to the programmable hit matrix memory, and for storing CPU bus signals from said CPU bus for generating a second set of address signals to the programmable hit matrix memory;

programmable hit matrix memory coupled to said input storage means and addressable by said information signals from said interface input storage means for generating said





hit signals in response to said predetermined signals; and of said information signals; and

the system further comprising monitor means coupled to said output storage means and responsive to the hit signals for generating statistical data regarding ocurrence of said predetermined signals on the system bus, CPU bus and cache bus.

4,521,850

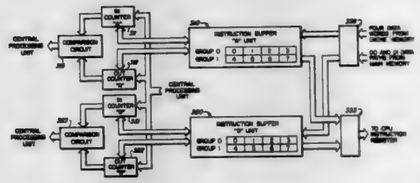
INSTRUCTION BUFFER ASSOCIATED WITH A CACHE MEMORY UNIT

John E. Wilhite, Glendale; William A. Shelly, and Charles P. Ryan, both of Phoenix, all of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Continuation of Ser. No. 156,224, Jun. 30, 1980, abandoned, which is a continuation of Ser. No. 866,083, Dec. 30, 1977, abandoned. This application Oct. 4, 1982, Ser. No. 433,569

Int. Cl.³ G06I *9/30*

U.S. Cl. 364—200 **7 Claims**



1. In a data processing system having a central processing unit, an instruction register, and an associated cache memory unit, buffer apparatus for a sequence of instructions being transferred from said cache memory unit to said instruction register comprising:

a first plurality of groups of storage locations for a temporary storage of a first sequence of instructions from said cache memory to be supplied to said instruction register;

first counter means, responsive to signals from said central processing unit, to indicate when a one of said first plurality of groups of storage locations has received a portion of said first sequence of instructions;

second counter means responsive to signals from said central processing unit, to indicate when contents of a preselected one of said first groups of storage locations has been transferred to said instruction register;

first comparison means responsive to signals from said first counter means and second counter means, said first comparison means signalling said central processing unit a status of said first plurality of groups of storage locations indicating which of said locations is available for signal storage;

a second plurality of groups of storage locations for temporary storage of groups of alternative sequence of instructions from said cache memory to be supplied to said instruction register;

third counter means, responsive to signals from said central processing unit, to indicate when a one of said second plurality of groups of storage locations has received a portion of said group alternative sequence of instructions from said cache memory;

fourth counter means, responsive to signals from said central processing unit, to indicate when said contents of a preselected one of said second group of storage locations had been transferred to said instruction register;

second comparison means responsive to signals from said third counter means and fourth counter means, said second comparison means signalling said central processing unit a status of said second group of storage locations wherein said status of said second plurality of group storage locations indicates which of the locations is available for signal storage.

4,521,851

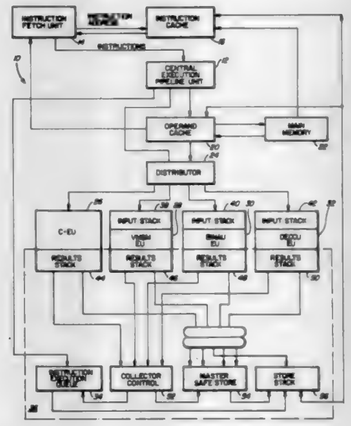
CENTRAL PROCESSOR

Leonard G. Trubisky, Scottsdale, and William A. Shelly, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Oct. 13, 1982, Ser. No. 434,122

Int. Cl.³ G06F *9/28, 9/38*

U.S. Cl. 364—200 **6 Claims**



1. A synchronous central processor for a general purpose digital data processing system, said central processor being synchronized by clock pulses produced by clock means and having a given repertoire of instructions, said processor comprising:

cache means adapted to store machine words, said machine words including instructions and operands;

a plurality of instruction execution units, each of which unit executes a different set of the instructions of the repertoire independently of and in parallel with one another, each instruction requiring a predetermined number of clock periods to complete and each execution unit having a results stack into which the result of the execution of each instruction is stored;

instruction fetch means for fetching instructions from the cache means and for queuing instructions awaiting execution;

central unit means for obtaining instructions of a given program from the instruction fetch means in program order, for decoding the instructions, for preparing the address of an operand to be operated upon by the instruction, for checking to determine if the addressed operand is stored in the cache means, for accessing the addressed operand from the cache and for dispatching the instruction and its operand to the one of said plurality of instruction execution units for executing it, each of said instruction execution units executing the instructions dispatched to it in the order received to produce a result and storing the result of the execution of each instruction in its results stack in the order of execution, the number of clock periods required to execute each instruction differing so that the results of the execution of instructions of a given program by the instruction execution units are not produced in program order; and

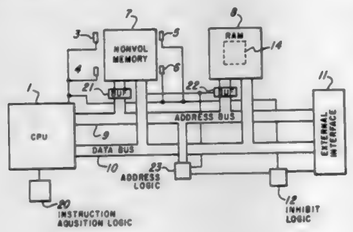
collector means for obtaining in program order the results of the execution of the instructions of the program from the results stacks of the instruction execution units and for writing into the cache means the results of the execution of instructions of the program which are to be written into memory in program order.

4,521,852

DATA PROCESSING DEVICE FORMED ON A SINGLE SEMICONDUCTOR SUBSTRATE HAVING SECURE MEMORY

Karl M. Guttag, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 30, 1982, Ser. No. 393,955
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **4 Claims**



1. A data processing device formed on a single semiconductor substrate comprising:

a central processing means for preforming data processing operations upon data in accordance with instructions, said data processing operations including at least one memory access operation for recall of data or an instruction stored in a specified address location;

a nonvolatile memory means having a plurality of address locations which are a subset of the possible address locations of said at least one memory access operation, for storing data and instructions which define data processing operations at respective address locations;

an information transfer means connected to said central processing means and said nonvolatile memory means for transfer of data and instructions;

an external interface means connected to said information transfer means for providing information to at least one device external to said single semiconductor substrate;

at least one security bit memory means, each for storing therein a single bit of data indiating a secure state when said nonvolatile memory means is to be secure to a nonsecure sytate;

an address logic means connected to said information transfer bus for generating a protected access signal when a memory access operation specifies one of said address locations of said nonvolatile memory means; and

an external interface inhibit logic means connected to said at least one security bit memory means, said external interface means and said address logic means for inhibiting said external interface means thereby preventing transfer of information to said at least one external device when any of said at least one security bit memory means indicates said secure state and said address logic means generates said protected access signal.

4,521,853

SECURE MICROPROCESSOR/MICROCOMPUTER WITH SECURED MEMORY

Karl M. Guttag, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 30, 1982, Ser. No. 393,956
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **3 Claims**

1. A data processing device formed on a single semiconductor substrate comprising:

a central processing means for performing data processing operations upon data in accordance with instructions, said data processing operations including at least one memory access operation for recall of data or an instruction stored in a specified address location;

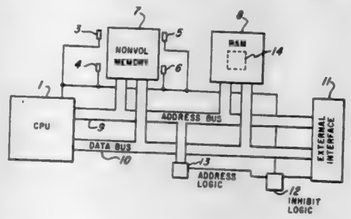
a nonvolatile memory means having a plurality of address locations which are a first subset of the possible address locations of said at least one memory access operation, for storing data and instructions which define data processing operations at respective address locations;

a temporary read-write memory means having a plurality of address locations which are a second subset of the possible address locations, said second subset including a secure set of address locations, for temporarily storing data and instructions which define data processing operations at respective address locations;

an information transfer means connected to said central processing means, said nonvolatile memory means and said temporary read-write memory means for transfer of data and instructions;

an external interface means connected to said information transfer means for providing information to at least one device external to said single semiconductor substrate;

at least one security bit memory means disposed in proximity to said nonvolatile memory means, each for storing



therein a single bit of data indicating a secure state when said nonvolatile memory means and said secure subset of memory locations of said temporary read-write memory means is to be secure or a nonsecure state;

address logic means connected to said central processing means, said information transfer means and said at least one security bit memory means for generating a security signal when said security bit memory means indicates a secure state and said central processing means is performing a data processing operation in accordance with an instruction including a memory access operation to recall data as an operand which is stored in either said nonvolatile memory means and or in said secure set of address locations of said temporary read-write memory means; and

an external interface inhibit means connected to said external interface means and said address logic means for inhibiting the transfer of data and instructions to the external device via said external interface means upon reception of said security signal.

4,521,854

CLOSED LOOP ELECTROSTATIC LEVITATION SYSTEM

Won-Kyu Rhim; Melvin M. Saffren, both of Pasadena, and Daniel D. Elleman, San Marino, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

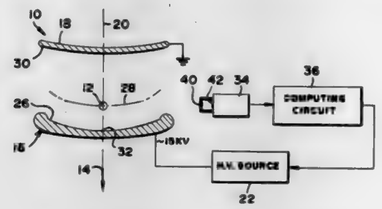
Filed Oct. 29, 1982, Ser. No. 437,912
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—400 **5 Claims**

5. Apparatus for electrostatically levitating a charged object, comprising:

a lower electrode, and an upper electrode lying a predetermined distance above said lower electrode;

means for applying a voltage to said lower electrode to apply an electrostatic force to an object lying a small distance above the lower electrode, and for applying a lower voltage to said upper electrode than to said lower one;

said lower electrode having a concave dish-shaped surface facing upwardly and said upper electrode having a convex



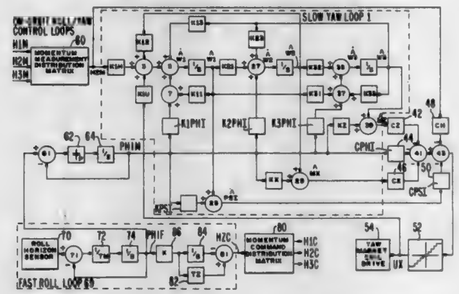
surface facing downwardly toward said lower electrode, whereby to urge the object toward a position directly above the lowermost portion of the concave surface.

4,521,855

ELECTRONIC ON-ORBIT ROLL/YAW SATELLITE CONTROL

John A. Lehner, Sunnyvale, and Kenneth L. Lebsock, Manhattan Beach, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Jul. 27, 1981, Ser. No. 288,230
Int. Cl.³ B64G *1/10*
U.S. Cl. 364—434 **11 Claims**



1. In an orbiting satellite having a stored momentum system for stabilizing the attitude of the satellite about orthogonal roll, pitch, and yaw axes, apparatus for estimating and directly correcting yaw error, said apparatus comprising:

at least one momentum wheel having a component of momentum about the yaw axis;

means situated on board the satellite for measuring the angular error of the satellite body with respect to the roll axis, said means generating a signal corresponding to said roll error;

coupled to said roll error measuring means and to said momentum wheel, means comprising solely electronic components for estimating the angular error of the satellite body with respect to the yaw axis from the roll error signal and from a measured component of momentum about the yaw axis; and

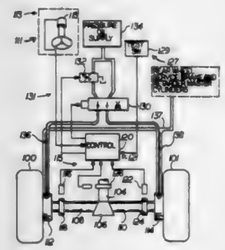
coupled to an output of said yaw error estimating means, means for continuously and directly correcting said yaw error during the satellite's orbit.

4,521,856

MULTIPLE THRESHOLD WHEEL SLIP CONTROL APPARATUS AND METHOD

Weldon L. Phelps, Dunlap, and Alan L. Stahl, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 1, 1984, Ser. No. 605,757
Int. Cl.³ G06F *15/20*; B60T *8/10*
U.S. Cl. 364—426 **16 Claims**



12. A vehicle anti-spin system, comprising:

a vehicle power source;

a differential mechanism (**106**) connected to said power source;

first and second wheels (**100,101**) connected to said differential mechanism (**106**);

a respective braking mechanism (**112,114**) connected to each of said wheels (**100,101**);

a steering mechanism (**111**) connected to said vehicle;

means (**115**) for producing a slip signal having a value responsive to the difference in rotational velocity between said wheels (**100,101**), said slip signal producing means (**115**) including respective wheel speed transducers (**116,122**) connected to each of said vehicle wheels (**100,101**);

a switch (**129**) connected to said vehicle and adapted to produce a test signal;

processor means (**121**) for receiving said slip signal and said test signal, comparing said slip signal value with a first predetermined reference value in response to receiving said slip signal in the absence of said test signal, said first predetermined reference value being greater than the largest value of said slip signal produced in response to steering said vehicle, comparing said slip signal value with a second predetermined reference value in response to receiving said slip signal and said test signal, said second predetermined reference value being less than the largest value of said slip signal produced in response to steering said vehicle, and producing a brake control signal in response to said slip signal value exceeding the compared one of said first and second predetermined reference values; and

means (**131**) for receiving said brake control signal and controllably operating said braking mechanisms (**112,114**) in response to said received signal.

4,521,857

AVIATION WEATHER INFORMATION DISSEMINATION SYSTEM

Collins J. Reynolds, III, Denver, Colo., assignor to Avimage, Inc., Tucson, Ariz.

Filed May 17, 1982, Ser. No. 378,615
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—439 **6 Claims**

1. An aviation weather communication system comprising:

a plurality of terminals located at various geographic locations within a large geographic zone;

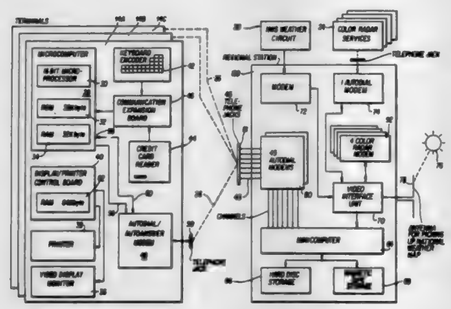
a regional weather-information accumulating station for communicating with sources of current pictorial and written weather information peculiar to locations in said

geographic zone and maintaining updated pictorial information and written weather messages cataloged according to the geographic locations to which the messages pertain;

each of said terminals having an interconnected system comprising a logic circuit means, both RAM and ROM memories, a display means and an auto-dial modem coupling its terminal to an existing telephone network in said geographic zone;

said regional station having an interconnected system comprising a logic circuit means, both RAM and ROM memories and modems coupling said regional station to said existing telephone network, for receiving and maintaining in said RAM memory a plurality of types of current weather information including pictorial and written-message weather information and for transmitting this information to said terminals upon request therefrom;

each of said terminals further including an information input means for allowing a user to input into said terminal a request for said plurality of types of weather information, including pictorial and written-message weather information, along a flight path of an anticipated flight from an originating location to a destination location in said geographic zone, the logic circuit of said terminal including a communication-logic means for automatically placing a call over said existing telephone network via said terminal auto-dial modem and one of said modems at said regional station to said regional station and thereafter transmitting said request for pictorial and written-message weather



information to said regional station in response to said user making such request at said terminal;

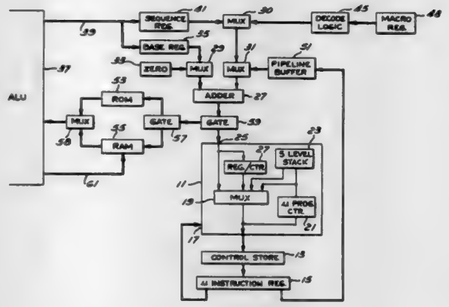
said logic circuit of said regional station including a logic means for responding to a request for pictorial and written-message weather information along said flight path by transmitting some of said requested pictorial information which said terminal receives and stores in its RAM memory, said terminal logic circuit means having the function of utilizing the display means and information input means, simultaneously with said terminal receiving said some pictorial information, for further interrogating said user concerning said anticipated flight and thereafter communicating information received from this interrogation to said regional station, said regional station logic circuit having the further function of utilizing flight originating location and destination location information transmitted to it by said terminal to automatically compute a tentative flight path between said originating and destination locations, and thereafter to identify locations proximate said tentative flight path for which particular written weather messages are maintained at said regional station, and to communicate said weather messages to said terminal from which said request for weather information was received in a particular sequence of said flight path starting with said origin location and continuing to said destination location, said terminal logic circuit having the further function of displaying the weather messages with the display means in this sequence.

4,521,858

FLEXIBLE ADDRESSING AND SEQUENCING SYSTEM FOR OPERAND MEMORY AND CONTROL STORE USING DEDICATED MICRO-ADDRESS REGISTERS LOADED SOLELY FROM ALU

Alan D. Kraemer, Tustin, and James A. Kane, Santa Ana, both of Calif., assignors to Technology Marketing, Inc., Irvine, Calif.

Continuation of Ser. No. 151,740, May 20, 1980, abandoned.
This application Mar. 11, 1983, Ser. No. 474,271
Int. Cl.³ G06F *9/24, 9/28, 9/36, 9/26*
U.S. Cl. 364—200 **12 Claims**



7. A method of addressing an operand memory, and a control store which contains microinstructions which directly operate the hardware of a processor having an arithmetic logic unit and a pair of micro-address registers, comprising:

loading a different micro-address word, that forms a portion of a microinstruction address, into each of said pair of micro-address registers solely from said arithmetic logic unit;

adding the micro-address words in said pair of registers to produce a sum micro-address word;

adding to said sum micro-address word an additional memory select segment indicating whether said sum micro-address word is intended to be communicated to said operand memory or to said control store; and

gating said sum micro-address word to either said control store or said operand memory in response to information in said memory select segment.

4,521,859

METHOD OF IMPROVED GAGE CONTROL IN METAL ROLLING MILLS

Donald J. Fapiano, Salem, Va., assignor to General Electric Company, Salem, Va.

Filed Oct. 27, 1982, Ser. No. 436,973
Int. Cl.³ G06F *15/46;* **B21B** *37/00*
U.S. Cl. 364—472 **5 Claims**

1. In a metal rolling mill including rotating rolls for reducing the thickness of a metal workpiece, roll gap adjusting means and automatic gage control means for controlling the roll gap adjusting means as a function of sensed roll separation force, a method for compensating for cyclic workpiece gage variations resulting from roll irregularities comprising:

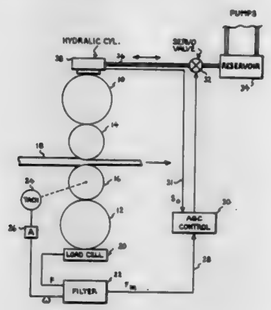
(a) developing a force signal proportional to the roll separation force occasioned by the workpiece between the rolls;

(b) developing a speed signal proportional to roll rotational speed;

(c) isolating, from said force signal, cyclic components having a frequency which is an integral multiple of the roll rotational speed;

(d) multiplying said cyclic components by a multiplication factor greater than unity to provide a product;

(e) subtracting said product from said force signal to provide a modified force signal; and,



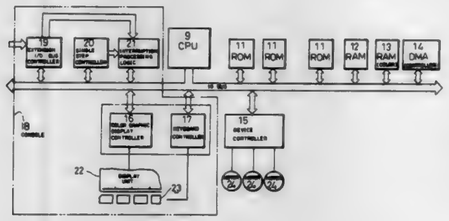
(f) applying said modifying force signal to said automatic gage control means to thereby control the gap between said rolls.

4,521,860

METHODS OF ENTERING MACHINING INFORMATION AND DISPLAY THEREFOR IN A NUMERICALLY CONTROLLED MACHINE TOOL

Hiroyuki Kanematsu, Konan; Akimitsu Nagae, Kasugai; Kiyohisa Mizoguchi, Nagoya, and Hajime Ohashi, Konan, all of Japan, assignors to Yamazaki Machinery Works, Ltd., Oguchi, Japan

Filed Aug. 30, 1982, Ser. No. 413,250
Claims priority, application Japan, Sep. 14, 1981, 56-145854; Oct. 15, 1981, 56-165936
Int. Cl.³ G06F *15/46;* **G05B** *19/18*
U.S. Cl. 364—474 **8 Claims**



1. In a numerically controlling machine tool, of the type having a computer, a display unit and a keyboard and controlled by a machining program and numerical information previously stored in the computer, a method of entering and displaying machining information necessary for machining a workpiece comprising the steps of:

inputting to the computer a machining mode of point, line, and face;

inputting into the computer numerical data representative of the finish machining contour of a workpiece specified in a corresponding engineering drawing;

classifying and computing the finish machining contour into machining modes of point, line and face;

subclassifying the respective machining modes into a plurality of machining units;

displaying machining information corresponding to the classified machining units on the display unit;

selecting and inputting into the computer machining information necessary for machining the workpiece; and

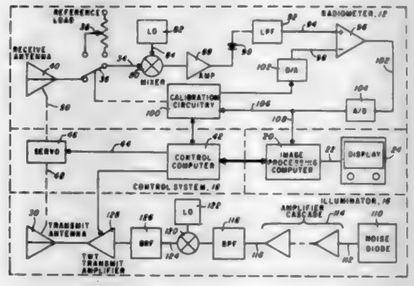
displaying condition of the workpiece being machined on the display unit, while computing a machining program corresponding to the inputted machining information.

4,521,861

METHOD AND APPARATUS FOR ENHANCING RADIOMETRIC IMAGING

Russell H. Logan, Richardson, and Frank J. Poradish, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 30, 1982, Ser. No. 373,583
Int. Cl.³ G08C *9/00;* **G01S** *13/00, 15/00;* **G06G** *7/48*
U.S. Cl. 364—517 **7 Claims**



1. A radiometric imaging system for sensing electromagnetic energy from a target area, comprising:

an illuminator means comprising a transmit antenna and transmitter means for producing random electromagnetic energy for illuminating said target area;

a radiometer comprising a receive antenna and receiver means, said radiometer for receiving and measuring the intensities of both the illuminated thermal image as well as the non-illuminated passive image from said target area in a predetermined frequency band, and

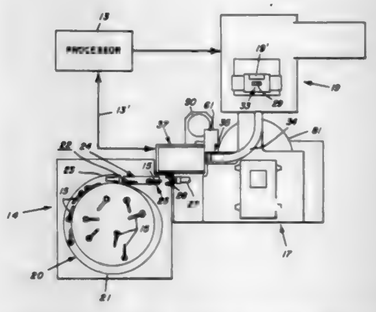
means coupled to said radiometer for inverse filtering and subtracting the intensities of the non-illuminated target area from the intensities of the illuminated target area to provide enhanced target detection.

4,521,862

SERIALIZATION OF ELONGATED MEMBERS

Harold B. King, Wrightsville Beach; William Masaitis, Castle Hayne; Ernest Ippisch, and Albert E. Chinn, both of Wilmington, all of N.C., assignors to General Electric Company, San Jose, Calif.

Filed Mar. 29, 1982, Ser. No. 363,094
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—552 **4 Claims**



1. The method for serializing nuclear fuel end plugs comprising the steps of:

(a) feeding a plurality of said end plugs individually to an output location of a feeder means for transporting said end plugs,

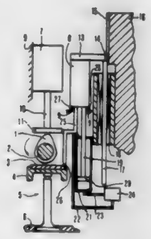
(b) transporting each said end plug from said feeder means by a robot including an arm and fingers,
(c) marking at least a single serial character onto said end plug with a marking means for marking serial characters,
(d) transferring said end plug from said marking means to an inspection site after marking has been completed,
(e) conducting an inspection of the nature and quality of said at least a single serial character marked on said end plug with a reader means for inspecting said nature and quality, and
(f) sorting said plurality of end plugs according to the results of the inspection in regard to nature and quality, wherein said sorting is conducted by a pneumatic means for delivering said end plugs to said reader means, including discriminating means for separating end plugs according to the results of said inspection.

4,521,863

GAUGE FOR CHECKING THE CLEARANCE EXISTING BETWEEN THE CAMS OF A CAMSHAFT AND THE RELEVANT VALVES

Sergio Solaroli, Bologna, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed Jul. 9, 1982, Ser. No. 396,894
Claims priority, application Italy, Jul. 17, 1981, 3481 A/81
Int. Cl.³ G01B *7/14;* **F01L** *1/20;* **G01M** *15/00*
U.S. Cl. 364—561 **13 Claims**



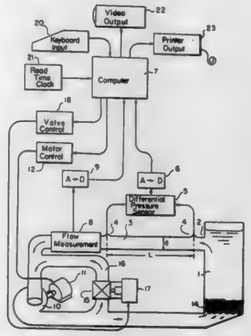
1. A gauge for checking the clearance existing between the cams of an engine camshaft and the associated valves, comprising:
support means;
drive means for rotating the camshaft;
control means;
gauging means including: a first measuring element movably coupled to the support means for undertaking, during rotation of the camshaft, positions responsive to the positions of a valve; a second measuring element movably coupled to the support means for contacting, during rotation of the camshaft, the surface of the cam associated with said valve; and a gauging device coupled to the first measuring element and the second measuring element for providing a signal indicative of the mutual position of said first measuring element and a second measuring element; and processing means connected to the gauging device for processing said signal during rotation of the camshaft and determining the amount of clearance between said valve and the associated cam; wherein the control means is coupled to the first measuring element for displacing it from a measurement position, where the first measuring element is arranged close at a side of said cam, to a rest position where the first measuring element is arranged apart from the path of displacement of said cam, during a part of the rotary movement of the cam.

4,521,864

MEASUREMENT OF BUILD-UP OF FOULING DEPOSITS BY SENSING FLOW CHARACTERISTICS DURING BRIEF FLOW EXCURSIONS

William G. Characklis, 516 W. Cleveland St., Bozeman, Mont. 59715

Filed Sep. 30, 1982, Ser. No. 429,254
Int. Cl.³ G01N *11/04;* **G01B** *13/10*
U.S. Cl. 364—563 **3 Claims**



1. The method of determining the thickness of a fouling deposit in a hydraulic conduit of uniform cross section which comprises the steps of:
determining, for a test section of said conduit, while in a clean and polished condition, the relationship between fluid flow velocity and fluid pressure drop over a wide range of fluid flow velocities;
recording said relationship to establish, for later use, a reference characteristic;
using said conduit for a period of time during which the conduit becomes coated with a fouling deposit;
at the end of said period of time determining, for said test section, while in its then fouled condition, the relationship between fluid flow velocity and fluid pressure drop over a wide range of fluid flow velocities;
recording said relationship to establish, for the time of the test, a transitory test characteristic;
comparing said reference characteristic with said transitory test characteristic to determine the critical fluid velocity below which the two characteristics are substantially identical and above which they diverge; and
utilizing said critical fluid velocity as a measurement to determine the thickness of the fouling deposit in said conduit at said time of the test.

4,521,865

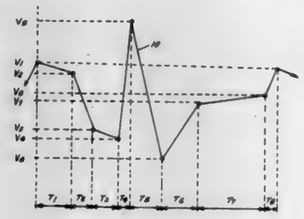
PROGRAMMABLE FUNCTION GENERATOR

Dean M. Winkler, 21 W. 86 St. 501, New York, N.Y. 10024; Jeffrey B. Curtis, 11434 Stewart La., Silver Spring, Md. 20904, and Aaron J. Heller, 367 Congress St., Troy, N.Y. 12180

Filed May 28, 1982, Ser. No. 383,147
Int. Cl.³ G06J *1/00*
U.S. Cl. 364—608 **27 Claims**

1. Apparatus for generating a signal representative of a function or the like comprising a sequence of line segments, the apparatus comprising:
first programmable input means for defining a first parameter corresponding to each of said line segments;
second programmable input means for generating a reference voltage representative of a second parameter corresponding to each of said line segments;
means connected to said second programmable input means for storing said reference voltages;
means connected to said first programmable input means for generating control signals representative of each of said first parameters; and

means connected to said second programmable input means, said means for generating control signals, and said means for storing said reference voltages for generating an output signal comprising portions representative of each of said line segments, each of said portions being generated over a period determined by the control signal corresponding to the line segment which said portion represents and having an initial value determined by the stored reference voltage corresponding to the line segment previous to the line segment which said portion represents, and a final value determined by the reference voltage for the line segment which the portion represents, wherein said first programmable input means comprises:
a power source;



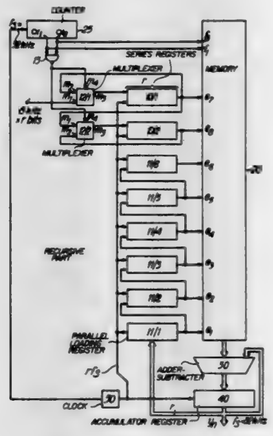
first variable resistance means corresponding to each of said line segments;
analog switch means having data input means for each of said line segments, data output means, and address signal input means, each of said first resistance means being connected between said source and a different one of said data input means, said data output means being connected to said means for generating said control signal; and
means for generating address signals, said address signal generating means being connected to said switch means address input means, and being effective to cause said switch means to select and connect one of said data input means to said data output means.

4,521,866

DISTRIBUTED ARITHMETIC OVERSAMPLING RECURSIVE DIGITAL FILTER

Jean-Pierre Petit, 16, rue Le Peletier, 22220 Treguier, and Xavier Maitre, Route de Pennker, Le Bourg, 22300 Lannion, both of France

Filed Aug. 17, 1981, Ser. No. 293,606
Claims priority, application France, Aug. 27, 1980, 80 18579
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—724 **4 Claims**



1. A distributed arithmetic oversampling recursive digital filter, comprising:
(a) a recursive part of order q comprising a parallel loading register having an output terminal and an input terminal, and q−1 series registers each of r cells, r being an integer connected in cascade;
(b) a non-recursive part of order p comprising series registers each of r cells each series register having one input terminal receiving input signals, said input signals being blockable P times out of N, wherein P and N are integers;
(c) a modulo N counter with α output terminals;
(d) a memory divided into N memory blocks, each of said memory blocks containing a set of calculated quantities characterizing the filtering to be carried out, said memory having α addressing input terminals corresponding to said blocks, said addressing input terminals being connected to said α outputs of said modulo N counter and said addressing input terminals within a block being connected to the output terminals of said series registers of said recursive and said non-recursive parts and said memory having an output terminal;
(e) an adder-subtracter having an input terminal connected to the output terminal of said memory and having an output terminal;
(f) an accumulator register having an input terminal connected to said output terminal of said adder-subtracter and having an output terminal connected to said input terminal of said parallel loading register and to said input terminal of said adder-subtracter;
(g) a clock having a first output terminal connected to said parallel loading register and said series registers, said first output terminal delivering a clock signal at a frequency rf_s, and a second output terminal connected to said modulo N counter, said second output terminal delivering a clock signal at a frequency f_s, said filter having an input terminal for receiving samples at a sampling frequency f_E, said frequency f_s of said clock being equal to Nf_E, said non-recursive part comprising at most K+1 series registers, K being an integer defined by the relationship $(K-1)N+2^{\alpha}-N \leqq p+P-1<KN+2^{\alpha}-N$, and wherein said filter further comprises a first plurality of first through Kth multiplexers each having first and second input terminals, a control input terminal and an output terminal, said output terminal of each said multiplexer being operatively connected to either said first or second input terminals according to a signal supplied to said control input signal, said second input terminal of each of said multiplexers being connected to the output terminal of an associated one of said series registers, said first input terminal of the jth multiplexer, j being an integer, $1<j \leqq K$, being connected to the output terminal of that one of said series registers associated with the (j−1)-th multiplexer said first input terminal of said first multiplexer being connected to said input of said filter, and said control input terminal of said j-th multiplexer being controlled by said modulo N counter in such a way that when the content of said modulo N counter is at a maximum, said output terminal of said j-th multiplexer is operatively connected to said first input terminal of said j-th multiplexer, thereby making said series registers circulating, and when the content of said modulo N counter differs from its maximum output, said output terminal of said j-th multiplexer, is operatively connected to said second input terminal.

4,521,867

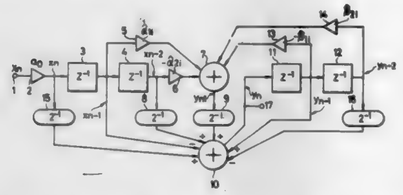
IIR DIGITAL FILTER HAVING LOW COEFFICIENT SENSITIVITY

Masao Kasuga, Sagamihara, Japan, assignor to Victor Company of Japan, Limited, Japan

Filed Aug. 23, 1982, Ser. No. 410,710
Claims priority, application Japan, Aug. 24, 1981, 56-132306
Int. Cl.³ G06F *7/38;* **H03H** *7/28*
U.S. Cl. 364—724 **8 Claims**

1. An Infinite Impulse Response digital filter comprising: a plurality of first feedforward circuits for successively delaying and scaling input discrete samples x_n by selected values of filter

coefficient, a plurality of first feedback circuits for successively delaying and scaling output discrete samples y_n by selected filter coefficient values, first combining means arranged to receive discrete samples from said first feedforward and feedback circuits to provide a first signal representative of a decimal fractional part of the filter coefficient, a plurality of second feedforward circuits for successively delaying and shifting said



input discrete samples x_n by selected values, a plurality of second feedback circuits for successively delaying and shifting said output discrete samples y_n by selected values, second combining means arranged to receive discrete samples from said second feedforward and feedback circuits to provide a second signal representative of an integer part of the filter coefficient, said first and second signals being combined in the second combining means to provide the output samples y_n, and bit shifting means provided for shifting discrete samples which appear in any one of circuits to said feedforward, feedback and combining means so that said first signal is shifted by a predetermined value.

2. An Infinite Impulse Response digital filter for filtering a digital input signal representative of a sequence of discrete samples x_n to generate a sequence of discrete output samples y_n according to a transfer function represented by

$$\sum_{K=0}^{N} b_K \cdot y_{(n-K)} = \sum_{K=0}^{M} a_K \cdot x_{(n-K)}$$

where, a_K and b_K are weighting factors given by

$$a_K = A_K \pm \alpha_{Ki} 2^{-i}$$

$$b_K = B_K \pm \beta_{Ki} 2^{-j}$$

where, A_K and B_K are integers, $\alpha_{Ki}2^{-i}$ and $\beta_{Ki}2^{-j}$ are fractions, α_{Ki} and β_{Ki} are weighting factors, and i, j are constants, whereby said transfer function is rewritten as

$$\sum_{K=0}^{N} B_K \cdot y_{(n-K)} = \sum_{K=0}^{M} A_K \cdot x_{(n-K)} \pm 2^{-i}\left(\sum_{K=0}^{M} \alpha_{Ki} \cdot x_{(n-K)} \pm \sum_{K=0}^{N} \beta_{Ki} \cdot 2^{i-j} \cdot y_{(n-K)} \right)$$

said digital filter comprising:

first feedforward means for successively delaying and scaling said input signal by selected values α_{Ki} to provide a plurality of first feedforward signals;

first combining means for providing a first combined signal representing

$$2^{-i}\left(\sum_{K=0}^{M} \alpha_{Ki} \cdot x_{(n-K)} \pm \sum_{K=0}^{N} \beta_{Ki} \cdot 2^{i-j} \cdot y_{(n-K)} \right)$$

in response to the combining of said first feedforward signals and a plurality of first feedback signals;

second feedforward means for successively delaying and shifting said input signal x_n by selected values to provide a plurality of second feedforward signals;

second combining means for providing a second combined signal representing

$$\sum_{K=0}^{N} B_K \cdot y_{(n-K)} \pm \sum_{K=0}^{M} A_K \cdot x_{(n-K)}$$

in response to the combining of said second feedforward signals and a plurality of second feedback signals and providing said output signal y_n in response to the combining of said first and second combined signals;

first feedback means coupled to said first combining means for successively delaying and scaling said first combined signal by selected values β_{Ki} to provide said first feedback signals;

second feedback means coupled to said second combining means for successively delaying and shifting said second combined signal by selected values to provide said second feedback signals; and

bit shifting means arranged to shift discrete samples which occur in any one of circuits to said feedforward, feedback and combining means so that said first combined signal is shifted by a predetermined value.

4,521,868

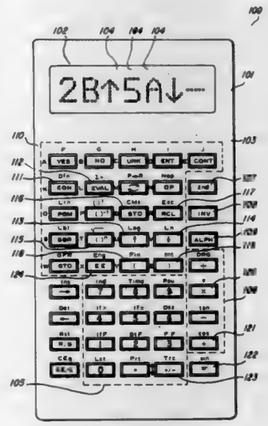
ELECTRONIC DATA PROCESSING APPARATUS WITH EQUATION OPERATING SYSTEM HAVING IMPROVED EXPONENTIATION OPERATORS

David Caldwell; Linda J. Ferrio, and Arthur C. Hunter, all of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 381,985, May 25, 1982,. This application Feb. 29, 1984, Ser. No. 584,841

Int. Cl.³ G06F *7/552*

U.S. Cl. 364—753 **11 Claims**



1. An electronic data processing apparatus comprising:

an input means for entering data processing functions including numeric data and a plurality of operational commands corresponding to data processing operations, said operational commands including at least (a) a first exponentiation command indicating the beginning of the expression of an exponent and (b) a second exponentiation command indicating the end of the expression of an exponent;

an arithmetic means connected to said input means for performing entered data processing functions and generating a numerical result, said arithmetic means including means for raising numeric data entered prior to each first exponentiation command by a power equal to the evaluation of the numeric data and operational commands between the corresponding first and second exponentiation commands; and

an output means for generating an operator perceivable indication of said numerical result generated by said arithmetic means.

4,521,869

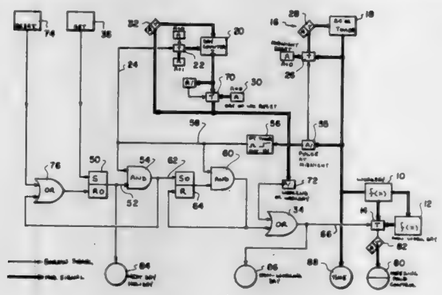
PROGRAM TIMER CONTROL

William H. Moss, Willoughby, and Thomas J. Scheib, Chesterland, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 2, 1982, Ser. No. 364,822

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—900 **6 Claims**



1. A program timer control for controlling the variation of a parameter in an operating system comprising:

a real time integrator for generating a time signal corresponding to the time of day during at least one twenty four hour period;

pulse means connected to said integrator for generating a day pulse upon the passage of each full day;

a controllable parameter controller for varying the parameter of the operating system;

a first function generator for controlling the parameter controller according to a first function corresponding to a working day;

a second function generator for controlling the parameter controller according to a second function corresponding to a non-working day;

a controllable selection switch connected to said function generators and said parameter controller for applying one of said first and second functions to said parameter controller;

a day counter connected to said pulse means for counting the passage of days and for generating a weekend signal upon the occurrence of a weekend day;

a manually operable setting means operable when a following day is a holiday to generate a holiday occurrence signal; and

a logic circuit connected to said setting means, said day counter, said pulse means and said selection switch for operating said selection switch to apply said second function corresponding to a non-working day to said parameter controller upon one of the occurrences of a weekend signal and a day pulse signal which occurs immediately after said logic curcuit has received a holiday occurrence signal, said logic circuit controlling said switch to apply said first function corresponding to a working day to said parameter controller at all other times.

4,521,870

AUDIO/VIDEO SYSTEM HAVING TOUCH RESPONSIVE FUNCTION DISPLAY SCREEN

John H. Babbel, Mountain View; William A. Russell, Atherton, and Robert B. Steele, Fremont, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 509,097, Jun. 28, 1983, abandoned, which is a continuation of Ser. No. 252,571, Apr. 9, 1981, abandoned. This application Oct. 18, 1984, Ser. No. 662,529

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—900 **12 Claims**

1. An audio/video editing system comprising:

at least one source recorder device for supplying a source of audio/video information;

a recording recorder device for recording selected audio/video information from the at least one source recorder device;

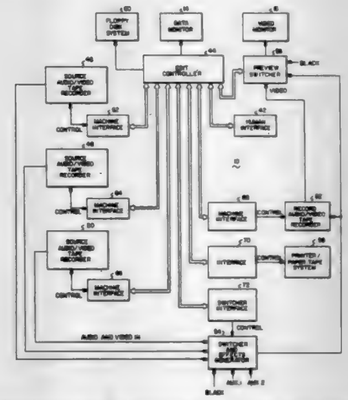
a switcher device for selectively coupling the at least one source recorder device and the recording recorder device;

computer means for providing selected edit commands;

an operator controlled input device including edit function display/indicating means for supplying serial edit function messages indicative of selected editing functions to be performed by the recorder device and the switcher device;

an operator intelligent line controller coupled to the operator controlled input device for identifying, converting and buffering the serial edit function messages in response to the computer means edit commands to provide corresponding parallel edit commands;

a plurality of device intelligent line controllers coupled to the operator intelligent line controller for establishing



communication with the respective recorder and switcher devices, and for converting and buffering the parallel edit commands to define serial edit commands, in response to the computer means;

a plurality of interfaces coupled between respective device intelligent line controllers and respective recorder devices and switcher device for translating the serial edit commands to a form commensurate with the requirements of the respective devices, and for translating device edit status messages from the respective devices for return to respective device intelligent line controllers, in response to the computer means; and

said device line controllers further converting and buffering the returned device edit status messages in response to the computer means.

4,521,871

PROGRAMMABLE CONTROLLER WITH BACK-UP CAPABILITY

Daniel J. Galdun, Huntsburg, Ohio; Raymond A. Grudowski, Round Rock, Tex., and Mark A. Flood, Richmond Heights, Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Apr. 12, 1982, Ser. No. 367,594

Int. Cl.³ G06F *15/46*

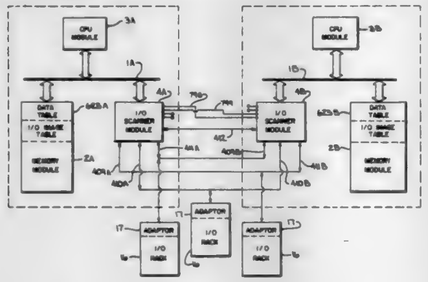
U.S. Cl. 364—900 **6 Claims**

1. In a programmable controller having a memory which stores a control program and a data table, and having a processor for executing the control program to input status data from I/O circuits which connect to a machine being controlled and for outputting data to the I/O circuits for operating devices on the machine being controlled, the improvement comprising:

mode indicating means for indicating that the programmable controller is either in an active or a back-up mode of operation;

means coupled to the mode indicating means and being operable when the programmable controller is in the back-up mode for inhibiting the output of data to the I/O circuits;

means for coupling the programmable controller to another similar programmable controller which is connected to the same I/O circuits and being operable when a switch signal is received from the said another similar programmable controller for operating said mode indicating means to indicate that the programmable controller is in the active mode;



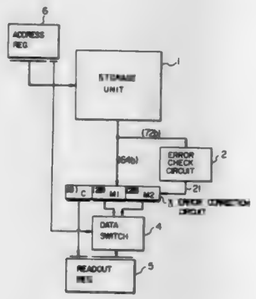
whereby the programmable controller may be operated initially as a back-up controller in which it only inputs status data from the I/O circuits on the machine being controlled, and when the switch signal is received from said another similar programmable controller, the programmable controller changes to the active mode in which it continues to input status data from the I/O circuits and it outputs data to the I/O circuits.

4,521,872

INSTRUCTION STORAGE

Hideo Sawada, and Kiyoshi Yata, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 327,118
Claims priority, application Japan, Dec. 10, 1980, 55-173282
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—49 **11 Claims**



1. An instruction storage for a data processing system comprising

storage means for storing a plurality of words, each word in said storage means including a plurality of multi-field instructions and having a first data field including a plurality of data areas, each said data area including those fields of a respective one of said plurality of multi-field instructions which are not identical in all of said instructions, and a second data field including a single data area for fields of the plurality of instructions which are identical in all of said plurality of multi-field instructions;

instruction designation means connected to said storage means for designating one of said words to be read from said storage means by generation of an address including a first designation field for designating a word in said storage means and a second designation field for designating one of the data areas of the first data field of said word, including means for applying said first designation field of said address to said storage means to read out said designated word;

readout data store means connected to said storage means for temporarily storing the word designated by said first designation field of said address generated by said instruction designation means and read out of said storage means;

selection means connected to said instruction designation means for selecting and reading out said designated one of the data areas of said first data field in the word stored in said readout data store means in response to said second designation field of said address generated by said instruction designation means; and

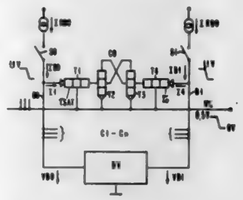
means connected to said readout data store means and said selection means for forming an instruction based on the second data field in the word read from said readout data store means and the output of said selection means.

4,521,873

METHOD OF AND CIRCUIT ARRANGEMENT FOR READING AN INTEGRATED SEMICONDUCTOR STORE WITH STORAGE CELLS IN MTL (I^2L) TECHNOLOGY

Klaus Heuber, Böblingen, and Siegfried K. Wiedmann, Stuttgart, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 2, 1982, Ser. No. 414,122
Claims priority, application European Pat. Off., Oct. 30, 1981, 81 109 368.1
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—190 **2 Claims**



2. A method of reading an I^2L memory cell where said cell is in either a first stable state or a second stable state, said cell, prior to being read, being maintained in either said first stable state or said second stable state by being provided with electrical energy having a fixed magnitude, said cell being connected between a pair of bit lines and a word line in a solid state memory, said method comprising the following steps in the order recited:

(1) utilizing said pair of bit lines and said word line to increase the magnitude of the electrical energy provided to said cell for a first predetermined period of time, said first predetermined time period having a time of origin and a time of termination;

(2) utilizing said pair of bit lines and responsive to said increase in the magnitude of the electrical energy provided to said cell, sense the electrical energy stored by said cell to determine whether said cell is in said first stable state or in said second stable state; and, said method being characterized by the afore recited step (1) including, in the order recited, the following substeps,

(1a) lowering the potential impressed on said word line for said first predetermined time period, and

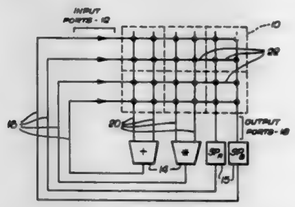
(1b) impressing an increased current on each of said bit lines for a second predetermined time period, said second predetermined time period being shorter in duration that said first predetermined time period and said second predetermined time period wholly occurring within said first predetermined time period.

4,521,874

RANDOM ACCESS MEMORY DEVICE

Bantwal R. Rau, Los Gatos; Christopher D. Glaeser, Fremont, and Philip J. Kuekes, Berkeley, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 28, 1982, Ser. No. 425,797
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—221 **19 Claims**



11. A random access storage and retrieval circuit, comprising:

a plurality of storage elements arranged in a logical sequence of contiguous locations numbered from 0 through n;

a write control line, to enable a writing operation into said circuit;

a set of write address lines, to define the location WA into which data is to be written;

an insert control line to allow optional insertion of written data into the logical sequence of contiguous locations;

a read control line, to enable a reading operation from said circuit;

a set of read address lines, to define the location RA from which data is to be read;

a purge control line, to allow optional purging of data read from said circuit;

data reading means responsive to signals on said read control line and said read address lines, for reading data from the read location RA specified by said read address lines;

data purging means, coupled to said data reading means and reponsive to signals on said purge control line, for purging data from the specified read location RA, and consolidating the remaining data into a single region of contiguous locations, by shifting down by one location all data stored in and above locations WA + 1;

data writing means responsive to signals on said write control line and said write address lines, for writing new data into the write location WA specified by said write address lines; and

data insertion means, coupled to said data writing means and responsive to signals on said insert control line, for preserving previously stored data by first shifting up by one location the data stored in and above location WA.

4,521,875

ORIENTATION DETECTION SYSTEM FOR THIN-LINE TOWED SONAR ARRAYS

William A. Harrington, Whittier, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

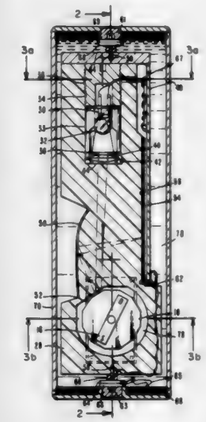
Filed Dec. 21, 1981, Ser. No. 332,999
Int. Cl.³ G01S *3/80;* G01C *17/26*
U.S. Cl. 367—130 **41 Claims**

20. A heating sensor for towed sonar arrays for providing electrical signals corresponding to the heading of the array comprising:

first means for providing a pulsating beam of light energy;

second means responsive to a magnetic field for changing the direction of the light beam, said second means including a magnetic wheel having a plurality of reflective facets about its perimeter; and

third means for measuring the change in direction of the light beam and providing electrical signals corresponding to the orientation of the system within the magnetic field, said third means including an array of photodetectors and electronic circuit means for ascertaining the pattern of



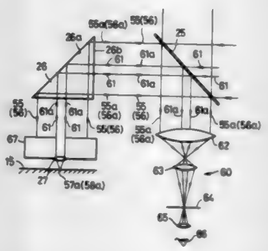
illumination on said photodetectors and providing a corresponding electrical output.

4,521,876

FOCUSING STATE MONITORING APPARATUS IN OPTICAL RECORDING APPARATUS

Ichiro Ueno, Isehara, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Oct. 16, 1980, Ser. No. 197,581
Claims priority, application Japan, Oct. 18, 1979, 54-134844
Int. Cl.³ G11B *7/12, 27/36*
U.S. Cl. 369—54 **3 Claims**



1. A monitoring apparatus for an optical recording system, said optical recording system including means for producing a first light beam and a second light beam, means for modulating said first and second light beams by a first signal and a second signal, said first and second light beams advancing in optical paths having an approximately common optical path segment, said advance being toward a recording medium, masking means positioned in said common optical path segment for eliminating portions of said first and second light beams incident thereupon in order to produce remaining portions of said first and second light beams, said remaining portions having diameters which are smaller than the respective diameters of the first and second light beams at said masking means, and focusing means in the common optical path segment for focusing said remaining portions of the first and second light beams from said masking means to form a first beam spot and a second beam spot on the recording medium, said first and second light beams being reflected at said first and second beam spots and going back into the common optical path segment as third and fourth light beams,

said monitoring apparatus comprising:

first reflecting means having at least a part in the common optical path segment before the focusing means for partially reflecting said first and second light beams back into the common optical path segment;

second reflecting means in the common optical path segment before the first reflecting means for directing the parts of the first and second light beams reflected by the first reflecting means and the third and fourth light beams out of the common optical path segment;

imaging means for forming first images of said parts of said first and second light beams and second images of said third and fourth light beams which are directed out of the common optical path segment by said second reflecting means; and

monitoring means for monitoring said first and second images formed by said imaging means, said monitoring means comprising a scale plate on which said first and second images are separately visible within the same field of vision, whereby a distance between the centers of said first and second beam spots is measurable through a corresponding separation of said first images on said scale plate and the accuracy of the focus of said first and second light beams can be monitored through said second images on said scale plate,

said first reflecting means having a flat reflective surface for reflecting the first and second light beams toward said second reflecting means.

4,521,877

REPRODUCING STYLUS AND METHOD OF MAKING SAME

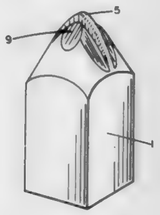
Hiroshi Shimamoto, Niiza, Japan, assignor to Namiki Precision Jewel Co., Ltd., Japan

Filed Feb. 2, 1983, Ser. No. 463,313

Claims priority, application Japan, Feb. 2, 1982, 57-015283; Mar. 23, 1982, 57-047539; Apr. 21, 1982, 57-056814[U]

Int. Cl.³ G11B *3/44;* B24B *1/00*

U.S. Cl. 369—173 **28 Claims**



1. A reproducing stylus for a record having a sound groove, said stylus formed by removing to a predetermined depth front and back portions of its contact area with the sound groove, said front and back portions being relative to the direction of stylus movement in the sound groove to obtain a groove contacting, ridge-like edge line portions having a lengthwise orientation perpendicular to the direction of record travel and a width d in said direction of record travel where the effective radius of curvature in said direction of record travel where the effective radius of curvature in said direction of record travel of the stylus tip is approximately ½ d.

4,521,878

DATA TRANSMITTING-RECEIVING SYSTEM

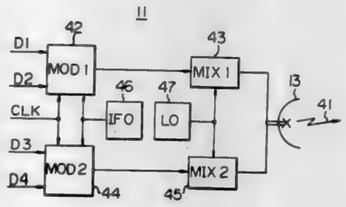
Noriyasu Toyonaga, Otawara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 28, 1983, Ser. No. 462,113

Claims priority, application Japan, Jan. 28, 1982, 57-12024; Dec. 9, 1982, 57-214657

Int. Cl.³ H04J *11/00*

U.S. Cl. 370—19 **11 Claims**



1. A data transmitting-receiving system comprising a transmitter unit, for transmitting two channels of data derived from a first route and two channels of data derived from a second route, and a receiver unit, for receiving, via a radio transmission line, said data, said transmitter unit comprising a transmitting apparatus generating a carrier from which is produced both a vertically (V) polarized wave and a horizontally (H) polarized wave each having the same frequency and in synchronism with each other and said V- and H-polarized waves being produced respectively according to said data from the first and second routes, the transmitting apparatus outputting a vector addition wave defined by both the modulated V- and H-polarized waves, and said receiver unit comprising a receiving apparatus receiving and dividing said vector addition wave into received V- and H-polarized waves, demodulating the V- and H-polarized waves, suppressing interference between the demodulated V- and H-polarized waves, between channels within each demodulated polarized wave and within data into a channel, and reproducing the original data of said first and second routes.

4,521,879

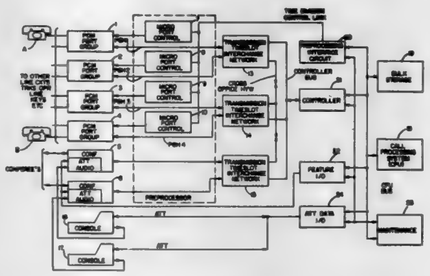
DIGITAL PRIVATE BRANCH EXCHANGE

Klaus Gueldenpfennig, 31 Lazy Trail, Penfield, N.Y. 14526; Stanley L. Russell, 649 Beverly Dr., West Webster, N.Y. 14580; William A. Oswald, 196 Fairhaven, Rochester, N.Y. 14610; Charles J. Breidenstein, 116A Clintwood Ct., Rochester, N.Y. 14620, and Karam V. Narula, 80 Fairhill Dr., Rochester, N.Y. 14610

Continuation of Ser. No. 003,070, Jan. 12, 1979, abandoned, which is a continuation of Ser. No. 855,181, Nov. 25, 1977, abandoned. This application Aug. 4, 1981, Ser. No. 289,960

Int. Cl.³ H04M *3/56;* H04Q *3/54, 11/04*

U.S. Cl. 370—62 **46 Claims**



1. An automatic private branch exchange comprising

a plurality of ports including line circuits and trunk circuits, said ports being divided into a plurality of distinct groups;

first stored program control means including a single individual microprocessor unit dedicated to each port for performing all real-time control in connection with the ports of the respective groups;

a common transmission network for all of said port groups including a plurality of inputs and a plurality of outputs and switching means for selectively interconnecting an input to an output;

each port group including information transmission means for connecting the ports to the inputs and outputs of said transmission network; and

second stored program control means including a central processing unit responsive to supervisory information from said first stored program control means for controlling said switching means to interconnect designated ports for establishing a communication path therebetween;

said first stored program control means further including, in each port group, strobe signal generating means responsive to the associated microprocessor unit for generating strobe signals for respective pairs of ports in the port group and port interface means connected to said microprocessor unit for applying said strobe signals to said pairs of ports sequentially in a repetitive cycle to sample the status of said ports.

4,521,880

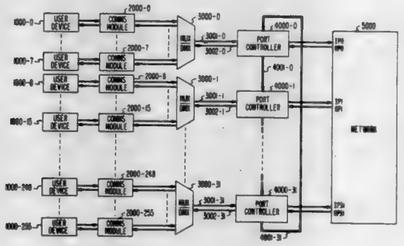
TIME-SLOT INTERCHANGER FOR FAST CIRCUIT SWITCHING

Milo Orsic, Lincolnwood, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 6, 1983, Ser. No. 558,504

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—68 **23 Claims**



1. An arrangement comprising

a plurality of input storage locations for storing digital words,

a plurality of output storage locations for storing digital words.

control memory input path means for sequentially receiving connection words each defining one of said input storage locations and one of said output storage locations,

control memory means for storing, for at most a predetermined duration, each of said connection words received by said control memory input path means,

transfer means coupled to said control memory means and responsive to said connection words stored by said control memory means, for transferring digital words stored in ones of said input storage locations, to ones of said output storage locations as defined by those connection words and

first enable gate means also coupled to said control memory means, for selectively transmitting ones of said connection words stored by said control memory means, to said control memory input path means for storage again by said control memory means.

4,521,881

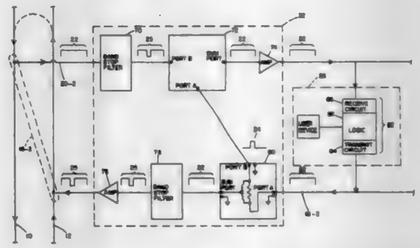
DATA COMMUNICATION SYSTEM WITH INCREASED EFFECTIVE BANDWIDTH

Gary N. Stapleford, Londonderry, and Andrew J. Borsa, Pelham, both of N.H., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Nov. 2, 1981, Ser. No. 317,292

Int. Cl.³ H04J *1/10*

U.S. Cl. 370—72 **3 Claims**



1. A communication system with a network for interconnecting a plurality of user devices having means for transmitting signals to and receiving signals from said communications system, said communication system having means for providing a plurality of frequency multiplexed communication channels operating on different frequency bands for concurrent communication between said user devices,

wherein one or more but not all of said channels are dedicated as local service channels employing designated local frequencies,

said communication system including frequency selective isolation means connected into said network intermediately between user devices, thereby subdividing said network into a plurality of local subnets, each local subnet interconnecting a plurality of said user devices,

said frequency selective isolation means including means for blocking only the frequencies used by said local service channels from being transmitted from any of said local subnets to another while enabling transmission of frequencies other than those used by said local service channels between user devices connected on different subnets to isolate said subnets from one another as to the local service channels only,

said communication system providing communications on a particular one of said local frequencies between two of said user devices both connected on a first of said subnets while concurrently and without interference providing communications on the same particular local frequency between two of said user devices both connected on a second of said subnets, while concurrently and without interference providing communications on a frequency other than local frequencies between user devices connected on different subnets.

4,521,882

INTERFACE FOR ACCESSING A WIDE-BAND BUS HANDLING SPEECH AND DATA TRAFFIC

Luciano Gabrielli, Leini, and Maurizio Sposini, Turin, both of Italy, assignors to Cselt Centro Studi E Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Mar. 17, 1983, Ser. No. 476,224

Claims priority, application Italy, Mar. 17, 1982, 67340 A/82

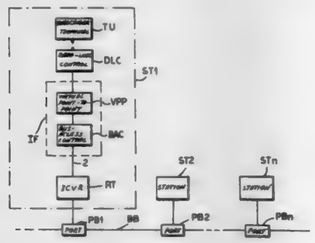
Int. Cl.³ H04J *3/02*

U.S. Cl. 370—85 **13 Claims**

1. In a telecommunication system with a plurality of stations served by a common transmission channel for the selective exchange of digitized messages subsequently inserted by component BAC, into account.

the improvement wherein said processing means of a given station comprises an interface with a lower-tier portion

and an upper-tier portion in hierarchical relationship interposed between said transceiver means and a higher-level structure controlling the organization of outgoing messages into data frames headed by destination codes as well as the forwarding to a user of incoming messages destinged for the given station; said lower-tier portion including wired-logic circuit for controlling said transceiver means and temporarily storing outgoing and incoming messages, said upper-tier portion including microprogrammed circuitry for exchanging information with said higher-level structure and with said lower-tier portion to establish, maintain and terminate virtual point-to-point data links between the given station and any other of said stations, said lower-tier portion comprising a transmitting section and a receiving section, said transmitting section including a first buffer memory for the temporary storage of outgoing data frames, said receiving section including a second buffer memory for the temporary storage of incoming data frames; said transmitting section further including a first controller responsive to writing instructions from said upper-tier portion for loading outgoing sequences of data words organized in a variable number of



frames into said first buffer memory and, in response to an end-of-message signal from said upper-tier portion, transferring the contents of said first buffer memory to said transceiver means for delivery to said channel during an idle period thereof; said receiving section further including a second controller responsive to the arrival of an incoming sequence of data words, addressed to the given station, for writing same in said second buffer memory and, upon completed reception of the incoming sequence, transferring same from said second buffer memory to said upper-tier portion in response to a reading instruction therefrom, said first controller being provided with first load-limiting means responsive to exhaustion of the storage capacity of said first buffer memory for signaling said upper-tier portion to block the writing of additional data words in said first buffer memory and initiating a readout of the contents thereof to said transceiver means; said second controller being provided with second load-limiting means responsive to exhaustion of the storage capacity of said second buffer memory for signaling said upper-tier portion to block the writing of additional data words therein prior to a readout of the contents of said second buffer memory to said upper-tier portion.

4,521,883

TELEPHONY APPARATUS HAVING FILTER CAPACITOR SWITCHED TO UNDERGO DISCRETE PHASE JUMPS

Bernard Roché, 13, rue de Bourgogne, Lannion, France 92140

Filed Jun. 21, 1982, Ser. No. 390,789
Claims priority, application France, Jun. 22, 1981, 81 12251
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—100 **8 Claims**

1. A system for transmitting and receiving telephony audio signals comprising:

a transmitter, the transmitter including:

means responsive to a telephony audio signal to be transmitted for deriving a digital information signal,

a master clock source having a frequency F_{MC},

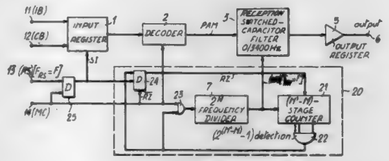
means responsive to the master clock source for deriving a time slot defining signal having a frequency $F_{TS}=F_{MC}\div 2^{N'}$, where N' is an integer greater than 2, and for deriving a transmit control signal having a frequency $F_{WT}=F_{MC}\div 2^{N}$, where N is an integer greater than 1 and less than N', the frequencies F_{TS} and F_{WT} controlling the frequency at which the digital information is transmitted from the transmitter;

a receiver responsive to the digital information signal, the receiver including:

a switched capacitor filter,

means for deriving the master clock frequency F_{MC},

means for deriving a reception synchronization signal having a frequency F_{RS} that is much lower than and asynchronous with the master clock frequency but which has approximately the same frequency as the time slot defining frequency,



means responsive to the information signal and the master clock frequency at the receiver, as well as to the reception synchronization signal, for supplying a pulse amplitude modulated signal indicative of the information signal to which the receiver is responsive to the switched capacitor filter,

means responsive to the master clock frequency at the receiver and the reception synchronization signal for deriving a switching control signal for the switched capacitor filter so that the filter is switched a predetermined number of times during each period of the reception synchronization signal while causing the switching time to undergo discrete phase jumps that occur at times uch that the filter is switched in a manner that is plesiosynchronous with the reception synchronization signal, the means for deriving the switching control signal including means for normally dividing the frequency of the master clock signal at the receiver by 2^N, and means for inhibiting derivation of a cycle by the means for dividing in response to the means for dividing deriving $2^{N'-N}$ cycles.

4,521,884

METHOD AND APPARATUS FOR ERROR DATA FEEDBACK IN A DISKETTE DRIVE

Gary L. Dix, Rochester; Lloyd S. Heim, Oronoco, both of Minn.; Robert F. Herald, Longmont, and William P. Quinlan, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

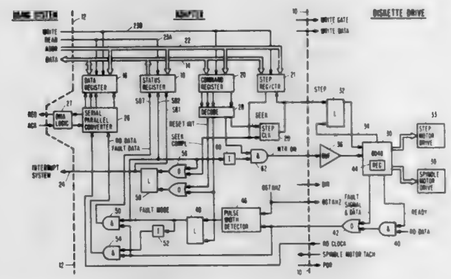
Filed Nov. 8, 1982, Ser. No. 439,956
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—15 **17 Claims**

1. Apparatus for transferring fault data from a recording device to a data processor connected to the device, said recording device having means responsive to the presence of first and second device-operation control signals on control lines from the processor to said device for controlling the operation of said device, and having a read output line for passing recorded data from said device to the processor, said transfer apparatus comprising:

storage means in said recording device for storing the fault data;

means in said recording device for generating a fault signal on the read output line;

means in said processor responsive to the fault signal on the read output line for inhibiting said first control signal from the processor to said device; and



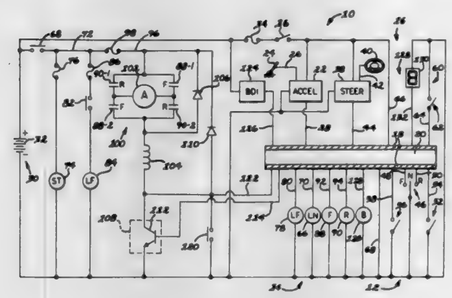
control means in said recording device responsive to the absence of the first control signal for interpreting the second control signal as a data gating signal for outputting the fault data from said storage means to the read output line in response to said gating signal so that the fault data is passed to said processor.

4,521,885

DIAGNOSTIC DISPLAY APPARATUS

Grant C. Melocik, Chardon, and William Pickering, University Heights, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Jan. 5, 1983, Ser. No. 455,721
Int. Cl.³ G08B *21/00;* **G06F** *11/32*
U.S. Cl. 371—29 **9 Claims**



1. An electric vehicle diagnostic apparatus (**10**), comprising:

a battery (**32**);

transducer means (**124**) for producing a battery condition signal;

a plurality of manually operable command signal producing devices (**12**), each adapted to produce respective input command signals;

means (**60**) for producing first and second diagnostic command signals; and

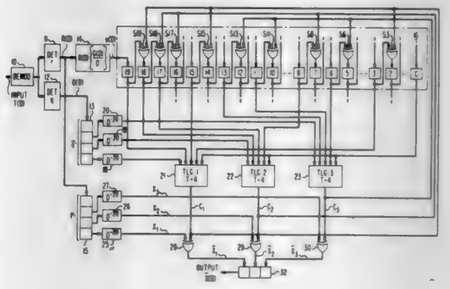
means (**128**) for receiving said plurality of input command signals, said battery condition signal, and said first and second diagnostic command signals, substantially continuously displaying a predetermined condition of said battery (**32**) in response to the condition of said battery (**32**) and to initially receiving a predetermined one of said first and second diagnostic command signals, displaying a predetermined diagnostic code in response to initially receiving the other of said first and second diagnostic command signals, and automatically incrementally sequencing said displayed code in response to receiving predetermined ones of said plurality of input command signals in a predetermined sequence or to cyclic operation of said diagnostic command signal producing means (**60**).

4,521,886

QUASI-SOFT DECISION DECODER FOR CONVOLUTIONAL SELF-ORTHOGONAL CODES

Peter M. Dollard, Highlands, and William Turin, Morganville, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 8, 1983, Ser. No. 511,852
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—43 **4 Claims**



1. A decoder for convolutional self-orthogonal codes comprising:

means responsive to an input convolutional self-orthogonal encoded signal including a plurality of serially transmitted m-bit groups, for detecting data and parity bits included in each m-bit group and then generating a first output signal representative of each of said data and parity bits and a second output signal associated with each detected data and parity bit which is a comparison of the input signal level of each bit and a predetermined signal threshold level;

means responsive to the first output signal from the detecting means for verifying the parity of the detected data and parity bits associated with each m-bit group in conjunction with bits in other m-bit groups and generating a syndrome bit output signal indicative of the success or failure of such verification;

a multistage syndrome shift register for storing the syndrome bit output signals from the verifying means at an m-bit transmission rate;

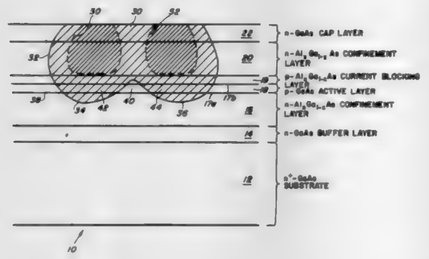
means responsive to each second output signal of the detecting means associated with a data bit of an m-bit group and an associated predetermined selection of stored syndrome bits from the syndrome register for generating an associated information correction bit output signal for use in selected correction of the associated stored signals in the syndrome register; and

means responsive to each information correction bit and an associated data bit from the first signal from the detecting means for generating a decoder output signal indicative of the most probable estimate of the associated data bit.

4,521,887
W-SHAPED DIFFUSED STRIPE GAAS/ALGAAS LASER

Yet-Zen Liu, Westlake Village; Chi-Shain Hong, Newbury Park, and P. Danial Dapkus, Anaheim, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 7, 1982, Ser. No. 415,639
Int. Cl.[3] H01S 3/19
U.S. Cl. 372—45 11 Claims



1. A stripe-geometry semiconductor laser device comprising:

a semiconductor substrate of a first conductivity type having first and second surfaces;

a first semiconductor confinement layer formed on said first surface of said substrate, said first confinement layer being of said first conductivity type;

an active semiconductor layer formed on said first confinement layer, said active layer being of a second conductivity type and having a band gap narrower than that of said first confinement layer, said active layer and said first confinement layer forming a heterojunction therebetween;

a current blocking semiconductor layer of said second conductivity type formed on said active layer, said current blocking layer having a band gap wider than that of said active layer, said current blocking layer and said active layer forming a heterojunction therebetween;

a second semiconductor confinement layer formed on said current blocking layer, said second confinement layer being of said first conductivity type and having a band gap wider than that of said active layer;

an elongated stripe region extending longitudinally between two reflective surfaces located on respective ends of said device, portions of said stripe region extending vertically from an upper surface of said second confinement layer through portions of said current blocking layer, said active layer, and said first confinement layer, said stripe region having a w-shaped cross-section taken in a vertical plane, a central portion of said stripe region vertically extending from said upper surface of said second confinement layer through portions of said current block layer, said stripe region defining two parallel longitudinally extending stripe active regions in said active layer, a portion of said active layer being located between said two longitudinally extending active stripe regions, said stripe region being doped with an impurity of said second conductivity type, said active stripe regions having an index of refraction different from the remaining portions of said active layer; and

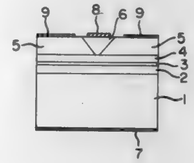
electrode means coupled to said second surface of said substrate and to said upper surface of said second confinement layer;

wherein laser oscillation takes place in said portion of said active layer located between said two longitudinally extending active stripe regions, the resultant laser radiation being guided by said portion of said active layer.

4,521,888
SEMICONDUCTOR DEVICE INTEGRATING A LASER AND A TRANSISTOR

Hideki Hayashi, and Kenichi Kikuchi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 275,029, Jun. 18, 1981, abandoned.
This application Aug. 13, 1984, Ser. No. 640,229
Claims priority, application Japan, Jun. 24, 1980, 55-85523
Int. Cl.[3] H01S 3/19
U.S. Cl. 372—50 3 Claims

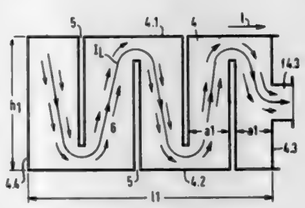


1. In a semiconductor device integrating a semiconductor laser and a transistor for modulating the laser, comprising semiconductor layers on a substrate and ohmic electrodes on the back surface of the substrate and on the uppermost semiconductor layer, the improvement wherein the semiconductor layers except the uppermost layer are semiconductor layers whose cavity is constructed by a pair of parallel cleavages or etched surfaces perpendicular to the semiconductor layers, the uppermost semiconductor layer is portioned into three semiconductor sections by a V-shaped boundary extending through the entire thickness of the uppermost semiconductor layer perpendicular to the cleavages or etched surfaces, the three semiconductor sections being a first semiconductor section within the V-shaped boundary and being of the same conductivity type as that of the semiconductor layer lying below said first semiconductor section, and second and third semiconductor sections separated by the first section and having a different conductivity type from that of the first semiconductor section, and the ohmic electrodes on the uppermost semiconductor layer are on each of the first, second and third semiconductor sections of the uppermost semiconductor layer, whereby said laser and said transistor for modulating said laser are integrated vertically above the same area of said substrate.

4,521,889
MICROSTRIP CAPACITOR FOR ENERGY STORAGE, PREFERABLY FOR HIGH-ENERGY LASERS

Hans-Jürgen Cirkel; Willi Bette, and Reinhard Müller, all of Erlangen, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,651
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128206
Int. Cl.[3] H01S 00/00
U.S. Cl. 372—87 14 Claims



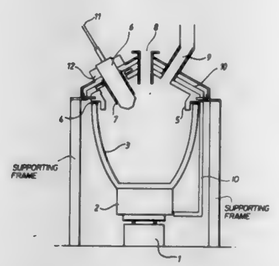
1. In a high-energy laser of the TE type having an optical axis, a laser chamber with at least two laser electrodes having a gas space therebetween, the laser electrodes being spaced

apart opposite each other and extending parallel to the optical axis, excitation produced by an arc-free capacitor discharge in the gas space being as homogeneous as possible, a pulse forming network connected to the laser electrodes, conductors of a stripline capacitor connected to the laser electrodes, contact-break electrodes connected to a fast high-voltage switch, the contact-break electrodes being connected to the laser electrodes, dielectric layers disposed between the conductors of the stripline capacitor in a direction substantially normal to a direction in which they are stacked parallel to the optical axis of the laser, the laser electrodes comprising a first electrode connected through the stripline capacitor to the pulse-forming network for a high voltage pulse, and a second electrode disposed opposite the first electrode and being connected to ground potential, wherein the improvement comprises: at least one of the conductors of the stripline capacitor connected to the first laser electrode having notches formed therein for increasing current path length therethrough for discharge current.

4,521,890
PLASMA ARC FURNACES

Robert F. Burnham, Reading; Alan Gibbon, Near Reading, and John E. Harry, Near Oakham, all of England, assignors to Johnson Matthey Public Limited Company, London, England

Filed May 25, 1983, Ser. No. 498,114
Claims priority, application United Kingdom, May 25, 1982, 8215192
Int. Cl.[3] H05B 7/00
U.S. Cl. 373—22 3 Claims



1. A plasma arc furnace in which solid feed material passes through the arcs produced by at least two stationary plasma torches positioned at or near the upper end of a furnace chamber and directed downwardly at an inclined angle towards an electrically conducting vessel for containing melt produced in the furnace and two or more electrical return anode connections made to said vessel at a level above the point of coalescence of the arcs produced, in use, by the said torches.

4,521,891
MULTIPLE CHANNEL DATA COMMUNICATION SYSTEM

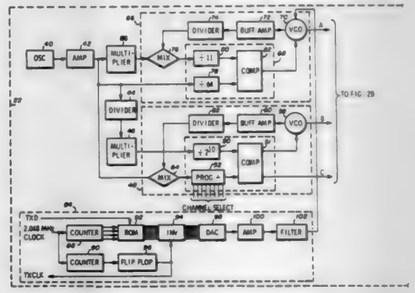
Kenneth J. Biba, San Francisco, and Jose J. Picazo, Jr., San Jose, both of Calif., assignors to Sytek, Incorporated, Mountain View, Calif.

Division of Ser. No. 166,384, Jul. 7, 1980, Pat. No. 4,365,331.
This application Feb. 26, 1982, Ser. No. 352,894
Int. Cl.[3] H04B 1/38
U.S. Cl. 375—8 14 Claims

1. A MODEM for data communication comprising in combination:

a main phase lock loop circuit electrically connected to a fixed frequency temperature compensated oscillator circuit and including a main frequency divider connected to the fixed frequency oscillator circuit for dividing a first output signal from the fixed frequency oscillator circuit by a first fixed factor and for providing a main fixed frequency output signal, a main mixer electrically connected to the fixed frequency oscillator circuit and a main feedback loop for modifying a reference signal frequency from the fixed frequency oscillator circuit, a programmable divider connected to said main mixer and a plurality of channel select lines connected to a support element, each of said plurality of channel select lines including a binary value for determining the divisor of the programmable divider, a main phase comparator joined to said main frequency divider and said programmable divider for comparing said main fixed frequency output signal of the main frequency divider and an output signal frequency of the programmable divider, said main feedback loop including a main voltage controlled oscillator electrically connected to said main mixer and said main phase comparator for providing a main voltage controlled oscillator output signal with a main oscillator output signal frequency controlled by an output voltage signal from said main phase comparator, said main phase comparator adjusting said output voltage signal from said main phase comparator until said main oscillator output signal frequency is fixed, wherein said main oscillator output signal frequency of said main voltage controlled oscillator is dependent upon said binary value of said channel select lines;

a transmitter for generating a frequency modulated signal including a transmit phase lock loop circuit comprising a first transmit frequency divider connected to said fixed frequency oscillator circuit for dividing a second output



signal from the fixed frequency oscillator circuit by a second fixed factor and providing a first transmit fixed frequency output signal, a transmit mixer electrically connected to the fixed frequency oscillator circuit and a transmit feedback loop within the transmit phase lock loop circuit for providing an output frequency signal of said transmit mixer equal to the difference between the frequency of a third output signal from the fixed frequency oscillator circuit and the frequency of an output signal of said transmit feedback loop, a second transmit frequency divider connected to said transmit mixer for dividing an output signal frequency of said transmit mixer by a third fixed factor and for providing a second transmit fixed frequency output signal, a transmit phase comparator connected to said first transmit frequency divider and to said second transmit frequency divider for comparing said first transmit fixed frequency output signal and said second transmit fixed frequency output signal, said transmit feedback loop including a transmit voltage controlled oscillator electrically connected to said transmit mixer and said transmit phase comparator to provide a transmit voltage controlled oscillator output signal with a transmit oscillator output signal frequency controlled by an output voltage signal from said transmit phase comparator and by an amplitude modulated signal from a data encoder, said transmit voltage controlled oscillator output signal being said frequency modulated signal and having a center frequency generated by the transmit phase lock loop

circuit, said main oscillator output signal frequency being differentially combined with said transmit oscillator output signal frequency within an output mixer electrically connected to said main voltage controlled oscillator and said transmit voltage controlled oscillator to provide a transmitter output signal to a coaxial transmission cable wherein and output frequency bandwidth of the transmitter is determined by said channel select lines; and

a receiver for providing a digital data output including a first receiver mixer connected to said main voltage controlled oscillator within the main phase lock loop circuit and the coaxial cable for differentially combining the frequencies of a frequency modulated receive signal with a main oscillator output signal frequency and for providing a first receiver mixer signal, a first filter connected to said first receiver mixer for filtering said first receiver mixer signal and for providing a filtered first receiver mixer signal, a second receiver mixer connected to said first filter and a receiver oscillator for differentially combining said filtered first receiver mixer signal and a receiver oscillator signal for providing a second receiver mixer signal, a second filter connected to said second receiver mixer for filtering said second receiver mixer signal, said filtered second receiver mixer signal being a frequency modulated signal, an intermediate frequency amplifier connected to said second filter for amplifying said filtered second receiver mixer signal and for providing an amplified amplitude-modulated second receiver mixer signal to a data decoder and to a signal detecting means for detecting a signal received by the translating means from said transmission cable wherein said signal detecting means is a mute amplifier for providing a carrier detect signal to a support element for preventing data collision, and said data decoder for providing said digital data output and wherein the receive frequency bandwidth of the receiver being determined by said channel select lines.

4,521,892

DIRECT CONVERSION RADIO RECEIVER FOR FM SIGNALS

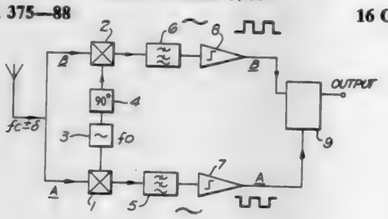
Ian A. W. Vance, Newport, and John K. Goatcher, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

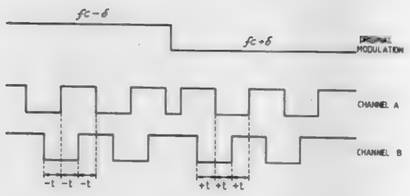
Filed Sep. 8, 1982, Ser. No. 415,782

Claims priority, application United Kingdom, Sep. 24, 1981, 8128956

Int. Cl.³ H03D *3/00*

U.S. Cl. 375—88 **16 Claims**





1. In or for a radio receiver for receiving frequency modulated signals with a varying frequency difference from a carrier frequency, and in which mixing with a local oscillator is used to produce quadrature baseband channels, a demodulator circuit comprising a first channel in which a first baseband signal at the difference frequency will appear, a second channel in which a second baseband signal at the difference frequency will appear in quadrature with respect to the first channel and lagging or leading the first baseband signal in dependence upon the received signal frequency being above or below the local oscillator frequency, respectively; and means for converting the outputs of said channels into an analog signal having an amplitude representative of the difference frequency.

4,521,893

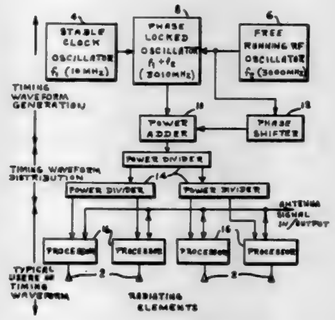
CLOCK DISTRIBUTION CIRCUIT FOR ACTIVE APERTURE ANTENNA ARRAY

Brian M. Bellman, Severna Park, Md., assignor to The Unites States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 21, 1983, Ser. No. 487,340

Int. Cl.³ H03B *21/01*

U.S. Cl. 375—107 **6 Claims**



1. A clock signal distribution system for synchronizing the operation of a plurality of separate digital processing elements having clock signal transmission paths of different lengths comprising:

a first oscillator providing a first output frequency f_1,

a second oscillator providing a second output frequency f_2,

a phase locked oscillator adapted to receive output frequency f_1 and output frequency f_2 from said first and second oscillators respectively to provide a single combined output frequency f_1+f_2,

a power adder having first and second inputs and an output,

means for coupling said single combined output frequency f_1+f_2 from said phase locked oscillator to said first input of said power adder, and

means for coupling said output frequency f_2 from said second oscillator to said second input of said power adder,

whereby a composite two-frequency clock signal is formed at the output of said power adder having sharply defined nulls occurring at the frequency f_1.

4,521,894

OVERSPEED/UNDERSPEED DETECTOR

Richard P. Moffat, Regina, Canada, assignor to Saskatchewan Power Corporation, Saskatchewan, Canada

Filed Apr. 22, 1982, Ser. No. 371,019

Int. Cl.³ G05B *11/06;* **G05D** *13/62*

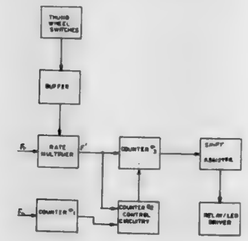
U.S. Cl. 377—16 **12 Claims**

1. A device for detecting overspeed or underspeed condition in a rotating body, comprising:

(a) a source of a first train of electrical pulses whose pulse repetition rate is proportional to the rotational speed of said rotating body;

(b) signal-generating means for producing a second pulse train whose pulse repetition rate is directly proportional to a predetermined overspeed or underspeed limit; and

(c) digital comparison means responsive to said first and second pulse trains adapted to compare the number of



pulses in said second pulse train occurring during an interval determined by a fixed number of pulses of said first puse train to a predetermined value independent of said predetermined overspeed or underspeed limit and to produce an output signal when said number of pulses of said second pulse train in said interval exceeds said predetermined value.

4,521,895

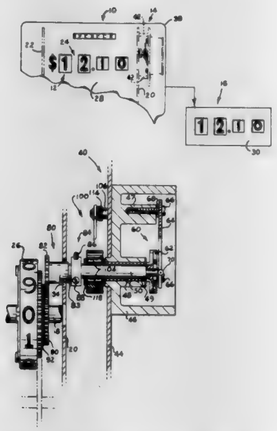
PULSE GENERATOR UNIT FOR FUEL PUMP REGISTER

Arthur J. Wells, Bloomfield, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Nov. 29, 1982, Ser. No. 445,049

Int. Cl.³ B67D *5/22;* **G01F** *15/06;* **G06M** *1/12*

U.S. Cl. 377—21 **16 Claims**



1. In a resettable fuel pump delivery register for registering the cost and volume of each fuel delivery and having a main frame with a pair of spaced generally parallel upright side frame members, at least one resettable counter with a bank of coaxial resettable counter wheels of increasing order mounted on a counter shaft with respective coaxial reset gears rotatable therewith, said counter shaft being axially shiftable to engage the reset gears with the counter to condition the counter for resetting, the counter being mounted on the main frame with the counter wheel bank mounted between the side frame members and with the counter shaft generally perpendicular to the side frame members for being read from one end of the register, and the lowest order counter wheel rotatable in a counting direction and an opposite resetting direction, the improvement wherein the resettable fuel pump delivery register further comprises a pulse generator unit comprising:

a mounting assembly mounted to the frame outwardly adjacent the lowest order counter wheel;

a pulser shaft rotatably received by said assembly;

an input gear means to rotatably couple said pulser shaft for rotation with said lowest order wheel;

a rotary permanent magnet mounted to said pulser shaft;

a ratchet clutch means to selectively restrict rotation of said pulser shaft to a counting direction or permit rotation of said pulser shaft in a resetting direction; and

a magnetic sensor operable by the rotary permanent magnet for generating a pulse train with a pulse for each predetermined increment of rotation of said magnet.

4,521,896

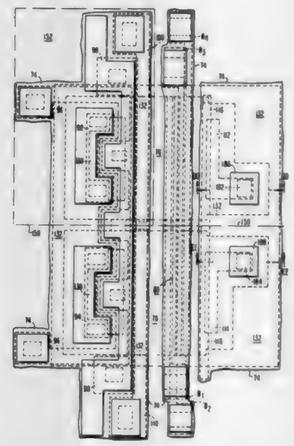
SIMULTANEOUS SAMPLING DUAL TRANSFER CHANNEL CHARGE COUPLED DEVICE

Gerald M. Borsuk, Washington, D.C.; Edwin E. Chesson, Odenton, Md.; Jerome C. Beard, Pasadena, Md., and Thomas K. Lisle, Jr., Baltimore, Md., assignors to Westinghouse Electric Co., Pittsburgh, Pa.

Filed May 14, 1982, Ser. No. 378,461

Int. Cl.³ G11C *19/28;* **H01L** *29/78, 29/04*

U.S. Cl. 377—60 **1 Claim**



1. A dual transport channel peristaltic charge coupled device (PCCD) for coherently processing two analog signals at simultaneous charge injection sampling frequencies of up to at least 60 MHz, said PCCD comprising:

a semiconductor substrate of a first conductivity type;

an upper layer of a second conductivity type disposed on the surface of said substrate;

an insulator layer disposed on said upper layer;

dual peristaltic N-stage in-line transport channels having parallel charge transport paths, respectively corresponding stages of the transport channels including a common insulatedly separted multi-gate structure disposed over said insulator layer, said multi-gate structures arranged cascadedly along the length of the charge transport path respectively over each in-line stage thereof; and

dual partition mode input charge injection stages corresponding to said dual transport channels, each injection stage including:

an input charge injection region of a second conductivity type disposed in the surface of said upper layer at one end of its corresponding transport channel, said injection region being of a higher conductivity than said upper layer, both injection stages including:

a charge sampling gate region of polysilicon material,

common to both charge injection regions, disposed within said insulator layer and extending across the width of both transport channels between said charge injection regions and corresponding charge transport channels with portions thereof in juxtaposition with said charge injection regions; and

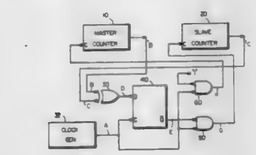
a charge sampling gate metallic contact layer disposed on said insulator layer over said charge sampling gate region across the width of both transport channels and making contact with said polysilicon sampling gate region through a multiplicity of window sections removed from said insulator layer, said contact windows being distributed across the width of said polysilicon sampling gate region to sectionalize the distributed parameter impedance thereof to reduce the signal propagation time across said width, thereby improving both the frequency and time matching of simultaneous input charge injection sampling of said dual charge injection stages to the extent necessary for simultaneous charge injection frequencies of up to at least 60 MHz.

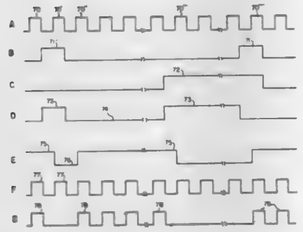
4,521,897

APPARATUS FOR SYNCHRONIZING THE OPERATION OF MASTER AND SLAVE COUNTERS

Richard G. Merrell, Hebron, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jul. 29, 1983, Ser. No. 518,509
Int. Cl.³ H03L *7/00*
U.S. Cl. 377—115 **7 Claims**





1. Apparatus for synchronizing the operation of a master and a slave counter comprising:

means for generating a clock signal;

logic means developing a control signal representing the exclusive OR/NOR combination of the outputs of said counters;

bi-stable means responsive to said clock signal and to said control signal for developing an enable signal;

means for coupling said clock signal to said master counter; and

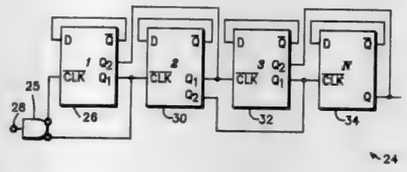
gate means responsive to said enable signal for coupling said clock signal to said slave counter, said enable signal inhibiting clocking of said slave counter in response to successively occurring, like polarity transitions of the outputs of said slave counter and said master counters respectively so as to force coincidence between the succeeding opposite polarity transitions of the outputs of the counters, whereby operation of said slave counter is synchronized to operation of said master counter.

4,521,898

RIPPLE COUNTER CIRCUIT HAVING REDUCED PROPAGATION DELAY

M. Faheem Akram, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 28, 1982, Ser. No. 453,974
Int. Cl.³ H03K *23/26*
U.S. Cl. 377—116 **4 Claims**



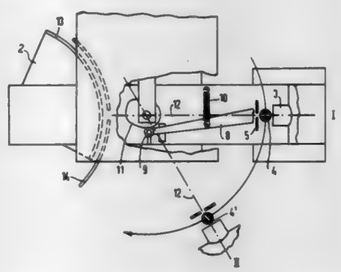
1. A ripple counter circuit having reduced propagation delay comprising a plurality of flip-flops, each flip-flop having a clock input, a first output, and a second output, wherein said clock input of a first flip-flop is responsive to a clock signal, said clock input of a second flip-flop is coupled to said first output of said first flip-flop and said clock signal, each subsequent flip-flop of said plurality of flip-flops having its clock input coupled only to the first output of the preceding flip-flop and the second output of the next preceding flip-flop.

4,521,899

DENTAL X-RAY DIAGNOSTIC DEVICE

Johann Finkenzeller, and Wolfgang Mittelstaedt, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 19, 1982, Ser. No. 442,898
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 3149723
Int. Cl.³ A61B *6/14*
U.S. Cl. 378—40 **8 Claims**



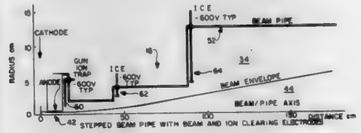
1. In a dental X-ray diagnostic device for producing panoramic layer exposures of a subject particularly panoramic layer exposures of a jaw, said device comprising an X-ray source, carriage means having an arm for supporting the X-ray source, a cassette accepting X-ray film, said cassette being mounted for relative movement on the arm of the carriage means, said carriage means moving both the X-ray source and cassette around a subject with the cassette being moved relatively on the arm and a slit diaphragm means comprising a slit diaphragm being positioned between the source and the subject for limiting the width of a beam of radiation being projected from the source, the improvement comprising means for changing the layer thickness to match the subject during the entire exposure including adjustment means for changing the effective width of the slit diaphragm during an exposure, said adjustment means including means for mounting the slit diaphragm for rotation on a vertical axis to change the effective width of the slit and a cam plate coupled to said slit diaphragm to control the rotation thereof, said cam plate being designed in such a manner that the slit diaphragm is rotated to a position to constrict the effective slit width of the diaphragm to achieve a greater layer thickness while exposing the area of the front teeth.

4,521,900

ELECTRON BEAM CONTROL ASSEMBLY AND METHOD FOR A SCANNING ELECTRON BEAM COMPUTED TOMOGRAPHY SCANNER

Roy E. Rand, Palo Alto, Calif., assignor to Imatron Associates, South San Francisco, Calif.

Filed Oct. 14, 1982, Ser. No. 434,252
Int. Cl.³ H01J *35/00, 35/04, 35/24*
U.S. Cl. 378—137 **30 Claims**



1. In a computed tomography X-ray scanning system, an electron beam production and control assembly for producing X-rays, said assembly comprising:

(a) a housing defining an elongated, vacuum sealed chamber having opposite forward and rearward ends;

(b) means for evacuating said chamber of any gases therein;

(c) means for producing an electron beam within said chamber and for directing said beam along a path therethrough from its rearward end to its forward end so as to impinge on a suitable target which is located at the forward end for providing X-rays and which forms part of the scanning system, the electrons forming said beam interacting with any residual gas for producing positive ions, said electron beam forming at least one negative potential well at a fixed point along its path, said potential well trapping said ions therein and preventing the latter from escaping from said beam whereby to have the effect of neutralizing the space charge of the electron beam; and

(d) means for acting on said trapped ions, if present, in a way which reduces the neutralizing effect they would otherwise have on said beam, said means acting on said trapped ions including means for removing said trapped ions from said potential well or wells and from the beam all together in order to prevent those ions from neutralizing said beam.

4,521,901

SCANNING ELECTRON BEAM COMPUTED TOMOGRAPHY SCANNER WITH ION AIDED FOCUSING

Roy E. Rand, Palo Alto, Calif., assignor to Imatron Associates, South San Francisco, Calif.

Filed Mar. 1, 1983, Ser. No. 471,199
Int. Cl.³ H01J *35/30, 35/14*
U.S. Cl. 378—138 **22 Claims**

1. An electron beam production and control assembly especially suitable for use in producing X-rays in a computed tomography X-ray scanning system, said assembly comprising:

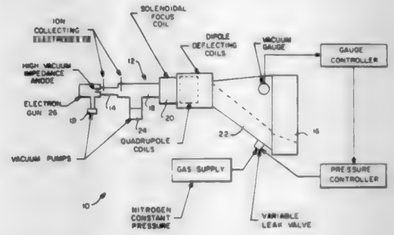
(a) a housing defining an elongated vacuum-sealed chamber having opposite rearward and forward ends;

(b) a target located at the forward end of said chamber, said target being the type which produces X-rays when impinged by an electron beam;

(c) means for producing an electron beam within said chamber at its rearward end and for directing the beam along a path towards the forward end of the chamber in a continuously expanding manner;

(d) focusing means located within said chamber at a location intermediate its rearward and forward ends and in the path of said beam for directing said beam towards said target in a continuously converging manner whereby to impinge on said target for producing X-rays; and

(e) means for neutralizing the converging segment of said beam in a controlled manner sufficient to cause it to converge to a greater extent at the time it impinges said X-ray target than it otherwise would have in the absence of said controlled neutralization, whereby to decrease the area of said target impinged by said converging beam segment, said neutralizing means including means for maintaining



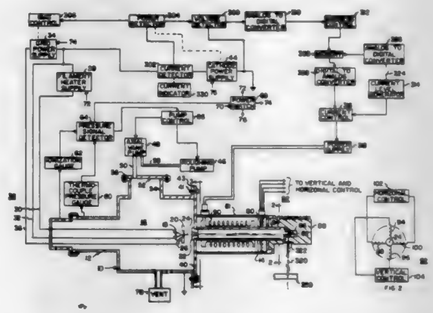
the gas pressure at a preset level within the section of said chamber containing the converging beam segment, said gas pressure maintaining means including means for leaking a specific gas into said chamber section containing said converging beam segment in a controllable manner, means for pumping gas out of said chamber section, means for sensing the pressure within said chamber section, and means responsive to said sensing means for controlling said gas leaking means for maintaining the gas pressure within said chamber at said preset level.

4,521,902

MICROFOCUS X-RAY SYSTEM

Richard S. Peugeot, Stone Mountain, Ga., assignor to Ridge, Inc., Tucker, Ga.

Filed Jul. 5, 1983, Ser. No. 510,660
Int. Cl.³ H05G *1/00, 1/64*
U.S. Cl. 378—138 **5 Claims**



1. An X-ray system comrising:

an elongated vacuum enclosure having first and second vacuum chambers;

electron beam generation means positioned in said first chamber and comprising a filament-cathode and a grid spaced from said filament-cathode, said grid having an aperture through which an electron beam emitted by said filament-cathode passes in a line which is generally along the longitudinal dimension of said enclosure, said beam passing from said first chamber into said second chamber;

said second chamber being tubular and extending around said electron beam;

a focusing coil wound around said tubular second chamber;

an anode having an opening therethrough for passage of said electron beam, said anode being positioned intermediately between said grid and said focusing coil;

a sintered metal tungsten target positioned at an extreme end of said second chamber which is downstream in terms of the passage of said beam, and said target being electrically connected to said anode;

a first pair of beam deflection coils positioned on first and second opposite sides of said second chamber and positioned, with respect to said electron beam, between said said focusing coil and said target, and a second pair of deflection coils positioned on opposite sides of said second chamber, orthogonally with respect to, said first pair of deflection coils;

a window of X-ray permeable material positioned adjacent to said target through which emitted X rays, responsive to bombardment of said target by said electron beam, pass from said second chamber;

first biasing means for applying a heater voltage to said filament-cathode, second biasing means for adjustably applying a negative voltage to said grid with respect to said filament-cathode, and third biasing means for adjustably applying an accelerating voltage to said anode, said accelerating voltage being connected as a ground potential to said anode and as a negative potential on said filament-cathode;

power control means responsive to both the voltage of said third biasing means and electron beam current passing in circuit between said filament-cathode and target for controllably adjusting the voltage of said second biasing means for effecting a grid bias of a value for maintaining a selected value of electron beam power within the range of 0 to 800 watts;

focusing control means coupled to said focusing coil and responsive to the voltage of said third biasing means for applying an electrical input to said focusing coil of a level which varies as a function of anode-to-filament-cathode voltage for maintaining an electron spot size within the range of 10 to 100 microns; and

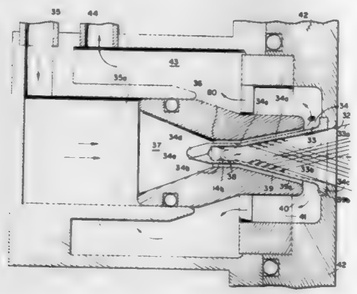
pressure sensing means for providing an electrical output representative of the pressure within said housing, and pumping means responsive to said electrical signal for maintaining a vacuum pressure in said enclosure of between 10 to 10^{-6} Torr.

4,521,903

HIGH POWER X-RAY SOURCE WITH IMPROVED ANODE COOLING

Martin Braun, San Jose, Calif., assignor to Micronix Partners, Los Gatos, Calif.

Filed Mar. 9, 1983, Ser. No. 473,483
Int. Cl.³ G21K *5/00*; H01J *35/00*
U.S. Cl. 378—141 **19 Claims**



1. In an X-ray generator having a target anode with a hollow substantially converging cross-sectional inside surface forming the principal region of bombardment by a beam of charged particles entering the hollow target anode from an open base end, to cause the emission of x-rays therefrom and having means for dissipating and removing generated heat in direction away from said region of bombardment, the improvement comprising:

(a) said surface being truncated at its smaller diameter end opposite its larger diameter open base end; and

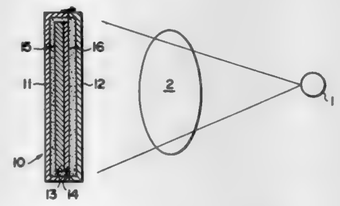
(b) a hollow extension connected to said truncated end and extending in a direction away from said base end and for a distance greater than the top of a hypothetical apex of said converging surface.

4,521,904

METHOD OF AND CASSETTE FOR TAKING X-RAY PHOTOGRAPH

Masao Takano, Minamiashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Sep. 29, 1982, Ser. No. 428,437
Claims priority, application Japan, Oct. 12, 1981, 56/162381
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—185 **7 Claims**



1. A method of taking an X-ray photograph, which comprises maintaining an X-ray film and a stimulable phosphor sheet in close contact with each other and shielded from light, and exposing said X-ray film and said stimulable phosphor sheet to X-rays through an object, whereby an X-ray transmission image of said object is recorded on said stimulable phosphor sheet and, at the same time, said X-ray film is exposed to light instantaneously emitted from stimulable phosphor sheet upon exposure to X-rays to record a photographic latent image of the X-ray transmission image of said object on said X-ray film, processing the image recorded on said stimulable phosphor sheet by scanning said latter sheet with a stimulating ray source to cause said latter image to be emitted as a light image; converting said light image to an electrical signal; processing said electrical signal to obtain an image suitable for viewing; and processing the image recorded on the X-ray film by developing and fixing said latter image to obtain a further image suitable for viewing.

4,521,905

MONITOR OF AN X-RAY RADIATION RANGE

Yoshinori Hosokawa, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Jan. 17, 1983, Ser. No. 459,039
Claims priority, application Japan, Feb. 2, 1982, 57-15900
Int. Cl.³ G01N *23/20*; G21K *1/00*
U.S. Cl. 378—206 **1 Claim**

1. A monitor of an X-ray radiation range for use in a fluorescent X-ray analyzer, said monitor comprising:

an X-ray source for radiating X-rays on a sample to be irradiated;

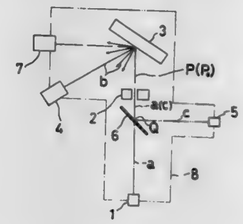
a collimator arranged along an axis of said X-rays so as to collimate said X-rays;

a mirror which is permeable to said X-rays but which reflects visible rays, said mirror being arranged across said axis of said X-rays between said collimator and said X-ray source;

a visible ray source arranged so as to radiate visible rays which are reflected by said mirror and then pass through said collimator so as to irradiate said sample, said visible rays being irradiated simultaneously with said X-rays;

a fluorescence detector for detecting fluorescence X-rays emitted from said sample in response to said X-rays radiated thereon by said X-ray source;

an optical viewer arranged so as to view a point on said sample upon which said X-rays impinge;



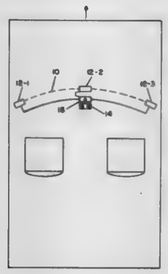
wherein said mirror is inclined at an angle with respect to said X-ray axis so that an axis of said visible rays is substantially identical to said axis of said X-rays radiated by said X-rays source, whereby said point on said sample upon which said X-rays impinge is substantially identical to a point on said sample upon which said visible rays impinge and said point is simultaneously irradiated with both said X-rays from said X-ray source and said visible rays from said visible ray source.

4,521,906

SPEAKER SYSTEMS FOR PRODUCING BALANCED STEREO IMAGES AT MULTIPLE LOCATIONS

Leonard R. Kahn, 137 E. 36 St., New York, N.Y. 10016

Filed Mar. 28, 1983, Ser. No. 479,223
Int. Cl.³ H04R *5/00*
U.S. Cl. 381—24 **1 Claim**



1. A speaker system for use in a vehicle, such as an automobile, in connection with a source of stereophonic signals having a pair of separate left and right stereo audio signal outputs, comprising:

first, second and third speakers arranged along a path extending generally across the width of the passenger compartment of said automobile, wherein said first and third speakers are located at opposite ends of said path and said second speaker is located approximately midway between said first and third speakers;

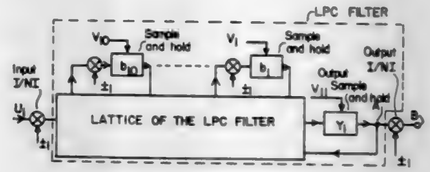
and means for coupling said first and third speakers to a selected one of said pair of stereo audio signal outputs and said second speaker to the remaining one of said pair of outputs, and for providing independent adjustment of the stereo image balance between said first and second speakers and between said second and third speakers.

4,521,907

MULTIPLIER/ADDER CIRCUIT

Gideon Amir, San Jose, and Roubik Gregorian, Santa Clara, both of Calif., assignors to American Microsystems, Incorporated, Santa Clara, Calif.

Filed May 25, 1982, Ser. No. 381,807
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—47 **4 Claims**



1. A structure for minimizing error components in the analog output signal of a linear predictive filter which utilizes analog sample and hold circuits to store the forward and backward prediction errors comprising:

means for providing a clock signal having a plurality of clock periods;

means for providing an inverted input signal to said filter during odd numbered clock periods and a noninverted input signal to said filter during even numbered clock periods;

means for storing inverted forward and backward prediction errors in said analog sample and hold circuits during odd numbered clock periods and for storing noninverted forward and backward prediction errors in said analog sample and hold circuits during even numbered clock periods; and

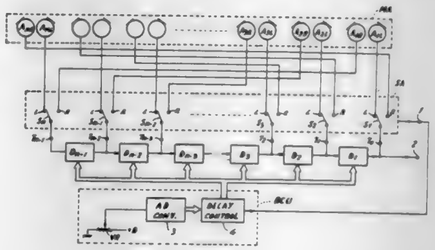
means for inverting the output signal from said filter during odd numbered clock periods and for not inverting the output signal from said filter during even numbered clock periods, thereby shifting the error signal of said linear predictive filter to a frequency of one-half the frequency of said clock signal.

4,521,908

PHASED-ARRAY SOUND PICKUP APPARATUS HAVING NO UNWANTED RESPONSE PATTERN

Naotaka Miyaji, Yamato; Atsushi Sakamoto, and Makoto Iwahara, both of Sagamihara, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Aug. 31, 1983, Ser. No. 528,100
Claims priority, application Japan, Sep. 1, 1982, 57-152470; Oct. 7, 1982, 57-176833; Oct. 7, 1982, 57-176834; Oct. 7, 1982, 57-176835
Int. Cl.³ H04M *1/20*
U.S. Cl. 381—92 **18 Claims**



1. A phased-array sound pickup apparatus comprising:

an array of microphones having a first subarray of micro-

phones and a second subarray of microphones, the microphones of said first subarray having individual unidirectional response patterns oriented on one side of the normal to said array and the microphones of said second subarray having individual unidirectional response patterns oriented on the other side of said normal;

a plurality of switches each having first and second switched positions;

a tapped variable delay line having a plurality of successively connected variable delay circuits with taps between successive ones of said delay circuits, said taps being coupled respectively through said switches in the first switched position to the microphones of said first subarray such that the signal from the microphone located at one end of the first subarray opposite to the orientation of said first subarray microphones is given a maximum delay, said taps being further coupled respectively through said switches in said second switched position to the microphones of said second subarray such that the signal from the microphone located on an end of the second subarray opposite to the orientation of the second subarray microphones is given a maximum delay, whereby incremental variable delays are introduced to the signals from said microphones so that the array has a main front lobe oriented on one side of the normal to said array when the switches are transferred to the first terminals and said main front lobe is oriented on the other side of said normal when said switches are transferred to the second terminals, the delayed signals being combined at an output terminal in a phased relationship dependent on the amount of delay introduced by each of said delay circuits; and

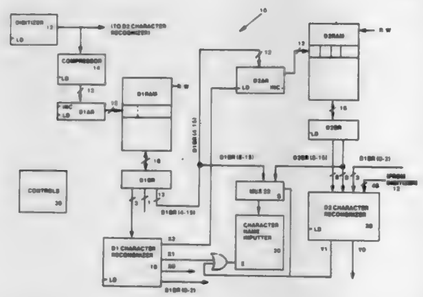
a delay control circuit for controlling said variable delay circuits and said switches in response to a manually adjustable setting.

4,521,909

DUAL LEVEL PATTERN RECOGNITION SYSTEM

Patrick S. Wang, Lexington, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Filed Oct. 4, 1983, Ser. No. 538,858
Int. Cl.³ G06K *9/70*
U.S. Cl. 382—38 **2 Claims**



1. Apparatus for generating a machine readable signal indicating which one of a set of reference characters corresponds to a visible pattern, including

means for storing signals indicative of a set of reference fine n-dimensional array values, each reference fine array value corresponding to one of the reference characters,

means for storing signals indicative of a set of reference coarse m-dimensional array values, where m is less than n, each reference coarse array value being derived either from a signal one only of said reference fine array values (in which case it will be designated an unambiguous value), or from any one of a plurality of said reference fine array values (in which case it will be designated an ambiguous value),

means for measuring with an optical instrument a workpiece visible pattern in each of n fields to provide a signal indicative of a workpiece fine n-dimensional array value and means for storing said last named signal,

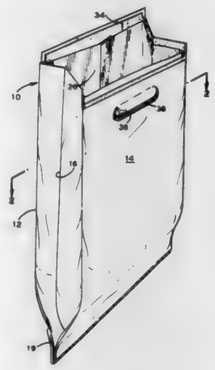
means for forming a signal indicative of a workpiece coarse m-dimensional array value from said workpiece fine array value signal, first comparing means for comparing the signal of the workpiece coarse array value with the signals of the set of reference coarse array values to produce a signal indicating the identification of the workpiece pattern with either an unambiguous reference coarse array value or an ambiguous reference coarse array value, means responsive to a signal from said first comparing means indicative of identification with an unambiguous array value to generate a signal indicative of the reference character associated with the identified unambiguous array value, second comparing means responsive to a signal from said first comparing means indicative of identification with an ambiguous array value to compare signals indicative of values of a preselected subset of elements from the plurality of reference fine array values associated with the identified ambiguous coarse array value with the signals indicative of values of corresponding elements of the workpiece fine array, to generate a signal indicative of identification of the workpiece pattern with a particular one of the reference characters associated with the identified ambiguous value.

4,521,910

MULTIWALL COOLER BAG

Stephen C. Keppel, Ridgefield, Conn.; Donald O. Newton, Washingtonville, N.Y., and Stephen R. Salt, Danbury, Conn., assignors to St. Regis Corporation, New York, N.Y.

Filed Apr. 19, 1984, Ser. No. 602,134
Int. Cl.³ B65D *30/08, 33/08*
U.S. Cl. 383—10 **5 Claims**



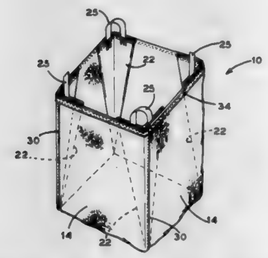
1. A multiwall cooler bag comprising inner and outer tubes having front and back walls connected by gussets, the inner tube comprising a ply of heat sealable material having its lower end heat sealed to closure, a strip of reinforcing material extending the length of and secured to the back and front walls of the outer tube, the front wall of the outer tube having its lower end formed with a closure flap overlapping and secured to the back wall of the outer tube, the back wall of the outer tube having its upper end formed with a closure flap overlapping the front wall of the outer tube when the bag is completely closed, the upper portion of the inner tube being free of the outer tube to permit independent closing of the inner tube before closing of the outer tube, an aperture formed in the strip-reinforcing portion and at the upper end of the front and back walls of the outer tube and having a tongue at its upper edge, the tongues being proportioned and arranged for bending through the apertures and upwardly against the upper closure flap to cooperate with the upper closure flap to provide a reinforced grip which is an integral part of the bag.

4,521,911

BULK CONTAINER

Robert L. Vance, Sheridan, Ark., assignor to St. Regis Corporation, New York, N.Y.

Filed Jan. 6, 1984, Ser. No. 568,894
Int. Cl.³ B65D *33/02, 33/14*
U.S. Cl. 383—20 **10 Claims**



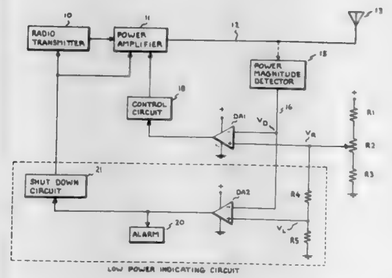
1. A bulk container made from a single rectangular piece of material and folded to provide a bottom wall, four side walls extending from the bottom wall, and four corner flaps each extending between adjacent side walls, each corner flap being integral with the bottom and side walls and folded into at least three portions, the first and second portions being folded against the surfaces of the corresponding side walls, and the third portion being folded against the surfaces of the first and second portions, lifting loops mounted at the corners at the upper edges of the side walls, each loop having two legs disposed intermediate and overlying the third portion and the first and second portions of the corresponding corner flap, the side edges of adjacent side walls being stitched together, the legs of each loop being connected to the corresponding corner flap by stitching passing through the legs and all portions of the corresponding flap.

4,521,912

LOW POWER INDICATING CIRCUIT FOR A RADIO TRANSMITTER

Earnest A. Franke, Goode, and Wayne J. Faulkenberry, Lynchburg, both of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Jun. 9, 1983, Ser. No. 502,679
Int. Cl.³ H04B *17/00, 1/02*
U.S. Cl. 455—115 **5 Claims**



2. A low power indicating circuit for a radio transmitter comprising:

a. an output power magnitude detector for coupling to the output of said radio transmitter and producing a power magnitude signal related thereto;

b. first means for providing a selectable power magnitude reference signal;

c. second means coupled to said output power magnitude detector and to said first means for producing a feedback signal for application to said radio transmitter to control said output power magnitude as a function of the selected power magnitude provided by said first means;

d. a low power magnitude circuit coupled to said first means for selecting a low power magnitude signal therefrom;

e. third means coupled to said output power magnitude detector and to said low power magnitude circuit for producing a low power signal in response to said power magnitude signal being less than said low power magnitude signal;

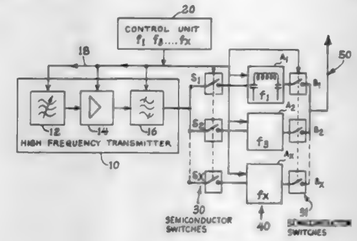
f. and means coupled to said third means for providing an alarm in response to said low power signal.

4,521,913

MULTIFREQUENCY ANTENNA MATCHING APPARATUS WITH AUTOMATIC TUNING

Franz R. Huber, Assling, and Axel Stark, Munich, both of Fed. Rep. of Germany, assignors to Rohde & Schwarz GmbH & Co., KG, Munich, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,715
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1981, 3127566
Int. Cl.³ H04B *1/02*
U.S. Cl. 455—121 **4 Claims**



1. An apparatus for matching the impedance of an antenna with the output impedance of a transmitter which generates an output signal having a frequency that varies according to a predetermined frequency scheme, comprising:

a plurality of antenna tuning means, each being automatically tunable to a plurality of frequencies and each having an input for receiving the output signal from the transmitter and an output for coupling to the antenna, the number of said antenna tuning means being less than the number of different frequencies in said predetermined frequency scheme;

first switching means for selectively providing an automatically controllable connection between the transmitter and any selected one of the inputs of said antenna tuning means; and

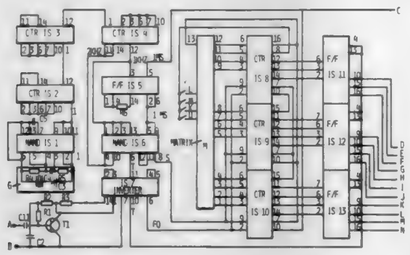
control means for automatically controlling said first switching means and for automatically tuning said antenna tuning means so that, for each of the frequencies in the predetermined frequency scheme, a selected one of said antenna tuning means is automatically tuned to match the impedance of the antenna with the output impedance of the transmitter, and the input of said selected antenna tuning means is automatically connected to the transmitter;

said control means repeatedly retuning at least one of the tuning means such that said at least one of the tuning means is automatically successively tuned to multiple ones of the frequencies in the predetermined frequency scheme during the transmission of signals from the transmitter to the antenna.

4,521,914
CIRCUIT ARRANGEMENT FOR INDICATING THE NAMES OF BROADCASTING STATIONS IN RADIO OR TV RECEIVERS

Branko Petrovic, Ebersteinweg 9, 1000 Berlin 37, Fed. Rep. of Germany

PCT No. PCT/DE81/00208, § 371 Date Jul. 19, 1982, § 102(e) Date Jul. 19, 1982, PCT Pub. No. WO82/01968, PCT Pub. Date Jun. 10, 1982
PCT Filed Nov. 25, 1981, Ser. No. 403,629
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1980, 3045037; Jan. 29, 1981, 3103377
Int. Cl.³ H04B *1/16*
U.S. Cl. 455—158 **8 Claims**



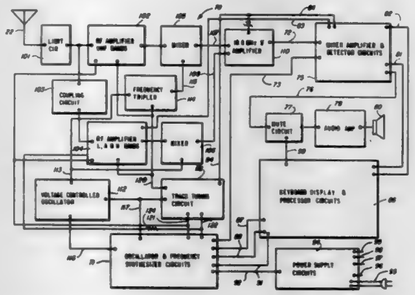
1. A circuit arrangement for automatically indicating the alphanumeric station designation for a selected received frequency in one of the plurality of frequency ranges in a radio or TV receiver comprising:
- means for determining the frequency of the received frequency signal, the determining means generating a signal corresponding to the received frequency;
- first memory means having addressable memory locations storing pre-determined address information, the addressable memory locations being arranged in groups corresponding to one of the plurality of frequency ranges of the received frequency signals;
- counter means, responsive to the signal from the frequency determining means, for counting the received frequency, the counter means addressing the first memory means for outputting address information therefrom;
- means for pre-setting the counter means to 0 for the lowest received frequency in each range of received frequencies;
- second memory means having addressable memory locations storing pre-determined alphanumeric station designations;
- the output from the first memory means addressing the second memory means; and
- indicator means, responsive to the output information from the second memory means, for displaying the station designation of the received frequency signal.

4,521,915
PROCESSOR CONTROLLED, SCANNING RADIO RECEIVER HAVING TABULAR STORAGE OF SERVICE BAND FREQUENCY CODES

William Baker, Indianapolis, Ind.; Gordon H. Smith, Santa Ana, Calif.; Xio I. Beach, Long Beach, Calif.; Gary F. Sallee, Yorba Linda, Calif., and Jeffrey I. Stein, Garden Grove, Calif., assignors to Masco Corporation of Indiana, Cumberland, Ind.

Filed May 28, 1980, Ser. No. 154,088
Int. Cl.³ H03J *7/18*
U.S. Cl. 455—165 **8 Claims**

1. In a scanning radio receiver, including frequency synthesizer means for generating a local oscillator signal for mixing with a received signal to produce an IF signal at a certain IF frequency, said frequency synthesizer means being digitally controlled and being responsive to an applied frequency code to develop a local oscillator frequency for reception of a signal at a frequency corresponding to the applied frequency code, a detector circuit including means for developing on a signal present line a signal indicating the receipt of a signal by the receiver, processor means including read only memory means for storing service group identification data which identifies a plurality of service bands each including a group of frequencies differing from one another by a certain incremental value with a limit frequency of the group being identified by a first data portion and with the number of frequencies in the group being identified by a second data portion, keyboard means for supplying control data for selection of said service bands, means connecting said processor means to said signal present

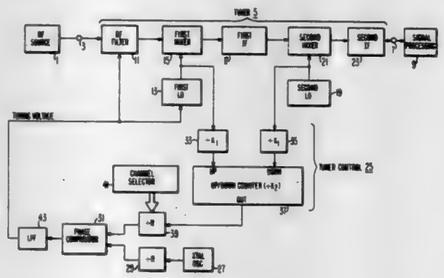


line and to said keyboard means, said processor means including code-developing means responsive to control data from said keyboard means and to corresponding service group identification data from said read only memory means for developing a series of frequency codes corresponding to said limit frequency and frequencies differing therefrom and from each other by said certain incremental values with the number of frequency codes in said series being equal to the number of frequencies in said group, output means for sequential output of said series of codes to said synthesizer means, and means for inhibiting operation of said output means in response to a signal on said signal present line.

4,521,916
FREQUENCY SYNTHESIS TUNING CONTROL SYSTEM FOR A DOUBLE-CONVERSION TUNER

Charles M. Wine, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 29, 1983, Ser. No. 556,356
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—182 **15 Claims**



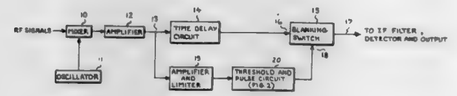
1. Control apparatus for a double-conversion tuner for tuning an RF signal corresponding to a selected channel, said double-conversion tuner including a first oscillator for generating a first local oscillator signal having a frequency controlled in response to a control signal and a second local oscillator for generating a second local oscillator signal, comprising:

counting means having first and second inputs coupled to receive first and second input pulse signals for producing at an output an output pulse signal having a number of pulses in a given time interval which number increases with each pulse of one said input pulse signals in said given time interval and which number decreases with each pulse of the other one of said input pulse signals in said given time interval;
- first coupling means for coupling said first local oscillator signal to said first input of said counting means as said second input pulse signal;
- second coupling means for coupling said second local oscillator signal to said second input of said counting means as said second input pulse signal;
- a source of a reference frequency signal; and
- comparing means for comparing the frequency of said output pulse signal of said counting means and the frequency of said reference frequency signal to generate said control signal for said first local oscillator.

4,521,917
NOISE BLANKING CIRCUIT AND METHOD

John R. Holt, Jr., Rustburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Nov. 14, 1983, Ser. No. 551,401
Int. Cl.³ H04B *1/10*
U.S. Cl. 455—223 **7 Claims**

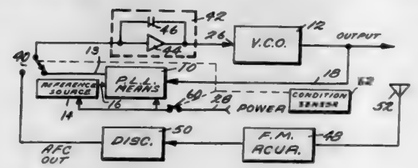


4. A method for blanking noise signals present in information signals provided by a receiving device, comprising the steps of:
- a. amplifying the received signals;
- b. limiting the amplitude of the amplified signals;
- c. detecting the amplitude of the limited signals;
- d. providing an output in response to the detected signals exceeding a selected amplitude threshold in less than a predetermined time following the beginning of each detected signal;
- e. generating a pulse of selected time duration in response to the provided output;
- f. and utilizing the pulse to prevent the received signals from being used for the duration of the pulse.

4,521,918
BATTERY SAVING FREQUENCY SYNTHESIZER ARRANGEMENT

Richard F. Challen, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Nov. 10, 1980, Ser. No. 205,516
Int. Cl.³ H04B *1/02*; H03L *7/02, 7/06*
U.S. Cl. 455—343 **4 Claims**

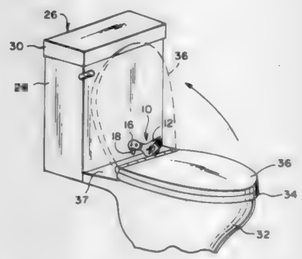


1. A frequency synthesizer circuit comprising:
- a voltage controlled oscillator (VCO) having a control input;
- an integrator having an output coupled to said VCO control input and an input;
- phase-locked loop (PLL) synthesizer means for comparing a signal output of said VCO with a signal from a reference oscillator and (b) providing a loop control signal related thereto;
- means for applying and interrupting power to the PLL synthesizer means;
- switch means for selectively coupling the input of the integrator to either (a) the loop control signal from the PLL synthesizer means when power is applied thereto or (b) a receiver discriminator signal derived from a discriminator separate and distinct from said PLL synthesized means when power to the PLL synthesizer means is interrupted, whereby the frequency of the VCO is controlled by the receiver discriminator signal during periods of power interruption to the PLL synthesizer means.

4,521,919
BATHROOM RADIO

Lawrence Molloy, 12 Welwyn Rd. Apt. 1G, Great Neck, N.Y. 11021

Filed Aug. 30, 1983, Ser. No. 527,782
Int. Cl.³ H04B *1/08*
U.S. Cl. 455—344 **4 Claims**



1. A bathroom radio which comprises:
- (a) a radio circuit;
- (b) a housing to hold said radio circuit within in the form of an animal having a head;
- (c) means for securing said housing in a place between a toilet tank and a toilet seat cover;
- (d) a pressure sensitive switch located within the head of said animal electrically connected to said radio circuit so that when the toilet seat is lifted up the cover will press against said pressure sensitive switch to close said radio circuit and when the toilet seat cover is placed back down said pressure sensitive switch will open turning said radio circuit off
- (e) a tuner to change the radio stations;
- (f) a battery compartment to store a battery so that said housing can be opened to remove and replace said battery when needed; and
- (g) a flexible ring contained in said head of said animal so that said pressure sensitive switch can be positioned to make contact with said seat cover.

4,521,920

METHOD AND AN ARRANGEMENT FOR INCREASING THE DYNAMIC RANGE AT THE INPUT STAGE OF A RECEIVER IN AN OPTICAL FIBRE INFORMATION TRANSMISSION SYSTEM

Gunnar Forsberg, Stockholm, and Lars Ingre, Huddinge, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

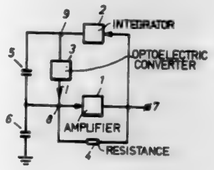
PCT No. PCT/SE81/00238, § 371 Date Apr. 5, 1982, § 102(e) Date Apr. 5, 1982, PCT Pub. No. WO82/00931, PCT Pub. Date Mar. 18, 1982

PCT Filed Aug. 25, 1981, Ser. No. 365,504

Claims priority, application Sweden, Sep. 1, 1980, 8006098

Int. Cl.³ H04B 9/00

U.S. Cl. 455—619 7 Claims



1. A method of increasing the dynamic range in a transimpedance type of input stage in a receiver of an optical fibre information transfer system having as an optical input a two-terminal non-amplifying photodiode with a parallel capacitance with one of the terminals of the photodiode being connected to the input of a high impedance amplifier, said method comprising the steps of integrating the output signal of said high impedance amplifier and feeding the resulting integrated signal to the other terminal of the photodiode and capacitive coupling the integrated signal received at said other terminal to said input of the high impedance amplifier.

DESIGNS

JUNE 4, 1985

279,040

HOSPITAL GOWN

Joan R. Horox, 211 Tangelo Dr., Clairton, Pa. 15025

Filed Mar. 8, 1982, Ser. No. 355,515

Term of patent 14 years

U.S. Cl. D2—25



279,041

PANTS

I. Weir Sears, Davenport; John E. Hostetler, Bettendorf, and William H. Hulsebusch, DeWitt, all of Iowa, assignors to Apparel Form Company, Davenport, Iowa

Filed Jul. 6, 1982, Ser. No. 395,820

Term of patent 14 years

U.S. Cl. D2—28



279,042

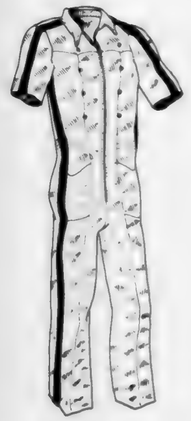
JUMP SUIT

Eddie O. Aquilina, deceased, late of Palm Springs, Calif., and Lacadena Aquilina, heir, 327 Sanchez St., Santa Fe, N. Mex. 87501

Filed Dec. 15, 1982, Ser. No. 434,506

Term of patent 14 years

U.S. Cl. D2—29



279,043

JEANS

Ben F. Stanley, 198 Wade Dr., Windsor, Calif. 95492

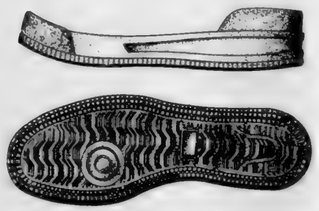
Filed Mar. 14, 1983, Ser. No. 474,791

Term of patent 14 years

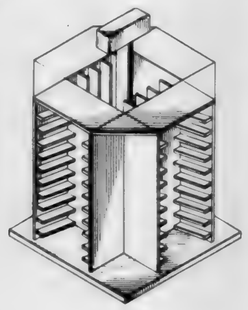
U.S. Cl. D2—29



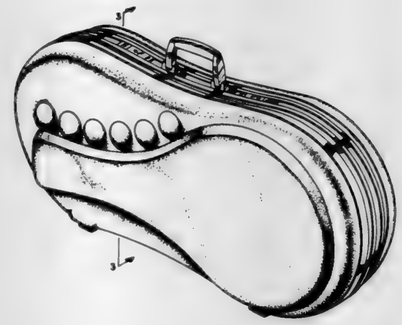
279,044
OUTSOLE FOR ATHLETIC SHOE
Edward J. Norton, Kingston, N.H.; Ronald L. Clay, W. Boxford, and Zenon O. Smotrycz, Woburn, both of Mass., assignors to New Balance Athletic Shoe, Inc., Boston, Mass.
Filed Feb. 1, 1983, Ser. No. 462,968
Term of patent 14 years
U.S. Cl. D2—320



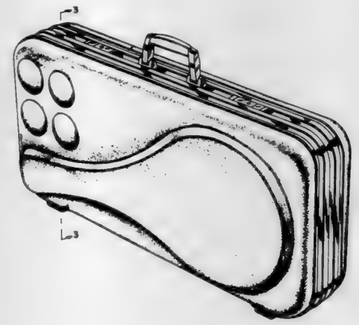
279,045
CASSETTE TAPE CAROUSEL
Nathaniel Hall, 618 Hedgeleaf Ave., Capitol Heights, Md. 20743
Filed May 5, 1983, Ser. No. 491,915
Term of patent 14 years
U.S. Cl. D3—35



279,046
TENNIS SUITCASE
Jarmo A. Soininen, Helsinki, Finland, assignor to Asoma OY, Helsinki, Finland
Filed Aug. 4, 1982, Ser. No. 405,018
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1982, 164/82
Term of patent 14 years
U.S. Cl. D3—36



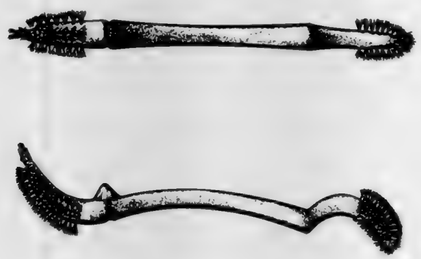
279,047
TENNIS SUITCASE
Jarmo A. Soininen, Helsinki, Finland, assignor to Asoma OY, Helsinki, Finland
Filed Aug. 4, 1982, Ser. No. 405,020
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1982, 164/82
Term of patent 14 years
U.S. Cl. D3—36



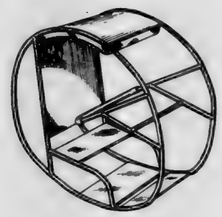
279,048
COMBINED GARMENT BAG AND OVERNIGHT CASE
James H. Allen, Covington, Ky., assignor to 'totes' incorporated, Loveland, Ohio
Filed Apr. 18, 1983, Ser. No. 486,055
Term of patent 14 years
U.S. Cl. D3—71



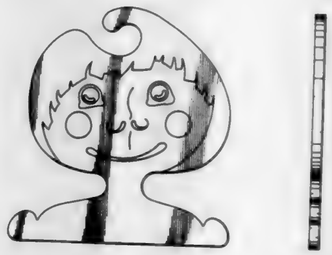
279,049
COMBINED MOUTH BRUSH AND DENTAL PROSTHESIS BRUSH
Tapio Putkonen, Mannerheimintie 27 A 15, Domicile, 00250 Helsinki 25, Finland
Filed Mar. 31, 1983, Ser. No. 480,839
Claims priority, application Finland, Oct. 11, 1982, 885/82
Term of patent 14 years
U.S. Cl. D4—106



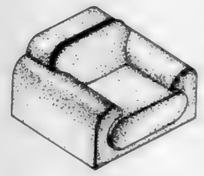
279,050
CHILDS TOY
Lowell Tietz, 738 Wheaton Ave., Roseville, Minn. 55113
Filed Sep. 1, 1982, Ser. No. 413,800
Term of patent 14 years
U.S. Cl. D6—348



279,051
CLOTHES HANGER
Rosalie C. Shockley, 12 Running Deer, Benton, La. 71006
Filed Jan. 13, 1983, Ser. No. 457,764
Term of patent 14 years
U.S. Cl. D6—316



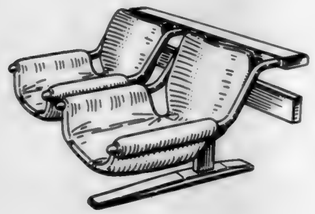
279,052
SEAT
R. J. McDonald, 166-41 Powells Cove Bldg., Whitestone, N.Y. 11357
Filed Mar. 29, 1983, Ser. No. 465,489
Term of patent 14 years
U.S. Cl. D6—334



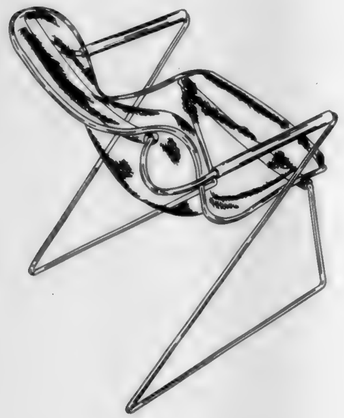
279,053
CHAISE
Robert D. Vanderminden, Granville, N.Y., assignor to The Telescope Folding Furniture Co., Granville, N.Y.
Filed Mar. 31, 1983, Ser. No. 480,743
Term of patent 14 years
U.S. Cl. D6—361



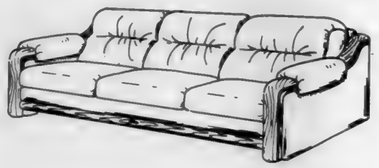
279,054
SEAT
Edward F. Longley, 615 Lyons Ct., Milton, Ontario, L9T 4R7, Canada, and Maurice Burke, P.O. Box 55, Warwick CV34 5HY, England
Filed Jul. 23, 1982, Ser. No. 401,161
Term of patent 14 years
U.S. Cl. D6—362



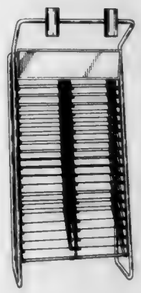
279,055
CHAIR
Charles R. Pollock, 34-24 86th St., Jackson Heights, N.Y. 11372
Filed Sep. 15, 1982, Ser. No. 418,511
Term of patent 14 years
U.S. Cl. D6—373



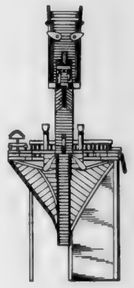
279,056
SOFA
Deborah L. Nelson, High Point, N.C., assignor to The Bean Station Furniture Factory, Bean Station, Tenn.
Filed Feb. 7, 1983, Ser. No. 464,340
Term of patent 14 years
U.S. Cl. D6—381

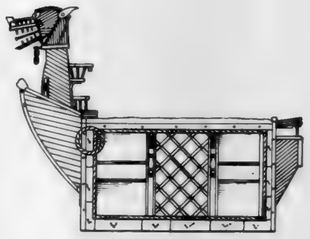


279,057
COMBINED MODULAR DISPLAY RACK AND LIGHTING FIXTURES UNIT
Richard Bolduc, Quebec, Canada, assignor to Domco Industries Ltd., Lachine, Canada
Filed Aug. 9, 1982, Ser. No. 406,381
Term of patent 14 years
U.S. Cl. D6—399

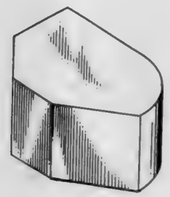


279,058
BAR
Rene P. Roy, 112 Sherbrook Ave., Hartford, Conn. 06106
Filed Aug. 27, 1982, Ser. No. 412,356
Term of patent 14 years
U.S. Cl. D6—453





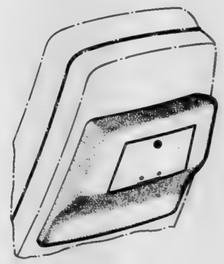
279,059
TABLE
Paul Tekel, 515 SW. 62nd Ave., Plantation, Fla. 33317
Filed Sep. 29, 1982, Ser. No. 427,749
Term of patent 14 years
U.S. Cl. D6—482



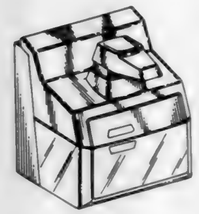
279,060
REVERSIBLE SEAT CUSHION AND BACK REST UNIT
M. Bernard Sheppard, 1031 Redondo Blvd., Los Angeles, Calif. 90019
Filed Sep. 1, 1982, Ser. No. 413,669
Term of patent 14 years
U.S. Cl. D6—502



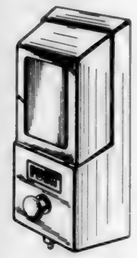
279,061
CAR SEAT BACK STORAGE COMPARTMENT
Steven Zabielinsky, 7573 SW. 96th Ct., Miami, Fla. 33173
Filed Sep. 17, 1982, Ser. No. 419,222
Term of patent 14 years
U.S. Cl. D6—509



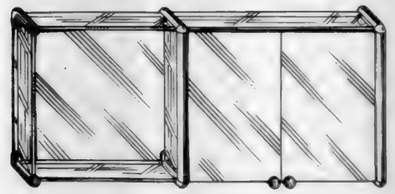
279,062
LIQUID DISPENSER
Joseph S. Kanfer, 2825 N. Walnut Ridge, Akron, Ohio 44313
Filed May 31, 1983, Ser. No. 499,314
Term of patent 14 years
U.S. Cl. D6—545



279,063
SOAP DISPENSER
George O. Haskell, III, and Francis J. Perzinski, both of Macon, Ga., assignors to Southern Chemical Products Co., Macon, Ga.
Filed Oct. 19, 1983, Ser. No. 543,474
Term of patent 14 years
U.S. Cl. D6—545



279,064
COMBINED MIRROR CABINET AND SHELF UNIT
Winfried Scholl, Düsseldorf, Fed. Rep. of Germany, assignor to HEWI GmbH, Fed. Rep. of Germany
Division of Ser. No. 301,435, Sep. 11, 1981,. This application May 14, 1984, Ser. No. 609,965
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1981, MR 162; Mar. 14, 1981, MR 163; Mar. 14, 1981, MR 164; Mar. 14, 1981, MR 165; Mar. 14, 1981, MR 166; Mar. 14, 1981, MR 167; Mar. 14, 1981, MR 168; Mar. 14, 1981, MR 169; Mar. 14, 1981, MR 170; Mar. 14, 1981, MR 171
Term of patent 14 years
U.S. Cl. D6—561



279,065
TUREEN
Walter Everhan, Weisshausstrasse 34-38, D-5000 Kohn 41, Fed. Rep. of Germany
Filed Nov. 3, 1982, Ser. No. 438,983
Term of patent 14 years
U.S. Cl. D7—17



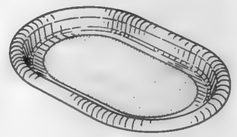


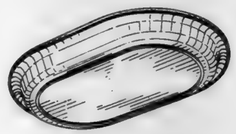
279,066
SUGAR BOWL
Walter Everhan, Weisshausstrasse 34-38, D-5000 Kohn 41, Fed. Rep. of Germany
Filed Nov. 3, 1982, Ser. No. 438,984
Term of patent 14 years
U.S. Cl. D7—17



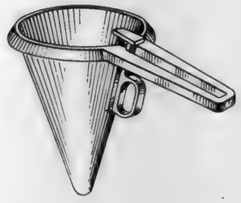


279,067
SERVING TRAY OR THE LIKE
Martin Kuster, 378 Queen St. E., Toronto, Ontario, Canada
Filed Oct. 19, 1982, Ser. No. 435,288
Term of patent 14 years
U.S. Cl. D7—37

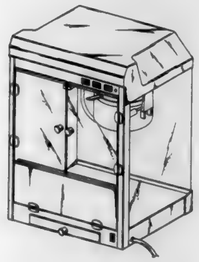




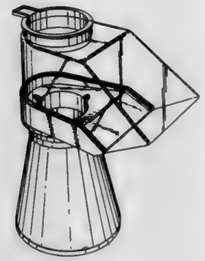
279,068
DISPENSING FUNNEL FOR MELTED CANDY
Ralph R. Burin, Glen Ellyn, Ill., assignor to Wilton Enterprises, Inc., Woodridge, Ill.
Filed Dec. 2, 1982, Ser. No. 446,349
Term of patent 14 years
U.S. Cl. D7—312



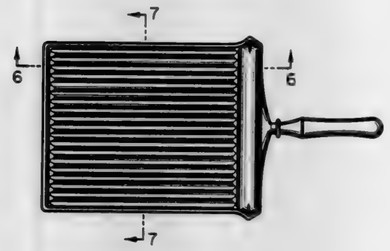
279,069
CORN POPPER
John D. Goodlaxson, 701 S. Goodrich, Colfax, Iowa 50054
Filed Sep. 29, 1982, Ser. No. 427,779
Term of patent 14 years
U.S. Cl. D7—325



279,070
HOT AIR POPCORN POPPER
Thurber H. Morrison, Evanston; Robert W. Becker, Naperville, and Robert S. Huff, Oak Park, all of Ill., assignors to National Presto Industries, Inc., Eau Claire, Wis.
Filed Mar. 17, 1983, Ser. No. 476,119
Term of patent 14 years
U.S. Cl. D7—325



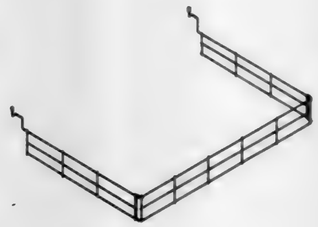
279,071
BROILING GRILL
Liviu Christea, 26-45 Ninth St., Astoria, N.Y. 11102
Filed Aug. 30, 1982, Ser. No. 412,778
Term of patent 14 years
U.S. Cl. D7—359



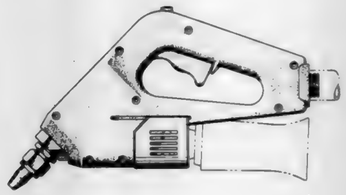
279,072
KITCHEN MACHINE BASE UNIT
Marten F. Elkerbout, Pieze, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 10, 1983, Ser. No. 456,946
Claims priority, application Benelux, Jul. 13, 1982, 57015-01; Jul. 13, 1982, 57015-02
Term of patent 14 years
U.S. Cl. D7—386



279,073
STOVE GUARD
Nicholas R. Simpson, 100 Sunvalley Drive S.E., Calgary, Alberta, Canada (T2X 1W3), and Ronald U. Rempe, 3307 Barrett Place N.W., Calgary, Alberta, Canada (T2L 1W5)
Filed Oct. 28, 1983, Ser. No. 546,351
Claims priority, application Canada, Apr. 28, 1983, 28034831
Term of patent 14 years
U.S. Cl. D7—402



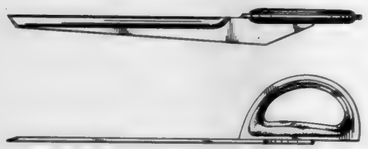
279,074
HAND HELD ADHESIVE GUN
R. Blakeley Honeyman, Carmel; Thomas D. Taggart, Pacific Grove, and Robert E. Taggart, Carmel, all of Calif., assignors to Lockwood Technical, Inc., Monterey, Calif.
Filed May 24, 1982, Ser. No. 381,323
Term of patent 14 years
U.S. Cl. D8—14.1



279,075
HAND HELD HOT MELT DISPENSER
Octavio Nuesse; Rainer Samson, both of Muenster, and Karl Majert, Herne, all of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.
Filed Nov. 16, 1982, Ser. No. 442,176
Claims priority, application Fed. Rep. of Germany, May 17, 1982, 10MR607
Term of patent 14 years
U.S. Cl. D8—30



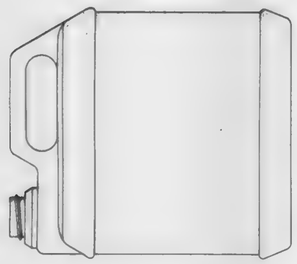
279,076
PAPER CUTTING KNIFE
Toru Hayashi, 1 Obora, Seki, Gifu, 501-32, Japan
Filed Oct. 6, 1982, Ser. No. 433,168
Term of patent 14 years
U.S. Cl. D8—102



279,077
BOTTLE
Archie G. Drummond, Jr., Paletine, and Dale E. Fahnstrom, Riverside, both of Ill., assignors to Helene Curtis Industries, Inc., Chicago, Ill.
Filed Jan. 17, 1983, Ser. No. 458,274
Term of patent 14 years
U.S. Cl. D9—371



279,078
OIL CONTAINER
Thomas A. Franchi, Cobham, England, and Leslie B. Rogers, Red Bank, N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Jan. 3, 1983, Ser. No. 455,359
Term of patent 14 years
U.S. Cl. D9—376



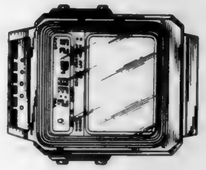
279,079
BOTTLE
Marie-Annick H. Pourtout, Paris, France, assignor to Courreges Parfums, France
Filed Mar. 18, 1983, Ser. No. 476,464
Claims priority, application France, Sep. 27, 1982, 82 3254
Term of patent 14 years
U.S. Cl. D9—410



279,080
CONTAINER CLOSURE
Fumio Negishi, Torrance, Calif., assignor to Three Bond Co., Ltd., Hachioji, Japan
Filed Apr. 4, 1983, Ser. No. 482,330
Term of patent 14 years
U.S. Cl. D9—453



279,081
WATCH
Susumu Suzuki; Noritaka Uchihori, and Naoto Fukazawa, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Feb. 11, 1983, Ser. No. 465,718
Claims priority, application Japan, Aug. 11, 1982, 57-36343
Term of patent 14 years
U.S. Cl. D10—38

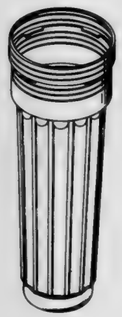


279,082
EARRING
Marina Bulgari, Athens, Greece, assignor to Marina B. Creations, S.A., Vaduz, Liechtenstein
Filed Jun. 6, 1983, Ser. No. 501,376
Claims priority, application Italy, Dec. 6, 1982, 36196/82[U]
Term of patent 14 years
U.S. Cl. D11—43

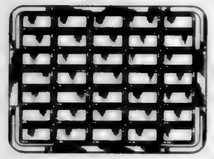




279,083
CONTAINER FOR PLANTS
Jack V. Gray, 13791 Jackson St., Garden Grove, Calif. 92643
Filed Feb. 18, 1983, Ser. No. 467,777
Term of patent 14 years
U.S. Cl. D11—152

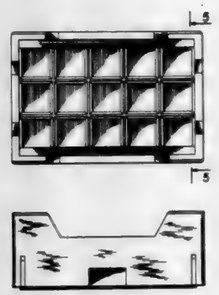


279,084
BOX FOR CULTIVATING VEGETABLES OR THE LIKE
Toshiro Kaneko, 20-3, Nakashinden, Yaizu-shi, Shizuoka-ken, Japan
Filed Oct. 18, 1983, Ser. No. 543,099
Term of patent 14 years
U.S. Cl. D11—155

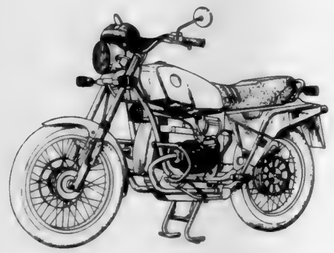




279,085
BOX FOR CULTIVATING VEGETABLES OR THE LIKE
Toshiro Kaneko, 20-3, Nakashinden, Yaizu-shi, Shizuoka-ken, Japan
Filed Dec. 23, 1983, Ser. No. 565,183
Term of patent 14 years
U.S. Cl. D11—155



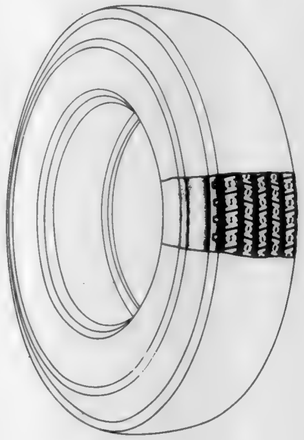
279,086
MOTORCYCLE
Klaus V. Gevert, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke, AG, Fed. Rep. of Germany
Filed Dec. 30, 1982, Ser. No. 454,539
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, MR 13067
Term of patent 14 years
U.S. Cl. D12—110



279,087
TIRE
Timothy J. Lassan, Kent, and Richard J. Skerl, Barberton, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Jan. 18, 1983, Ser. No. 459,020
Term of patent 14 years
U.S. Cl. D12—147



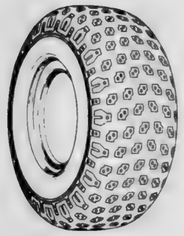
279,088
TIRE
Daniel Giron, Greer, S.C., assignor to Michelin Recherche et Technique S.A., Basel, Switzerland
Filed Aug. 29, 1983, Ser. No. 527,315
Term of patent 14 years
U.S. Cl. D12—147



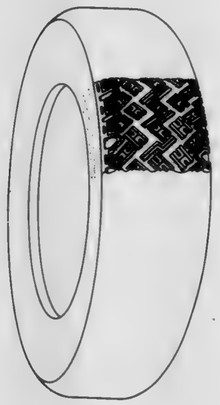
279,089
TIRE
David A. Wright, Louisville, Colo., assignor to The B. F. Goodrich Company, Akron, Ohio
Filed Oct. 3, 1983, Ser. No. 538,701
Term of patent 14 years
U.S. Cl. D12—147



279,090
MOTORCYCLE TIRE
Hiroshi Kojima, and Kiyoshi Takase, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Sep. 8, 1983, Ser. No. 530,433
Claims priority, application Japan, May 6, 1983, 58-18822
Term of patent 14 years
U.S. Cl. D12—149



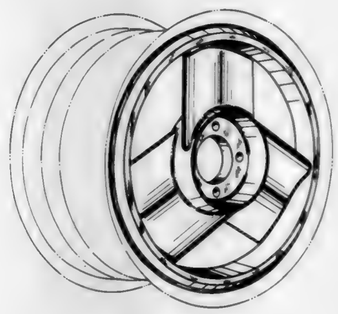
279,091
TIRE FOR ROAD VEHICLES
Manuel G. Balbis, and Silvana Hinrichsen, both of Rome, Italy, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jan. 27, 1983, Ser. No. 461,360
Claims priority, application Italy, Aug. 4, 1982, 53605/82[U]
Term of patent 14 years
U.S. Cl. D12—151



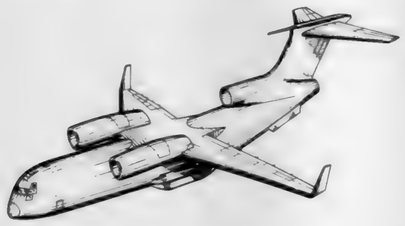
279,092
TRAILER HITCH GUIDE
Alvin A. Snaper, 2800 Cameo Cir., Las Vegas, Nev. 89107
Filed Jul. 13, 1982, Ser. No. 397,832
Term of patent 14 years
U.S. Cl. D12—162



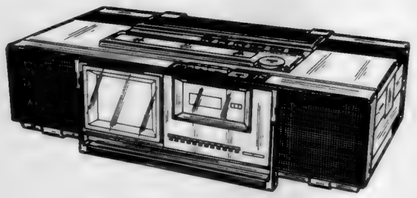
279,093
VEHICLE WHEEL CENTER
Donald J. Reid, Plymouth, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Jun. 25, 1982, Ser. No. 392,097
Term of patent 14 years
U.S. Cl. D12—211



279,094
AIRPLANE
Jay A. Ferrell; Lucas J. Kimes, and Robert E. Spitzer, all of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed May 28, 1982, Ser. No. 382,855
Term of patent 14 years
U.S. Cl. D12—340



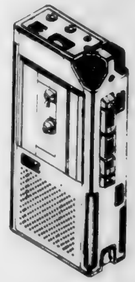
279,095
COMBINED TELEVISION AND RADIO RECEIVER AND TAPE RECORDER
Naoyuki Kato; Takahisa Yubisui, and Masumi Kanari, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jul. 12, 1982, Ser. No. 397,250
Claims priority, application Japan, Dec. 29, 1981, 56-57947
Term of patent 14 years
U.S. Cl. D14—5



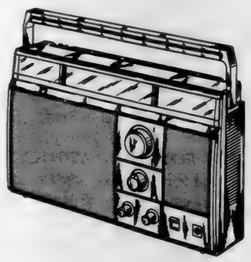
279,096
COMBINED TAPE DECK, PHONOGRAPH, TUNER AND AMPLIFIER
Takao Oura, and Hideki Okada, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 23, 1982, Ser. No. 444,815
Claims priority, application Japan, Jul. 5, 1982, 57-30278
Term of patent 14 years
U.S. Cl. D14—5



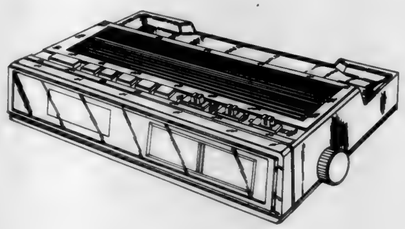
279,097
TAPE RECORDER
Kazuaki Takata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1983, Ser. No. 470,471
Claims priority, application Japan, Sep. 6, 1982, 57-40639
Term of patent 14 years
U.S. Cl. D14—6



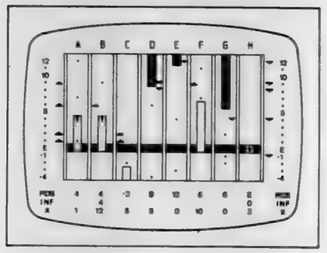
279,098
PORTABLE RADIO RECEIVER
Sies K. Brandsma, Eersel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 23, 1982, Ser. No. 422,227
Claims priority, application United Kingdom, Apr. 8, 1982, 1006072
Term of patent 14 years
U.S. Cl. D14—70



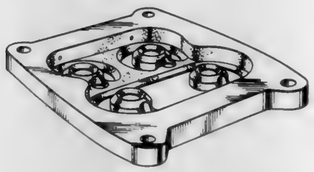
279,099
COMBINED CLOCK RADIO AND TELEPHONE BASE
Elliot I. Baum, Dix Hills, N.Y., assignor to QT&T, Inc., Brentwood, N.Y.
Filed Mar. 21, 1983, Ser. No. 477,176
Term of patent 14 years
U.S. Cl. D14—73



279,100
VISUAL CONTROL PANEL FOR TELEVISION MONITOR FOR MONITORING THE POSITION OF INDIVIDUAL ELEVATORS OF A GROUP OF ELEVATORS OR SIMILAR ARTICLE
Joris Schröder, Lucerne, and Thomas Hinderling, Ebikon, both of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland
Filed Oct. 25, 1982, Ser. No. 436,529
Claims priority, application Benelux, Apr. 29, 1982, DM/001419
Term of patent 14 years
U.S. Cl. D14—115



279,101
MULTIPLE VENTURI GASOLINE/AIR MIXER
Walter C. Halcomb, Sr., 600 Galaxie, Harrisonville, Mo. 64701; W. Carl Halcomb, Jr., 9220 Ensley La., Leawood, Kans. 66206, and Jeff D. McFerron, 600 James St., Harrisonville, Mo. 64701
Filed Apr. 28, 1983, Ser. No. 489,567
Term of patent 14 years
U.S. Cl. D15—5



279,102
GUITAR BODY OR THE LIKE
Thomas C. Holmes, 2662 Union Hill Rd., Joelton, Tenn. 37080
Filed Sep. 28, 1981, Ser. No. 306,320
Term of patent 14 years
U.S. Cl. D17—20



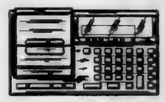
279,103
DRUM CLAMP BRACKET
Raymond D. Ayotte, 7600 Malahat Ave., Richmond, British Columbia, Canada (V7A 4G9)
Filed Feb. 23, 1983, Ser. No. 469,080
Term of patent 14 years
U.S. Cl. D17—22



279,104
ELECTRONIC PRINTER WITH CALCULATOR
Noriko Satake, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Aug. 10, 1983, Ser. No. 522,191
Claims priority, application Japan, Feb. 14, 1983, 58-5267
Term of patent 14 years
U.S. Cl. D18—2



279,105
ELECTRONIC CALCULATOR
Masaji Sawada, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Jan. 5, 1983, Ser. No. 455,821
Claims priority, application Japan, Jul. 15, 1982, 57-32169
Term of patent 14 years
U.S. Cl. D18—7





279,106
DESK-TOP CALCULATOR
Masaji Sawada; Hiroshi Sakaguchi; Shigeaki Hayashi, and Kazuo Yamada, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jan. 28, 1983, Ser. No. 461,880
Term of patent 14 years
U.S. Cl. D18—7



279,107
DESK-TOP ELECTRONIC CALCULATOR
Nobuo Kikuchi, Tokyo, and Hideo Fushimoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 18, 1983, Ser. No. 486,221
Claims priority, application Japan, Oct. 20, 1982, 57-47793
Term of patent 14 years
U.S. Cl. D18—7



279,108
PRINTING CALCULATOR
Masaji Sawada, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Apr. 25, 1983, Ser. No. 488,115
Claims priority, application Japan, Oct. 25, 1982, 57-48534
Term of patent 14 years
U.S. Cl. D18—7



279,109
CALCULATOR
Takahisa Yubisui; Hiroshi Sakaguchi; Keiji Sakata, and Megumi Shinohara, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Apr. 27, 1983, Ser. No. 489,155
Claims priority, application Japan, Oct. 27, 1982, 57-49122
Term of patent 14 years
U.S. Cl. D18—7

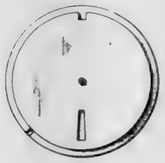




279,110
ELECTRONIC CALCULATOR WITH PRINTER
Noriko Takahashi, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed May 19, 1983, Ser. No. 496,119
Claims priority, application Japan, Nov. 25, 1982, 57-53257
Term of patent 14 years
U.S. Cl. D18—7

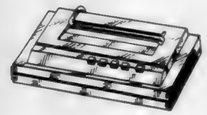


279,111
WATER TEMPERATURE CALCULATOR FOR BAKERY PRODUCTS
Peter L. Wilkinson, 231 Fair St., Warwick, R.I. 02888
Filed Sep. 29, 1982, Ser. No. 426,299
Term of patent 14 years
U.S. Cl. D18—10





279,112
PRINTER FOR DESK-TOP ELECTRONIC CALCULATOR
Nobuo Kikuchi, Tokyo, and Hideo Fushimoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 18, 1983, Ser. No. 486,223
Claims priority, application Japan, Oct. 20, 1982, 57-47794
Term of patent 14 years
U.S. Cl. D18—12



279,113
PORTFOLIO
Betty M. Beall, 1801 Century Park East, Los Angeles, Calif. 90067
Filed Feb. 1, 1983, Ser. No. 463,061
Term of patent 14 years
U.S. Cl. D19—26



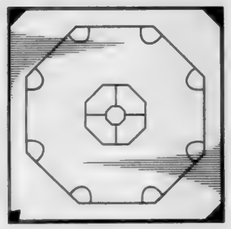
279,114
PEN
Robert Adell, Novi, Mich., assignor to U.S. Product Development Company, Sunnyvale, Tex.
Filed May 19, 1982, Ser. No. 379,581
Term of patent 14 years
U.S. Cl. D19—42



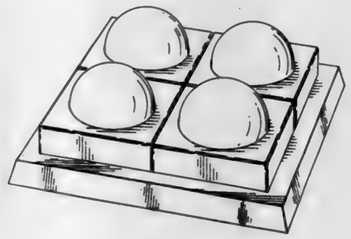
279,115
BALL-POINT PEN
Yoshitsugu Nishida, Tenri, Japan, assignor to Kabushiki Kaisha Kuretake-Seishodo, Nara, Japan
Filed Nov. 10, 1982, Ser. No. 440,638
Term of patent 14 years
U.S. Cl. D19—51



279,116
GAME BOARD
James W. Giallo, Jr., 2995 Woodlawn Ave., San Marino, Calif. 91108
Filed Sep. 23, 1982, Ser. No. 422,208
Term of patent 14 years
U.S. Cl. D21—34



279,117
SHAPE SORTING TOY
Peter G. Adams, Lingfield nr. East Grinstead, England, assignor to Hestair Kiddicraft Limited, Surrey, England
Filed Jun. 3, 1982, Ser. No. 384,542
Claims priority, application United Kingdom, Dec. 3, 1981, 1003972
Term of patent 14 years
U.S. Cl. D21—65



279,118
TOY LAWN TRIMMER
Ronald R. Klawitter, Hermann, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.
Filed May 24, 1982, Ser. No. 381,074
Term of patent 14 years
U.S. Cl. D21—120



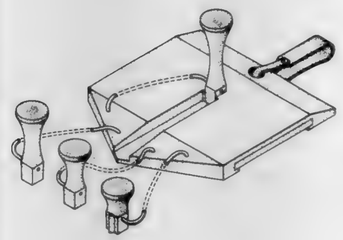
279,119
STUFFED TOY BEAR WITH FACE CARICATURE
Steven Yuranyi, 5720 Cavendish Blvd., Apt. 1401, Cote St. Luc, Quebec, Canada
Filed Sep. 27, 1982, Ser. No. 424,634
Term of patent 14 years
U.S. Cl. D21—159



279,120
JOGGING BELT
Mark Spangler, Brooklyn Center, Minn., assignor to Palantir Inc., Brooklyn Center, Minn.
Filed Jan. 13, 1984, Ser. No. 570,696
Term of patent 14 years
U.S. Cl. D21—191



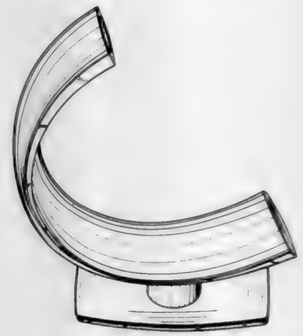
279,121
COMBINED TETHERED GOLF TEES AND BASE THEREFOR
Gordon D. Wampler, 302 Sutton Bridge Rd., Box 701, Gadsden, Ala. 35901
Filed Apr. 1, 1983, Ser. No. 481,485
Term of patent 14 years
U.S. Cl. D21—208



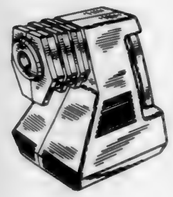
279,122
FISHING ROD HOLDER
Daniel J. Mohel, 1408 Summit Cir., Taylor, Tex. 76574
Filed Jan. 17, 1983, Ser. No. 432,303
Term of patent 14 years
U.S. Cl. D22—13



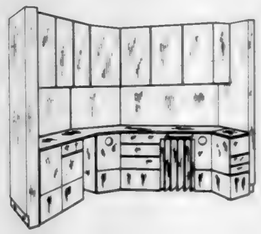
279,123
BATH SPOUT OR SIMILAR ARTICLE
James E. Niemann, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.
Filed Mar. 7, 1983, Ser. No. 472,797
Term of patent 14 years
U.S. Cl. D23—32



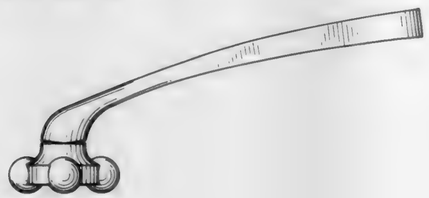
279,124
PORTABLE BLOWER FOR IGNITING CHARCOAL
Philip W. Jensen, and Karl-Heinz Stawski, both of Hood River, Oreg., assignors to P & D, Hood River, Oreg.
Filed Sep. 30, 1982, Ser. No. 429,142
Term of patent 14 years
U.S. Cl. D23—162



279,125
DENTIST SERVICE UNIT
David E. J. Newman, Toronto, Canada, assignor to D.I. Retail Planning & Design Ltd., Toronto, Canada
Filed Aug. 12, 1982, Ser. No. 407,596
Claims priority, application Canada, Apr. 27, 1982, 27-04-82-13
Term of patent 14 years
U.S. Cl. D24—4



279,126
FACIAL MASSAGE INSTRUMENT
Charles Kaeser, Pully, Switzerland, assignor to P.F. Cosmetique, Paris, France
Filed Nov. 29, 1982, Ser. No. 445,151
Claims priority, application France, Jun. 8, 1982, 822000
Term of patent 14 years
U.S. Cl. D24—36





279,127
FLUORESCENT LAMP
Masumi Suzuki, Funabashi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Nov. 29, 1982, Ser. No. 445,041
Term of patent 14 years
U.S. Cl. D26—3



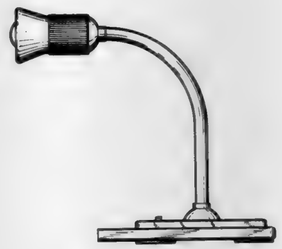
279,128
FLUORESCENT LAMP
Masumi Suzuki, Funabashi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Nov. 29, 1982, Ser. No. 445,163
Claims priority, application Japan, Nov. 4, 1981, 56-48832
Term of patent 14 years
U.S. Cl. D26—3



279,129
CANDLE HOLDER
Gary R. Wendt, Fountain Valley, Calif., assignor to Leonard R. Vogel, Steamwood, Ill., a part interest
Filed Apr. 23, 1982, Ser. No. 371,071
Term of patent 14 years
U.S. Cl. D26—9



279,130
LAMP
Robert M. Berger, Warren, Vt., assignor to Intercon Purchasing Industries (USA) Ltd., Forest Hills, N.Y.
Filed Jan. 17, 1983, Ser. No. 458,453
Term of patent 14 years
U.S. Cl. D26—62

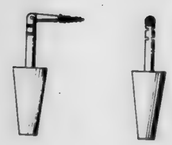


279,131
PERISCOPIC REMOTE ILLUMINATOR
Creed F. McDaris, 518 Marsheutz Ave., Huntsville, Ala. 35801
Filed Apr. 5, 1982, Ser. No. 365,871
Term of patent 14 years
U.S. Cl. D26—37

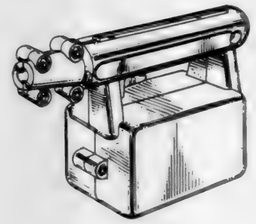


279,132
ADJUSTABLE COSMETIC APPLICATOR
Henry J. Cassai, 163-47 85 St., Howard Beach, N.Y. 11414, and Gino H. Cassai, 924 E. 96th St., Brooklyn, N.Y. 11236
Filed Aug. 10, 1982, Ser. No. 406,939
Term of patent 14 years
U.S. Cl. D28—7





279,133
HOUSING FOR AN ELECTRICAL PROD
Richard E. Ayres, 32501 Road 228, Woodlake, Calif. 93286
Filed Oct. 17, 1983, Ser. No. 542,890
Term of patent 14 years
U.S. Cl. D30—32



279,134
QUILL CAN
Olin H. Baker, and Robert P. Reilly, both of Madison, Ind., assignors to Meese, Inc., Madison, Ind.
Division of Ser. No. 422,554, Sep. 24, 1982,. This application Dec. 22, 1983, Ser. No. 564,294
Term of patent 14 years
U.S. Cl. D34—43



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF JUNE, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. R. Wilfley and Sons, Inc.: *See—*
Weber, Richard B.; Wilfley, George M.; and Wilfley, George M., 4,521,349, Cl. 261-93.000.

Aaserude, Gordon: *See—*
Mercer, James D.; and Aaserude, Gordon, 4,520,802, Cl. 128-80.00C.

Abbott, Scot D.; and Luddy, Michael A. G., to Du Pont de Nemours, E. I., and Company. Particle reagent size distribution measurements for immunoassay. 4,521,521, Cl. 436-517.000.

Abe, Eiji; and Kanazawa, Junpei, to Shinko Electric Co., Ltd. Guidance conductor for driverless vehicle. 4,520,889, Cl. 180-168.000.

Abe, Masaharu: *See—*
Oizumi, Masayuki; Abe, Masaharu; and Fushiki, Yasuo, 4,521,491, Cl. 428-458.000.

Abe, Michio, to Tokai TRW & Co., Ltd. Method for cutting rack teeth. 4,521,141, Cl. 409-48.000.

Abe, Tadafumi: *See—*
Sakamoto, Takao; and Abe, Tadafumi, 4,521,473, Cl. 428-82.000.

Abner, David K.: *See—*
Jenkins, Richard L.; Pettus, John A.; and Abner, David K., 4,521,225, Cl. 55-18.000.

Abraham, Nicholas F., to World Video Library, Inc. Recorded program communication system. 4,521,806, Cl. 358-86.000.

Adams, L. Jane, to Eastman Kodak Company. Colored polyester compositions. 4,521,556, Cl. 524-88.000.

Adams Rite Products, Inc.: *See—*
Sheffer, Ralph L., 4,520,992, Cl. 251-48.000.

Adell, Robert, to U.S. Product Development Company. Insulated edge guard. 4,520,593, Cl. 49-462.000.

Adell, Robert, to U.S. Product Development Company. Method of making edge guard. 4,520,594, Cl. 49-462.000.

Adorjan, Jon M.; Kobiske, Michael H.; and Astorino, Michael P., to Maremont Corporation. Series spring shock absorbers. 4,521,002, Cl. 267-8.00R.

Adsit, Gordon H., to Orthner, Gordon W. Mixing apparatus with removable drum liner. 4,521,116, Cl. 366-54.000.

Advanced Micro Devices, Inc.: *See—*
Wilson, Stanley, 4,521,699, Cl. 307-456.000.

AGA AB: *See—*
Poulsen, Bo, 4,521,676, Cl. 235-375.000.

Agabekov, Youri. Tubular electric lamp fixture. 4,521,838, Cl. 362-219.000.

Agency of Industrial Science & Technology: *See—*
Miura, Kazunori; Hattori, Yoshinori; and Matsuo, Yasushi, 4,521,358, Cl. 264-65.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
Podszun, Wolfgang; Simm, Walter; Goossens, John; and Suling, Carlhans, 4,521,505, Cl. 430-112.000.
Stolzenburg, Rudolf; Bergthaller, Peter; Wolfrum, Gerhard; and Strauss, Jurgen, 4,521,506, Cl. 430-241.000.

Ahlm, Lars, to Timmele Laminering AB. Mattress or pillow construction. 4,520,517, Cl. 5-481.000.

Aichi, Takeo: *See—*
Hayashi, Mitsuji; Endo, Hideo; Oishibashi, Hirotsugu; Aichi, Takeo; and Sasaki, Shigeru, 4,520,756, Cl. 118-699.000.

Aigo, Seiichiro. Cradle for semiconductor element carrier. 4,520,934, Cl. 211-41.000.

Aioi Seiki Kabushiki Kaisha: *See—*
Keitaro, Yonezawa, 4,520,919, Cl. 198-648.000.

Air Products and Chemicals, Inc.: *See—*
Erickson, Donald C., 4,521,398, Cl. 423-579.000.
Hausman, Mary L.; and Lenney, William E., 4,521,561, Cl. 524-459.000.
Pierantozzi, Ronald, 4,521,540, Cl. 518-717.000.
Wells, James E.; and Eskinazi, Victoria, 4,521,600, Cl. 544-352.000.

Ajinomoto Co., Inc.: *See—*
Oyama, Kiyotaka; Irino, Shigeaki; Harada, Tsuneo; and Nakamura, Masao, 4,521,514, Cl. 435-70.000.

Akagiri, Kenzo; and Katakura, Masayuki, to Sony Corporation. Gain control circuit. 4,521,738, Cl. 330-134.000.

Akeroyd, Richard T. Dual fuel valve. 4,520,766, Cl. 123-27.0GE.

AKG Akustische u.Kino-Gerate Gesellschaft m.b.H.: *See—*
Ruberl, Ernst, 4,521,741, Cl. 330-277.000.

Akram, M. Faheem, to Motorola, Inc. Ripple counter circuit having reduced propagation delay. 4,521,898, Cl. 377-116.000.

Aktiebolaget Amals Mekaniska Verkstad: *See—*
Andreasson, Bengt A., 4,520,967, Cl. 242-55.000.

Aktiengesellschaft Adolph Saurer: *See—*
Lucian, Anton; and Geiger, Kurt, 4,520,848, Cl. 139-1.00R.

Akzona Incorporated: *See—*
Seibert, Karl; Neumann, Klaus; Spiess, Ernst; and Bruil, Hendrik G., 4,521,326, Cl. 252-174.210.

Alberta Research Council: *See—*
Kessick, Michael A.; George, Zacharia M.; and Schneider, Linda G., 4,521,382, Cl. 423-68.000.
Kessick, Michael A.; George, Zacharia M.; and Schneider, Linda G., 4,521,383, Cl. 423-68.000.

Albrecht, Charles W.: *See—*
Hicks, Irwin A.; and Albrecht, Charles W., 4,520,676, Cl. 73-281.000.

Albright, Jay D.: *See—*
Dusza, John P.; Tomcufcik, Andrew S.; and Albright, Jay D., 4,521,422, Cl. 514-258.000.

Alig, Franz; Hemmerling, Horst; and Neulinger, Franz, to Metallgesellschaft AG. Method of automatically controlling a dust-collecting plant. 4,521,226, Cl. 55-21.000.

Alig, Franz: *See—*
Daar, Horst; and Alig, Franz, 4,521,223, Cl. 55-13.000.
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Allard, Emmanuel M., to Gould Inc. Electrostatic printer of video pictures with grey tones. 4,521,790, Cl. 346-154.000.

Allard, Jules N., to Bush Universal, Inc. Techniques for stiffening shoe insoles. 4,520,522, Cl. 12-40.500.

Allemane, Claude. Folding guard rail for a platform. 4,520,898, Cl. 182-113.000.

Allemano, Emilio. Manometric instrument for underwater diving. 4,520,668, Cl. 73-300.000.

Allen-Bradley Company: *See—*
Galdun, Daniel J.; Grudowski, Raymond A.; and Flood, Mark A., 4,521,871, Cl. 364-900.000.

Allen, James L.: *See—*
Barmatz, Martin B.; Allen, James L.; and Granett, Dan, 4,520,656, Cl. 73-505.000.

Allen, Robert L., to Champion International Corporation. Light refractive coated paperboard. 4,521,492, Cl. 428-464.000.

Alliance Manufacturing Company, Inc., The: *See—*
Meyer, Lawrence L.; and Carli, Alvin J., 4,520,684, Cl. 74-89.210.

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Deconinck, Didier, 4,521,054, Cl. 297-357.000.

Allied Corporation: *See—*
Gaiser, Robert F., 4,520,911, Cl. 192-13.00A.
Knapp, Anthony W.; and Werth, Dee A., 4,521,064, Cl. 339-45.00M.

Alpaire, Inc.: *See—*
Bohrer, Walter G., Jr.; and Stamps, Kenneth H., 4,520,717, Cl. 99-337.000.

Alsthom Atlantique: *See—*
Thuries, Edmond, 4,521,657, Cl. 200-148.00R.

Althausen, Ferdinand; Proksa, Ferdinand; and Osinski, Ulrich, to Maschinenfabrik Hennecke GmbH. Machinery for filling cavities with flowable reaction mixtures. 4,520,947, Cl. 222-63.000.

Alton, Michael J., to Omni Devices, Inc. Combined static and dynamic image data display system. 4,521,771, Cl. 340-705.000.

Aluminum Company of America: *See—*
Powers, John H.; and Remaley, Edward G., 4,521,463, Cl. 427-435.000.

ALZA Corporation: *See—*
Theeuwes, Felix, 4,521,211, Cl. 604-85.000.

Amana Refrigeration, Inc.: *See—*
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Amasek, Inc.: *See—*
Stewart, E. Allen; and Keesling, Evan L., 4,520,616, Cl. 56-9.000.

Amazonen-Werke H. Dreyer: *See—*
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AMB Systems Corp.: *See—*
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American Cyanamid Company: *See—*
Cortese, Nicholas A., Jr.; and Gastrock, William H., 4,521,629, Cl. 568-313.000.
Dusza, John P.; Tomcufcik, Andrew S.; and Albright, Jay D., 4,521,422, Cl. 514-258.000.
Kohli, Dalip K., 4,521,583, Cl. 528-119.000.
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American Dental Association Health Foundation: *See—*
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American Flange & Manufacturing Co. Inc.: *See—*
Dwinell, Davis B., 4,520,942, Cl. 220-257.000.

American Hoechst Corporation: *See—*
Weis, Robert, 4,521,214, Cl. 8-506.000.

American Home Products Corp.: *See—*
Asselin, Andre A.; Crosilla, Danilo A.; and Humber, Leslie G., 4,521,606, Cl. 548-503.000.

American Home Products Corporation (Del.): *See—*
Flanagan, Eugene L., III, 4,520,830, Cl. 128-660.000.
American Hospital Supply Corporation: *See—*
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American Microsystems, Incorporated: *See—*
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Amir, Gideon; and Gregorian, Roubik, to American Microsystems, Incorporated. Multiplier/adder circuit. 4,521,907, Cl. 381-47.000.
AMP Incorporated: *See—*
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Analog Devices Incorporated: *See—*
Burton, David P., 4,521,764, Cl. 340-347.0DA.
Anami, Kenji: *See—*
Shinohara, Hirofumi; Tomisawa, Osamu; Anami, Kenji; and Yoshimoto, Masahiko, 4,521,704, Cl. 307-530.000.
Anderson-Cook, Inc.: *See—*
Killop, James T., 4,520,540, Cl. 29-90.00B.
Anderson, Edward M. Apparatus and method for separating a mixture of three liquids. 4,521,312, Cl. 210-744.000.
Anderson, Eric G., to Rockwell International Corporation. Data input module. 4,521,679, Cl. 235-492.000.
Anderson, James J., to Mobil Oil Corporation. Highly flame resistant rigid urethane-isocyanurate foam compositions. 4,521,547, Cl. 521-137.000.
Anderson, Patricia A.; Hagens, Roger G.; and Roden, Dianne M., to Diversey Wyandotte Inc. Conveyor track lubricant composition employing phosphate esters and method of using same. 4,521,321, Cl. 252-49.300.
Anderson, Ronald L.; and Mascio, Maria R. Cleaning contact lenses with solution of bromelain and carboxypeptidase. 4,521,254, Cl. 134-26.000.
Anderson, Steven. Seed planter attachment for chisel plow. 4,520,742, Cl. 111-86.000.
Ando, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. System for focusing a light beam on a light reflecting surface. 4,521,680, Cl. 250-201.000.
Andoh, Naoki; and Fujiwara, Shuetsu, to Japan Synthetic Rubber Co., Ltd. Process for producing aromatic amine. 4,521,622, Cl. 564-406.000.
Andreasson, Bengt A., to Aktiebolaget Amals Mekaniska Verkstad. Device for a roll spindle. 4,520,967, Cl. 242-55.000.
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, to Daimler-Benz Aktiengesellschaft. Heat-exchanger with a bundle of parallelly extending pipes adapted to be acted upon by air. 4,520,863, Cl. 165-48.00R.
Andrews, Gary W.: *See—*
Dix, Robert M.; Ellis, Timothy A.; and Andrews, Gary W., 4,520,629, Cl. 62-6.000.
Anger, Anton, to Osterreichische Schiffswerften Aktiengellschaft Linz-Korneuburg. Apparatus for producing undercut tubular synthetic plastic articles. 4,521,178, Cl. 425-548.000.
Angevine, Philip J.; Kuhl, Gunter H.; and Mizrahi, Sadi, to Mobil Oil Corporation. Catalytic conversion of shale oil. 4,521,297, Cl. 208-89.000.
Aono, Kiyotaka: *See—*
Ishida, Tokuzi; and Aono, Kiyotaka, 4,520,776, Cl. 123-308.000.
Aotsuka, Yasuo: *See—*
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Arai, Mitsuru: *See—*
Sato, Hideyori; Inaba, Nobuaki; Arai, Mitsuru; and Onzou, Michio, 4,520,625, Cl. 60-464.000.
Arai, Yoshihiro; and Nahara, Akira, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,521,482, Cl. 428-336.000.
Archer, Gene R. Gardening tool. 4,520,621, Cl. 56-400.110.
Arends, Charles B.: *See—*
Bubeck, Robert A.; and Arends, Charles B., 4,521,569, Cl. 525-316.000.
Arfsten, Richard. Roof ventilator. 4,520,713, Cl. 98-42.190.
Arikawa, Yoshijiro: *See—*
Nishimura, Yasuyuki; Yamada, Mutsuo; Arikawa, Yoshijiro; Kamiguchi, Taiji; Kuwahara, Takanori; and Tanimoto, Hirotoshi, 4,521,631, Cl. 568-478.000.
Armbrust, Herbert; Dix, Johannes P.; Hansen, Guenter; and Zeidler, Georg, to BASF Aktiengesellschaft. Disazo dyes. 4,521,216, Cl. 8-639.000.
Armstrong, James A. Building wall descent device having manually operated brake means. 4,520,895, Cl. 182-3.000.
Armstrong World Industries, Inc.: *See—*
Kauffman, William J.; and Martin, Pamela H., 4,521,215, Cl. 8-508.000.
Arndt, Peter J.; Ludwig, Walter; Munzer, Manfred; Siol, Werner; and Wenzel, Franz, to Rohm GmbH. Method for making impact resistant molding compositions. 4,521,567, Cl. 525-261.000.
Arnold, Anthony F.; and Schmeckenbecher, Arnold F., to International Business Machines Corporation. Process for forming a high density metallurgy system on a substrate and structure thereof. 4,521,449, Cl. 427-96.000.
Arnold, Gerald D., to John Thurley Limited. Direct contact water heater. 4,520,761, Cl. 122-31.00R.
Arnold, William; and Brouwer, Gerardus J., to Brouwer Turf Equipment Limited. Forklift vehicle. 4,520,903, Cl. 187-9.00R.
Arnould, Jacques; and Tonnel, Eugene, to Thomson-CSF. Semiconductor device with deep grip accessible via the surface and process for manufacturing same. 4,520,552, Cl. 29-571.000.
Arntz, Dietrich; Prescher, Gunter; Burkhardt, Werner; Heilos, Johannes; and Manner, Reinhard, to Degussa Aktiengesellschaft. Process for preparing acrylic or methacrylic acid. 4,521,618, Cl. 562-535.000.
Arthur K. Thatcher Revokable Trust: *See—*
Thatcher, Arthur K.; and McCarter, Ed R., deceased, 4,520,786, Cl. 123-536.000.
Arwin, Hans R.: *See—*
Lundstrom, Kurt I.; Arwin, Hans R.; Rieke, Erwin; Sielaff, Gunter; and Hennrich, Norbert, 4,521,522, Cl. 436-525.000.
Asahi Glass Company, Ltd.: *See—*
Nakaya, Keiichi; and Sato, Kunio, 4,521,397, Cl. 423-474.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Hattori, Yoshihiro; Watanabe, Takashi; and Maeda, Kunio, 4,521,488, Cl. 428-409.000.
Kabashima, Kazuo; and Tanaka, Kyugo, 4,521,793, Cl. 346-201.000.
Mori, Kyoichiro; and Hirano, Hiroyuki, 4,521,568, Cl. 525-309.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Takami, Satoshi; and Kuroki, Yoshifumi, 4,521,094, Cl. 354-423.000.
Asai, Mitsuko: *See—*
Kanamaru, Tsuneo; Shinagawa, Susumu; and Asai, Mitsuko, 4,521,432, Cl. 514-556.000.
Asai, Shinichiro; Katoh, Kazuo; and Nakano, Tatsuo, to Denki Kagaku Kogyo Kabushiki Kaisha. Hybrid integrated circuit and preparation thereof. 4,521,476, Cl. 428-209.000.
Asami, Masahiro: *See—*
Toaba, Hirotaka; Mikumo, Masatoshi; and Asami, Masahiro, 4,521,565, Cl. 525-64.000.
ASARCO Incorporated: *See—*
Di Martini, Carl R.; Howe, Herbert E.; Scott, William L.; and Bulvanoski, Leo J., 4,521,247, Cl. 75-77.000.
ASEA Aktiebolag: *See—*
Bjorklund, Robert; Gustavsson, Hans; Lundstrom, Ingemar; and Nygren, Bertil, 4,521,450, Cl. 427-121.000.
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Ashland Oil, Inc.: *See—*
Mansour, Maher L., 4,520,750, Cl. 118-58.000.
Aspen Laboratories, Inc.: *See—*
Birmingham, Michael J.; and Manes, Michael R., 4,520,819, Cl. 128-327.000.
Kitchin, Dwight W.; and Manes, Michael R., 4,520,820, Cl. 128-327.000.
Asselin, Andre A.; and Humber, Leslie G., to Ayerst, McKenna & Harrison, Ltd. 7,8,9,10-Tetrahydrobenzo[h]quinolin-9-amine derivatives and compositions and methods for treating depression employing them. 4,521,423, Cl. 514-290.000.
Asselin, Andre A.; Crosilla, Danilo A.; and Humber, Leslie G., to American Home Products Corp. 5-Indolyl substituted aminoethanols. 4,521,606, Cl. 548-503.000.
Asselin, Andre A.: *See—*
Gauthier, Jean A.; Voith, Katherine; and Asselin, Andre A., 4,521,534, Cl. 514-219.000.
Astorino, Michael P.: *See—*
Adorjan, Jon M.; Kobiske, Michael H.; and Astorino, Michael P., 4,521,002, Cl. 267-8.00R.
Astrom, Erik G.: *See—*
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AT&T Bell Laboratories: *See—*
Carlson, Eric R.; and Schneider, Martin V., 4,521,755, Cl. 333-244.000.
Dollard, Peter M.; and Turin, William, 4,521,886, Cl. 371-43.000.
Orsic, Milo, 4,521,880, Cl. 370-68.000.
Peterson, William A., 4,521,739, Cl. 330-257.000.
Reichmanis, Elsa; and Wilkins, Cletus W., Jr., 4,521,274, Cl. 156-643.000.
AT&T Technologies, Inc.: *See—*
Fanning, William J., 4,521,828, Cl. 361-386.000.
Gault, William A., 4,521,272, Cl. 156-616.00R.
Atherton, James H.; and Stanojevic, Silvo, to Honeywell Inc. Hall effect circuit with temperature compensation. 4,521,727, Cl. 323-294.000.
Atlantic Richfield Company: *See—*
Kriel, Wayne A., 4,521,636, Cl. 568-659.000.
Stevens, Frank, 4,521,635, Cl. 568-659.000.
Stevens, Frank, 4,521,637, Cl. 568-659.000.
Aubourg, Patrick F.; and Fabricant, Barbara L., to Owens-Corning Fiberglas Corporation. Methods of introducing fluorine into glasses. 4,521,523, Cl. 501-30.000.
Aultman, William H.; and Reese, Morris T., to Sangamo Weston, Inc. Low leakage capacitor header and manufacturing method therefor. 4,521,830, Cl. 361-433.000.

Austenal International, Inc.: *See—*
Ehrnford, Lars E. M., 4,521,191, Cl. 433-164.000.
Automated Robotic Systems, Inc.: *See—*
Dunn, Jimmy L.; Mayo, George L.; and Romeo, Frank C., 4,520,550, Cl. 29-568.000.
Avimage, Inc.: *See—*
Reynolds, Collins J., III, 4,521,857, Cl. 364-439.000.
Ayata, Naoki; Saito, Seiji; Suzuki, Hidetoshi; Ozawa, Kunitaka; Koumura, Noboru; and Kazuma, Koji, to Canon Kabushiki Kaisha. Printing apparatus or system. 4,521,805, Cl. 358-75.000.
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Asselin, Andre A.; and Humber, Leslie G., 4,521,423, Cl. 514-290.000.
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Aykut, Eva-Marie, executor: *See—*
Aykut, Kurt, deceased; Aykut, Eva-Marie, executor; and Wolf, Wolfram, 4,520,614, Cl. 53-540.000.
Aykut, Kurt, deceased; by Aykut, Eva-Marie, executor; and Wolf, Wolfram. Apparatus for introducing stacks of paper sheets or the like into cartons. 4,520,614, Cl. 53-540.000.
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Mukae, Toshiyuki; and Azuma, Yoshifumi, 4,521,105, Cl. 355-64.000.
Azumi, Toshinori: *See—*
Norota, Susumi; Kiriyama, Tsutomu; Imoto, Tadashi; and Azumi, Toshinori, 4,521,364, Cl. 264-176.00F.
B.F. Goodrich Company, The: *See—*
Fisher, John M.; and Putt, James C., 4,520,838, Cl. 137-69.000.
Babbel, John H.; Russell, William A.; and Steele, Robert B., to Ampex Corporation. Audio/video system having touch responsive function display screen. 4,521,870, Cl. 364-900.000.
Babcock-Hitachi Kabushiki Kaisha: *See—*
Nishimura, Yasuyuki; Yamada, Mutsuo; Arikawa, Yoshijiro; Kamiguchi, Taiji; Kuwahara, Takanori; and Tanimoto, Hirotoshi, 4,521,631, Cl. 568-478.000.
Babcock & Wilcox Company, The: *See—*
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Bachi, Inc.: *See—*
Bachi, Robert W.; and Bachi, Phillip L., 4,520,944, Cl. 220-305.000.
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Bachi, Robert W.; and Bachi, Phillip L., 4,520,944, Cl. 220-305.000.
Bachi, Robert W.; and Bachi, Phillip L., to Bachi, Inc. Open-ended container closure. 4,520,944, Cl. 220-305.000.
Baeger, Holm, to VDO Adolf Schindling AG. Electro-optical display without reflection. 4,521,078, Cl. 350-334.000.
Baglioni, Alessandro, to Medosan Industrie Biochimiche Riunite S.p.A. Ester of the 1-methyl-5-p-toluoylpyrrole-2-acetic acid having antiinflammatory, mucolytic and antitussive properties, process for its preparation and pharmaceutical compositions containing them. 4,521,538, Cl. 514-423.000.
Bahrle, Dieter K.; and Schwerdt, Friedrich W., to International Business Machines Corporation. Method of making printed circuits with one conductor plane. 4,521,280, Cl. 204-15.000.
Bain, Lee L., to Xerox Corporation. Programmable driver/controller for ink jet printheads. 4,521,786, Cl. 346-140.00R.
Baker, Don R.; and Tam, Teresa M., to Stauffer Chemical Company. N-Carbonyl-N-(4-substituted benzyl)-4-chloroanilines. 4,521,243, Cl. 71-100.000.
Baker, George E.: *See—*
Ziehm, Richard T.; Wilczek, Stephen P.; Baker, George E.; Husted, Raymond R.; Dumas, Glen A.; Bunker, Keith G.; and Place, George H., Jr., 4,521,847, Cl. 364-184.000.
Baker, Ian M., to U.S. Philips Corporation. Infra-red radiation imaging devices and methods for their manufacture. 4,521,798, Cl. 357-30.000.
Baker International Corp.: *See—*
Herron, Charles R., 4,520,734, Cl. 105-157.00R.
Baker, Irwin G., to Boeing Company, The. Triple redundant electromechanical linear actuator and method. 4,521,707, Cl. 310-80.000.
Baker, Nathaniel R.: *See—*
Lynch, Franklin E.; and Baker, Nathaniel R., 4,520,763, Cl. 123-1.00A.
Baker, Robert D.; Driggers, Gerald W.; Gray, Ronald W.; and Hawkins, Lawrence A., to Combustion Engineering, Inc. Tubular discharge electrode for electrostatic precipitator. 4,521,229, Cl. 55-137.000.
Baker, William; Smith, Gordon H.; Beach, Xio I.; Sallee, Gary F.; and Stein, Jeffrey I., to Masco Corporation of Indiana. Processor controlled, scanning radio receiver having tabular storage of service band frequency codes. 4,521,915, Cl. 455-165.000.
Bako, Lazlo, to Presto Lock, Inc. Combination lock with security feature. 4,520,641, Cl. 70-312.000.
Balcke-Duerr AG: *See—*
Fickelscher, Kurt G., 4,521,158, Cl. 416-160.000.
Ban, Masaki, to Honda Giken Kogyo Kabushiki Kaisha. Variable capacity flywheel. 4,520,688, Cl. 74-572.000.
Baquet, Philippe: *See—*
Rouly, Eric; Baquet, Philippe; and Dubuit, Jean-Louis, 4,520,726, Cl. 101-123.000.
Barabas, Eugene S., to GAF Corporation. Rust removal process. 4,521,253, Cl. 134-3.000.
Barbour, Bruce E. Wrist strap illuminating device. 4,521,832, Cl. 362-103.000.
Barmatz, Martin B.; Allen, James L.; and Granett, Dan, to United States of America, National Aeronautics and Space Administration. Gravity enhanced acoustic levitation method and apparatus. 4,520,656, Cl. 73-505.000.
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Blackburn, Jan W.; and Baron, Burl E., 4,521,042, Cl. 285-334.000.
Baron, Walter J., to Water Services of America, Inc. Fluid flow diverter disc valve. 4,520,847, Cl. 137-625.430.
Barrett, Monroe C.: *See—*
Fachini, Robert M.; Barrett, Monroe C.; and McClure, Maxwell D., III, 4,520,617, Cl. 56-16.600.
Barrett, Timothy M. Pistol magazine loading guide. 4,520,585, Cl. 42-7.000.
Bartels, James I., to Honeywell Inc. Reliable field-effect transistor timer circuit. 4,521,705, Cl. 307-605.000.
Barth, Walter: *See—*
Kremser, Harald H.; and Barth, Walter, 4,520,548, Cl. 29-517.000.
Barthel, Richard C.; and Roy, Richard D., to Singer Company, The. Appliance controller. 4,521,722, Cl. 318-578.000.
Barton, George D., Sr. Vehicle anchoring stand. 4,520,649, Cl. 72-457.000.
BASF Aktiengesellschaft: *See—*
Armbrust, Herbert; Dix, Johannes P.; Hansen, Guenter; and Zeidler, Georg, 4,521,216, Cl. 8-639.000.
Broecker, Franz J.; Gettert, Hans; and Kaempfer, Knut, 4,521,387, Cl. 423-210.000.
Fischer, Rolf; Weitz, Hans-Martin; and Paust, Joachim, 4,521,342, Cl. 260-410.000.
Frank, Gerhard; Rudolf, Peter; Neubauer, Gerald; Ohlinger, Manfred; Wilfinger, Hans J.; Pfannebecker, Emil; and Duffner, Paul, 4,521,527, Cl. 502-184.000.
Meyer, Norbert; Zeeh, Bernd; Buschmann, Ernst; and Pommer, Ernst-Heinrich, 4,521,429, Cl. 514-383.000.
Plath, Peter; Rohr, Wolfgang; Schwendemann, Volker; and Wuerzer, Bruno, 4,521,604, Cl. 548-301.000.
Rebafka, Walter; Heilen, Gerd; Halbritter, Klaus; and Franzischka, Wolfgang, 4,521,602, Cl. 546-184.000.
Wickenhaeuser, Gerhard; Heida, Bernd; Graf, Fritz; and Hupfer, Leopold, 4,521,632, Cl. 568-492.000.
BASF Farben & Fasern AG: *See—*
Blum, Rainer; Seitz, Max; and Kaczinski, Friedrich, 4,521,555, Cl. 524-63.000.
Batchelor, William H., to Propane Carburetion Systems, Inc. Gaseous fuel supply and control system for an internal combustion engine. 4,520,785, Cl. 123-525.000.
Battelle Memorial Institute: *See—*
Fiorentino, Robert J., 4,521,360, Cl. 264-108.000.
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Bauman, Dale E., to Cornell Research Foundation, Inc. Use of growth hormone to enhance ruminant mammary development. 4,521,409, Cl. 514-21.000.
Baus, Heinz G. Structural assembly for shower partition or the like. 4,520,608, Cl. 52-718.000.
Baxter Travenol Laboratories, Inc.: *See—*
Mason, Joe; and Eckert, Hermann F., 4,521,366, Cl. 264-312.000.
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Bayer Aktiengesellschaft: *See—*
Beck, Ulrich; Stohr, Frank-Michael; and Nickel, Horst, 4,521,217, Cl. 8-639.000.
Goyert, Wilhelm; and Winkler, Jurgen, 4,521,582, Cl. 528-67.000.
Grogler, Gerhard; and Kopp, Richard, 4,521,338, Cl. 260-239.00A.
Heitz, Walter; and Risse, Wilhelm, 4,521,584, Cl. 528-214.000.
Kerimis, Dimitrios; Hombach, Rudolf; Muller, Peter; and Dollhausen, Manfred, 4,521,545, Cl. 521-107.000.
Krock, Friedrich W.; and Neoff, Rutger, 4,521,341, Cl. 260-371.000.
Maurer, Fritz; Brandes, Wilhelm; Kuck, Karl-Heinz; Reinecke, Paul; and Scheinpflug, Hans, 4,521,420, Cl. 514-259.000.
Musch, Rudiger; Gobel, Wilhelm; Konter, Wolfgang; and Nolte, Wilfried, 4,521,576, Cl. 526-213.000.
Roos, Ernst; and Kircher, Klaus, 4,521,542, Cl. 521-89.000.
Schmitt, Hans-Georg; Reinecke, Paul; Paulus, Wilfried; Genth, Hermann; and Radt, Walter, 4,521,412, Cl. 514-244.000.
Schroer, Walter; and Wlasitsch, Gyula, 4,521,465, Cl. 428-35.000.
Beach, Edward B. Container for flat articles. 4,520,922, Cl. 206-44.00R.
Beach, Verlin R.: *See—*
Cole, Clinton W.; and Beach, Verlin R., 4,520,837, Cl. 137-68.00R.
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Baker, William; Smith, Gordon H.; Beach, Xio I.; Sallee, Gary F.; and Stein, Jeffrey I., 4,521,915, Cl. 455-165.000.
Beachey, Edwin H., to University of Tennesse Research Corporation, The. Synthetic polypeptide fragments. 4,521,334, Cl. 260-112.50R.
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Fischer, Larry E.; and Bean, Jackie E., 4,521,370, Cl. 376-233.000.
Beane, Bennie J., to General Electric Company. Rotary calcining system with cleaning means. 4,521,379, Cl. 422-209.000.
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Borsuk, Gerald M.; Chesson, Edwin E.; Beard, Jerome C.; and Lisle, Thomas K., Jr., 4,521,896, Cl. 377-60.000.
Beatenbough, Paul K.: *See—*
Sacca, Demetrio B.; Sanderson, Edward H.; and Beatenbough, Paul K., 4,520,867, Cl. 165-144.000.

Beatrice Foods Co.: *See—*
Jones, John H.; and Schoenleber, Donald W., 4,520,958, Cl. 229-72.000.

Beck, Ulrich; Stohr, Frank-Michael; and Nickel, Horst, to Bayer Aktiengesellschaft. Phthalocyanine and azo dyestuff mixtures and their use for dyeing paper. 4,521,217, Cl. 8-639.000.

Bednorz, Johannes G.; Hollis, Ralph L., Jr.; Lanz, Martin; Pohl, Wolfgang D.; and Yeack-Scranton, Celia E., to International Business Machines Corporation. Piezoelectric x-y-positioner. 4,520,570, Cl. 33-180.00R.

Beecham Group p.l.c.: *See—*
Southgate, Robert; and Brown, Pamela, 4,521,337, Cl. 534-560.000.

Belart, Juan; Burgdorf, Jochen; Weise, Lutz; Kircher, Dieter; and Goossens, Andre F. L., to ITT Industries, Inc. Hydraulic brake system with slip control. 4,521,061, Cl. 303-114.000.

Bellman, Brian M., to United States of America, Air Force. Clock distribution circuit for active aperture antenna array. 4,521,893, Cl. 375-107.000.

Beloit Corporation: *See—*
Olshansky, Alexis; and Guild, Gerald A., 4,520,704, Cl. 83-499.000.

Belouet, Christian, to Compagnie General d'Electricite; and Societe Nationale Elf Aquitaine. Device for depositing a layer of polycrystalline silicon on a carbon tape. 4,520,752, Cl. 118-405.000.

Bendall, Max R.: *See—*
Pegg, David T.; Doddrell, David M.; and Bendall, Max R., 4,521,732, Cl. 324-300.000.

Bendell, Sidney L., to RCA Corporation. Solid-state color TV camera image size control. 4,521,804, Cl. 358-51.000.

Benedetto, Enrico: *See—*
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Bengtsson, Bengt L.; Palmlin, Peter; and Saldert, Bertil K., to Nestec, S.A. Blanching process. 4,521,439, Cl. 426-509.000.

Benin, Joshua; Delp, Helen R.; and Krauss, Leland L., to Du Pont de Nemours, E. I., and Company. Automatic splicing device and process. 4,521,263, Cl. 156-159.000.

Benkovic, Stephen J.; Putney, Scott D.; and Schimmel, Paul R., to Research Corporation. Method for degrading DNA. 4,521,509, Cl. 435-6.000.

Berezowsky, John W. Paper sheet holders. 4,521,035, Cl. 281-48.000.

Berge, Christian: *See—*
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Berger, Kenneth R., to Frito-Lay, Inc. Ultrasonically-sealable peelable seal. 4,521,467, Cl. 428-35.000.

Bergthaller, Peter: *See—*
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Bergwerksverband GmbH: *See—*
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Berman, Edward. Carrier and method for providing yarn for latch hook rug kits and the like. 4,521,474, Cl. 428-93.000.

Bernard, Samuel, Jr., to Minnesota Mining and Manufacturing Company. Method of establishing communication. 4,521,644, Cl. 179-2.0DP.

Bethurum, Gary C.: *See—*
Kurbikoff, Peter A.; and Bethurum, Gary C., 4,521,062, Cl. 339-14.00R.

Bette, Willi: *See—*
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Biba, Kenneth J.; and Picazo, Jose J., Jr., to Sytek, Incorporated. Multiple channel data communication system. 4,521,891, Cl. 375-8.000.

Bieler, Hans. Cutting or drilling apparatus. 4,521,145, Cl. 409-218.000.

Bigelow, James H.: *See—*
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Bigot, Jean: *See—*
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Bilofsky, Ruth C.: *See—*
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,521,588, Cl. 528-363.000.

Bingham, Joseph P.; and Hatch, Douglas J., to North American Philips Corporation. Method and apparatus for controlling access to selected television programs. 4,521,809, Cl. 358-120.000.

Binks Manufacturing Company: *See—*
Gerdes, Donald F.; and Telchuk, Steve E., 4,521,227, Cl. 55-225.000.

Bio Research Inc.: *See—*
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Biocon, Inc.: *See—*
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Bipel Limited: *See—*
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Bird, Bertram: *See—*
Fitzgerald-Smith, James P.; Bird, Bertram; and Willis, Michael, 4,520,523, Cl. 14-2.400.

Birmingham, Michael J.; and Manes, Michael R., to Aspen Laboratories, Inc. Tourniquet with differential pressure occlusion detector. 4,520,819, Cl. 128-327.000.

Birsa, Joseph J.: *See—*
Sturges, Robert H., Jr.; Birsa, Joseph J.; Dawson, Paul H.; and Byford, Roger G., 4,521,844, Cl. 364-167.000.

Bizzell, Gary D., to Lockheed Missiles & Space Company, Inc. Gas-tolerant arterial heat pipe. 4,520,865, Cl. 165-104.260.

Bjorklund, Robert; Gustavsson, Hans; Lundstrom, Ingemar; and Nygren, Bertil, to ASEA Aktiebolag. Method of increasing the electrical conductivity of cellulose-based materials or other impregnable materials. 4,521,450, Cl. 427-121.000.

Black & Decker, Inc.: *See—*
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Blackburn, Jan W.; and Baron, Burl E., to Hydril Company. Threaded connection. 4,521,042, Cl. 285-334.000.

Blackburn, Louis W.: *See—*
Wyland, Alvin D.; Smith, Duaine W.; and Blackburn, Louis W., 4,521,658, Cl. 219-10.55B.

Blackhurst, William R., to Northrop Corporation. Air-bag ejection system for store deployment. 4,520,975, Cl. 244-137.00R.

Blank, Michael G.; and Hammerschmidt, Horst E., to Maschinenfabrik Koppern FmbH & Co. KG. Multiple injection moulding apparatus. 4,521,177, Cl. 425-533.000.

Blank, Richard W.; and Simard, Albert J., to United States of America, Agriculture. Forest fire rate of spread with timers method. 4,521,120, Cl. 374-102.000.

Blanton, William A., Jr.; and Dimpel, William L., to Chevron Research Company. Process of controlling NO_x in FCC flue gas in which an SO_2 oxidation promotor is used. 4,521,389, Cl. 423-235.000.

Bleistiftmaschinenfabrik Dipl. Ing. Karl Zuber GmbH & Co. KG: *See—*
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Blessmann, Heinz: *See—*
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Bloch, Joseph T.; and Cross, Dan A., to Boeing Company, The. Wire canister for a robotic wire harness assembly system. 4,520,966, Cl. 242-54.00R.

Block Drug Company, Inc.: *See—*
Chang, Tiang-Shing; and Zientek, Lucy J., 4,521,551, Cl. 523-120.000.

Block, Michael J.: *See—*
Kelley, Arnold E.; Block, Michael J.; and Skripek, Milan R., 4,521,278, Cl. 201-17.000.

Blum, Rainer; Seitz, Max; and Kaczinski, Friedrich, to BASF Farben & Fasern AG. Plastisols having carbon dust fillers. 4,521,555, Cl. 524-63.000.

Blumberg, Richard J.; Brenner, Stewart; and Robortaccio, Rocco J., to International Business Machines Corporation. TTL logic circuit employing feedback to improved the speed-power curve. 4,521,700, Cl. 307-456.000.

Blumenthal, Lawrence S., to Gelhaar Uniform Company. Playing field boundary flag and support therefor. 4,520,985, Cl. 248-530.000.

Bock, Jan: *See—*
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Boden, Richard M.: *See—*
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,521,634, Cl. 568-665.000.

Bodette, James E.: *See—*
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Boehmer, Georg, to Siemens Aktiengesellschaft. Method and apparatus for the representation of characters. 4,521,123, Cl. 400-124.000.

Boehringer Mannheim GmbH: *See—*
Draeger, Brigitte; and Ziegenhorn, Joachim, 4,521,519, Cl. 436-17.000.

Boeing Company, The: *See—*
Baker, Irwin G., 4,521,707, Cl. 310-80.000.
Bloch, Joseph T.; and Cross, Dan A., 4,520,966, Cl. 242-54.00R.
Engelke, Claude W.; Sutton, Gerald E.; and Potter, Steven E., 4,521,354, Cl. 264-46.600.
Miller, Glen E., 4,521,683, Cl. 250-221.000.
Pinson, George T., 4,521,782, Cl. 343-765.000.

Bohl, Thomas L.; and Ciammaichella, Richard C., to Babcock & Wilcox Company, The. Optical window purge arrangement. 4,521,089, Cl. 350-582.000.

Bohm, Heinz, to U.S. Philips Corporation. Graded index rod lens comprising light-wave conductors. 4,521,071, Cl. 350-96.180.

Bohrer, Walter G., Jr.; and Stamps, Kenneth H., to Alpaire, Inc. Food frying apparatus. 4,520,717, Cl. 99-337.000.

Bok, Edward. Apparatus for deposition of fluid and gaseous media on substrates. 4,521,268, Cl. 156-345.000.

Bommarito, John J.: *See—*
Ryntz, Edward F., Jr.; and Bommarito, John J., 4,520,858, Cl. 164-34.000.

Bonne, Harry: *See—*
Hampel, Hans-Joachim; Scondo, Ludwig; Stahl, Jurgen; Wegner, Wilhelm; and Bonne, Harry, 4,520,948, Cl. 222-103.000.

Bonnot, Guy; Laviolette, Pierre; Potiron, Andre; and Deysson, Jean-Yves, to Institut National de la Recherche Agronomique. Process for producing encapsulable globules. 4,521,353, Cl. 264-8.000.

Bordet, Rene , to Electricite de France (Service National). Stacks or vertical pipes for the flow of gas. 4,520,600, Cl. 52-83.000.

Borg-Warner Corporation: *See—*
Ferris, Ernest A.; and McColl, John W., 4,520,912, Cl. 192-85.0AA.
Hoadley, Frederick L., 4,521,840, Cl. 363-35.000.

Borjesson, Per O.: *See—*
Salomonsson, Goran; Borjesson, Per O.; Mandersson, Bengt; Holmer, Nils-Gunnar; and Lindstrom, Kjell, 4,520,670, Cl. 73-602.000.

Bormioli, Pier L., to Vetreria Padana Polesana, S.p.A. Glass storage jar. 4,520,937, Cl. 215-10.000.

Borsa, Andrew J.: *See—*
Stapleford, Gary N.; and Borsa, Andrew J., 4,521,881, Cl. 370-72.000.

Borsuk, Gerald M.; Chesson, Edwin E.; Beard, Jerome C.; and Lisle, Thomas K., Jr., to Westinghouse Electric Co. Simultaneous sampling dual transfer channel charge coupled device. 4,521,896, Cl. 377-60.000.

Borup, Alf L.; and Astrom, Erik G., to Swedish Rail System AB SRS. Method and apparatus for dispensing a working substance such as a lubricant. 4,520,901, Cl. 184-3.100.

BOSCH-SIEMENS HAUSGERAETE GmbH: *See—*
Speckhart, Max, 4,520,703, Cl. 83-478.000.

Bosna, Alexander: *See—*
Riccio, Louis M.; and Bosna, Alexander, 4,521,475, Cl. 428-142.000.

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Osial, Thaddeus A.; Bosna, Alexander A.; and Kulak, Richard J., 4,521,668, Cl. 219-121.0LC.

Bottomley, Paul A.; and Edelstein, William A., to General Electric Company. NMR Imaging of the transverse relaxation time using multiple spin echo sequences. 4,521,733, Cl. 324-309.000.

Bouchard, Andre C., to GTE Products Corporation. Compact fluorescent lamp having increased light output. 4,521,837, Cl. 362-216.000.

Boudakian, Max M., to Olin Corporation. Continuous process for the production of polybromopyridine compounds. 4,521,603, Cl. 546-304.000.

Bouiller, Jean G.; and Soligny, Marcel R., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Rotors of rotating machines. 4,521,160, Cl. 416-218.000.

Bouse, Vaclav: *See—*
Kuzel, Radomir; Broukal, Josef; and Bouse, Vaclav, 4,521,250, Cl. 106-15.050.

Bouzianis, George J.; and McIlvin, Donald B., to USM Corporation. Shoe upper cavity shell. 4,521,176, Cl. 425-521.000.

Bowen, Rafael L., to American Dental Association Health Foundation. Method for obtaining strong adhesive bonding of composites to dentin, enamel and other substrates. 4,521,550, Cl. 523-116.000.

Bowers, Cecil W.: *See—*
Peebles, William C., Jr.; and Bowers, Cecil W., 4,521,234, Cl. 55-481.000.

Boyd, Malcolm W.; and Mander, Michael G., to W. A. Goold Limited; and W. J. Goodwin & Son Limited. Containers for liquids. 4,520,940, Cl. 220-68.000.

Brand, Glen; and Chew, Timmy L. Four-way valve. 4,520,841, Cl. 137-270.000.

Brandes, Wilhelm: *See—*
Maurer, Fritz; Brandes, Wilhelm; Kuck, Karl-Heinz; Reinecke, Paul; and Scheinpflug, Hans, 4,521,420, Cl. 514-259.000.

Brandon, Craig A.: *See—*
Johnston, Lawton L.; and Brandon, Craig A., 4,520,520, Cl. 8-151.000.

Brandstatter, Hans G., to Ontario Research Foundation. Recovery of titanium values. 4,521,385, Cl. 423-76.000.

Brandt, Richard W., to Orchard Machinery Corporation. Deformable pad for tree clamping jaws. 4,521,468, Cl. 428-35.000.

Braun, Derrek E.; Lau, Daniel T.; and Moy, Harold, to United Technologies Automotive, Inc. Pressure sensitive piezoelectric signal generator assembly. 4,521,712, Cl. 310-339.000.

Braun, Martin, to Micronix Partners. High power x-ray source with improved anode cooling. 4,521,903, Cl. 378-141.000.

Brecht, Maria. Movable casing for the excavation of trenches. 4,521,137, Cl. 405-283.000.

Breidenstein, Charles J.: *See—*
Gueldenpfennig, Klaus; Russell, Stanley L.; Oswald, William A.; Breidenstein, Charles J.; and Narula, Karam V., 4,521,879, Cl. 370-62.000.

Breitenfellner, Franz, to Ciba Geigy Corporation. Thermoplastic polyester moulding composition containing flame retardant and magnesium sulfate. 4,521,560, Cl. 524-371.000.

Brenci, Massimo: *See—*
Sottini, Stefano; Brenci, Massimo; Righini, Giancarlo; Falciai, Riccardo; Russo, Vera; and Scheggi, Verga A., 4,521,070, Cl. 350-96.150.

Brenner, Robert A., to Whirlpool Corporation. Triple action agitator for automatic washers. 4,520,638, Cl. 68-133.000.

Brenner, Stewart: *See—*
Blumberg, Richard J.; Brenner, Stewart; and Robortaccio, Rocco J., 4,521,700, Cl. 307-456.000.

Brennstoffinstitut Freiberg: *See—*
Kretschmer, Horst; Tietze, Guenter; Noack, Juergen; Schweigel, Hans-Joachim; Schingnitz, Manfred; Werner, Klaus; and Kirsch, Bernd, 4,521,139, Cl. 406-19.000.

Bresson, Clarence R.: *See—*
Parlman, Robert M.; and Bresson, Clarence R., 4,521,300, Cl. 209-166.000.

Breuninger, Robert E., to Hinkle, John F., Jr.; and Stockdale, Wendell B., a part interest. Egg lathe. 4,520,753, Cl. 118-500.000.

Brewer, Carl T. Clutch actuator. 4,520,909, Cl. 192-0.02R.

Briard, Rene ; Saunier, Christian; and Canova, Guy, to Giravions Dorand. Method and apparatus for formation of a fictitious target in a training unit for aiming at targets. 4,521,196, Cl. 434-20.000.

Bridge, Richard F. Composite strip. 4,521,767, Cl. 340-555.000.

Bridgestone Tire Company Limited: *See—*
Ogino, Takao; Watanabe, Yoichi; and Sano, Shigehisa, 4,520,857, Cl. 152-527.000.
Ozawa, Chiaki, 4,521,269, Cl. 156-420.000.

Briggs, Jeffrey M.: *See—*
Halsey, Jay F.; and Briggs, Jeffrey M., 4,520,604, Cl. 52-200.000.

Brimhall, George H., Jr.; and Vigus, Leonard J., to University of California, The Regents of the. Rotary support for vacuum filtration apparatus. 4,521,308, Cl. 210-330.000.

Briner, Emil: *See—*
Stalder, Herbert; and Briner, Emil, 4,520,532, Cl. 19-244.000.

Bristol, James A.: *See—*
Sircar, Ila; and Bristol, James A., 4,521,416, Cl. 514-252.000.

British Nuclear Fuels plc: *See—*
Parkinson, Francis J., 4,521,162, Cl. 417-138.000.

British Telecommunications: *See—*
Falconer, Robert M., 4,521,745, Cl. 331-2.000.

Broecker, Franz J.; Gettert, Hans; and Kaempfer, Knut, to BASF Aktiengesellschaft. Purification of gases containing CO and/or CO_2. 4,521,387, Cl. 423-210.000.

Brogie, Earl W. Automobile shelter. 4,520,603, Cl. 52-173.00R.

Brooks, Robert M.: *See—*
Roettgen, Leslie A.; Webber, Beth A.; Brooks, Robert M.; and Layman, Robert J., 4,520,767, Cl. 123-41.100.

Broukal, Josef: *See—*
Kuzel, Radomir; Broukal, Josef; and Bouse, Vaclav, 4,521,250, Cl. 106-15.050.

Broussoux, Dominique; Facoetti, Hugues; Micheron, Francois; and Monnerie, Lucien, to Thomson-CSF. Process for manufacturing a piezo- or pyroelectric polymer material comprising a cross-linking step. 4,521,322, Cl. 252-62.900.

Brouwer, Gerardus J.: *See—*
Arnold, William; and Brouwer, Gerardus J., 4,520,903, Cl. 187-9.00R.

Brouwer Turf Equipment Limited: *See—*
Arnold, William; and Brouwer, Gerardus J., 4,520,903, Cl. 187-9.00R.

Brown, Anthony D., to Grundy Dispense Systems, Inc. Coupler. 4,520,954, Cl. 222-400.800.

Brown, Boveri & Cie. AG: *See—*
Klein, Erwin, 4,521,170, Cl. 357-81.000.

Brown, Dennis N. Skate boot insert. 4,520,580, Cl. 36-44.000.

Brown, Pamela: *See—*
Southgate, Robert; and Brown, Pamela, 4,521,337, Cl. 534-560.000.

Brown, Richard, to RCA Corporation. Method of fabricating an electronic circuit including an aperture through the substrate thereof. 4,520,561, Cl. 29-840.000.

Brown, Thomas H.; and Durant, Graham J., to Smith Kline & French Laboratories Limited. Guanidinothiazolyl derivatives. 4,521,418, Cl. 514-272.000.

Brown, Thomas H.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. Dioxocyclobutene compounds. 4,521,625, Cl. 564-461.000.

Browning, George W.: *See—*
Linklater, Peter M.; and Browning, George W., 4,521,433, Cl. 426-36.000.

Bruce, Kenneth E.; Lombardo, Ralph M., Jr.; Tarbox, Bruce H.; and Conway, John W., to Honeywell Information Systems Inc. Intersystem fault detection and bus cycle completion logic system. 4,521,848, Cl. 364-200.000.

Bruil, Hendrik G.: *See—*
Seibert, Karl; Neumann, Klaus; Spiess, Ernst; and Bruil, Hendrik G., 4,521,326, Cl. 252-174.210.

Brumbaugh, Donald L.: *See—*
Wang, Anthony D.; and Brumbaugh, Donald L., 4,521,765, Cl. 340-347.0DA.

Bruns, Engelbert: *See—*
Lorenz, Kurt; Bruns, Engelbert; and Osterholt, Gerd, 4,521,279, Cl. 202-227.000.

Bryans, Lawrence G.; Goudey, Kenneth R.; and Nickerson, William F., to Ford Aerospace & Communications Corporation. Offset microwave feed horn for producing focused beam having reduced sidelobe radiation. 4,521,783, Cl. 343-781.00R.

bso Steuerungstechnik GmbH: *See—*
Gibas, Cristoph, 4,521,759, Cl. 335-255.000.

Bubeck, Robert A.; and Arends, Charles B., to Dow Chemical Company, The. Impact styrene polymer. 4,521,569, Cl. 525-316.000.

Buch, Thomas: *See—*
Steinhauser, Thomas; and Buch, Thomas, 4,521,001, Cl. 266-208.000.

Buckley, John D.; Swaim, Robert J.; Fox, Robert L.; and Johnston, David F., to United States of America, National Aeronautics & Space Administration. Induction heating gun. 4,521,659, Cl. 219-10.770.

Buckner, Michael T.: *See—*
St. Pierre, Philippe D.; and Buckner, Michael T., 4,521,222, Cl. 51-295.000.

Budapesti Radiotechnikai Gyar: *See—*
Nemet, Mihaly, 4,521,784, Cl. 343-846.000.

Budd, Richard W. Decorative molding for tub or counter caulking. 4,520,605, Cl. 52-287.000.

Budinger, A. Bowman: *See—*
Byszewski, Wojciech W.; Budinger, A. Bowman; and Proud, Joseph M., 4,521,718, Cl. 315-99.000.

Budnik, Brian J., to Motorola, Inc. Control circuitry for a pulse-width-modulated switching power supply. 4,521,726, Cl. 323-283.000.

Buendia, Jean: *See—*
Martel, Jacques; Buendia, Jean; and Nezot, Francois, 4,521,331, Cl. 252-522.00R.

Bultemeier, Keith D.: *See—*
Hilker, G. Daniel; Lausen, Verne H.; Coon, Jessie H.; Bodette, James E.; Grimes, Jerry L.; Wright, Roger D.; Disque, Donny R.; and Bultemeier, Keith D., 4,521,173, Cl. 425-113.000.

Bulvanoski, Leo J.: *See—*
Di Martini, Carl R.; Howe, Herbert E.; Scott, William L.; and Bulvanoski, Leo J., 4,521,247, Cl. 75-77.000.

Bunker, Keith G.: *See—*
Ziehm, Richard T.; Wilczek, Stephen P.; Baker, George E.; Husted, Raymond R.; Dumas, Glen A.; Bunker, Keith G.; and Place, George H., Jr., 4,521,847, Cl. 364-184.000.

Bunnell, Edward D., to AMP Incorporated. Tool for matrix connector. 4,520,558, Cl. 29-749.000.

Burgdorf, Jochen: *See—*
Belart, Juan; Burgdorf, Jochen; Weise, Lutz; Kircher, Dieter; and Goossens, Andre F. L., 4,521,061, Cl. 303-114.000.

Burkhardt, Werner: *See—*
Arntz, Dietrich; Prescher, Gunter; Burkhardt, Werner; Heilos, Johannes; and Manner, Reinhard, 4,521,618, Cl. 562-535.000.

Burl, Michael; and Young, Ian R., to Picker International, Ltd. Nuclear magnetic resonance method and apparatus. 4,520,828, Cl. 128-653.000.

Burlington Industries, Inc.: *See—*
Schnegg, Julius R., 4,520,636, Cl. 66-192.000.

Burnham, Robert F.; Gibbon, Alan; and Harry, John E., to Johnson Matthey Public Limited Company. Plasma arc furnaces. 4,521,890, Cl. 373-22.000.

Burns, Mike L.: *See—*
Sillivent, Bob; and Sillivent, Clifford, 4,520,917, Cl. 198-499.000.

Burr-Brown Corporation: *See—*
Wang, Anthony D.; and Brumbaugh, Donald L., 4,521,765, Cl. 340-347.0DA.

Burton, C. Leonard: *See—*
Klein, Gregory L.; and Burton, C. Leonard, 4,521,121, Cl. 384-100.000.

Burton, David P., to Analog Devices Incorporated. Signal-controllable attenuator employing a digital-to-analog converter. 4,521,764, Cl. 340-347.0DA.

Burzin, Klaus: *See—*
Droscher, Michael; Gerth, Christian; and Burzin, Klaus, 4,521,554, Cl. 523-522.000.

Busch, Peter: *See—*
Schumann, Henning; Busch, Peter; Fischer, Detlef; and Thiele, Klaus, 4,520,831, Cl. 132-11.00R.

Buschmann, Ernst: *See—*
Meyer, Norbert; Zeeh, Bernd; Buschmann, Ernst; and Pommer, Ernst-Heinrich, 4,521,429, Cl. 514-383.000.

Bush Universal, Inc.: *See—*
Allard, Jules N., 4,520,522, Cl. 12-40.500.

Butler, Derek W.: *See—*
McVie, James; and Butler, Derek W., 4,521,461, Cl. 427-387.000.

Butt, Sheldon H.; Smith, Edward F., III; and Gyurina, F. Dennis, to Olin Corporation. Casing for electronic components. 4,521,469, Cl. 428-35.000.

Butterwick, Gilbert N., to RCA Corporation. Silicon target support assembly for an image sensing device. 4,521,713, Cl. 313-378.000.

Buttinoni, Ada: *See—*
Doria, Gianfederico; Passarotti, Carlo; Lovisolo, Pier P.; and Buttinoni, Ada, 4,521,419, Cl. 514-267.000.

Byford, Roger G.: *See—*
Sturges, Robert H., Jr.; Birsa, Joseph J.; Dawson, Paul H.; and Byford, Roger G., 4,521,844, Cl. 364-167.000.

Bynum, Byron G., to Motorola, Inc. Bipolar-MOS current amplifier having active turn-off circuitry. 4,521,737, Cl. 330-51.000.

Byszewski, Wojciech W.; Budinger, A. Bowman; and Proud, Joseph M., to GTE Laboratories Incorporated. Beam mode lamp with voltage modifying electrode. 4,521,718, Cl. 315-99.000.

Cadbury Schweppes Public Limited Company: *See—*
Jeans, Edward L., 4,520,950, Cl. 222-129.100.

Cain, Paul A., to Union Carbide Corporation. Pesticidal bicycloxyheterocyclyl aroyl ureas. 4,521,426, Cl. 514-346.000.

Calderon, Jose L.; and Layrisse, Ignacio, to Intevep, S.A. Apparatus for upgrading heavy hydrocarbons employing a diluent. 4,521,277, Cl. 196-46.000.

Calderoni, Sergio L., to General Motors Corporation. Spring retainer. 4,521,005, Cl. 267-179.000.

Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., to Texas Instruments Incorporated. Electronic data processing apparatus with equation operating system having improved exponentiation operators. 4,521,868, Cl. 364-753.000.

Caldwell, William F. Vibration-isolating mounting with load-directing chamfer. 4,521,004, Cl. 267-141.400.

Callaghan, Edward P. Methods and apparatus for bandwidth reduction. 4,521,646, Cl. 375-122.000.

Callaghan, Vincent M.: *See—*
Peck, Daniel A.; and Callaghan, Vincent M., 4,521,371, Cl. 376-245.000.

Calvagno, Michael J. Garage door safety locking system. 4,520,591, Cl. 49-322.000.

Camco, Incorporated: *See—*
Pringle, Ronald E., 4,520,870, Cl. 166-317.000.

Campi, Morris; and Sindoris, Arthur R., to United States of America, Army. Phase scanned microstrip array antenna. 4,521,781, Cl. 343-700.0MS.

Canada, Ronald G.; Piety, Kenneth R.; Simpson, Daniel G.; and Pardue, E. Forrest, to Technology for Energy Corporation. Vibration monitoring device. 4,520,674, Cl. 73-660.000.

Canadian General Electric Company Limited: *See—*
deHertel Eastcott, Peter; and Trussler, Ronald C., 4,520,910, Cl. 192-0.02R.

Candau, Francoise; Leong, Yee-Sing; Kohler, Norbert; and Dawans, Francois, to Institut Francais du Petrole. Process for manufacturing a microlatex in a continuous oil phase by polymerization of a water-soluble monomer in a water-in-oil microemulsion, resultant microlatices, and their use for enhanced oil recovery. 4,521,317, Cl. 252-8.55D.

Canon Kabushiki Kaisha: *See—*
Ayata, Naoki; Saito, Seiji; Suzuki, Hidetoshi; Ozawa, Kunitaka; Koumura, Noboru; and Kazuma, Koji, 4,521,805, Cl. 358-75.000.
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,521,099, Cl. 355-8.000.
Kawabata, Takashi; and Yamada, Masanori, 4,521,093, Cl. 354-403.000.
Matsufuji, Yohji, 4,521,785, Cl. 346-25.000.
Suzuki, Akiyoshi; Sato, Hirosi; Omata, Takashi; and Kosugi, Masao, 4,521,082, Cl. 350-405.000.
Yokota, Masami; Sugitani, Hiroshi; and Inamoto, Tadayoshi, 4,521,787, Cl. 346-140.00R.
Yonemori, Takaji; and Sagara, Seiji, 4,521,100, Cl. 355-8.000.

Canova, Guy: *See—*
Briard, Rene ; Saunier, Christian; and Canova, Guy, 4,521,196, Cl. 434-20.000.

Caracteres S.A.: *See—*
Moulin, Blaise, 4,521,124, Cl. 400-144.200.

Carafeno, Joseph A. Toy baseball bat device. 4,521,015, Cl. 273-26.00B.

Caramaschi, Vittorio; and Castelli, Pier L., to Costruzioni Aeronautiche Giovanni Agusta S.p.A. Helicopter rotor hub. 4,521,157, Cl. 416-134.00A.

Carbeau, Richard W.; Martin, James F.; Lanier, John H.; and Holt, William L., to ENSCO, Inc. Waste disposal. 4,520,741, Cl. 110-344.000.

Carbone, Douglas C.; and Dennis, Philip J., to GTE Products Corporation. Miniaturized circuit breaker. 4,521,760, Cl. 337-368.000.

Careddu, Franco, to Sugherificio P. Careddu S.p.A. Method of manufacturing corks for bottles. 4,521,266, Cl. 156-242.000.

Carl Still GmbH & Co. KG, Firma: *See—*
Lorenz, Kurt; Bruns, Engelbert; and Osterholt, Gerd, 4,521,279, Cl. 202-227.000.

Carl-Zeiss-Stiftung: *See—*
Schulte in den Baumen, Joachim, 4,521,068, Cl. 350-1.100.
Weber, Klaus; Willert, Manfred; and Blessmann, Heinz, 4,521,076, Cl. 350-254.000.

Carl-Zeiss-Stuftung, Heidenhheim/Brenz: *See—*
Herzog, Klaus; Szenger, Franz; and Gentner, Gabriele, 4,520,700, Cl. 82-31.000.

Carli, Alvin J.: *See—*
Meyer, Lawrence L.; and Carli, Alvin J., 4,520,684, Cl. 74-89.210.

Carlqvist, Stig G., to Stig G. Carlqvist Motor Consultant (CMC) AB. Method for compressing and heating a heating medium to be externally supplied to an engine while using the energy available in the hot exhaust gases of the engine. 4,520,628, Cl. 60-616.000.

Carlson, Eric R.; and Schneider, Martin V., to AT&T Bell Laboratories. Symmetrical low-loss suspended substrate stripline. 4,521,755, Cl. 333-244.000.

Carpenter, Brian M., to Coal Industry (Patents) Limited. Combustion and heating equipment. 4,520,740, Cl. 110-288.000.

Carpenter, Keith H., to General Motors Corporation. Pressure balanced valve for adjustable hydraulic damper. 4,520,908, Cl. 188-319.000.

Carroll, Robert A. Fire alarm system. 4,521,645, Cl. 179-5.00R.

Carter, James H.; Ledis, Stephen L.; and Crews, Harold R., to Coulter Electronics, Inc. Multi-purpose blood diluent and lysing agent for differential determination of lymphoid-myeloid population of leukocytes. 4,521,518, Cl. 436-10.000.

Case, Allen W., Jr.; and Peroutky, Donald C., to General Electric Company. Gas metal arc welding torch with vision system. 4,521,670, Cl. 219-130.010.

Casey, Thomas J. Apparatus and method for the treatment of organic wastes. 4,521,310, Cl. 210-603.000.

Casper, James A. Dental analyzer. 4,521,187, Cl. 433-72.000.

Cassella Aktiengesellschaft: *See—*
Engelhardt, Friedrich; Schmitz, Hermann; Gulden, Walter; and Hax, Jorg, 4,521,579, Cl. 526-287.000.

Castelli, Pier L.: *See—*
Caramaschi, Vittorio; and Castelli, Pier L., 4,521,157, Cl. 416-134.00A.

Caterpillar Tractor Co.: *See—*
Englund, Michael S.; Hafele, Joseph C.; and Schulze, Dwain C., Jr., 4,520,652, Cl. 73-23.000.
Grawey, Charles E., 4,520,868, Cl. 165-158.000.
Oswald, Charles W., 4,521,650, Cl. 200-61.880.
Phelps, Weldon L.; and Stahl, Alan L., 4,521,856, Cl. 364-426.000.

Cavalleri, Robert J.; and Clark, William E. Low frictional loss rotary vane gas compressor having superior lubrication characteristics. 4,521,167, Cl. 418-82.000.

Cebal: *See—*
Edelmann, Gilbert, 4,520,730, Cl. 101-426.000.

Central Glass Company, Limited: *See—*
Kandachi, Takayoshi; Okino, Seiki; Yanai, Toshiharu; and Tanaka, Katsuto, 4,521,454, Cl. 427-168.000.

Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See—*
Ponghis, Nikolas G.; and Poos, Arthur G., 4,521,246, Cl. 75-42.000.

Centrifugal Piston Expander, Inc.: *See—*
Dibrell, Edwin W., 4,520,632, Cl. 62-403.000.

Cerny, David E., to Respiratory Care, Inc. Safety connector for flexible tube device. 4,521,038, Cl. 285-24.000.

Chaborski, Hoiko; and Mehnert, Walter, to MITEC Moderne Industrietechnik GmbH. Apparatus for measuring distances by measuring time of travel of a measuring light pulse. 4,521,107, Cl. 356-5.000.

Chabrerie, Jean-Pierre: *See—*
Saint-Michel, Jacques A.; Chabrerie, Jean-Pierre; and Mailfert, Alain, 4,521,709, Cl. 310-186.000.

Chadshay, Roman: *See—*
McCartney, Michael S.; Chadshay, Roman; and Erlacher, Richard F., 4,520,739, Cl. 110-263.000.

Challen, Richard F., to General Electric Company. Battery saving frequency synthesizer arrangement. 4,521,918, Cl. 455-343.000.

Chamberlain, Joseph G. Jacketed wood stove. 4,520,791, Cl. 126-121.000.

Champion International Corporation: *See—*
Allen, Robert L., 4,521,492, Cl. 428-464.000.

Champion Spark Plug Company: *See—*
Seitz, David M.; and Weinstein, Richard, 4,520,949, Cl. 222-108.000.

Chan, George W.; and Sitrin, Robert D., to SmithKline Beckman Corporation. Aglycone and pseudo-aglycones of the AAD 216 antibiotics. 4,521,335, Cl. 260-112.50R.

Chang, Glenn E. C.: *See—*
Jones, Robert J.; and Chang, Glenn E. C., 4,521,623, Cl. 564-430.000.

Chang, Kai: *See—*
Tahim, Raghbir S.; Hayashibara, George M.; and Chang, Kai, 4,521,747, Cl. 331-107.0SL.

Chang, Tiang-Shing; and Zientek, Lucy J., to Block Drug Company, Inc. Denture fixative composition containing partially neutralized copolymers of maleic acid or anhydride and alkyl vinyl ethers which are optionally partially crosslinked. 4,521,551, Cl. 523-120.000.

Chao, Tai-Hsiang; and Cleary, Michael T., to UOP Inc. Process for separating fatty acids from rosin acids with phosphorus modified alumina molecular sieve. 4,521,343, Cl. 260-419.000.

Chapman, G. Paul, to Decorative Designs, Inc. Decorative plate apparatus. 4,521,464, Cl. 428-33.000.

Characklis, William G. Measurement of build-up of fouling deposits by sensing flow characteristics during brief flow excursions. 4,521,864, Cl. 364-563.000.

Chas. M. Bailey Co., Inc.: *See—*
Dixon, Robert W., 4,520,846, Cl. 137-625.300.

Chemische Werke Huels AG: *See—*
Droscher, Michael; Gerth, Christian; and Burzin, Klaus, 4,521,554, Cl. 523-522.000.

Chemische Werke Huls AG: *See—*
Hofmann, Peter, 4,521,526, Cl. 502-24.000.

Chen, Robert G.; Patel, Arvind D.; and Sample, Thomas E., Jr., to Dresser Industries, Inc. Composition and method of preparation of novel aqueous drilling fluid additives. 4,521,578, Cl. 526-288.000.

Chenausky, Peter P.; Mongeon, Robert J.; and Laughman, Lanny M., to United Technologies Corporation. Passively Q-switched dual laser. 4,521,109, Cl. 356-349.000.

Cherill, Robert J.: *See—*
Kosley, Raymond W., Jr.; and Cherill, Robert J., 4,521,537, Cl. 514-302.000.

Chervenak, Michael C.; Eccles, Richard M.; and Nongbri, Govanon, to HRI, Inc. Sustained high hydroconversion of petroleum residua feedstocks. 4,521,295, Cl. 208-59.000.

Chesson, Edwin E.: *See—*
Borsuk, Gerald M.; Chesson, Edwin E.; Beard, Jerome C.; and Lisle, Thomas K., Jr., 4,521,896, Cl. 377-60.000.

Chevron Research Company: *See—*
Blanton, William A., Jr.; and Dimpel, William L., 4,521,389, Cl. 423-235.000.
Erdman, Timothy R., 4,521,319, Cl. 252-47.500.
Loh, William, 4,521,240, Cl. 71-88.000.
Plavac, Frank, 4,521,610, Cl. 560-27.000.
Silcox, William H., 4,521,135, Cl. 405-224.000.
Spars, Byron G.; Klett, Robert J.; and Wallman, P. Henrik, 4,521,292, Cl. 208-11.00R.

Chew, Timmy L.: *See—*
Brand, Glen; and Chew, Timmy L., 4,520,841, Cl. 137-270.000.

Chinn, Albert E.: *See—*
King, Harold B.; Masaitis, William; Ippisch, Ernest; and Chinn, Albert E., 4,521,862, Cl. 364-552.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Soos, Rudolf; Kolta, Rezso; Zoltan, Sandor; and Tary, Maria, 4,521,612, Cl. 560-124.000.

Chiou, George C. Y.; and Liu, Hsin-Kuang, to Texas A&M University System, The. Ophthalmic compositions and their use for treating elevated intraocular pressure and glaucoma. 4,521,414, Cl. 514-229.000.

Chisso Corporation: *See—*
Kawamura, Yasuo; Nishiyama, Tadashi; Itoh, Tomiyoshi; and Sakai, Takuo, 4,521,406, Cl. 424-94.000.

Cho, Byong K., to General Motors Corporation. Monolithic catalytic converter for improved thermal performance. 4,521,532, Cl. 502-439.000.

Cholley, Henri E.; Laupretre, Jean J.; and Rollet, Jean, to Foptica. Optical cable designed to withstand high pressures. 4,521,072, Cl. 350-96.230.

Chow, William C.: *See—*
Rasmussen, Donald O.; Chow, William C.; and Davio, Franklin J., 4,520,970, Cl. 242-195.000.

Christ, Richard; Muller, Erhard; Knackstedt, Hans-Gunther; and Laug, Reiner, to Transnuklear GmbH. Shielding container having neutron shielding for the transportation and/or storage of radioactive material. 4,521,691, Cl. 250-506.100.

Christen, Jimmie D.; and Taylor, Henry B., III, to Dow Chemical Company, The. Preparation of polyether polyols. 4,521,548, Cl. 521-167.000.

Churchill, Howard. Tree stand. 4,520,935, Cl. 211-124.000.

Cialone, Robert A. Method and kit for constructing an aesthetic and functional temporary denture. 4,521,193, Cl. 433-199.000.

Ciammaichella, Richard C.: *See—*
Bohl, Thomas L.; and Ciammaichella, Richard C., 4,521,089, Cl. 350-582.000.

Ciba-Geigy AG: *See—*
Jan, Gerald; and Lenoir, John, 4,521,591, Cl. 534-821.000.

Ciba Geigy Corporation: *See—*
Breitenfeliner, Franz, 4,521,560, Cl. 524-371.000.
Kristinsson, Haukur; and Topfl, Werner, 4,521,597, Cl. 544-3.000.
Spivack, John D.; and Pastor, Stephen D., 4,521,320, Cl. 252-47.500.

Cieloszyk, Gary S.: *See—*
Lee, Kiu H.; and Cieloszyk, Gary S., 4,521,573, Cl. 526-125.000.

Cincinnati Milacron Inc.: *See—*
Holmes, Donald P.; and McDonald, David I., 4,520,575, Cl. 34-23.000.

Cirkel, Hans-Jurgen; Bette, Willi; and Muller, Reinhard, to Kraftwerk Union Aktiengesellschaft. Microstrip capacitor for energy storage, preferably for high-energy lasers. 4,521,889, Cl. 372-87.000.

Clairol Incorporated: *See—*
Skovdal, Jorgen, 4,520,832, Cl. 132-33.00R.

Clarion Co., Ltd.: *See—*
Okamoto, Takeshi; and Minagawa, Shoichi, 4,521,711, Cl. 310-313.00B.

Clark, Jim W.: *See—*
Doescher, George C.; and Clark, Jim W., 4,521,140, Cl. 408-97.000.

Clark, Keith E.; and Woods, Charles E., to United States of America, Navy. Stabilized gimbal platform. 4,520,973, Cl. 244-3.160.

Clark, Lloyd D.; Wilcox, Jean K.; and Day, Gene F., to Xerox Corporation. Ion projection printer with charge compensation source. 4,521,792, Cl. 346-159.000.

Clark, William E.: *See—*
Cavalleri, Robert J.; and Clark, William E., 4,521,167, Cl. 418-82.000.

Clarke, James W.; Kimber, Geoffrey M.; Rantell, Terry D.; and Snape, Colin E., to Coal Industry (Patents) Limited. Coal extraction. 4,521,291, Cl. 208-8.0LE.

Class, Jay B., to Hercules Incorporated. Fiber filter and stabilizer formulation. 4,521,493, Cl. 428-498.000.

Classen, Theodore M.: *See—*
Scinta, James; and Classen, Theodore M., 4,521,293, Cl. 208-11.0LE.

Claude, Oudet, to Portescap. Method and device for braking an assembly comprising a two-phase synchronous motor. 4,521,723, Cl. 318-696.000.

Claudio, Fuzzi, to Eurobeva Engineering Trust. Method and machine for the packaging of articles with a stretchable foil. 4,520,613, Cl. 53-441.000.

Cleary, Michael T.: *See—*
Chao, Tai-Hsiang; and Cleary, Michael T., 4,521,343, Cl. 260-419.000.

Clegg, John E. Conical middle component microscopic lenses. 4,521,085, Cl. 350-432.000.

Clum Mfg. Co. Inc.: *See—*
Krubsack, Larry J., 4,521,758, Cl. 335-131.000.

Clusener, Gerhard R.: *See—*
Stepke, Anthony C.; and Clusener, Gerhard R., 4,521,119, Cl. 374-56.000.

Coal Industry (Patents) Limited: *See—*
Carpenter, Brian M., 4,520,740, Cl. 110-288.000.
Clarke, James W.; Kimber, Geoffrey M.; Rantell, Terry D.; and Snape, Colin E., 4,521,291, Cl. 208-8.0LE.
Eagles, Brian A.; and French, Albert G., 4,521,058, Cl. 299-81.000.

Coates, John S., to Du Pont de Nemours, E. I., and Company. Catalyst for anthraquinone hydrogen peroxide process. 4,521,531, Cl. 502-242.000.

Coates, Vincent J.; Grund, J. Evan; and Westrate, Stephen B., to Nanometrics Incorporated. Linewidth measuring with linearity calibration of the T.V. camera tube. 4,521,686, Cl. 250-237.00R.

Coblentz, Andrea; Lefevre, Didier; Colombani, Pascal; and Meunier, Denis, to Schlumberger Technology Corp. Methods and apparatus for determining flow characteristics of a fluid in a well from temperature measurements. 4,520,666, Cl. 73-155.000.

Codman & Shurtleff, Inc.: *See—*
Mickiewicz, Stanley, 4,520,818, Cl. 128-303.170.

Cody, Michael J.; and Spykerman, Scott A., to Prince Corporation. Visor with mirror and storage means. 4,521,051, Cl. 296-97.00H.

Coe, David J.; and Lowis, Royce, to U.S. Philips Corporation. Insulated-gate field-effect transistors. 4,521,795, Cl. 357-23.400.
Cohen, Alan P. High volume oral evacuator. 4,521,185, Cl. 433-31.000.
Cole, Clinton W.; and Beach, Verlin R., to Halliburton Company. Cover retainer. 4,520,837, Cl. 137-68.00R.
Coleman, Donald J., Jr.; Haken, Roger A.; and Wang, Chung S., to Texas Instruments Incorporated. Method for depositing polysilicon over TiO_2. 4,521,446, Cl. 427-86.000.
Collins, Albert R., to Grefco, Inc. Method and apparatus for heating particulate material. 4,521,182, Cl. 432-13.000.
Colombani, Pascal: *See—*
Coblentz, Andrea; Lefevre, Didier; Colombani, Pascal; and Meunier, Denis, 4,520,666, Cl. 73-155.000.
Combustion Engineering, Inc.: *See—*
Baker, Robert D.; Driggers, Gerald W.; Gray, Ronald W.; and Hawkins, Lawrence A., 4,521,229, Cl. 55-137.000.
Covell, Russell B., 4,520,760, Cl. 122-7.00R.
McCartney, Michael S.; Chadshay, Roman; and Erlacher, Richard F., 4,520,739, Cl. 110-263.000.
Peck, Daniel A.; and Callaghan, Vincent M., 4,521,371, Cl. 376-245.000.
Commissariat a l'Energie Atomique: *See—*
Pigeon, Michel; and Saglio, Robert, 4,521,150, Cl. 414-749.000.
Commonwealth of Australia, The: *See—*
Linklater, Peter M.; and Browning, George W., 4,521,433, Cl. 426-36.000.
Robinson, Paul R., 4,520,711, Cl. 89-1.50D.
Compagnie Francaise de l'Azote Cofaz: *See—*
Mouille , Bernhard; and Durand, Michel, 4,521,390, Cl. 423-239.000.
Compagnie Francaise des Petroles: *See—*
Marais, Lionel, 4,520,886, Cl. 173-135.000.
Compagnie General d'Electricite: *See—*
Belouet, Christian, 4,520,752, Cl. 118-405.000.
Compagnie Generale des Etablissements Michelin: *See—*
Pommier, Jean, deceased, 4,520,856, Cl. 152-454.000.
Cone, Richard E., to Spalding & Evenflo Companies, Inc. Booster seat. 4,521,052, Cl. 297-3.000.
Connelly, Dale L., to United States of America, National Aeronautics & Space Administration. Light transmitting window assembly. 4,521,077, Cl. 350-319.000.
Consiglio Nazionale Delle Ricerche: *See—*
Sottini, Stefano; Brenci, Massimo; Righini, Giancarlo; Falciai, Riccardo; Russo, Vera; and Scheggi, Verga A., 4,521,070, Cl. 350-96.150.
Conway, John W.: *See—*
Bruce, Kenneth E.; Lombardo, Ralph M., Jr.; Tarbox, Bruce H.; and Conway, John W., 4,521,848, Cl. 364-200.000.
Cook, Brian A.; and Quintin, Philip G. Strip lighting system. 4,521,839, Cl. 362-238.000.
Coomes, Pamela R.: *See—*
Coomes, Raymond G.; and Coomes, Pamela R., 4,520,715, Cl. 98-101.000.
Coomes, Raymond G.; and Coomes, Pamela R. Energy-saving cover apparatus for room air registers. 4,520,715, Cl. 98-101.000.
Coon, Jessie H.: *See—*
Hilker, G. Daniel; Lausen, Verne H.; Coon, Jessie H.; Bodette, James E.; Grimes, Jerry L.; Wright, Roger D.; Disque, Donny R.; and Bultemeier, Keith D., 4,521,173, Cl. 425-113.000.
CooperVision, Inc.: *See—*
Houlsby, Robert D., 4,521,375, Cl. 422-29.000.
Corbett, Reg D. Centrifugal fans. 4,521,154, Cl. 416-175.000.
Corder, Thomas E.: *See—*
Pezzolo, Donald E.; Pfeiffer, James W.; and Corder, Thomas E., 4,521,843, Cl. 364-145.000.
Cordier, Bernard; and Berge, Christian, to Societe Nationale Elf Aquitaine (Production). System for detecting a native reservoir fluid in a well bore. 4,520,665, Cl. 73-155.000.
Cordis Corporation: *See—*
Heimer, Malcolm L., 4,521,743, Cl. 330-296.000.
Cornell Research Foundation, Inc.: *See—*
Bauman, Dale E., 4,521,409, Cl. 514-21.000.
Cortese, Nicholas A., Jr.; and Gastrock, William H., to American Cyanamid Company. Method for the preparation of 1,5-bis-aryl-1,4-pentadien-3-ones. 4,521,629, Cl. 568-313.000.
Cosby, Theodore E.; and Cunningham, Patrick J., to Cunningham, Patrick J. Variable resistance exercise apparatus and improved method of exercising. 4,521,012, Cl. 272-73.000.
Costarelli, Edoardo. Screw drier particularly for plastic materials. 4,520,724, Cl. 100-935.000.
Coste, Steven D.: *See—*
Rado, David J.; and Coste, Steven D., 4,520,904, Cl. 187-29.00R.
Costruzioni Aeronautiche Giovanni Agusta S.p.A.: *See—*
Caramaschi, Vittorio; and Castelli, Pier L., 4,521,157, Cl. 416-134.00A.
Cotchonis, N. Eugene. Golf ball position marker. 4,521,018, Cl. 273-32.00A.
Cottman, Kirkwood S., to Goodyear Tire & Rubber Company, The. Phenolic antioxidants. 4,521,559, Cl. 524-289.000.
Coulter Electronics, Inc.: *See—*
Carter, James H.; Ledis, Stephen L.; and Crews, Harold R., 4,521,518, Cl. 436-10.000.
Coulter Systems Corporation: *See—*
Kuehnle, Manfred R.; Perry, George J.; and Rose, Robert M., 4,521,097, Cl. 355-3.00R.
Cournoyer, Bernard T.; and Hedstrom, Norman A., to Wright Line Inc. Cable bushing. 4,520,976, Cl. 248-56.000.
Courtney, Thomas F., Jr.: *See—*
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,521,613, Cl. 560-152.000.
Covell, Russell B., to Combustion Engineering, Inc. Heat exchanger outlet arrangement. 4,520,760, Cl. 122-7.00R.
Cowart, Ronald W.: *See—*
Ong, Poen S.; Zermeno, Alfonso; Marsh, Lee M., Jr.; Hevezi, James M.; and Cowart, Ronald W., 4,521,808, Cl. 358-111.000.
Cowell, Mark: *See—*
Lares, Joseph P.; and Cowell, Mark, 4,521,189, Cl. 433-84.000.
Cox, Russell C.; and McElroy, Arthur H. Pipe connection. 4,521,041, Cl. 285-156.000.
CPC International Inc.: *See—*
Lemme, Christopher J.; and Frankiewicz, Jeffrey R., 4,521,516, Cl. 435-253.000.
Craig, Dwin R. Apparatus and method for producing photographic records of transparencies. 4,521,104, Cl. 355-20.000.
Cramer, Gottfried; and Krumm, Valentin, to Lindauer Dornier Gesellschaft mbH. Apparatus in a shuttleless weaving machine for making a selvage. 4,520,850, Cl. 139-194.000.
Cramer, Rudolph E.: *See—*
Ouwerkerk, Johannes H. W.; Lucieer, Wouter B.; and Cramer, Rudolph E., 4,521,117, Cl. 366-165.000.
Crawford, John G., to Black & Decker, Inc. Power pierce can opener. 4,520,567, Cl. 30-424.000.
Crawford, John S., to Technical Components Pty. Ltd. Gas ignition circuits. 4,521,825, Cl. 361-253.000.
CRC Chemicals Inc.: *See—*
Facey, Roy B., 4,520,951, Cl. 222-182.000.
Crehan, Patrick J.: *See—*
Kennedy, Richard B., 4,521,544, Cl. 521-107.000.
Crews, Harold R.: *See—*
Carter, James H.; Ledis, Stephen L.; and Crews, Harold R., 4,521,518, Cl. 436-10.000.
Crookes, Derek L., to Glaxo Group Limited. Aminoalkyl furan derivative. 4,521,431, Cl. 514-471.000.
Crosby, Gaius P.; and James, Thomas A., to James, Thomas A. Lightweight safe and door mechanism therefor. 4,520,736, Cl. 109-60.000.
Crosilla, Danilo A.: *See—*
Asselin, Andre A.; Crosilla, Danilo A.; and Humber, Leslie G., 4,521,606, Cl. 548-503.000.
Cross, Dan A.: *See—*
Bloch, Joseph T.; and Cross, Dan A., 4,520,966, Cl. 242-54.00R.
Cross, William E.: *See—*
Nestor, Charles R.; Plyler, Robert G.; and Cross, William E., 4,521,065, Cl. 339-75.0MP.
Crowell, Douglas H.: *See—*
Morse, Albert I.; Crowell, Douglas H.; and Gilligan, Thomas J., III, 4,520,751, Cl. 118-203.000.
Cselt Centro Studi E Laboratori Telecomunicazioni S.p.A.: *See—*
Gabrielli, Luciano; and Sposini, Maurizio, 4,521,882, Cl. 370-85.000.
Csepel Muvek Femmuve: *See—*
Domokos, Sipos, 4,521,455, Cl. 427-178.000.
Cummings, Lewis W.: *See—*
Reichenbach, Dean H.; Stang, John H.; Cummings, Lewis W.; Glasson, Richard E.; and Ruthmansdorfer, David A., 4,520,627, Cl. 60-599.000.
Cummins Engine Company: *See—*
Roettgen, Leslie A.; Webber, Beth A.; Brooks, Robert M.; and Layman, Robert J., 4,520,767, Cl. 123-41.100.
Cummins Engine Company, Inc.: *See—*
Reichenbach, Dean H.; Stang, John H.; Cummings, Lewis W.; Glasson, Richard E.; and Ruthmansdorfer, David A., 4,520,627, Cl. 60-599.000.
Villanyi, Tibor J., 4,520,542, Cl. 29-224.000.
Cummins, George E. Speed differential device. 4,520,692, Cl. 74-799.000.
Cunningham, Patrick J.: *See—*
Cosby, Theodore E.; and Cunningham, Patrick J., 4,521,012, Cl. 272-73.000.
Curtis, Jeffrey B.: *See—*
Winkler, Dean M.; Curtis, Jeffrey B.; and Heller, Aaron J., 4,521,865, Cl. 364-608.000.
Cuscurida, Michael; and Peterson, Bruce W., to Texaco Inc. Epoxy resin modified polyether polyols from mixed initiators. 4,521,572, Cl. 525-507.000.
Cuscurida, Michael: *See—*
Dominguez, Richard J. G.; and Cuscurida, Michael, 4,521,581, Cl. 528-57.000.
Cushman, Robert L.; Koester, Arlan; and Eveland, Michael, to Halsey Taylor Division of King-Seeley Thermos Co. Barrier-free water cooler. 4,520,960, Cl. 239-29.000.
Custom Laboratories, Inc.: *See—*
Theslof, Gene, Jr., 4,521,091, Cl. 353-122.000.
CVI Incorporated: *See—*
Sarcia, Domenico S., 4,520,630, Cl. 62-6.000.
D & S Plug Corporation: *See—*
DiFazio, Robert, 4,520,887, Cl. 180-68.500.
Daar, Horst; and Alig, Franz, to Siemens Aktiengesellschaft; and Metallgesellschaft Aktiengesellschaft. Method for determining the existence of an optimal interval for rapping the electrodes of an electrostatic precipitator. 4,521,223, Cl. 55-13.000.

Daar, Horst; and Alig, Franz, to Siemens Aktiengesellschaft; and Metallgesellschaft Aktiengesellschaft. Control device for an electrostatic precipitator. 4,521,228, Cl. 55-105.000.
Dabi, Shmuel; Loewrigkeit, Peter; and Van Dyk, Kenneth A. Aqueous N-methylolhydrazide-containing polymer dispersion. 4,521,460, Cl. 427-385.500.
Dahmen, Jan E.; Magnusson, Hans G.; and Martensson, Kaj B., to Svenska Sockerfabriks AB. Compounds for therapeutic or diagnostic use, a process and intermediates for their preparation. 4,521,592, Cl. 536-4.100.
Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Fujita, Takeshi;; Mori, Shigeo; Kataoka, Hironori; and Taniuchi, Akira, 4,521,586, Cl. 528-297.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Sato, Yoshihiro, 4,520,927, Cl. 206-387.000.
Daicel Chemical Industries, Ltd.: *See—*
Ishido, Takatsugu; and Horikawa, Takeshi, 4,521,571, Cl. 525-437.000.
Kanematu, Tetuo, 4,521,594, Cl. 536-98.000.
Otake, Etsuo; Kimura, Mamoru; Yokota, Hiromu; and Kanematu, Tetuo, 4,521,251, Cl. 106-183.000.
Toaba, Hirotaka; Mikumo, Masatoshi; and Asami, Masahiro, 4,521,565, Cl. 525-64.000.
Watanabe, Shoji; Inoue, Kimio; and Okitsu, Kiyoshi, 4,521,570, Cl. 525-415.000.
Daigle, Ronald H., to Rosenberg, Wilbert, a part interest. Convertible headband construction. 4,520,510, Cl. 2-452.000.
Daikin Kogyo Co., Ltd.: *See—*
Nakagawa, Shinichi; and Ihara, Kiyohiko, 4,521,575, Cl. 526-206.000.
Yoshimura, Tatsushiro; and Tominaga, Shigetake, 4,521,596, Cl. 524-406.000.
Daikoku, Takahiro: *See—*
Nakajima, Tadakatsu; Nakayama, Wataru; and Daikoku, Takahiro, 4,520,866, Cl. 165-115.000.
Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,520,863, Cl. 165-48.00R.
Dudeck, Ingo; and Schenk, Jurgen, 4,521,769, Cl. 340-635.000.
Dainippon Screen Mfg. Co., Ltd.: *See—*
Ono, Yoshio; and Sakamoto, Seiya, 4,521,814, Cl. 358-296.000.
Suzuki, Shigeyoshi; Yamada, Jun; Senga, Takao; Kuriu, Sadao; Yamasaki, Masahiro; Hirose, Iwao; and Maegawa, Tokubee, 4,521,101, Cl. 355-10.000.
Daiwa Seiko Inc.: *See—*
Nagata, Hiromitsu, 4,520,971, Cl. 242-220.000.
Dangel, Henry. Inter-axle differential transfer box unit for a four-wheel drive vehicle. 4,520,690, Cl. 74-695.000.
Dankwart, Franz J.: *See—*
Freitag, Lutz; Wendt, Michael; and Dankwart, Franz J., 4,520,812, Cl. 128-204.250.
Dapkus, P. Danial: *See—*
Liu, Yet-Zen; Hong, Chi-Shain; and Dapkus, P. Danial, 4,521,887, Cl. 372-45.000.
Darda, Walter, to Heidelberger Druckmaschinen AG. Braking brushes in folding apparatus of rotary printing machines. 4,521,007, Cl. 270-47.000.
Darle, Thierry: *See—*
Goursat, Albert-Gilbert; Vernet, Gilles; Rimbert, Jean-Francis; Foulard, Jean; Darle, Thierry; and Bigot, Jean, 4,521,244, Cl. 75-0.50B.
Darnell, Raymond E. Method for fabricating a ball joint assembly including a step for burr removal. 4,520,546, Cl. 29-441.00R.
Das, Jagabandhu, to E. R. Squibb & Sons, Inc. Tetrahydrofuranyl substituted ethers. 4,521,539, Cl. 514-461.000.
Databar Corporation: *See—*
Winter, Arthur J., 4,521,678, Cl. 235-472.000.
D'Augustine, Frank T., to RCA Corporation. Method for reducing degradation of an optical image in an exposure lighthouse. 4,521,501, Cl. 430-24.000.
Daventry Pty. Ltd.: *See—*
Howard, Robert, 4,520,584, Cl. 40-606.000.
Davies, David G., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Double base propellant compositions. 4,521,261, Cl. 149-92.000.
Davies, Robert B., to Motorola, Inc. Crossunder within an active device. 4,521,799, Cl. 357-51.000.
Davio, Franklin J.: *See—*
Rasmussen, Donald O.; Chow, William C.; and Davio, Franklin J., 4,520,970, Cl. 242-195.000.
Davis, Boyce W. Seed delinter. 4,520,529, Cl. 19-41.000.
Davis, Kurtis D. Shear pin hilt for knife. 4,520,566, Cl. 30-342.000.
Davis, Walter L.; Messenger, Dale; and Randall, Malcolm W., to Key Technology, Inc. Inspection and cutting apparatus. 4,520,702, Cl. 83-71.000.
Davy McKee (Poole) Limited: *See—*
Ross, Hugh M.; and Grocock, Peter G., 4,520,645, Cl. 72-250.000.
Dawans, Francois: *See—*
Candau, Francoise; Leong, Yee-Sing; Kohler, Norbert; and Dawans, Francois, 4,521,317, Cl. 252-8.55D.
Dawson, Paul H.: *See—*
Sturges, Robert H., Jr.; Birsa, Joseph J.; Dawson, Paul H.; and Byford, Roger G., 4,521,844, Cl. 364-167.000.
Day, Gene F., to Xerox Corporation. Ion projection printer with pseudo-continuous back electrode. 4,521,791, Cl. 346-159.000.
Day, Gene F.: *See—*
Clark, Lloyd D.; Wilcox, Jean K.; and Day, Gene F., 4,521,792, Cl. 346-159.000.
Day, John T., to Rubber Millers, Inc. Mechanically raked bar screen with conveyor system having elastomeric rakes. 4,521,306, Cl. 210-159.000.
Dayco Corporation: *See—*
Tassone, Joseph V., 4,521,362, Cl. 264-136.000.
Daymarc Corporation: *See—*
Evain, Jean, 4,520,931, Cl. 209-542.000.
De Cloet Ltd.: *See—*
De Cloet, Dan; De Cloet, Ben; and Krempa, Ted, 4,520,579, Cl. 34-204.000.
Deal, Troy M. Rotating self-cleaning screen. 4,521,305, Cl. 210-158.000.
Debeneix, Pierre, to S.N.E.C.M.A. Combined fastening device for transporting and hoisting a turbojet engine. 4,520,974, Cl. 244-54.000.
de Boer, Peter, to Gispen+Staalmeubel B.V. Chair. 4,521,053, Cl. 297-312.000.
Debrunner, Paul E., Jr., to Rockwell International Corporation. Flow control valve. 4,520,843, Cl. 137-469.000.
Deckler, Harry C., to White Farm Equipment Company. Marker for tilling implements. 4,520,875, Cl. 172-126.000.
De Cloet, Ben: *See—*
De Cloet, Dan; De Cloet, Ben; and Krempa, Ted, 4,520,579, Cl. 34-204.000.
De Cloet, Dan; De Cloet, Ben; and Krempa, Ted, to De Cloet Ltd. Tobacco bin. 4,520,579, Cl. 34-204.000.
DeCoene, Frans J. G. C., to Sperry Corporation. Round baler with vertically oriented start chamber. 4,520,721, Cl. 100-88.000.
Deconinck, Didier, to Allibert S.A. Chaise lounge. 4,521,054, Cl. 297-357.000.
Decorative Designs, Inc.: *See—*
Chapman, G. Paul, 4,521,464, Cl. 428-33.000.
Deep Rock Manufacturing Company, Inc.: *See—*
MacElvain, Robert C., 4,520,879, Cl. 173-57.000.
Deforeit, Christian J., to Matth. Hohner AG. Electronic musical instrument. 4,520,706, Cl. 84-1.100.
de Greef, Magdel N.; and Smit, Ian D. Anaesthetic induction device. 4,520,809, Cl. 128-200.240.
Degussa Aktiengesellschaft: *See—*
Arntz, Dietrich; Prescher, Gunter; Burkhardt, Werner; Heilos, Johannes; and Manner, Reinhard, 4,521,618, Cl. 562-535.000.
deHertel Eastcott, Peter; and Trussler, Ronald C., to Canadian General Electric Company Limited. Grinding mill control using controlled pulsing of air clutches. 4,520,910, Cl. 192-0.02R.
de Jong, Koenraad A.: *See—*
Philips, Franciscus M.; and de Jong, Koenraad A., 4,520,999, Cl. 254-278.000.
Delage, Richard A. Fuel fume generator kit. 4,521,181, Cl. 431-207.000.
De Lima Castro Netto, Eduardo. Sliding closure assemblies. 4,520,534, Cl. 24-399.000.
Delp, Helen R.: *See—*
Benin, Joshua; Delp, Helen R.; and Krauss, Leland L., 4,521,263, Cl. 156-159.000.
Demizu, Hiromi: *See—*
Sakai, Katsuo; and Demizu, Hiromi, 4,521,502, Cl. 430-42.000.
Demus, Dietrich; Vorbrodt, Hans-Matthias; Hauser, Anton; Vogel, Jorg; and Zaschke, Horst, to VEB Werk fur Fernsehelektronik im VEB Kombinat Mikroelektronik. Nematic liquid crystals and method for production thereof. 4,521,327, Cl. 252-299.610.
Denker, Stanley D.: *See—*
Engler, Peter B.; and Denker, Stanley D., 4,520,615, Cl. 53-550.000.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Asai, Shinichiro; Katoh, Kazuo; and Nakano, Tatsuo, 4,521,476, Cl. 428-209.000.
Dennis, Philip J.: *See—*
Carbone, Douglas C.; and Dennis, Philip J., 4,521,760, Cl. 337-368.000.
Deters, Thomas J. Waste flushing unit for hog farrowing. 4,520,759, Cl. 119-28.000.
Detienne, Jean-Louis; Levesque, Guy; and Tozzolino, Pierre, to Societe Nationale Elf Aquitaine (Production). Process of production of organic dithio-acids and their application. 4,521,301, Cl. 209-166.000.
Deutsch Company, Electronic Components Division, The: *See—*
Kempe, Hans I., 4,521,066, Cl. 339-89.00M.
Deutsche Babcock Werke Aktiengesellschaft: *See—*
Martin, Heino, 4,520,762, Cl. 122-406.0ST.
DeWald, Jack J. Sub-surface safety gate valve. 4,520,994, Cl. 251-58.000.
De Witt, Paolo; and Benedetto, Enrico. Electrolytic process for the preparation of organic compounds. 4,521,285, Cl. 204-72.000.
Deysson, Jean-Yves: *See—*
Bonnot, Guy; Laviolette, Pierre; Potiron, Andre; and Deysson, Jean-Yves, 4,521,353, Cl. 264-8.000.
Dibrell, Edwin W., to Centrifugal Piston Expander, Inc. Method and apparatus for extracting heat and mechanical energy from a pressured gas. 4,520,632, Cl. 62-403.000.
DiCicco, Paolo S. Apparatus for processing articles in a series of process solution containers. 4,520,834, Cl. 134-63.000.
Dien, Sam. Golf club cover. 4,520,855, Cl. 150-52.00G.
Diener, Herbert, to Guhring, Gottlieb. Automatic machine tool. 4,520,595, Cl. 51-3.000.
Diesinger, Walter; and Homburg, Axel, to Dynamit Nobel Aktiengesellschaft. Spin-stabilized training missile. 4,520,972, Cl. 244-3.100.
DiFazio, Robert, to D & S Plug Corporation. Battery holddown arrangement. 4,520,887, Cl. 180-68.500.

DiGeorge, Michael A. Double-locking ratchet for orthopedic brace. 4,520,804, Cl. 128-80.00C.
Digh, Frank, to Harsco Corporation. Concrete core-wall form and stripping assembly therefor. 4,520,989, Cl. 249-13.000.
Dilling, Peter, to Westvaco Corporation. Process for preparing lignosulfonates. 4,521,336, Cl. 530-501.000.
Di Martini, Carl R.; Howe, Herbert E.; Scott, William L.; and Bulvanoski, Leo J., to ASARCO Incorporated. Low temperature, non-SO_2 polluting, kettle process for separation of lead from lead sulfide-containing material. 4,521,247, Cl. 75-77.000.
Dimpel, William L.: *See—*
Blanton, William A., Jr.; and Dimpel, William L., 4,521,389, Cl. 423-235.000.
Dingwall, Andrew G. F., to RCA Corporation. High speed sense amplifier. 4,521,703, Cl. 307-530.000.
Disque, Donny R.: *See—*
Hilker, G. Daniel; Lausen, Verne H.; Coon, Jessie H.; Bodette, James E.; Grimes, Jerry L.; Wright, Roger D.; Disque, Donny R.; and Bultemeier, Keith D., 4,521,173, Cl. 425-113.000.
Disston, Horace C.; and Eichfeld, Timothy J. Foldable ladder. 4,520,896, Cl. 182-22.000.
Diversey Wyandotte Inc.: *See—*
Anderson, Patricia A.; Hagens, Roger G.; and Roden, Dianne M., 4,521,321, Cl. 252-49.300.
Dix, Gary L.; Heim, Lloyd S.; Herald, Robert F.; and Quinlan, William P., to International Business Machines Corporation. Method and apparatus for error data feedback in a diskette drive. 4,521,884, Cl. 371-15.000.
Dix, Johannes P.: *See—*
Armbrust, Herbert; Dix, Johannes P.; Hansen, Guenter; and Zeidler, Georg, 4,521,216, Cl. 8-639.000.
Dix, Robert M.; Ellis, Timothy A.; and Andrews, Gary W., to Texas Instruments Incorporated. Drive mechanism for a refrigerator with clearance seals. 4,520,629, Cl. 62-6.000.
Dixon, Claude E. Video game table for airlines commercial vehicles or the like. 4,521,021, Cl. 273-148.00B.
Dixon Industries Corporation: *See—*
Marshall, Charles R., 4,521,027, Cl. 277-152.000.
Dixon, Robert W., to Chas. M. Bailey Co., Inc. Valve. 4,520,846, Cl. 137-625.300.
Dobbs, Joseph M.: *See—*
Simms, Douglas P.; and Dobbs, Joseph M., 4,521,239, Cl. 71-27.000.
Doboy Packaging Machinery, Inc.: *See—*
Engler, Peter B.; and Denker, Stanley D., 4,520,615, Cl. 53-550.000.
Dr.-Ing. Rudolf Hell GmbH: *See—*
Knop, Hans-Georg, 4,521,812, Cl. 358-287.000.
Dr. Johannes Heidenhain GmbH: *See—*
Schwefel, Ernst, 4,521,845, Cl. 364-171.000.
Dr. von Ballmoos AG: *See—*
Marthaler, Hans-Peter, 4,520,657, Cl. 73-73.000.
Doddrell, David M.: *See—*
Pegg, David T.; Doddrell, David M.; and Bendall, Max R., 4,521,732, Cl. 324-300.000.
Dodge, Cleveland E., Jr. Bypassing double action rope grip. 4,521,000, Cl. 254-391.000.
Doduco KG Dr. Eugen Durrwachter: *See—*
Gevatter, Hans-Jurgen; Muller, Bernhard; and Neese, Hans-Joachim, 4,521,257, Cl. 148-11.50Q.
Doescher, George C.; and Clark, Jim W. Jig. 4,521,140, Cl. 408-97.000.
Dofel, Andrew W. R., to Supafit Gymnasium Equipment Pty. Ltd. Resilient type exercising device. 4,521,013, Cl. 272-136.000.
Doi, Hachiro; and Yaegashi, Masayuki, to Fuso Keigokin Co., Ltd. Lawn mower. 4,520,619, Cl. 56-320.100.
Doi, Haruo: *See—*
Yamamoto, Minoru; Sakata, Jiro; and Doi, Haruo, 4,521,236, Cl. 65-31.000.
Dollard, Peter M.; and Turin, William, to AT&T Bell Laboratories. Quasi-soft decision decoder for convolutional self-orthogonal codes. 4,521,886, Cl. 371-43.000.
Dollhausen, Manfred: *See—*
Kerimis, Dimitrios; Hombach, Rudolf; Muller, Peter; and Dollhausen, Manfred, 4,521,545, Cl. 521-107.000.
Dominguez, Richard J. G.; and Cuscurida, Michael, to Texaco Inc. Polymer polyol prepared by crosslinking a low molecular weight polymer in a polyol. 4,521,581, Cl. 528-57.000.
Domokos, Sipos, to Csepel Muvek Femmuve. Process and equipment for the production of alloyed copper wire rod by continuous casting. 4,521,455, Cl. 427-178.000.
Donaldson Company, Inc.: *See—*
Wolde-Michael, Girma, 4,521,313, Cl. 210-776.000.
Donn Incorporated: *See—*
Worley, Robert F.; and Petras, Jeffrey L., 4,520,609, Cl. 52-729.000.
Doria, Gianfederico; Passarotti, Carlo; Lovisolo, Pier P.; and Buttinoni, Ada, to Farmitalia Carlo Erba S.p.A. Condensed cycloaliphatic derivatives of substituted pyrido[1,2-a]pyrimidines and methods of treating allergic conditions, peptic ulcers and inhibiting gastric acid secretion with them. 4,521,419, Cl. 514-267.000.
Dornier System GmbH: *See—*
Knepper, Udo, 4,521,778, Cl. 343-13.00R.
Doucet, Jos: *See—*
Overbergh, Noel M. M.; Doucet, Jos; and Vansant, Jan, 4,521,470, . Cl. 428-36.000.
Douglas, Alan D.; and Reilly, Kenneth T., to GTE Products Corporation. Recovery of rhenium. 4,521,381, Cl. 423-49.000.
Doveri, Carlo, to Piaggio & C. S.p.A. Tension-adjusting device for toothed driving belts subjected to wide temperature differentials. 4,521,208, Cl. 474-101.000.
Dow Chemical Company, The: *See—*
Bubeck, Robert A.; and Arends, Charles B., 4,521,569, Cl. 525-316.000.
Christen, Jimmie D.; and Taylor, Henry B., III, 4,521,548, Cl. 521-167.000.
Kershner, Larry D., 4,521,626, Cl. 564-487.000.
Laursen, Larry J.; and Prueter, Elton D., 4,520,547, Cl. 29-469.500.
Mani, Inder, 4,521,494, Cl. 428-514.000.
Olstowski, Franciszek; and Peffley, Richard D., 4,521,330, Cl. 252-51.50R.
Pedjac, Joseph J., 4,521,633, Cl. 568-639.000.
Dow Corning Limited: *See—*
McVie, James; and Butler, Derek W., 4,521,461, Cl. 427-387.000.
Dowden, Dennis C.: *See—*
Higginbotham, John W.; and Dowden, Dennis C., 4,521,115, Cl. 356-432.000.
Draeger, Brigitte; and Ziegenhorn, Joachim, to Boehringer Mannheim GmbH. Reagent for the precipitation of apo-B-containing lipoproteins. 4,521,519, Cl. 436-17.000.
Draft Systems, Inc.: *See—*
Fallon, Merton R., 4,520,953, Cl. 222-396.000.
Dragerwerk AG: *See—*
Freitag, Lutz; Wendt, Michael; and Dankwart, Franz J., 4,520,812, Cl. 128-204.250.
Drenner, Dewey A., to 4D Incorporated. Brake drum gauge. 4,520,568, Cl. 33-143.00R.
Dresser Industries, Inc.: *See—*
Chen, Robert G.; Patel, Arvind D.; and Sample, Thomas E., Jr., 4,521,578, Cl. 526-288.000.
Kernion, Mark C.; and Renkey, Albert L., 4,521,357, Cl. 264-63.000.
Driggers, Gerald W.: *See—*
Baker, Robert D.; Driggers, Gerald W.; Gray, Ronald W.; and Hawkins, Lawrence A., 4,521,229, Cl. 55-137.000.
Droscher, Michael; Gerth, Christian; and Burzin, Klaus, to Chemische Werke Huels AG. Polybutylene terephthalate molding composition with high cold impact strength and amenable to thermoplastic processing. 4,521,554, Cl. 523-522.000.
Du Pont Canada Inc.: *See—*
Storms, William J., 4,521,437, Cl. 426-130.000.
Dubuit, Jean-Louis: *See—*
Rouly, Eric; Baquet, Philippe; and Dubuit, Jean-Louis, 4,520,726, Cl. 101-123.000.
Dudeck, Ingo; and Schenk, Jurgen, to Daimler-Benz Aktiengesellschaft. Device for detecting the failure of a sensor. 4,521,769, Cl. 340-635.000.
Duffner, Paul: *See—*
Frank, Gerhard; Rudolf, Peter; Neubauer, Gerald; Ohlinger, Manfred; Wilfinger, Hans J.; Pfannebecker, Emil; and Duffner, Paul, 4,521,527, Cl. 502-184.000.
DuFresne, Allen J., to Paper Converting Machine Company. Apparatus and method for transverse folding of webs. 4,521,209, Cl. 493-432.000.
Dufresne, Raymond A. Non-conductive battery cable connector and electrically conductive clip for use therewith. 4,521,067, Cl. 339-237.000.
Dumas, Glen A.: *See—*
Ziehm, Richard T.; Wilczek, Stephen P.; Baker, George E.; Husted, Raymond R.; Dumas, Glen A.; Bunker, Keith G.; and Place, George H., Jr., 4,521,847, Cl. 364-184.000.
Duncan, Robert, to Westinghouse Electric Corp. Fuel grid with sleeves welded in notched grid straps. 4,521,374, Cl. 376-462.000.
Dunn, James M., to Verex Laboratories, Inc. Constant release rate solid oral dosage formulations of quinidine. 4,521,401, Cl. 424-19.000.
Dunn, James M., to Verex Laboratories, Inc. Constant release rate solid oral dosage formulations of hydrazine. 4,521,402, Cl. 424-19.000.
Dunn, Jimmy L.; Mayo, George L.; and Romeo, Frank C., to Automated Robotic Systems, Inc. Robot tool changer. 4,520,550, Cl. 29-568.000.
Du Pont de Nemours, E. I., and Company: *See—*
Abbott, Scot D.; and Luddy, Michael A. G., 4,521,521, Cl. 436-517.000.
Benin, Joshua; Delp, Helen R.; and Krauss, Leland L., 4,521,263, Cl. 156-159.000.
Coates, John S., 4,521,531, Cl. 502-242.000.
Geltosky, ohn E., 4,521,510, Cl. 435-7.000.
Hay, James V.; and Sauers, Richard F., 4,521,241, Cl. 71-92.000.
Li, George T. C., 4,521,484, Cl. 428-374.000.
McKenna, James M., 4,521,557, Cl. 524-94.000.
Ostermaier, John J., 4,521,628, Cl. 568-1.000.
Paulson, Charles M., Jr.; and Faulhaber, Mark E., 4,521,111, Cl. 356-367.000.
Siuta, Vincent P.; and Slutsky, Joel, 4,521,329, Cl. 252-512.000.
Dupuis, Claude R.; and Hinz, Lorne C., to Northern Telecom Limited. Apparatus for transmitting informaticn via telephone lines. 4,521,643, Cl. 179-2.0DP.
Durand, John E. Visually and mechanically testable submersible composite. 4,521,652, Cl. 200-84.00B.
Durand, Michel: *See—*
Mouille , Bernhard; and Durand, Michel, 4,521,390, Cl. 423-239.000.

Durant, Graham J.: *See—*
Brown, Thomas H.; and Durant, Graham J., 4,521,418, Cl. 514-272.000.
Dusza, John P.; Tomcufcik, Andrew S.; and Albright, Jay D., to American Cyanamid Company. Aryl and heteroaryl[7-(aryl and heteroaryl)pyrazolo[1,5-a]pyrimidin-3-yl]methanones. 4,521,422, Cl. 514-258.000.
Dwinell, Davis B., to American Flange & Manufacturing Co. Inc. Container closure having a frangible outer cap. 4,520,942, Cl. 220-257.000.
Dycem Limited: *See—*
Fitton, Paul; and Holland, Peter J., 4,521,553, Cl. 523-333.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Diesinger, Walter; and Homburg, Axel, 4,520,972, Cl. 244-3.100.
E.D.T. Electrostatic Deposition Technologies S.p.A.: *See—*
Gange, Lester; and Pannell, Reginald J. H., 4,520,754, Cl. 118-626.000.
E. R. Squibb & Sons, Inc.: *See—*
Das, Jagabandhu, 4,521,539, Cl. 514-461.000.
Eagles, Brian A.; and French, Albert G., to Coal Industry (Patents) Limited. Rotary cutter heads for mining machines. 4,521,058, Cl. 299-81.000.
Eastman Kodak Company: *See—*
Adams, L. Jane, 4,521,556, Cl. 524-88.000.
Holzhauser, Ronald C.; McGlen, James A.; and Lawniczak, Gary P., 4,520,977, Cl. 248-201.000.
Lambeth, David N., 4,521,106, Cl. 356-1.000.
Thomsen, Joelle R.; and Fagerburg, David R., 4,521,585, Cl. 528-271.000.
Eaton Corporation: *See—*
Forsell, Kenneth A., 4,521,756, Cl. 335-21.000.
Hastings, Jerome K.; Bigelow, James H.; and Pearson, Robert L., 4,521,757, Cl. 335-79.000.
Ryczek, Lawrence J.; and Janutka, William J., 4,521,694, Cl. 307-266.000.
Ryczek, Lawrence J.; and Janutka, William J., 4,521,748, Cl. 331-108.00D.
Eberhardt, Wolfgang; Hoffmann, Dietrich; Kriechbaum, Karl; and Rohde, Erwin, to Licentia Patent-Verwaltungs-G.m.b.H. High voltage disconnect switch employing pre-contact pieces. 4,521,654, Cl. 200-146.00R.
Eberle, David N.: *See—*
Sobolewski, Robert; and Eberle, David N., 4,520,861, Cl. 164-473.000.
Ebner, Jerry R.: *See—*
Kuechler, Thomas C.; Ebner, Jerry R.; and Li, Tao P., 4,521,395, Cl. 423-376.000.
Eccles, Richard M.: *See—*
Chervenak, Michael C.; Eccles, Richard M.; and Nongbri, Govannon, 4,521,295, Cl. 208-59.000.
Ecker, Harold; and Spencer, Harvey J., to Paper Converting Machine Company. Method of operating a printing press and apparatus. 4,520,728, Cl. 101-248.000.
Eckert, Hermann F.: *See—*
Mason, Joe; and Eckert, Hermann F., 4,521,366, Cl. 264-312.000.
Economy, James; and Zachariades, Anagnostis E., to International Business Machines Corporation. Surface finishing process. 4,520,647, Cl. 72-365.000.
Edelmann, Gilbert, to Cebal. Presetting process for printing cylindrical or conical articles. 4,520,730, Cl. 101-426.000.
Edelstein, William A.: *See—*
Bottomley, Paul A.; and Edelstein, William A., 4,521,733, Cl. 324-309.000.
Edvardsen, Erik, to NAD Holding Limited. Amplifier power supply with large dynamic headroom. 4,521,742, Cl. 330-289.000.
Edwards, Bryant; Klygis, M. Julius; and Olsen, Robert C., to Illinois Tool Works Inc. Multi-package and packaging device. 4,520,924, Cl. 206-150.000.
Eguchi, Ronald G.: *See—*
Naik, Ishverlal K.; and Eguchi, Ronald G., 4,521,443, Cl. 427-38.000.
Eguchi, Yasukata; Hanyu, Susumu; Takenoya, Hideaki; and Inamori, Mikio, to Janome Sewing Machine Co. Ltd. Structure of supporting a stepping motor. 4,520,987, Cl. 248-635.000.
Ehrnford, Lars E. M., to Austenal International, Inc. Condensing instrument for packing and condensing in connection with placement of dental composite resin restorative materials. 4,521,191, Cl. 433-164.000.
Eichfeld, Timothy J.: *See—*
Disston, Horace C.; and Eichfeld, Timothy J., 4,520,896, Cl. 182-22.000.
Eide, Daniel L., to RCA Corporation. Shaft seal. 4,521,026, Cl. 277-134.000.
Eitzinger, Robert, to Mid-West Automation Inc. Reciprocating rectilinear motion apparatus. 4,520,682, Cl. 74-40.000.
Eldridge, Gordon E.: *See—*
Owens, Ester L., 4,520,655, Cl. 73-46.000.
Eldridge, Jerome M.; and Homola, Andrew M., to International Business Machines Corporation. Encapsulated magnetic recording disk. 4,521,451, Cl. 427-130.000.
Electricite de France (Service National): *See—*
Bordet, Rene , 4,520,600, Cl. 52-83.000.
Eli Lilly and Company: *See—*
Foreman, Mark M., 4,521,421, Cl. 514-267.000.
Spry, Douglas O.; and Spitzer, Wayne A., 4,521,598, Cl. 544-16.000.
Elleman, Daniel D.: *See—*
Rhim, Won-Kyu; Saffren, Melvin M.; and Elleman, Daniel D., 4,521,854, Cl. 364-400.000.
Elliott, Francis J. J., Jr. Drum and cymbals pedals assembly. 4,520,710, Cl. 84-422.00R.
Elliott, Richard E.; and King, William R. Particle form evaporation of polymer-liquid mixtures. 4,521,590, Cl. 528-502.000.
Elliott, Robert E. High pressure valve for positive pressure pumps including means for installing and removing the valve. 4,520,842, Cl. 137-327.000.
Elliott, Ross W.: *See—*
Porter, Michael R.; and Elliott, Ross W., 4,521,669, Cl. 219-125.110.
Ellis, Timothy A.: *See—*
Dix, Robert M.; Ellis, Timothy A.; and Andrews, Gary W., 4,520,629, Cl. 62-6.000.
Elsec Electronic Security Systems Ltd.: *See—*
Haran, Ilan; and Haran, Dan, 4,521,768, Cl. 340-566.000.
Elsing, John W.; Gorham, Gene F.; and Knopp, Steven D., to Magnetic Peripherals Inc. Cartridge load mechanism. 4,521,819, Cl. 360-97.000.
Emhart Industries, Inc.: *See—*
Marcinek, John A., 4,521,369, Cl. 264-532.000.
Shedigian, Vandos; and Voyles, Gerald A., 4,521,826, Cl. 361-314.000.
Empak Inc.: *See—*
Johnson, Douglas M., 4,520,925, Cl. 206-334.000.
EMPI, Inc.: *See—*
Wright, Thomas C.; and Ober, Stephen H., 4,520,827, Cl. 128-423.00W.
Encon Products, Inc.: *See—*
Simpson, Harold G.; and Neyer, Leo E., 4,520,610, Cl. 52-745.000.
Endo, Hideo: *See—*
Hayashi, Mitsuji; Endo, Hideo; Oishibashi, Hirotsugu; Aichi, Takeo; and Sasaki, Shigeru, 4,520,756, Cl. 118-699.000.
Endoh, Hiroyuki: *See—*
Sasaki, Tohru; Endoh, Hiroyuki; and Ohira, Seiichi, 4,521,483, Cl. 428-373.000.
Energy Conversion Devices, Inc.: *See—*
Nath, Prem; Hoffman, Kevin R.; and Laarman, Timothy D., 4,520,757, Cl. 118-723.000.
Energy Sciences, Inc.: *See—*
Nablo, Sam V.; and Tripp, Edwin P., III, 4,521,445, Cl. 427-44.000.
Engeler, William E.: *See—*
Mazin, Moshe; and Engeler, William E., 4,521,695, Cl. 307-279.000.
Engelhardt, Friedrich; Schmitz, Hermann; Gulden, Walter; and Hax, Jorg, to Cassella Aktiengesellschaft. High molecular weight water-soluble polymers useful in deoiling sand and rock masses. 4,521,579, Cl. 526-287.000.
Engelke, Claude W.; Sutton, Gerald E.; and Potter, Steven E., to Boeing Company, The. Method and mold for fabricating an aerodynamic airframe structure. 4,521,354, Cl. 264-46.600.
Engler, Peter B.; and Denker, Stanley D., to Doboy Packaging Machinery, Inc. Tube forming apparatus for packaging. 4,520,615, Cl. 53-550.000.
Englund, Michael S.; Hafele, Joseph C.; and Schulze, Dwain C., Jr., to Caterpillar Tractor Co. System for obtaining exhaust samples and analyzing the same. 4,520,652, Cl. 73-23.000.
Enichimica S.p.A.: *See—*
Romano, Ugo; Renzi, Fiorenzo; Rivetti, Franco; and Gagliardi, Claudio, 4,521,577, Cl. 526-261.000.
Enomoto, Yoichi: *See—*
Murakami, Toshiaki; Enomoto, Yoichi; and Inamura, Takahiro, 4,521,682, Cl. 250-211.00J.
ENSCO, Inc.: *See—*
Carbeau, Richard W.; Martin, James F.; Lanier, John H.; and Holt, William L., 4,520,741, Cl. 110-344.000.
Enzyme Technology Company: *See—*
Stout, Robert L., 4,521,511, Cl. 435-28.000.
Erdman, Timothy R., to Chevron Research Company. Dispersant lubricating oil additives. 4,521,319, Cl. 252-47.500.
Ergenics Inc.: *See—*
Lynch, Franklin E.; and Baker, Nathaniel R., 4,520,763, Cl. 123-1.00A.
Erickson, Donald C., to Air Products and Chemicals, Inc. Controlled temperature expansion in oxygen production by molten alkali metal salts. 4,521,398, Cl. 423-579.000.
Eriksson, Sven: *See—*
Lundin, Per O.; Eriksson, Sven; and Lundin, Ingvar, 4,521,314, Cl. 210-777.000.
Erlacher, Richard F.: *See—*
McCartney, Michael S.; Chadshay, Roman; and Erlacher, Richard F., 4,520,739, Cl. 110-263.000.
Eschrich, Gerhard; and Schwab, Manfred, to Robert Bosch GmbH. Method of controlling engine operation in an automotive vehicle during gear change. 4,520,694, Cl. 74-858.000.
Eshet Eilon: *See—*
Gefen, Nir, 4,520,873, Cl. 172-47.000.
Eshkol, Aliza: *See—*
Pelham, Russell W.; Redden, Charlotte S.; Eshkol, Aliza; and Stiles, Gerald E., 4,521,407, Cl. 424-95.000.
Eskinazi, Victoria: *See—*
Wells, James E.; and Eskinazi, Victoria, 4,521,600, Cl. 544-352.000.
Essential Automotive Products, Inc.: *See—*
Juskevic, John, 4,521,142, Cl. 409-82.000.
Essex Group, Inc.: *See—*
Vogel, Ralph A., 4,521,363, Cl. 264-174.000.

Essilor International (Compagnie Generale d'Optique): *See—*
Pierquin, Jean-Claude, 4,521,090, Cl. 351-124.000.
Estes, William E., to Stauffer Chemical Company. Method to improve yields of sodium hypophosphite. 4,521,391, Cl. 423-307.000.
Estriplet, Isnard: *See—*
Macko, Joseph E.; and Estriplet, Isnard, 4,520,677, Cl. 73-861.000.
Etat Francais: *See—*
Saint-Michel, Jacques A.; Chabrerie, Jean-Pierre; and Mailfert, Alain, 4,521,709, Cl. 310-186.000.
Ethicon, Inc.: *See—*
Menezes, Edgar V.; and Steinheuser, Peter, 4,520,822, Cl. 128-335.500.
Ethyl Corporation: *See—*
Jackisch, Philip F., 4,521,624, Cl. 564-446.000.
Perilstein, Warren L., 4,521,219, Cl. 44-55.000.
Stahly, G. Patrick, 4,521,345, Cl. 260-465.00F.
Eucken, Craig M., to Teledyne Industries, Inc. Nitrogen annealing of zirconium and zirconium alloys. 4,521,259, Cl. 148-20.300.
Eumuco Aktiengesellschaft Fur Maschinenbau: *See—*
Werner, Eberhard; and Willim, Friedrich, 4,520,643, Cl. 72-39.000.
Eurobeva Engineering Trust: *See—*
Claudio, Fuzzi, 4,520,613, Cl. 53-441.000.
Evain, Jean, to Daymarc Corporation. Apparatus for reorienting electrically asymmetrical axial lead devices in a sorter/tester. 4,520,931, Cl. 209-542.000.
Eveland, Michael: *See—*
Cushman, Robert L.; Koester, Arlan; and Eveland, Michael, 4,520,960, Cl. 239-29.000.
Ex-Cell-O Corporation: *See—*
Lisiecki, Robert E., 4,520,929, Cl. 206-610.000.
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Lisiecki, Robert E., 4,520,957, Cl. 229-17.00R.
Exxon Research & Engineering Co.: *See—*
Hicks, Alfonza; and Hankins, Jerry E., 4,521,303, Cl. 209-454.000.
Tsien, Hsue C., 4,521,359, Cl. 264-104.000.
Turner, S. Richard; Siano, Donald B.; and Bock, Jan, 4,521,580, Cl. 526-307.200.
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Aubourg, Patrick F.; and Fabricant, Barbara L., 4,521,523, Cl. 501-30.000.
Fabrique de Produits Chimiques, d'Entretien et de Degraissage Ravicolor, S.A.: *See—*
Hueber, Francois, 4,520,961, Cl. 239-284.00R.
Facey, Roy B., to CRC Chemicals Inc. Aerosol cap. 4,520,951, Cl. 222-182.000.
Fachini, Robert M.; Barrett, Monroe C.; and McClure, Maxwell D., III, to J. I. Case Company. Cotton harvester. 4,520,617, Cl. 56-16.600.
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Broussoux, Dominique; Facoetti, Hugues; Micheron, Francois; and Monnerie, Lucien, 4,521,322, Cl. 252-62.900.
Fagerburg, David R.: *See—*
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Falciai, Riccardo: *See—*
Sottini, Stefano; Brenci, Massimo; Righini, Giancarlo; Falciai, Riccardo; Russo, Vera; and Scheggi, Verga A., 4,521,070, Cl. 350-96.150.
Falconer, Robert M., to British Telecommunications. Interactive non-hierarchical adaptively synchronized oscillator network and phase locked loop oscillator for use therein. 4,521,745, Cl. 331-2.000.
Falk, Richard A. Repeating thermocouple. 4,521,639, Cl. 136-234.000.
Fallon, Merton R., to Draft Systems, Inc. Safety apparatus for high pressure systems. 4,520,953, Cl. 222-396.000.
Fann, James D. Insert for blocking operation of the disc write switch in use of computer diskettes. 4,521,820, Cl. 360-133.000.
Fanning, William J., to AT&T Technologies, Inc. Component module for piggyback mounting on a circuit package having dual-in-line leads. 4,521,828, Cl. 361-386.000.
Fanuc Ltd.: *See—*
Kinoshita, Mitsuo; and Obara, Haruki, 4,521,662, Cl. 219-69.00W.
Kinoshita, Mitsuo, 4,521,721, Cl. 318-573.000.
Sakamoto, Keiji; and Toyozawa, Yukio, 4,521,724, Cl. 318-762.000.
Fapiano, Donald J., to General Electric Company. Method of improved gage control in metal rolling mills. 4,521,859, Cl. 364-472.000.
Farmitalia Carlo Erba S.p.A.: *See—*
Doria, Gianfederico; Passarotti, Carlo; Lovisolo, Pier P.; and Buttinoni, Ada, 4,521,419, Cl. 514-267.000.
Fatello, Ubaldo. Surfboard type boat convertible into sailboat or buoy. 4,521,200, Cl. 440-23.000.
Faulhaber, Mark E.: *See—*
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Faulkenberry, Wayne J.: *See—*
Franke, Earnest A.; and Faulkenberry, Wayne J., 4,521,912, Cl. 455-115.000.
Faulkner, Richard D.; and McDonie, Arthur F., to RCA Corporation. Photoemissive cathode formed on conductive strips. 4,521,715, Cl. 313-531.000.
Ferrante, Mario, to Photomeca S.A. Developing light sensitive plates including use of ultrasonic waves. 4,521,092, Cl. 354-320.000.
Ferrio, Linda J.: *See—*
Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., 4,521,868, Cl. 364-753.000.
Ferris, Ernest A.; and McColl, John W., to Borg-Warner Corporation. Hydraulically actuated starting clutch assembly. 4,520,912, Cl. 192-85.0AA.
Ferro Manufacturing Corporation: *See—*
Fudala, Chester S., 4,521,055, Cl. 297-362.000.
Fickelscher, Kurt G., to Balcke-Duerr AG. Fluid-flow machine. 4,521,158, Cl. 416-160.000.
Field, Keith C., to Matisa (U.K.) Limited. Convertible rail-highway maintenance vehicle. 4,520,735, Cl. 105-215.00C.
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Fifolt, Michael J.; and Foster, Arthur M., to Occidental Chemical Corporation. Method for the preparation of fluoroanthranilic acids. 4,521,616, Cl. 562-456.000.
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Finike Italiana Marposs S.p.A.: *See—*
Solaroli, Sergio, 4,521,863, Cl. 364-561.000.
Finke, Manfred; and Mundnich, Rainer, to Hoechst Aktiengesellschaft. Phosphorus-containing cyanohydrine derivatives. 4,521,348, Cl. 260-940.000.
Finke, Robert G., to Robert Finke GmbH. Safety screw cap. 4,520,938, Cl. 215-220.000.
Finkelstein, Wolfgang; and Haaz, Josef, to Gebruder Trox, GmbH. Regulator valve for stabilizing volume flow, especially in ventilation systems. 4,520,844, Cl. 137-486.000.
Finkenzeller, Johann; and Mittelstaedt, Wolfgang, to Siemens Aktiengesellschaft. Dental X-ray diagnostic device. 4,521,899, Cl. 378-40.000.
Fiorentino, Robert J., to Battelle Memorial Institute. Methods of compaction by incremental radial compression and/or low-ratio extrusion. 4,521,360, Cl. 264-108.000.
Firestone Tire & Rubber Company, The: *See—*
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Fischer, Detlef: *See—*
Schumann, Henning; Busch, Peter; Fischer, Detlef; and Thiele, Klaus, 4,520,831, Cl. 132-11.00R.
Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Inker for rotary printing machine, and method. 4,520,729, Cl. 101-352.000.
Fischer, Larry E.; and Bean, Jackie E., to General Electric Company. Control of nuclear reactors. 4,521,370, Cl. 376-233.000.
Fischer, Rolf; Weitz, Hans-Martin; and Paust, Joachim, to BASF Aktiengesellschaft. Preparation of 2-alkyl-4,4-diacyloxybut-2-enals. 4,521,342, Cl. 260-410.000.
Fisher, Albert W., to RCA Corporation. Method of making a multilevel metallization structure for semiconductor device. 4,520,554, Cl. 29-591.000.
Fisher, John M.; and Putt, James C., to B.F. Goodrich Company, The. Valve for high pressure fluid container. 4,520,838, Cl. 137-69.000.
Fitton, Paul; and Holland, Peter J., to Dycem Limited. Anti-static highly-plasticized polyvinylchloride. 4,521,553, Cl. 523-333.000.
Fitzgerald-Smith, James P.; Bird, Bertram; and Willis, Michael, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Bridge module for use in a crane assisted method of building a transportable girder bridge. 4,520,523, Cl. 14-2.400.
Flaig, Heinz, to Mannesmann Aktiengesellschaft. Safety mechanism for a hoist. 4,520,998, Cl. 254-267.000.
Flanagan, Eugene L., III, to American Home Products Corporation (Del.). Ultrasonic imaging device. 4,520,830, Cl. 128-660.000.
Flanders Filters,Inc.: *See—*
Peebles, William C., Jr.; and Bowers, Cecil W., 4,521,234, Cl. 55-481.000.
Fleissner, Heinz, to Vepa Aktiengesellschaft. Steaming device arranged in front of a synthetic fiber crimping installation for heating fibers traveling past such steaming device. 4,520,637, Cl. 68-5.00D.
Flood, Mark A.: *See—*
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Flowers, Dervin L., to Motorola, Inc. Plasma enhanced diffusion process. 4,521,441, Cl. 427-38.000.
FMC Corporation: *See—*
Rodler, Waldo E., Jr., 4,520,691, Cl. 74-790.000.
Sikorski, Charles F., 4,521,316, Cl. 252-8.55R.
Wolf, Marvin L., 4,520,888, Cl. 180-125.000.
Foggini, Giovanni, to Lear S.n.c. di Foggini & C. Cell structure sun visor for automobile vehicles including retention and snap-action positioning means. 4,521,046, Cl. 296-97.00K.
Foot, William R.: *See—*
Hodgson, Thomas D.; and Foot, William R., 4,521,400, Cl. 423-658.500.
Foptica: *See—*
Cholley, Henri E.; Laupretre, Jean J.; and Rollet, Jean, 4,521,072, Cl. 350-96.230.
Ford Aerospace & Communications Corporation: *See—*
Bryans, Lawrence G.; Goudey, Kenneth R.; and Nickerson, William F., 4,521,783, Cl. 343-781.00R.
Lehner, John A.; and Lebsock, Kenneth L., 4,521,855, Cl. 364-434.000.
Ford Motor Company: *See—*
Kaiser, William J., 4,520,653, Cl. 73-23.000.
Foreman, Mark M., to Eli Lilly and Company. Treatment of sexual dysfunction. 4,521,421, Cl. 514-267.000.
Forsberg, Gunnar; and Ingre, Lars, to Telefonaktiebolaget L M Ericsson. Method and an arrangement for increasing the dynamic range at the input stage of a receiver in an optical fibre information transmission system. 4,521,920, Cl. 455-619.000.
Forsell, Kenneth A., to Eaton Corporation. Circuit breaker having increased contact opening velocity at trip operation. 4,521,756, Cl. 335-21.000.
Foster, Arthur M.: *See—*
Fifolt, Michael J.; and Foster, Arthur M., 4,521,616, Cl. 562-456.000.
Foulard, Jean: *See—*
Goursat, Albert-Gilbert; Vernet, Gilles; Rimbert, Jean-Francis; Foulard, Jean; Darle, Thierry; and Bigot, Jean, 4,521,244, Cl. 75-0.50B.
Fournier, Pascal; and Peraud, Jean-Claude, to Pont-A-Mousson, S.A. Apparatus for rapid solidification of thin metallic strips on a continuously moving substrate. 4,520,859, Cl. 164-253.000.
Fox, Robert L.: *See—*
Buckley, John D.; Swaim, Robert J.; Fox, Robert L.; and Johnston, David F., 4,521,659, Cl. 219-10.770.
Foxboro Company, The: *See—*
Gilby, Anthony C.; Lewis, Edward L.; and Olsen, Everett O., 4,521,684, Cl. 250-227.000.
Koziol, Stanislaw; and Sgourakes, George E., 4,520,678, Cl. 73-861.240.
Frama AG.: *See—*
Haug, Werner, 4,520,725, Cl. 101-91.000.
Francovitch, Thomas F. Roof membrane anchoring systems using dual anchor plates. 4,520,606, Cl. 52-410.000.
Frank, Gerhard; Rudolf, Peter; Neubauer, Gerald; Ohlinger, Manfred; Wilfinger, Hans J.; Pfannebecker, Emil; and Duffner, Paul, to BASF Aktiengesellschaft. Molded iron catalyst and its preparation. 4,521,527, Cl. 502-184.000.
Franke, Earnest A.; and Faulkenberry, Wayne J., to General Electric Company. Low power indicating circuit for a radio transmitter. 4,521,912, Cl. 455-115.000.
Frankiewicz, Jeffrey R.: *See—*
Lemme, Christopher J.; and Frankiewicz, Jeffrey R., 4,521,516, Cl. 435-253.000.
Frano, Francis G.; and Ruehl, William E., to Illinois Tool Works Inc. Differential-vacuum alarm device. 4,520,748, Cl. 116-70.000.
Franz Kuhlmann Prazisionsmechanik und Maschinenbau GmbH & Co. KG: *See—*
Otten, Heinrich, 4,520,573, Cl. 33-438.000.
Franzischka, Wolfgang: *See—*
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Frater, John S.; and Pope, David W., to Joy Manufacturing Holdings Limited. Centrifugal slurry pump. 4,521,151, Cl. 415-131.000.
Freitag, Lutz; Wendt, Michael; and Dankwart, Franz J., to Dragerwerk AG. Method and apparatus for controlling a pressure level in a respirator. 4,520,812, Cl. 128-204.250.
French, Albert G.: *See—*
Eagles, Brian A.; and French, Albert G., 4,521,058, Cl. 299-81.000.
Frentzel, Richard L., to Olin Corporation. Preparation of carboxylic acid-containing monoether and polyether polyol addition products. 4,521,615, Cl. 560-198.000.
Fricke, Richard J.: *See—*
Kennedy, Richard B., 4,521,544, Cl. 521-107.000.
Friedline, Karl L.: *See—*
Nigborowicz, John J.; and Friedline, Karl L., 4,521,810, Cl. 358-181.000.
Friedmann, Oswald: *See—*
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Frigerio, Marco: *See—*
Nisato, Dino; Frigerio, Marco; and Miranda, Giovanna F., 4,521,428, Cl. 514-277.000.
Frito-Lay, Inc.: *See—*
Berger, Kenneth R., 4,521,467, Cl. 428-35.000.
Fronius, Klaus, to Miller Electric Manufacturing Company. Electronic welding apparatus. 4,521,671, Cl. 219-130.310.
Fronius, Klaus, to Miller Electric Manufacturing Company. Electronic welding apparatus. 4,521,672, Cl. 219-130.330.
Froude Consine Limited: *See—*
Hitchcock, Keith N., 4,520,660, Cl. 73-120.000.
Fuchs, Uwe; and Wildmoser, Alfred, to Linde Aktiengesellschaft. Activated sludge system with integrated regenerator. 4,521,311, Cl. 210-616.000.
Fudala, Chester S., to Ferro Manufacturing Corporation. Power recliner. 4,521,055, Cl. 297-362.000.
Fuji Photo Film Co., Ltd.: *See—*
Arai, Yoshihiro; and Nahara, Akira, 4,521,482, Cl. 428-336.000.
Inukai, Yuzo; and Shichijo, Yoshiaki, 4,520,755, Cl. 118-629.000.
Nagao, Makoto; and Nahara, Akira, 4,521,481, Cl. 428-336.000.
Ohtsuka, Shuichi; Aotsuka, Yasuo; and Saito, Eiichi, 4,521,103, Cl. 355-14.00D.
Sugimoto, Tadao; Ikeda, Hideo; Mifune, Hiroyuki; and Nakamura, Koki, 4,521,508, Cl. 430-567.000.
Takano, Masao, 4,521,904, Cl. 378-185.000.
Takeda, Hideo, 4,521,459, Cl. 427-359.000.
Fuji Xerox Co., Ltd.: *See—*
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Fujie, Masakatsu: *See—*
Yoshida, Takashi; Fujie, Masakatsu; Matsuno, Junichi; and Ouchi, Hideyuki, 4,521,813, Cl. 358-296.000.
Fujiki, Kuniharu, to Victor Company of Japan, Limited. Magnetic recording media of the high recording density type comprising both titanium monoxide and magnetic alloy powders in a magnetic layer. 4,521,480, Cl. 428-328.000.
Fujimoto, Shigeo. Apparatus for dilution of pulp. 4,521,380, Cl. 422-273.000.
Fujimoto, Yoshiaki: *See—*
Hirota, Ken; Fujimoto, Yoshiaki; Watanabe, Kouichi; and Sugimura, Minoru, 4,521,323, Cl. 252-62.590.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. Ether carbinols and process for preparing same. 4,521,634, Cl. 568-665.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,521,413, Cl. 514-203.000.
Fujita, Takeshi;; Mori, Shigeo; Kataoka, Hironori; and Taniuchi, Akira, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Process for preparing high molecular weight compounds. 4,521,586, Cl. 528-297.000.
Fujitsu Limited: *See—*
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Fujiwara, Shuetsu: *See—*
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Fukazawa, Nobuyuki: *See—*
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Fukuda, Masao, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing method and apparatus with volume sensing. 4,520,883, Cl. 177-1.000.
Fukuda, Tamio: *See—*
Oouchi, Tomihisa; Usui, Sampei; Fukuda, Tamio; and Nishiguchi, Akira, 4,520,634, Cl. 62-476.000.
Fukuda, Teruo: *See—*
Isobe, Toshiaki; and Fukuda, Teruo, 4,520,784, Cl. 123-492.000.
Fukushima, Isao; Kuwahara, Kazuyoshi; Itoigawa, Keiichi; Kobori, Yasunori; and Nishijima, Hideo, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering, Ltd. Characteristic switching circuit. 4,521,750, Cl. 333-28.00R.
Fulger, Charles V.: *See—*
Lou, Wen C.; and Fulger, Charles V., 4,521,436, Cl. 426-104.000.
Funada, Fumiaki; and Shimizu, Keiichiro, to Sharp Kabushiki Kaisha. Field effect mode liquid crystal display. 4,521,080, Cl. 350-341.000.
Furman, Yakov A.: *See—*
Sevastyanov, Viktor V.; Furman, Yakov A.; Grebenschikov, Anatoly P.; Lysov, Viktor F.; and Shalnov, Boris N., 4,520,826, Cl. 128-422.000.
Furukawa, Hiroshi; and Saito, Yuichi, to Sumitomo Rubber Industries, Ltd.; and Sumitomo Chemical Company, Limited. Composition for tread rubber of tires. 4,521,587, Cl. 526-340.200.
Fushiki, Yasuo: *See—*
Oizumi, Masayuki; Abe, Masaharu; and Fushiki, Yasuo, 4,521,491, Cl. 428-458.000.
Fuso Keigokin Co., Ltd.: *See—*
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Gabrielli, Luciano; and Sposini, Maurizio, to Cselt Centro Studi E Laboratori Telecomunicazioni S.p.A. Interface for accessing a wide-band bus handling speech and data traffic. 4,521,882, Cl. 370-85.000.
GAF Corporation: *See—*
Barabas, Eugene S., 4,521,253, Cl. 134-3.000.
Lorenz, Donald H.; Murphy, Edward J.; and Rutherford, John M., Jr., 4,521,404, Cl. 424-71.000.
Gagliardi, Claudio: *See—*
Romano, Ugo; Renzi, Fiorenzo; Rivetti, Franco; and Gagliardi, Claudio, 4,521,577, Cl. 526-261.000.
Gaiser, Robert F., to Allied Corporation. Vehicle attitude responsive brake control device. 4,520,911, Cl. 192-13.00A.
Galdun, Daniel J.; Grudowski, Raymond A.; and Flood, Mark A., to Allen-Bradley Company. Programmable controller with back-up capability. 4,521,871, Cl. 364-900.000.
Galli, Paolo; and Spataro, Mario, to Montedison S.p.A. Polypropylene compositions having improved impact strength properties at low temperatures and process for preparing same. 4,521,566, Cl. 525-247.000.
Galloway, Louie A., III: *See—*
Price, William E.; Galloway, Louie A., III; Lowrey, Charles B.; and Lewis, Donald R., 4,521,372, Cl. 376-250.000.
Gange, Lester; and Pannell, Reginald J. H., to Gange, Lester; Pannell, Reginald James Harding; and E.D.T. Electrostatic Deposition Technologies S.p.A. Process and apparatus for electrostatic application of liquids or powders on substances or objects. 4,520,754, Cl. 118-626.000.
Gastrock, William H.: *See—*
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Gates Energy Products, Inc.: *See—*
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Gaudiana, Russell A.: *See—*
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Gault, William A., to AT&T Technologies, Inc. Method for forming and growing a single crystal of a semiconductor compound. 4,521,272, Cl. 156-616.00R.
Gauthier, Alvarado & Associates, Inc.: *See—*
Gauthier, L. Paul, 4,521,517, Cl. 435-313.000.
Gauthier, Jean A.; Voith, Katherine; and Asselin, Andre A., to Ayerst, McKenna & Harrison, Ltd. Imidazo[2,1-a]pyrrolo[2,1-c][1,4]benzodiazepine derivatives, methods of preparation and use. 4,521,534, Cl. 514-219.000.

Gauthier, L. Paul, to Gauthier, Alvarado & Associates, Inc., a part interest. Compost aeration system. 4,521,517, Cl. 435-313.000.
Gebo, George B. Portable steps. 4,520,897, Cl. 182-92.000.
Gebruder Trox, GmbH: *See—*
Finkelstein, Wolfgang; and Haaz, Josef, 4,520,844, Cl. 137-486.000.
Gefen, Nir, to Eshet Eilon. Tractor-driven agricultural apparatus including a plurality of rotary-driven agricultural units. 4,520,873, Cl. 172-47.000.
Geiger, Kurt: *See—*
Lucian, Anton; and Geiger, Kurt, 4,520,848, Cl. 139-1.00R.
Gelhaar Uniform Company: *See—*
Blumenthal, Lawrence S., 4,520,985, Cl. 248-530.000.
Gellert, Jobst U. Injection molding core ring gate system. 4,521,179, Cl. 425-548.000.
Geltosky, ohn E., to Du Pont de Nemours, E. I., and Company. Hybridoma cell lines and monoclonal antibodies to theophylline. 4,521,510, Cl. 435-7.000.
Genequand, Pierre: *See—*
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General Electric Company: *See—*
Beane, Bennie J., 4,521,379, Cl. 422-209.000.
Bottomley, Paul A.; and Edelstein, William A., 4,521,733, Cl. 324-309.000.
Case, Allen W., Jr.; and Peroutky, Donald C., 4,521,670, Cl. 219-130.010.
Challen, Richard F., 4,521,918, Cl. 455-343.000.
Fapiano, Donald J., 4,521,859, Cl. 364-472.000.
Fischer, Larry E.; and Bean, Jackie E., 4,521,370, Cl. 376-233.000.
Franke, Earnest A.; and Faulkenberry, Wayne J., 4,521,912, Cl. 455-115.000.
Gittinger, Norman C., 4,521,803, Cl. 358-12.000.
Hardin, William R., 4,520,671, Cl. 73-620.000.
Holt, John R., Jr., 4,521,917, Cl. 455-223.000.
King, Harold B.; Masaitis, William; Ippisch, Ernest; and Chinn, Albert E., 4,521,862, Cl. 364-552.000.
Mazin, Moshe; and Engeler, William E., 4,521,695, Cl. 307-279.000.
Merrill, Duane F., 4,521,471, Cl. 428-40.000.
Morris, Robert A.; Kiesel, George W.; and Rajotte, Paul T., 4,521,824, Cl. 361-45.000.
Pasko, Walter J., Jr.; and Rathbun, William H., 4,520,556, Cl. 29-606.000.
Pritzkow, Dennis H., 4,521,689, Cl. 250-385.000.
Rosenquist, Niles R., 4,521,562, Cl. 524-490.000.
St. Pierre, Philippe D.; and Buckner, Michael T., 4,521,222, Cl. 51-295.000.
Terhune, James H., 4,520,654, Cl. 73-24.000.
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Calderoni, Sergio L., 4,521,005, Cl. 267-179.000.
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Kramer, Richard L., 4,520,640, Cl. 70-248.000.
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Gilbert, Barrie W., to Bipel Limited. Moulding machines. 4,521,172, Cl. 425-73.000.
Gilby, Anthony C.; Lewis, Edward L.; and Olsen, Everett O., to Foxboro Company, The. Optical measurement system with light-driven vibrating sensor element. 4,521,684, Cl. 250-227.000.
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Morse, Albert I.; Crowell, Douglas H.; and Gilligan, Thomas J., III, 4,520,751, Cl. 118-203.000.
Ginter, Carl A. Quill stop device. 4,521,144, Cl. 409-218.000.
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Briard, Rene ; Saunier, Christian; and Canova, Guy, 4,521,196, Cl. 434-20.000.
Gispen+Staalmeubel B.V.: *See—*
de Boer, Peter, 4,521,053, Cl. 297-312.000.
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Glaxo Group Limited: *See—*
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Vance, Ian A. W.; and Goatcher, John K., 4,521,892, Cl. 375-88.000.
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Podszun, Wolfgang; Simm, Walter; Goossens, John; and Suling, Carlhans, 4,521,505, Cl. 430-112.000.
Gorham, Gene F.: *See—*
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Goth, Paul R.: *See—*
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Goto, Jiro: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,521,413, Cl. 514-203.000.
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Goursat, Albert-Gilbert; Vernet, Gilles; Rimbert, Jean-Francis; Foulard, Jean; Darle, Thierry; and Bigot, Jean, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process of producing metal powders from a molten metal material. 4,521,244, Cl. 75-0.50B.
Goyert, Wilhelm; and Winkler, Jurgen, to Bayer Aktiengesellschaft. Thermoplastic polyurethanes having a high heat stability, based on naphthylene diisocyanate, their production and their use. 4,521,582, Cl. 528-67.000.
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Schroer, Walter; and Wlasitsch, Gyula, 4,521,465, Cl. 428-35.000.
Gradl, David A., to Q-Dot, Inc. Passive transient recording systems. 4,521,752, Cl. 333-165.000.
Graf, Fritz: *See—*
Wickenhaeuser, Gerhard; Heida, Bernd; Graf, Fritz; and Hupfer, Leopold, 4,521,632, Cl. 568-492.000.
Graham, Joseph; Gennrich, Timothy J.; and Laird, James A., to Minnesota Mining and Manufacturing Company. Intumescent silicates having improved stability. 4,521,333, Cl. 252-606.000.
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Barmatz, Martin B.; Allen, James L.; and Granett, Dan, 4,520,656, Cl. 73-505.000.
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Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,520,863, Cl. 165-48.00R.
Granzotto, Richard J.: *See—*
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Granzow, Robert H.; Gupta, Desh B.; Myers, Kimbrough I.; and Filliman, Mark D., to NCR Corporation. Fail safe document dispensing system. 4,521,008, Cl. 271-3.000.
Grassetti, Davide R. Agents affecting the production of hormones in living mammals. 4,521,425, Cl. 514-350.000.
Grawey, Charles E., to Caterpillar Tractor Co. Heat exchanger. 4,520,868, Cl. 165-158.000.
Gray, Ronald W.: *See—*
Baker, Robert D.; Driggers, Gerald W.; Gray, Ronald W.; and Hawkins, Lawrence A., 4,521,229, Cl. 55-137.000.
Grebe, Reiner; Norbisrath, Max; and Schmidt, Karl-Heinz, to Kramer & Grebe GmbH & Co. KG. Process and equipment for continuous cutting of material. 4,520,963, Cl. 241-30.000.
Grebenschikov, Anatoly P.: *See—*
Sevastyanov, Viktor V.; Furman, Yakov A.; Grebenschikov, Anatoly P.; Lysov, Viktor F.; and Shalnov, Boris N., 4,520,826, Cl. 128-422.000.
Green, David T., to United States Surgical Corporation. Surgical instruments. 4,520,817, Cl. 128-305.000.
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Grefco, Inc.: *See—*
Collins, Albert R., 4,521,182, Cl. 432-13.000.
Gregorian, Roubik: *See—*
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Gregory, Jack T., to Gregory Tool Systems, Inc. Lever operated riveter. 4,520,648, Cl. 72-391.000.
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Gregory, Jack T., 4,520,648, Cl. 72-391.000.
Grewal, Gurbachan S.: *See—*
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Windawi, Hassan; Grieger, Gene R.; and Oakdale, Warren R., 4,521,394, Cl. 423-363.000.
Griffey, Donald E., to Zenith Electronics Corporation. Projection TV CRT burn protection. 4,521,720, Cl. 315-386.000.
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Hilker, G. Daniel; Lausen, Verne H.; Coon, Jessie H.; Bodette, James E.; Grimes, Jerry L.; Wright, Roger D.; Disque, Donny R.; and Bultemeier, Keith D., 4,521,173, Cl. 425-113.000.
Grocock, Peter G.: *See—*
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Grof, Geza J., to James Dole Corporation. Vacuum foam remover. 4,520,528, Cl. 15-304.000.
Grogler, Gerhard; and Kopp, Richard, to Bayer Aktiengesellschaft. Process for the preparation of low molecular weight 4,4'-diphenylmethane-uretdione-diisocyanates. 4,521,338, Cl. 260-239.00A.
Gross, Herbert G.: *See—*
Meggs, Daniel H.; Gross, Herbert G.; and Greenslade, John T., 4,521,835, Cl. 362-183.000.
Grosse-Scharmann, Franz, to Amazonen-Werke H. Dreyer. Agricultural machine. 4,520,874, Cl. 172-49.500.
Grove Medical Supply, Inc.: *See—*
White, Daniel S.; and Nave, Jerald L. (said Jerald L. Nave assors. to), 4,520,811, Cl. 128-203.110.
Grudowski, Raymond A.: *See—*
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Grund, J. Evan: *See—*
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Grundy Dispense Systems, Inc.: *See—*
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GTE Automatic Electric Laboratories, Incorporated: *See—*
Kapral, Christopher W., 4,521,762, Cl. 340-347.0DA.
GTE Laboratories Incorporated: *See—*
Byszewski, Wojciech W.; Budinger, A. Bowman; and Proud, Joseph M., 4,521,718, Cl. 315-99.000.
GTE Products Corporation: *See—*
Bouchard, Andre C., 4,521,837, Cl. 362-216.000.
Carbone, Douglas C.; and Dennis, Philip J., 4,521,760, Cl. 337-368.000.
Douglas, Alan D.; and Reilly, Kenneth T., 4,521,381, Cl. 423-49.000.
Hsieh, Martin Y., 4,521,525, Cl. 501-98.000.
Snell, Richard G.; and Loughridge, Fredrick A., 4,521,641, Cl. 174-50.640.
Guarnieri, C. Richard, to International Business Machines Corporation. Radiant energy collector having plasma-textured polyimide exposed surface. 4,521,442, Cl. 427-38.000.
Gueldenpfennig, Klaus; Russell, Stanley L.; Oswald, William A.; Breidenstein, Charles J.; and Narula, Karam V. Digital private branch exchange. 4,521,879, Cl. 370-62.000.
Guhring, Gottlieb: *See—*
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Guild, Gerald A.: *See—*
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Guisinger, Barrett E., to Sony Corporation. One plus double omega squared radio frequency equalizer. 4,521,818, Cl. 360-65.000.
Gulden, Walter: *See—*
Engelhardt, Friedrich; Schmitz, Hermann; Gulden, Walter; and Hax, Jorg, 4,521,579, Cl. 526-287.000.
Gulf & Western: *See—*
Meggs, Daniel H.; Gross, Herbert G.; and Greenslade, John T., 4,521,835, Cl. 362-183.000.
Gullickson, Myron L. Aeration duct system. 4,520,714, Cl. 98-56.000.
Gunther, Oswin: *See—*
Gotz, Udo; Gleichauf, Winifred; and Gunther, Oswin, 4,520,731, Cl. 102-527.000.
Gupta, Desh B.: *See—*
Granzow, Robert H.; Gupta, Desh B.; Myers, Kimbrough I.; and Filliman, Mark D., 4,521,008, Cl. 271-3.000.
Gustavsson, Hans: *See—*
Bjorklund, Robert; Gustavsson, Hans; Lundstrom, Ingemar; and Nygren, Bertil, 4,521,450, Cl. 427-121.000.
Gusto Engineering B.V.: *See—*
Schoonmade, Wim, 4,521,134, Cl. 405-198.000.
Guttag, Karl M., to Texas Instruments Incorporated. Data processing device formed on a single semiconductor substrate having secure memory. 4,521,852, Cl. 364-200.000.
Guttag, Karl M., to Texas Instruments Incorporated. Secure microprocessor/microcomputer with secured memory. 4,521,853, Cl. 364-200.000.
Gutweniger, Edgar C. Button sewing aid. 4,520,955, Cl. 223-044.000.
Gyi, Ko Ko; and Grewal, Gurbachan S., to Magnetic Information Technology, Inc. Apparatus and method for aligning and assembly of a gimbal, magnetic slider head, and flexure arm. 4,520,555, Cl. 29-603.000.
Gyurina, F. Dennis: *See—*
Butt, Sheldon H.; Smith, Edward F., III; and Gyurina, F. Dennis, 4,521,469, Cl. 428-35.000.
Haaz, Josef: *See—*
Finkelstein, Wolfgang; and Haaz, Josef, 4,520,844, Cl. 137-486.000.
Hadary, Joseph. Toothpick holder. 4,520,833, Cl. 132-90.000.
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Hafele, Joseph C.: *See—*
Englund, Michael S.; Hafele, Joseph C.; and Schulze, Dwain C., Jr., 4,520,652, Cl. 73-23.000.
Hagan, John A.; and Lafferty, James, to Rehrig Pacific Company. Water bottle crate. 4,520,941, Cl. 220-72.000.

Hageman, John P. In situ roofing composite and method. 4,521,478, Cl. 428-287.000.

Hagens, Roger G.: *See—*
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Hahn, Daniel G. Exerciser tension device assembly. 4,521,010, Cl. 272-73.000.

Hahn, Kenneth G., Jr., to SCM Corporation. Process for coating a woody substrate and product. 4,521,495, Cl. 428-537.100.

Haissig, Manfred; and Lothmann, Josef, to Haissig, Manfred. Horizontal continuous casting apparatus. 4,520,860, Cl. 164-415.000.

Haken, Roger A.: *See—*
Coleman, Donald J., Jr.; Haken, Roger A.; and Wang, Chung S., 4,521,446, Cl. 427-86.000.

Halbritter, Klaus: *See—*
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Haldemann A.G.: *See—*
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Hall, Charles P. Foldable, insulated solar water heater. 4,520,793, Cl. 126-426.000.

Halliburton Company: *See—*
Cole, Clinton W.; and Beach, Verlin R., 4,520,837, Cl. 137-68.00R.
Murphey, Joseph R., 4,521,136, Cl. 405-263.000.

Halsey, Jay F.; and Briggs, Jeffrey M., to RCA Corporation. Skylight structure. 4,520,604, Cl. 52-200.000.

Halsey Taylor Division of King-Seeley Thermos Co.: *See—*
Cushman, Robert L.; Koester, Arlan; and Eveland, Michael, 4,520,960, Cl. 239-29.000.

Hamada, Hiroyoshi: *See—*
Kuwabara, Yoshiharu; Hamada, Hiroyoshi; and Kuwata, Masayuki, 4,521,112, Cl. 356-375.000.
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Hamanaka, Ernest S.; and Stam, John G., to Pfizer Inc. Salts of 6-alpha-(aminomethyl)penicillanic acid 1,1-dioxide esters and beta-lactam antibiotics. 4,521,533, Cl. 514-80,000.

Hamashima, Eiji: *See—*
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Hammerschmidt, Horst E.: *See—*
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Hampel, Hans-Joachim; Scondo, Ludwig; Stahl, Jurgen; Wegner, Wilhelm; and Bonne, Harry, to Jacobs Beverage Systems AG. Disposable container for liquids and apparatus for dispensing liquid from such container. 4,520,948, Cl. 222-103.000.

Handleman, Avrom R., to Semi-Bulk Systems, Inc. Apparatus for pumping fluent solid material. 4,521,165, Cl. 417-393.000.

Hankins, Jerry E.: *See—*
Hicks, Alfonza; and Hankins, Jerry E., 4,521,303, Cl. 209-454.000.

Hansen, Guenter: *See—*
Armbrust, Herbert; Dix, Johannes P.; Hansen, Guenter; and Zeidler, Georg, 4,521,216, Cl. 8-639.000.

Hanson, Raymond, to USM Corporation. Applicator nozzle. 4,521,456, Cl. 427-207.100.

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Harada, Setsuo; Shinagawa, Susumu; and Kitano, Kazuaki, to Takeda Chemical Industries, Ltd. Pharmaceutically acceptable salts of the antibiotic C-19393 E_5. 4,521,340, Cl. 260-245.20T.

Harada, Tsuneo: *See—*
Oyama, Kiyotaka; Irino, Shigeaki; Harada, Tsuneo; and Nakamura, Masao, 4,521,514, Cl. 435-70.000.

Haran, Dan: *See—*
Haran, Ilan; and Haran, Dan, 4,521,768, Cl. 340-566.000.

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Hardin, William R., to General Electric Company. Method and means for real time image zoom display in an ultrasonic scanning system. 4,520,671, Cl. 73-620.000.

Harding, Delbert. Base plate bolt hole marker. 4,520,571, Cl. 33-189.000.

Harigane, Kotaro; Tando, Shuichi; Takahashi, Kenichi; and Shudo, Hirokazu, to TDK Corporation. Apparatus for mounting chip type circuit elements on printed circuit boards. 4,520,557, Cl. 29-740.000.

Harrigan, Marvin, to Marvco Tool & Mfg. Inc. Adjustable telescopic support. 4,520,981, Cl. 248-413.000.

Harrington, Richard J.: *See—*
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Harrington, William A., to Hughes Aircraft Company. Orientation detection system for thin-line towed sonar arrays. 4,521,875, Cl. 367-130.000.

Harris Corporation: *See—*
Hwan, Eugene J.; and Kajfez, Darko, 4,521,746, Cl. 331-96.000.

Harris, Martin, to Shell Oil Company. Pesticidal nitromethylene derivatives. 4,521,536, Cl. 514-226.000.

Harry, John E.: *See—*
Burnham, Robert F.; Gibbon, Alan; and Harry, John E., 4,521,890, Cl. 373-22.000.

Harry Wolf & Sons: *See—*
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Harsco Corporation: *See—*
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Walker, Eugene P., 4,520,988, Cl. 249-13.000.

Hart-Carter Company: *See—*
Gessel, James M.; Kunz, Gary L.; and Scheidenhelm, E. Louis, 4,520,620, Cl. 56-400.000.

Hart, Cecil C. Mattress carrier. 4,521,045, Cl. 294-149.000.

Harte, J. Richard. Computer assisted teaching machine that uses two sets of conductive strips. 4,521,199, Cl. 434-339.000.

Hartmann, Achim; and Thumm, Hans, to Kronos Titan - G.m.b.H. Process for the production of nearly aluminium chloride-free titanium tetrachloride from titaniferous raw materials containing aluminum compounds. 4,521,384, Cl. 423-72.000.

Hashimoto, Akira: *See—*
Ninomiya, Yoshinobu; Somezawa, Masashi; and Hashimoto, Akira, 4,521,486, Cl. 428-407.000.

Hashimoto, Yoshio: *See—*
Kimura, Kazuo; Taneda, Yukinori; Tsuyuki, Shinichi; Suzuki, Shun; Hashimoto, Yoshio; and Sakamoto, Shinichi, 4,520,965, Cl. 242-7.05B.

Hastings, Jerome K.; Bigelow, James H.; and Pearson, Robert L., to Eaton Corporation. High speed electromagnetic mechanical switch. 4,521,757, Cl. 335-79.000.

Hata, Hiroyuki. Clothing clasp. 4,520,536, Cl. 24-498.000.

Hata, Hitoshi: *See—*
Tsubouchi, Toshiyuki; and Hata, Hitoshi, 4,521,324, Cl. 252-73.000.

Hata, Kosei, to Seiken Kai Foundation Juridical Person. Bacterial strain for purifying hydrocarbons pollution and purification process. 4,521,515, Cl. 435-248.000.

Hatala, John, to Temco Home Health Care Products, Inc. Three point clamping means for a shower bench. 4,520,515, Cl. 4-579.000.

Hatamura, Yotaro. Load converter. 4,520,679, Cl. 73-862.040.

Hatch, Douglas J.: *See—*
Bingham, Joseph P.; and Hatch, Douglas J., 4,521,809, Cl. 358-120.000.

Hatori, Yukiyoshi; Yagi, Eiji; and Kobari, Yuji, to Nissan Motor Co., Ltd. System for stabilizing idling of vehicular engine. 4,520,777, Cl. 123-339.000.

Hattori, Yoshihiro; Watanabe, Takashi; and Maeda, Kunio, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyacetal resin composition excellent in heat stability and surface processability and process for surface treating same. 4,521,488, Cl. 428-409.000.

Hattori, Yoshinori: *See—*
Miura, Kazunori; Hattori, Yoshinori; and Matsuo, Yasushi, 4,521,358, Cl. 264-65.000.

Haug, Werner, to Frama AG. Setting mechanism for type wheels of a printing device. 4,520,725, Cl. 101-91.000.

Hauser, Anton: *See—*
Demus, Dietrich; Vorbrodt, Hans-Matthias; Hauser, Anton; Vogel, Jorg; and Zaschke, Horst, 4,521,327, Cl. 252-299.610.

Hausman, Mary L.; and Lenney, William E., to Air Products and Chemicals, Inc. Vinyl acetate/ethylene copolymer emulsions exhibiting both partially- and fully-hydrolyzed polyvinyl alcohol compatibility. 4,521,561, Cl. 524-459.000.

Haverstock, Wayne; Krywchuk, David; and Masak, Peter, to Universal Industries Ltd. Pump jack slant wells. 4,520,683, Cl. 74-41.000.

Hawes, Samuel R., Jr.: *See—*
Olson, Peter D.; and Hawes, Samuel R., Jr., 4,521,647, Cl. 179-84.0VF.

Hawkins, Lawrence A.: *See—*
Baker, Robert D.; Driggers, Gerald W.; Gray, Ronald W.; and Hawkins, Lawrence A., 4,521,229, Cl. 55-137.000.

Hax, Jorg: *See—*
Engelhardt, Friedrich; Schmitz, Hermann; Gulden, Walter; and Hax, Jorg, 4,521,579, Cl. 526-287.000.

Hay, James V.; and Sauers, Richard F., to Du Pont de Nemours, E. I., and Company. Herbicidal benzenesulfonamides. 4,521,241, Cl. 71-92.000.

Hayashi, Hideki; and Kikuchi, Kenichi, to Sumitomo Electric Industries, Ltd. Semiconductor device integrating a laser and a transistor. 4,521,888, Cl. 372-50.000.

Hayashi, Mitsuji; Endo, Hideo; Oishibashi, Hirotsugu; Aichi, Takeo; and Sasaki, Shigeru, to Japanese National Railways; and Kyushu Tetsudo Kiki Mfg., Co., Ltd. Build-up spraying apparatus. 4,520,756, Cl. 118-699.000.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Internal combustion engine. 4,520,771, Cl. 123-195.00H.

Hayashibara, George M.: *See—*
Tahim, Raghbir S.; Hayashibara, George M.; and Chang, Kai, 4,521,747, Cl. 331-107.0SL.

Hayes, Ellen J., administratrix: *See—*
Hayes, Lawrence P., deceased; Hayes, Ellen J., administratrix; Jain, Kantilal; and Kerth, Randall T., 4,521,087, Cl. 350-574.000.

Hayes, Lawrence P., deceased; by Hayes, Ellen J., administratrix; Jain, Kantilal; and Kerth, Randall T., to International Business Machines Corporation. Optical system with diffuser for transformation of a collimated beam into a self-luminous arc with required curvature and numerical aperture. 4,521,087, Cl. 350-574.000.

Hayes, Susan M. Drip-type coffee making apparatus. 4,520,716, Cl. 99-306.000.

Hayworth, Lawrence T., to Mars, Incorporated. Microencapsulation process. 4,521,352, Cl. 264-4.300.

Hazelwood, Louis S.: *See—*
Rehfuss, John W.; Hazelwood, Louis S.; Price, Martin B.; and Zilke, Robert W., Jr., 4,521,489, Cl. 428-412.000.

Hedegard, Peter L.: *See—*
Raymor, Willard E.; and Hedegard, Peter L., 4,521,255, Cl. 134-33.000.

Hedstrom, Norman A.: *See—*
Cournoyer, Bernard T.; and Hedstrom, Norman A., 4,520,976, Cl. 248-56.000.

Hegi, Paul, to Lupa Finances S.A. Automatic dialer for telephone numbers. 4,521,648, Cl. 179-90.00B.

Heida, Bernd: *See—*
Wickenhaeuser, Gerhard; Heida, Bernd; Graf, Fritz; and Hupfer, Leopold, 4,521,632, Cl. 568-492.000.

Heidelberger Druckmaschinen AG: *See—*
Darda, Walter, 4,521,007, Cl. 270-47.000.

Heijmen, Hendricus J.: *See—*
Wattimena, Freddy; and Heijmen, Hendricus J., 4,521,630, Cl. 568-435.000.

Heilen, Gerd: *See—*
Rebafka, Walter; Heilen, Gerd; Halbritter, Klaus; and Franzischka, Wolfgang, 4,521,602, Cl. 546-184.000.

Heilos, Johannes: *See—*
Arntz, Dietrich; Prescher, Gunter; Burkhardt, Werner; Heilos, Johannes; and Manner, Reinhard, 4,521,618, Cl. 562-535.000.

Heim, Lloyd S.: *See—*
Dix, Gary L.; Heim, Lloyd S.; Herald, Robert F.; and Quinlan, William P., 4,521,884, Cl. 371-15.000.

Heimer, Malcolm L., to Cordis Corporation. Switched capacitor amplifier. 4,521,743, Cl. 330-296.000.

Heinen, Frank B.: *See—*
St. Vincent, Valerie A.; Heinen, Frank B.; and Rinell, Steven J., 4,520,805, Cl. 128-80.00R.

Heithoff, Robert B., to PPG Industries, Inc. Method and apparatus for controlling wall layer thickness in a liquefaction process. 4,521,235, Cl. 65-29.000.

Heithoff, Robert B., to PPG Industries, Inc. Method and apparatus for controlling an ablation liquefaction process. 4,521,238, Cl. 65-135.000.

Heitz, Walter; and Risse, Wilhelm, to Bayer Aktiengesellschaft. Process for the production of bifunctional polyphenylene ethers. 4,521,584, Cl. 528-214.000.

Heller, Aaron J.: *See—*
Winkler, Dean M.; Curtis, Jeffrey B.; and Heller, Aaron J., 4,521,865, Cl. 364-608.000.

Helmbold, Walter. Energy storage apparatus. 4,520,862, Cl. 165-10.000.

Hemmerling, Horst: *See—*
Alig, Franz; Hemmerling, Horst; and Neulinger, Franz, 4,521,226, Cl. 55-21.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Schumann, Henning; Busch, Peter; Fischer, Detlef; and Thiele, Klaus, 4,520,831, Cl. 132-11.00R.

Hennrich, Norbert: *See—*
Lundstrom, Kurt I.; Arwin, Hans R.; Rieke, Erwin; Sielaff, Gunter; and Hennrich, Norbert, 4,521,522, Cl. 436-525.000.

Henrikson, Stig A. Apparatus for extracting at least the inherent kinetic energy from waves. 4,521,152, Cl. 415-2.00R.

Hensler, David L. Control wand for overhead personnel crane. 4,520,894, Cl. 182-2.000.

Herald, Robert F.: *See—*
Dix, Gary L.; Heim, Lloyd S.; Herald, Robert F.; and Quinlan, William P., 4,521,884, Cl. 371-15.000.

Herbert, Alan J., to Minnesota Mining and Manufacturing Company. Highly photosensitive aqueous solvent-developable printing assembly. 4,521,503, Cl. 430-49.000.

Hercules Incorporated: *See—*
Class, Jay B., 4,521,493, Cl. 428-498.000.

Hergeth, Hubert. Apparatus for making a web from fibers. 4,520,531, Cl. 19-105.000.

Hermann Hemscheidt Maschinenfabrik GmbH & Co.: *See—*
Hovorka, Reiner; and Riedhammer, Josef, 4,520,712, Cl. 91-505.000.

Herron, Charles R., to Baker International Corp. Short displacement double acting vehicle suspension system. 4,520,734, Cl. 105-157.00R.

Herron, Maynard M.: *See—*
Smith, David R.; and Herron, Maynard M., 4,520,878, Cl. 172-705.000.

Herschel Corporation: *See—*
Sorensen, Wayne E.; and Johnson, Larry E., 4,520,618, Cl. 56-310.000.

Herzog, Klaus; Szenger, Franz; and Gentner, Gabriele, to Carl-Zeiss-Stuftung, Heidenhheim/Brenz. Tailstock for rotatably mounting a workpiece in precision machinery. 4,520,700, Cl. 82-31.000.

Hess, Lloyd D., Jr.: *See—*
Patterson, Dennis B.; Parker, Dane K.; and Hess, Lloyd D., Jr., 4,521,574, Cl. 526-204.000.

Hesston Corporation: *See—*
Smith, David R.; and Herron, Maynard M., 4,520,878, Cl. 172-705.000.

Heuber, Klaus; and Wiedmann, Siegfried K., to International Business Machines Corporation. Method of and circuit arrangement for reading an integrated semiconductor store with storage cells in MTL (I^2L) technology. 4,521,873, Cl. 365-190.000.

Hevezi, James M.: *See—*
Ong, Poen S.; Zermeno, Alfonso; Marsh, Lee M., Jr.; Hevezi, James M.; and Cowart, Ronald W., 4,521,808, Cl. 358-111.000.

Hicks, Alfonza; and Hankins, Jerry E., to Exxon Research & Engineering Co. Solids separation in a self-circulating magnetically stabilized fluidized bed. 4,521,303, Cl. 209-454.000.

Hicks, Irwin A.; and Albrecht, Charles W., to Singer Company, The. Adjustable tangent assembly for a diaphragm gas meter. 4,520,676, Cl. 73-281.000.

Hiestand, Karl, to SMW Schneider & Weisshaupt GmbH. Power operated chuck having centrifugal force compensation. 4,521,028, Cl. 279-1.00C.

Higginbotham, John W.; and Dowden, Dennis C., to McDonnell Douglas Corporation. Pulse coded optical attenuation meter. 4,521,115, Cl. 356-432.000.

Highsmith, Ronald E. Gel-forming compositions and the use thereof. 4,521,452, Cl. 427-136.000.

Hilker, G. Daniel; Lausen, Verne H.; Coon, Jessie H.; Bodette, James E.; Grimes, Jerry L.; Wright, Roger D.; Disque, Donny R.; and Bultemeier, Keith D., to Phelps Dodge Magnet Wire Co. Apparatus for manufacturing magnet wire. 4,521,173, Cl. 425-113.000.

Hill, Norman L.: *See—*
Maggio, Richard A.; Maggio, Leonard C.; and Hill, Norman L., 4,520,527, Cl. 15-235.800.

Hindermyer, Charles. Fishing lure. 4,520,588, Cl. 43-42.060.

Hiniker Company: *See—*
Peterson, Richard L.; Scheurer, Roger J.; and Steinberg, Richard W., 4,520,876, Cl. 172-427.000.

Hinkle, John F., Jr.: *See—*
Breuninger, Robert E., 4,520,753, Cl. 118-500.000.

Hinz, Lorne C.: *See—*
Dupuis, Claude R.; and Hinz, Lorne C., 4,521,643, Cl. 179-2.0DP.

Hirai, Masayoshi; Tanaka, Junzo; and Ueda, Katsuroh, to Matsushita Electric Industrial Co., Ltd. Cooking appliance. 4,521,183, Cl. 432-37.000.

Hiraki, Shunichi; Kinoshita, Hiroshi; Kumamaru, Kuniaki; Koguchi, Shigeo; and Yonezawa, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of making integrated devices having long and short minority carrier lifetimes. 4,521,256, Cl. 148-1.500.

Hirano, Hiroyuki: *See—*
Mori, Kyoichiro; and Hirano, Hiroyuki, 4,521,568, Cl. 525-309.000.

Hirano, Yoshinori: *See—*
Shimonosono, Hitoshi; Ogawa, Naoki; and Hirano, Yoshinori, 4,520,768, Cl. 123-41.440.

Hirose, Iwao: *See—*
Suzuki, Shigeyoshi; Yamada, Jun; Senga, Takao; Kuriu, Sadao; Yamasaki, Masahiro; Hirose, Iwao; and Maegawa, Tokubee, 4,521,101, Cl. 355-10.000.

Hirose, Takao: *See—*
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,521,294, Cl. 208-23.000.

Hirota, Ken; Fujimoto, Yoshiaki; Watanabe, Kouichi; and Sugimura, Minoru, to Matsushita Electric Industrial Co., Ltd. Polycrystalline ferrite and a magnetic head using the same. 4,521,323, Cl. 252-62.590.

Hirota, Toshio: *See—*
Ozawa, Masuo; and Hirota, Toshio, 4,520,764, Cl. 123-3.000.

Hisanaga, Akinori: *See—*
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; Kano, Toshiji; and Hisanaga, Akinori, 4,521,289, Cl. 204-253.000.

Hisatsune, Fumiyuki: *See—*
Yoshiyasu, Hajimu; Murata, Shirou; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,521,653, Cl. 200-144.00C.

Hitachi Automotive Engineering Co., Ltd.: *See—*
Momono, Masakichi; Moriya, Hisanori; Souma, Masahiro; and Hamashima, Eiji, 4,520,962, Cl. 239-585.000.

Hitachi Construction Machinery Co., Ltd.: *See—*
Nakajima, Kichio; Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; and Honma, Kazuo, 4,520,626, Cl. 60-468.000.

Hitachi Denshi Kabushiki Kaisha: *See—*
Kougami, Akihiko; Mita, Seiichi; Kirino, Toru; and Nagahara, Shusaku, 4,521,816, Cl. 360-45.000.

Hitachi Koki Company, Limited: *See—*
Kimura, Kazuo; Taneda, Yukinori; Tsuyuki, Shinichi; Suzuki, Shun; Hashimoto, Yoshio; and Sakamoto, Shinichi, 4,520,965, Cl. 242-7.05B.

Hitachi, Ltd.: *See—*
Fukushima, Isao; Kuwahara, Kazuyoshi; Itoigawa, Keiichi; Kobori, Yasunori; and Nishijima, Hideo, 4,521,750, Cl. 333-28.00R.
Momono, Masakichi; Moriya, Hisanori; Souma, Masahiro; and Hamashima, Eiji, 4,520,962, Cl. 239-585.000.
Nakajima, Tadakatsu; Nakayama, Wataru; and Daikoku, Takahiro, 4,520,866, Cl. 165-115.000.
Oouchi, Tomihisa; Usui, Sampei; Fukuda, Tamio; and Nishiguchi, Akira, 4,520,634, Cl. 62-476.000.
Sawada, Hideo; and Yata, Kiyoshi, 4,521,872, Cl. 365-49.000.
Yoshida, Takashi; Fujie, Masakatsu; Matsuno, Junichi; and Ouchi, Hideyuki, 4,521,813, Cl. 358-296.000.

Hitachi Maxell Limited: *See—*
Watanabe, Osamu, 4,521,500, Cl. 429-174.000.

Hitachi Metals, Ltd.: *See—*
Samuels, Abe; Yamashita, Keitaro; and Sasaki, Yoshitaka, 4,521,184, Cl. 432-60.000.

Hitachi Microcomputer Engineering, Ltd.: *See—*
Fukushima, Isao; Kuwahara, Kazuyoshi; Itoigawa, Keiichi; Kobori, Yasunori; and Nishijima, Hideo, 4,521,750, Cl. 333-28.00R.

Hitchcock, Keith N., to Froude Consine Limited. Engine testing apparatus and methods. 4,520,660, Cl. 73-120.000.
Hoadley, Frederick L., to Borg-Warner Corporation. D-C Bus current monitoring system. 4,521,840, Cl. 363-35.000.
Hodge, Allan M. Solid waste receptacle security system. 4,520,945, Cl. 220-315.000.
Hodgson, Thomas D.; and Foot, William R., to United Kingdom Atomic Energy Authority. Agitator apparatus. 4,521,400, Cl. 423-658.500.
Hodogaya Chemical Co., Ltd.: *See*—
Okazaki, Hideo; Imagome, Hiroshi; Suzuka, Susumu; and Sakai, Kiyoshi, 4,521,605, Cl. 548-440.000.
Hoechst Aktiengesellschaft: *See*—
Finke, Manfred; and Mundnich, Rainer, 4,521,348, Cl. 260-940.000.
Kleiner, Hans-Jerg, 4,521,346, Cl. 260-543.00P.
Kleiner, Hans-Jerg, 4,521,347, Cl. 260-543.00P.
Papenfuhs, Theodor; and Volk, Heinrich, 4,521,617, Cl. 562-467.000.
Reichert, Gunter; Mainzer, Franz; Lehmann, Kurt; and Niermann, Hermann, 4,520,631, Cl. 62-188.000.
Stuhler, Herbert; and Krempl, Engelbert, 4,521,595, Cl. 536-127.000.
Hoechst-Roussel Pharmaceuticals Incorporated: *See*—
Kosley, Raymond W., Jr.; and Cherill, Robert J., 4,521,537, Cl. 514-302.000.
Hoffman, Kevin R.: *See*—
Nath, Prem; Hoffman, Kevin R.; and Laarman, Timothy D., 4,520,757, Cl. 118-723.000.
Hoffmann, Dietrich: *See*—
Eberhardt, Wolfgang; Hoffmann, Dietrich; Kriechbaum, Karl; and Rohde, Erwin, 4,521,654, Cl. 200-146.00R.
Hoffmann-La Roche Inc.: *See*—
Wick, Alexander E., 4,521,535, Cl. 514-222.000.
Hofmann, Peter, to Chemische Werke Huls AG. Methods for reprocessing cobalt catalysts used in hydrocarboxylation. 4,521,526, Cl. 502-24.000.
Holick, Michael F.; and Holick, Sally A., to General Hospital Corporation, The. Vitamin D glycosyl orthoesters. 4,521,410, Cl. 514-26.000.
Holick, Sally A.: *See*—
Holick, Michael F.; and Holick, Sally A., 4,521,410, Cl. 514-26.000.
Holland, Frederic A.: *See*—
Russell, Philip P.; Niu, Tyan-Faung; and Holland, Frederic A., 4,521,457, Cl. 427-286.000.
Holland, Peter J.: *See*—
Fitton, Paul; and Holland, Peter J., 4,521,553, Cl. 523-333.000.
Hollis, Ralph L., Jr.: *See*—
Bednorz, Johannes G.; Hollis, Ralph L., Jr.; Lanz, Martin; Pohl, Wolfgang D.; and Yeack-Scranton, Celia E., 4,520,570, Cl. 33-180.00R.
Holloway, Falis E. Automatic gate opener. 4,520,592, Cl. 49-358.000.
Holman, Ardee R. Emergency firehose switchover device for wells and the like. 4,520,872, Cl. 169-54.000.
Holmer, Nils-Gunnar: *See*—
Salomonsson, Goran; Borjesson, Per O.; Mandersson, Bengt; Holmer, Nils-Gunnar; and Lindstrom, Kjell, 4,520,670, Cl. 73-602.000.
Holmes, Donald P.; and McDonald, David I., to Cincinnati Milacron Inc. Impingement oven and method. 4,520,575, Cl. 34-23.000.
Holroyd, Ralph; and Spiller, Peter O., to Lucas Industries Limited. Fuel pumping apparatus. 4,520,782, Cl. 123-450.000.
Holt, John R., Jr., to General Electric Company. Noise blanking circuit and method. 4,521,917, Cl. 455-223.000.
Holt, William L.: *See*—
Carbeau, Richard W.; Martin, James F.; Lanier, John H.; and Holt, William L., 4,520,741, Cl. 110-344.000.
Holzhauser, Ronald C.; McGlen, James A.; and Lawniczak, Gary P., to Eastman Kodak Company. Apparatus for mounting a document feeder on a copier/duplicator. 4,520,977, Cl. 248-201.000.
Hombach, Rudolf: *See*—
Kerimis, Dimitrios; Hombach, Rudolf; Muller, Peter; and Dollhausen, Manfred, 4,521,545, Cl. 521-107.000.
Homburg, Axel: *See*—
Diesinger, Walter; and Homburg, Axel, 4,520,972, Cl. 244-3.100.
Homola, Andrew M.: *See*—
Eldridge, Jerome M.; and Homola, Andrew M., 4,521,451, Cl. 427-130.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ban, Masaki, 4,520,688, Cl. 74-572.000.
Nakamura, Yukinobu; Tagami, Katsutoshi; and Takahashi, Tsuneo, 4,521,777, Cl. 340-995.000.
Satoh, Kazuo, 4,520,892, Cl. 180-219.000.
Honeycutt, Thomas L.: *See*—
Roberts, Thomas G.; and Honeycutt, Thomas L., 4,521,110, Cl. 356-350.000.
Honeywell Inc.: *See*—
Atherton, James H.; and Stanojevic, Silvo, 4,521,727, Cl. 323-294.000.
Bartels, James I., 4,521,705, Cl. 307-605.000.
Venkatasetty, Hanumanthiya V., 4,521,290, Cl. 204-412.000.
Honeywell Information Systems Inc.: *See*—
Bruce, Kenneth E.; Lombardo, Ralph M., Jr.; Tarbox, Bruce H.; and Conway, John W., 4,521,848, Cl. 364-200.000.
Genuit, Luther L.; and Nowell, John R., 4,521,692, Cl. 290-4.00A.
Trubisky, Leonard G.; and Shelly, William A., 4,521,851, Cl. 364-200.000.
Wilder, Richard P., Jr., 4,521,849, Cl. 364-200.000.
Wilhite, John E.; Shelly, William A.; and Ryan, Charles P., 4,521,850, Cl. 364-200.000.
Hong, Chi-Shain: *See*—
Liu, Yet-Zen; Hong, Chi-Shain; and Dapkus, P. Danial, 4,521,887, Cl. 372-45.000.
Honma, Kazuo: *See*—
Nakajima, Kichio; Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; and Honma, Kazuo, 4,520,626, Cl. 60-468.000.
Honsel-Werke AG: *See*—
Steinhauser, Thomas; and Buch, Thomas, 4,521,001, Cl. 266-208.000.
Hoogovens Groep B.V.: *See*—
Ouwerkerk, Johannes H. W.; Lucieer, Wouter B.; and Cramer, Rudolph E., 4,521,117, Cl. 366-165.000.
Hoover, David S.: *See*—
Givens, Edwin N.; and Hoover, David S., 4,521,299, Cl. 208-254.00R.
Hori, Takahiro: *See*—
Obitsu, Masamichi; Hori, Takahiro; Koinuma, Toyoji; and Sakaguchi, Yuriko, 4,521,249, Cl. 106-12.000.
Horiba, Ltd.: *See*—
Hosokawa, Yoshinori, 4,521,905, Cl. 378-206.000.
Horikawa, Takeshi: *See*—
Ishido, Takatsugu; and Horikawa, Takeshi, 4,521,571, Cl. 525-437.000.
Horikawa, Yoichi: *See*—
Morita, Toyoo; and Horikawa, Yoichi, 4,520,544, Cl. 29-408.000.
Horikawa, Yoshiaki, to Olympus Optical Co., Ltd. Focusing device for optical system. 4,521,108, Cl. 356-123.000.
Horimoto, Katsutoshi: *See*—
Ichimura, Mitsunori; Yamamoto, Ryoichi; and Horimoto, Katsutoshi, 4,521,378, Cl. 422-135.000.
Horwitz, Christopher M., to Unisearch Limited. Hollow cathode sputter etcher. 4,521,286, Cl. 204-192.00E.
Hosogai, Takeo: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Hosogai, Takeo; and Nishida, Takashi, 4,521,242, Cl. 71-94.000.
Hosokawa, Yoshinori, to Horiba, Ltd. Monitor of an X-ray radiation range. 4,521,905, Cl. 378-206.000.
Hosoya, Masahiro; and Ueno, Tsuyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Developing device. 4,521,098, Cl. 355-3.0DD.
Houlsby, Robert D., to CooperVision, Inc. Sterilizing treatment with hydrogen peroxide and neutralization of residual amounts thereof. 4,521,375, Cl. 422-29.000.
House Food Industrial Co., Ltd.: *See*—
Sugisawa, Ko; Matsumura, Yasushi; and Taga, Kazumitsu, 4,520,574, Cl. 34-5.000.
Hovorka, Reiner; and Riedhammer, Josef, to Hermann Hemscheidt Maschinenfabrik GmbH & Co. Axial piston machine having a sealed bearing box. 4,520,712, Cl. 91-505.000.
Howard, Robert, to Daventry Pty. Ltd. Display screens and the like. 4,520,584, Cl. 40-606.000.
Howe, Arthur T., to Standard Oil Company (Indiana). Multilayer photoelectrodes utilizing exotic materials. 4,521,800, Cl. 357-67.000.
Howe, Herbert E.: *See*—
Di Martini, Carl R.; Howe, Herbert E.; Scott, William L.; and Bulvanoski, Leo J., 4,521,247, Cl. 75-77.000.
Howell, Danny T.: *See*—
Howell, William T., Jr.; Howell, John T.; and Howell, Danny T., 4,521,036, Cl. 285-61.000.
Howell, John T.: *See*—
Howell, William T., Jr.; Howell, John T.; and Howell, Danny T., 4,521,036, Cl. 285-61.000.
Howell, Stephen L.: *See*—
Weil, Robert A., Jr.; and Howell, Stephen L., 4,520,707, Cl. 84-1.030.
Howell, William T., Jr.; Howell, John T.; and Howell, Danny T. Sprinkler head support. 4,521,036, Cl. 285-61.000.
Howeth, D. Franklin. Air filter unit with multiple filter chambers and particulate material collection hoppers. 4,521,232, Cl. 55-324.000.
Hoya Corporation: *See*—
Yamashita, Toshiharu, 4,521,524, Cl. 501-64.000.
Hoydic, Roberta L. Salad bowl. 4,520,633, Cl. 62-457.000.
HRI, Inc.: *See*—
Chervenak, Michael C.; Eccles, Richard M.; and Nongbri, Govanon, 4,521,295, Cl. 208-59.000.
Hsie, C. H., to Son Su Kung. Catalyst for cracking kerosene. 4,521,529, Cl. 502-217.000.
Hsieh, Martin Y., to GTE Products Corporation. Silicon nitride bodies. 4,521,525, Cl. 501-98.000.
Huber, Franz R.; and Stark, Axel, to Rohde & Schwarz GmbH & Co., KG. Multifrequency antenna matching apparatus with antomatic tuning. 4,521,913, Cl. 455-121.000.
Hudgens, Stephen J.: *See*—
Ovshinsky, Stanford R.; Hudgens, Stephen J.; and Kastner, Marc A., 4,521,447, Cl. 427-45.100.
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Napolitano, Pellegrino E., 4,521,156, Cl. 415-11.000.
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Hughes Aircraft Company: *See*—
Harrington, William A., 4,521,875, Cl. 367-130.000.
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Vandevier, Joseph E., 4,521,708, Cl. 310-87.000.

Humber, Leslie G.: *See*—
Asselin, Andre A.; and Humber, Leslie G., 4,521,423, Cl. 514-290.000.
Asselin, Andre A.; Crosilla, Danilo A.; and Humber, Leslie G., 4,521,606, Cl. 548-503.000.
Hundt, Roger C.: *See*—
Jordan, William D.; Hundt, Roger C.; and Pritchett, James D., 4,521,827, Cl. 361-386.000.
Hunter, Arthur C.: *See*—
Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., 4,521,868, Cl. 364-753.000.
Hunter, Patrick F.: *See*—
Redding, John R.; and Hunter, Patrick F., 4,521,149, Cl. 414-44.000.
Hupfer, Leopold: *See*—
Wickenhaeuser, Gerhard; Heida, Bernd; Graf, Fritz; and Hupfer, Leopold, 4,521,632, Cl. 568-492.000.
Huson, Gale W.: *See*—
Urban, Clement A.; and Huson, Gale W., 4,520,720, Cl. 100-26.000.
Husted, Raymond R.: *See*—
Ziehm, Richard T.; Wilczek, Stephen P.; Baker, George E.; Husted, Raymond R.; Dumas, Glen A.; Bunker, Keith G.; and Place, George H., Jr., 4,521,847, Cl. 364-184.000.
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Huth, Robert M. Two-wheeled vehicle kickstand support pad. 4,521,031, Cl. 280-293.000.
Hutter, Charles G., III, to Physical Systems, Inc. Freezeproof valve assembly. 4,520,836, Cl. 137-59.000.
Hwan, Eugene J.; and Kajfez, Darko, to Harris Corporation. Microwave oscillator with TM01δ dielectric resonator. 4,521,746, Cl. 331-96.000.
Hydril Company: *See*—
Blackburn, Jan W.; and Baron, Burl E., 4,521,042, Cl. 285-334.000.
Hydro-Quebec: *See*—
Simard, Julien, 4,521,822, Cl. 361-35.000.
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Kunihiro, Takatoshi; and Tsuchiya, Koji, 4,521,296, Cl. 208-87.000.
Tsubouchi, Toshiyuki; and Hata, Hitoshi, 4,521,324, Cl. 252-73.000.
Ihara, Kiyohiko: *See*—
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Katagiri, Nobuhiko; Matsubara, Hidenobu; and Iida, Akio, 4,520,864, Cl. 165-60.000.
Iida, Noriyoshi: *See*—
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,521,099, Cl. 355-8.000.
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Ikeda, Hideo: *See*—
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Ikeda, Masahiro, to Nippon Telegraph & Telephone Public Corporation. Optical switch. 4,521,069, Cl. 350-96.130.
Ikeda, Yasunari, to Sony Corporation. Double-scanning non-interlace color television receiver. 4,521,802, Cl. 358-11.000.
Illinois Tool Works Inc.: *See*—
Edwards, Bryant; Klygis, M. Julius; and Olsen, Robert C., 4,520,924, Cl. 206-150.000.
Frano, Francis G.; and Ruehl, William E., 4,520,748, Cl. 116-70.000.
Imagome, Hiroshi: *See*—
Okazaki, Hideo; Imagome, Hiroshi; Suzuka, Susumu; and Sakai, Kiyoshi, 4,521,605, Cl. 548-440.000.
Imatron Associates: *See*—
Rand, Roy E., 4,521,900, Cl. 378-137.000.
Rand, Roy E., 4,521,901, Cl. 378-138.000.
Imhof, Werner, to Posalux S.A. Machine tool. 4,520,551, Cl. 29-568.000.
Imoto, Tadashi: *See*—
Norota, Susumi; Kiriyama, Tsutomu; Imoto, Tadashi; and Azumi, Toshinori, 4,521,364, Cl. 264-176.00F.
Inaba, Humio; Ito, Hiromasa; and Ogawa, Yoh, to Tohoku University. Optical function semiconductor device. 4,521,681, Cl. 250-205.000.
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Sato, Hideyori; Inaba, Nobuaki; Arai, Mitsuru; and Onzou, Michio, 4,520,625, Cl. 60-464.000.
Inamori, Mikio: *See*—
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Inamoto, Tadayoshi: *See*—
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Inamura, Takahiro: *See*—
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Info-Chem Inc.: *See*—
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Ingre, Lars: *See*—
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Inject Star Pokelmaschinen Gessellschaft m.b.H.: *See*—
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Inoue, Kiyoshi, 4,521,328, Cl. 252-502.000.
Inoue, Kiyoshi, 4,521,660, Cl. 219-69.00W.
Inoue, Kiyoshi, 4,521,661, Cl. 219-69.00W.
Inoue, Kimio: *See*—
Watanabe, Shoji; Inoue, Kimio; and Okitsu, Kiyoshi, 4,521,570, Cl. 525-415.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of making carbon material. 4,521,328, Cl. 252-502.000.
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Matsushita, Souichi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,520,783, Cl. 123-492.000.
Institut Francais du Petrole: *See*—
Candau, Francoise; Leong, Yee-Sing; Kohler, Norbert; and Dawans, Francois, 4,521,317, Cl. 252-8.55D.
Institut National de la Recherche Agronomique: *See*—
Bonnot, Guy; Laviolette, Pierre; Potiron, Andre; and Deysson, Jean-Yves, 4,521,353, Cl. 264-8.000.
Intermatic Incorporated: *See*—
Pezzolo, Donald E.; Pfeiffer, James W.; and Corder, Thomas E., 4,521,843, Cl. 364-145.000.
International Business Machines Corporation: *See*—
Arnold, Anthony F.; and Schmeckenbecher, Arnold F., 4,521,449, Cl. 427-96.000.
Bahrle, Dieter K.; and Schwerdt, Friedrich W., 4,521,280, Cl. 204-15.000.
Bednorz, Johannes G.; Hollis, Ralph L., Jr.; Lanz, Martin; Pohl, Wolfgang D.; and Yeack-Scranton, Celia E., 4,520,570, Cl. 33-180.00R.
Blumberg, Richard J.; Brenner, Stewart; and Robortaccio, Rocco J., 4,521,700, Cl. 307-456.000.
Dix, Gary L.; Heim, Lloyd S.; Herald, Robert F.; and Quinlan, William P., 4,521,884, Cl. 371-15.000.
Economy, James; and Zachariades, Anagnostis E., 4,520,647, Cl. 72-365.000.
Eldridge, Jerome M.; and Homola, Andrew M., 4,521,451, Cl. 427-130.000.
Guarnieri, C. Richard, 4,521,442, Cl. 427-38.000.
Hayes, Lawrence P., deceased; Hayes, Ellen J., administratrix; Jain, Kantilal; and Kerth, Randall T., 4,521,087, Cl. 350-574.000.
Heuber, Klaus; and Wiedmann, Siegfried K., 4,521,873, Cl. 365-190.000.
Murphy, Alan S., 4,521,774, Cl. 340-745.000.
Rhyne, James R., 4,521,770, Cl. 340-703.000.
Scalzi, Casper A.; and Schmalz, Richard J., 4,521,846, Cl. 364-200.000.
International Coal Refining Company: *See*—
Givens, Edwin N.; and Hoover, David S., 4,521,299, Cl. 208-254.00R.
International Flavors & Fragrances Inc.: *See*—
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,521,634, Cl. 568-665.000.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,521,613, Cl. 560-152.000.
Rutherford, Howard J.; and Withycombe, Donald A., 4,521,541, Cl. 521-79.000.
International Honeycomb Corporation: *See*—
Rothenberg, Lee M., Jr., 4,521,203, Cl. 446-106.000.
International Standard Electric Corporation: *See*—
Vance, Ian A. W.; and Goatcher, John K., 4,521,892, Cl. 375-88.000.
International Telephone and Telegraph Corporation: *See*—
Kurbikoff, Peter A.; and Bethurum, Gary C., 4,521,062, Cl. 339-14.00R.
Ranghelli, Joseph C.; and La Bella, Joseph A., 4,521,754, Cl. 333-224.000.
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Calderon, Jose L.; and Layrisse, Ignacio, 4,521,277, Cl. 196-46.000.
Inukai, Yuzo; and Shichijo, Yoshiaki, to Fuji Photo Film Co., Ltd. Spray type coating apparatus. 4,520,755, Cl. 118-629.000.
Inuzuka, Tsuneki: *See*—
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,521,099, Cl. 355-8.000.
Ippisch, Ernest: *See*—
King, Harold B.; Masaitis, William; Ippisch, Ernest; and Chinn, Albert E., 4,521,862, Cl. 364-552.000.

Ireland, Eric, to Sigma Ltd. Component measuring instrument. 4,520,569, Cl. 33-148.00E.
Irino, Shigeaki: *See—*
Oyama, Kiyotaka; Irino, Shigeaki; Harada, Tsuneo; and Nakamura, Masao, 4,521,514, Cl. 435-70.000.
Irwin, J. Michael; and White, Jay P., to Irwin, J. Michael. Custom footbed support and method and apparatus for manufacturing same. 4,520,581, Cl. 36-88.000.
Isaac, Olivier; and Pignolet, Louis, to Rexroth-Sigma. Hydraulic distributors. 4,520,845, Cl. 137-624.270.
Isakson, John E.; and Nutting, H. Eugene, to Western Gear Machinery Co. Apparatus and method for simultaneously tensioning pipes. 4,521,132, Cl. 405-166.000.
Ishida, Tokuzi; and Aono, Kiyotaka, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Intake port structure for internal combustion engines. 4,520,776, Cl. 123-308.000.
Ishido, Takatsugu; and Horikawa, Takeshi, to Daicel Chemical Industries, Ltd. Process for preparing polyester elastomers. 4,521,571, Cl. 525-437.000.
Ishikawa, Takashi: *See—*
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Ishimura, Koichi: *See—*
Niino, Shuheu; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, 4,520,642, Cl. 72-8.000.
Isobe, Toshiaki; and Fukuda, Teruo, to Toyota Jidosha Kabushiki Kaisha. Method of and apparatus for controlling fuel injection. 4,520,784, Cl. 123-492.000.
Ito, Hiromasa: *See—*
Inaba, Humio; Ito, Hiromasa; and Ogawa, Yoh, 4,521,681, Cl. 250-205.000.
Ito, Yoshiyasu; Kobayashi, Fumiaki; and Miyagi, Hideo, to Toyota Jidosha Kabushiki Kaisha. Diesel fuel injection pump with fuel injection cutoff upon detection of excessive actual fuel combustion time. 4,520,780, Cl. 123-359.000.
Ito, Yuji, to Toyota Jidosha Kabushiki Kaisha. Coil spring compressor, with vertically adjustable clamp carriage. 4,520,543, Cl. 29-227.000.
Itoh, Katsuhisa: *See—*
Tanabe, Zenichi; Itoh, Katsuhisa; and Watanabe, Yoshiaki, 4,521,284, Cl. 204-71.000.
Itoh, Tomiyoshi: *See—*
Kawamura, Yasuo; Nishiyama, Tadashi; Itoh, Tomiyoshi; and Sakai, Takuo, 4,521,406, Cl. 424-94.000.
Itoigawa, Keiichi: *See—*
Fukushima, Isao; Kuwahara, Kazuyoshi; Itoigawa, Keiichi; Kobori, Yasunori; and Nishijima, Hideo, 4,521,750, Cl. 333-28.00R.
Itsubo, Junichi; Yazaki, Takashi; and Mori, Fumio, to Japan Crown Cork Co., Ltd. Pilfer-proof plastic closure for containers. 4,520,939, Cl. 215-252.000.
ITT Industries, Inc.: *See—*
Belart, Juan; Burgdorf, Jochen; Weise, Lutz; Kircher, Dieter; and Goossens, Andre F. L., 4,521,061, Cl. 303-114.000.
Kraft, Wolfgang, 4,520,553, Cl. 29-571.000.
Leonardsson, Per-Erik, 4,521,025, Cl. 277-89.000.
Iwahara, Makoto: *See—*
Miyaji, Naotaka; Sakamoto, Atsushi; and Iwahara, Makoto, 4,521,908, Cl. 381-92.000.
Iwano, Yoshimi: *See—*
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Izumi, Eiki: *See—*
Nakajima, Kichio; Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; and Honma, Kazuo, 4,520,626, Cl. 60-468.000.
Izumi, Kazuo: *See—*
Ogawa, Hiroyasu; Izumi, Kazuo; and Shimazaki, Kenji, 4,520,623, Cl. 57-236.000.
Izushi, Takehiro: *See—*
Uemura, Masayuki; Murauchi, Akitsugu; and Izushi, Takehiro, 4,521,020, Cl. 273-85.00G.
J. I. Case Company: *See—*
Fachini, Robert M.; Barrett, Monroe C.; and McClure, Maxwell D., III, 4,520,617, Cl. 56-16.600.
J.M. Voith GmbH: *See—*
Schiel, Christian; Zurn, Georg; and Schmid, Karl, 4,520,578, Cl. 34-110.000.
Jacke, Stanley E., to SmithKline Diagnostics, Inc. Method for in house occult blood testing. 4,521,520, Cl. 436-66.000.
Jackisch, Philip F., to Ethyl Corporation. Process for making cyclic amines. 4,521,624, Cl. 564-446.000.
Jacobs Beverage Systems AG: *See—*
Hampel, Hans-Joachim; Scondo, Ludwig; Stahl, Jurgen; Wegner, Wilhelm; and Bonne, Harry, 4,520,948, Cl. 222-103.000.
Jacobs, Cornelis A. J.; Schellen, Johannes A. T.; and Van Der Vleuten, Anthonius P., to U.S. Philips Corporation. High-pressure metal vapor discharge lamp. 4,521,716, Cl. 313-594.000.
Jacobson, David N., to Monarch Marking Systems, Inc. Composite label web and method of labeling. 4,521,267, Cl. 156-249.000.
Jain, Kantilal: *See—*
Hayes, Lawrence P., deceased; Hayes, Ellen J., administratrix; Jain, Kantilal; and Kerth, Randall T., 4,521,087, Cl. 350-574.000.
James Dole Corporation: *See—*
Grof, Geza J., 4,520,528, Cl. 15-304.000.
James River-Norwalk, Inc.: *See—*
Gould, Jerome; and Kellogg, Thomas W., 4,520,946, Cl. 221-63.000.
James, Thomas A.: *See—*
Crosby, Gaius P.; and James, Thomas A., 4,520,736, Cl. 109-60.000.
Jan, Gerald; and Lenoir, John, to Ciba-Geigy AG. Oil-soluble disazo dyes and their use in color-photographic recording materials for the silver dye bleach process. 4,521,591, Cl. 534-821.000.
Jandy Industries: *See—*
Johnson, Bruce R., 4,520,514, Cl. 4-490.000.
Janome Sewing Machine Co. Ltd.: *See—*
Eguchi, Yasukata; Hanyu, Susumu; Takenoya, Hideaki; and Inamori, Mikio, 4,520,987, Cl. 248-635.000.
Janutka, William J.: *See—*
Ryczek, Lawrence J.; and Janutka, William J., 4,521,694, Cl. 307-266.000.
Ryczek, Lawrence J.; and Janutka, William J., 4,521,748, Cl. 331-108.00D.
Japan Crown Cork Co., Ltd.: *See—*
Itsubo, Junichi; Yazaki, Takashi; and Mori, Fumio, 4,520,939, Cl. 215-252.000.
Japan Synthetic Rubber Co., Ltd.: *See—*
Andoh, Naoki; and Fujiwara, Shuetsu, 4,521,622, Cl. 564-406.000.
Japanese National Railways: *See—*
Hayashi, Mitsuji; Endo, Hideo; Oishibashi, Hirotsugu; Aichi, Takeo; and Sasaki, Shigeru, 4,520,756, Cl. 118-699.000.
Jeans, Edward L., to Cadbury Schweppes Public Limited Company. In-home drink dispenser. 4,520,950, Cl. 222-129.100.
Jefferson, David A. Checklist device. 4,520,749, Cl. 116-325.000.
Jeffrey, Peter, to Yoshida Kogyo K.K. Load sensing apparatus with capacitive and inductive sensors. 4,520,885, Cl. 177-210.00C.
Jenck, Jean, to Rhone-Poulenc Chimie De Base. Carbonylation of monoolefins. 4,521,614, Cl. 560-193.000.
Jenkins, Richard L.; Pettus, John A.; and Abner, David K., to Getty Synthetic Fuels, Inc. Instrument and process for testing landfill gas for chlorinated hydrocarbons. 4,521,225, Cl. 55-18.000.
Jeol Ltd.: *See—*
Naito, Motohiro, 4,521,687, Cl. 250-296.000.
Jepmar: *See—*
Rampe, John F., 4,520,598, Cl. 51-163.200.
Jeremic, Miodrag. Adjustable wrench. 4,520,699, Cl. 81-166.000.
Jinnai, Koichiro, to Ricoh Company, Ltd. Ink viscosity regulation for ink jet printer. 4,521,789, Cl. 346-140.00R.
John, Heinz, deceased; and John nee Rueffler, Friedlinde, heiress, to Lindauer Dornier Gesellschaft mbH. Device for separating and delivering individual heddles to a draw-in position. 4,520,539, Cl. 28-206.000.
John nee Rueffler, Friedlinde, heiress: *See—*
John, Heinz, deceased; and John nee Rueffler, Friedlinde, heiress, 4,520,539, Cl. 28-206.000.
John Thurley Limited: *See—*
Arnold, Gerald D., 4,520,761, Cl. 122-31.00R.
Johnson, Alan L. Electro-optical solid-state SPDT relay switch. 4,521,693, Cl. 307-252.00T.
Johnson, Bruce R., to Jandy Industries. Fitting for a swimming pool return line. 4,520,514, Cl. 4-490.000.
Johnson, Douglas M., to Empak Inc. Package. 4,520,925, Cl. 206-334.000.
Johnson, Herbert H.: *See—*
Olsen, Ole B.; Bilik, Charles W.; Johnson, Herbert H.; and Jozepaitis, Charles M., 4,521,161, Cl. 417-68.000.
Johnson, Larry E.: *See—*
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Johnson Matthey Public Limited Company: *See—*
Burnham, Robert F.; Gibbon, Alan; and Harry, John E., 4,521,890, Cl. 373-22.000.
Johnson, Nancy C.; and Gotzmer, Carl, Jr., to United States of America, Navy. Detonation-transfer energetic composition. 4,521,260, Cl. 149-19.910.
Johnston, David F.: *See—*
Buckley, John D.; Swaim, Robert J.; Fox, Robert L.; and Johnston, David F., 4,521,659, Cl. 219-10.770.
Johnston, Lawton L.; and Brandon, Craig A. Mercerization process and apparatus. 4,520,520, Cl. 8-151.000.
Jones, John H.; and Schoenleber, Donald W., to Beatrice Foods Co. Multi-compartment envelope for coupon nesting. 4,520,958, Cl. 229-72.000.
Jones, Robert J.; and Chang, Glenn E. C., to TRW Inc. 2,2-Bis[(2-halo-4-aminophenoxy)phenyl]-hexafluoropropane. 4,521,623, Cl. 564-430.000.
Jordan, William D.; Hundt, Roger C.; and Pritchett, James D., to Thermalloy, Inc. Heat sink mounting. 4,521,827, Cl. 361-386.000.
Joseph, Eric D., to Motorola, Inc. PNP comparator circuit having beta current error cancellation. 4,521,697, Cl. 307-355.000.
Joy Manufacturing Holdings Limited: *See—*
Frater, John S.; and Pope, David W., 4,521,151, Cl. 415-131.000.
Jozepaitis, Charles M.: *See—*
Olsen, Ole B.; Bilik, Charles W.; Johnson, Herbert H.; and Jozepaitis, Charles M., 4,521,161, Cl. 417-68.000.
Juergens, Tristan D., to Gates Energy Products, Inc. Through-the-partition intercell connection and method. 4,521,498, Cl. 429-59.000.
Juskevic, John, to Essential Automotive Products, Inc. Key cutting machine. 4,521,142, Cl. 409-82.000.
Kabashima, Kazuo; and Tanaka, Kyugo, to Asahi Kasei Kogyo Kabushiki Kaisha. Coloring method and color-forming material. 4,521,793, Cl. 346-201.000.
Kabelmetal Electro GmbH: *See—*
Ziemek, Gerhard; Schatz, Friedrich; and Meyer, Hermann, 4,520,622, Cl. 57-59.000.

Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Miyake, Toshio; Sakai, Shuzo; and Shibuya, Takashi, 4,521,252, Cl. 127-46.300.
Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Fukuda, Masao, 4,520,883, Cl. 177-1.000.
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Kabushiki Kaisha Komatsu Seisakusho: *See—*
Sato, Hideyori; Inaba, Nobuaki; Arai, Mitsuru; and Onzou, Michio, 4,520,625, Cl. 60-464.000.
Kabushiki Kaisha Morita Seisakusho: *See—*
Nakayama, Shozo; and Ogino, Sekiya, 4,521,190, Cl. 433-132.000.
Kabushiki Kaisha Takuma: *See—*
Takehara, Nobuo, 4,520,738, Cl. 110-171.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Yamamoto, Minoru; Sakata, Jiro; and Doi, Haruo, 4,521,236, Cl. 65-31.000.
Kachur, Nicholas W.: *See—*
Tomburo, Anthony F.; and Kachur, Nicholas W., 4,521,127, Cl. 401-68.000.
Kaczinski, Friedrich: *See—*
Blum, Rainer; Seitz, Max; and Kaczinski, Friedrich, 4,521,555, Cl. 524-63.000.
Kadija, Igor V., to Olin Corporation. Process and apparatus for continuously producing multivalent metals. 4,521,281, Cl. 204-25.000.
Kado, Yoshikazu: *See—*
Matsuda, Yoshihiro; Kimishima, Hiroshi; and Kado, Yoshikazu, 4,520,932, Cl. 209-545.000.
Kaempfer, Knut: *See—*
Broecker, Franz J.; Gettert, Hans; and Kaempfer, Knut, 4,521,387, Cl. 423-210.000.
Kageyama, Yoshikazu; Nagasaki, Sakon; and Mino, Mineo, to Matsushita Electric Industrial Co., Ltd. Battery voltage level detecting apparatus. 4,521,735, Cl. 324-433.000.
Kagiyama, Tsutomu; and Takaishi, Tatsuyuki, to Ohi Seisakusho Co., Ltd. Centrifugal clutch with radially movable magnetic member. 4,520,914, Cl. 192-71.000.
Kahle Engineering Co.: *See—*
Logothetis, Emanuel N., 4,521,237, Cl. 65-42.000.
Kahn, Leonard R. Speaker systems for producing balanced stereo images at multiple locations. 4,521,906, Cl. 381-24.000.
Kaiser, William J., to Ford Motor Company. Circuits for obtaining a voltage reading from a sensing element. 4,520,653, Cl. 73-23.000.
Kajfez, Darko: *See—*
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Sakuma, Seiitj; and Karasawa, Shuichi, 4,521,504, Cl. 430-57.000.
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Reiff, Harro, 4,520,933, Cl. 209-606.000.
Karol, Thomas J., to Texaco Inc. Lubricant compositions containing both hydrocarbyl substituted mono and bissuccinimide having polyamine chain linked hydroxacyl radicals, and neopentyl derivative. 4,521,318, Cl. 252-46.700.
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Kasuga, Masao, to Victor Company of Japan, Limited. IIR digital filter having low coefficient sensitivity. 4,521,867, Cl. 364-724.000.
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Wodlinger, Harold; and Katz, Hart V., 4,521,186, Cl. 433-71.000.
Kauffman, William J.; and Martin, Pamela H., to Armstrong World Industries, Inc. Polyvinyl chloride resin particles dyed with cationic dyestuffs and process of preparation. 4,521,215, Cl. 8-508.000.
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Keesling, Evan L.: *See—*
Stewart, E. Allen; and Keesling, Evan L., 4,520,616, Cl. 56-9.000.
Keitaro, Yonezawa, to Aioi Seiki Kabushiki Kaisha. Work-clamp pallet for machine tool. 4,520,919, Cl. 198-648.000.
Keller, Hartmut; Krauth, Axel; and Kriener, Roswitha, to Rosenthal Aktiengesellschaft. Decorative flatware handles and process for their preparation. 4,521,356, Cl. 264-60.000.
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Steigerwald, Carl J., 4,521,213, Cl. 604-323.000.
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Rasmussen, Donald O.; Chow, William C.; and Davio, Franklin J., 4,520,970, Cl. 242-195.000.

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Kershner, Larry D., to Dow Chemical Company, The. Preparations of alkanolamines. 4,521,626, Cl. 564-487.000.

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Kester, Ralph C., Jr. Rimless drum structure with tuning device. 4,520,709, Cl. 84-415.000.

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Davis, Walter L.; Messenger, Dale; and Randall, Malcolm W., 4,520,702, Cl. 83-71.000.

Kida, Koichi; Aoyama, Tetsuo; and Uchiyama, Takako, to Mitsubishi Gas Chemical Company, Inc. Process for preparation of tertiary olefins. 4,521,638, Cl. 585-640.000.

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Walter, Carl W.; and Riordan, William J., 4,521,180, Cl. 431-25.000.

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Schafer, Rolf; Vogelhuber, Peter; and Wysk, Hans-Joachim, 4,521,122, Cl. 400-124.000.

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Morris, Robert A.; Kiesel, George W.; and Rajotte, Paul T., 4,521,824, Cl. 361-45.000.

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Kikuchi, Kenichi: *See*—
Hayashi, Hideki; and Kikuchi, Kenichi, 4,521,888, Cl. 372-50.000.

Killop, James T., to Anderson-Cook, Inc. Fixture for grinding racks. 4,520,540, Cl. 29-90.00B.

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Weil, Robert A., Jr.; and Howell, Stephen L., 4,520,707, Cl. 84-1.030.

Kimber, Geoffrey M.: *See*—
Clarke, James W.; Kimber, Geoffrey M.; Rantell, Terry D.; and Snape, Colin E., 4,521,291, Cl. 208-8.0LE.

Kimishima, Hiroshi: *See*—
Matsuda, Yoshihiro; Kimishima, Hiroshi; and Kado, Yoshikazu, 4,520,932, Cl. 209-545.000.

Kimura, Kazuo; Taneda, Yukinori; Tsuyuki, Shinichi; Suzuki, Shun; Hashimoto, Yoshio; and Sakamoto, Shinichi, to Hitachi Koki Company, Limited. Apparatus for winding coils in electric machinery. 4,520,965, Cl. 242-7.05B.

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King, John O., Jr.; and King, John O., III, 4,521,147, Cl. 411-43.000.

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Kinoshita, Hiroshi: *See*—
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Kircher, Klaus: *See*—
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Kiriyama, Tsutomu: *See*—
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Kishi, Hirotoshi: *See*—
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Kisner, Howard D., to General Motors Corporation. High rate sputtering of exhaust oxygen sensor electrode. 4,521,287, Cl. 204-192.0SP.

Kiss, Gunter H. Multilayer fibre mat and process for its production. 4,521,477, Cl. 428-282.000.

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Kitchin, Dwight W.; and Manes, Michael R., to Aspen Laboratories, Inc. Automatic tourniquet with improved pressure resolution. 4,520,820, Cl. 128-327.000.

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Kiyota, Yuhiko; Tsuji, Katsuyuki; Kume, Satoru; Takada, Hiroaki; Shinsei, Kiyoichi; Matsumoto, Akio; and Ogawa, Hitoshi, to Mitsubishi Jiboshia Kogyo Kabushiki Kaisha; and Mitsubishi Denki Kabushiki Kaisha. Diesel particulate filter system. 4,520,624, Cl. 60-286.000.

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Knepper, Udo, to Dornier System GmbH. High-resolution, coherent pulse radar. 4,521,778, Cl. 343-13.00R.

Knoblauch, Karl: *See*—
Richter, Ekkehard; Korbacher, Werner; Knoblauch, Karl; and Giessler, Klaus, 4,521,221, Cl. 48-196.00R.

Knop, Hans-Georg, to Dr.-Ing. Rudolf Hell GmbH. Method of improving contrast accentuation. 4,521,812, Cl. 358-287.000.

Knopp, Steven D.: *See*—
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Kobayashi, Fumiaki: *See*—
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Kobiske, Michael H.: *See*—
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Kohli, Dalip K., to American Cyanamid Company. Curable epoxy resin compositions. 4,521,583, Cl. 528-119.000.

Koike, Yasuhiro: *See*—
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Koloff, Theodora. Analgesic composition. 4,521,411, Cl. 424-195.100.

Kolt, Stanley, to Suroff, Leonard W., a part interest. Energy saver damper assembly. 4,520,959, Cl. 236-49.000.

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Soos, Rudolf; Kolta, Rezso; Zoltan, Sandor; and Tary, Maria, 4,521,612, Cl. 560-124.000.

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Kimura, Yoshiaki; Nozu, Taketo; and Tanaka, Yasuhiko, 4,521,788, Cl. 346-140.00R.

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Musch, Rudiger; Gobel, Wilhelm; Konter, Wolfgang; and Nolte, Wilfried, 4,521,576, Cl. 526-213.000.

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Kornhauser, Murray. Adjustable dough manipulator. 4,521,174, Cl. 425-194.000.

Kosley, Raymond W., Jr.; and Cherill, Robert J., to Hoechst-Roussel Pharmaceuticals Incorporated. Spiro[2H-1,4-benzodioxepin-3(5H)4'-piperidine and -3'-pyrrolidine] compounds and their use as antihypertensive agents. 4,521,537, Cl. 514-302.000.

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Suzuki, Akiyoshi; Sato, Hirosi; Omata, Takashi; and Kosugi, Masao, 4,521,082, Cl. 350-405.000.

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Stuhler, Herbert; and Krempl, Engelbert, 4,521,595, Cl. 536-127.000.

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Hartmann, Achim; and Thumm, Hans, 4,521,384, Cl. 423-72.000.

Krubsack, Larry J., to Clum Mfg. Co. Inc. Electric solenoid structure. 4,521,758, Cl. 335-131.000.

Kruger, Hans: *See*—
Leenhouts, Frans; and Kruger, Hans, 4,521,079, Cl. 350-339.00R.

Kruger, Sandra J. Facial treatment device. 4,520,799, Cl. 128-67.000.

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Cramer, Gottfried; and Krumm, Valentin, 4,520,850, Cl. 139-194.000.

Krumpeck, Kurt: *See*—
Lenhard-Backhaus, Hugo; and Krumpeck, Kurt, 4,521,033, Cl. 280-700.000.

Krywchuk, David: *See*—
Haverstock, Wayne; Krywchuk, David; and Masak, Peter, 4,520,683, Cl. 74-41.000.

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Kuck, Karl-Heinz: *See*—
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Rau, Bantwal R.; Glaeser, Christopher D.; and Kuekes, Philip J., 4,521,874, Cl. 365-221.000.

Kuhl, Gunter H.: *See*—
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Osial, Thaddeus A.; Bosna, Alexander A.; and Kulak, Richard J., 4,521,668, Cl. 219-121.0LC.

Kumamaru, Kuniaki: *See*—
Hiraki, Shunichi; Kinoshita, Hiroshi; Kumamaru, Kuniaki; Koguchi, Shigeo; and Yonezawa, Toshio, 4,521,256, Cl. 148-1.500.

Kumamoto, Kazuo: *See*—
Nakamoto, Hiromasa; Ogawa, Michitaka; Kobayashi, Muneo; Nogami, Yuki; Kumamoto, Kazuo; Murakami, Hiroko; Ninagawa, Yoichi; Omura, Yoshiaki; and Mizuno, Masao, 4,521,417, Cl. 514-255.000.

Kume, Satoru: *See*—
Kiyota, Yuhiko; Tsuji, Katsuyuki; Kume, Satoru; Takada, Hiroaki; Shinsei, Kiyoichi; Matsumoto, Akio; and Ogawa, Hitoshi, 4,520,624, Cl. 60-286.000.

Kunihiko, Ichikawa; and Kiyoshi, Mishima, to Mitsubishi Light Metal Industries Limited. Process for preparing laminated plate. 4,521,265, Cl. 156-229.000.

Kunihiro, Takatoshi; and Tsuchiya, Koji, to Idemitsu Kosan Company Limited. Process for the production of refrigerator oil. 4,521,296, Cl. 208-87.000.

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Gessel, James M.; Kunz, Gary L.; and Scheidenhelm, E. Louis, 4,520,620, Cl. 56-400.000.

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Nakamoto, Hiromasa; Ogawa, Michitaka; Kobayashi, Muneo; Nogami, Yuki; Kumamoto, Kazuo; Murakami, Hiroko; Ninagawa, Yoichi; Omura, Yoshiaki; and Mizuno, Masao, 4,521,417, Cl. 514-255.000.
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Kurbikoff, Peter A.; and Bethurum, Gary C., to International Telephone and Telegraph Corporation. Electrical connector with optional grounding element. 4,521,062, Cl. 339-14.00R.

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Sasaki, Tohru; Endoh, Hiroyuki; and Ohira, Seiichi, 4,521,483, Cl. 428-373.000.

Kurihara, Takashi, to Olympus Optical Co., Ltd. Photographic lens system. 4,521,084, Cl. 350-432.000.

Kurita, Hiroyuki, to Olympus Optical Co., Ltd. Objective for an IC mask testing device. 4,521,086, Cl. 350-464.000.

Kuriu, Sadao: *See—*
Suzuki, Shigeyoshi; Yamada, Jun; Senga, Takao; Kuriu, Sadao; Yamasaki, Masahiro; Hirose, Iwao; and Maegawa, Tokubee, 4,521,101, Cl. 355-10.000.

Kuroki, Yoshifumi: *See—*
Takami, Satoshi; and Kuroki, Yoshifumi, 4,521,094, Cl. 354-423.000.

Kurtz, Leonard D., to Bio Research Inc. Glove molding apparatus and method. 4,521,365, Cl. 264-306.000.

Kuur, Vyacheslav P.: *See—*
Yarygin, Vladimir I.; Sannikov, Jury I.; Panchenko, Anatoly I.; Sychev, Anatoly P.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; and Toguzov, Mels Z., 4,521,245, Cl. 75-21.000.

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Kuwahara, Takanori: *See—*
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Kuwata, Masayuki: *See—*
Kuwabara, Yoshiharu; Hamada, Hiroyoshi; and Kuwata, Masayuki, 4,521,112, Cl. 356-375.000.

Kuzel, Radomir; Broukal, Josef; and Bouse, Vaclav, to Universita Karlova. Mixture for preparation of protective and insulating coatings on metals. 4,521,250, Cl. 106-15.050.

Kuzuoka, Shinichi: *See—*
Kitajima, Nobuyuki; Tachibana, Yoshinori; Muraki, Asashi; and Kuzuoka, Shinichi, 4,521,355, Cl. 264-60.000.

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Laakso, Oliver A. Pulp thickening utilizing stationary screens. 4,521,315, Cl. 210-784.000.

Laarman, Timothy D.: *See—*
Nath, Prem; Hoffman, Kevin R.; and Laarman, Timothy D., 4,520,757, Cl. 118-723.000.

LaBauve, Raphael J., to Stauffer Chemical Company. Inhalation exposure apparatus. 4,520,808, Cl. 128-200.140.

La Bella, Joseph A.: *See—*
Ranghelli, Joseph C.; and La Bella, Joseph A., 4,521,754, Cl. 333-224.000.

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Martin, Michel, 4,521,593, Cl. 536-55.300.

Ladd, Horace W.: *See—*
Parkyn, William A.; Ladd, Horace W.; and Mellon, Andrew M., 4,520,795, Cl. 126-443.000.

Lafferty, James: *See—*
Hagan, John A.; and Lafferty, James, 4,520,941, Cl. 220-72.000.

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Goursat, Albert-Gilbert; Vernet, Gilles; Rimbert, Jean-Francis; Foulard, Jean; Darle, Thierry; and Bigot, Jean, 4,521,244, Cl. 75-0.50B.

Laird, James A.: *See—*
Graham, Joseph; Gennrich, Timothy J.; and Laird, James A., 4,521,333, Cl. 252-606.000.

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Lammerich, Kurt: *See—*
Walters, William F.; Lammerich, Kurt; and Watney, John D., 4,520,746, Cl. 114-69.000.

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Lanier, John H.: *See—*
Carbeau, Richard W.; Martin, James F.; Lanier, John H.; and Holt, William L., 4,520,741, Cl. 110-344.000.

Lansbergen, Gabriel J. T., to Lever Brothers Company. Water-in-oil emulsions. 4,521,440, Cl. 426-602.000.

Lanz, Martin: *See—*
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Lares, Joseph P.; and Cowell, Mark, to Lares Research. Dental handpiece. 4,521,189, Cl. 433-84.000.

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Lares, Joseph P.; and Cowell, Mark, 4,521,189, Cl. 433-84.000.

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Witonsky, Robert J.; and Larsson, Raymond P., 4,521,376, Cl. 422-56.000.

Lau, Daniel T.: *See—*
Braun, Derrek E.; Lau, Daniel T.; and Moy, Harold, 4,521,712, Cl. 310-339.000.

Laug, Reiner: *See—*
Christ, Richard; Muller, Erhard; Knackstedt, Hans-Gunther; and Laug, Reiner, 4,521,691, Cl. 250-506.100.

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Chenausky, Peter P.; Mongeon, Robert J.; and Laughman, Lanny M., 4,521,109, Cl. 356-349.000.

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Laupretre, Jean J.: *See—*
Cholley, Henri E.; Laupretre, Jean J.; and Rollet, Jean, 4,521,072, Cl. 350-96.230.

Laursen, Larry J.; and Prueter, Elton D., to Dow Chemical Company, The. Flanging of plastic lined conduit. 4,520,547, Cl. 29-469.500.

Lausen, Verne H.: *See—*
Hilker, G. Daniel; Lausen, Verne H.; Coon, Jessie H.; Bodette, James E.; Grimes, Jerry L.; Wright, Roger D.; Disque, Donny R.; and Bultemeier, Keith D., 4,521,173, Cl. 425-113.000.

Laviolette, Pierre: *See—*
Bonnot, Guy; Laviolette, Pierre; Potiron, Andre; and Deysson, Jean-Yves, 4,521,353, Cl. 264-8.000.

Lawniczak, Gary P.: *See—*
Holzhauser, Ronald C.; McGlen, James A.; and Lawniczak, Gary P., 4,520,977, Cl. 248-201.000.

Layman, Robert J.: *See—*
Roettgen, Leslie A.; Webber, Beth A.; Brooks, Robert M.; and Layman, Robert J., 4,520,767, Cl. 123-41.100.

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Calderon, Jose L.; and Layrisse, Ignacio, 4,521,277, Cl. 196-46.000.

Lear S.n.c. di Foggini & C.: *See—*
Foggini, Giovanni, 4,521,046, Cl. 296-97.00K.

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Lehner, John A.; and Lebsock, Kenneth L., 4,521,855, Cl. 364-434.000.

Ledis, Stephen L.: *See—*
Carter, James H.; Ledis, Stephen L.; and Crews, Harold R., 4,521,518, Cl. 436-10.000.

Lee, Kiu H.; and Cieloszyk, Gary S., to Union Carbide Corporation. Catalyst impregnated on fine silica, process for preparing, and use for ethylene polymerization. 4,521,573, Cl. 526-125.000.

Leenhouts, Frans; and Kruger, Hans, to Siemens Aktiengesellschaft. Low-reflection liquid-crystal display. 4,521,079, Cl. 350-339.00R.

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Lefevre, Marcel R., to Munters Corporation, The. Drainage collection system. 4,521,350, Cl. 261-111.000.

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Reichert, Gunter; Mainzer, Franz; Lehmann, Kurt; and Niermann, Hermann, 4,520,631, Cl. 62-188.000.

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Obenschain, Stephen P.; and Lehmberg, Robert H., 4,521,075, Cl. 350-162.110.

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Lenhart, Ronald A., to Precision Metal Fabricators, Inc. Air transport system. 4,521,130, Cl. 406-86.000.

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Hausman, Mary L.; and Lenney, William E., 4,521,561, Cl. 524-459.000.

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Jan, Gerald; and Lenoir, John, 4,521,591, Cl. 534-821.000.

Leonardsson, Per-Erik, to ITT Industries, Inc. Seal device. 4,521,025, Cl. 277-89.000.

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Lerman, Max. Cervical collar. 4,520,801, Cl. 128-75.000.

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Vives, Jean-Patrick, 4,521,642, Cl. 174-70.00S.

Letica, Ilija. Apparatus for maintaining uniform wall thickness in hollow molded plastic articles. 4,520,991, Cl. 249-122.000.

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LeVeen, Harry H.; LeVeen, Robert F.; and LeVeen, Eric G., 4,520,823, Cl. 128-348.100.

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Levine, Jules D., to Texas Instruments Incorporated. Large area, low temperature process, fault tolerant solar energy converter. 4,521,640, Cl. 136-250.000.

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Kuechler, Thomas C.; Ebner, Jerry R.; and Li, Tao P., 4,521,395, Cl. 423-376.000.

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Eberhardt, Wolfgang; Hoffmann, Dietrich; Kriechbaum, Karl; and Rohde, Erwin, 4,521,654, Cl. 200-146.00R.

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O'Connor, James M.; and Lickei, Donald L., 4,521,546, Cl. 521-137.000.

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Scanlan, Harry J.; and Liljegren, Leif, 4,521,674, Cl. 219-299.000.

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Yanus, John F.; and Limburg, William W., 4,521,621, Cl. 564-307.000.

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Cramer, Gottfried; and Krumm, Valentin, 4,520,850, Cl. 139-194.000.
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Fuchs, Uwe; and Wildmoser, Alfred, 4,521,311, Cl. 210-616.000.

Lindenmuth, Donald C., to General Motors Corporation. Modular, multi-position arm rest. 4,521,056, Cl. 297-412.000.

Lindsey, Keith E., to Lindsey Manufacturing Company. Instruction kit for use in making feasibility studies for erecting temporary power line supports. 4,521,198, Cl. 434-224.000.

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Lindsey, Keith E., 4,521,198, Cl. 434-224.000.

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Link, Edwin A., to RTE Corporation. Submersible primary circuit breaker. 4,521,823, Cl. 361-38.000.

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Chiou, George C. Y.; and Liu, Hsin-Kuang, 4,521,414, Cl. 514-229.000.

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Bizzell, Gary D., 4,520,865, Cl. 165-104.260.

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Loh, William, to Chevron Research Company. 5-C-Alkyl-3-O-arylmethyl or substituted arylmethyl-1,2-O-alkylidene-α-D-xylo-pentodialdofuranose herbicide derivatives. 4,521,240, Cl. 71-88.000.

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Bruce, Kenneth E.; Lombardo, Ralph M., Jr.; Tarbox, Bruce H.; and Conway, John W., 4,521,848, Cl. 364-200.000.

Long, Charles A., Jr. Remotely controlled hydraulic cleaner apparatus. 4,520,524, Cl. 15-104.30R.

Lord Corporation: *See—*
Rebman, Jack, 4,521,685, Cl. 250-229.000.

Lorenz, Donald H.; Murphy, Edward J.; and Rutherford, John M., Jr., to GAF Corporation. Polymeric hair preparation. 4,521,404, Cl. 424-71.000.

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Haissig, Manfred; and Lothmann, Josef, 4,520,860, Cl. 164-415.000.

Lou, Wen C.; and Fulger, Charles V., to General Foods Corporation. Rehydratable rice product. 4,521,436, Cl. 426-104.000.

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Snell, Richard G.; and Loughridge, Fredrick A., 4,521,641, Cl. 174-50.640.

Lovisolo, Pier P.: *See—*
Doria, Gianfederico; Passarotti, Carlo; Lovisolo, Pier P.; and Buttinoni, Ada, 4,521,419, Cl. 514-267.000.

Lowis, Royce: *See—*
Coe, David J.; and Lowis, Royce, 4,521,795, Cl. 357-23.400.

Lowrey, Charles B.: *See—*
Price, William E.; Galloway, Louie A., III; Lowrey, Charles B.; and Lewis, Donald R., 4,521,372, Cl. 376-250.000.

LTH Associates, Ltd.: *See—*
Tamminen, Pentti J., 4,521,497, Cl. 429-27.000.

Lubriquip-Houdaille, Inc.: *See—*
Snow, John P., 4,520,902, Cl. 184-7.400.

Lucas, Howard R., to American Cyanamid Company. Low temperature cure, pigmented coated composition. 4,521,563, Cl. 524-555.000.

Lucas Industries Limited: *See—*
Holroyd, Ralph; and Spiller, Peter O., 4,520,782, Cl. 123-450.000.

Lucia, Carroll J.; and Lucia, George C. Transmission tester. 4,520,659, Cl. 73-118.000.

Lucia, George C.: *See—*
Lucia, Carroll J.; and Lucia, George C., 4,520,659, Cl. 73-118.000.

Lucian, Anton; and Geiger, Kurt, to Aktiengesellschaft Adolph Saurer. Rapier or gripper weaving machine. 4,520,848, Cl. 139-1.00R.

Lucieer, Wouter B.: *See—*
Ouwerkerk, Johannes H. W.; Lucieer, Wouter B.; and Cramer, Rudolph E., 4,521,117, Cl. 366-165.000.

Luddy, Michael A. G.: *See—*
Abbott, Scot D.; and Luddy, Michael A. G., 4,521,521, Cl. 436-517.000.

Ludwig, Walter: *See—*
Arndt, Peter J.; Ludwig, Walter; Munzer, Manfred; Siol, Werner; and Wenzel, Franz, 4,521,567, Cl. 525-261.000.

Luk Lamellen und Kupplungsbau GmbH: *See—*
Maucher, Paul; and Friedmann, Oswald, 4,520,913, Cl. 192-48.800.
Strub, Jean-Claude, 4,520,915, Cl. 192-106.200.
Strub, Jean-Claude, 4,520,916, Cl. 192-106.200.

Lummis, Michael G., to Pacific Atlantic Products, Ltd. Locking and releasing mechanism. 4,520,589, Cl. 43-43.120.

Lumpkins, Rebecca G. Money calculation game. 4,521,197, Cl. 434-110.000.

Lundin, Ingvar: *See—*
Lundin, Per O.; Eriksson, Sven; and Lundin, Ingvar, 4,521,314, Cl. 210-777.000.

Lundin, Per O.; Eriksson, Sven; and Lundin, Ingvar. Method and device for filtering yeast and other plant cell material on rotary vacuum filter. 4,521,314, Cl. 210-777.000.

Lundstroem, Kurt I.: *See—*
Lundstrom, Kurt I.; Arwin, Hans R.; Rieke, Erwin; Sielaff, Gunter; and Hennrich, Norbert, 4,521,522, Cl. 436-525.000.

Lundstrom, Ingemar: *See—*
Bjorklund, Robert; Gustavsson, Hans; Lundstrom, Ingemar; and Nygren, Bertil, 4,521,450, Cl. 427-121.000.

Lundstrom, Kurt I.; Arwin, Hans R.; Rieke, Erwin; Sielaff, Gunter; and Hennrich, Norbert, to Lundstroem, Kurt I. Optical specific binding assay with reflection of polarized electromagnetic radiation. 4,521,522, Cl. 436-525.000.

Lunk, Hans E.: *See—*
Tondre, Stephen L.; and Lunk, Hans E., 4,521,485, Cl. 428-383.000.

Lupa Finances S.A.: *See—*
Hegi, Paul, 4,521,648, Cl. 179-90.00B.

Lupke, Manfred A. A. Apparatus for forming spirally wound pipe. 4,521,270, Cl. 156-429.000.

Lynch, Franklin E.; and Baker, Nathaniel R., to Ergenics Inc. Fuel injection system. 4,520,763, Cl. 123-1.00A.

Lyon, Richard F., to Xerox Corporation. Cursor control device. 4,521,772, Cl. 340-710.000.

Lyon, Richard F., to Xerox Corporation. Imaging array. 4,521,773, Cl. 340-710.000.

Lyons, Gerard E., to Polybottle. Blow moulded plastic containers. 4,520,936, Cl. 215-1.00C.

Lysov, Viktor F.: *See—*
Sevastyanov, Viktor V.; Furman, Yakov A.; Grebenschikov, Anatoly P.; Lysov, Viktor F.; and Shalnov, Boris N., 4,520,826, Cl. 128-422.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,520,729, Cl. 101-352.000.

Mabuchi Motor Co. Ltd.: *See—*
Mabuchi, Takaichi, 4,521,710, Cl. 310-234.000.

Mabuchi, Takaichi, to Mabuchi Motor Co. Ltd. Commutator device for miniature motors. 4,521,710, Cl. 310-234.000.

Mace, Michel: *See—*
Miller, Walter G.; Mace, Michel; and Zitterbart, George, 4,520,871, Cl. 169-43.000.

MacElvain, Robert C., to Deep Rock Manufacturing Company, Inc. Ratchet and hydraulic seal assembly for rotating hollow shafts. 4,520,879, Cl. 173-57.000.

Mack Trucks, Inc.: *See—*
Saxman, Edwin F., 4,521,047, Cl. 296-97.00K.

Macko, Joseph E.; and Estriplet, Isnard, to United States of America, Energy. Solids mass flow indication with radiation. 4,520,677, Cl. 73-861.000.

Macnak, Philip P.: *See—*
Smoot, George W.; and Macnak, Philip P., 4,521,776, Cl. 340-825.440.

Macovski, Albert. Pulsed main field nuclear magnetic resonance imaging system. 4,521,734, Cl. 324-313.000.

Maeda, Kunio: *See—*
Hattori, Yoshihiro; Watanabe, Takashi; and Maeda, Kunio, 4,521,488, Cl. 428-409.000.

Maegawa, Tokubee: *See—*
Suzuki, Shigeyoshi; Yamada, Jun; Senga, Takao; Kuriu, Sadao; Yamasaki, Masahiro; Hirose, Iwao; and Maegawa, Tokubee, 4,521,101, Cl. 355-10.000.

Magelky, Bruce F. Row cultivator with structure to inhibit bowing of its frame end to end. 4,520,877, Cl. 172-643.000.

Maggio, Leonard C.: *See—*
Maggio, Richard A.; Maggio, Leonard C.; and Hill, Norman L., 4,520,527, Cl. 15-235.800.

Maggio, Richard A.; Maggio, Leonard C.; and Hill, Norman L. Concrete finishing tool. 4,520,527, Cl. 15-235.800.

Maggiore, Lynne D. Hair cutting guide apparatus and method. 4,520,565, Cl. 30-201.000.

Maglio, Ralph A.; and Fieldhouse, John W., to Firestone Tire & Rubber Company, The. Surface treatment for tack reduction of elastomer surfaces. 4,521,479, Cl. 428-326.000.

Magnetic Information Technology, Inc.: *See—*
Gyi, Ko Ko; and Grewal, Gurbachan S., 4,520,555, Cl. 29-603.000.

Magnetic Peripherals Inc.: *See—*
Elsing, John W.; Gorham, Gene F.; and Knopp, Steven D., 4,521,819, Cl. 360-97.000.

Magnus, George, to Stepan Chemical Company. Polyester polyol blend from phthalic anhydride bottoms. 4,521,611, Cl. 560-91.000.

Magnusson, Hans G.: *See—*
Dahmen, Jan E.; Magnusson, Hans G.; and Martensson, Kaj B., 4,521,592, Cl. 536-4.100.

Mahannah, Daniel H.: *See—*
Moore, George R.; and Mahannah, Daniel H., 4,520,663, Cl. 73-129.000.

Maier, Josef. Device for separably connecting neighboring panels in concrete forms. 4,520,990, Cl. 249-47.000.

Mailfert, Alain: *See—*
Saint-Michel, Jacques A.; Chabrerie, Jean-Pierre; and Mailfert, Alain, 4,521,709, Cl. 310-186.000.

Mainzer, Franz: *See—*
Reichert, Gunter; Mainzer, Franz; Lehmann, Kurt; and Niermann, Hermann, 4,520,631, Cl. 62-188.000.

Maitre, Xavier: *See—*
Petit, Jean-Pierre; and Maitre, Xavier, 4,521,866, Cl. 364-724.000.

Mander, Michael G.: *See—*
Boyd, Malcolm W.; and Mander, Michael G., 4,520,940, Cl. 220-68.000.

Mandersson, Bengt: *See—*
Salomonsson, Goran; Borjesson, Per O.; Mandersson, Bengt; Holmer, Nils-Gunnar; and Lindstrom, Kjell, 4,520,670, Cl. 73-602.000.

Manes, Michael R.: *See—*
Birmingham, Michael J.; and Manes, Michael R., 4,520,819, Cl. 128-327.000.
Kitchin, Dwight W.; and Manes, Michael R., 4,520,820, Cl. 128-327.000.

Mani, Inder, to Dow Chemical Company, The. Styrene-acrylic latex containing a hetero-unsaturated monomer and paper-coating compositions produced therefrom. 4,521,494, Cl. 428-514.000.

Manner, Reinhard: *See—*
Arntz. Dietrich; Prescher, Gunter; Burkhardt, Werner; Heilos, Johannes; and Manner, Reinhard, 4,521,618, Cl. 562-535.000.

Mannesmann Aktiengesellschaft: *See—*
Flaig, Heinz, 4,520,998, Cl. 254-267.000.

Mansour, Maher L., to Ashland Oil, Inc. Gas curing chamber for flat substrates. 4,520,750, Cl. 118-58.000.

Marais, Lionel, to Compagnie Francaise des Petroles. Rotary drilling tool with percussion device. 4,520,886, Cl. 173-135.000.

Marceau, Aurilien J. Chain saw extension attachment. 4,520,563, Cl. 30-122.000.

Marcinek, John A., to Emhart Industries, Inc. Method of making molecularly oriented plastic bottles. 4,521,369, Cl. 264-532.000.

Maremont Corporation: *See—*
Adorjan, Jon M.; Kobiske, Michael H.; and Astorino, Michael P., 4,521,002, Cl. 267-8.00R.

Marier, Gregory J., to Yamaha Hatsudoki Kabushiki Kaisha. Brake arrangement for snowmobile. 4,520,890, Cl. 180-193.000.

Mariisky Politekhnichesky Institut: *See—*
Sevastyanov, Viktor V.; Furman, Yakov A.; Grebenschikov, Anatoly P.; Lysov, Viktor F.; and Shalnov, Boris N., 4,520,826, Cl. 128-422.000.

Marinoff, Gerald P. Hand supported surgical instrument. 4,520,815, Cl. 128-303.00R.

Maron Products, Inc.: *See—*
Wharton, Donald J., 4,521,146, Cl. 411-1.000.

Mars, Incorporated: *See—*
Hayworth, Lawrence T., 4,521,352, Cl. 264-4.300.

Marsh, Lee M., Jr.: *See—*
Ong, Poen S.; Zermeno, Alfonso; Marsh, Lee M., Jr.; Hevezi, James M.; and Cowart, Ronald W., 4,521,808, Cl. 358-111.000.

Marshall, Charles R., to Dixon Industries Corporation. Double flange sealing member for single action piston pump. 4,521,027, Cl. 277-152.000.

Martel, Jacques; Buendia, Jean; and Nezot, Francois, to Roussel Uclaf. Method of imparting a pleasant odor. 4,521,331, Cl. 252-522.00R.

Martensson, Kaj B.: *See—*
Dahmen, Jan E.; Magnusson, Hans G.; and Martensson, Kaj B., 4,521,592, Cl. 536-4.100.

Marthaler, Hans-Peter, to Dr. von Ballmoos AG. Apparatus for determining the pressure of capillary water, especially in soil. 4,520,657, Cl. 73-73.000.

Martin GmbH fur Umwelt- und Energietechnik: *See—*
Weber, Erich, 4,520,792, Cl. 126-175.000.

Martin, Heino, to Deutsche Babcock Werke Aktiengesellschaft. Forced through-flow steam generator. 4,520,762, Cl. 122-406.0ST.

Martin, James F.: *See—*
Carbeau, Richard W.; Martin, James F.; Lanier, John H.; and Holt, William L., 4,520,741, Cl. 110-344.000.

Martin, Keith F.: *See—*
Mercer, Frank B.; and Martin, Keith F., 4,521,368, Cl. 264-514.000.

Martin, Michel, to Laboratoire Lucchini S.A. Process for obtaining lacto-N-norhexaosyl ceramide. 4,521,593, Cl. 536-55.300.

Martin, Pamela H.: *See—*
Kauffman, William J.; and Martin, Pamela H., 4,521,215, Cl. 8-508.000.

Martinmaas, Werner W. Adjustable socket for socket wrenches. 4,520,698, Cl. 81-128.000.

Marvco Tool & Mfg. Inc.: *See—*
Harrigan, Marvin, 4,520,981, Cl. 248-413.000.

Masaitis, William: *See—*
King, Harold B.; Masaitis, William; Ippisch, Ernest; and Chinn, Albert E., 4,521,862, Cl. 364-552.000.

Masak, Peter: *See—*
Haverstock, Wayne; Krywchuk, David; and Masak, Peter, 4,520,683, Cl. 74-41.000.

Masanek, Jurgen: *See—*
Schnee, Reiner; and Masanek, Jurgen, 4,521,552, Cl. 523-313.000.

Maschinenfabrik Hennecke GmbH: *See—*
Althausen, Ferdinand; Proksa, Ferdinand; and Osinski, Ulrich, 4,520,947, Cl. 222-63.000.

Maschinenfabrik Koppern FmbH & Co. KG: *See—*
Blank, Michael G.; and Hammerschmidt, Horst E., 4,521,177, Cl. 425-533.000.

Mascio, Maria R.: *See—*
Anderson, Ronald L.; and Mascio, Maria R., 4,521,254, Cl. 134-26.000.

Masco Corporation of Indiana: *See—*
Baker, William; Smith, Gordon H.; Beach, Xio I.; Sallee, Gary F.; and Stein, Jeffrey I., 4,521,915, Cl. 455-165.000.

Masom, Ronald A., to Smiths Industries Public Limited Company. Optical element having a catalytic coating to promote oxidation of optically-opaque substances. 4,521,088, Cl. 350-582.000.

Mason, Joe; and Eckert, Hermann F., to Baxter Travenol Laboratories, Inc. Method for closing and sealing plastic tubing using a hot die and a rotating cold die. 4,521,366, Cl. 264-312.000.

Masters, William E. Breakaway kayak cockpit and method. 4,520,747, Cl. 114-347.000.

Masuda, Shigeru: *See—*
Okado, Hiroyuki; Masuda, Shigeru; and Mori, Teijiro, 4,521,655, Cl. 200-147.00R.

Matisa (U.K.) Limited: *See—*
Field, Keith C., 4,520,735, Cl. 105-215.00C.

Matrozza, Mark A., to Microlife Technics, Inc. Fermentation method and compositions including a lactobacillus species strain. 4,521,434, Cl. 426-59.000.

Matsubara, Hidenobu: *See—*
Katagiri, Nobuhiko; Matsubara, Hidenobu; and Iida, Akio, 4,520,864, Cl. 165-60.000.

Matsuda, Yoshihiro; Kimishima, Hiroshi; and Kado, Yoshikazu, to Nippon Electric Co., Ltd. Stamp detection in a mail processing apparatus. 4,520,932, Cl. 209-545.000.

Matsufuji, Yohji, to Canon Kabushiki Kaisha. Image forming device. 4,521,785, Cl. 346-25.000.

Matsumoto, Akio; and Yokota, Mitsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Diaphragm apparatus having a magnetically imparted hysteresis characteristic. 4,521,651, Cl. 200-83.00R.

Matsumoto, Akio: *See—*
Kiyota, Yuhiko; Tsuji, Katsuyuki; Kume, Satoru; Takada, Hiroaki; Shinsei, Kiyoichi; Matsumoto, Akio; and Ogawa, Hitoshi, 4,520,624, Cl. 60-286.000.

Matsumoto, Masaaki: *See—*
Uyeda, Takashi; and Matsumoto, Masaaki, 4,521,731, Cl. 324-174.000.

Matsumura, Yasushi: *See—*
Sugisawa, Ko; Matsumura, Yasushi; and Taga, Kazumitsu, 4,520,574, Cl. 34-5.000.

Matsuno, Junichi: *See—*
Yoshida, Takashi; Fujie, Masakatsu; Matsuno, Junichi; and Ouchi, Hideyuki, 4,521,813, Cl. 358-296.000.

Matsuo, Yasushi: *See—*
Miura, Kazunori; Hattori, Yoshinori; and Matsuo, Yasushi, 4,521,358, Cl. 264-65.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hirai, Masayoshi; Tanaka, Junzo; and Ueda, Katsuroh, 4,521,183, Cl. 432-37.000.
Hirota, Ken; Fujimoto, Yoshiaki; Watanabe, Kouichi; and Sugimura, Minoru, 4,521,323, Cl. 252-62.590.
Kageyama, Yoshikazu; Nagasaki, Sakon; and Mino, Mineo, 4,521,735, Cl. 324-433.000.
Tamai, Takashi; Tomiyama, Shigefumi; and Ohshima, Nobumasa, 4,520,661, Cl. 73-129.000.

Matsushita, Souichi; Nakanishi, Kiyoshi; and Inoue, Tokuta, to Toyota Jidosha Kabushiki Kaisha. Method of controlling fuel injection and apparatus therefor. 4,520,783, Cl. 123-492.000.

Mattel, Inc.: *See—*
Saffer, Gary M.; Lambert, Gerard L.; and Stern, Howard R., 4,521,206, Cl. 446-444.000.

Matth. Hohner AG: *See—*
Deforeit, Christian J., 4,520,706, Cl. 84-1.100.

Maucher, Paul; and Friedmann, Oswald, to Luk Lamellen und Kupplungsbau GmbH. Device for selectively separating and connecting a rotatable shaft. 4,520,913, Cl. 192-48.800.

Maurer, Fritz; Brandes, Wilhelm; Kuck, Karl-Heinz; Reinecke, Paul; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. Oxoquinazoline carbamates. 4,521,420, Cl. 514-259.000.

Mauser-Werke Oberndorf GmbH: *See—*
Gotz, Udo; Gleichauf, Winifred; and Gunther, Oswin, 4,520,731, Cl. 102-527.000.

May, David C.: *See—*
Krech, Thomas D.; and May, David C., 4,521,129, Cl. 404-10.000.

May, Jim. Log splitter. 4,520,854, Cl. 144-193.00A.

Mayer, Edward F., to Ricoh Company, Ltd. Electrophotographic copying apparatus including specific toner fusing roll and its method of use. 4,521,095, Cl. 355-3.0FU.

Mayes, Thomas L. Iceboard. 4,521,029, Cl. 280-7.140.

Mayo, George L.: *See—*
Dunn, Jimmy L.; Mayo, George L.; and Romeo, Frank C., 4,520,550, Cl. 29-568.000.

Mazin, Moshe; and Engeler, William E., to General Electric Company. CMOS D-type latch employing six transistors and four diodes. 4,521,695, Cl. 307-279.000.

Mazuda, Hiroo: *See—*
Tamehiro, Hiroshi; Mazuda, Hiroo; Ohashi, Mamoru; and Onoe, Yasumitsu, 4,521,258, Cl. 148-12.00F.

McCarter, Ed R., deceased: *See—*
Thatcher, Arthur K.; and McCarter, Ed R., deceased, 4,520,786, Cl. 123-536.000.

McCarter, Rebecca A., executrix: *See—*
Thatcher, Arthur K.; and McCarter, Ed R., deceased, 4,520,786, Cl. 123-536.000.

McCartney, Michael S.; Chadshay, Roman; and Erlacher, Richard F., to Combustion Engineering, Inc. Nozzle tip for pulverized coal burner. 4,520,739, Cl. 110-263.000.

McClure, Maxwell D., III: *See—*
Fachini, Robert M.; Barrett, Monroe C.; and McClure, Maxwell D., III, 4,520,617, Cl. 56-16.600.

McColl, John W.: *See—*
Ferris, Ernest A.; and McColl, John W., 4,520,912, Cl. 192-85.0AA.

McCready, James B. Table tennis game and training apparatus. 4,521,017, Cl. 273-30.000.

McDonald, David I.: *See—*
Holmes, Donald P.; and McDonald, David I., 4,520,575, Cl. 34-23.000.

McDonie, Arthur F.: *See—*
Faulkner, Richard D.; and McDonie, Arthur F., 4,521,715, Cl. 313-531.000.

McDonnell Douglas Corporation: *See—*
Higginbotham, John W.; and Dowden, Dennis C., 4,521,115, Cl. 356-432.000.

McElroy, Arthur H.: *See—*
Cox, Russell C.; and McElroy, Arthur H., 4,521,041, Cl. 285-156.000.

McGary, Charles W.: *See—*
Solomon, Donald D.; McGary, Charles W.; and Pascarella, Vincent J., 4,521,564, Cl. 525-54.100.

McGlen, James A.: *See—*
Holzhauser, Ronald C.; McGlen, James A.; and Lawniczak, Gary P., 4,520,977, Cl. 248-201.000.

McIlvin, Donald B.: *See—*
Bouzianis, George J.; and McIlvin, Donald B., 4,521,176, Cl. 425-521.000.

McInnes, Robert. Cathode structure for cleaning, plating and/or coating apparatus. 4,521,288, Cl. 204-213.000.

McInnis, Donald E. Hanger and method for suspending a television. 4,520,979, Cl. 248-323.000.

McKenna, James M., to Du Pont de Nemours, E. I., and Company. Flame retardant copolyetheresters. 4,521,557, Cl. 524-94.000.

McKinney, Benjamin F., to Oxide & Chemical Corporation. Method and apparatus for the production of lead oxide. 4,521,399, Cl. 423-620.000.

McMichael, John, to McMichael, John. Methods and materials for treatment of disease states involving immunological factors. 4,521,405, Cl. 424-92.000.

McVie, James; and Butler, Derek W., to Dow Corning Limited. Siloxane-polyester compositions. 4,521,461, Cl. 427-387.000.

Mead Corporation, The: *See—*
Muller, Rolf, 4,520,612, Cl. 53-48.000.

Medical Engineering Corporation: *See—*
Weeks, Vaughan B., 4,520,814, Cl. 128-303.100.

Medosan Industrie Biochimiche Riunite S.p.A.: *See—*
Baglioni, Alessandro, 4,521,538, Cl. 514-423.000.

Medtronic, Inc.: *See—*
Thompson, David L.; Roline, Glenn M.; and Harrington, Richard J., 4,520,825, Cl. 128-422.000.

Medwed, Emmerich, to Multivac Sepp Haggenmuller KG. Apparatus for producing containers from thermoplastic sheet material. 4,521,175, Cl. 425-403.000.

Meggs, Daniel H.; Gross, Herbert G.; and Greenslade, John T., to Gulf & Western. Flexible elongated lighting system. 4,521,835, Cl. 362-183.000.

Mehnert, Walter: *See—*
Chaborski, Hoiko; and Mehnert, Walter, 4,521,107, Cl. 356-5.000.

Meisenheimer, William L.: *See—*
Van Peski, Christian K.; and Meisenheimer, William L., 4,521,114, Cl. 356-401.000.

Mellon, Andrew M.: *See—*
Parkyn, William A.; Ladd, Horace W.; and Mellon, Andrew M., 4,520,795, Cl. 126-443.000.

Melocik, Grant C.; and Pickering, William, to Towmotor Corporation. Diagnostic display apparatus. 4,521,885, Cl. 371-29.000.

Melvin, Larry E. Rotating wheel dresser. 4,520,788, Cl. 125-11.0CD.

Menezes, Edgar V.; and Steinheuser, Peter, to Ethicon, Inc. Ethylene-propylene copolymer sutures. 4,520,822, Cl. 128-335.500.

Mercer, Frank B.; and Martin, Keith F., to Netlon Limited. Method of making internally cross-ribbed plastics material structure. 4,521,368, Cl. 264-514.000.

Mercer, James D.; and Aaserude, Gordon. Bi-axial orthotic device. 4,520,802, Cl. 128-80.00C.

Merck & Co., Inc.: *See—*
Stapley, Edward O., 4,521,408, Cl. 424-115.000.

Merrell, Richard G., to Zenith Electronics Corporation. Apparatus for synchronizing the operation of master and slave counters. 4,521,897, Cl. 377-115.000.

Merrill, Duane F., to General Electric Company. Processes and articles for removing typewriter inks. 4,521,471, Cl. 428-40.000.

Messenger, Dale: *See—*
Davis, Walter L.; Messenger, Dale; and Randall, Malcolm W., 4,520,702, Cl. 83-71.000.

Metallgesellschaft AG: *See—*
Alig, Franz; Hemmerling, Horst; and Neulinger, Franz, 4,521,226, Cl. 55-21.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Daar, Horst; and Alig, Franz, 4,521,223, Cl. 55-13.000.
Daar, Horst; and Alig, Franz, 4,521,228, Cl. 55-105.000.

Metzler, Steven, to National Keystone Products Co. Dowel pin for dental models. 4,521,188, Cl. 433-74.000.

Meunier, Denis: *See—*
Coblentz, Andrea; Lefevre, Didier; Colombani, Pascal; and Meunier, Denis, 4,520,666, Cl. 73-155.000.

Meurer NonFood Product GmbH: *See—*
Vossen, Franz, 4,521,233, Cl. 55-384.000.

Meyer, Hermann: *See—*
Ziemek, Gerhard; Schatz, Friedrich; and Meyer, Hermann, 4,520,622, Cl. 57-59.000.

Meyer, Lawrence L.; and Carli, Alvin J., to Alliance Manufacturing Company, Inc., The. Tape drive closure operator. 4,520,684, Cl. 74-89.210.

Meyer, Norbert; Zeeh, Bernd; Buschmann, Ernst; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. Vinylazoles and their use for controlling fungi. 4,521,429, Cl. 514-383.000.

Mezhkhozyai Stvennoe Opytnokonstruktorskoe Bjuro Mariiskogo Respublicanskogo Proizvodstvennogo Obiedinenia "Mariiskmezhkhozkombikorm": *See—*
Sevastyanov, Viktor V.; Furman, Yakov A.; Grebenschikov, Anatoly P.; Lysov, Viktor F.; and Shalnov, Boris N., 4,520,826, Cl. 128-422.000.

Michel, Robert, to Renault Vehicules Industriels. Hydropneumatic energy reservoir for accumulating the braking energy recovered on a vehicle. 4,520,840, Cl. 137-259.000.

Micheron, Francois: *See—*
Broussoux, Dominique; Facoetti, Hugues; Micheron, Francois; and Monnerie, Lucien, 4,521,322, Cl. 252-62.900.

Mickiewicz, Stanley, to Codman & Shurtleff, Inc. High dielectric output circuit for electrosurgical power source. 4,520,818, Cl. 128-303.170.

Microlife Technics, Inc.: *See—*
Matrozza, Mark A., 4,521,434, Cl. 426-59.000.

Micronix Partners: *See—*
Braun, Martin, 4,521,903, Cl. 378-141.000.

Mid-West Automation Inc.: *See—*
Eitzinger, Robert, 4,520,682, Cl. 74-40.000.

Midorikawa, Minoru, to Nissan Motor Co., Ltd. Intake air heating system for an internal combustion engine. 4,520,787, Cl. 123-556.000.

Mifune, Hiroyuki: *See—*
Sugimoto, Tadao; Ikeda, Hideo; Mifune, Hiroyuki; and Nakamura, Koki, 4,521,508, Cl. 430-567.000.

Mikami, Yoshiharu, to Kabushiki Kaisha Ishida Koki Seisakusho. Hooper door opening mechanism for automatic weighing apparatus. 4,520,884, Cl. 177-58.000.

Miki, Isao; and Kawai, Toshiyuki, to Nippon Light Metal Co., Ltd. Method for producing profiled product having fins. 4,520,541, Cl. 29-156.8CF.

Mikumo, Masatoshi: *See—*
Toaba, Hirotaka; Mikumo, Masatoshi; and Asami, Masahiro, 4,521,565, Cl. 525-64.000.

Milc, Thomas A., to Mitel Corporation. Printed circuit board lock. 4,521,063, Cl. 339-17.0LM.

Miller, Clarence W., to Thermetic Glass, Inc. Multi-pane sealed window and method for forming same. 4,520,602, Cl. 52-173.00R.

Miller Electric Manufacturing Company: *See—*
Fronius, Klaus, 4,521,671, Cl. 219-130.310.
Fronius, Klaus, 4,521,672, Cl. 219-130.330.

Miller, Glen E., to Boeing Company, The. Pressure-actuated optical switch. 4,521,683, Cl. 250-221.000.

Miller, Henry L., to Miller Screen & Design, Inc. Method and apparatus for silk-screen printing. 4,520,727, Cl. 101-127.000.

Miller, Larry. Splint and method of using same. 4,520,806, Cl. 128-87.00R.

Miller, Robert F., to Teledyne, Inc. Process and apparatus for surfacing with high deposition and low dilution. 4,521,664, Cl. 219-76.140.

Miller Screen & Design, Inc.: *See—*
Miller, Henry L., 4,520,727, Cl. 101-127.000.

Miller Special Tools Division Triangle Corporation: *See—*
Koslow, James R., 4,520,773, Cl. 123-198.00A.

Miller, Walter G.; Mace, Michel; and Zitterbart, George, to Wormald Fire Systems, Inc. Fire extinguishing system. 4,520,871, Cl. 169-43.000.

Mills, Harold E.; Murdock, David L.; Ramer, Richard M.; and Sale, Francis M., to Occidental Chemical Agricultural Products, Inc. Process for blending phosphoric acids of differing impurity content. 4,521,392, Cl. 423-317.000.

Milora, David J., to Pennwalt Corporation. Highly alkaline cleaning dispersion. 4,521,332, Cl. 252-527.000.

Minagawa, Shoichi: *See—*
Okamoto, Takeshi; and Minagawa, Shoichi, 4,521,711, Cl. 310-313.00B.

Mine Support Systems (Proprietary) Ltd.: *See—*
Townsend, Rodney C., 4,520,980, Cl. 248-351.000.

Minnesota Mining and Manufacturing Company: *See—*
Bernard, Samuel, Jr., 4,521,644, Cl. 179-2.0DP.
Graham, Joseph; Gennrich, Timothy J.; and Laird, James A., 4,521,333, Cl. 252-606.000.
Herbert, Alan J., 4,521,503, Cl. 430-49.000.
Krech, Thomas D.; and May, David C., 4,521,129, Cl. 404-10.000.
Pocius, Alphonsus V.; and Schultz, William J., 4,521,490, Cl. 428-416.000.
Wulfing, James J.; and Rood, Robert M., 4,520,969, Cl. 242-71.800.

Mino, Mineo: *See—*
Kageyama, Yoshikazu; Nagasaki, Sakon; and Mino, Mineo, 4,521,735, Cl. 324-433.000.

Miranda, Giovanna F.: *See—*
Nisato, Dino; Frigerio, Marco; and Miranda, Giovanna F., 4,521,428, Cl. 514-277.000.

Mississippi Chemical Corporation: *See—*
Simms, Douglas P.; and Dobbs, Joseph M., 4,521,239, Cl. 71-27.000.

Mita Industrial Co., Ltd.: *See—*
Motomura, Minoru; Shibata, Kiyoshi; Watanabe, Toshio; and Ohata, Yousuke, 4,521,102, Cl. 355-14.0CU.

Mita, Seiichi: *See—*
Kougami, Akihiko; Mita, Seiichi; Kirino, Toru; and Nagahara, Shusaku, 4,521,816, Cl. 360-45.000.

Mitchell, Peter W. D., to Union Camp Corporation. Separation of 1,8-cineole by forming a complex with hydroquinone. 4,521,608, Cl. 549-397.000.

Mitchell, Peter W. D., to Union Camp Corporation. Method of preparing alkali metal salts of organic diamines. 4,521,627, Cl. 564-511.000.

MITEC Moderne Industrietechnik GmbH: *See—*
Chaborski, Hoiko; and Mehnert, Walter, 4,521,107, Cl. 356-5.000.

Mitel Corporation: *See—*
Milc, Thomas A., 4,521,063, Cl. 339-17.0LM.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Kiyota, Yuhiko; Tsuji, Katsuyuki; Kume, Satoru; Takada, Hiroaki; Shinsei, Kiyoichi; Matsumoto, Akio; and Ogawa, Hitoshi, 4,520,624, Cl. 60-286.000.
Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,521,651, Cl. 200-83.00R.
Niino, Shuheu; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, 4,520,642, Cl. 72-8.000.
Nishida, Minoru, 4,520,781, Cl. 123-414.000.
Ogawa, Hitoshi, 4,521,169, Cl. 418-69.000.
Okado, Hiroyuki; Masuda, Shigeru; and Mori, Teijiro, 4,521,655, Cl. 200-147.00R.
Sasao, Isao, 4,520,905, Cl. 187-29.00R.
Shinohara, Hirofumi; Tomisawa, Osamu; Anami, Kenji; and Yoshimoto, Masahiko, 4,521,704, Cl. 307-530.000.
Tatsumi, Takumi, 4,520,680, Cl. 73-862.190.
Watanabe, Eiki, 4,520,906, Cl. 187-29.00R.
Yoshiyasu, Hajimu; Murata, Shirou; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,521,653, Cl. 200-144.00C.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Kida, Koichi; Aoyama, Tetsuo; and Uchiyama, Takako, 4,521,638, Cl. 585-640.000.

Mitsubishi Jiboshia Kogyo Kabushiki Kaisha: *See—*
Kiyota, Yuhiko; Tsuji, Katsuyuki; Kume, Satoru; Takada, Hiroaki; Shinsei, Kiyoichi; Matsumoto, Akio; and Ogawa, Hitoshi, 4,520,624, Cl. 60-286.000.

Mitsubishi Light Metal Industries Limited: *See—*
Kunihiko, Ichikawa; and Kiyoshi, Mishima, 4,521,265, Cl. 156-229.000.

Mitsubishi Paper Mills, Ltd.: *See—*
Suzuki, Shigeyoshi; Yamada, Jun; Senga, Takao; Kuriu, Sadao; Yamasaki, Masahiro; Hirose, Iwao; and Maegawa, Tokubee, 4,521,101, Cl. 355-10.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Ichimura, Mitsunori; Yamamoto, Ryoichi; and Horimoto, Katsutoshi, 4,521,378, Cl. 422-135.000.

Mitsui Toatsu Kagaku Kabushiki Kaisha: *See—*
Katakami, Tsutomu; Fukazawa, Nobuyuki; Iizuka, Hajime; Nishina, Takashi; Kamiya, Joji; Tanaka, Yasuhito; and Nakano, Takuo, 4,521,415, Cl. 514-252.000.

Mitsuno, Tatsuyuki; and Yamamoto, Masashi, to Sumitomo Chemical Company, Limited. Particulate polyolefin expansion molding material. 4,521,487, Cl. 428-407.000.

Mittelstaedt, Wolfgang: *See—*
Finkenzeller, Johann; and Mittelstaedt, Wolfgang, 4,521,899, Cl. 378-40.000.

Mitutoyo Mfg. Co., Ltd.: *See—*
Kuwabara, Yoshiharu; Hamada, Hiroyoshi; and Kuwata, Masayuki, 4,521,112, Cl. 356-375.000.
Kuwabara, Yoshiharu; Takayama, Yasuharu; and Hamada, Hiroyoshi, 4,521,113, Cl. 356-387.000.

Miura, Kazunori; Hattori, Yoshinori; and Matsuo, Yasushi, to Agency of Industrial Science & Technology. Process for the production of silicon nitride sintered bodies. 4,521,358, Cl. 264-65.000.

Miyagi, Hideo: *See—*
Ito, Yoshiyasu; Kobayashi, Fumiaki; and Miyagi, Hideo, 4,520,780, Cl. 123-359.000.

Miyaji, Naotaka; Sakamoto, Atsushi; and Iwahara, Makoto, to Victor Company of Japan, Limited. Phased-array sound pickup apparatus having no unwanted response pattern. 4,521,908, Cl. 381-92.000.

Miyake, Akio: *See—*
Oka, Yoshikazu; Nishikawa, Kohei; and Miyake, Akio, 4,521,607, Cl. 549-39.000.

Miyake, Akira. Process of manufacturing a sleeve and wedge for an anchor bolt. 4,520,521, Cl. 10-27.0PH.

Miyake, Kiyoshi; and Kaneko, Hiroko, to Ricoh Company, Ltd. Electrochromic display device. 4,521,081, Cl. 350-357.000.

Miyake, Toshio; Sakai, Shuzo; and Shibuya, Takashi, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Process for producing a high-purity isomaltose. 4,521,252, Cl. 127-46.300.

Mizoguchi, Kiyohisa: *See—*
Kanematsu, Hiroyuki; Nagae, Akimitsu; Mizoguchi, Kiyohisa; and Ohashi, Hajime, 4,521,860, Cl. 364-474.000.

Mizrahi, Sadi: *See—*
Angevine, Philip J.; Kuhl, Gunter H.; and Mizrahi, Sadi, 4,521,297, Cl. 208-89.000.

Mizuno, Masao: *See—*
Nakamoto, Hiromasa; Ogawa, Michitaka; Kobayashi, Muneo; Nogami, Yuki; Kumamoto, Kazuo; Murakami, Hiroko; Ninagawa, Yoichi; Omura, Yoshiaki; and Mizuno, Masao, 4,521,417, Cl. 514-255.000.

Mizushima, Yoshihiko: *See—*
Murase, Katsumi; and Mizushima, Yoshihiko, 4,521,794, Cl. 357-2.000.

Moberg, Kurt E. L. Device for simulating the report effect of a blank cartridge when firing small arms. 4,521,195, Cl. 434-16.000.

Mobil Oil Corporation: *See—*
Anderson, James J., 4,521,547, Cl. 521-137.000.
Angevine, Philip J.; Kuhl, Gunter H.; and Mizrahi, Sadi, 4,521,297, Cl. 208-89.000.
Rosinski, Edward J.; and Schwartz, Albert B., 4,521,298, Cl. 208-120.000.

Moeller, John D. Portable tent. 4,520,835, Cl. 135-102.000.

Moetteli, John B. Ratchet wrench. 4,520,697, Cl. 81-62.000.

Moffat, Richard P., to Saskatchewan Power Corporation. Overspeed-/underspeed detector. 4,521,894, Cl. 377-16.000.

Moisan, Louis E. Audible and bi-visual indicator. 4,520,586, Cl. 43-17.000.

Molloy, Lawrence. Bathroom radio. 4,521,919, Cl. 455-344.000.

Momono, Masakichi; Moriya, Hisanori; Souma, Masahiro; and Hamashima, Eiji, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Magnetic fuel injection valve. 4,520,962, Cl. 239-585.000.

Monarch Marking Systems, Inc.: *See—*
Jacobson, David N., 4,521,267, Cl. 156-249.000.

Mongeon, Robert J.: *See—*
Chenausky, Peter P.; Mongeon, Robert J.; and Laughman, Lanny M., 4,521,109, Cl. 356-349.000.

Monnerie, Lucien: *See—*
Broussoux, Dominique; Facoetti, Hugues; Micheron, Francois; and Monnerie, Lucien, 4,521,322, Cl. 252-62.900.

Monsanto Company: *See—*
Kuechler, Thomas C.; Ebner, Jerry R.; and Li, Tao P., 4,521,395, Cl. 423-376.000.
Tou, Jacob S.; and Schleppnik, Alfred A., 4,521,344, Cl. 260-465.00D.

Montedison S.p.A.: *See—*
Galli, Paolo; and Spataro, Mario, 4,521,566, Cl. 525-247.000.

Montedoro-Whitney Corporation: *See—*
Palmer, David A.; and Palmer, James K., 4,520,650, Cl. 73-3.000.

Moore, Eddie C.: *See—*
Moore, Jeff D.; Moore, Eddie C.; Tucker, Burnis H.; and Goodwill, William P., 4,520,681, Cl. 73-862.280.

Moore, George R.; and Mahannah, Daniel H., to General Motors Corporation. Vehicle brake test apparatus. 4,520,663, Cl. 73-129.000.

Moore, Jeff D.; Moore, Eddie C.; Tucker, Burnis H.; and Goodwill, William P., to Moore, Jeff D.; and Moore, Eddie C. Apparatus for measuring torque on a rotating shaft. 4,520,681, Cl. 73-862.280.

Moraly, Paul. Method for manufacturing pins particularly intended for anchoring in the ground posts or stakes, and pins obtained thereby. 4,520,545, Cl. 29-412.000.

Mori, Fumio: *See—*
Itsubo, Junichi; Yazaki, Takashi; and Mori, Fumio, 4,520,939, Cl. 215-252.000.

Mori, Kyoichiro; and Hirano, Hiroyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Sequentially produced multilayer acrylic resin composition. 4,521,568, Cl. 525-309.000.

Mori, Shigeo: *See—*
Fujita, Takeshi;; Mori, Shigeo; Kataoka, Hironori; and Taniuchi, Akira, 4,521,586, Cl. 528-297.000.

Mori, Takaro: *See—*
Sasamura, Kohhei; and Mori, Takaro, 4,521,817, Cl. 360-46.000.

Mori, Teijiro: *See—*
Okado, Hiroyuki; Masuda, Shigeru; and Mori, Teijiro, 4,521,655, Cl. 200-147.00R.

Morimoto, Masao; Sano, Shoji; Yoshimi, Kazuyoshi; and Saitou, Kazuo, to Sanyo Electric Co., Ltd. Blower and rotating wind deflector. 4,521,153, Cl. 415-146.000.

Morita, Toyoo; and Horikawa, Yoichi, to Yoshida Kogyo K. K. Method of and apparatus for automatically finishing slide fasteners. 4,520,544, Cl. 29-408.000.

Moriya, Hisanori: *See—*
Momono, Masakichi; Moriya, Hisanori; Souma, Masahiro; and Hamashima, Eiji, 4,520,962, Cl. 239-585.000.

Morris, Robert A.; Kiesel, George W.; and Rajotte, Paul T., to General Electric Company. Interrupter mechanism for a ground fault circuit interrupter. 4,521,824, Cl. 361-45.000.

Morse, Albert I.; Crowell, Douglas H.; and Gilligan, Thomas J., III, to USM Corporation. Receiving belt mechanism. 4,520,751, Cl. 118-203.000.

Moss, William H.; and Scheib, Thomas J., to Babcock & Wilcox Company, The. Program timer control. 4,521,869, Cl. 364-900.000.

Mostek Corporation: *See—*
Taylor, Ronald T., 4,521,698, Cl. 307-450.000.

Motomura, Minoru; Shibata, Kiyoshi; Watanabe, Toshio; and Ohata, Yousuke, to Mita Industrial Co., Ltd. Copy paper counting method and device for copying apparatus. 4,521,102, Cl. 355-14.0CU.

Motorola, Inc.: *See—*
Akram, M. Faheem, 4,521,898, Cl. 377-116.000.
Budnik, Brian J., 4,521,726, Cl. 323-283.000.
Bynum, Byron G., 4,521,737, Cl. 330-51.000.
Davies, Robert B., 4,521,799, Cl. 357-51.000.
Flowers, Dervin L., 4,521,441, Cl. 427-38.000.
Joseph, Eric D., 4,521,697, Cl. 307-355.000.
Raghunathan, Kuppuswamy, 4,521,696, Cl. 307-350.000.
Smoot, George W.; and Macnak, Philip P., 4,521,776, Cl. 340-825.440.

Mouille , Bernhard; and Durand, Michel, to Compagnie Francaise de l'Azote Cofaz. Continuous process and equipment for the recovery of nitrogen oxides from nitrous gases. 4,521,390, Cl. 423-239.000.

Moulin, Blaise, to Caracteres S.A. Characters carrying print wheel disc for printing machine and method of manufacturing same. 4,521,124, Cl. 400-144.200.

Mowdood, Syed K., to Goodyear Tire & Rubber Company, The. Rubber-metal adhesion promoters. 4,521,558, Cl. 524-145.000.

Moy, Harold: *See—*
Braun, Derrek E.; Lau, Daniel T.; and Moy, Harold, 4,521,712, Cl. 310-339.000.

Moyer, Ted A.: *See—*
Sucro, Jost S.; Moyer, Ted A.; and Shufflebarger, William S., 4,520,689, Cl. 74-595.000.

MSI Electronics Inc.: *See—*
Shulman, Carl, 4,521,730, Cl. 324-158.00F.

Mueller, Martin, to Osgood Industries, Inc. Method and apparatus for internally cutting a tube of material. 4,521,264, Cl. 156-184.000.

Mukae, Toshiyuki; and Azuma, Yoshifumi, to Noritsu Kenkyu Center Co., Ltd. Negative film carrier for a disc film. 4,521,105, Cl. 355-64.000.

Mulcahy, Kieran, to Loctite (Ireland) Ltd. Heating/cooling coil sealing. 4,521,453, Cl. 427-140.000.

Muller, Bernhard: *See—*
Gevatter, Hans-Jurgen; Muller, Bernhard; and Neese, Hans-Joachim, 4,521,257, Cl. 148-11.50Q.

Muller, Erhard: *See—*
Christ, Richard; Muller, Erhard; Knackstedt, Hans-Gunther; and Laug, Reiner, 4,521,691, Cl. 250-506.100.

Muller, Peter: *See—*
Kerimis, Dimitrios; Hombach, Rudolf; Muller, Peter; and Dollhausen, Manfred, 4,521,545, Cl. 521-107.000.

Muller, Reinhard: *See—*
Cirkel, Hans-Jurgen; Bette, Willi; and Muller, Reinhard, 4,521,889, Cl. 372-87.000.

Muller, Rolf, to Mead Corporation, The. Packaging machine. 4,520,612, Cl. 53-48.000.

Muller, Thomas; and Bauer, Rainer, to Kraftwerk Union Aktiengesellschaft. Inspection device, especially for steam generator tubes. 4,520,673, Cl. 73-623.000.

Multani, Jagir S.: *See—*
Rajkanan, Kamal; and Multani, Jagir S., 4,521,796, Cl. 357-23.500.

Multivac Sepp Haggenmuller KG: *See—*
Medwed, Emmerich, 4,521,175, Cl. 425-403.000.

Mundnich, Rainer: *See—*
Finke, Manfred; and Mundnich, Rainer, 4,521,348, Cl. 260-940.000.

Munters Corporation, The: *See—*
Lefevre, Marcel R., 4,521,350, Cl. 261-111.000.

Munzel, Wolf-Dietrich: *See—*
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,520,863, Cl. 165-48.00R.

Munzer, Manfred: *See—*
Arndt, Peter J.; Ludwig, Walter; Munzer, Manfred; Siol, Werner; and Wenzel, Franz, 4,521,567, Cl. 525-261.000.

Murakami, Hiroko: *See—*
Nakamoto, Hiromasa; Ogawa, Michitaka; Kobayashi, Muneo; Nogami, Yuki; Kumamoto, Kazuo; Murakami, Hiroko; Ninagawa, Yoichi; Omura, Yoshiaki; and Mizuno, Masao, 4,521,417, Cl. 514-255.000.

Murakami, Kazuhito; and Takahashi, Kenichi, to Sumitomo Electric Industries, Ltd. Infrared light transmitting fiber and process for producing the same. 4,521,073, Cl. 350-96.340.

Murakami, Toshiaki; Enomoto, Yoichi; and Inamura, Takahiro, to Nippon Telegraph & Telephone Public Corporation. Photodetecting device having Josephson junctions. 4,521,682, Cl. 250-211.00J.

Muraki, Asashi: *See—*
Kitajima, Nobuyuki; Tachibana, Yoshinori; Muraki, Asashi; and Kuzuoka, Shinichi, 4,521,355, Cl. 264-60.000.

Muralidhara, Ranya: *See—*
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,521,613, Cl. 560-152.000.

Murao, Yutaka; and Nishizono, Taira, to Tokyo Shibaura Denki Kabushiki Kaisha. A-D Converter and method of A-D conversion. 4,521,763, Cl. 340-347.0AD.

Murase, Katsumi; and Mizushima, Yoshihiko, to Nippon Telegraph & Telephone Public Corporation. Electrode and semiconductor device provided with the electrode. 4,521,794, Cl. 357-2.000.

Murata, Shirou: *See—*
Yoshiyasu, Hajimu; Murata, Shirou; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,521,653, Cl. 200-144.00C.

Murauchi, Akitsugu: *See—*
Uemura, Masayuki; Murauchi, Akitsugu; and Izushi, Takehiro, 4,521,020, Cl. 273-85.00G.

Murdock, David L.: *See—*
Mills, Harold E.; Murdock, David L.; Ramer, Richard M.; and Sale, Francis M., 4,521,392, Cl. 423-317.000.

Murphey, Joseph R., to Halliburton Company. Rapidly dissolvable silicates and methods of using the same. 4,521,136, Cl. 405-263.000.

Murphy, Alan S., to International Business Machines Corporation. Raster CRT having balanced pel distribution for flicker reduction. 4,521,774, Cl. 340-745.000.

Murphy, Edward J.: *See—*
Lorenz, Donald H.; Murphy, Edward J.; and Rutherford, John M., Jr., 4,521,404, Cl. 424-71.000.

Musch, Rudiger; Gobel, Wilhelm; Konter, Wolfgang; and Nolte, Wilfried, to Bayer Aktiengesellschaft. Continuous polymerization of chloroprene. 4,521,576, Cl. 526-213.000.

Myers, Kimbrough I.: *See—*
Granzow, Robert H.; Gupta, Desh B.; Myers, Kimbrough I.; and Filliman, Mark D., 4,521,008, Cl. 271-3.000.

Myers, Terry D.: *See—*
Myers, William D.; and Myers, Terry D., 4,521,194, Cl. 433-215.000.

Myers, William D.; and Myers, Terry D. Method for removing incipient carious lesions and/or stain from teeth. 4,521,194, Cl. 433-215.000.

Myrenne; Heinz: *See—*
Kiesewetter, Holger; Myrenne, Heinz; and Roggenkamp, Hans-Gunther, 4,521,729, Cl. 324-71.100.

Nablo, Sam V.; and Tripp, Edwin P., III, to Energy Sciences, Inc. Method and apparatus for electron curing on a cooled drum. 4,521,445, Cl. 427-44.000.

NAD Holding Limited: *See—*
Edvardsen, Erik, 4,521,742, Cl. 330-289.000.

Nagae, Akimitsu: *See—*
Kanematsu, Hiroyuki; Nagae, Akimitsu; Mizoguchi, Kiyohisa; and Ohashi, Hajime, 4,521,860, Cl. 364-474.000.

Nagahara, Shusaku: *See—*
Kougami, Akihiko; Mita, Seiichi; Kirino, Toru; and Nagahara, Shusaku, 4,521,816, Cl. 360-45.000.

Nagao, Makoto; and Nahara, Akira, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,521,481, Cl. 428-336.000.

Nagao, Taku: *See—*
Oh-ishi, Tokuro; Takeda, Mikio; Nakajima, Hiromichi; and Nagao, Taku, 4,521,430, Cl. 514-211.000.

Nagaoka, Tateki: *See—*
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,521,099, Cl. 355-8.000.

Nagasaki, Sakon: *See—*
Kageyama, Yoshikazu; Nagasaki, Sakon; and Mino, Mineo, 4,521,735, Cl. 324-433.000.

Nagata, Hiromitsu, to Daiwa Seiko Inc. Fishing reel. 4,520,971, Cl. 242-220.000.

Nahara, Akira: *See—*
Arai, Yoshihiro; and Nahara, Akira, 4,521,482, Cl. 428-336.000.
Nagao, Makoto; and Nahara, Akira, 4,521,481, Cl. 428-336.000.

Naik, Ishverlal K.; and Eguchi, Ronald G., to Northrop Corporation. Integrated optical waveguide fabrication by ion implantation. 4,521,443, Cl. 427-38.000.

Naito, Motohiro, to Jeol Ltd. Mass spectrometer. 4,521,687, Cl. 250-296.000.

Nakagawa, Shinichi; and Ihara, Kiyohiko, to Daikin Kogyo Co., Ltd. Tetrafluoroethylene-ethylene type copolymer. 4,521,575, Cl. 526-206.000.

Nakagawa, Toshiaki, to Yoshida Kogyo K. K. Apparatus for holding a slide fastener slider. 4,520,560, Cl. 29-708.000.

Nakahama, Ryoji, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Tilt locking system for ship propellers. 4,521,202, Cl. 440-61.000.

Nakajima, Hiromichi: *See—*
Oh-ishi, Tokuro; Takeda, Mikio; Nakajima, Hiromichi; and Nagao, Taku, 4,521,430, Cl. 514-211.000.

Nakajima, Kichio; Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; and Honma, Kazuo, to Hitachi Construction Machinery Co., Ltd. Hydraulic drive system for single rod cylinder. 4,520,626, Cl. 60-468.000.

Nakajima, Tadakatsu; Nakayama, Wataru; and Daikoku, Takahiro, to Hitachi, Ltd. Falling film evaporation type heat exchanger. 4,520,866, Cl. 165-115.000.

Nakamoto, Hiromasa; Ogawa, Michitaka; Kobayashi, Muneo; Nogami, Yuki; Kumamoto, Kazuo; Murakami, Hiroko; Ninagawa, Yoichi; Omura, Yoshiaki; and Mizuno, Masao, to Nihon Iyakuhin Kogyo Co., Ltd.; and Kuraray Co., Ltd. Geranylgeranylacetamide compounds having a piperazine ring, salts thereof, pharmaceutical compositions containing said compounds, and method of treating ulcers in mammals. 4,521,417, Cl. 514-255.000.

Nakamura, Haruo, to Yamaha Hatsudoki Kabushiki Kaisha. Intake system for multiple valve type engine. 4,520,775, Cl. 123-308.000.

Nakamura, Koki: *See—*
Sugimoto, Tadao; Ikeda, Hideo; Mifune, Hiroyuki; and Nakamura, Koki, 4,521,508, Cl. 430-567.000.

Nakamura, Masao: *See—*
Oyama, Kiyotaka; Irino, Shigeaki; Harada, Tsuneo; and Nakamura, Masao, 4,521,514, Cl. 435-70.000.

Nakamura, Minoru: *See—*
Yamamoto, Yoshihiro; Suzuki, Junichiro; and Nakamura, Minoru, 4,521,248, Cl. 75-238.000.

Nakamura, Yukinobu; Tagami, Katsutoshi; and Takahashi, Tsuneo, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for visually indicating the current location of an automotive vehicle. 4,521,777, Cl. 340-995.000.

Nakanishi, Kiyoshi: *See—*
Matsushita, Souichi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,520,783, Cl. 123-492.000.

Nakano, Takuo: *See—*
Katakami, Tsutomu; Fukazawa, Nobuyuki; Iizuka, Hajime; Nishina, Takashi; Kamiya, Joji; Tanaka, Yasuhito; and Nakano, Takuo, 4,521,415, Cl. 514-252.000.

Nakano, Tatsuo: *See—*
Asai, Shinichiro; Katoh, Kazuo; and Nakano, Tatsuo, 4,521,476, Cl. 428-209.000.

Nakata, Shuji; Kawaguchi, Yoshio; and Nishimura, Akira, to Nissan Motor Co., Ltd. Method and system for determining weld quality in resistance welding. 4,521,665, Cl. 219-117.100.

Nakaya, Keiichi; and Sato, Kunio, to Asahi Glass Company, Ltd. Process for producing calcium hypochlorite hydrate crystals. 4,521,397, Cl. 423-474.000.

Nakayama, Kazuaki, to Pioneer Electronic Corporation. Bias current compensated amplifier. 4,521,740, Cl. 330-267.000.

Nakayama, Shozo; and Ogino, Sekiya, to Kabushiki Kaisha Morita Seisakusho. Air bearing device in dental handpiece. 4,521,190, Cl. 433-132.000.

Nakayama, Wataru: *See—*
Nakajima, Tadakatsu; Nakayama, Wataru; and Daikoku, Takahiro, 4,520,866, Cl. 165-115.000.

Nalco Chemical Company: *See—*
Phillips, Kenneth G., 4,521,620, Cl. 564-128.000.

Namiki Precision Jewel Co., Ltd.: *See—*
Shimamoto, Hiroshi, 4,521,877, Cl. 369-178.000.

Nandlal, Samlal, to Shell Offshore Inc. Lightweight semi-flexible dike. 4,521,131, Cl. 405-116.000.

Nanjo, Hirotoshi; Satou, Hiroo; and Takahashi, Osamu, to Kokusan Denki Co., Ltd. Method of controlling engine speed for internal combustion engine. 4,520,778, Cl. 123-352.000.

Nanometrics Incorporated: *See—*
Coates, Vincent J.; Grund, J. Evan; and Westrate, Stephen B., 4,521,686, Cl. 250-237.00R.

Napolitano, Pellegrino E., to Hudson Engineering Company. Self-priming pump system having diaphragm-type flow sensor. 4,521,156, Cl. 415-11.000.

Narula, Karam V.: *See—*
Gueldenpfennig, Klaus; Russell, Stanley L.; Oswald, William A.; Breidenstein, Charles J.; and Narula, Karam V., 4,521,879, Cl. 370-62.000.

Nash Engineering Company, The: *See—*
Olsen, Ole B.; Bilik, Charles W.; Johnson, Herbert H.; and Jozepaitis, Charles M., 4,521,161, Cl. 417-68.000.

Nath, Prem; Hoffman, Kevin R.; and Laarman, Timothy D., to Energy Conversion Devices, Inc. Process gas introduction, confinement and evacuation system for glow discharge deposition apparatus. 4,520,757, Cl. 118-723.000.

National Keystone Products Co.: *See—*
Metzler, Steven, 4,521,188, Cl. 433-74.000.

National Research Development Corporation: *See—*
Lockhart, Gordon B., 4,521,749, Cl. 332-17.000.

Natori, Yohei: *See—*
Otake, Noboru; Seto, Haruo; Sasaki, Tetsuo; Sugita, Masanori; Natori, Yohei; and Sueda, Noriyoshi, 4,521,339, Cl. 260-239.30B.

Nave, Jerald L.: *See—*
White, Daniel S.; and Nave, Jerald L., 4,520,811, Cl. 128-203.110.

NCR Corporation: *See—*
Granzow, Robert H.; Gupta, Desh B.; Myers, Kimbrough I.; and Filliman, Mark D., 4,521,008, Cl. 271-3.000.

Neese, Hans-Joachim: *See—*
Gevatter, Hans-Jurgen; Muller, Bernhard; and Neese, Hans-Joachim, 4,521,257, Cl. 148-11.50Q.

Neissel, John P.: *See—*
Terhune, James H.; and Neissel, John P., 4,521,373, Cl. 376-258.000.

Nelissen, Johan W. A.: *See—*
Ponjee, Johannes J.; Nelissen, Johan W. A.; and Verwijlen, Christiaan J. A., 4,521,444, Cl. 427-41.000.

Nelson, Gunnar I. Watertight electrical receptacle. 4,521,649, Cl. 200-50.00B.

Nelson, Joseph A. Nonmechanical digital raingauge. 4,520,667, Cl. 73-171.000.

Nelson, Ralph E., to Winfield Corp. Container for sharps. 4,520,926, Cl. 206-366.000.

Nelson, Richard C. Process for coating material with water resistant composition. 4,521,458, Cl. 427-294.000.

Nemet, Mihaly, to Budapesti Radiotechnikai Gyar. Ground-plane antenna with impedance matching. 4,521,784, Cl. 343-846.000.

Nemoto, Shigeru: *See—*
Kobayashi, Minoru; and Nemoto, Shigeru, 4,521,821, Cl. 360-137.000.

Neoff, Rutger: *See—*
Krock, Friedrich W.; and Neoff, Rutger, 4,521,341, Cl. 260-371.000.

Neshem-Peterson, Inc.: *See—*
Sagness, Ronald L.; and Peterson, Donald A., 4,520,790, Cl. 126-109.000.

Nestec, S. A.: *See—*
Launay, Noel, 4,520,705, Cl. 83-879.000.

Nestec, S.A.: *See—*
Bengtsson, Bengt L.; Palmlin, Peter; and Saldert, Bertil K., 4,521,439, Cl. 426-509.000.

Nestor, Charles R.; Plyler, Robert G.; and Cross, William E., to General Motors Corporation. Socket connector for parallel circuit boards. 4,521,065, Cl. 339-75.0MP.

Netlon Limited: *See—*
Mercer, Frank B.; and Martin, Keith F., 4,521,368, Cl. 264-514.000.

Neubauer, Gerald: *See—*
Frank, Gerhard; Rudolf, Peter; Neubauer, Gerald; Ohlinger, Manfred; Wilfinger, Hans J.; Pfannebecker, Emil; and Duffner, Paul, 4,521,527, Cl. 502-184.000.

Neulinger, Franz: *See—*
Alig, Franz; Hemmerling, Horst; and Neulinger, Franz, 4,521,226, Cl. 55-21.000.

Neumann, Klaus: *See—*
Seibert, Karl; Neumann, Klaus; Spiess, Ernst; and Bruil, Hendrik G., 4,521,326, Cl. 252-174.210.

New York University: *See—*
Lehneis, Hans R.; and Wilson, Robert G., 4,520,512, Cl. 3-22.000.

Newton, Donald O.: *See—*
Keppel, Stephen C.; Newton, Donald O.; and Salt, Stephen R., 4,521,910, Cl. 383-10.000.

Neyer, Leo E.: *See—*
Simpson, Harold G.; and Neyer, Leo E., 4,520,610, Cl. 52-745.000.

Nezot, Francois: *See—*
Martel, Jacques; Buendia, Jean; and Nezot, Francois, 4,521,331, Cl. 252-522.00R.

NGK Spark Plug Co., Ltd.: *See—*
Yamamoto, Yoshihiro; Suzuki, Junichiro; and Nakamura, Minoru, 4,521,248, Cl. 75-238.000.

Nickel, Horst: *See—*
Beck, Ulrich; Stohr, Frank-Michael; and Nickel, Horst, 4,521,217, Cl. 8-639.000.

Nickerson, William F.: *See—*
Bryans, Lawrence G.; Goudey, Kenneth R.; and Nickerson, William F., 4,521,783, Cl. 343-781.00R.

Nielsen, Jens O. Reclosable plastic container. 4,520,943, Cl. 220-281.000.

Niemela, Tapio. Ski trails rôtary cutter and crusher drag unit. 4,520,582, Cl. 37-222.000.

Niermann, Hermann: *See—*
Reichert, Gunter; Mainzer, Franz; Lehmann, Kurt; and Niermann, Hermann, 4,520,631, Cl. 62-188.000.

Niese, Leo J.; and Sharlow, Gary R., to Reliance Electric Company. Drum positioning system. 4,520,853, Cl. 141-168.000.

Nietupski, Ronald S. Appetite suppressant and method of application thereof. 4,521,427, Cl. 514-354.000.

Nifco Inc.: *See—*
Tanaka, Toshie, 4,521,148, Cl. 411-182.000.

Nigborowicz, John J.; and Friedline, Karl L., to RCA Corporation. Video source selector. 4,521,810, Cl. 358-181.000.

Nihon Iyakuhin Kogyo Co., Ltd.: *See—*
Nakamoto, Hiromasa; Ogawa, Michitaka; Kobayashi, Muneo; Nogami, Yuki; Kumamoto, Kazuo; Murakami, Hiroko; Ninagawa, Yoichi; Omura, Yoshiaki; and Mizuno, Masao, 4,521,417, Cl. 514-255.000.

Niino, Shuheu; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, to Mitsubishi Denki Kabushiki Kaisha. Control device for continuous rolling machine. 4,520,642, Cl. 72-8.000.

Ninagawa, Yoichi: *See—*
Nakamoto, Hiromasa; Ogawa, Michitaka; Kobayashi, Muneo; Nogami, Yuki; Kumamoto, Kazuo; Murakami, Hiroko; Ninagawa, Yoichi; Omura, Yoshiaki; and Mizuno, Masao, 4,521,417, Cl. 514-255.000.

Ninomiya, Yoshinobu; Somezawa, Masashi; and Hashimoto, Akira, to Sony Corporation. Magnetic recording medium. 4,521,486, Cl. 428-407.000.

Nintendo Co., Ltd.: *See—*
Uemura, Masayuki; Murauchi, Akitsugu; and Izushi, Takehiro, 4,521,020, Cl. 273-85.00G.

Nippon Electric Co., Ltd.: *See—*
Matsuda, Yoshihiro; Kimishima, Hiroshi; and Kado, Yoshikazu, 4,520,932, Cl. 209-545.000.
Oda, Eiji, 4,521,797, Cl. 357-24.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Wachi, Masatada, 4,520,708, Cl. 84-1.260.

Nippon Kinzoku Co., Ltd.: *See—*
Sano, Yasumasa; and Ohwada, Tetsuya, 4,520,538, Cl. 24-682.000.

Nippon Light Metal Co., Ltd.: *See—*
Miki, Isao; and Kawai, Toshiyuki, 4,520,541, Cl. 29-156.8CF.

Nippon Notion Kogyo Co., Ltd.: *See—*
Kasai, Kazumi, 4,520,533, Cl. 24-198.000.

Nippon Oil Co., Ltd.: *See—*
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,521,294, Cl. 208-23.000.

Nippon Sheet Glass Co., Ltd.: *See—*
Ohtsuka, Yasuji; Koike, Yasuhiro; and Yoshida, Motoaki, 4,521,351, Cl. 264-1.500.

Nippon Steel Corporation: *See—*
Tamehiro, Hiroshi; Mazuda, Hiroo; Ohashi, Mamoru; and Onoe, Yasumitsu, 4,521,258, Cl. 148-12.00F.

Nippon Telegraph & Telephone Public Corporation: *See—*
Ikeda, Masahiro, 4,521,069, Cl. 350-96.130.
Murakami, Toshiaki; Enomoto, Yoichi; and Inamura, Takahiro, 4,521,682, Cl. 250-211.00J.
Murase, Katsumi; and Mizushima, Yoshihiko, 4,521,794, Cl. 357-2.000.

Nisato, Dino; Frigerio, Marco; and Miranda, Giovanna F., to Sanofi. Anorexigenic trifluoromethylphenyltetrahydropyridines and pharmaceutical compositions containing them. 4,521,428, Cl. 514-277.000.

Nishida, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Ignition control system of internal combustion engine. 4,520,781, Cl. 123-414.000.

Nishida, Takashi: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Hosogai, Takeo; and Nishida, Takashi, 4,521,242, Cl. 71-94.000.

Nishiguchi, Akira: *See—*
Oouchi, Tomihisa; Usui, Sampei; Fukuda, Tamio; and Nishiguchi, Akira, 4,520,634, Cl. 62-476.000.

Nishihara, Toshio: *See—*
Shingu, Tadashi; Tsutada, Tadakazu; Nishihara, Toshio; and Suzuki, Nobuo, 4,520,611, Cl. 52-789.000.

Nishijima, Hideo: *See—*
Fukushima, Isao; Kuwahara, Kazuyoshi; Itoigawa, Keiichi; Kobori, Yasunori; and Nishijima, Hideo, 4,521,750, Cl. 333-28.00R.

Nishikawa, Kohei: *See—*
Oka, Yoshikazu; Nishikawa, Kohei; and Miyake, Akio, 4,521,607, Cl. 549-39.000.

Nishimura, Akira: *See—*
Nakata, Shuji; Kawaguchi, Yoshio; and Nishimura, Akira, 4,521,665, Cl. 219-117.100.

Nishimura, Yasuyuki; Yamada, Mutsuo; Arikawa, Yoshijiro; Kamiguchi, Taiji; Kuwahara, Takanori; and Tanimoto, Hirotoshi, to Babcock-Hitachi Kabushiki Kaisha. Process for producing acetaldehyde. 4,521,631, Cl. 568-478.000.

Nishina, Takashi: *See—*
Katakami, Tsutomu; Fukazawa, Nobuyuki; Iizuka, Hajime; Nishina, Takashi; Kamiya, Joji; Tanaka, Yasuhito; and Nakano, Takuo, 4,521,415, Cl. 514-252.000.

Nishino, Takaichi, to Tachikawa Spring Co., Ltd. Slide adjustment apparatus. 4,520,982, Cl. 248-430.000.

Nishiyama, Tadashi: *See—*
Kawamura, Yasuo; Nishiyama, Tadashi; Itoh, Tomiyoshi; and Sakai, Takuo, 4,521,406, Cl. 424-94.000.

Nishizono, Taira: *See—*
Murao, Yutaka; and Nishizono, Taira, 4,521,763, Cl. 340-347.0AD.

Nissan Chemical Industries, Ltd.: *See—*
Obitsu, Masamichi; Hori, Takahiro; Koinuma, Toyoji; and Sakaguchi, Yuriko, 4,521,249, Cl. 106-12.000.

Nissan Motor Co., Ltd.: *See—*
Hatori, Yukiyoshi; Yagi, Eiji; and Kobari, Yuji, 4,520,777, Cl. 123-339.000.
Hayashi, Yoshimasa, 4,520,771, Cl. 123-195.00H.
Midorikawa, Minoru, 4,520,787, Cl. 123-556.000.
Nakata, Shuji; Kawaguchi, Yoshio; and Nishimura, Akira, 4,521,665, Cl. 219-117.100.
Ogawa, Naoki, 4,520,770, Cl. 123-195.00H.
Ozawa, Masuo; and Hirota, Toshio, 4,520,764, Cl. 123-3.000.
Shimonosono, Hitoshi; Ogawa, Naoki; and Hirano, Yoshinori, 4,520,768, Cl. 123-41.440.
Takahashi, Kotei, 4,520,685, Cl. 74-473.00R.

Nisshin Flour Milling Co., Ltd.: *See—*
Otake, Noboru; Seto, Haruo; Sasaki, Tetsuo; Sugita, Masanori; Natori, Yohei; and Sueda, Noriyoshi, 4,521,339, Cl. 260-239.30B.

Nitanda, Hiroshi: *See—*
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,521,099, Cl. 355-8.000.

Niu, Tyan-Faung: *See—*
Russell, Philip P.; Niu, Tyan-Faung; and Holland, Frederic A., 4,521,457, Cl. 427-286.000.

NJM, Inc.: *See—*
Voltmer, Helmut; Schwenzer, Alfred F.; and Spano, John D., 4,521,271, Cl. 156-568.000.

Noack, Juergen: *See—*
Kretschmer, Horst; Tietze, Guenter; Noack, Juergen; Schweigel, Hans-Joachim; Schingnitz, Manfred; Werner, Klaus; and Kirsch, Bernd, 4,521,139, Cl. 406-19.000.

Noble Automated Systems, Inc.: *See—*
Ray, Joe R., 4,520,918, Cl. 198-640.000.
Ray, Joe R., 4,520,920, Cl. 198-761.000.

Noble, Robert T., to Texas Instruments Incorporated. Method of operating a stacked display. 4,521,775, Cl. 340-784.000.

Nogami, Yuki: *See—*
Nakamoto, Hiromasa; Ogawa, Michitaka; Kobayashi, Muneo; Nogami, Yuki; Kumamoto, Kazuo; Murakami, Hiroko; Ninagawa, Yoichi; Omura, Yoshiaki; and Mizuno, Masao, 4,521,417, Cl. 514-255.000.

Noguchi, Minetoshi: *See—*
Shinomiya, Hiroaki; and Noguchi, Minetoshi, 4,520,745, Cl. 112-266.100.

Nogueira, Eduardo D.: *See—*
Nogueira, Gustavo D.; Vega, Jose M. R.; and Nogueira, Eduardo D., 4,521,386, Cl. 423-157.000.

Nogueira, Gustavo D.; Vega, Jose M. R.; and Nogueira, Eduardo D. Procedure for obtaining high purity magnesium salts or their concentrate solutions from sea water, brine or impure magnesium salt solutions. 4,521,386, Cl. 423-157.000.

Nolte, Wilfried: *See—*
Musch, Rudiger; Gobel, Wilhelm; Konter, Wolfgang; and Nolte, Wilfried, 4,521,576, Cl. 526-213.000.

Nongbri, Govanon: *See—*
Chervenak, Michael C.; Eccles, Richard M.; and Nongbri, Govanon, 4,521,295, Cl. 208-59.000.

Noonan, David, Jr. Foot pattern device. 4,521,171, Cl. 425-2.000.

Norbisrath, Max: *See—*
Grebe, Reiner; Norbisrath, Max; and Schmidt, Karl-Heinz, 4,520,963, Cl. 241-30.000.

Noritsu Kenkyu Center Co., Ltd.: *See—*
Mukae, Toshiyuki; and Azuma, Yoshifumi, 4,521,105, Cl. 355-64.000.

Norota, Susumi; Kiriyama, Tsutomu; Imoto, Tadashi; and Azumi, Toshinori, to Teijin Limited. Filament-like fibers and bundles thereof,

and novel process and apparatus for production thereof. 4,521,364, Cl. 264-176.00F.
North American Philips Corporation: *See—*
Bingham, Joseph P.; and Hatch, Douglas J., 4,521,809, Cl. 358-120.000.
North American Utility Construction Corporation: *See—*
Stark, Virgil; and Genequand, Pierre, 4,520,794, Cl. 126-438.000.
Northern Telecom Limited: *See—*
Dupuis, Claude R.; and Hinz, Lorne C., 4,521,643, Cl. 179-2.0DP.
Northrop Corporation: *See—*
Blackhurst, William R., 4,520,975, Cl. 244-137.00R.
Naik, Ishverlal K.; and Eguchi, Ronald G., 4,521,443, Cl. 427-38.000.
Nowell, John R.: *See—*
Genuit, Luther L.; and Nowell, John R., 4,521,692, Cl. 290-4.00A.
Nozu, Taketo: *See—*
Kimura, Yoshiaki; Nozu, Taketo; and Tanaka, Yasuhiko, 4,521,788, Cl. 346-140.00R.
NSK-Warner K.K.: *See—*
Sano, Yasumasa; and Ohwada, Tetsuya, 4,520,538, Cl. 24-682.000.
Nuclear Monitoring Systems & Management Corporation: *See—*
Price, William E.; Galloway, Louie A., III; Lowrey, Charles B.; and Lewis, Donald R., 4,521,372, Cl. 376-250.000.
Nunzio, Godoli: *See—*
Gianezio, Paribelli; and Nunzio, Godoli, 4,520,511, Cl. 3-1.913.
Nutting, H. Eugene: *See—*
Isakson, John E.; and Nutting, H. Eugene, 4,521,132, Cl. 405-166.000.
N.V. Raychem S. A.: *See—*
Overbergh, Noel M. M.; Doucet, Jos; and Vansant, Jan, 4,521,470, Cl. 428-36.000.
Nygren, Bertil: *See—*
Bjorklund, Robert; Gustavsson, Hans; Lundstrom, Ingemar; and Nygren, Bertil, 4,521,450, Cl. 427-121.000.
O.T. Pumpen GmbH & Co. KG: *See—*
Stahlkopf, Friedrich R. R., 4,521,163, Cl. 417-238.000.
Oakdale, Warren R.: *See—*
Windawi, Hassan; Grieger, Gene R.; and Oakdale, Warren R., 4,521,394, Cl. 423-363.000.
Obara, Haruki: *See—*
Kinoshita, Mitsuo; and Obara, Haruki, 4,521,662, Cl. 219-69.00W.
Obenschain, Stephen P.; and Lehmberg, Robert H. Controllable spatial incoherence echelon for laser. 4,521,075, Cl. 350-162.110.
Ober, Stephen H.: *See—*
Wright, Thomas C.; and Ober, Stephen H., 4,520,827, Cl. 128-423.00W.
Obitsu, Masamichi; Hori, Takahiro; Koinuma, Toyoji; and Sakaguchi, Yuriko, to Nissan Chemical Industries, Ltd. Silicate containing agent and cement surface modified with said agent. 4,521,249, Cl. 106-12.000.
Occidental Chemical Agricultural Products, Inc.: *See—*
Mills, Harold E.; Murdock, David L.; Ramer, Richard M.; and Sale, Francis M., 4,521,392, Cl. 423-317.000.
Occidental Chemical Corporation: *See—*
Fifolt, Michael J.; and Foster, Arthur M., 4,521,616, Cl. 562-456.000.
O'Connor, James M.; and Lickei, Donald L., to Olin Corporation. Graft copolymers from vinyl monomers and polyurethane oligomers and polyurethanes prepared therefrom. 4,521,546, Cl. 521-137.000.
Octel Communications, Inc.: *See—*
Olson, Peter D.; and Hawes, Samuel R., Jr., 4,521,647, Cl. 179-84.0VF.
Oda, Eiji, to Nippon Electric Co., Ltd. Semiconductor imaging device using charge-coupling device. 4,521,797, Cl. 357-24.000.
Odebrecht, Wolfgang: *See—*
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,520,863, Cl. 165-48.00R.
Odobasic, Steven L. Torsion link. 4,521,003, Cl. 267-57.10A.
Ogawa, Hiroyasu; Izumi, Kazuo; and Shimazaki, Kenji, to Toho Beslon Co., Ltd. Activated carbon fiber spun yarn. 4,520,623, Cl. 57-236.000.
Ogawa, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Vane pump with intermediate rotary casing and drive clutch. 4,521,169, Cl. 418-69.000.
Ogawa, Hitoshi: *See—*
Kiyota, Yuhiko; Tsuji, Katsuyuki; Kume, Satoru; Takada, Hiroaki; Shinsei, Kiyoichi; Matsumoto, Akio; and Ogawa, Hitoshi, 4,520,624, Cl. 60-286.000.
Ogawa, Michitaka: *See—*
Nakamoto, Hiromasa; Ogawa, Michitaka; Kobayashi, Muneo; Nogami, Yuki; Kumamoto, Kazuo; Murakami, Hiroko; Ninagawa, Yoichi; Omura, Yoshiaki; and Mizuno, Masao, 4,521,417, Cl. 514-255.000.
Ogawa, Naoki, to Nissan Motor Co., Ltd. Automotive internal combustion engine with bearing beam structure. 4,520,770, Cl. 123-195.00H.
Ogawa, Naoki: *See—*
Shimonosono, Hitoshi; Ogawa, Naoki; and Hirano, Yoshinori, 4,520,768, Cl. 123-41.440.
Ogawa, Yoh: *See—*
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Ogino, Sekiya: *See—*
Nakayama, Shozo; and Ogino, Sekiya, 4,521,190, Cl. 433-132.000.
Ogino, Takao; Watanabe, Yoichi; and Sano, Shigehisa, to Bridgestone Tire Company Limited. High-durable pneumatic radial tires. 4,520,857, Cl. 152-527.000.
Ogland, Jon W., to United States of America, Air Force. High voltage grounding device for pressurized equipment. 4,521,656, Cl. 200-148.00B.
Oh-ishi, Tokuro; Takeda, Mikio; Nakajima, Hiromichi; and Nagao, Taku, to Tanabe Seiyaku Co., Ltd. 1,5-Benzothiazepin-4-one, their pharmaceutical compositoins, and methods of use. 4,521,430, Cl. 514-211.000.
Ohashi, Hajime: *See—*
Kanematsu, Hiroyuki; Nagae, Akimitsu; Mizoguchi, Kiyohisa; and Ohashi, Hajime, 4,521,860, Cl. 364-474.000.
Ohashi, Mamoru: *See—*
Tamehiro, Hiroshi; Mazuda, Hiroo; Ohashi, Mamoru; and Onoe, Yasumitsu, 4,521,258, Cl. 148-12.00F.
Ohata, Yousuke: *See—*
Motomura, Minoru; Shibata, Kiyoshi; Watanabe, Toshio; and Ohata, Yousuke, 4,521,102, Cl. 355-14.0CU.
Ohba, Koichi: *See—*
Niino, Shuheu; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, 4,520,642, Cl. 72-8.000.
Ohi Seisakusho Co., Ltd.: *See—*
Kagiyama, Tsutomu; and Takaishi, Tatsuyuki, 4,520,914, Cl. 192-71.000.
Ohira, Seiichi: *See—*
Sasaki, Tohru; Endoh, Hiroyuki; and Ohira, Seiichi, 4,521,483, Cl. 428-373.000.
Ohlinger, Manfred: *See—*
Frank, Gerhard; Rudolf, Peter; Neubauer, Gerald; Ohlinger, Manfred; Wilfinger, Hans J.; Pfannebecker, Emil; and Duffner, Paul, 4,521,527, Cl. 502-184.000.
Ohshima, Nobumasa: *See—*
Tamai, Takashi; Tomiyama, Shigefumi; and Ohshima, Nobumasa, 4,520,661, Cl. 73-129.000.
Ohta, Wataru: *See—*
Suzuki, Shoichi; Ohta, Wataru; Sakurai, Noriaki; and Yamashita, Michio, 4,521,133, Cl. 405-195.000.
Ohtsuka, Shuichi; Aotsuka, Yasuo; and Saito, Eiichi, to Fuji Photo Film Co., Ltd. Electrophotographic reversal developing apparatus with control of developing electrode bias potential. 4,521,103, Cl. 355-14.00D.
Ohtsuka, Yasuji; Koike, Yasuhiro; and Yoshida, Motoaki, to Nippon Sheet Glass Co., Ltd. Process for producing light-transmitting element of synthetic resin. 4,521,351, Cl. 264-1.500.
Ohwada, Tetsuya: *See—*
Sano, Yasumasa; and Ohwada, Tetsuya, 4,520,538, Cl. 24-682.000.
Oishibashi, Hirotsugu: *See—*
Hayashi, Mitsuji; Endo, Hideo; Oishibashi, Hirotsugu; Aichi, Takeo; and Sasaki, Shigeru, 4,520,756, Cl. 118-699.000.
Oizumi, Masayuki; Abe, Masaharu; and Fushiki, Yasuo, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Flame-retarded copper-clad laminate. 4,521,491, Cl. 428-458.000.
Oka, Takashi, to Sharp Kabushiki Kaisha. Sheet file mounting-/demounting mechanism in an item selection signal input system. 4,520,583, Cl. 40-378.000.
Oka, Yoshikazu; Nishikawa, Kohei; and Miyake, Akio, to Takeda Chemical Industries, Ltd. Chromanyl glycines. 4,521,607, Cl. 549-39.000.
Okado, Hiroyuki; Masuda, Shigeru; and Mori, Teijiro, to Mitsubishi Denki Kabushiki Kaisha. Electric power switch with slotted commutation end plate. 4,521,655, Cl. 200-147.00R.
Okamoto, Ken: *See—*
Niino, Shuheu; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, 4,520,642, Cl. 72-8.000.
Okamoto, Takeshi; and Minagawa, Shoichi, to Clarion Co., Ltd. Unidirectional transducer for a surface-acoustic-wave device and a method of making same. 4,521,711, Cl. 310-313.00B.
Okazaki, Hideo; Imagome, Hiroshi; Suzuka, Susumu; and Sakai, Kiyoshi, to Hodogaya Chemical Co., Ltd.; and Ricoh Company, Ltd. Carbazole compounds and process for preparing the same. 4,521,605, Cl. 548-440.000.
Okino, Seiki: *See—*
Kandachi, Takayoshi; Okino, Seiki; Yanai, Toshiharu; and Tanaka, Katsuto, 4,521,454, Cl. 427-168.000.
Okitsu, Kiyoshi: *See—*
Watanabe, Shoji; Inoue, Kimio; and Okitsu, Kiyoshi, 4,521,570, Cl. 525-415.000.
Olave, Solozabal y Cia., S.A.: *See—*
Urresti, Jose E. A., 4,520,956, Cl. 227-120.000.
Olin Corporation: *See—*
Boudakian, Max M., 4,521,603, Cl. 546-304.000.
Butt, Sheldon H.; Smith, Edward F., III; and Gyurina, F. Dennis, 4,521,469, Cl. 428-35.000.
Frentzel, Richard L., 4,521,615, Cl. 560-198.000.
Kadija, Igor V., 4,521,281, Cl. 204-25.000.
O'Connor, James M.; and Lickei, Donald L., 4,521,546, Cl. 521-137.000.
Sandel, Bonnie B., 4,521,325, Cl. 252-77.000.
Olsen, Everett O.: *See—*
Gilby, Anthony C.; Lewis, Edward L.; and Olsen, Everett O., 4,521,684, Cl. 250-227.000.
Olsen, Ole B.; Bilik, Charles W.; Johnson, Herbert H.; and Jozepaitis, Charles M., to Nash Engineering Company, The. Noise control for conically ported liquid ring pumps. 4,521,161, Cl. 417-68.000.
Olsen, Robert C.: *See—*
Edwards, Bryant; Klygis, M. Julius; and Olsen, Robert C., 4,520,924, Cl. 206-150.000.

Olshansky, Alexis; and Guild, Gerald A., to Beloit Corporation. Motor driven slitter of narrow configuration. 4,520,704, Cl. 83-499.000.
Olson, Peter D.; and Hawes, Samuel R., Jr., to Octel Communications, Inc. Tone detection system and method. 4,521,647, Cl. 179-84.0VF.
Olstowski, Franciszek; and Peffley, Richard D., to Dow Chemical Company, The. Non-aqueous urea-polyether gel compositions and a method for their preparation. 4,521,330, Cl. 252-51.50R.
Olympus Optical Co., Ltd.: *See—*
Horikawa, Yoshiaki, 4,521,108, Cl. 356-123.000.
Kobayashi, Minoru; and Nemoto, Shigeru, 4,521,821, Cl. 360-137.000.
Kurihara, Takashi, 4,521,084, Cl. 350-432.000.
Kurita, Hiroyuki, 4,521,086, Cl. 350-464.000.
Togino, Takayoshi, 4,521,083, Cl. 350-414.000.
Omata, Takashi: *See—*
Suzuki, Akiyoshi; Sato, Hirosi; Omata, Takashi; and Kosugi, Masao, 4,521,082, Cl. 350-405.000.
Omholt, Bruce D. Motorcycle. 4,520,891, Cl. 180-219.000.
OMI International Corporation: *See—*
Tremmel, Robert A., 4,521,282, Cl. 204-52.00R.
Omni Devices, Inc.: *See—*
Alton, Michael J., 4,521,771, Cl. 340-705.000.
Omura, Yoshiaki: *See—*
Nakamoto, Hiromasa; Ogawa, Michitaka; Kobayashi, Muneo; Nogami, Yuki; Kumamoto, Kazuo; Murakami, Hiroko; Ninagawa, Yoichi; Omura, Yoshiaki; and Mizuno, Masao, 4,521,417, Cl. 514-255.000.
O'Neal, Chester L. Disposable toothbrush with cap. 4,521,128, Cl. 401-183.000.
Ong, Poen S.; Zermeno, Alfonso; Marsh, Lee M., Jr.; Hevezi, James M.; and Cowart, Ronald W., to University of Texas System. Electrostatic imaging apparatus. 4,521,808, Cl. 358-111.000.
Ono, Yoshio; and Sakamoto, Seiya, to Dainippon Screen Mfg. Co., Ltd. Method and apparatus for simultaneously outputting a graphic signal and an alphanumeric signal by using an image reproducing system. 4,521,814, Cl. 358-296.000.
Onoe, Akira: *See—*
Kato, Taketoshi; and Onoe, Akira, 4,521,801, Cl. 357-71.000.
Onoe, Yasumitsu: *See—*
Tamehiro, Hiroshi; Mazuda, Hiroo; Ohashi, Mamoru; and Onoe, Yasumitsu, 4,521,258, Cl. 148-12.00F.
Ontario Research Foundation: *See—*
Brandstatter, Hans G., 4,521,385, Cl. 423-76.000.
Onzou, Michio: *See—*
Sato, Hideyori; Inaba, Nobuaki; Arai, Mitsuru; and Onzou, Michio, 4,520,625, Cl. 60-464.000.
Oouchi, Tomihisa; Usui, Sampei; Fukuda, Tamio; and Nishiguchi, Akira, to Hitachi, Ltd. Multi-stage absorption refrigeration system. 4,520,634, Cl. 62-476.000.
Orchard Machinery Corporation: *See—*
Brandt, Richard W., 4,521,468, Cl. 428-35.000.
Orgeron, Orey C. Fire escape apparatus for use in high-rise buildings and the like. 4,520,900, Cl. 182-238.000.
Oriental Metal Mfg. Co., Ltd.: *See—*
Tsumura, Kenji; and Yamashita, Masayuki, 4,521,276, Cl. 159-1.00W.
Orr, Allie E. Adjustable reflector for illuminating devices. 4,521,834, Cl. 362-139.000.
Orsic, Milo, to AT&T Bell Laboratories. Time-slot interchanger for fast circuit switching. 4,521,880, Cl. 370-68.000.
Orthner, Gordon W.: *See—*
Adsit, Gordon H., 4,521,116, Cl. 366-54.000.
Osborn, Norbert L. Turbocharger compressor housing. 4,521,155, Cl. 415-190.000.
Osgood Industries, Inc.: *See—*
Mueller, Martin, 4,521,264, Cl. 156-184.000.
Osial, Thaddeus A.; Bosna, Alexander A.; and Kulak, Richard J., to Westinghouse Electric Corp. Method of hermetically laser sealing electronic packages. 4,521,668, Cl. 219-121.0LC.
Osinski, Ulrich: *See—*
Althausen, Ferdinand; Proksa, Ferdinand; and Osinski, Ulrich, 4,520,947, Cl. 222-63.000.
Osterholt, Gerd: *See—*
Lorenz, Kurt; Bruns, Engelbert; and Osterholt, Gerd, 4,521,279, Cl. 202-227.000.
Ostermaier, John J., to Du Pont de Nemours, E. I., and Company. Recovery of arylboranes. 4,521,628, Cl. 568-1.000.
Osterreichische Schiffswerften Aktiengellschaft Linz-Korneuburg: *See—*
Anger, Anton, 4,521,178, Cl. 425-548.000.
Oswald, Charles W., to Caterpillar Tractor Co. Mounting apparatus for a control lever. 4,521,650, Cl. 200-61.880.
Oswald, William A.: *See—*
Gueldenpfennig, Klaus; Russell, Stanley L.; Oswald, William A.; Breidenstein, Charles J.; and Narula, Karam V., 4,521,879, Cl. 370-62.000.
Otake, Etsuo; Kimura, Mamoru; Yokota, Hiromu; and Kanematu, Tetuo, to Daicel Chemical Industries, Ltd. Low-melting glass paste and cellulose nitrate therefor. 4,521,251, Cl. 106-183.000.
Otake, Noboru; Seto, Haruo; Sasaki, Tetsuo; Sugita, Masanori; Natori, Yohei; and Sueda, Noriyoshi, to Nisshin Flour Milling Co., Ltd. Ansatrienols. 4,521,339, Cl. 260-239.30B.
Otis Elevator Company: *See—*
Rado, David J.; and Coste, Steven D., 4,520,904, Cl. 187-29.00R.
Otten, Heinrich, to Franz Kuhlmann Prazisionsmechanik und Maschinenbau GmbH & Co. KG. Guide rail for a drawing machine carriage. 4,520,573, Cl. 33-438.000.
Otto, Maurice J.; and Peridont, Jean-Pierre, to Societe Anonyme dite: Etudes et Fabrications Optiques. Grinding or polishing machine for optical lenses. 4,520,596, Cl. 51-55.000.
Ouchi, Hideyuki: *See—*
Yoshida, Takashi; Fujie, Masakatsu; Matsuno, Junichi; and Ouchi, Hideyuki, 4,521,813, Cl. 358-296.000.
Oury, Jean-Claude, to Societe anonyme dite: Prestinox S.A. Attachment for supplying a filler wire to an electric soldering iron of the pen type. 4,521,673, Cl. 219-230.000.
Ouwerkerk, Johannes H. W.; Lucieer, Wouter B.; and Cramer, Rudolph E., to Hoogovens Groep B.V. Arrangement for mixing a gas into a main flow of a second gas. 4,521,117, Cl. 366-165.000.
Overbergh, Noel M. M.; Doucet, Jos; and Vansant, Jan, to N.V. Raychem S. A. Dimensionally heat recoverable article. 4,521,470, Cl. 428-36.000.
Ovshinsky, Stanford R.; Hudgens, Stephen J.; and Kastner, Marc A., to Sovonics Solar Systems. Method and apparatus for making layered amorphous semiconductor alloys using microwave energy. 4,521,447, Cl. 427-45.100.
Owens-Corning Fiberglas Corporation: *See—*
Aubourg, Patrick F.; and Fabricant, Barbara L., 4,521,523, Cl. 501-30.000.
Owens, Ester L., to Eldridge, Gordon E., a part interest. Valve testing apparatus. 4,520,655, Cl. 73-46.000.
Oxide & Chemical Corporation: *See—*
McKinney, Benjamin F., 4,521,399, Cl. 423-620.000.
Oyama, Kiyotaka; Irino, Shigeaki; Harada, Tsuneo; and Nakamura, Masao, to Toyo Soda Manufacturing Co., Ltd.; Ajinomoto Co., Inc.; and Sagami Chemical Research Center. Process for producing an addition compound of a dipeptide ester and an amino acid ester. 4,521,514, Cl. 435-70.000.
Ozawa, Chiaki, to Bridgestone Tire Company Limited. Tire building apparatus. 4,521,269, Cl. 156-420.000.
Ozawa, Kunitaka: *See—*
Ayata, Naoki; Saito, Seiji; Suzuki, Hidetoshi; Ozawa, Kunitaka; Koumura, Noboru; and Kazuma, Koji, 4,521,805, Cl. 358-75.000.
Ozawa, Masuo; and Hirota, Toshio, to Nissan Motor Co., Ltd. Starter for an alcohol engine. 4,520,764, Cl. 123-3.000.
Pacific Atlantic Products, Ltd.: *See—*
Lummis, Michael G., 4,520,589, Cl. 43-43.120.
Pall Corporation: *See—*
Pall, David B., 4,521,309, Cl. 210-493.200.
Pall, David B., to Pall Corporation. Filter cartridge with castellated support and process of making the same. 4,521,309, Cl. 210-493.200.
Palmer, David A.; and Palmer, James K., to Montedoro-Whitney Corporation. Field-portable calibration unit for electromagnetic flow meters. 4,520,650, Cl. 73-3.000.
Palmer, James K.: *See—*
Palmer, David A.; and Palmer, James K., 4,520,650, Cl. 73-3.000.
Palmlin, Peter: *See—*
Bengtsson, Bengt L.; Palmlin, Peter; and Saldert, Bertil K., 4,521,439, Cl. 426-509.000.
Panchenko, Anatoly I.: *See—*
Yarygin, Vladimir I.; Sannikov, Jury I.; Panchenko, Anatoly I.; Sychev, Anatoly P.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; and Toguzov, Mels Z., 4,521,245, Cl. 75-21.000.
Pannell, Reginald J. H.: *See—*
Gange, Lester; and Pannell, Reginald J. H., 4,520,754, Cl. 118-626.000.
Pannell, Reginald James Harding: *See—*
Gange, Lester; and Pannell, Reginald J. H., 4,520,754, Cl. 118-626.000.
Papenfuhs, Theodor; and Volk, Heinrich, to Hoechst Aktiengesellschaft. Process for preparing pure alkyl 1-hydroxy-2-naphthoates. 4,521,617, Cl. 562-467.000.
Paper Converting Machine Company: *See—*
DuFresne, Allen J., 4,521,209, Cl. 493-432.000.
Ecker, Harold; and Spencer, Harvey J., 4,520,728, Cl. 101-248.000.
Pardue, E. Forrest: *See—*
Canada, Ronald G.; Piety, Kenneth R.; Simpson, Daniel G.; and Pardue, E. Forrest, 4,520,674, Cl. 73-660.000.
Parker, Dane K.: *See—*
Patterson, Dennis B.; Parker, Dane K.; and Hess, Lloyd D., Jr., 4,521,574, Cl. 526-204.000.
Parkinson, Francis J., to British Nuclear Fuels plc. Pumping system. 4,521,162, Cl. 417-138.000.
Parkyn, William A.; Ladd, Horace W.; and Mellon, Andrew M. Solar collector having tank and glazing construction. 4,520,795, Cl. 126-443.000.
Parlman, Robert M.; and Bresson, Clarence R. Ore flotation with combined collectors. 4,521,300, Cl. 209-166.000.
Parsons, Natan E. Ultrasonic flow-control system. 4,520,516, Cl. 4-623.000.
Pascarella, Vincent J.: *See—*
Solomon, Donald D.; McGary, Charles W.; and Pascarella, Vincent J., 4,521,564, Cl. 525-54.100.
Pask, George, to Rolls-Royce Limited. Load distribution member. 4,521,159, Cl. 416-174.000.
Pasko, Walter J., Jr.; and Rathbun, William H., to General Electric Company. Methods for assembling a transformer core. 4,520,556, Cl. 29-606.000.

Passarotti, Carlo: *See—*
Doria, Gianfederico; Passarotti, Carlo; Lovisolo, Pier P.; and Buttinoni, Ada, 4,521,419, Cl. 514-267.000.

Pastor, Stephen D.: *See—*
Spivack, John D.; and Pastor, Stephen D., 4,521,320, Cl. 252-47.500.

Patel, Arvind D.: *See—*
Chen, Robert G.; Patel, Arvind D.; and Sample, Thomas E., Jr., 4,521,578, Cl. 526-288.000.

Patterson, Dennis B.; Parker, Dane K.; and Hess, Lloyd D., Jr., to Goodyear Tire & Rubber Company, The. Incorporation of functionalized monomers. 4,521,574, Cl. 526-204.000.

Paulson, Charles M., Jr.; and Faulhaber, Mark E., to Du Pont de Nemours, E. I., and Company. Apparatus for measurement of molecular orientation. 4,521,111, Cl. 356-367.000.

Paulus, Wilfried: *See—*
Schmitt, Hans-Georg; Reinecke, Paul; Paulus, Wilfried; Genth, Hermann; and Radt, Walter, 4,521,412, Cl. 514-244.000.

Paust, Joachim: *See—*
Fischer, Rolf; Weitz, Hans-Martin; and Paust, Joachim, 4,521,342, Cl. 260-410.000.

Pauzin, Alexis. Sheet-metal bending brake. 4,520,646, Cl. 72-313.000.

Pav, Josef; and Wenzel, Reinhard, to Kleinewefers GmbH. Pressure roll for use in calenders or the like. 4,520,723, Cl. 100-162.00B.

Pearson, Robert L.: *See—*
Hastings, Jerome K.; Bigelow, James H.; and Pearson, Robert L., 4,521,757, Cl. 335-79.000.

Peck, Daniel A.; and Callaghan, Vincent M., to Combustion Engineering, Inc. Vessel liquid level indication. 4,521,371, Cl. 376-245.000.

Pedjac, Joseph J., to Dow Chemical Company, The. Bromination process. 4,521,633, Cl. 568-639.000.

Peebles, William C., Jr.; and Bowers, Cecil W., to Flanders Filters,Inc. Housing for high efficiency particulate air filters. 4,521,234, Cl. 55-481.000.

Peffley, Richard D.: *See—*
Olstowski, Franciszek; and Peffley, Richard D., 4,521,330, Cl. 252-51.50R.

Pegg, David T.; Doddrell, David M.; and Bendall, Max R. Pulse sequence for use in performing nuclear magnetic resonance spectroscopy. 4,521,732, Cl. 324-300.000.

Pelham, Russell W.; Redden, Charlotte S.; Eshkol, Aliza; and Stiles, Gerald E., to Serono Pharmaceutical Partners. Treatment of acquired immune deficiency syndrome with thymus extract. 4,521,407, Cl. 424-95.000.

Pellegrino, Peter P. Method for mass producing printed circuit boards. 4,521,262, Cl. 156-150.000.

Penneck, Richard J., to Raychem Corporation. High voltage insulating materials. 4,521,549, Cl. 523-173.000.

Pennington, Edward M.: *See—*
Raupuk, Milton W., Jr.; and Pennington, Edward M., 4,520,513, Cl. 4-302.000.

Pennwalt Corporation: *See—*
Milora, David J., 4,521,332, Cl. 252-527.000.

Pentel Kabushiki Kaisha: *See—*
Sakaoka, Gouji; and Ishikawa, Takashi, 4,521,126, Cl. 401-65.000.

Peraud, Jean-Claude: *See—*
Fournier, Pascal; and Peraud, Jean-Claude, 4,520,859, Cl. 164-253.000.

Peridont, Jean-Pierre: *See—*
Otto, Maurice J.; and Peridont, Jean-Pierre, 4,520,596, Cl. 51-55.000.

Perilstein, Warren L., to Ethyl Corporation. Alcohol based fuels containing corrosion inhibitors. 4,521,219, Cl. 44-55.000.

Peroutky, Donald C.: *See—*
Case, Allen W., Jr.; and Peroutky, Donald C., 4,521,670, Cl. 219-130.010.

Perry, George J.: *See—*
Kuehnle, Manfred R.; Perry, George J.; and Rose, Robert M., 4,521,097, Cl. 355-3.00R.

Peters, Charles W. Resiliently flexible toothbrush. 4,520,526, Cl. 15-167.00R.

Peters, Leo. Hamburger-type meat patties. 4,521,435, Cl. 426-92.000.

Petersen, Thomas D. Collateral ligament retractor. 4,520,797, Cl. 128-20.000.

Peterson, Bruce W.: *See—*
Cuscurida, Michael; and Peterson, Bruce W., 4,521,572, Cl. 525-507.000.

Peterson, Donald A.: *See—*
Sagness, Ronald L.; and Peterson, Donald A., 4,520,790, Cl. 126-109.000.

Peterson Mfg. Co.: *See—*
Templeman, Arthur R., 4,520,983, Cl. 248-481.000.

Peterson, Richard L.; Scheurer, Roger J.; and Steinberg, Richard W., to Hiniker Company. Gauge and guide wheel assembly. 4,520,876, Cl. 172-427.000.

Peterson, William A., to AT&T Bell Laboratories. Low offset voltage transistor bridge transconductance amplifier. 4,521,739, Cl. 330-257.000.

Petit, Jean-Pierre; and Maitre, Xavier. Distributed arithmetic oversampling recursive digital filter. 4,521,866, Cl. 364-724.000.

Petras, Jeffrey L.: *See—*
Worley, Robert F.; and Petras, Jeffrey L., 4,520,609, Cl. 52-729.000.

Petrovic, Branko. Circuit arrangement for indicating the names of broadcasting stations in radio or TV receivers. 4,521,914, Cl. 455-158.000.

Pettit, John R.: *See—*
Slyker, Richard W.; and Pettit, John R., 4,521,040, Cl. 285-140.000.

Pettus, John A.: *See—*
Jenkins, Richard L.; Pettus, John A.; and Abner, David K., 4,521,225, Cl. 55-18.000.

Peugeot, Richard S., to Ridge, Inc. Microfocus X-ray system. 4,521,902, Cl. 378-138.000.

Pezzolo, Donald E.; Pfeiffer, James W.; and Corder, Thomas E., to Intermatic Incorporated. Programmable wall switch for controlling lighting times and loads. 4,521,843, Cl. 364-145.000.

Pfannebecker, Emil: *See—*
Frank, Gerhard; Rudolf, Peter; Neubauer, Gerald; Ohlinger, Manfred; Wilfinger, Hans J.; Pfannebecker, Emil; and Duffner, Paul, 4,521,527, Cl. 502-184.000.

Pfeiffer, James W.: *See—*
Pezzolo, Donald E.; Pfeiffer, James W.; and Corder, Thomas E., 4,521,843, Cl. 364-145.000.

Pfizer Inc.: *See—*
Hamanaka, Ernest S.; and Stam, John G., 4,521,533, Cl. 514-80.000.

Pfriender, John A. Animal house. 4,520,758, Cl. 119-19.000.

Phaal, Cornelius. Tool component. 4,520,881, Cl. 175-329.000.

Phaneuf, Charles A., to United Technologies Corporation. Series switching regulator. 4,521,725, Cl. 323-282.000.

Phelps Dodge Magnet Wire Co.: *See—*
Hilker, G. Daniel; Lausen, Verne H.; Coon, Jessie H.; Bodette, James E.; Grimes, Jerry L.; Wright, Roger D.; Disque, Donny R.; and Bultemeier, Keith D., 4,521,173, Cl. 425-113.000.

Phelps, Weldon L.; and Stahl, Alan L., to Caterpillar Tractor Co. Multiple threshold wheel slip control apparatus and method. 4,521,856, Cl. 364-426.000.

Philips, Franciscus M.; and de Jong, Koenraad A. Combination of a hoistdrum and hoistcable for a winch. 4,520,999, Cl. 254-278.000.

Phillips, Kenneth G., to Nalco Chemical Company. Acrylamide synthesis from an oil-in-water emulsion containing acrylonitrile. 4,521,620, Cl. 564-128.000.

Phillips, William E. Inflatable air pump. 4,521,166, Cl. 417-478.000.

Photomeca S.A.: *See—*
Ferrante, Mario, 4,521,092, Cl. 354-320.000.

Physical Systems, Inc.: *See—*
Hutter, Charles G., III, 4,520,836, Cl. 137-59.000.

Piaggio & C. S.p.A.: *See—*
Doveri, Carlo, 4,521,208, Cl. 474-101.000.

Picazo, Jose J., Jr.: *See—*
Biba, Kenneth J.; and Picazo, Jose J., Jr., 4,521,891, Cl. 375-8.000.

Pickens, Stanley R., to PPG Industries, Inc. Electro organic method and apparatus for carrying out same. 4,521,283, Cl. 204-59.00R.

Picker International, Ltd.: *See—*
Burl, Michael; and Young, Ian R., 4,520,828, Cl. 128-653.000.

Pickering, William: *See—*
Melocik, Grant C.; and Pickering, William, 4,521,885, Cl. 371-29.000.

Pierantozzi, Ronald, to Air Products and Chemicals, Inc. Process for producing dimethyl ether form synthesis gas. 4,521,540, Cl. 518-717.000.

Pierquin, Jean-Claude, to Essilor International (Compagnie Generale d'Optique). Spectacle frame with removable face assembly. 4,521,090, Cl. 351-124.000.

Piety, Kenneth R.: *See—*
Canada, Ronald G.; Piety, Kenneth R.; Simpson, Daniel G.; and Pardue, E. Forrest, 4,520,674, Cl. 73-660.000.

Pigeon, Michel; and Saglio, Robert, to Commissariat a l'Energie Atomique. Device for positioning a member facing each of the perforations of a perforated plate in accordance with a given grid. 4,521,150, Cl. 414-749.000.

Pignolet, Louis: *See—*
Isaac, Olivier; and Pignolet, Louis, 4,520,845, Cl. 137-624.270.

Pinson, George T., to Boeing Company, The. Target seeker used in a pointer and tracking assembly. 4,521,782, Cl. 343-765.000.

Pinto, Akiva. Fiber feeding apparatus with a pivoted air exhaust wall portion. 4,520,530, Cl. 19-105.000.

Pioneer Electronic Corporation: *See—*
Nakayama, Kazuaki, 4,521,740, Cl. 330-267.000.

Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, to International Flavors & Fragrances Inc. 4(Hydrocarbylthio)acetoacetic esters. 4,521,613, Cl. 560-152.000.

Place, George H., Jr.: *See—*
Ziehm, Richard T.; Wilczek, Stephen P.; Baker, George E.; Husted, Raymond R.; Dumas, Glen A.; Bunker, Keith G.; and Place, George H., Jr., 4,521,847, Cl. 364-184.000.

Plas, Jean J. R.: *See—*
Puttemanns, Louis; and Plas, Jean J. R., 4,521,836, Cl. 362-145.000.

Plath, Peter; Rohr, Wolfgang; Schwendemann, Volker; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Heterocyclic dihaloacetamides, and herbicides which contain acetanilides as herbicidal active ingredients and the dihaloacetamides as antagonistic agents. 4,521,604, Cl. 548-301.000.

Plavac, Frank, to Chevron Research Company. Poly(oxyalkylene) aminoether carbamates as deposit control additives. 4,521,610, Cl. 560-27.000.

Plyler, Robert G.: *See—*
Nestor, Charles R.; Plyler, Robert G.; and Cross, William E., 4,521,065, Cl. 339-75.0MP.

Pocius, Alphonsus V.; and Schultz, William J., to Minnesota Mining and Manufacturing Co. Two-part epoxy composition. 4,521,490, Cl. 428-416.000.

Podszun, Wolfgang; Simm, Walter; Goossens, John; and Suling, Carlhans, to Agfa-Gevaert Aktiengesellschaft. Electrostatographic suspension developer and process for the production thereof. 4,521,505, Cl. 430-112.000.

Pohl, Wolfgang D.: *See—*
Bednorz, Johannes G.; Hollis, Ralph L., Jr.; Lanz, Martin; Pohl, Wolfgang D.; and Yeack-Scranton, Celia E., 4,520,570, Cl. 33-180.00R.

Pohlenz, Jack B.: *See—*
Samish, Norman C.; and Pohlenz, Jack B., 4,521,388, Cl. 423-235.000.

Polaroid Corporation: *See—*
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,521,588, Cl. 528-363.000.

Poler, Stanley. Method of making a lens and haptic assembly. 4,521,273, Cl. 156-630.000.

Polybottle: *See—*
Lyons, Gerard E., 4,520,936, Cl. 215-1.00C.

Pomeroy, Gary G. Portable exercise device. 4,521,009, Cl. 272-73.000.

Pommer, Ernst-Heinrich: *See—*
Meyer, Norbert; Zeeh, Bernd; Buschmann, Ernst; and Pommer, Ernst-Heinrich, 4,521,429, Cl. 514-383.000.

Pommier, Alain Gaston, heir: *See—*
Pommier, Jean, deceased, 4,520,856, Cl. 152-454.000.

Pommier, Jean, deceased (by Pommier, Alain Gaston, heir), to Compagnie Generale des Establissements Michelin. Radial tire for heavy loads. 4,520,856, Cl. 152-454.000.

Ponghis, Nikolas G.; and Poos, Arthur G., to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Operating a blast furnace with the injection of hot reducing gases. 4,521,246, Cl. 75-42.000.

Ponjee, Johannes J.; Nelissen, Johan W. A.; and Verwijlen, Christiaan J. A., to U.S. Philips Corporation. Method of providing a metal layer on a substrate. 4,521,444, Cl. 427-41.000.

Pont-A-Mousson, S.A.: *See—*
Fournier, Pascal; and Peraud, Jean-Claude, 4,520,859, Cl. 164-253.000.

Poos, Arthur G.: *See—*
Ponghis, Nikolas G.; and Poos, Arthur G., 4,521,246, Cl. 75-42.000.

Pope, David W.: *See—*
Frater, John S.; and Pope, David W., 4,521,151, Cl. 415-131.000.

Poradish, Frank J.: *See—*
Logan, Russell H.; and Poradish, Frank J., 4,521,861, Cl. 364-517.000.

Porter, Michael R.; and Elliott, Ross W. Tube-welding auxiliary. 4,521,669, Cl. 219-125.110.

Portescap: *See—*
Claude, Oudet, 4,521,723, Cl. 318-696.000.

Portilla, Mario. Sewing machine with articulated table assembly. 4,520,744, Cl. 112-260.000.

Posalux S.A.: *See—*
Imhof, Werner, 4,520,551, Cl. 29-568.000.

Potiron, Andre: *See—*
Bonnot, Guy; Laviolette, Pierre; Potiron, Andre; and Deysson, Jean-Yves, 4,521,353, Cl. 264-8.000.

Potter, Steven E.: *See—*
Engelke, Claude W.; Sutton, Gerald E.; and Potter, Steven E., 4,521,354, Cl. 264-46.600.

Poulsen, Bo, to AGA AB. Encoded cap for a pressurized gas cylinder. 4,521,676, Cl. 235-375.000.

Powers, John H.; and Remaley, Edward G., to Aluminum Company of America. One step sealing process. 4,521,463, Cl. 427-435.000.

PPG Industries, Inc.: *See—*
Heithoff, Robert B., 4,521,235, Cl. 65-29.000.
Heithoff, Robert B., 4,521,238, Cl. 65-135.000.
Pickens, Stanley R., 4,521,283, Cl. 204-59.00R.

Prawdzik, Joseph F., to Tiger Products, Inc. Kicker wheel with replaceable surface for bowling apparatus. 4,521,019, Cl. 273-49.000.

Precision Metal Fabricators, Inc.: *See—*
Lenhart, Ronald A., 4,521,130, Cl. 406-86.000.

Preikschat, Fritz K. Target simulation system. 4,521,780, Cl. 343-17.700.

Prescher, Gunter: *See—*
Arntz, Dietrich; Prescher, Gunter; Burkhardt, Werner; Heilos, Johannes; and Manner, Reinhard, 4,521,618, Cl. 562-535.000.

Presto Lock, Inc.: *See—*
Bako, Lazlo, 4,520,641, Cl. 70-312.000.

Price, Martin B.: *See—*
Rehfuss, John W.; Hazelwood, Louis S.; Price, Martin B.; and Zilke, Robert W., Jr., 4,521,489, Cl. 428-412.000.

Price, William E.; Galloway, Louie A., III; Lowrey, Charles B.; and Lewis, Donald R., to Nuclear Monitoring Systems & Management Corporation. Apparatus and method for monitoring stored material. 4,521,372, Cl. 376-250.000.

Price, William M. Nutcracker for cracking hard-shell nuts such as black walnuts and macadamia nuts. 4,520,719, Cl. 99-578.000.

Prince Corporation: *See—*
Cody, Michael J.; and Spykerman, Scott A., 4,521,051, Cl. 296-97.00H.

Pringle, Ronald E., to Camco, Incorporated. Well flow control device. 4,520,870, Cl. 166-317.000.

Pritchett, James D.: *See—*
Jordan, William D.; Hundt, Roger C.; and Pritchett, James D., 4,521,827, Cl. 361-386.000.

Pritzkow, Dennis H., to General Electric Company. Modular radiation-detecting array. 4,521,689, Cl. 250-385.000.

Proksa, Ferdinand: *See—*
Althausen, Ferdinand; Proksa, Ferdinand; and Osinski, Ulrich, 4,520,947, Cl. 222-63.000.

Propane Carburetion Systems, Inc.: *See—*
Batchelor, William H., 4,520,785, Cl. 123-525.000.

Prosenbauer, Otto, to Inject Star Pokelmaschinen Gessellschaft m.b.H. Equipment for massaging of meat. 4,520,718, Cl. 99-535.000.

Proud, Joseph M.: *See—*
Byszewski, Wojciech W.; Budinger, A. Bowman; and Proud, Joseph M., 4,521,718, Cl. 315-99.000.

Prueter, Elton D.: *See—*
Laursen, Larry J.; and Prueter, Elton D., 4,520,547, Cl. 29-469.500.

Prvanoff, Ivan. Vehicle supported collapsible bed with shelter cover. 4,521,048, Cl. 296-160.000.

Purdes, Andrew J., to Texas Instruments Incorporated. Plasma etch chemistry for anisotropic etching of silicon. 4,521,275, Cl. 156-643.000.

Putney, Scott D.: *See—*
Benkovic, Stephen J.; Putney, Scott D.; and Schimmel, Paul R., 4,521,509, Cl. 435-6.000.

Putt, James C.: *See—*
Fisher, John M.; and Putt, James C., 4,520,838, Cl. 137-69.000.

Puttemanns, Louis; and Plas, Jean J. R. Elevated airport runway, taxiway, or threshold edge light with sealed glass dome. 4,521,836, Cl. 362-145.000.

Q-Dot, Inc.: *See—*
Gradl, David A., 4,521,752, Cl. 333-165.000.

Qsine Corporation Limited: *See—*
Saruwatari, Minoru, 4,521,059, Cl. 301-36.00R.

Quest, Thomas A. Orthopaedic apparatus. 4,520,803, Cl. 128-80.00A.

Quinlan, William P.: *See—*
Dix, Gary L.; Heim, Lloyd S.; Herald, Robert F.; and Quinlan, William P., 4,521,884, Cl. 371-15.000.

Quintin, Philip G.: *See—*
Cook, Brian A.; and Quintin, Philip G., 4,521,839, Cl. 362-238.000.

Rado, David J.; and Coste, Steven D., to Otis Elevator Company. Elevator leveling signal error and correction. 4,520,904, Cl. 187-29.00R.

Radt, Walter: *See—*
Schmitt, Hans-Georg; Reinecke, Paul; Paulus, Wilfried; Genth, Hermann; and Radt, Walter, 4,521,412, Cl. 514-244.000.

Raghunathan, Kuppuswamy, to Motorola, Inc. Voltage detecting circuit. 4,521,696, Cl. 307-350.000.

Rajkanan, Kamal; and Multani, Jagir S., to General Instrument Corporation. Memory implant profile for improved channel shielding in electrically alterable read only memory semiconductor device. 4,521,796, Cl. 357-23.500.

Rajotte, Paul T.: *See—*
Morris, Robert A.; Kiesel, George W.; and Rajotte, Paul T., 4,521,824, Cl. 361-45.000.

Ramer, Richard M.: *See—*
Mills, Harold E.; Murdock, David L.; Ramer, Richard M.; and Sale, Francis M., 4,521,392, Cl. 423-317.000.

Rampe, John F., to Jepmar. Bowl-type vibratory finishing machine. 4,520,598, Cl. 51-163.200.

Rand, Roy E., to Imatron Associates. Electron beam control assembly and method for a scanning electron beam computed tomography scanner. 4,521,900, Cl. 378-137.000.

Rand, Roy E., to Imatron Associates. Scanning electron beam computed tomography scanner with ion aided focusing. 4,521,901, Cl. 378-138.000.

Randall, Malcolm W.: *See—*
Davis, Walter L.; Messenger, Dale; and Randall, Malcolm W., 4,520,702, Cl. 83-71.000.

Ranghelli, Joseph C.; and La Bella, Joseph A., to International Telephone and Telegraph Corporation. Tuning and temperature compensation arrangement for microwave resonators. 4,521,754, Cl. 333-224.000.

Rantell, Terry D.: *See—*
Clarke, James W.; Kimber, Geoffrey M.; Rantell, Terry D.; and Snape, Colin E., 4,521,291, Cl. 208-8.0LE.

Rasmussen, Donald O.; Chow, William C.; and Davio, Franklin J., to Kennedy Company. Cartridge tape drive having vacuum autothreading. 4,520,970, Cl. 242-195.000.

Rathbun, William H.: *See—*
Pasko, Walter J., Jr.; and Rathbun, William H., 4,520,556, Cl. 29-606.000.

Rau, Bantwal R.; Glaeser, Christopher D.; and Kuekes, Philip J., to TRW Inc. Random access memory device. 4,521,874, Cl. 365-221.000.

Raupuk, Milton W., Jr.; and Pennington, Edward M., to United States of America, Navy. Automatic vacuum urinal flush mechanism. 4,520,513, Cl. 4-302.000.

Ray, Joe R., to Noble Automated Systems, Inc. Method of and apparatus for preventing segregation of aggregate. 4,520,918, Cl. 198-640.000.

Ray, Joe R., to Noble Automated Systems, Inc. Variable stroke drive mechanism. 4,520,920, Cl. 198-761.000.

Raychem Corporation: *See—*
Penneck, Richard J., 4,521,549, Cl. 523-173.000.
Tondre, Stephen L.; and Lunk, Hans E., 4,521,485, Cl. 428-383.000.

Rayl, Martin: *See—*
Whitley, George J.; Rayl, Martin; and Squire, William, 4,520,549, Cl. 29-566.300.

Raymor, Willard E.; and Hedegard, Peter L. Method for washing a fibrous mat. 4,521,255, Cl. 134-33.000.

Raytheon Company: *See—*
Schloemann, Ernst F. R. A., 4,521,753, Cl. 333-204.000.
RCA Corporation: *See—*
Bendell, Sidney L., 4,521,804, Cl. 358-51.000.
Brown, Richard, 4,520,561, Cl. 29-840.000.
Butterwick, Gilbert N., 4,521,713, Cl. 313-378.000.
D'Augustine, Frank T., 4,521,501, Cl. 430-24.000.
Dingwall, Andrew G. F., 4,521,703, Cl. 307-530.000.
Eide, Daniel L., 4,521,026, Cl. 277-134.000.
Faulkner, Richard D.; and McDonie, Arthur F., 4,521,715, Cl. 313-531.000.
Fisher, Albert W., 4,520,554, Cl. 29-591.000.
Halsey, Jay F.; and Briggs, Jeffrey M., 4,520,604, Cl. 52-200.000.
Nigborowicz, John J.; and Friedline, Karl L., 4,521,810, Cl. 358-181.000.
Stoughton, John W.; and Willis, Donald H., 4,521,811, Cl. 358-243.000.
Vaccaro, Frank E.; and Kowalik, John, 4,521,714, Cl. 313-422.000.
Whitley, George J.; Rayl, Martin; and Squire, William, 4,520,549, Cl. 29-566.300.
Wine, Charles M., 4,521,916, Cl. 455-182.000.
Rea, Gerald M.; Stoff, William G.; and Zens, John F., to General Motors Corporation. Shroud top vent grille retaining means. 4,521,050, Cl. 296-192.000.
Reaser, Brian K. Bed sheet installation and retention. 4,520,518, Cl. 5-498.000.
Rebafka, Walter; Heilen, Gerd; Halbritter, Klaus; and Franzischka, Wolfgang, to BASF Aktiengesellschaft. Preparation of pyridines or pyrroles from α,ω-dinitriles. 4,521,602, Cl. 546-184.000.
Rebman, Jack, to Lord Corporation. Tactile sensor for an industrial robot or the like. 4,521,685, Cl. 250-229.000.
Redden, Charlotte S.: *See—*
Pelham, Russell W.; Redden, Charlotte S.; Eshkol, Aliza; and Stiles, Gerald E., 4,521,407, Cl. 424-95.000.
Redding, John R.; and Hunter, Patrick F., to Redding, John Robert. Bale handling machine. 4,521,149, Cl. 414-44.000.
Redding, John Robert: *See—*
Redding, John R.; and Hunter, Patrick F., 4,521,149, Cl. 414-44.000.
Reddy, Chitranjan N., to Texas Instruments Incorporated. High-speed low-power delayed clock generator. 4,521,701, Cl. 307-482.000.
Reese, Morris T.: *See—*
Aultman, William H.; and Reese, Morris T., 4,521,830, Cl. 361-433.000.
Rehfuss, John W.; Hazelwood, Louis S.; Price, Martin B.; and Zilke, Robert W., Jr., to Reliance Universal, Inc. Low temperature cure coating system suitable for metal and plastic substrates. 4,521,489, Cl. 428-412.000.
Rehrig Pacific Company: *See—*
Hagan, John A.; and Lafferty, James, 4,520,941, Cl. 220-72.000.
Reichenbach, Dean H.; Stang, John H.; Cummings, Lewis W.; Glasson, Richard E.; and Ruthmansdorfer, David A., to Cummins Engine Company, Inc. Turbocharged internal combustion engine. 4,520,627, Cl. 60-599.000.
Reichert, Gunter; Mainzer, Franz; Lehmann, Kurt; and Niermann, Hermann, to Hoechst Aktiengesellschaft. Method for controlling and optionally regulating the level of liquid P_2S_5 in a cooling device. 4,520,631, Cl. 62-188.000.
Reichmanis, Elsa; and Wilkins, Cletus W., Jr., to AT&T Bell Laboratories. Bilevel resist. 4,521,274, Cl. 156-643.000.
Reid, John H. Conservation of momentum in a barrier oxidation ditch. 4,521,307, Cl. 210-194.000.
Reiff, Harro, to Karl Mengele & Sohne. Device for stacking cut plates in plate shears. 4,520,933, Cl. 209-606.000.
Reilly, Kenneth T.: *See—*
Douglas, Alan D.; and Reilly, Kenneth T., 4,521,381, Cl. 423-49.000.
Reinecke, Paul: *See—*
Maurer, Fritz; Brandes, Wilhelm; Kuck, Karl-Heinz; Reinecke, Paul; and Scheinpflug, Hans, 4,521,420, Cl. 514-259.000.
Schmitt, Hans-Georg; Reinecke, Paul; Paulus, Wilfried; Genth, Hermann; and Radt, Walter, 4,521,412, Cl. 514-244.000.
Reliance Electric Company: *See—*
Kamiller, Neil A., 4,521,841, Cl. 363-45.000.
Kammiller, Neil A., 4,521,842, Cl. 363-71.000.
Niese, Leo J.; and Sharlow, Gary R., 4,520,853, Cl. 141-168.000.
Reliance Universal, Inc.: *See—*
Rehfuss, John W.; Hazelwood, Louis S.; Price, Martin B.; and Zilke, Robert W., Jr., 4,521,489, Cl. 428-412.000.
Remaley, Edward G.: *See—*
Powers, John H.; and Remaley, Edward G., 4,521,463, Cl. 427-435.000.
Renato Bosisio: *See—*
Li, Shihe, 4,521,728, Cl. 324-58.00R.
Renault Vehicules Industriels: *See—*
Michel, Robert, 4,520,840, Cl. 137-259.000.
Renk, Rolf, to General Motors Corporation. Connecting element for gearshift linkages. 4,520,686, Cl. 74-473.00R.
Renken, Terry L.: *See—*
Sanderson, John R.; Watts, Lewis W., Jr.; Vanderpool, Steven H.; and Renken, Terry L., 4,521,609, Cl. 549-533.000.
Renkey, Albert L.: *See—*
Kernion, Mark C.; and Renkey, Albert L., 4,521,357, Cl. 264-63.000.
Renzi, Fiorenzo: *See—*
Romano, Ugo; Renzi, Fiorenzo; Rivetti, Franco; and Gagliardi, Claudio, 4,521,577, Cl. 526-261.000.
Republic Steel Corporation: *See—*
Sobolewski, Robert; and Eberle, David N., 4,520,861, Cl. 164-473.000.
Research Corporation: *See—*
Benkovic, Stephen J.; Putney, Scott D.; and Schimmel, Paul R., 4,521,509, Cl. 435-6.000.
Respiratory Care, Inc.: *See—*
Cerny, David E., 4,521,038, Cl. 285-24.000.
Rexroth-Sigma: *See—*
Isaac, Olivier; and Pignolet, Louis, 4,520,845, Cl. 137-624.270.
Reynolds, Collins J., III, to Avimage, Inc. Aviation weather information dissemination system. 4,521,857, Cl. 364-439.000.
Rhim, Won-Kyu; Saffren, Melvin M.; and Elleman, Daniel D., to United States of America, National Aeronautics and Space Administration. Closed loop electrostatic levitation system. 4,521,854, Cl. 364-400.000.
Rhone-Poulenc Chimie De Base: *See—*
Jenck, Jean, 4,521,614, Cl. 560-193.000.
Rhyne, James R., to International Business Machines Corporation. Use of inversions in the near realtime control of selected functions in interactive buffered raster displays. 4,521,770, Cl. 340-703.000.
Riccio, Louis M.; and Bosna, Alexander. Method and apparatus for applying metal cladding on surfaces and products formed thereby. 4,521,475, Cl. 428-142.000.
Rice, Kenner C., to United States of America, Health & Human Services. Practical total synthesis unnatural enantiomers of opium-derived morphinans. 4,521,601, Cl. 546-45.000.
Richter, Ekkehard; Korbacher, Werner; Knoblauch, Karl; and Giessler, Klaus, to Bergwerksverband GmbH. Method of producing a methane-rich gas mixture from mine gas. 4,521,221, Cl. 48-196.00R.
Ricoh Company, Ltd.: *See—*
Jinnai, Koichiro, 4,521,789, Cl. 346-140.00R.
Mayer, Edward F., 4,521,095, Cl. 355-3.0FU.
Miyake, Kiyoshi; and Kaneko, Hiroko, 4,521,081, Cl. 350-357.000.
Okazaki, Hideo; Imagome, Hiroshi; Suzuka, Susumu; and Sakai, Kiyoshi, 4,521,605, Cl. 548-440.000.
Sakai, Katsuo; and Demizu, Hiromi, 4,521,502, Cl. 430-42.000.
Sakuma, Seiitj; and Karasawa, Shuichi, 4,521,504, Cl. 430-57.000.
Sugiyama, Hiroaki, 4,520,695, Cl. 81-3.070.
Rider, Billie F., to Rockwell International Corporation. Cross-axis acceleration compensation for angular rate sensing apparatus. 4,520,669, Cl. 73-510.000.
Ridge, Inc.: *See—*
Peugeot, Richard S., 4,521,902, Cl. 378-138.000.
Riedhammer, Josef: *See—*
Hovorka, Reiner; and Riedhammer, Josef, 4,520,712, Cl. 91-505.000.
Rieke, Erwin: *See—*
Lundstrom, Kurt I.; Arwin, Hans R.; Rieke, Erwin; Sielaff, Gunter; and Hennrich, Norbert, 4,521,522, Cl. 436-525.000.
Rieter Machine Works Limited: *See—*
Stalder, Herbert; and Briner, Emil, 4,520,532, Cl. 19-244.000.
Righini, Giancarlo: *See—*
Sottini, Stefano; Brenci, Massimo; Righini, Giancarlo; Falciai, Riccardo; Russo, Vera; and Scheggi, Verga A., 4,521,070, Cl. 350-96.150.
Riha, Gerd; and Veith, Richard, to Siemens Aktiengeselischaft. Electronic component functioning with reflected acoustic waves. 4,521,751, Cl. 333-151.000.
Rimbert, Jean-Francis: *See—*
Goursat, Albert-Gilbert; Vernet, Gilles; Rimbert, Jean-Francis; Foulard, Jean; Darle, Thierry; and Bigot, Jean, 4,521,244, Cl. 75-0.50B.
Rinell, Steven J.: *See—*
St. Vincent, Valerie A.; Heinen, Frank B.; and Rinell, Steven J., 4,520,805, Cl. 128-80.00R.
Riordan, William J.: *See—*
Walter, Carl W.; and Riordan, William J., 4,521,180, Cl. 431-25.000.
Risse, Wilhelm: *See—*
Heitz, Walter; and Risse, Wilhelm, 4,521,584, Cl. 528-214.000.
Rivetti, Franco: *See—*
Romano, Ugo; Renzi, Fiorenzo; Rivetti, Franco; and Gagliardi, Claudio, 4,521,577, Cl. 526-261.000.
RMC Rotary Motor Company AG: *See—*
Kathmann, Peter B., 4,521,168, Cl. 418-137.000.
Robert Bosch GmbH: *See—*
Eschrich, Gerhard; and Schwab, Manfred, 4,520,694, Cl. 74-858.000.
Kubach, Hans, 4,520,779, Cl. 123-357.000.
Sitter, Erhard, 4,520,774, Cl. 123-300.000.
Robert Finke GmbH: *See—*
Finke, Robert G., 4,520,938, Cl. 215-220.000.
Roberts, Thomas G.; and Honeycutt, Thomas L., to United States of America, Army. Dual cavity laser gyro. 4,521,110, Cl. 356-350.000.
Robinson, Paul R., to Commonwealth of Australia, The. Loop retention device for hook operated bomb arming solenoids. 4,520,711, Cl. 89-1.50D.
Robortaccio, Rocco J.: *See—*
Blumberg, Richard J.; Brenner, Stewart; and Robortaccio, Rocco J., 4,521,700, Cl. 307-456.000.
Roche , Bernard. Telephony apparatus having filter capacitor switched to undergo discrete phase jumps. 4,521,883, Cl. 370-100.000.

Rockwell International Corporation: *See—*
Anderson, Eric G., 4,521,679, Cl. 235-492.000.
Debrunner, Paul E., Jr., 4,520,843, Cl. 137-469.000.
Rider, Billie F., 4,520,669, Cl. 73-510.000.
Roden, Dianne M.: *See—*
Anderson, Patricia A.; Hagens, Roger G.; and Roden, Dianne M., 4,521,321, Cl. 252-49.300.
Rodler, Waldo E., Jr., to FMC Corporation. Hydrostatic reaction transmission. 4,520,691, Cl. 74-790.000.
Roettgen, Leslie A.; Webber, Beth A.; Brooks, Robert M.; and Layman, Robert J., to Cummins Engine Company. Low flow cooling system and apparatus. 4,520,767, Cl. 123-41.100.
Roff, Robert W. Valve. 4,520,839, Cl. 137-202.000.
Rogers, George T.: *See—*
Severance, Wayne S., Jr.; and Rogers, George T., 4,521,666, Cl. 217-121.0PY.
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., to Polaroid Corporation. Optical device including birefringent polyhydrazide polymer. 4,521,588, Cl. 528-363.000.
Roggenkamp, Hans-Gunther: *See—*
Kiesewetter, Holger; Myrenne, Heinz; and Roggenkamp, Hans-Gunther, 4,521,729, Cl. 324-71.100.
Rohde, Erwin: *See—*
Eberhardt, Wolfgang; Hoffmann, Dietrich; Kriechbaum, Karl; and Rohde, Erwin, 4,521,654, Cl. 200-146.00R.
Rohde & Schwarz GmbH & Co., KG: *See—*
Huber, Franz R.; and Stark, Axel, 4,521,913, Cl. 455-121.000.
Rohm GmbH: *See—*
Arndt, Peter J.; Ludwig, Walter; Munzer, Manfred; Siol, Werner; and Wenzel, Franz, 4,521,567, Cl. 525-261.000.
Schnee, Reiner; and Masanek, Jurgen, 4,521,552, Cl. 523-313.000.
Rohr, Willy; Wollgarten, Kurt; and Vogel, Rudolf, to Sulzer Brothers Limited. Gripper for inserting the weft in a rapier weaving machine. 4,520,851, Cl. 139-448.000.
Rohr, Wolfgang: *See—*
Plath, Peter; Rohr, Wolfgang; Schwendemann, Volker; and Wuerzer, Bruno, 4,521,604, Cl. 548-301.000.
Roline, Glenn M.: *See—*
Thompson, David L.; Roline, Glenn M.; and Harrington, Richard J., 4,520,825, Cl. 128-422.000.
Rollet, Jean: *See—*
Cholley, Henri E.; Laupretre, Jean J.; and Rollet, Jean, 4,521,072, Cl. 350-96.230.
Rolls-Royce Limited: *See—*
Pask, George, 4,521,159, Cl. 416-174.000.
Romano, Ugo; Renzi, Fiorenzo; Rivetti, Franco; and Gagliardi, Claudio, to Enichimica S.p.A. Liquid polymerizable compositions of a carbonate oligomer, an allylcarbonate and vinyl acetate. 4,521,577, Cl. 526-261.000.
Rombouts, Andre H. Supports for heating bodies intended for annealing furnaces. 4,520,789, Cl. 126-91.00A.
Romeo, Frank C.: *See—*
Dunn, Jimmy L.; Mayo, George L.; and Romeo, Frank C., 4,520,550, Cl. 29-568.000.
Rood, Robert M.: *See—*
Wulfing, James J.; and Rood, Robert M., 4,520,969, Cl. 242-71.800.
Roos, Ernst; and Kircher, Klaus, to Bayer Aktiengesellschaft. Arylsulphonyl hydrazones as blowing agents. 4,521,542, Cl. 521-89.000.
Rose, Robert M.: *See—*
Kuehnle, Manfred R.; Perry, George J.; and Rose, Robert M., 4,521,097, Cl. 355-3.00R.
Rosenberg, Wilbert: *See—*
Daigle, Ronald H., 4,520,510, Cl. 2-452.000.
Rosencwaig, Allan, to Therma-Wave, Inc. Method for detection of thermal waves with a laser probe. 4,521,118, Cl. 374-5.000.
Rosenquist, Niles R., to General Electric Company. Polycarbonate resin impact modified with polyolefins and containing paraffin derivatives. 4,521,562, Cl. 524-490.000.
Rosenthal Aktiengesellschaft: *See—*
Keller, Hartmut; Krauth, Axel; and Kriener, Roswitha, 4,521,356, Cl. 264-60.000.
Rosinski, Edward J.; and Schwartz, Albert B., to Mobil Oil Corporation. Promotion of cracking catalyst octane yield performance. 4,521,298, Cl. 208-120.000.
Ross, Hugh M.; and Grocock, Peter G., to Davy McKee (Poole) Limited. Feeding thin foil-like material into a gap between a pair of rotatable rolls. 4,520,645, Cl. 72-250.000.
Rosselet, Ernest: *See—*
Kudelski, Stefan; and Rosselet, Ernest, 4,521,706, Cl. 310-67.00R.
Rossignol, Jean F., to SmithKline Beckman Corporation. Quinate salts of the antimalarial compound mefloquine. 4,521,424, Cl. 514-314.000.
Rossler, Kurt. Waste comminuting apparatus. 4,520,964, Cl. 241-55.000.
Rothenberg, Lee M., Jr., to International Honeycomb Corporation. Toy construction kit. 4,521,203, Cl. 446-106.000.
Rotter, Carl W. Obstetric device and method. 4,520,807, Cl. 128-132.00D.
Rouleau, Robert J. Hanging bracket for suspending overhead signs. 4,520,984, Cl. 248-489.000.
Rouly, Eric; Baquet, Philippe; and Dubuit, Jean-Louis, to Societe d'Exploitation des Machines Dubuit. Flat silk-screen printing machine with movable pivoted support. 4,520,726, Cl. 101-123.000.
Roussel Uclaf: *See—*
Martel, Jacques; Buendia, Jean; and Nezot, Francois, 4,521,331, Cl. 252-522.00R.
Rowe, Donald R.: *See—*
Zackay, Victor F.; and Rowe, Donald R., 4,521,530, Cl. 502-218.000.
Roy, Richard D.: *See—*
Barthel, Richard C.; and Roy, Richard D., 4,521,722, Cl. 318-578.000.
RPC Corporation: *See—*
Appleman, William S.; and Sturgill, James D., 4,521,044, Cl. 294-82.240.
RTE Corporation: *See—*
Link, Edwin A., 4,521,823, Cl. 361-38.000.
Rubber Millers, Inc.: *See—*
Day, John T., 4,521,306, Cl. 210-159.000.
Ruberl, Ernst, to AKG Akustische u.Kino-Gerate Gesellschaft m.b.H. Impedance transformer circuit. 4,521,741, Cl. 330-277.000.
Rudolf, Peter: *See—*
Frank, Gerhard; Rudolf, Peter; Neubauer, Gerald; Ohlinger, Manfred; Wilfinger, Hans J.; Pfannebecker, Emil; and Duffner, Paul, 4,521,527, Cl. 502-184.000.
Ruehl, William E.: *See—*
Frano, Francis G.; and Ruehl, William E., 4,520,748, Cl. 116-70.000.
Ruhl, Erich; and Thenner, Johann, to Ruhl, Erich. Non-flammable rigid foam and its use as a building material. 4,521,543, Cl. 521-103.000.
Ruschke, Rick R., to Baxter Travenol Laboratories, Inc. Solution administration set. 4,521,212, Cl. 604-126.000.
Russell, Philip P.; Niu, Tyan-Faung; and Holland, Frederic A., to Xerox Corporation. Simultaneous formation and deposition of multiple ribbon-like streams. 4,521,457, Cl. 427-286.000.
Russell, Roy R. B., to Secretary of State of Social Services in Her Britannic Majesty's Government of the United Kingdon of Great Brtian and Northern Ireland, The. Protection against dental caries. 4,521,513, Cl. 435-68.000.
Russell, Stanley L.: *See—*
Gueldenpfennig, Klaus; Russell, Stanley L.; Oswald, William A.; Breidenstein, Charles J.; and Narula, Karam V., 4,521,879, Cl. 370-62.000.
Russell, William A.: *See—*
Babbel, John H.; Russell, William A.; and Steele, Robert B., 4,521,870, Cl. 364-900.000.
Russo, Vera: *See—*
Sottini, Stefano; Brenci, Massimo; Righini, Giancarlo; Falciai, Riccardo; Russo, Vera; and Scheggi, Verga A., 4,521,070, Cl. 350-96.150.
Rutherford, Howard J.; and Withycombe, Donald A., to International Flavors & Fragrances Inc. Process for forming functional fluid and solid-containing thermoplastic films, uses thereof and process for producing same. 4,521,541, Cl. 521-79.000.
Rutherford, John M., Jr.: *See—*
Lorenz, Donald H.; Murphy, Edward J.; and Rutherford, John M., Jr., 4,521,404, Cl. 424-71.000.
Ruthmansdorfer, David A.: *See—*
Reichenbach, Dean H.; Stang, John H.; Cummings, Lewis W.; Glasson, Richard E.; and Ruthmansdorfer, David A., 4,520,627, Cl. 60-599.000.
Ryan, Charles P.: *See—*
Wilhite, John E.; Shelly, William A.; and Ryan, Charles P., 4,521,850, Cl. 364-200.000.
Ryan, John O., to Ampex Corporation. Demodulator for pulse width modulated signals. 4,521,736, Cl. 329-102.000.
Ryan, William P.; and Schroeder, Thaddeus, to General Motors Corporation. Method of locating engine top dead center position. 4,520,658, Cl. 73-117.300.
Ryczek, Lawrence J.; and Janutka, William J., to Eaton Corporation. Comparator timer with dual function adjustment. 4,521,694, Cl. 307-266.000.
Ryczek, Lawrence J.; and Janutka, William J., to Eaton Corporation. Adjustable frequency oscillator. 4,521,748, Cl. 331-108.00D.
Ryntz, Edward F., Jr.; and Bommarito, John J., to General Motors Corporation. Chill-enhanced lost foam casting process. 4,520,858, Cl. 164-34.000.
S.N.E.C.M.A.: *See—*
Debeneix, Pierre, 4,520,974, Cl. 244-54.000.
Sacca, Demetrio B.; Sanderson, Edward H.; and Beatenbough, Paul K., to General Motors Corporation. Single inlet/outlet-tank U-shaped tube heat exchanger. 4,520,867, Cl. 165-144.000.
Sachs, Bertram, to Siemens Aktiengesellschaft. Method for the manufacture of a device for the read-out of a two-dimensional image pattern with an array. 4,521,667, Cl. 219-121.0LJ.
Sado, Ryoichi; and Tahara, Kazutoki, to Shin-Etsu Polymer Co., Ltd. Method for manufacturing an elastic composite body with metal wires embedded therein. 4,520,562, Cl. 29-878.000.
Saffer, Gary M.; Lambert, Gerard L.; and Stern, Howard R., to Mattel, Inc. Track for toy vehicles. 4,521,206, Cl. 446-444.000.
Saffren, Melvin M.: *See—*
Rhim, Won-Kyu; Saffren, Melvin M.; and Elleman, Daniel D., 4,521,854, Cl. 364-400.000.
Sagami Chemical Research Center: *See—*
Oyama, Kiyotaka; Irino, Shigeaki; Harada, Tsuneo; and Nakamura, Masao, 4,521,514, Cl. 435-70.000.
Sagara, Seiji: *See—*
Yonemori, Takaji; and Sagara, Seiji, 4,521,100, Cl. 355-8.000.
Saglio, Robert: *See—*
Pigeon, Michel; and Saglio, Robert, 4,521,150, Cl. 414-749.000.
Sagness, Ronald L.; and Peterson, Donald A., to Neshem-Peterson, Inc. Air heating furnace. 4,520,790, Cl. 126-109.000.

Sahatjian, Ronald A.: *See—*
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,521,588, Cl. 528-363.000.

Saint-Amour, John D. Thickness measuring. 4,520,672, Cl. 73-622.000.

Saint-Michel, Jacques A.; Chabrerie, Jean-Pierre; and Mailfert, Alain, to Etat Francais. Direct current dynamoelectric machines with auxiliary equalizer poles. 4,521,709, Cl. 310-186.000.

St. Pierre, Philippe D.; and Buckner, Michael T., to General Electric Company. Resin-bonded grinding elements with dual. coated diamond grit for dry grinding and wet grinding cemented carbide workpieces. 4,521,222, Cl. 51-295.000.

St. Regis Corporation: *See—*
Keppel, Stephen C.; Newton, Donald O.; and Salt, Stephen R., 4,521,910, Cl. 383-10.000.
Vance, Robert L., 4,521,911, Cl. 383-20.000.

St. Vincent, Valerie: *See—*
St. Vincent, Valerie A.; Heinen, Frank B.; and Rinell, Steven J., 4,520,805, Cl. 128-80.00R.

St. Vincent, Valerie A.; Heinen, Frank B.; and Rinell, Steven J., to St. Vincent, Valerie. Abductor turntable. 4,520,805, Cl. 128-80.00R.

Saito, Eiichi: *See—*
Ohtsuka, Shuichi; Aotsuka, Yasuo; and Saito, Eiichi, 4,521,103, Cl. 355-14.00D.

Saito, Hajime; and Urakawa, Tetsuro, to Toshiba Ceramics Co. Limited; and Saito, Hajime. Method of manufacturing β type silicon nitride whiskers. 4,521,393, Cl. 423-344.000.

Saito, Seiji: *See—*
Ayata, Naoki; Saito, Seiji; Suzuki, Hidetoshi; Ozawa, Kunitaka; Koumura, Noboru; and Kazuma, Koji, 4,521,805, Cl. 358-75.000.

Saitō, Yoshitaka. Automatic stone cutter. 4,520,880, Cl. 175-51.000.

Saito, Yuichi: *See—*
Furukawa, Hiroshi; and Saito, Yuichi, 4,521,587, Cl. 526-340.200.

Saitou, Kazuo: *See—*
Morimoto, Masao; Sano, Shoji; Yoshimi, Kazuyoshi; and Saitou, Kazuo, 4,521,153, Cl. 415-146.000.

Sakaguchi, Yuriko: *See—*
Obitsu, Masamichi; Hori, Takahiro; Koinuma, Toyoji; and Sakaguchi, Yuriko, 4,521,249, Cl. 106-12.000.

Sakai, Katsuo; and Demizu, Hiromi, to Ricoh Company, Ltd. Color recording method. 4,521,502, Cl. 430-42.000.

Sakai, Kiyoshi: *See—*
Okazaki, Hideo; Imagome, Hiroshi; Suzuka, Susumu; and Sakai, Kiyoshi, 4,521,605, Cl. 548-440.000.

Sakai, Shuzo: *See—*
Miyake, Toshio; Sakai, Shuzo; and Shibuya, Takashi, 4,521,252, Cl. 127-46.300.

Sakai, Takuo: *See—*
Kawamura, Yasuo; Nishiyama, Tadashi; Itoh, Tomiyoshi; and Sakai, Takuo, 4,521,406, Cl. 424-94.000.

Sakamoto, Atsushi: *See—*
Miyaji, Naotaka; Sakamoto, Atsushi; and Iwahara, Makoto, 4,521,908, Cl. 381-92.000.

Sakamoto, Keiji; and Toyozawa, Yukio, to Fanuc Ltd. Apparatus for processing energy regenerated by an AC motor. 4,521,724, Cl. 318-762.000.

Sakamoto, Seiya: *See—*
Ono, Yoshio; and Sakamoto, Seiya, 4,521,814, Cl. 358-296.000.

Sakamoto, Shinichi: *See—*
Kimura, Kazuo; Taneda, Yukinori; Tsuyuki, Shinichi; Suzuki, Shun; Hashimoto, Yoshio; and Sakamoto, Shinichi, 4,520,965, Cl. 242-7.05B.

Sakamoto, Takao; and Abe, Tadafumi, to Tachikawa Spring Co., Ltd. Carpet with fusion-cut through bore and its manufacture method. 4,521,473, Cl. 428-82.000.

Sakane, Kazuo: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,521,413, Cl. 514-203.000.

Sakaoka, Gouji; and Ishikawa, Takashi, to Pentel Kabushiki Kaisha. Mechanical pencil. 4,521,126, Cl. 401-65.000.

Sakata, Jiro: *See—*
Yamamoto, Minoru; Sakata, Jiro; and Doi, Haruo, 4,521,236, Cl. 65-31.000.

Sakuma, Seiitj; and Karasawa, Shuichi, to Ricoh Company, Ltd. Composite photosensitive material for use in electrophotography. 4,521,504, Cl. 430-57.000.

Sakurai, Noriaki: *See—*
Suzuki, Shoichi; Ohta, Wataru; Sakurai, Noriaki; and Yamashita, Michio, 4,521,133, Cl. 405-195.000.

Saldert, Bertil K.: *See—*
Bengtsson, Bengt L.; Palmlin, Peter; and Saldert, Bertil K., 4,521,439, Cl. 426-509.000.

Sale, Francis M.: *See—*
Mills, Harold E.; Murdock, David L.; Ramer, Richard M.; and Sale, Francis M., 4,521,392, Cl. 423-317.000.

Sale Tilney Technology Plc.: *See—*
Smythe, Kenneth R., 4,521,462, Cl. 427-421.000.

Saleeb, Fouad Z.: *See—*
Zeller, Bary L.; Kaleda, William W.; and Saleeb, Fouad Z., 4,521,438, Cl. 426-271.000.

Sallee, Gary F.: *See—*
Baker, William; Smith, Gordon H.; Beach, Xio I.; Sallee, Gary F.; and Stein, Jeffrey I., 4,521,915, Cl. 455-165.000.

Salomonsson, Goran; Borjesson, Per O.; Mandersson, Bengt; Holmer, Nils-Gunnar; and Lindstrom, Kjell. Method and apparatus for generating short ultrasonic echo pulses. 4,520,670, Cl. 73-602.000.

Salt, Stephen R.: *See—*
Keppel, Stephen C.; Newton, Donald O.; and Salt, Stephen R., 4,521,910, Cl. 383-10.000.

Samish, Norman C.; and Pohlenz, Jack B., to Shell California Production Inc. NO_x reduction in flue gas. 4,521,388, Cl. 423-235.000.

Sample, Thomas E., Jr.: *See—*
Chen, Robert G.; Patel, Arvind D.; and Sample, Thomas E., Jr., 4,521,578, Cl. 526-288.000.

Samuels, Abe; Yamashita, Keitaro; and Sasaki, Yoshitaka, to Hitachi Metals, Ltd.; and Speed-O-Print Business Machines Corp. Pressure fixing device. 4,521,184, Cl. 432-60.000.

Sandel, Bonnie B., to Olin Corporation. Selected N,1-disubstituted hydrazinecarboxamides and their use as antioxidants. 4,521,325, Cl. 252-77.000.

Sanderson, Edward H.: *See—*
Sacca, Demetrio B.; Sanderson, Edward H.; and Beatenbough, Paul K., 4,520,867, Cl. 165-144.000.

Sanderson, John R.; Watts, Lewis W., Jr.; Vanderpool, Steven H.; and Renken, Terry L., to Texaco Inc. Cycloalkane epoxides produced by air oxidation of cycloalkenes over lead zirconate as catalyst. 4,521,609, Cl. 549-533.000.

Sanechika, Kenichi: *See—*
Yamamoto, Takakazu; Yamamoto, Akio; and Sanechika, Kenichi, 4,521,589, Cl. 528-380.000.

Sangamo Weston, Inc.: *See—*
Aultman, William H.; and Reese, Morris T., 4,521,830, Cl. 361-433.000.
Welch, Edward W., 4,521,761, Cl. 338-174.000.

Sannikov, Jury I.: *See—*
Yarygin, Vladimir I.; Sannikov, Jury I.; Panchenko, Anatoly I.; Sychev, Anatoly P.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; and Toguzov, Mels Z., 4,521,245, Cl. 75-21.000.

Sano, Shigehisa: *See—*
Ogino, Takao; Watanabe, Yoichi; and Sano, Shigehisa, 4,520,857, Cl. 152-527.000.

Sano, Shoji: *See—*
Morimoto, Masao; Sano, Shoji; Yoshimi, Kazuyoshi; and Saitou, Kazuo, 4,521,153, Cl. 415-146.000.

Sano, Yasumasa; and Ohwada, Tetsuya, to NSK-Warner K.K.; and Nippon Kinzoku Co., Ltd. Buckle assembly. 4,520,538, Cl. 24-682.000.

Sanofi: *See—*
Nisato, Dino; Frigerio, Marco; and Miranda, Giovanna F., 4,521,428, Cl. 514-277.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Nakahama, Ryoji, 4,521,202, Cl. 440-61.000.
Watanabe, Eifu, 4,521,201, Cl. 440-55.000.

Sanyo Electric Co., Ltd.: *See—*
Morimoto, Masao; Sano, Shoji; Yoshimi, Kazuyoshi; and Saitou, Kazuo, 4,521,153, Cl. 415-146.000.

Sara, Raymond V. Stress relieved metal/ceramic abradable seals. 4,521,496, Cl. 428-551.000.

Sarcia, Domenico S., to CVI Incorporated. Cryogenic refrigerator and heat source. 4,520,630, Cl. 62-6.000.

Saruwatari, Minoru, to Qsine Corporation Limited. Dual wheel adapter. 4,521,059, Cl. 301-36.00R.

Sarwin, Herbert S. Product control system for supermarkets and the like. 4,521,677, Cl. 235-385.000.

Sasaki, Shigeru: *See—*
Hayashi, Mitsuji; Endo, Hideo; Oishibashi, Hirotsugu; Aichi, Takeo; and Sasaki, Shigeru, 4,520,756, Cl. 118-699.000.

Sasaki, Tetsuo: *See—*
Otake, Noboru; Seto, Haruo; Sasaki, Tetsuo; Sugita, Masanori; Natori, Yohei; and Sueda, Noriyoshi, 4,521,339, Cl. 260-239.30B.

Sasaki, Tohru; Endoh, Hiroyuki; and Ohira, Seiichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Vinylidene fluoride resin filament and production thereof. 4,521,483, Cl. 428-373.000.

Sasaki, Yoshitaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing semiconductor device. 4,521,448, Cl. 427-88.000.

Sasaki, Yoshitaka: *See—*
Samuels, Abe; Yamashita, Keitaro; and Sasaki, Yoshitaka, 4,521,184, Cl. 432-60.000.

Sasamura, Kohhei; and Mori, Takaro, to Victor Company of Japan, Limited. Circuit arrangement for magnetic recording apparatus having a multi-track head. 4,521,817, Cl. 360-46.000.

Sasao, Isao, to Mitsubishi Denki Kabushiki Kaisha. Elevator group control apparatus. 4,520,905, Cl. 187-29.00R.

Saskatchewan Power Corporation: *See—*
Moffat, Richard P., 4,521,894, Cl. 377-16.000.

Sassa, Yusei: *See—*
Takahashi, Kihei; and Sassa, Yusei, 4,520,559, Cl. 29-766.000.

Sato, Hideyori; Inaba, Nobuaki; Arai, Mitsuru; and Onzou, Michio, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic brake valve system. 4,520,625, Cl. 60-464.000.

Sato, Hirosi: *See—*
Suzuki, Akiyoshi; Sato, Hirosi; Omata, Takashi; and Kosugi, Masao, 4,521,082, Cl. 350-405.000.

Sato, Kunio: *See—*
Nakaya, Keiichi; and Sato, Kunio, 4,521,397, Cl. 423-474.000.

Sato, Yoshihiro, to Dai Nippon Insatsu Kabushiki Kaisha. Heat-sealable package blank for a video tape cassette. 4,520,927, Cl. 206-387.000.

Satoh, Kazuo, to Honda Giken Kogyo Kabushiki Kaisha. Two-wheeled vehicle with offset wheel. 4,520,892, Cl. 180-219.000.

Satou, Hiroo: *See—*
Nanjo, Hirotoshi; Satou, Hiroo; and Takahashi, Osamu, 4,520,778, Cl. 123-352.000.

Sauers, Richard F.: *See—*
Hay, James V.; and Sauers, Richard F., 4,521,241, Cl. 71-92.000.

Saunier, Christian: *See—*
Briard, Rene ; Saunier, Christian; and Canova, Guy, 4,521,196, Cl. 434-20.000.

Sawada, Hideo; and Yata, Kiyoshi, to Hitachi, Ltd. Instruction storage. 4,521,872, Cl. 365-49.000.

Saxman, Edwin F., to Mack Trucks, Inc. Sun visor arrangement. 4,521,047, Cl. 296-97.00K.

Scalzi, Casper A.; and Schmalz, Richard J., to International Business Machines Corporation. Mechanism for accessing multiple virtual address spaces. 4,521,846, Cl. 364-200.000.

Scanlan, Harry J.; and Liljegren, Leif. Electric fluid heater employing pressurized helium as a heat transfer medium. 4,521,674, Cl. 219-299.000.

Schachar, Ronald A.; and Solin, Stuart A. Method and apparatus for delivering laser energy for ophthalmic use. 4,520,816, Cl. 128-303.100.

Schafer, Rolf; Vogelhuber, Peter; and Wysk, Hans-Joachim, to Kienzle Apparate GmbH. Needle printer assembly. 4,521,122, Cl. 400-124.000.

Schatz, Friedrich: *See—*
Ziemek, Gerhard; Schatz, Friedrich; and Meyer, Hermann, 4,520,622, Cl. 57-59.000.

Scheggi, Verga A.: *See—*
Sottini, Stefano; Brenci, Massimo; Righini, Giancarlo; Falciai, Riccardo; Russo, Vera; and Scheggi, Verga A., 4,521,070, Cl. 350-96.150.

Scheib, Thomas J.: *See—*
Moss, William H.; and Scheib, Thomas J., 4,521,869, Cl. 364-900.000.

Scheidenhelm, E. Louis: *See—*
Gessel, James M.; Kunz, Gary L.; and Scheidenhelm, E. Louis, 4,520,620, Cl. 56-400.000.

Scheinpflug, Hans: *See—*
Maurer, Fritz; Brandes, Wilhelm; Kuck, Karl-Heinz; Reinecke, Paul; and Scheinpflug, Hans, 4,521,420, Cl. 514-259.000.

Schellen, Johannes A. T.: *See—*
Jacobs, Cornelis A. J.; Schellen, Johannes A. T.; and Van Der Vleuten, Anthonius P., 4,521,716, Cl. 313-594.000.

Schenk, Jurgen: *See—*
Dudeck, Ingo; and Schenk, Jurgen, 4,521,769, Cl. 340-635.000.

Schertler, Siegfried. Metering valve. 4,520,993, Cl. 251-57.000.

Scheurer, Roger J.: *See—*
Peterson, Richard L.; Scheurer, Roger J.; and Steinberg, Richard W., 4,520,876, Cl. 172-427.000.

Schiel, Christian; Zurn, Georg; and Schmid, Karl, to J.M. Voith GmbH. Drying cylinder adapted to be heated with steam. 4,520,578, Cl. 34-110.000.

Schimmel, Paul R.: *See—*
Benkovic, Stephen J.; Putney, Scott D.; and Schimmel, Paul R., 4,521,509, Cl. 435-6.000.

Schingnitz, Manfred: *See—*
Kretschmer, Horst; Tietze, Guenter; Noack, Juergen; Schweigel, Hans-Joachim; Schingnitz, Manfred; Werner, Klaus; and Kirsch, Bernd, 4,521,139, Cl. 406-19.000.

Schleppnik, Alfred A.: *See—*
Tou, Jacob S.; and Schleppnik, Alfred A., 4,521,344, Cl. 260-465.00D.

Schloemann, Ernst F. R. A., to Raytheon Company. Tuned resonant circuit utilizing a ferromagnetically coupled interstage line. 4,521,753, Cl. 333-204.000.

Schlumberger Technology Corp.: *See—*
Coblentz, Andrea; Lefevre, Didier; Colombani, Pascal; and Meunier, Denis, 4,520,666, Cl. 73-155.000.

Schmalz, Richard J.: *See—*
Scalzi, Casper A.; and Schmalz, Richard J., 4,521,846, Cl. 364-200.000.

Schmeckenbecher, Arnold F.: *See—*
Arnold, Anthony F.; and Schmeckenbecher, Arnold F., 4,521,449, Cl. 427-96.000.

Schmid, Hartmut, to Glenayre Electronics, Ltd. Coupler mount assembly. 4,520,662, Cl. 73-129.000.

Schmid, Karl: *See—*
Schiel, Christian; Zurn, Georg; and Schmid, Karl, 4,520,578, Cl. 34-110.000.

Schmid, Karlheinz, to Gerbrueder Heller Maschinenfabrik GmbH. Crankshaft milling apparatus. 4,521,143, Cl. 409-200.000.

Schmidt, Glenn H. Golf iron face. 4,521,022, Cl. 273-175.000.

Schmidt, Karl-Heinz: *See—*
Grebe, Reiner; Norbisrath, Max; and Schmidt, Karl-Heinz, 4,520,963, Cl. 241-30.000.

Schmidt, Richard A.; and Tanagho, Emil A., to University of California, The Regents of the. Growing of long-term biological tissue correction structures in vivo. 4,520,821, Cl. 128-334.00R.

Schmitt, Hans-Georg; Reinecke, Paul; Paulus, Wilfried; Genth, Hermann; and Radt, Walter, to Bayer Aktiengesellschaft. Pesticidal iodopropargylammonium salts. 4,521,412, Cl. 514-244.000.

Schmitz, Hermann: *See—*
Engelhardt, Friedrich; Schmitz, Hermann; Gulden, Walter; and Hax, Jorg, 4,521,579, Cl. 526-287.000.

Schnee, Reiner; and Masanek, Jurgen, to Rohm GmbH. Process for making an emulsion polymer. 4,521,552, Cl. 523-313.000.

Schnegg, Julius R., to Burlington Industries, Inc. Woven-like warp knit fabric with tension control for top effect yarn. 4,520,636, Cl. 66-192.000.

Schneider, Linda G.: *See—*
Kessick, Michael A.; George, Zacharia M.; and Schneider, Linda G., 4,521,382, Cl. 423-68.000.
Kessick, Michael A.; George, Zacharia M.; and Schneider, Linda G., 4,521,383, Cl. 423-68.000.

Schneider, Martin V.: *See—*
Carlson, Eric R.; and Schneider, Martin V., 4,521,755, Cl. 333-244.000.

Schoenleber, Donald W.: *See—*
Jones, John H.; and Schoenleber, Donald W., 4,520,958, Cl. 229-72.000.

Schoofs, Mark J. Swim fin for breaststroke swimmers. 4,521,220, Cl. 441-64.000.

Schoonmade, Wim, to Gusto Engineering B.V. Elevating device for an artificial island or work platform. 4,521,134, Cl. 405-198.000.

Schreiber, William L.: *See—*
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,521,634, Cl. 568-665.000.

Schroeder, Thaddeus: *See—*
Ryan, William P.; and Schroeder, Thaddeus, 4,520,658, Cl. 73-117.300.

Schroer, Walter; and Wlasitsch, Gyula, to Bayer Aktiengesellschaft; and Graboplast. Coated composite material for lining passages. 4,521,465, Cl. 428-35.000.

Schuh, Gerald J. Tree brace system. 4,520,590, Cl. 47-43.000.

Schulte in den Baumen, Joachim, to Carl-Zeiss-Stiftung. Cooled field optical system for infrared telescopes. 4,521,068, Cl. 350-1.100.

Schultz, William J.: *See—*
Pocius, Alphonsus V.; and Schultz, William J., 4,521,490, Cl. 428-416.000.

Schulz, Wilhelm. Connector for heated pipes. 4,521,039, Cl. 285-41.000.

Schulze, Dwain C., Jr.: *See—*
Englund, Michael S.; Hafele, Joseph C.; and Schulze, Dwain C., Jr., 4,520,652, Cl. 73-23.000.

Schumann, Henning; Busch, Peter; Fischer, Detlef; and Thiele, Klaus, to Henkel Kommanditgesellschaft auf Aktien. Plastic hairdressing comb. 4,520,831, Cl. 132-11.00R.

Schwab, Manfred: *See—*
Eschrich, Gerhard; and Schwab, Manfred, 4,520,694, Cl. 74-858.000.

Schwartz, Albert B.: *See—*
Rosinski, Edward J.; and Schwartz, Albert B., 4,521,298, Cl. 208-120.000.

Schwarzkopf, Anton. Amusement ride. 4,520,732, Cl. 104-53.000.

Schwefel, Ernst, to Dr. Johannes Heidenhain GmbH. Numerical control device. 4,521,845, Cl. 364-171.000.

Schwehr, Richard A.: *See—*
Liljequist, Lawrence A.; Wible, John E.; and Schwehr, Richard A., 4,520,986, Cl. 248-585.000.

Schweigel, Hans-Joachim: *See—*
Kretschmer, Horst; Tietze, Guenter; Noack, Juergen; Schweigel, Hans-Joachim; Schingnitz, Manfred; Werner, Klaus; and Kirsch, Bernd, 4,521,139, Cl. 406-19.000.

Schwendemann, Volker: *See—*
Plath, Peter; Rohr, Wolfgang; Schwendemann, Volker; and Wuerzer, Bruno, 4,521,604, Cl. 548-301.000.

Schwenzer, Alfred F.: *See—*
Voltmer, Helmut; Schwenzer, Alfred F.; and Spano, John D., 4,521,271, Cl. 156-568.000.

Schwerdt, Friedrich W.: *See—*
Bahrle, Dieter K.; and Schwerdt, Friedrich W., 4,521,280, Cl. 204-15.000.

Scinta, James; and Classen, Theodore M. Oil recovery. 4,521,293, Cl. 208-11.0LE.

SCM Corporation: *See—*
Hahn, Kenneth G., Jr., 4,521,495, Cl. 428-537.100.

Scondo, Ludwig: *See—*
Hampel, Hans-Joachim; Scondo, Ludwig; Stahl, Jurgen; Wegner, Wilhelm; and Bonne, Harry, 4,520,948, Cl. 222-103.000.

Scott, William A.; and Smith, Roger N., to Walbro Corporation. Fuel shut-off valve for internal combustion engines. 4,520,772, Cl. 123-198.0DB.

Scott, William L.: *See—*
Di Martini, Carl R.; Howe, Herbert E.; Scott, William L.; and Bulvanoski, Leo J., 4,521,247, Cl. 75-77.000.

Secretary of State of Social Services in Her Britannic Majesty's Government of the United Kingdon of Great Brtian and Northern Ireland, The: *See—*
Russell, Roy R. B., 4,521,513, Cl. 435-68.000.

Seibert, Karl; Neumann, Klaus; Spiess, Ernst; and Bruil, Hendrik G., to Akzona Incorporated. Thickening agent based on polyether derivatives. 4,521,326, Cl. 252-174.210.

Seiken Kai Foundation Juridical Person: *See—*
Hata, Kosei, 4,521,515, Cl. 435-248.000.

Seisakusho Kabushiki Kaisha Toyoda Jidoshokki: *See—*
Suzuki, Hajime; and Iwano, Yoshimi, 4,520,849, Cl. 139-116.000.

Seitz, David M.; and Weinstein, Richard, to Champion Spark Plug Company. Protective housing for coating applicator. 4,520,949, Cl. 222-108.000.

Seitz, Max: *See—*
Blum, Rainer; Seitz, Max; and Kaczinski, Friedrich, 4,521,555, Cl. 524-63.000.

Semi-Bulk Systems, Inc.: *See—*
Handleman, Avrom R., 4,521,165, Cl. 417-393.000.

Senga, Takao: *See—*
Suzuki, Shigeyoshi; Yamada, Jun; Senga, Takao; Kuriu, Sadao; Yamasaki, Masahiro; Hirose, Iwao; and Maegawa, Tokubee, 4,521,101, Cl. 355-10.000.

Serono Pharmaceutical Partners: *See—*
Pelham, Russell W.; Redden, Charlotte S.; Eshkol, Aliza; and Stiles, Gerald E., 4,521,407, Cl. 424-95.000.

Seto, Haruo: *See—*
Otake, Noboru; Seto, Haruo; Sasaki, Tetsuo; Sugita, Masanori; Natori, Yohei; and Sueda, Noriyoshi, 4,521,339, Cl. 260-239.30B.

Sevastyanov, Viktor V.; Furman, Yakov A.; Grebenschikov, Anatoly P.; Lysov, Viktor F.; and Shalnov, Boris N., to Mezhkhozyai Stvennoe Opytnokonstruktorskoe Bjuro Mariiskogo Respublican-skogo Proizvodstvennogo Obiedinenia "Mariiskmezhkhozkom-bikorm"; and Mariisky Politekhnichesky Institut. Method for growth promotion in animals. 4,520,826, Cl. 128-422.000.

Seven Towns Limited: *See—*
Slade, Brian P., 4,521,024, Cl. 273-271.000.

Severance, Wayne S., Jr.; and Rogers, George T., to Union Carbide Corporation. Plasma arc torch. 4,521,666, Cl. 217-121.0PY.

Sfredda, Albert P. High ratio drive. 4,520,693, Cl. 74-804.000.

Sgourakes, George E.: *See—*
Koziol, Stanislaw; and Sgourakes, George E., 4,520,678, Cl. 73-861.240.

Shalnov, Boris N.: *See—*
Sevastyanov, Viktor V.; Furman, Yakov A.; Grebenschikov, Anatoly P.; Lysov, Viktor F.; and Shalnov, Boris N., 4,520,826, Cl. 128-422.000.

Sharlow, Gary R.: *See—*
Niese, Leo J.; and Sharlow, Gary R., 4,520,853, Cl. 141-168.000.

Sharp Kabushiki Kaisha: *See—*
Funada, Fumiaki; and Shimizu, Keiichiro, 4,521,080, Cl. 350-341.000.
Oka, Takashi, 4,520,583, Cl. 40-378.000.

Shedigian, Vandos; and Voyles, Gerald A., to Emhart Industries, Inc. Dielectric fluid for a compacitor. 4,521,826, Cl. 361-314.000.

Sheffer, Ralph L., to Adams Rite Products, Inc. Slow-closing valve mechanism. 4,520,992, Cl. 251-48.000.

Shell California Production Inc.: *See—*
Samish, Norman C.; and Pohlenz, Jack B., 4,521,388, Cl. 423-235.000.

Shell Offshore Inc.: *See—*
Nandlal, Samlal, 4,521,131, Cl. 405-116.000.

Shell Oil Company: *See—*
Harris, Martin, 4,521,536, Cl. 514-226.000.
van Kessel, Matheus M., 4,520,737, Cl. 110-171.000.
Wattimena, Freddy; and Heijmen, Hendricus J., 4,521,630, Cl. 568-435.000.

Shelly, William A.: *See—*
Trubisky, Leonard G.; and Shelly, William A., 4,521,851, Cl. 364-200.000.
Wilhite, John E.; Shelly, William A.; and Ryan, Charles P., 4,521,850, Cl. 364-200.000.

Shibata, Kiyoshi: *See—*
Motomura, Minoru; Shibata, Kiyoshi; Watanabe, Toshio; and Ohata, Yousuke, 4,521,102, Cl. 355-14.0CU.

Shiber, Samuel: *See—*
Husted, Royce H., 4,521,207, Cl. 474-56.000.

Shibuya, Takashi: *See—*
Miyake, Toshio; Sakai, Shuzo; and Shibuya, Takashi, 4,521,252, Cl. 127-46.300.

Shichijo, Yoshiaki: *See—*
Inukai, Yuzo; and Shichijo, Yoshiaki, 4,520,755, Cl. 118-629.000.

Shields, Harper; and Lineberry, Roger D., to Kayser-Roth Hosiery, Inc. Cushion foot sock. 4,520,635, Cl. 66-185.000.

Shilling, Norman Z., to General Electric Environmental Services, Inc. High capacity gas filter system. 4,521,231, Cl. 55-302.000.

Shimamoto, Hiroshi, to Namiki Precision Jewel Co., Ltd. Reproducing stylus and method of making same. 4,521,877, Cl. 369-173.000.

Shimazaki, Kenji: *See—*
Ogawa, Hiroyasu; Izumi, Kazuo; and Shimazaki, Kenji, 4,520,623, Cl. 57-236.000.

Shimizu, Keiichiro: *See—*
Funada, Fumiaki; and Shimizu, Keiichiro, 4,521,080, Cl. 350-341.000.

Shimonosono, Hitoshi; Ogawa, Naoki; and Hirano, Yoshinori, to Nissan Motor Co., Ltd. Cylinder block of internal combustion engine. 4,520,768, Cl. 123-41.440.

Shin-Etsu Polymer Co., Ltd.: *See—*
Sado, Ryoichi; and Tahara, Kazutoki, 4,520,562, Cl. 29-878.000.

Shinagawa, Susumu: *See—*
Harada, Setsuo; Shinagawa, Susumu; and Kitano, Kazuaki, 4,521,340, Cl. 260-245.20T.
Kanamaru, Tsuneo; Shinagawa, Susumu; and Asai, Mitsuko, 4,521,432, Cl. 514-556.000.

Shingu, Tadashi; Tsutada, Tadakazu; Nishihara, Toshio; and Suzuki, Nobuo, to Teijin Limited. Structure of multilayered unit for windows. 4,520,611, Cl. 52-789.000.

Shinko Electric Co., Ltd.: *See—*
Abe, Eiji; and Kanazawa, Junpei, 4,520,889, Cl. 180-168.000.

Shinohara, Hirofumi; Tomisawa, Osamu; Anami, Kenji; and Yoshimoto, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. Differential amplifying circuit. 4,521,704, Cl. 307-530.000.

Shinomiya, Hiroaki; and Noguchi, Minetoshi, to Tokyo Juki Industrial Co., Ltd. Seam forming method and device for sewing machine for embroidery. 4,520,745, Cl. 112-266.100.

Shinsei, Kiyoichi: *See—*
Kiyota, Yuhiko; Tsuji, Katsuyuki; Kume. Satoru; Takada, Hiroaki; Shinsei, Kiyoichi; Matsumoto, Akio; and Ogawa, Hitoshi, 4,520,624, Cl. 60-286.000.

Shpigelman, David. Dispensing device for cylindrical bodies, such as rolls of toilet paper, paper towels and the like. 4,520,968, Cl. 242-55.300.

Shudo, Hirokazu: *See—*
Harigane, Kotaro; Tando, Shuichi; Takahashi, Kenichi; and Shudo, Hirokazu, 4,520,557, Cl. 29-740.000.

Shufflebarger, William S.: *See—*
Sucro, Jost S.; Moyer, Ted A.; and Shufflebarger, William S., 4,520,689, Cl. 74-595.000.

Shulman, Carl, to MSI Electronics Inc. Mercury probes. 4,521,730, Cl. 324-158.00F.

Siano, Donald B.: *See—*
Turner, S. Richard; Siano, Donald B.; and Bock, Jan, 4,521,580, Cl. 526-307.200.

Sielaff, Gunter: *See—*
Lundstrom, Kurt I.; Arwin, Hans R.; Rieke, Erwin; Sielaff, Gunter; and Hennrich, Norbert, 4,521,522, Cl. 436-525.000.

Siemens Aktiengesellschaft: *See—*
Boehmer, Georg, 4,521,123, Cl. 400-124.000.
Daar, Horst; and Alig, Franz, 4,521,223, Cl. 55-13.000.
Daar, Horst; and Alig, Franz, 4,521,228, Cl. 55-105.000.
Finkenzeller, Johann; and Mittelstaedt, Wolfgang, 4,521,899, Cl. 378-40.000.
Leenhouts, Frans; and Kruger, Hans, 4,521,079, Cl. 350-339.00R.
Riha, Gerd; and Veith, Richard, 4,521,751, Cl. 333-151.000.
Sachs, Bertram, 4,521,667, Cl. 219-121.0LJ.
Wessely, Herrmann, 4,521,829, Cl. 361-387.000.
Ziegler, Horst, 4,520,675, Cl. 73-718.000.

Sigma Ltd.: *See—*
Ireland, Eric, 4,520,569, Cl. 33-148.00E.

Signode Corporation: *See—*
Urban, Clement A.; and Huson, Gale W., 4,520,720, Cl. 100-26.000.

Sikora, Joseph G. Mechanical-emergency system between vehicle service brake foot pedal and parking brake. 4,520,907, Cl. 188-156.000.

Sikorski, Charles F., to FMC Corporation. Oil well completion fluid. 4,521,316, Cl. 252-8.55R.

Silcox, William H., to Chevron Research Company. Pressurized gas filled tendons. 4,521,135, Cl. 405-224.000.

Sillivent, Bob; and Sillivent, Clifford, to Wright, Thomas J.; and Burns, Mike L. Conveyor belt cleaning methods and apparatuses therefor. 4,520,917, Cl. 198-499.000.

Sillivent, Clifford: *See—*
Sillivent, Bob; and Sillivent, Clifford, 4,520,917, Cl. 198-499.000.

Silman, Robert E., to AMB Systems Corp. Microorganism identification technique. 4,521,512, Cl. 435-35.000.

Simard, Albert J.: *See—*
Blank, Richard W.; and Simard, Albert J., 4,521,120, Cl. 374-102.000.

Simard, Julien, to Hydro-Quebec. Current transformer protection device. 4,521,822, Cl. 361-35.000.

Simm, Walter: *See—*
Podszun, Wolfgang; Simm, Walter; Goossens, John; and Suling, Carlhans, 4,521,505, Cl. 430-112.000.

Simms, Douglas P.; and Dobbs, Joseph M., to Mississippi Chemical Corporation. Coating agent for particulate materials. 4,521,239, Cl. 71-27.000.

Simon, Gilbert I.; and Witkin, Roy T. Chemotherapeutic method for treating periodontal disease. 4,521,403, Cl. 424-51.000.

Simpson, Daniel G.: *See—*
Canada, Ronald G.; Piety, Kenneth R.; Simpson, Daniel G.; and Pardue, E. Forrest, 4,520,674, Cl. 73-660.000.

Simpson, Harold G.; and Neyer, Leo E., to Encon Products, Inc. Method for installing a roof system positionable over an existing roof structure. 4,520,610, Cl. 52-745.000.

Sindoris, Arthur R.: *See—*
Campi, Morris; and Sindoris, Arthur R., 4,521,781, Cl. 343-700.0MS.

Singer Company, The: *See—*
Barthel, Richard C.; and Roy, Richard D., 4,521,722, Cl. 318-578.000.
Hicks, Irwin A.; and Albrecht, Charles W., 4,520,676, Cl. 73-281.000.
Zylbert, Thaddeus J., 4,520,743, Cl. 112-255.000.

Siol, Werner: *See—*
Arndt, Peter J.; Ludwig, Walter; Munzer, Manfred; Siol, Werner; and Wenzel, Franz, 4,521,567, Cl. 525-261.000.

Sircar, Ila; and Bristol, James A., to Warner-Lambert Company. 4,5-Dihydro-6-[(substituted)-1H-imidazol-4-yl or 5-yl]-3(2H)-pyridazinones and 6-[(substituted)-1H-imidazol-4-yl or 5-yl]-3(2H)-pyridazinones. 4,521,416, Cl. 514-252.000.

Sitrick, David H. Video game including user visual image. 4,521,014, Cl. 273-1.0GC.

Sitrin, Robert D.: *See—*
Chan, George W.; and Sitrin, Robert D., 4,521,335, Cl. 260-112.50R.

Sitter, Erhard, to Robert Bosch GmbH. Fuel injection apparatus with pilot injection and main injection in internal combustion engines. 4,520,774, Cl. 123-300.000.

Siuta, Vincent P.; and Slutsky, Joel, to Du Pont de Nemours, E. I., and Company. Copper conductor compositions. 4,521,329, Cl. 252-512.000.

SKF Industrial Trading and Development Co., B.V.: *See—*
van Nederveen, Hans B., 4,520,882, Cl. 175-410.000.

Skovdal, Jorgen, to Clairol Incorporated. Vapor generating hair roller assembly. 4,520,832, Cl. 132-33.00R.

Skripek, Milan R.: *See—*
Kelley, Arnold E.; Block, Michael J.; and Skripek, Milan R., 4,521,278, Cl. 201-17.000.

Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, to Upjohn Company, The. Process for the preparation of 1,3-oxazine-4-ones. 4,521,599, Cl. 544-97.000.

Slade, Brian P., to Seven Towns Limited. Apparatus for playing a game. 4,521,024, Cl. 273-271.000.

Slaminski, J. Michael, to Slaminski, J. Michael; and Haefliger, William W., a part interest. Lightweight solar collector. 4,520,796, Cl. 126-445.000.

Slinsky, Albert. Drill bit sharpener. 4,520,599, Cl. 51-219.00R.

Slutsky, Joel: *See—*
Siuta, Vincent P.; and Slutsky, Joel, 4,521,329, Cl. 252-512.000.

Slyker, Richard W.; and Pettit, John R., to Vetco Offshore, Inc. Combined metal and elastomer seal. 4,521,040, Cl. 285-140.000.

Smit, Ian D.: *See—*
de Greef, Magdel N.; and Smit, Ian D., 4,520,809, Cl. 128-200.240.

Smith, David R.; and Herron, Maynard M., to Hesston Corporation. Spring cushion chisel plow shank assembly. 4,520,878, Cl. 172-705.000.

Smith, Duaine W.: *See—*
Wyland, Alvin D.; Smith, Duaine W.; and Blackburn, Louis W., 4,521,658, Cl. 219-10.55B.

Smith, Edward F., III: *See—*
Butt, Sheldon H.; Smith, Edward F., III; and Gyurina, F. Dennis, 4,521,469, Cl. 428-35.000.

Smith, Gordon H.: *See—*
Baker, William; Smith, Gordon H.; Beach, Xio I.; Sallee, Gary F.; and Stein, Jeffrey I., 4,521,915, Cl. 455-165.000.

Smith, Herman W.: *See—*
Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, 4,521,599, Cl. 544-97.000.

Smith Kline & French Laboratories Limited: *See—*
Brown, Thomas H.; and Durant, Graham J., 4,521,418, Cl. 514-272.000.
Brown, Thomas H.; and Young, Rodney C., 4,521,625, Cl. 564-461.000.

Smith, Robert J.: *See—*
Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, 4,521,599, Cl. 544-97.000.

Smith, Roger N.: *See—*
Scott, William A.; and Smith, Roger N., 4,520,772, Cl. 123-198.0DB.

SmithKline Beckman Corporation: *See—*
Chan, George W.; and Sitrin, Robert D., 4,521,335, Cl. 260-112.50R.
Rossignol, Jean F., 4,521,424, Cl. 514-314.000.

SmithKline Diagnostics, Inc.: *See—*
Jacke, Stanley E., 4,521,520, Cl. 436-66.000.

Smiths Industries Public Limited Company: *See—*
Masom, Ronald A., 4,521,088, Cl. 350-582.000.

Smoot, George W.; and Macnak, Philip P., to Motorola, Inc. Radio paging device including apparatus for preventing undesired device turn-off. 4,521,776, Cl. 340-825.440.

SMW Schneider & Weisshaupt GmbH: *See—*
Hiestand, Karl, 4,521,028, Cl. 279-1.00C.

Smythe, Kenneth R., to Sale Tilney Technology Plc. Rotary atomizer for coating workpieces with a fine layer of liquid material, and a method of operating the said atomizer. 4,521,462, Cl. 427-421.000.

Snape, Colin E.: *See—*
Clarke, James W.; Kimber, Geoffrey M.; Rantell, Terry D.; and Snape, Colin E., 4,521,291, Cl. 208-8.0LE.

Snell, Richard G.; and Loughridge, Fredrick A., to GTE Products Corporation. Solder glass and electrical device employing the same. 4,521,641, Cl. 174-50.640.

Snow, John P., to Lubriquip-Houdaille, Inc. Lubricant applying system and injector means. 4,520,902, Cl. 184-7.400.

Sobolewski, Robert; and Eberle, David N., to Republic Steel Corporation. Method and apparatus for alloying continuously cast steel products. 4,520,861, Cl. 164-473.000.

Societe Anonyme Dite: Establissements Tourtellier S.A.: *See—*
Willmann, Claude, 4,520,733, Cl. 104-93.000.

Societe Anonyme dite: Etudes et Fabrications Optiques: *See—*
Otto, Maurice J.; and Peridont, Jean-Pierre, 4,520,596, Cl. 51-55.000.

Societe anonyme dite: Prestinox S.A.: *See—*
Oury, Jean-Claude, 4,521,673, Cl. 219-230.000.

Societe d'Exploitation des Machines Dubuit: *See—*
Rouly, Eric; Baquet, Philippe; and Dubuit, Jean-Louis, 4,520,726, Cl. 101-123.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Bouiller, Jean G.; and Soligny, Marcel R., 4,521,160, Cl. 416-218.000.

Societe Nationale Elf Aquitaine: *See—*
Belouet, Christian, 4,520,752, Cl. 118-405.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Cordier, Bernard; and Berge, Christian, 4,520,665, Cl. 73-155.000.
Detienne, Jean-Louis; Levesque, Guy; and Tozzolino, Pierre, 4,521,301, Cl. 209-166.000.

Solaroli, Sergio, to Finike Italiana Marposs S.p.A. Gauge for checking the clearance existing between the cams of a camshaft and the relevant valves. 4,521,863, Cl. 364-561.000.

Soligny, Marcel R.: *See—*
Bouiller, Jean G.; and Soligny, Marcel R., 4,521,160, Cl. 416-218.000.

Solin, Stuart A.: *See—*
Schachar, Ronald A.; and Solin, Stuart A., 4,520,816, Cl. 128-303.100.

Solloway, Daniel S. Hand engageable aquatic exercise assembly. 4,521,011, Cl. 272-116.000.

Solomon, Donald D.; McGary, Charles W.; and Pascarella, Vincent J., to Warner-Lambert Company. Covalent bonded antithrombogenic polyurethane material. 4,521,564, Cl. 525-54.100.

Somezawa, Masashi: *See—*
Ninomiya, Yoshinobu; Somezawa, Masashi; and Hashimoto, Akira, 4,521,486, Cl. 428-407.000.

Sommer, Werner, to T+F Kunststuffe fur Tecknik und Freizeit GmbH. Aqueous plastic molding compositions based on ceramic raw materials containing air-drying and sinterable additives. 4,521,361, Cl. 264-126.000.

Son Su Kung: *See—*
Hsie, C. H., 4,521,529, Cl. 502-217.000.

Sondhaus, Charles A., to Sondhaus, Charles A. Method of and device for irradiating animals. 4,521,690, Cl. 250-455.100.

Sony Corporation: *See—*
Akagiri, Kenzo; and Katakura, Masayuki, 4,521,738, Cl. 330-134.000.
Guisinger, Barrett E., 4,521,818, Cl. 360-65.000.
Ikeda, Yasunari, 4,521,802, Cl. 358-11.000.
Ninomiya, Yoshinobu; Somezawa, Masashi; and Hashimoto, Akira, 4,521,486, Cl. 428-407.000.
Yamada, Takaaki; Tsuda, Yukio; and Yamakoshi, Akira, 4,521,744, Cl. 331-1.00A.

Soos, Rudolf; Kolta, Rezso; Zoltan, Sandor; and Tary, Maria, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Process for the separation of esters. 4,521,612, Cl. 560-124.000.

Sorensen, Wayne E.; and Johnson, Larry E., to Herschel Corporation. Cutter Guard. 4,520,618, Cl. 56-310.000.

Sottini, Stefano; Brenci, Massimo; Righini, Giancarlo; Falciai, Riccardo; Russo, Vera; and Scheggi, Verga A., to Consiglio Nazionale Delle Ricerche. High power laser radiation conveying device utilizing variable section fiber optics. 4,521,070, Cl. 350-96.150.

Souma, Masahiro: *See—*
Momono, Masakichi; Moriya, Hisanori; Souma, Masahiro; and Hamashima, Eiji, 4,520,962, Cl. 239-585.000.

Southgate, Robert; and Brown, Pamela, to Beecham Group p.l.c. Oxazine resolution process. 4,521,337, Cl. 534-560.000.

Sovonics Solar Systems: *See—*
Ovshinsky, Stanford R.; Hudgens, Stephen J.; and Kastner, Marc A., 4,521,447, Cl. 427-45.100.

Spalding & Evenflo Companies, Inc.: *See—*
Cone, Richard E., 4,521,052, Cl. 297-3.000.

Spano, John D.: *See—*
Voltmer, Helmut; Schwenzer, Alfred F.; and Spano, John D., 4,521,271, Cl. 156-568.000.

Spars, Byron G.; Klett, Robert J.; and Wallman, P. Henrik, to Chevron Research Company. Process for improving quality of pyrolysis oil from oil shales and tar sands. 4,521,292, Cl. 208-11.00R.

Spataro, Mario: *See—*
Galli, Paolo; and Spataro, Mario, 4,521,566, Cl. 525-247.000.

Speckhart, Max, to BOSCH-SIEMENS HAUSGERAETE GmbH. Electromotively driven household slicing machine for food. 4,520,703, Cl. 83-478.000.

Spector, Donald. Sound tape player having an animated character. 4,521,205, Cl. 446-302.000.

Spector, George: *See—*
Yogi, Seigi; and Spector, George, 4,520,525, Cl. 15-104.920.

Speed-O-Print Business Machines Corp.: *See—*
Samuels, Abe; Yamashita, Keitaro; and Sasaki, Yoshitaka, 4,521,184, Cl. 432-60.000.

Spencer, Harvey J.: *See—*
Ecker, Harold; and Spencer, Harvey J., 4,520,728, Cl. 101-248.000.

Sperry Corporation: *See—*
DeCoene, Frans J. G. C., 4,520,721, Cl. 100-88.000.

Spiess, Ernst: *See—*
Seibert, Karl; Neumann, Klaus; Spiess, Ernst; and Bruil, Hendrik G., 4,521,326, Cl. 252-174.210.

Spilhaus, Athelstan. Geographical sundial. 4,520,572, Cl. 33-270.000.

Spiller, Peter O.: *See—*
Holroyd, Ralph; and Spiller, Peter O., 4,520,782, Cl. 123-450.000.

Spitzer, Wayne A.: *See—*
Spry, Douglas O.; and Spitzer, Wayne A., 4,521,598, Cl. 544-16.000.

Spivack, John D.; and Pastor, Stephen D., to Ciba Geigy Corporation. Thiocarbamate stabilizers. 4,521,320, Cl. 252-47.500.

Sposini, Maurizio: *See—*
Gabrielli, Luciano; and Sposini, Maurizio, 4,521,882, Cl. 370-85.000.

Spry, Douglas O.; and Spitzer, Wayne A., to Eli Lilly and Company. 3-Azidocephalosporins. 4,521,598, Cl. 544-16.000.

Spykerman, Scott A.: *See—*
Cody, Michael J.; and Spykerman, Scott A., 4,521,051, Cl. 296-97.00H.

Squire, William: *See—*
Whitley, George J.; Rayl, Martin; and Squire, William, 4,520,549, Cl. 29-566.300.
Stacey, Albert B., Jr., to United States of America, National Aeronautics & Space Administration. Mechanical fastener. 4,520,601, Cl. 52-127.700.
Stahl, Alan L.: *See—*
Phelps, Weldon L.; and Stahl, Alan L., 4,521,856, Cl. 364-426.000.
Stahl, Jurgen: *See—*
Hampel, Hans-Joachim; Scondo, Ludwig; Stahl, Jurgen; Wegner, Wilhelm; and Bonne, Harry, 4,520,948, Cl. 222-103.000.
Stahlkonstruktionen Suckow & Fischer: *See—*
Suckow, Klaus, 4,520,607, Cl. 52-489.000.
Stahlkopf, Friedrich R. R., to O.T. Pumpen GmbH & Co. KG. Oscillating displacement pump. 4,521,163, Cl. 417-238.000.
Stahly, G. Patrick, to Ethyl Corporation. Aromatic coupling process. 4,521,345, Cl. 260-465.00F.
Stalder, Herbert; and Briner, Emil, to Rieter Machine Works Limited. Drafting mechanism for spinning machines. 4,520,532, Cl. 19-244.000.
Stam, John G.: *See—*
Hamanaka, Ernest S.; and Stam, John G., 4,521,533, Cl. 514-80.000.
Stamps, Kenneth H.: *See—*
Bohrer, Walter G., Jr.; and Stamps, Kenneth H., 4,520,717, Cl. 99-337.000.
Standard Oil Company, The: *See—*
Li, George S., 4,521,224, Cl. 55-16.000.
Standard Oil Company (Indiana): *See—*
Howe, Arthur T., 4,521,800, Cl. 357-67.000.
Standex International Corporation: *See—*
Kowalski, Frank P., 4,520,800, Cl. 128-72.000.
Stang, John H.: *See—*
Reichenbach, Dean H.; Stang, John H.; Cummings, Lewis W.; Glasson, Richard E.; and Ruthmansdorfer, David A., 4,520,627, Cl. 60-599.000.
Stanojevic, Silvo: *See—*
Atherton, James H.; and Stanojevic, Silvo, 4,521,727, Cl. 323-294.000.
Stapleford, Gary N.; and Borsa, Andrew J., to Wang Laboratories, Inc. Data communication system with increased effective bandwidth. 4,521,881, Cl. 370-72.000.
Stapley, Edward O., to Merck & Co., Inc. Antibiotics-859A and production thereof. 4,521,408, Cl. 424-115.000.
Stark, Axel: *See—*
Huber, Franz R.; and Stark, Axel, 4,521,913, Cl. 455-121.000.
Stark, Virgil; and Genequand, Pierre, to North American Utility Construction Corporation. Solar energy concentrating slat arrangement and collector. 4,520,794, Cl. 126-438.000.
Stauffer Chemical Company: *See—*
Baker, Don R.; and Tam, Teresa M., 4,521,243, Cl. 71-100.000.
Estes, William E., 4,521,391, Cl. 423-307.000.
LaBauve, Raphael J., 4,520,808, Cl. 128-200.140.
Steele, Robert B.: *See—*
Babbel, John H.; Russell, William A.; and Steele, Robert B., 4,521,870, Cl. 364-900.000.
Steigerwald, Carl J., to Kendall Company, The. Liquid drainage system with hinged cup-shaped valve. 4,521,213, Cl. 604-323.000.
Stein, Jeffrey I.: *See—*
Baker, William; Smith, Gordon H.; Beach, Xio I.; Sallee, Gary F.; and Stein, Jeffrey I., 4,521,915, Cl. 455-165.000.
Steinberg, Richard W.: *See—*
Peterson, Richard L.; Scheurer, Roger J.; and Steinberg, Richard W., 4,520,876, Cl. 172-427.000.
Steiner, Alfred, to Steiner Silidur AG. Building blocks. 4,521,138, Cl. 405-284.000.
Steiner Silidur AG: *See—*
Steiner, Alfred, 4,521,138, Cl. 405-284.000.
Steinhauser, Thomas; and Buch, Thomas, to Honsel-Werke AG. Apparatus for removing gases from molten metal, especially molten aluminum. 4,521,001, Cl. 266-208.000.
Steinheuser, Peter: *See—*
Menezes, Edgar V.; and Steinheuser, Peter, 4,520,822, Cl. 128-335.500.
Stepan Chemical Company: *See—*
Magnus, George, 4,521,611, Cl. 560-91.000.
Stepke, Anthony C.; and Clusener, Gerhard R., to Theta Industries, Inc. Constant load dilatometers. 4,521,119, Cl. 374-56.000.
Stern, Howard R.: *See—*
Saffer, Gary M.; Lambert, Gerard L.; and Stern, Howard R., 4,521,206, Cl. 446-444.000.
Stevens, Frank, to Atlantic Richfield Company. Bis(alpha-alkylbenzyl)ether production. 4,521,635, Cl. 568-659.000.
Stevens, Frank, to Atlantic Richfield Company. Process for the production of bis(alpha-alkylbenzyl) ethers. 4,521,637, Cl. 568-659.000.
Stewart, E. Allen; and Keesling, Evan L., to Amasek, Inc. Method and system for conditioning and removing aquatic plants. 4,520,616, Cl. 56-9.000.
Steyr-Daimler-Puch Aktiengesellschaft: *See—*
Lenhard-Backhaus, Hugo; and Krumpeck, Kurt, 4,521,033, Cl. 280-700.000.
Stig G. Carlqvist Motor Consultant (CMC) AB: *See—*
Carlqvist, Stig G., 4,520,628, Cl. 60-616.000.
Stiles, Gerald E.: *See—*
Pelham, Russell W.; Redden, Charlotte S.; Eshkol, Aliza; and Stiles, Gerald E., 4,521,407, Cl. 424-95.000.
Stockdale, Wendell B.: *See—*
Breuninger, Robert E., 4,520,753, Cl. 118-500.000.
Stoff, William G.: *See—*
Rea, Gerald M.; Stoff, William G.; and Zens, John F., 4,521,050, Cl. 296-192.000.
Stohr, Frank-Michael: *See—*
Beck, Ulrich; Stohr, Frank-Michael; and Nickel, Horst, 4,521,217, Cl. 8-639.000.
Stolzenburg, Rudolf; Bergthaller, Peter; Wolfrum, Gerhard; and Strauss, Jurgen, to Agfa-Gevaert Aktiengesellschaft. Monoazo pyridinol dyes chelated or capable of being chelated with metal ions and their use for image production. 4,521,506, Cl. 430-241.000.
Stone, Spencer A. End elevation adjustment of material separating tables. 4,521,302, Cl. 209-441.000.
Storms, William J., to Du Pont Canada Inc. Pouches of ethylene/octene-1 copolymer film containing a flowable material. 4,521,437, Cl. 426-130.000.
Stoughton, John W.; and Willis, Donald H., to RCA Corporation. Beam current limiting arrangement for a digital television system. 4,521,811, Cl. 358-243.000.
Stout, Robert L., to Enzyme Technology Company. Catalyzed colorimetric and fluorometric substrates for peroxidase enzyme determinations. 4,521,511, Cl. 435-28.000.
Strauss, Jurgen: *See—*
Stolzenburg, Rudolf; Bergthaller, Peter; Wolfrum, Gerhard; and Strauss, Jurgen, 4,521,506, Cl. 430-241.000.
Strong, John C. Self-cleaning furnace filter construction. 4,521,230, Cl. 55-274.000.
Strub, Jean-Claude, to Luk Lamellen und Kupplungsbau GmbH. Multistage clutch disc arrangement with dished clutch disc, friction generating means, and load friction unit. 4,520,915, Cl. 192-106.200.
Strub, Jean-Claude, to Luk Lamellen und Kupplungsbau GmbH. Clutch disc assembly including a flange on the clutch disc, the flange extending through one guide plate and a friction disc. 4,520,916, Cl. 192-106.200.
Stuhler, Herbert; and Krempl, Engelbert, to Hoechst Aktiengesellschaft. Process for the purification of esters. 4,521,595, Cl. 536-127.000.
Sturges, Robert H., Jr.; Birsa, Joseph J.; Dawson, Paul H.; and Byford, Roger G., to Westinghouse Electric Corp. Manipulator control system and apparatus for decontaminating nuclear steam generators. 4,521,844, Cl. 364-167.000.
Sturgill, James D.: *See—*
Appleman, William S.; and Sturgill, James D., 4,521,044, Cl. 294-82.240.
Suckow, Klaus, to Stahlkonstruktionen Suckow & Fischer. Releasable resilient mounting assembly for panel members. 4,520,607, Cl. 52-489.000.
Sucro, Jost S.; Moyer, Ted A.; and Shufflebarger, William S., to General Motors Corporation. Windshield wiper transmission. 4,520,689, Cl. 74-595.000.
Sueda, Noriyoshi: *See—*
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Suganuma, Saburo; and Kataoka, Hiroyuki, to Fuji Xerox Co., Ltd. Apparatus for combining information from different forms to generate composite slips. 4,521,096, Cl. 355-3.00R.
Sugherificio P. Careddu S.p.A.: *See—*
Careddu, Franco, 4,521,266, Cl. 156-242.000.
Sugimoto, Tadao; Ikeda, Hideo; Mifune, Hiroyuki; and Nakamura, Koki, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive materials. 4,521,508, Cl. 430-567.000.
Sugimura, Minoru: *See—*
Hirota, Ken; Fujimoto, Yoshiaki; Watanabe, Kouichi; and Sugimura, Minoru, 4,521,323, Cl. 252-62.590.
Sugisawa, Ko; Matsumura, Yasushi; and Taga, Kazumitsu, to House Food Industrial Co., Ltd. Process for drying foods under reduced pressure. 4,520,574, Cl. 34-5.000.
Sugita, Masanori: *See—*
Otake, Noboru; Seto, Haruo; Sasaki, Tetsuo; Sugita, Masanori; Natori, Yohei; and Sueda, Noriyoshi, 4,521,339, Cl. 260-239.30B.
Sugita, Yoshiaki: *See—*
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Sugitani, Hiroshi: *See—*
Yokota, Masami; Sugitani, Hiroshi; and Inamoto, Tadayoshi, 4,521,787, Cl. 346-140.00R.
Sugiyama, Hiroaki, to Ricoh Company, Ltd. Opening means for powder vessel. 4,520,695, Cl. 81-3.070.
Suissa, Moshe. Cleaning apparatus. 4,520,577, Cl. 34-76.000.
Suling, Carlhans: *See—*
Podszun, Wolfgang; Simm, Walter; Goossens, John; and Suling, Carlhans, 4,521,505, Cl. 430-112.000.
Sulzer Brothers Limited: *See—*
Rohr, Willy; Wollgarten, Kurt; and Vogel, Rudolf, 4,520,851, Cl. 139-448.000.
Sumitomo Chemical Company, Limited: *See—*
Furukawa, Hiroshi; and Saito, Yuichi, 4,521,587, Cl. 526-340.200.
Mitsuno, Tatsuyuki; and Yamamoto, Masashi, 4,521,487, Cl. 428-407.000.
Sumitomo Electric Industries, Ltd.: *See—*
Hayashi, Hideki; and Kikuchi, Kenichi, 4,521,888, Cl. 372-50.000.
Murakami, Kazuhito; and Takahashi, Kenichi, 4,521,073, Cl. 350-96.340.
Sumitomo Light Metal Industries, Ltd.: *See—*
Tanabe, Zenichi; Itoh, Katsuhisa; and Watanabe, Yoshiaki, 4,521,284, Cl. 204-71.000.
Sumitomo Rubber Industries, Ltd.: *See—*
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Sundstrand Corporation: *See—*
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Supafit Gymnasium Equipment Pty. Ltd.: *See—*
Dofel, Andrew W. R., 4,521,013, Cl. 272-136.000.
Suroff, Leonard W.: *See—*
Kolt, Stanley, 4,520,959, Cl. 236-49.000.
Sutton, Gerald E.: *See—*
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Suzuka, Susumu: *See—*
Okazaki, Hideo; Imagome, Hiroshi; Suzuka, Susumu; and Sakai, Kiyoshi, 4,521,605, Cl. 548-440.000.
Suzuki, Akiyoshi; Sato, Hirosi; Omata, Takashi; and Kosugi, Masao, to Canon Kabushiki Kaisha. Exposure apparatus. 4,521,082, Cl. 350-405.000.
Suzuki, Hajime; and Iwano, Yoshimi, to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki. Method for disposal of defective weft yarn in a fluid jet loom. 4,520,849, Cl. 139-116.000.
Suzuki, Hidetoshi: *See—*
Ayata, Naoki; Saito, Seiji; Suzuki, Hidetoshi; Ozawa, Kunitaka; Koumura, Noboru; and Kazuma, Koji, 4,521,805, Cl. 358-75.000.
Suzuki Jidosha Kogyo Kabushiki Kaisha: *See—*
Ishida, Tokuzi; and Aono, Kiyotaka, 4,520,776, Cl. 123-308.000.
Suzuki, Junichiro: *See—*
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Suzuki Motor Company Limited: *See—*
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Suzuki, Nobuo: *See—*
Shingu, Tadashi; Tsutada, Tadakazu; Nishihara, Toshio; and Suzuki, Nobuo, 4,520,611, Cl. 52-789.000.
Suzuki, Shigeyoshi; Yamada, Jun; Senga, Takao; Kuriu, Sadao; Yamasaki, Masahiro; Hirose, Iwao; and Maegawa, Tokubee, to Mitsubishi Paper Mills, Ltd.; and Dainippon Screen Mfg. Co., Ltd. Liquid developing apparatus for electrophotography. 4,521,101, Cl. 355-10.000.
Suzuki, Shoichi; Ohta, Wataru; Sakurai, Noriaki; and Yamashita, Michio, to Yokohama Rubber Co., Ltd., The. Caisson for underwater structures. 4,521,133, Cl. 405-195.000.
Suzuki, Shun: *See—*
Kimura, Kazuo; Taneda, Yukinori; Tsuyuki, Shinichi; Suzuki, Shun; Hashimoto, Yoshio; and Sakamoto, Shinichi, 4,520,965, Cl. 242-7.05B.
Svenska Sockerfabriks AB: *See—*
Dahmen, Jan E.; Magnusson, Hans G.; and Martensson, Kaj B., 4,521,592, Cl. 536-4.100.
Svenson, Bert N. Centralizer for well casings. 4,520,869, Cl. 166-241.000.
Swaim, Robert J.: *See—*
Buckley, John D.; Swaim, Robert J.; Fox, Robert L.; and Johnston, David F., 4,521,659, Cl. 219-10.770.
Swaniger, James R.; and Goth, Paul R., to American Hospital Supply Corporation. Instrument for ophthalmic laser surgery. 4,520,824, Cl. 128-395.000.
Swedish Rail System AB SRS: *See—*
Borup, Alf L.; and Astrom, Erik G., 4,520,901, Cl. 184-3.100.
Swiss Aluminum Ltd.: *See—*
Kesting, Marinus C., 4,521,663, Cl. 219-76.140.
Switzer, Jay A., to Union Oil Company of California. Highly conductive photoelectrochemical electrodes and uses thereof. 4,521,499, Cl. 429-111.000.
Sychev, Anatoly P.: *See—*
Yarygin, Vladimir I.; Sannikov, Jury I.; Panchenko, Anatoly I.; Sychev, Anatoly P.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; and Toguzov, Mels Z., 4,521,245, Cl. 75-21.000.
Synthelabo: *See—*
Kaplan, Jean-Pierre, 4,521,619, Cl. 514-315.000.
Sytek, Incorporated: *See—*
Biba, Kenneth J.; and Picazo, Jose J., Jr., 4,521,891, Cl. 375-8.000.
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Tachibana, Yoshinori: *See—*
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Tachikawa Spring Co., Ltd.: *See—*
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Taga, Kazumitsu: *See—*
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Tahara, Kazutoki: *See—*
Sado, Ryoichi; and Tahara, Kazutoki, 4,520,562, Cl. 29-878.000.
Tahim, Raghbir S.; Hayashibara, George M.; and Chang, Kai, to TRW Inc. Suspended stripline varactor-tuned Gunn oscillator. 4,521,747, Cl. 331-107.0SL.
Takada, Hiroaki: *See—*
Kiyota, Yuhiko; Tsuji, Katsuyuki; Kume, Satoru; Takada, Hiroaki; Shinsei, Kiyoichi; Matsumoto, Akio; and Ogawa, Hitoshi, 4,520,624, Cl. 60-286.000.
Takada, Juichiro, to Takata Corporation. Lockable moving belt anchor for passive vehicle occupant restraint belt systems. 4,521,034, Cl. 280-804.000.
Takada, Yusaku: *See—*
Katayama, Hajime; Nitanda, Hiroshi; Nagaoka, Tateki; Kishi, Hirotoshi; Takada, Yusaku; Iida, Noriyoshi; Inuzuka, Tsuneki; and Komiya, Yutaka, 4,521,099, Cl. 355-8.000.
Takahashi, Kenichi: *See—*
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Murakami, Kazuhito; and Takahashi, Kenichi, 4,521,073, Cl. 350-96.340.
Takahashi, Kihei; and Sassa, Yusei, to Yoshida Kogyo K. K. Apparatus for pairing two rows of slide fastener zigzag coupling elements. 4,520,559, Cl. 29-766.000.
Takahashi, Kotei, to Nissan Motor Co., Ltd. Shift control mechanism of an automotive manual transmission. 4,520,685, Cl. 74-473.00R.
Takahashi, Osamu: *See—*
Nanjo, Hirotoshi; Satou, Hiroo; and Takahashi, Osamu, 4,520,778, Cl. 123-352.000.
Takahashi, Tsuneo: *See—*
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Takaishi, Tatsuyuki: *See—*
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Takami, Satoshi; and Kuroki, Yoshifumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Aperture value control device utilizing frequency signal from flash unit for camera. 4,521,094, Cl. 354-423.000.
Takano, Masao, to Fuji Photo Film Co., Ltd. Method of and cassette for taking X-ray photograph. 4,521,904, Cl. 378-185.000.
Takashima, Hiroaki: *See—*
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Takayama, Yasuharu: *See—*
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Takeda Chemical Industries, Ltd.: *See—*
Harada, Setsuo; Shinagawa, Susumu; and Kitano, Kazuaki, 4,521,340, Cl. 260-245.20T.
Kanamaru, Tsuneo; Shinagawa, Susumu; and Asai, Mitsuko, 4,521,432, Cl. 514-556.000.
Oka, Yoshikazu; Nishikawa, Kohei; and Miyake, Akio, 4,521,607, Cl. 549-39.000.
Takeda, Hideo, to Fuji Photo Film Co., Ltd. Coating method and apparatus. 4,521,459, Cl. 427-359.000.
Takeda, Mikio: *See—*
Oh-ishi, Tokuro; Takeda, Mikio; Nakajima, Hiromichi; and Nagao, Taku, 4,521,430, Cl. 514-211.000.
Takehara, Nobuo, to Kabushiki Kaisha Takuma. Device to force out incineration ash. 4,520,738, Cl. 110-171.000.
Takematsu, Tetsuo; Konnai, Makoto; Hosogai, Takeo; and Nishida, Takashi, to Kuraray Co., Ltd. Substituted phenyl carbamates, herbicidal compositions containing the same as active ingredient and method of controlling weeds. 4,521,242, Cl. 71-94.000.
Takenoya, Hideaki: *See—*
Eguchi, Yasukata; Hanyu, Susumu; Takenoya, Hideaki; and Inamori, Mikio, 4,520,987, Cl. 248-635.000.
Tam, Teresa M.: *See—*
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Tamai, Takashi; Tomiyama, Shigefumi; and Ohshima, Nobumasa, to Matsushita Electric Industrial Co., Ltd. Temperature and wear sensor for a brake. 4,520,661, Cl. 73-129.000.
Tamehiro, Hiroshi; Mazuda, Hiroo; Ohashi, Mamoru; and Onoe, Yasumitsu, to Nippon Steel Corporation. Method of making wrought high tension steel having superior low temperature toughness. 4,521,258, Cl. 148-12.00F.
Tamminen, Pentti J., to LTH Associates, Ltd. Electrochemical generators and method for the operation thereof. 4,521,497, Cl. 429-27.000.
Tanabe Seiyaku Co., Ltd.: *See—*
Oh-ishi, Tokuro; Takeda, Mikio; Nakajima, Hiromichi; and Nagao, Taku, 4,521,430, Cl. 514-211.000.
Tanabe, Zenichi; Itoh, Katsuhisa; and Watanabe, Yoshiaki, to Sumitomo Light Metal Industries, Ltd. Electrolytic method of producing a high purity aluminum-lithium mother alloy. 4,521,284, Cl. 204-71.000.
Tanagho, Emil A.: *See—*
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Tanaka, Junzo: *See—*
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Tanaka, Kyugo: *See—*
Kabashima, Kazuo; and Tanaka, Kyugo, 4,521,793, Cl. 346-201.000.
Tanaka, Toshie, to Nifco Inc. Hinged mirror image plastic fastener for quick assembly to threaded male members. 4,521,148, Cl. 411-182.000.
Tanaka, Yasuhiko: *See—*
Kimura, Yoshiaki; Nozu, Taketo; and Tanaka, Yasuhiko, 4,521,788, Cl. 346-140.00R.
Tanaka, Yasuhito: *See—*
Katakami, Tsutomu; Fukazawa, Nobuyuki; Iizuka, Hajime; Nishina, Takashi; Kamiya, Joji; Tanaka, Yasuhito; and Nakano, Takuo, 4,521,415, Cl. 514-252.000.

Tando, Shuichi: *See—*
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Taneda, Yukinori: *See—*
Kimura, Kazuo; Taneda, Yukinori; Tsuyuki, Shinichi; Suzuki, Shun; Hashimoto, Yoshio; and Sakamoto, Shinichi, 4,520,965, Cl. 242-7.05B.
Tanimoto, Hirotoshi: *See—*
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Taniuchi, Akira: *See—*
Fujita, Takeshi;; Mori, Shigeo; Kataoka, Hironori; and Taniuchi, Akira, 4,521,586, Cl. 528-297.000.
Tarbox, Bruce H.: *See—*
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Tary, Maria: *See—*
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Tassone, Joseph V., to Dayco Corporation. Method and apparatus for making a polymeric coated layer. 4,521,362, Cl. 264-136.000.
Tatsumi, Takumi, to Mitsubishi Denki Kabushiki Kaisha. Torque measuring apparatus. 4,520,680, Cl. 73-862.190.
Taub, Ronald H. Display hanger. 4,520,978, Cl. 248-220.400.
Taylor, Christopher J. C.: *See—*
Wiggs, Christopher C.; and Taylor, Christopher J. C., 4,521,204, Cl. 446-198.000.
Taylor, Henry B., III: *See—*
Christen, Jimmie D.; and Taylor, Henry B., III, 4,521,548, Cl. 521-167.000.
Taylor, Ronald T., to Mostek Corporation. Mos output driver circuit avoiding hot-electron effects. 4,521,698, Cl. 307-450.000.
TDK Corporation: *See—*
Harigane, Kotaro; Tando, Shuichi; Takahashi, Kenichi; and Shudo, Hirokazu, 4,520,557, Cl. 29-740.000.
Technical Components Pty. Ltd.: *See—*
Crawford, John S., 4,521,825, Cl. 361-253.000.
Technics GmbH Europa: *See—*
Liebel, Gerhard, 4,521,719, Cl. 315-111.810.
Technology for Energy Corporation: *See—*
Canada, Ronald G.; Piety, Kenneth R.; Simpson, Daniel G.; and Pardue, E. Forrest, 4,520,674, Cl. 73-660.000.
Technology Marketing, Inc.: *See—*
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Teijin Limited: *See—*
Norota, Susumi; Kiriyama, Tsutomu; Imoto, Tadashi; and Azumi, Toshinori, 4,521,364, Cl. 264-176.00F.
Shingu, Tadashi; Tsutada, Tadakazu; Nishihara, Toshio; and Suzuki, Nobuo, 4,520,611, Cl. 52-789.000.
Telchuk, Steve E.: *See—*
Gerdes, Donald F.; and Telchuk, Steve E., 4,521,227, Cl. 55-225.000.
Teledyne, Inc.: *See—*
Miller, Robert F., 4,521,664, Cl. 219-76.140.
Teledyne Industries, Inc.: *See—*
Eucken, Craig M., 4,521,259, Cl. 148-20.300.
Teledyne Industries, Inc., Teledyne Water Pik: *See—*
Zackay, Victor F.; and Rowe, Donald R., 4,521,530, Cl. 502-218.000.
Telefonaktiebolaget L M Ericsson: *See—*
Forsberg, Gunnar; and Ingre, Lars, 4,521,920, Cl. 455-619.000.
Temco Home Health Care Products, Inc.: *See—*
Hatala, John, 4,520,515, Cl. 4-579.000.
Templeman, Arthur R., to Peterson Mfg. Co. Mirror assembly. 4,520,983, Cl. 248-481.000.
Terachi, Junichi: *See—*
Yoshiyasu, Hajimu; Murata, Shirou; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,521,653, Cl. 200-144.00C.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,521,413, Cl. 514-203.000.
Terhune, James H., to General Electric Company. Method and apparatus for detecting hydrogen, oxygen and water vapor concentrations in a host gas. 4,520,654, Cl. 73-24.000.
Terhune, James H.; and Neissel, John P., to General Electric Company. Liquid level sensor. 4,521,373, Cl. 376-258.000.
Texaco Inc.: *See—*
Cuscurida, Michael; and Peterson, Bruce W., 4,521,572, Cl. 525-507.000.
Dominguez, Richard J. G.; and Cuscurida, Michael, 4,521,581, Cl. 528-57.000.
Karol, Thomas J., 4,521,318, Cl. 252-46.700.
Sanderson, John R.; Watts, Lewis W., Jr.; Vanderpool, Steven H.; and Renken, Terry L., 4,521,609, Cl. 549-533.000.
Texas A&M University System, The: *See—*
Chiou, George C. Y.; and Liu, Hsin-Kuang, 4,521,414, Cl. 514-229.000.
Texas Instruments Incorporated: *See—*
Caldwell, David; Ferrio, Linda J.; and Hunter, Arthur C., 4,521,868, Cl. 364-753.000.
Coleman, Donald J., Jr.; Haken, Roger A.; and Wang, Chung S., 4,521,446, Cl. 427-86.000.
Dix, Robert M.; Ellis, Timothy A.; and Andrews, Gary W., 4,520,629, Cl. 62-6.000.
Guttag, Karl M., 4,521,852, Cl. 364-200.000.
Guttag, Karl M., 4,521,853, Cl. 364-200.000.
Levine, Jules D., 4,521,640, Cl. 136-250.000.
Logan, Russell H.; and Poradish, Frank J., 4,521,861, Cl. 364-517.000.
Noble, Robert T., 4,521,775, Cl. 340-784.000.
Purdes, Andrew J., 4,521,275, Cl. 156-643.000.
Reddy, Chitranjan N., 4,521,701, Cl. 307-482.000.
Textron Inc.: *See—*
Klein, Gregory L.; and Burton, C. Leonard, 4,521,121, Cl. 384-100.000.
T+F Kunststuffe fur Tecknik und Freizeit GmbH: *See—*
Sommer, Werner, 4,521,361, Cl. 264-126.000.
Thatcher, Arthur K.; and McCarter, Ed R., deceased (by McCarter, Rebecca A., executrix), to Arthur K. Thatcher Revokable Trust. Sonic dispersion unit and control system therefor. 4,520,786, Cl. 123-536.000.
Thayer, John R. Protective helmet with dual adjustment illumination means. 4,521,831, Cl. 362-32.000.
Theeuwes, Felix, to ALZA Corporation. Parenteral agent dispensing equipment. 4,521,211, Cl. 604-85.000.
Thenner, Johann: *See—*
Ruhl, Erich; and Thenner, Johann, 4,521,543, Cl. 521-103.000.
Therma-Wave, Inc.: *See—*
Rosencwaig, Allan, 4,521,118, Cl. 374-5.000.
Thermalloy, Inc.: *See—*
Jordan, William D.; Hundt, Roger C.; and Pritchett, James D., 4,521,827, Cl. 361-386.000.
Thermetic Glass, Inc.: *See—*
Miller, Clarence W., 4,520,602, Cl. 52-173.00R.
Theslof, Gene, Jr., to Custom Laboratories, Inc. Slide production system. 4,521,091, Cl. 353-122.000.
Theta Industries, Inc.: *See—*
Stepke, Anthony C.; and Clusener, Gerhard R., 4,521,119, Cl. 374-56.000.
Thiele, Klaus: *See—*
Schumann, Henning; Busch, Peter; Fischer, Detlef; and Thiele, Klaus, 4,520,831, Cl. 132-11.00R.
Thompson, David L.; Roline, Glenn M.; and Harrington, Richard J., to Medtronic, Inc. Digital circuit for control of gradual turn-on of electrical tissue stimulators. 4,520,825, Cl. 128-422.000.
Thomsen, Joelle R.; and Fagerburg, David R., to Eastman Kodak Company. Polyesters and their manufacture from acids and glycol carbonates. 4,521,585, Cl. 528-271.000.
Thomson-CSF: *See—*
Arnould, Jacques; and Tonnel, Eugene, 4,520,552, Cl. 29-571.000.
Broussoux, Dominique; Facoetti, Hugues; Micheron, Francois; and Monnerie, Lucien, 4,521,322, Cl. 252-62.900.
Thumm, Hans: *See—*
Hartmann, Achim; and Thumm, Hans, 4,521,384, Cl. 423-72.000.
Thuries, Edmond, to Alsthom Atlantique. Circuit breaker with incorporated current transformer. 4,521,657, Cl. 200-148.00R.
Tietze, Guenter: *See—*
Kretschmer, Horst; Tietze, Guenter; Noack, Juergen; Schweigel, Hans-Joachim; Schingnitz, Manfred; Werner, Klaus; and Kirsch, Bernd, 4,521,139, Cl. 406-19.000.
Tiger Products, Inc.: *See—*
Prawdzik, Joseph F., 4,521,019, Cl. 273-49.000.
Timmele Laminering AB: *See—*
Ahlm, Lars, 4,520,517, Cl. 5-481.000.
Toaba, Hirotaka; Mikumo, Masatoshi; and Asami, Masahiro, to Daicel Chemical Industries, Ltd. Aqueous dispersion. 4,521,565, Cl. 525-64.000.
Togino, Takayoshi, to Olympus Optical Co., Ltd. Microscope objective. 4,521,083, Cl. 350-414.000.
Toguzov, Mels Z.: *See—*
Yarygin, Vladimir I.; Sannikov, Jury I.; Panchenko, Anatoly I.; Sychev, Anatoly P.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; and Toguzov, Mels Z., 4,521,245, Cl. 75-21.000.
Toho Beslon Co., Ltd.: *See—*
Ogawa, Hiroyasu; Izumi, Kazuo; and Shimazaki, Kenji, 4,520,623, Cl. 57-236.000.
Tohoku University: *See—*
Inaba, Humio; Ito, Hiromasa; and Ogawa, Yoh, 4,521,681, Cl. 250-205.000.
Tokai TRW & Co., Ltd.: *See—*
Abe, Michio, 4,521,141, Cl. 409-48.000.
Tokuyama, Yoshio, to Victor Company of Japan, Limited. Reproducing apparatus capable of performing high-speed reproduction of a video signal. 4,521,815, Cl. 360-10.200.
Tokyo Institute of Technology: *See—*
Yamamoto, Takakazu; Yamamoto, Akio; and Sanechika, Kenichi, 4,521,589, Cl. 528-380.000.
Tokyo Juki Industrial Co., Ltd.: *See—*
Shinomiya, Hiroaki; and Noguchi, Minetoshi, 4,520,745, Cl. 112-266.100.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ando, Hideo, 4,521,680, Cl. 250-201.000.
Hiraki, Shunichi; Kinoshita, Hiroshi; Kumamaru, Kuniaki; Koguchi, Shigeo; and Yonezawa, Toshio, 4,521,256, Cl. 148-1.500.
Hosoya, Masahiro; and Ueno, Tsuyoshi, 4,521,098, Cl. 355-3.0DD.
Kato, Taketoshi; and Onoe, Akira, 4,521,801, Cl. 357-71.000.
Murao, Yutaka; and Nishizono, Taira, 4,521,763, Cl. 340-347.0AD.
Sasaki, Yoshitaka, 4,521,448, Cl. 427-88.000.
Tomburo, Anthony F.; and Kachur, Nicholas W., to Gibson Associates, Inc. Sealed propulsion mechanism for a stick-deodorant or the like container. 4,521,127, Cl. 401-68.000.

Tomcufcik, Andrew S.: *See—*
Dusza, John P.; Tomcufcik, Andrew S.; and Albright, Jay D., 4,521,422, Cl. 514-258.000.
Tominaga, Shigetake: *See—*
Yoshimura, Tatsushiro; and Tominaga, Shigetake, 4,521,596, Cl. 524-406.000.
Tominaga, Yasuhiro. Ball game apparatus. 4,521,016, Cl. 273-29.00A.
Tomisawa, Osamu: *See—*
Shinohara, Hirofumi; Tomisawa, Osamu; Anami, Kenji; and Yoshimoto, Masahiko, 4,521,704, Cl. 307-530.000.
Tomiyama, Shigefumi: *See—*
Tamai, Takashi; Tomiyama, Shigefumi; and Ohshima, Nobumasa, 4,520,661, Cl. 73-129.000.
Tondre, Stephen L.; and Lunk, Hans E., to Raychem Corporation. Electrical insulation. 4,521,485, Cl. 428-383.000.
Tonnel, Eugene: *See—*
Arnould, Jacques; and Tonnel, Eugene, 4,520,552, Cl. 29-571.000.
Topfl, Werner: *See—*
Kristinsson, Haukur; and Topfl, Werner, 4,521,597, Cl. 544-3.000.
Toppan Printing Company, Ltd.: *See—*
Kitajima, Nobuyuki; Tachibana, Yoshinori; Muraki, Asashi; and Kuzuoka, Shinichi, 4,521,355, Cl. 264-60.000.
Torin Corporation: *See—*
Lampietti, Bernard P., 4,520,644, Cl. 72-131.000.
Toshiba Ceramics Co. Limited: *See—*
Saito, Hajime; and Urakawa, Tetsuro, 4,521,393, Cl. 423-344.000.
Toshiba Electric Appliances Co., Ltd.: *See—*
Katagiri, Nobuhiko; Matsubara, Hidenobu; and Iida, Akio, 4,520,864, Cl. 165-60.000.
Tou, Jacob S.; and Schleppnik, Alfred A., to Monsanto Company. Cyano-dicarboxylate. 4,521,344, Cl. 260-465.00D.
Towmotor Corporation: *See—*
Liljequist, Lawrence A.; Wible, John E.; and Schwehr, Richard A., 4,520,986, Cl. 248-585.000.
Melocik, Grant C.; and Pickering, William, 4,521,885, Cl. 371-29.000.
Townsend, Rodney C., to Mine Support Systems (Proprietary) Ltd. Elongate compression bearing member. 4,520,980, Cl. 248-351.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Oyama, Kiyotaka; Irino, Shigeaki; Harada, Tsuneo; and Nakamura, Masao, 4,521,514, Cl. 435-70.000.
Toyonaga, Noriyasu, to Fujitsu Limited. Data transmitting-receiving system. 4,521,878, Cl. 370-19.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Isobe, Toshiaki; and Fukuda, Teruo, 4,520,784, Cl. 123-492.000.
Ito, Yoshiyasu; Kobayashi, Fumiaki; and Miyagi, Hideo, 4,520,780, Cl. 123-359.000.
Ito, Yuji, 4,520,543, Cl. 29-227.000.
Matsushita, Souichi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,520,783, Cl. 123-492.000.
Toyozawa, Yukio: *See—*
Sakamoto, Keiji; and Toyozawa, Yukio, 4,521,724, Cl. 318-762.000.
Tozzolino, Pierre: *See—*
Detienne, Jean-Louis; Levesque, Guy; and Tozzolino, Pierre, 4,521,301, Cl. 209-166.000.
Transnuklear GmbH: *See—*
Christ, Richard; Muller, Erhard; Knackstedt, Hans-Gunther; and Laug, Reiner, 4,521,691, Cl. 250-506.100.
TRE Semiconductor Equipment Corporation: *See—*
Van Peski, Christian K.; and Meisenheimer, William L., 4,521,114, Cl. 356-401.000.
Tremmel, Robert A., to OMI International Corporation. Cyanide-free copper electrolyte and process. 4,521,282, Cl. 204-52.00R.
Tripp, Edwin P., III: *See—*
Nablo, Sam V.; and Tripp, Edwin P., III, 4,521,445, Cl. 427-44.000.
Trubisky, Leonard G.; and Shelly, William A., to Honeywell Information Systems Inc. Central processor. 4,521,851, Cl. 364-200.000.
Trussler, Ronald C.: *See—*
deHertel Eastcott, Peter; and Trussler, Ronald C., 4,520,910, Cl. 192-0.02R.
TRW Inc.: *See—*
Jones, Robert J.; and Chang, Glenn E. C., 4,521,623, Cl. 564-430.000.
Rau, Bantwal R.; Glaeser, Christopher D.; and Kuekes, Philip J., 4,521,874, Cl. 365-221.000.
Tahim, Raghbir S.; Hayashibara, George M.; and Chang, Kai, 4,521,747, Cl. 331-107.0SL.
Tsien, Hsue C., to Exxon Research & Engineering Co. Method of coextruding plastics to form a composite sheet. 4,521,359, Cl. 264-104.000.
Tsubouchi, Toshiyuki; and Hata, Hitoshi, to Idemitsu Kosan Company Limited. Fluid for traction drive. 4,521,324, Cl. 252-73.000.
Tsuchiya, Koji: *See—*
Kunihiro, Takatoshi; and Tsuchiya, Koji, 4,521,296, Cl. 208-87.000.
Tsuda, Yukio: *See—*
Yamada, Takaaki; Tsuda, Yukio; and Yamakoshi, Akira, 4,521,744, Cl. 331-1.00A.
Tsuji, Katsuyuki: *See—*
Kiyota, Yuhiko; Tsuji, Katsuyuki; Kume, Satoru; Takada, Hiroaki; Shinsei, Kiyoichi; Matsumoto, Akio; and Ogawa, Hitoshi, 4,520,624, Cl. 60-286.000.
Tsumura, Kenji; and Yamashita, Masayuki, to Oriental Metal Mfg. Co., Ltd. Concentrating apparatus. 4,521,276, Cl. 159-1.00W.
Tsutada, Tadakazu: *See—*
Shingu, Tadashi; Tsutada, Tadakazu; Nishihara, Toshio; and Suzuki, Nobuo, 4,520,611, Cl. 52-789.000.
Tsuyama Mfg. Co., Ltd.: *See—*
Uyeda, Takashi; and Matsumoto, Masaaki, 4,521,731, Cl. 324-174.000.
Tsuyuki, Shinichi: *See—*
Kimura, Kazuo; Taneda, Yukinori; Tsuyuki, Shinichi; Suzuki, Shun; Hashimoto, Yoshio; and Sakamoto, Shinichi, 4,520,965, Cl. 242-7.05B.
Tucker, Burnis H.: *See—*
Moore, Jeff D.; Moore, Eddie C.; Tucker, Burnis H.; and Goodwill, William P., 4,520,681, Cl. 73-862.280.
Tuckey, Charles H., to Walbro Corporation. Rotary fuel pump with pulse modulation. 4,521,164, Cl. 417-307.000.
Turbon, Klaus, to Turbon Plastics, U.S.A., Inc. Ribbon cassette assembly. 4,521,125, Cl. 400-208.000.
Turbon Plastics, U.S.A., Inc.: *See—*
Turbon, Klaus, 4,521,125, Cl. 400-208.000.
Turin, William: *See—*
Dollard, Peter M.; and Turin, William, 4,521,886, Cl. 371-43.000.
Turner, S. Richard; Siano, Donald B.; and Bock, Jan, to Exxon Research & Engineering Co. Microemulsion process for producing acrylamide-alkyl acrylamide copolymers. 4,521,580, Cl. 526-307.200.
Tyndall, Jack L.: *See—*
Viglione, Vincent; and Tyndall, Jack L., 4,520,996, Cl. 254-9.00C.
Uchiyama, Takako: *See—*
Kida, Koichi; Aoyama, Tetsuo; and Uchiyama, Takako, 4,521,638, Cl. 585-640.000.
Ueda, Katsuroh: *See—*
Hirai, Masayoshi; Tanaka, Junzo; and Ueda, Katsuroh, 4,521,183, Cl. 432-37.000.
Uemura, Masayuki; Murauchi, Akitsugu; and Izushi, Takehiro, to Nintendo Co., Ltd. Apparatus for displaying grouped characters in scanning type display. 4,521,020, Cl. 273-85.00G.
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, to Nippon Oil Co., Ltd. Starting pitches for carbon fibers. 4,521,294, Cl. 208-23.000.
Ueno, Ichiro, to Victor Company of Japan, Limited. Focusing state monitoring apparatus in optical recording apparatus. 4,521,876, Cl. 369-54.000.
Ueno, Tsuyoshi: *See—*
Hosoya, Masahiro; and Ueno, Tsuyoshi, 4,521,098, Cl. 355-3.0DD.
Underwood, J. Larry. Mold, process of molding, and article molded by such process. 4,521,367, Cl. 264-318.000.
Union Camp Corporation: *See—*
Mitchell, Peter W. D., 4,521,608, Cl. 549-397.000.
Mitchell, Peter W. D., 4,521,627, Cl. 564-511.000.
Union Carbide Corporation: *See—*
Cain, Paul A., 4,521,426, Cl. 514-346.000.
Lee, Kiu H.; and Cieloszyk, Gary S., 4,521,573, Cl. 526-125.000.
Severance, Wayne S., Jr.; and Rogers, George T., 4,521,666, Cl. 217-121.0PY.
Union Oil Company of California: *See—*
Kelley, Arnold E.; Block, Michael J.; and Skripek, Milan R., 4,521,278, Cl. 201-17.000.
Switzer, Jay A., 4,521,499, Cl. 429-111.000.
Unisearch Limited: *See—*
Horwitz, Christopher M., 4,521,286, Cl. 204-192.00E.
United Kingdom Atomic Energy Authority: *See—*
Hodgson, Thomas D.; and Foot, William R., 4,521,400, Cl. 423-658.500.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Davies, David G., 4,521,261, Cl. 149-92.000.
Fitzgerald-Smith, James P.; Bird, Bertram; and Willis, Michael, 4,520,523, Cl. 14-2.400.
United States of America
Administrator, National Aeronautics and Space Administration: *See—*
Kleinberg, Leonard L., 4,521,702, Cl. 307-520.000.
Agriculture: *See—*
Blank, Richard W.; and Simard, Albert J., 4,521,120, Cl. 374-102.000.
Air Force: *See—*
Bellman, Brian M., 4,521,893, Cl. 375-107.000.
Ogland, Jon W., 4,521,656, Cl. 200-148.00B.
Army: *See—*
Campi, Morris; and Sindoris, Arthur R., 4,521,781, Cl. 343-700.0MS.
Roberts, Thomas G.; and Honeycutt, Thomas L., 4,521,110, Cl. 356-350.000.
Energy: *See—*
Macko, Joseph E.; and Estriplet, Isnard, 4,520,677, Cl. 73-861.000.
Health & Human Services: *See—*
Rice, Kenner C., 4,521,601, Cl. 546-45.000.
National Aeronautics and Space Administration: *See—*
Barmatz, Martin B.; Allen, James L.; and Granett, Dan, 4,520,656, Cl. 73-505.000.
Rhim, Won-Kyu; Saffren, Melvin M.; and Elleman, Daniel D., 4,521,854, Cl. 364-400.000.
Yin, Lo I., 4,521,688, Cl. 250-363.00S.
National Aeronautics & Space Administration: *See—*
Buckley, John D.; Swaim, Robert J.; Fox, Robert L.; and Johnston, David F., 4,521,659, Cl. 219-10.770.
Connelly, Dale L., 4,521,077, Cl. 350-319.000.
Stacey, Albert B., Jr., 4,520,601, Cl. 52-127.700.

Navy: *See—*
Clark, Keith E.; and Woods, Charles E., 4,520,973, Cl. 244-3.160.
Johnson, Nancy C.; and Gotzmer, Carl, Jr., 4,521,260, Cl. 149-19.910.
Lewis, Bernard L., 4,521,779, Cl. 343-17.2PC.
Liu, Yet-Zen; Hong, Chi-Shain; and Dapkus, P. Danial, 4,521,887, Cl. 372-45.000.
Raupuk, Milton W., Jr.; and Pennington, Edward M., 4,520,513, Cl. 4-302.000.

U.S. Philips Corporation: *See—*
Baker, Ian M., 4,521,798, Cl. 357-30.000.
Bohm, Heinz, 4,521,071, Cl. 350-96.180.
Coe, David J.; and Lowis, Royce, 4,521,795, Cl. 357-23.400.
Jacobs, Cornelis A. J.; Schellen, Johannes A. T.; and Van Der Vleuten, Anthonius P., 4,521,716, Cl. 313-594.000.
Ponjee, Johannes J.; Nelissen, Johan W. A.; and Verwijlen, Christiaan J. A., 4,521,444, Cl. 427-41.000.
Vry, Michael G., 4,521,766, Cl. 340-347.0DD.

U.S. Product Development Company: *See—*
Adell, Robert, 4,520,593, Cl. 49-462.000.
Adell, Robert, 4,520,594, Cl. 49-462.000.

United States Surgical Corporation: *See—*
Green, David T., 4,520,817, Cl. 128-305.000.

United Technologies Automotive, Inc.: *See—*
Braun, Derrek E.; Lau, Daniel T.; and Moy, Harold, 4,521,712, Cl. 310-339.000.

United Technologies Corporation: *See—*
Chenausky, Peter P.; Mongeon, Robert J.; and Laughman, Lanny M., 4,521,109, Cl. 356-349.000.
Phaneuf, Charles A., 4,521,725, Cl. 323-282.000.

Universal Industries Ltd.: *See—*
Haverstock, Wayne; Krywchuk, David; and Masak, Peter, 4,520,683, Cl. 74-41.000.

Universita Karlova: *See—*
Kuzel, Radomir; Broukal, Josef; and Bouse, Vaclav, 4,521,250, Cl. 106-15.050.

University of California, The Regents of the: *See—*
Brimhall, George H., Jr.; and Vigus, Leonard J., 4,521,308, Cl. 210-330.000.
Schmidt, Richard A.; and Tanagho, Emil A., 4,520,821, Cl. 128-334.00R.

University of Exeter: *See—*
Kalaugher, Patrick G., 4,521,074, Cl. 350-145.000.

University of Tennesse Research Corporation, The: *See—*
Beachey, Edwin H., 4,521,334, Cl. 260-112.50R.

University of Texas System: *See—*
Ong, Poen S.; Zermeno, Alfonso; Marsh, Lee M., Jr.; Hevezi, James M.; and Cowart, Ronald W., 4,521,808, Cl. 358-111.000.

UOP Inc.: *See—*
Chao, Tai-Hsiang; and Cleary, Michael T., 4,521,343, Cl. 260-419.000.
Windawi, Hassan; Grieger, Gene R.; and Oakdale, Warren R., 4,521,394, Cl. 423-363.000.

Upjohn Company, The: *See—*
Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, 4,521,599, Cl. 544-97.000.

Urakawa, Tetsuro: *See—*
Saito, Hajime; and Urakawa, Tetsuro, 4,521,393, Cl. 423-344.000.

Urban, Clement A.; and Huson, Gale W., to Signode Corporation. Strap chute for automatic strapping machine. 4,520,720, Cl. 100-26.000.

Urresti, Jose E. A., to Olave, Solozabal y Cia., S.A. Stapling machine. 4,520,956, Cl. 227-120.000.

USM Corporation: *See—*
Bouzianis, George J.; and McIlvin, Donald B., 4,521,176, Cl. 425-521.000.
Hanson, Raymond, 4,521,456, Cl. 427-207.100.
Morse, Albert I.; Crowell, Douglas H.; and Gilligan, Thomas J., III, 4,520,751, Cl. 118-203.000.

Usui, Sampei: *See—*
Oouchi, Tomihisa; Usui, Sampei; Fukuda, Tamio; and Nishiguchi, Akira, 4,520,634, Cl. 62-476.000.

Uyeda, Takashi; and Matsumoto, Masaaki, to Tsuyama Mfg. Co., Ltd. Detector attachment arrangement. 4,521,731, Cl. 324-174.000.

Vaccaro, Frank E.; and Kowalik, John, to RCA Corporation. Shielded electron beam guide assembly for flat panel display devices. 4,521,714, Cl. 313-422.000.

Valikov, Sioma, to Harry Wolf & Sons. Gold jewelry clasp assembly. 4,520,537, Cl. 24-616.000.

Vance, Ian A. W.; and Goatcher, John K., to International Standard Electric Corporation. Direct conversion radio receiver for FM signals. 4,521,892, Cl. 375-88.000.

Vance, Jeffrey D. Collapsible and slidable cart. 4,521,030, Cl. 280-42.000.

Vance, Robert L., to St. Regis Corporation. Bulk container. 4,521,911, Cl. 383-20.000.

Vander Molen, Donald R., to Whirlpool Corporation. Conversational voice command control system for home appliance. 4,520,576, Cl. 34-45.000.

Vanderpool, Steven H.: *See—*
Sanderson, John R.; Watts, Lewis W., Jr.; Vanderpool, Steven H.; and Renken, Terry L., 4,521,609, Cl. 549-533.000.

Van Der Vleuten, Anthonius P.: *See—*
Jacobs, Cornelis A. J.; Schellen, Johannes A. T.; and Van Der Vleuten, Anthonius P., 4,521,716, Cl. 313-594.000.

Vandevier, Joseph E., to Hughes Tool Company. Motor bearing with locking pins. 4,521,708, Cl. 310-87.000.

Van Dyk, Kenneth A.: *See—*
Dabi, Shmuel; Loewrigkeit, Peter; and Van Dyk, Kenneth A., 4,521,460, Cl. 427-385.500.

van Kessel, Matheus M., to Shell Oil Company. Process and reactor for the combustion of carbon-containing fuel. 4,520,737, Cl. 110-171.000.

van Nederveen, Hans B., to SKF Industrial Trading and Development Co., B.V. Drill head. 4,520,882, Cl. 175-410.000.

Van Peski, Christian K.; and Meisenheimer, William L., to TRE Semiconductor Equipment Corporation. Single lens repeater. 4,521,114, Cl. 356-401.000.

Vansant, Jan: *See—*
Overbergh, Noel M. M.; Doucet, Jos; and Vansant, Jan, 4,521,470, Cl. 428-36.000.

Varterasian, John H.; and Granzotto, Richard J., to General Motors Corporation. Automobile seat with adjustable damping. 4,521,057, Cl. 297-455.000.

Vasquez, Tulio. Parachute apparatus with shock absorber. 4,520,899, Cl. 182-230.000.

VDO Adolf Schindling AG: *See—*
Baeger, Holm, 4,521,078, Cl. 350-334.000.

VEB Werk fur Fernsehelektronik im VEB Kombinat Mikroelektronik: *See—*
Demus, Dietrich; Vorbrodt, Hans-Matthias; Hauser, Anton; Vogel, Jorg; and Zaschke, Horst, 4,521,327, Cl. 252-299.610.

Veeder Industries Inc.: *See—*
Wells, Arthur J., 4,521,895, Cl. 377-21.000.

Vega, Jose M. R.: *See—*
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Veith, Richard: *See—*
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Venkatasetty, Hanumanthiya V., to Honeywell Inc. Thin layer electrochemical cell for rapid detection of toxic chemicals. 4,521,290, Cl. 204-412.000.

Vepa Aktiengesellschaft: *See—*
Fleissner, Heinz, 4,520,637, Cl. 68-5.00D.

Verex Laboratories, Inc.: *See—*
Dunn, James M., 4,521,401, Cl. 424-19.000.
Dunn, James M., 4,521,402, Cl. 424-19.000.

Vernet, Gilles: *See—*
Goursat, Albert-Gilbert; Vernet, Gilles; Rimbert, Jean-Francis; Foulard, Jean; Darle, Thierry; and Bigot, Jean, 4,521,244, Cl. 75-0.50B.

Verwijlen, Christiaan J. A.: *See—*
Ponjee, Johannes J.; Nelissen, Johan W. A.; and Verwijlen, Christiaan J. A., 4,521,444, Cl. 427-41.000.

Vetco Offshort, Inc.: *See—*
Slyker, Richard W.; and Pettit, John R., 4,521,040, Cl. 285-140.000.

Vetreria Padana Polesana, S.p.A.: *See—*
Bormioli, Pier L., 4,520,937, Cl. 215-10.000.

Victor Company of Japan, Limited: *See—*
Fujiki, Kuniharu, 4,521,480, Cl. 428-328.000.
Kasuga, Masao, 4,521,867, Cl. 364-724.000.
Miyaji, Naotaka; Sakamoto, Atsushi; and Iwahara, Makoto, 4,521,908, Cl. 381-92.000.
Sasamura, Kohhei; and Mori, Takaro, 4,521,817, Cl. 360-46.000.
Tokuyama, Yoshio, 4,521,815, Cl. 360-10.200.
Ueno, Ichiro, 4,521,876, Cl. 369-54.000.

Viglione, Vincent; and Tyndall, Jack L. Aircraft engine maintenance stand. 4,520,996, Cl. 254-9.00C.

Vigus, Leonard J.: *See—*
Brimhall, George H., Jr.; and Vigus, Leonard J., 4,521,308, Cl. 210-330.000.

Vikharev, Ivan G.: *See—*
Yarygin, Vladimir I.; Sannikov, Jury I.; Panchenkc, Anatoly I.; Sychev, Anatoly P.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; and Toguzov, Mels Z., 4,521,245, Cl. 75-21.000.

Villanyi, Tibor J., to Cummins Engine Company, Inc. Hand operable tool used in installing piston assemblies into an engine block. 4,520,542, Cl. 29-224.000.

Vissing, Ellin D. Method and apparatus for closing cylindrical containers. 4,520,921, Cl. 206-1.500.

Vives, Jean-Patrick, to Les Cables de Lyon. Sealed connection connecting an undersea coaxial cable to a repeater and a method of making same. 4,521,642, Cl. 174-70.00S.

Vogel, Jorg: *See—*
Demus, Dietrich; Vorbrodt, Hans-Matthias; Hauser, Anton; Vogel, Jorg; and Zaschke, Horst, 4,521,327, Cl. 252-299.610.

Vogel, Ralph A., to Essex Group, Inc. Extrusion of a plastic coating about a strand. 4,521,363, Cl. 264-174.000.

Vogel, Rudolf: *See—*
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Vogelhuber, Peter: *See—*
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Voith, Katherine: *See—*
Gauthier, Jean A.; Voith, Katherine; and Asselin, Andre A., 4,521,534, Cl. 514-219.000.

Volk, Heinrich: *See—*
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Voltmer, Helmut; Schwenzer, Alfred F.; and Spano, John D., to NJM, Inc. Labeling machines. 4,521,271, Cl. 156-568.000.

Vorbrodt, Hans-Matthias: *See—*
Demus, Dietrich; Vorbrodt, Hans-Matthias; Hauser, Anton; Vogel, Jorg; and Zaschke, Horst, 4,521,327, Cl. 252-299.610.

Vossen, Franz, to Meurer NonFood Product GmbH. Disc cover for a frying pan or vessel. 4,521,233, Cl. 55-384.000.

Voyles, Gerald A.: *See—*
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Vry, Michael G., to U.S. Philips Corporation. Code generator. 4,521,766, Cl. 340-347.0DD.

W. A. Goold Limited: *See—*
Boyd, Malcolm W.; and Mander, Michael G., 4,520,940, Cl. 220-68.000.

W. J. Goodwin & Son Limited: *See—*
Boyd, Malcolm W.; and Mander, Michael G., 4,520,940, Cl. 220-68.000.

W. R. Grace & Co.: *See—*
Werson, Michael J., 4,521,807, Cl. 358-106.000.

Wachi, Masatada, to Nippon Gakki Seizo Kabushiki Kaisha. Tone waveshape generation device. 4,520,708, Cl. 84-1.260.

Wahl, Eugene R.: *See—*
Wahl, Richard C.; and Wahl, Eugene R., 4,520,952, Cl. 222-199.000.

Wahl, Richard C.; and Wahl, Eugene R. Flexible sleeve for bin activator. 4,520,952, Cl. 222-199.000.

Walbro Corporation: *See—*
Scott, William A.; and Smith, Roger N., 4,520,772, Cl. 123-198.0DB.
Tuckey, Charles H., 4,521,164, Cl. 417-307.000.

Waldman, Fred. Contact lens holder. 4,520,923, Cl. 206-5.100.

Walker, Eugene P., to Harsco Corporation. Concrete core-wall form and stripping assembly therefor. 4,520,988, Cl. 249-13.000.

Wallace, Leonard D. Tubular fishing rod with integral handle-reel seat. 4,520,587, Cl. 43-18.100.

Wallman, P. Henrik: *See—*
Spars, Byron G.; Klett, Robert J.; and Wallman, P. Henrik, 4,521,292, Cl. 208-11.00R.

Walter, Carl W.; and Riordan, William J., to Kidde, Inc. Laboratory burner apparatus. 4,521,180, Cl. 431-25.000.

Walters, William F.; Lammerich, Kurt; and Watney, John D. Flotation collar. 4,520,746, Cl. 114-69.000.

Wang, Anthony D.; and Brumbaugh, Donald L., to Burr-Brown Corporation. Circuit and method for reducing non-linearity in analog output current due to waste current switching. 4,521,765, Cl. 340-347.0DA.

Wang, Chung S.: *See—*
Coleman, Donald J., Jr.; Haken, Roger A.; and Wang, Chung S., 4,521,446, Cl. 427-86.000.

Wang Laboratories, Inc.: *See—*
Stapleford, Gary N.; and Borsa, Andrew J., 4,521,881, Cl. 370-72.000.
Wang, Patrick S., 4,521,909, Cl. 382-38.000.

Wang, Patrick S., to Wang Laboratories, Inc. Dual level pattern recognition system. 4,521,909, Cl. 382-38.000.

Ward, Russell G. Mask with removable countercurrent exchange module. 4,520,509, Cl. 2-206.000.

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Sircar, Ila; and Bristol, James A., 4,521,416, Cl. 514-252.000.
Solomon, Donald D.; McGary, Charles W.; and Pascarella, Vincent J., 4,521,564, Cl. 525-54.100.

Wartian, George, to Wartian Lock Co. Double dead bolt door lock. 4,520,639, Cl. 70-110.000.

Wartian Lock Co.: *See—*
Wartian, George, 4,520,639, Cl. 70-110.000.

Watamura, Abe S. Tool holder for lathe. 4,520,701, Cl. 82-36.00R.

Watanabe, Eifu, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Steering device for an outboard motor. 4,521,201, Cl. 440-55.000.

Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for elevator. 4,520,906, Cl. 187-29.00R.

Watanabe, Hiroshi: *See—*
Nakajima, Kichio; Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; and Honma, Kazuo, 4,520,626, Cl. 60-468.000.

Watanabe, Kouichi: *See—*
Hirota, Ken; Fujimoto, Yoshiaki; Watanabe, Kouichi; and Sugimura, Minoru, 4,521,323, Cl. 252-62.590.

Watanabe, Osamu, to Hitachi Maxell Limited. Leak-proof alkaline cell. 4,521,500, Cl. 429-174.000.

Watanabe, Shoji; Inoue, Kimio; and Okitsu, Kiyoshi, to Daicel Chemical Industries, Ltd. Modified epoxy resin and composition. 4,521,570, Cl. 525-415.000.

Watanabe, Takashi: *See—*
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Watanabe, Toshio: *See—*
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Watanabe, Yoichi: *See—*
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Watanabe, Yoshiaki: *See—*
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Water Services of America, Inc.: *See—*
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Waters, Deryl P. Removable fence for table saw. 4,521,006, Cl. 269-304.000.

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Wattimena, Freddy; and Heijmen, Hendricus J., to Shell Oil Company. Process for the preparation of aldehydes. 4,521,630, Cl. 568-435.000.

Watts, Lewis W., Jr.: *See—*
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Webber, Beth A.: *See—*
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Weber, Erich, to Martin GmbH fur Umwelt- und Energietechnik. Grate bars for use in the grates of industrial furnaces and the like. 4,520,792, Cl. 126-175.000.

Weber, Klaus; Willert, Manfred; and Blessmann, Heinz, to Carl-Zeiss-Stiftung. Transmitted-light illuminating device. 4,521,076, Cl. 350-254.000.

Weber, Richard B.; Wilfley, George M.; and Wilfley, George M., to A. R. Wilfley and Sons, Inc. Fluid diffuser for gases and liquids. 4,521,349, Cl. 261-93.000.

Weeks, Vaughan B., to Medical Engineering Corporation. Laser-resistant back-up pad. 4,520,814, Cl. 128-303.100.

Wegner, Wilhelm: *See—*
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Weil, Robert A., Jr.; and Howell, Stephen L., to Kimball International, Inc. Electronic organ having microprocessor controlled rhythmic note pattern generation. 4,520,707, Cl. 84-1.030.

Weinstein, Richard: *See—*
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Weise, Lutz: *See—*
Belart, Juan; Burgdorf, Jochen; Weise, Lutz; Kircher, Dieter; and Goossens, Andre F. L., 4,521,061, Cl. 303-114.000.

Weiss, Sol. Apparatus for performing an emergency cricothyrotomy. 4,520,810, Cl. 128-200.260.

Weitz, Hans-Martin: *See—*
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Welch, Edward W., to Sangamo Weston, Inc. Small outline potentiometer. 4,521,761, Cl. 338-174.000.

Wells, Arthur J., to Veeder Industries Inc. Pulse generator unit for fuel pump register. 4,521,895, Cl. 377-21.000.

Wells, James E.; and Eskinazi, Victoria, to Air Products and Chemicals, Inc. Triethylenediamine preparation via phosphate catalysts. 4,521,600, Cl. 544-352.000.

Wendt, Michael: *See—*
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Werner, Eberhard; and Willim, Friedrich, to Eumuco Aktiengesellschaft Fur Maschinenbau. Assembly for blowing out and spraying dies in forging presses. 4,520,643, Cl. 72-39.000.

Werner, Klaus: *See—*
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Werson, Michael J., to W. R. Grace & Co. Optical inspection system. 4,521,807, Cl. 358-106.000.

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Wessely, Herrmann, to Siemens Aktiengesellschaft. Device for cooling a plurality of integrated modules combined on a rigid printed circuit-board to form logic cards. 4,521,829, Cl. 361-387.000.

Western Gear Machinery Co.: *See—*
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Westinghouse Electric Co.: *See—*
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Whirlpool Corporation: *See—*
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Vander Molen, Donald R., 4,520,576, Cl. 34-45.000.

White, Daniel S.; and Nave, Jerald L., to Grove Medical Supply, Inc., by said Jerald L. Nave. Pulmonary resuscitator. 4,520,811, Cl. 128-203.110.
White Farm Equipment Company: *See*—
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White, Leonard A., to Baxter Travenol Laboratories, Inc. Cellular seal coating. 4,521,466, Cl. 428-35.000.
Whitley, George J.; Rayl, Martin; and Squire, William, to RCA Corporation. Multiple component lead processing apparatus. 4,520,549, Cl. 29-566.300.
Wible, John E.: *See*—
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Wickenhaeuser, Gerhard; Heida, Bernd; Graf, Fritz; and Hupfer, Leopold, to BASF Aktiengesellschaft. Purification of aqueous glyoxal solutions. 4,521,632, Cl. 568-492.000.
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Wilczek, Stephen P.: *See*—
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Wilsford, Robert L., deceased (by Wilsford, JoAnn, executor), to Wilsford, Jo Ann. Trash bagging apparatus. 4,521,043, Cl. 294-19.100.
Wilson, James D. Nestable/stackable containers for bakery goods and the like. 4,520,928, Cl. 206-505.000.
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Wilson, Stanley, to Advanced Micro Devices, Inc. High-speed schottky TTL gate apparatus. 4,521,699, Cl. 307-456.000.
Windawi, Hassan; Grieger, Gene R.; and Oakdale, Warren R., to UOP Inc. Conversion of gases to useable products. 4,521,394, Cl. 423-363.000.
Wine, Charles M., to RCA Corporation. Frequency synthesis tuning control system for a double-conversion tuner. 4,521,916, Cl. 455-182.000.
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Wolter, Heinz. Light. 4,521,833, Cl. 362-116.000.
Wolze, Martin H. Champagne bottle opener. 4,520,696, Cl. 81-3.550.
Wong, Vernon G. Eye implant for relieving glaucoma, and device and method for use therewith. 4,521,210, Cl. 604-8.000.
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Wyland, Alvin D.; Smith, Duaine W.; and Blackburn, Louis W., to Amana Refrigeration, Inc. Microwave oven scale apparatus. 4,521,658, Cl. 219-10.55B.
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Yakich, Joseph. Cribbage board. 4,521,675, Cl. 235-90.000.
Yamada, Jun: *See*—
Suzuki, Shigeyoshi; Yamada, Jun; Senga, Takao; Kuriu, Sadao; Yamasaki, Masahiro; Hirose, Iwao; and Maegawa, Tokubee, 4,521,101, Cl. 355-10.000.
Yamada, Masanori: *See*—
Kawabata, Takashi; and Yamada, Masanori, 4,521,093, Cl. 354-403.000.

Yamada, Mutsuo: *See*—
Nishimura, Yasuyuki; Yamada, Mutsuo; Arikawa, Yoshijiro; Kamiguchi, Taiji; Kuwahara, Takanori; and Tanimoto, Hirotoshi, 4,521,631, Cl. 568-478.000.
Yamada, Takaaki; Tsuda, Yukio; and Yamakoshi, Akira, to Sony Corporation. Tuning apparatus of phase-locked loop type. 4,521,744, Cl. 331-1.00A.
Yamagata, Shinji: *See*—
Yoshiyasu, Hajimu; Murata, Shirou; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,521,653, Cl. 200-144.00C.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Marier, Gregory J., 4,520,890, Cl. 180-193.000.
Nakahama, Ryoji, 4,521,202, Cl. 440-61.000.
Nakamura, Haruo, 4,520,775, Cl. 123-308.000.
Watanabe, Eifu, 4,521,201, Cl. 440-55.000.
Yamakoshi, Akira: *See*—
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Yamamoto, Akio: *See*—
Yamamoto, Takakazu; Yamamoto, Akio; and Sanechika, Kenichi, 4,521,589, Cl. 528-380.000.
Yamamoto, Masashi: *See*—
Mitsuno, Tatsuyuki; and Yamamoto, Masashi, 4,521,487, Cl. 428-407.000.
Yamamoto, Minoru; Sakata, Jiro; and Doi, Haruo, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for preparation of porous glass film. 4,521,236, Cl. 65-31.000.
Yamamoto, Ryoichi: *See*—
Ichimura, Mitsunori; Yamamoto, Ryoichi; and Horimoto, Katsutoshi, 4,521,378, Cl. 422-135.000.
Yamamoto, Shunichi: *See*—
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,521,294, Cl. 208-23.000.
Yamamoto, Takakazu; Yamamoto, Akio; and Sanechika, Kenichi, to Tokyo Institute of Technology. Linear poly(3-alkyl-2,5-thienylene) polymer. 4,521,589, Cl. 528-380.000.
Yamamoto, Toshiharu: *See*—
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; Kano, Toshiji; and Hisanaga, Akinori, 4,521,289, Cl. 204-253.000.
Yamamoto, Yoshihiro; Suzuki, Junichiro; and Nakamura, Minoru, to NGK Spark Plug Co., Ltd. Process for producing titanium nitride base cermets with high toughness. 4,521,248, Cl. 75-238.000.
Yamasaki, Masahiro: *See*—
Suzuki, Shigeyoshi; Yamada, Jun; Senga, Takao; Kurju, Sadao; Yamasaki, Masahiro; Hirose, Iwao; and Maegawa, Tokubee, 4,521,101, Cl. 355-10.000.
Yamashita, Keitaro: *See*—
Samuels, Abe; Yamashita, Keitaro; and Sasaki, Yoshitaka, 4,521,184, Cl. 432-60.000.
Yamashita, Kiyoshi: *See*—
Iijima, Toshifumi; and Yamashita, Kiyoshi, 4,521,507, Cl. 430-503.000.
Yamashita, Masayuki: *See*—
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Yamashita, Michio: *See*—
Suzuki, Shoichi; Ohta, Wataru; Sakurai, Noriaki; and Yamashita, Michio, 4,521,133, Cl. 405-195.000.
Yamashita, Toshiharu, to Hoya Corporation. Contrast enhancement filter for color CRT display devices. 4,521,524, Cl. 501-64.000.
Yamazaki Machinery Works, Ltd.: *See*—
Kanematsu, Hiroyuki; Nagae, Akimitsu; Mizoguchi, Kiyohisa; and Ohashi, Hajime, 4,521,860, Cl. 364-474.000.
Yanai, Toshiharu: *See*—
Kandachi, Takayoshi; Okino, Seiki; Yanai, Toshiharu; and Tanaka, Katsuto, 4,521,454, Cl. 427-168.000.
Yanus, John F.; and Limburg, William W., to Xerox Corporation. Squaraine systems. 4,521,621, Cl. 564-307.000.
Yarygin, Vladimir I.; Sannikov, Jury I.; Panchenko, Anatoly I.; Sychev, Anatoly P.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; and Toguzov, Mels Z. Method of processing sulphide copper- and/or sulphide copper-zinc concentrates. 4,521,245, Cl. 75-21.000.
Yata, Kiyoshi: *See*—
Sawada, Hideo; and Yata, Kiyoshi, 4,521,872, Cl. 365-49.000.
Yazaki, Takashi: *See*—
Itsubo, Junichi; Yazaki, Takashi; and Mori, Fumio, 4,520,939, Cl. 215-252.000.
Yeack-Scranton, Celia E.: *See*—
Bednorz, Johannes G.; Hollis, Ralph L., Jr.; Lanz, Martin; Pohl, Wolfgang D.; and Yeack-Scranton, Celia E., 4,520,570, Cl. 33-180.00R.
Yin, Lo I., to United States of America, National Aeronautics and Space Administration. Three-dimensional and tomographic imaging device for x-ray and gamma-ray emitting objects. 4,521,688, Cl. 250-363.00S.
Yogi, Seigi; and Spector, George. Foot brush. 4,520,525, Cl. 15-104.920.
Yokohama Rubber Co., Ltd., The: *See*—
Suzuki, Shoichi; Ohta, Wataru; Sakurai, Noriaki; and Yamashita, Michio, 4,521,133, Cl. 405-195.000.
Yokota, Hiromu: *See*—
Otake, Etsuo; Kimura, Mamoru; Yokota, Hiromu; and Kanematu, Tetuo, 4,521,251, Cl. 106-183.000.
Yokota, Masami; Sugitani, Hiroshi; and Inamoto, Tadayoshi, to Canon Kabushiki Kaisha. Ink jet recording head. 4,521,787, Cl. 346-140.00R.
Yokota, Mitsuyoshi: *See*—
Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,521,651, Cl. 200-83.00R.
Yonemori, Takaji; and Sagara, Seiji, to Canon Kabushiki Kaisha. Variable magnification image forming apparatus. 4,521,100, Cl. 355-8.000.
Yonezawa, Toshio: *See*—
Hiraki, Shunichi; Kinoshita, Hiroshi; Kumamaru, Kuniaki; Koguchi, Shigeo; and Yonezawa, Toshio, 4,521,256, Cl. 148-1.500.
Yoshida Kogyo K. K.: *See*—
Kasai, Kazumi, 4,520,535, Cl. 24-410.000.
Morita, Toyoo; and Horikawa, Yoichi, 4,520,544, Cl. 29-408.000.
Nakagawa, Toshiaki, 4,520,560, Cl. 29-708.000.
Takahashi, Kihei; and Sassa, Yusei, 4,520,559, Cl. 29-766.000.
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Yoshida, Motoaki: *See*—
Ohtsuka, Yasuji; Koike, Yasuhiro; and Yoshida, Motoaki, 4,521,351, Cl. 264-1.500.
Yoshida, Takashi; Fujie, Masakatsu; Matsuno, Junichi; and Ouchi, Hideyuki, to Hitachi, Ltd. Recording method in a facsimile receiver. 4,521,813, Cl. 358-296.000.
Yoshimi, Kazuyoshi: *See*—
Morimoto, Masao; Sano, Shoji; Yoshimi, Kazuyoshi; and Saitou, Kazuo, 4,521,153, Cl. 415-146.000.
Yoshimoto, Masahiko: *See*—
Shinohara, Hirofumi; Tomisawa, Osamu; Anami, Kenji; and Yoshimoto, Masahiko, 4,521,704, Cl. 307-530.000.
Yoshimura, Tatsushiro; and Tominaga, Shigetake, to Daikin Kogyo Co., Ltd. Fluororesin-containing coating composition. 4,521,596, Cl. 524-406.000.
Yoshiyasu, Hajimu; Murata, Shirou; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker with arc light absorber. 4,521,653, Cl. 200-144.00C.
Young, Ian R.: *See*—
Burl, Michael; and Young, Ian R., 4,520,828, Cl. 128-653.000.
Young, Michael S. Endotracheal tube holder. 4,520,813, Cl. 128-207.170.
Young, Rodney C.: *See*—
Brown, Thomas H.; and Young, Rodney C., 4,521,625, Cl. 564-461.000.
Yount, Gary L., to Biocon, Inc. Apparatus for biodegrading organic waste. 4,521,304, Cl. 210-96.100.
Zachariades, Anagnostis E.: *See*—
Economy, James; and Zachariades, Anagnostis E., 4,520,647, Cl. 72-365.000.
Zackay, Victor F.; and Rowe, Donald R., to Teledyne Industries, Inc., Teledyne Water Pik. Catalyst of palladium, copper and nickel on a substrate. 4,521,530, Cl. 502-218.000.
Zaschke, Horst: *See*—
Demus, Dietrich; Vorbrodt, Hans-Matthias; Hauser, Anton; Vogel, Jorg; and Zaschke, Horst, 4,521,327, Cl. 252-299.610.
Zeeh, Bernd: *See*—
Meyer, Norbert; Zeeh, Bernd; Buschmann, Ernst; and Pommer, Ernst-Heinrich, 4,521,429, Cl. 514-383.000.
Zeidler, Georg: *See*—
Armbrust, Herbert; Dix, Johannes P.; Hansen, Guenter; and Zeidler, Georg, 4,521,216, Cl. 8-639.000.
Zeller, Bary L.; Kaleda, William W.; and Saleeb, Fouad Z., to General Foods Corporation. Coffee extract decaffeination method. 4,521,438, Cl. 426-271.000.
Zenith Electronics Corporation: *See*—
Griffey, Donald E., 4,521,720, Cl. 315-386.000.
Merrell, Richard G., 4,521,897, Cl. 377-115.000.
Zens, John F.: *See*—
Rea, Gerald M.; Stoff, William G.; and Zens, John F., 4,521,050, Cl. 296-192.000.
Zermeno, Alfonso: *See*—
Ong, Poen S.; Zermeno, Alfonso; Marsh, Lee M., Jr.; Hevezi, James M.; and Cowart, Ronald W., 4,521,808, Cl. 358-111.000.
Ziegenhorn, Joachim: *See*—
Draeger, Brigitte; and Ziegenhorn, Joachim, 4,521,519, Cl. 436-17.000.
Ziegler, Horst, to Siemens Aktiengesellschaft. Pressure or pressure difference measuring transducer. 4,520,675, Cl. 73-718.000.
Ziehm, Richard T.; Wilczek, Stephen P.; Baker, George E.; Husted, Raymond R.; Dumas, Glen A.; Bunker, Keith G.; and Place, George H., Jr., to Xerox Corporation. Control system job recovery after a malfunction. 4,521,847, Cl. 364-184.000.
Ziemek, Gerhard; Schatz, Friedrich; and Meyer, Hermann, to Kabelmetal Electro GmbH. Stranding device. 4,520,622, Cl. 57-59.000.
Zientek, Lucy J.: *See*—
Chang, Tiang-Shing; and Zientek, Lucy J., 4,521,551, Cl. 523-120.000.
Zilke, Robert W., Jr.: *See*—
Rehfuss, John W.; Hazelwood, Louis S.; Price, Martin B.; and Zilke, Robert W., Jr., 4,521,489, Cl. 428-412.000.
Zitterbart, George: *See*—
Miller, Walter G.; Mace, Michel; and Zitterbart, George, 4,520,871, Cl. 169-43.000.
Zoltan, Sandor: *See*—
Soos, Rudolf; Kolta, Rezso; Zoltan, Sandor; and Tary, Maria, 4,521,612, Cl. 560-124.000.
Zurn, Georg: *See*—
Schiel, Christian; Zurn, Georg; and Schmid, Karl, 4,520,578, Cl. 34-110.000.
Zylbert, Thaddeus J., to Singer Company, The. Needle thread tensioning device for a sewing machine. 4,520,743, Cl. 112-255.000.
4D Incorporated: *See*—
Drenner, Dewey A., 4,520,568, Cl. 33-143.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF JUNE, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Crompton & Knowles Corporation: *See—*
Faillace, Louie M., Re. 31,903, Cl. 165-12.000.
Du Pont de Nemours, E. I., and Company: *See—*
Poirier, Robert V., Re. 31,907, Cl. 525-276.000.
Faillace, Louie M., to Crompton & Knowles Corporation. Extruder temperature controller. Re. 31,903, Cl. 165-12.000.
Hitachi, Ltd.: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; and Nishimura, Yutaka, Re. 31,906, Cl. 364-431.060.
Mendenhall, Robert L. Method and apparatus for recycling asphalt-aggregate compositions. Re. 31,904, Cl. 366-25.000.
Mendenhall, Robert L. Method and apparatus for recycling asphalt-aggregate compositions. Re. 31,905, Cl. 106-281.00R.
Nishimura, Yutaka: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; and Nishimura, Yutaka, Re. 31,906, Cl. 364-431.060.
Oyama, Yoshishige; Yamauchi, Teruo; and Nishimura, Yutaka, to Hitachi, Ltd. Control system for internal combustion engine. Re. 31,906, Cl. 364-431.060.
Petrik, John T.; and Westover, Brooke N., to Sun Chemical Corporation. Glow plug. Re. 31,908, Cl. 219-270.000.
Poirier, Robert V., to Du Pont de Nemours, E. I., and Company. Tetrafluoroethylene copolymer fine powder resin. Re. 31,907, Cl. 525-276.000.
Sun Chemical Corporation: *See—*
Petrik, John T.; and Westover, Brooke N., Re. 31,908, Cl. 219-270.000.
Westover, Brooke N.: *See—*
Petrik, John T.; and Westover, Brooke N., Re. 31,908, Cl. 219-270.000.
Yamauchi, Teruo: *See—*
Oyama, Yoshishige; Yamauchi, Teruo; and Nishimura, Yutaka, Re. 31,906, Cl. 364-431.060.

LIST OF DESIGN PATENTEES

Adams, Peter G., to Hestair Kiddicraft Limited. Weighted ball rattle toy. 279,117, 6-4-85, Cl. D21-65.000.
Adell, Robert, to U.S. Product Development Company. Pen. 279,114, 6-4-85, Cl. D19-42.000.
Allen, James H., to 'totes' incorporated. Combined garment bag and overnight case. 279,048, 6-4-85, Cl. D3-71.000.
American Standard Inc.: *See—*
Niemann, James E., 279,123, Cl. D23-32.000.
Apparel Form Company: *See—*
Sears, I. Weir; Hostetler, John E.; and Hulsebusch, William H., 279,041, Cl. D2-28.000.
Aquilina, Eddie O., deceased; and Aquilina, Lacadena, heir. Jump suit. 279,042, 6-4-85, Cl. D2-29.000.
Aquilina, Lacadena, heir: *See—*
Aquilina, Eddie O., deceased; and Aquilina, Lacadena, heir, 279,042, Cl. D2-29.000.
Asoma OY: *See—*
Soininen, Jarmo A., 279,046, Cl. D3-36.000.
Soininen, Jarmo A., 279,047, Cl. D3-36.000.
Ayotte, Raymond D. Drum clamp bracket. 279,103, 6-4-85, Cl. D17-22.000.
Ayres, Richard E. Housing for an electrical prod. 279,133, 6-4-85, Cl. D30-32.000.
B. F. Goodrich Company, The: *See—*
Lassan, Timothy J.; and Skerl, Richard J., 279,087, Cl. D12-147.000.
Wright, David A., 279,089, Cl. D12-147.000.
Baker, Olin H.; and Reilly, Robert P., to Meese, Inc. Quill can. 279,134, 6-4-85, Cl. D34-43.000.
Balbis, Manuel G.; and Hinrichsen, Silvana, to Firestone Tire & Rubber Company, The. Tire for road vehicles. 279,091, 6-4-85, Cl. D12-151.000.
Baum, Elliot I., to QT&T, Inc. Combined clock radio and telephone base. 279,099, 6-4-85, Cl. D14-73.000.
Bayerische Motoren Werke, AG: *See—*
Gevert, Klaus V., 279,086, Cl. D12-110.000.
Beall, Betty M. Portfolio. 279,113, 6-4-85, Cl. D19-26.000.
Bean Station Furniture Factory, The: *See—*
Nelson, Deborah L., 279,056, Cl. D6-381.000.
Becker, Robert W.: *See—*
Morrison, Thurber H.; Becker, Robert W.; and Huff, Robert S., 279,070, Cl. D7-325.000.
Berger, Robert M., to Intercon Purchasing Industries (USA) Ltd. Lamp. 279,130, 6-4-85, Cl. D26-62.000.
Boeing Company, The: *See—*
Ferrell, Jay A.; Kimes, Lucas J.; and Spitzer, Robert E., 279,094, Cl. D12-340.000.
Bolduc, Richard, to Domco Industries Ltd. Combined modular display rack and lighting fixtures unit. 279,057, 6-4-85, Cl. D6-399.000.
Brandsma, Sies K., to U.S. Philips Corporation. Portable radio receiver. 279,098, 6-4-85, Cl. D14-70.000.
Bridgestone Tire Company Limited: *See—*
Kojima, Hiroshi; and Takase, Kiyoshi, 279,090, Cl. D12-149.000.
Bulgari, Marina, to Marina B. Creations, S.A. Earring. 279,082, 6-4-85, Cl. D11-43.000.
Burin, Ralph R., to Wilton Enterprises, Inc. Dispensing funnel for melted candy. 279,068, 6-4-85, Cl. D7-312.000.
Burke, Maurice: *See—*
Longley, Edward F.; and Burke, Maurice, 279,054, Cl. D6-362.000.
Canon Kabushiki Kaisha: *See—*
Kikuchi, Nobuo; and Fushimoto, Hideo, 279,107, Cl. D18-7.000.
Kikuchi, Nobuo; and Fushimoto, Hideo, 279,112, Cl. D18-12.000.
Cassai, Gino H.: *See—*
Cassai, Henry J.; and Cassai, Gino H., 279,132, Cl. D28-7.000.
Cassai, Henry J.; and Cassai, Gino H. Adjustable cosmetic applicator. 279,132, 6-4-85, Cl. D28-7.000.
Christea, Liviu. Broiling grill. 279,071, 6-4-85, Cl. D7-359.000.
Clay, Ronald L.: *See—*
Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., 279,044, Cl. D2-320.000.
Courreges Parfums: *See—*
Pourtout, Marie-Annick H., 279,079, Cl. D9-410.000.
D.I. Retail Planning & Design Ltd.: *See—*
Newman, David E. J., 279,125, Cl. D24-4.000.
Domco Industries Ltd.: *See—*
Bolduc, Richard, 279,057, Cl. D6-399.000.
Drummond, Archie G., Jr.; and Fahnstrom, Dale E., to Helene Curtis Industries, Inc. Bottle. 279,077, 6-4-85, Cl. D9-371.000.
Elkerbout, Marten F., to U.S. Philips Corporation. Kitchen machine base unit. 279,072, 6-4-85, Cl. D7-386.000.
Everhan, Walter. Tureen. 279,065, 6-4-85, Cl. D7-17.000.
Everhan, Walter. Sugar bowl. 279,066, 6-4-85, Cl. D7-17.000.
Fahnstrom, Dale E.: *See—*
Drummond, Archie G., Jr.; and Fahnstrom, Dale E., 279,077, Cl. D9-371.000.
Ferrell, Jay A.; Kimes, Lucas J.; and Spitzer, Robert E., to Boeing Company, The. Airplane. 279,094, 6-4-85, Cl. D12-340.000.
Firestone Tire & Rubber Company, The: *See—*
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Franchi, Thomas A.; and Rogers, Leslie B., to Mobil Oil Corporation. Oil container. 279,078, 6-4-85, Cl. D9-376.000.
Fukazawa, Naoto: *See—*
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Fushimoto, Hideo: *See—*
Kikuchi, Nobuo; and Fushimoto, Hideo, 279,107, Cl. D18-7.000.
Kikuchi, Nobuo; and Fushimoto, Hideo, 279,112, Cl. D18-12.000.
Gevert, Klaus V., to Bayerische Motoren Werke, AG. Motorcycle. 279,086, 6-4-85, Cl. D12-110.000.
Giallo, James W., Jr. Game board. 279,116, 6-4-85, Cl. D21-34.000.
Giron, Daniel, to Michelin Recherche et Technique S.A. Tire. 279,088, 6-4-85, Cl. D12-147.000.
Goodlaxson, John D. Corn popper. 279,069, 6-4-85, Cl. D7-325.000.
Gray, Jack V. Container for plants. 279,083, 6-4-85, Cl. D11-152.000.
Halcomb, W. Carl, Jr.: *See—*
Halcomb, Walter C., Sr.; Halcomb, W. Carl, Jr.; and McFerron, Jeff D., 279,101, Cl. D15-5.000.
Halcomb, Walter C., Sr.; Halcomb, W. Carl, Jr.; and McFerron, Jeff D. Multiple venturi gasoline/air mixer. 279,101, 6-4-85, Cl. D15-5.000.
Hall, Nathaniel. Cassette tape carousel. 279,045, 6-4-85, Cl. D3-35.000.

Handi-Pac, Inc.: *See—*
Klawitter, Ronald R., 279,118, Cl. D21-120.000.
Haskell, George O., III; and Perzinski, Francis J., to Southern Chemical Products Co. Soap dispenser. 279,063, 6-4-85, Cl. D6-545.000.
Hayashi, Shigeaki: *See—*
Sawada, Masaji; Sakaguchi, Hiroshi; Hayashi, Shigeaki; and Yamada, Kazuo, 279,106, Cl. D18-7.000.
Hayashi, Toru. Paper cutting knife. 279,076, 6-4-85, Cl. D8-102.000.
Helene Curtis Industries, Inc.: *See—*
Drummond, Archie G., Jr.; and Fahnstrom, Dale E., 279,077, Cl. D9-371.000.
Hestair Kiddicraft Limited: *See—*
Adams, Peter G., 279,117, Cl. D21-65.000.
HEWI GmbH: *See—*
Scholl, Winfried, 279,064, Cl. D6-561.000.
Hinderling, Thomas: *See—*
Schroder, Joris; and Hinderling, Thomas, 279,100, Cl. D14-115.000.
Hinrichsen, Silvana: *See—*
Balbis, Manuel G.; and Hinrichsen, Silvana, 279,091, Cl. D12-151.000.
Holmes, Thomas C. Guitar body or the like. 279,102, 6-4-85, Cl. D17-20.000.
Honeyman, R. Blakeley; Taggart, Thomas D.; and Taggart, Robert E., to Lockwood Technical, Inc. Hand held adhesive gun. 279,074, 6-4-85, Cl. D8-14.100.
Horox, Joan R. Hospital gown. 279,040, 6-4-85, Cl. D2-25.000.
Hostetler, John E.: *See—*
Sears, I. Weir; Hostetler, John E.; and Hulsebusch, William H., 279,041, Cl. D2-28.000.
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Hulsebusch, William H.: *See—*
Sears, I. Weir; Hostetler, John E.; and Hulsebusch, William H., 279,041, Cl. D2-28.000.
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Inventio AG: *See—*
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Jensen, Philip W.; and Stawski, Karl-Heinz, to P & D. Portable blower for igniting charcoal. 279,124, 6-4-85, Cl. D23-162.000.
Kabushiki Kaisha Kuretake-Seishodo: *See—*
Nishida, Yoshitsugu, 279,115, Cl. D19-51.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Suzuki, Susumu; Uchihori, Noritaka; and Fukazawa, Naoto, 279,081, Cl. D10-38.000.
Kaeser, Charles, to P.F. Cosmetique. Facial massage instrument. 279,126, 6-4-85, Cl. D24-36.000.
Kanari, Masumi: *See—*
Kato, Naoyuki; Yubisui, Takahisa; and Kanari, Masumi, 279,095, Cl. D14-5.000.
Kaneko, Toshiro. Box for cultivating vegetables or the like. 279,084, 6-4-85, Cl. D11-155.000.
Kaneko, Toshiro. Box for cultivating vegetables or the like. 279,085, 6-4-85, Cl. D11-155.000.
Kanfer, Joseph S. Liquid dispenser. 279,062, 6-4-85, Cl. D6-545.000.
Kato, Naoyuki; Yubisui, Takahisa; and Kanari, Masumi, to Sharp Corporation. Combined television and radio receiver and tape recorder. 279,095, 6-4-85, Cl. D14-5.000.
Kelsey-Hayes Company: *See—*
Reid, Donald J., 279,093, Cl. D12-211.000.
Kikuchi, Nobuo; and Fushimoto, Hideo, to Canon Kabushiki Kaisha. Desk-top electronic calculator. 279,107, 6-4-85, Cl. D18-7.000.
Kikuchi, Nobuo; and Fushimoto, Hideo, to Canon Kabushiki Kaisha. Printer for desk-top electronic calculator. 279,112, 6-4-85, Cl. D18-12.000.
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46.3 4,521,252

CLASS 128

20 4,520,797
24 R 4,520,798
67 4,520,799
72 4,520,800
75 4,520,801
80 A 4,520,803
80 C 4,520,802
4,520,804
80 R 4,520,805
87 R 4,520,806
132 D 4,520,807
200.14 4,520,808
200.24 4,520,809
200.26 4,520,810
203.11 4,520,811
204.25 4,520,812
207.17 4,520,813
303 R 4,520,815
303.1 4,520,814
4,520,816
303.17 4,520,818
305 4,520,817
327 4,520,819
4,520,820
334 R 4,520,821
335.5 4,520,822
348.1 4,520,823
395 4,520,824
422 4,520,825
4,520,826
423 W 4,520,827
653 4,520,828
654 4,520,829
660 4,520,830

CLASS 132

11 R 4,520,831
33 R 4,520,832
90 4,520,833

CLASS 134

3 4,521,253
26 4,521,254
33 4,521,255
63 4,520,834

CLASS 135

102 4,520,835

CLASS 136

234 4,521,639
250 4,521,640

CLASS 137

59 4,520,836
68 R 4,520,837
69 4,520,838
100 4,520,839
259 4,520,840
270 4,520,841
327 4,520,842
469 4,520,843
486 4,520,844
624.27 4,520,845
625.3 4,520,846
625.43 4,520,847

CLASS 139

1 R 4,520,848
116 4,520,849
194 4,520,850
448 4,520,851

CLASS 141

86 4,520,852
168 4,520,853

CLASS 144

193 A 4,520,854

CLASS 148

1.5 4,521,256
11.5 Q 4,521,257
12 F 4,521,258
20.3 4,521,259

CLASS 149

19.91 4,521,260
92 4,521,261

CLASS 150

52 G 4,520,855

CLASS 152

454 4,520,856
527 4,520,857

CLASS 156

150 4,521,262

159 4,521,263
184 4,521,264
229 4,521,265
242 4,521,266
249 4,521,267
345 4,521,268
420 4,521,269
429 4,521,270
568 4,521,271
616 R 4,521,272
630 4,521,273
643 4,521,274
4,521,275

CLASS 159

1 W 4,521,276

CLASS 164

34 4,520,858
253 4,520,859
415 4,520,860
473 4,520,861

CLASS 165

10 4,520,862
12 Re.31,903
48 R 4,520,863
60 4,520,864
104.26 4,520,865
115 4,520,866
144 4,520,867
158 4,520,868

CLASS 166

241 4,520,869
317 4,520,870

CLASS 169

43 4,520,871
54 4,520,872

CLASS 172

47 4,520,873
49.5 4,520,874
126 4,520,875
427 4,520,876
643 4,520,877
703 4,520,878

CLASS 173

57 4,520,879
135 4,520,886

CLASS 174

50.64 4,521,641
70 S 4,521,642

CLASS 175

51 4,520,880
329 4,520,881
410 4,520,882

CLASS 177

1 4,520,883
58 4,520,884
210 C 4,520,885

CLASS 179

2 DP 4,521,643
4,521,644
5 R 4,521,645
84 VF 4,521,647
90 B 4,521,648

CLASS 180

68.5 4,520,887
125 4,520,888
168 4,520,889
193 4,520,890
219 4,520,891
4,520,892
326 4,520,893

CLASS 182

2 4,520,894
3 4,520,895
22 4,520,896
92 4,520,897
113 4,520,898
230 4,520,899
238 4,520,900

CLASS 184

3.1 4,520,901
7.4 4,520,902

CLASS 187

9 R 4,520,903
29 R 4,520,904
4,520,905
4,520,906

CLASS 188

156 4,520,907
319 4,520,908

CLASS 192

0.02 R 4,520,909
4,520,910

13 A 4,520,911
48 B 4,520,913
71 4,520,914
85 AA 4,520,912
106.2 4,520,915
4,520,916

CLASS 196

46 4,521,277

CLASS 198

499 4,520,917
640 4,520,918
648 4,520,919
761 4,520,920

CLASS 200

50 B 4,521,649
61.88 4,521,650
83 R 4,521,651
84 B 4,521,652
144 C 4,521,653
146 R 4,521,654
147 R 4,521,655
148 B 4,521,656
148 R 4,521,657

CLASS 201

17 4,521,278

CLASS 202

227 4,521,279

CLASS 204

15 4,521,280
25 4,521,281
52 R 4,521,282
59 R 4,521,283
71 4,521,284
72 4,521,285
192 E 4,521,286
192 SP 4,521,287
213 4,521,288
253 4,521,289
412 4,521,290

CLASS 206

1.5 4,520,921
5.1 4,520,923
44 R 4,520,922
150 4,520,924
334 4,520,925
366 4,520,926
387 4,520,927
505 4,520,928
610 4,520,929
628 4,520,930

CLASS 208

8 LE 4,521,291
11 LE 4,521,293
11 R 4,521,292
23 4,521,294
59 4,521,295
87 4,521,296
89 4,521,297
120 4,521,298
254 R 4,521,299

CLASS 209

166 4,521,300
4,521,301
441 4,521,302
454 4,521,303
542 4,520,931
545 4,520,932
606 4,520,933

CLASS 210

96.1 4,521,304
158 4,521,305
159 4,521,306
194 4,521,307
330 4,521,308
493.2 4,521,309
603 4,521,310
616 4,521,311
744 4,521,312
776 4,521,313
777 4,521,314
784 4,521,315

CLASS 211

41 4,520,934
124 4,520,935

CLASS 215

1 C 4,520,936
10 4,520,937
220 4,520,938
252 4,520,939

CLASS 217

121 PY 4,521,666

CLASS 219

10.55 B 4,521,658
10.77 4,521,659
69 W 4,521,660
4,521,661
4,521,662
76.14 4,521,663
4,521,664
117.1 4,521,665
121 LC 4,521,668
121 LJ 4,521,667
125.11 4,521,669
130.01 4,521,670
130.31 4,521,671
130.33 4,521,672
230 4,521,673
270 Re.31,908
299 4,521,674

CLASS 220

68 4,520,940
72 4,520,941
257 4,520,942
281 4,520,943
305 4,520,944
315 4,520,945

CLASS 221

63 4,520,946

CLASS 222

4,520,947
103 4,520,948
108 4,520,949
129.1 4,520,950
182 4,520,951
199 4,520,952
396 4,520,953
400.8 4,520,954

CLASS 223

044 4,520,955

CLASS 227

120 4,520,956

CLASS 229

17 R 4,520,957
72 4,520,958

CLASS 235

90 4,521,675
375 4,521,676
385 4,521,677
472 4,521,678
492 4,521,679

CLASS 236

89 4,520,959

CLASS 239

29 4,520,960
284 R 4,520,961
585 4,520,962

CLASS 241

30 4,520,963
55 4,520,964

CLASS 242

7.05 B 4,520,965
54 R 4,520,966
55 4,520,967
55.3 4,520,968
71.8 4,520,969
195 4,520,970
220 4,520,971

CLASS 244

3.1 4,520,972
3.16 4,520,973
34 4,520,974
137 R 4,520,975

CLASS 248

56 4,520,976
201 4,520,977
220.4 4,520,978
323 4,520,979
351 4,520,980
413 4,520,981
430 4,520,982
481 4,520,983
489 4,520,984
530 4,520,985
585 4,520,986
635 4,520,987

CLASS 249

13 4,520,988
4,520,989
47 4,520,990
122 4,520,991

CLASS 250

201 4,521,680
205 4,521,681
211 J 4,521,682
221 4,521,683
227 4,521,684
229 4,521,685
237 R 4,521,686
296 4,521,687
363 S 4,521,688
385 4,521,689
455.1 4,521,690
506.1 4,521,691

CLASS 251

48 4,520,992
57 4,520,993
58 4,520,994
162 4,520,995

CLASS 252

8.55 D 4,521,317
8.55 R 4,521,316
46.7 4,521,318
47.5 4,521,319
4,521,320
49.3 4,521,321
51.5 R 4,521,330
62.59 4,521,323
62.9 4,521,322
73 4,521,324
77 4,521,325
174.21 4,521,326
299.61 4,521,327
502 4,521,328
512 4,521,329
522 R 4,521,331
527 4,521,332
606 4,521,333

CLASS 254

9 C 4,520,996
26 R 4,520,997
267 4,520,998
278 4,520,999
391 4,521,000

CLASS 260

112.5 R 4,521,334
4,521,335
239 A 4,521,338
239.3 B 4,521,339
245.2 T 4,521,340
371 4,521,341
410 4,521,342
419 4,521,343
465 D 4,521,344
465 F 4,521,345
543 P 4,521,346
4,521,347
940 4,521,348

CLASS 261

93 4,521,349
111 4,521,350

CLASS 264

1.5 4,521,351
4.3 4,521,352
8 4,521,353
46.6 4,521,354
60 4,521,355
4,521,356
63 4,521,357
65 4,521,358
104 4,521,359
108 4,521,360
126 4,521,361
136 4,521,362
174 4,521,363
176 F 4,521,364
306 4,521,365
312 4,521,366
318 4,521,367
514 4,521,368
532 4,521,369

CLASS 266

208 4,521,001

CLASS 267

8 R 4,521,002
57.1 A 4,521,003
141.4 4,521,004
179 4,521,005

CLASS 269

304 4,521,006

CLASS 270

47 4,521,007

CLASS 271

3 4,521,008

CLASS 272

73 4,521,009
4,521,010
4,521,012
116 4,521,011
136 4,521,013

CLASS 273

1 GC 4,521,014
26 B 4,521,015
29 A 4,521,016
30 4,521,017
32 A 4,521,018
49 4,521,019
85 G 4,521,020
148 B 4,521,021
175 4,521,022
183 B 4,521,023
271 4,521,024

CLASS 277

89 4,521,025
134 4,521,026
152 4,521,027

CLASS 279

1 C 4,521,028

CLASS 280

7.14 4,521,029
42 4,521,030
293 4,521,031
605 4,521,032
700 4,521,033
804 4,521,034

CLASS 281

48 4,521,035

CLASS 285

15 4,521,037
24 4,521,038
41 4,521,039
61 4,521,036
140 4,521,040
156 4,521,041
334 4,521,042

CLASS 290

4 A 4,521,692

CLASS 294

19.1 4,521,043
82.24 4,521,044
149 4,521,045

CLASS 296

97 H 4,521,051
97 K 4,521,046
4,521,047
4,521,048
160 4,521,049
185 4,521,050
192

CLASS 297

3 4,521,052
312 4,521,053
357 4,521,054
362 4,521,055
412 4,521,056
455 4,521,057

CLASS 299

81 4,521,058

CLASS 301

36 R 4,521,059

CLASS 303

71 4,521,060
114 4,521,061

CLASS 307

252 T 4,521,693
266 4,521,694
279 4,521,695
350 4,521,696
355 4,521,697
450 4,521,698
456 4,521,699
4,521,700
482 4,521,701
520 4,521,702
530 4,521,703
4,521,704
605 4,521,705

CLASS 310

67 R 4,521,706
80 4,521,707
87 4,521,708
186 4,521,709
234 4,521,710
313 B 4,521,711
339 4,521,712

CLASS 313

378 4,521,713
422 4,521,714
531 4,521,715
594 4,521,716

CLASS 315

39 4,521,717
99 4,521,718
111.81 4,521,719
386 4,521,720

CLASS 318

573 4,521,721
578 4,521,722
696 4,521,723
762 4,521,724

CLASS 323

282 4,521,725
283 4,521,726
294 4,521,727

CLASS 324

58 R 4,521,728
71.1 4,521,729
158 F 4,521,730
174 4,521,731
300 4,521,732
309 4,521,733
313 4,521,734
433 4,521,735

CLASS 329

102 4,521,736

CLASS 330

51 4,521,737
134 4,521,738
257 4,521,739
267 4,521,740
277 4,521,741
289 4,521,742
296 4,521,743

CLASS 331

1 A 4,521,744
2 4,521,745
96 4,521,746
107 SL 4,521,747
108 D 4,521,748

CLASS 332

17 4,521,749

CLASS 333

28 R 4,521,750
151 4,521,751
165 4,521,752
204 4,521,753
224 4,521,754
244 4,521,755

CLASS 335

21 4,521,756
79 4,521,757
131 4,521,758
255 4,521,759

CLASS 337

368 4,521,760

CLASS 338

174 4,521,761

CLASS 339

14 R 4,521,062
17 LM 4,521,063
45 M 4,521,064
75 MP 4,521,065
89 M 4,521,066
237 4,521,067

CLASS 340

347 AD 4,521,763
347 DA 4,521,762
4,521,764
4,521,765
347 DD 4,521,766
555 4,521,767
566 4,521,768
635 4,521,769
703 4,521,770
705 4,521,771
710 4,521,772
4,521,773
745 4,521,774
784 4,521,775
825.44 4,521,776
995 4,521,777

CLASS 343

13 R 4,521,778
17.2 PC 4,521,779
17.7 4,521,780
700 MS 4,521,781
765 4,521,782
781 R 4,521,783
846 4,521,784

CLASS 346

25 4,521,785
140 R 4,521,786
4,521,787
4,521,788
4,521,789
154 4,521,790
159 4,521,791
4,521,792
201 4,521,793

CLASS 350

1.1 4,521,068
96.13 4,521,069
96.15 4,521,070
96.18 4,521,071
96.23 4,521,072
96.34 4,521,073
145 4,521,074
162.11 4,521,075
254 4,521,076
319 4,521,077
334 4,521,078
339 R 4,521,079
341 4,521,080
357 4,521,081
405 4,521,082
414 4,521,083
432 4,521,084
4,521,085
464 4,521,086
574 4,521,087
582 4,521,088
4,521,089

CLASS 351

124 4,521,090

CLASS 353

122 4,521,091

CLASS 354

320 4,521,092
403 4,521,093
423 4,521,094

CLASS 355

3 DD 4,521,098
3 FU 4,521,095
3 R 4,521,096
4,521,097
8 4,521,099
4,521,100
10 4,521,101
14 CU 4,521,102
14 D 4,521,103
20 4,521,104
64 4,521,105

CLASS 356

1 4,521,106
5 4,521,107
123 4,521,108
349 4,521,109
350 4,521,110
367 4,521,111
375 4,521,112
387 4,521,113
401 4,521,114
432 4,521,115

CLASS 357

2 4,521,794
23.4 4,521,795
23.5 4,521,796
24 4,521,797
30 4,521,798
51 4,521,799
67 4,521,800
71 4,521,801
81 4,521,170

CLASS 358

11 4,521,802
12 4,521,803
51 4,521,804
75 4,521,805
86 4,521,806
106 4,521,807
111 4,521,808
120 4,521,809
181 4,521,810
243 4,521,811
287 4,521,812
296 4,521,813
4,521,814

CLASS 360

10.2 4,521,815
45 4,521,816
46 4,521,817
65 4,521,818
97 4,521,819
133 4,521,820
137 4,521,821

CLASS 361

35 4,521,822
38 4,521,823
45 4,521,824
253 4,521,825
314 4,521,826
386 4,521,827
4,521,828
387 4,521,829
433 4,521,830

CLASS 362

32 4,521,831
103 4,521,832
116 4,521,833
139 4,521,834
145 4,521,836
183 4,521,835
216 4,521,837
219 4,521,838
238 4,521,839

CLASS 363

35 4,521,840
45 4,521,841
71 4,521,842

CLASS 364

145 4,521,843
167 4,521,844
171 4,521,845
184 4,521,847
200 4,521,846
4,521,848
4,521,849
4,521,850
4,521,851
4,521,852
4,521,853
4,521,858
400 4,521,854
426 4,521,856
431.06 Re.31,906
434 4,521,855
439 4,521,857
472 4,521,859
474 4,521,860
517 4,521,861
552 4,521,862
561 4,521,863
563 4,521,864
608 4,521,865
724 4,521,866
4,521,867
753 4,521,868
900 4,521,869
4,521,870
4,521,871

CLASS 365

49 4,521,872
190 4,521,873
221 4,521,874

CLASS 366

25 Re.31,904
54 4,521,116
165 4,521,117

CLASS 367

130 4,521,875

CLASS 369

54 4,521,876
173 4,521,877

CLASS 370

19 4,521,878
62 4,521,879
68 4,521,880
72 4,521,881
85 4,521,882
100 4,521,883

CLASS 371

15 4,521,884
29 4,521,885
43 4,521,886

CLASS 372

45 4,521,887
50 4,521,888
87 4,521,889

CLASS 373

22 4,521,890

CLASS 374

5 4,521,118
56 4,521,119
102 4,521,120

CLASS 375

8 4,521,891
88 4,521,892
107 4,521,893
122 4,521,646

CLASS 376

233 4,521,370
245 4,521,371
250 4,521,372
258 4,521,373
462 4,521,374

CLASS 377

16 4,521,894
21 4,521,895
60 4,521,896
115 4,521,897
116 4,521,898

CLASS 378

40 4,521,899
137 4,521,900
138 4,521,901
4,521,902
4,521,903
141 4,521,903
185 4,521,904
206 4,521,905

CLASS 381

24 4,521,906
47 4,521,907
92 4,521,908

CLASS 382

38 4,521,909

CLASS 383

10 4,521,910
20 4,521,911

CLASS 384

100 4,521,121

CLASS 400

124 4,521,122
4,521,123
144.2 4,521,124
208 4,521,125

CLASS 401

65 4,521,126
68 4,521,127
183 4,521,128

CLASS 404

10 4,521,129

CLASS 405

116 4,521,131
166 4,521,132
195 4,521,133
198 4,521,134
224 4,521,135
263 4,521,136
283 4,521,137
284 4,521,138

CLASS 406

19 4,521,139
86 4,521,130

CLASS 408

97 4,521,140

CLASS 409

48 4,521,141
82 4,521,142
200 4,521,143
218 4,521,144
4,521,145

CLASS 411

1 4,521,146
43 4,521,147
182 4,521,148

CLASS 414

44 4,521,149
749 4,521,150

CLASS 415

2 R 4,521,152
11 4,521,156
131 4,521,151
146 4,521,153
190 4,521,155

CLASS 416

134 A 4,521,157
160 4,521,158
174 4,521,159
175 4,521,154
218 4,521,160

CLASS 417

68 4,521,161
138 4,521,162
238 4,521,163
307 4,521,164
393 4,521,165
478 4,521,166

CLASS 418

69 4,521,169
82 4,521,167
137 4,521,168

CLASS 422

29 4,521,375
56 4,521,376
92 4,521,377
135 4,521,378
209 4,521,379
273 4,521,380

CLASS 423

49 4,521,381
68 4,521,382
72 4,521,384
76 4,521,385
157 4,521,386
210 4,521,387
235 4,521,388
4,521,389
239 4,521,390
307 4,521,391
317 4,521,392
344 4,521,393
363 4,521,394
376 4,521,395
474 4,521,397
579 4,521,398
620 4,521,399
658.5 4,521,400

CLASS 424

19 4,521,401
4,521,402
51 4,521,403
71 4,521,404
92 4,521,405
94 4,521,406
95 4,521,407
115 4,521,408
195.1 4,521,411

CLASS 425

2 4,521,171
73 4,521,172
113 4,521,173
194 4,521,174
403 4,521,175
521 4,521,176
533 4,521,177
548 4,521,178
4,521,179

CLASS 426

36 4,521,433
59 4,521,434
92 4,521,435
104 4,521,436
130 4,521,437
271 4,521,438
509 4,521,439
602 4,521,440

CLASS 427

38 4,521,441
4,521,442
4,521,443
41 4,521,444
44 4,521,445
45.1 4,521,447
86 4,521,446
88 4,521,448
96 4,521,449
121 4,521,450
130 4,521,451
136 4,521,452
140 4,521,453
168 4,521,454
178 4,521,455
207.1 4,521,456
286 4,521,457
294 4,521,458
359 4,521,459
385.5 4,521,460
387 4,521,461
421 4,521,462
435 4,521,463

CLASS 428

33 4,521,464
35 4,521,465
4,521,466
4,521,467
4,521,468
4,521,469
36 4,521,470
40 4,521,471
53 4,521,472
82 4,521,473
93 4,521,474
142 4,521,475
209 4,521,476
282 4,521,477
287 4,521,478
326 4,521,479
328 4,521,480
336 4,521,481
4,521,482
373 4,521,483
374 4,521,484
383 4,521,485
407 4,521,486
4,521,487
409 4,521,488
412 4,521,489
416 4,521,490
458 4,521,491
464 4,521,492
498 4,521,493
514 4,521,494
537.1 4,521,495
551 4,521,496

CLASS 429

27 4,521,497
59 4,521,498
111 4,521,499
174 4,521,500

CLASS 430

24 4,521,501
42 4,521,502
49 4,521,503
57 4,521,504
112 4,521,505
241 4,521,506
503 4,521,507
567 4,521,508

CLASS 431

25 4,521,180
207 4,521,181

CLASS 432

13 4,521,182
37 4,521,183
60 4,521,184

CLASS 433

31 4,521,185
71 4,521,186
72 4,521,187
74 4,521,188
84 4,521,189
132 4,521,190
164 4,521,191
173 4,521,192
199 4,521,193
215 4,521,194

CLASS 434

16 4,521,195
20 4,521,196
110 4,521,197
224 4,521,198
339 4,521,199

CLASS 435

6 4,521,509
7 4,521,510
28 4,521,511
35 4,521,512
68 4,521,513
70 4,521,514
248 4,521,515
253 4,521,516
313 4,521,517

CLASS 436

10 4,521,518
17 4,521,519
66 4,521,520
517 4,521,521
525 4,521,522

CLASS 440

23 4,521,200
55 4,521,201
61 4,521,202

CLASS 441

64 4,521,220

CLASS 446

106 4,521,203
198 4,521,204
302 4,521,205
444 4,521,206

CLASS 455

115 4,521,912
121 4,521,913
158 4,521,914
165 4,521,915
182 4,521,916
223 4,521,917
343 4,521,918
344 4,521,919
619 4,521,920

CLASS 474

56 4,521,207
101 4,521,208

CLASS 493

432 4,521,209

CLASS 501

30 4,521,523
64 4,521,524
98 4,521,525

CLASS 502

24 4,521,526
184 4,521,527
208 4,521,528
217 4,521,529
218 4,521,530
242 4,521,531
439 4,521,532

CLASS 514

21 4,521,409
26 4,521,410
80 4,521,533
203 4,521,413
211 4,521,430
219 4,521,534
222 4,521,535
226 4,521,536
229 4,521,414
244 4,521,412
252 4,521,415
4,521,416
255 4,521,417
258 4,521,422
259 4,521,420
267 4,521,419
4,521,421
272 4,521,418
277 4,521,428
280 4,521,423
302 4,521,537
314 4,521,424
315 4,521,619
346 4,521,426
350 4,521,425
354 4,521,427
383 4,521,429
423 4,521,538
461 4,521,539
471 4,521,431
556 4,521,432

CLASS 518

717 4,521,540

CLASS 521

79 4,521,541
89 4,521,542
103 4,521,543
107 4,521,544
4,521,545
137 4,521,546
4,521,547
167 4,521,548

CLASS 523

116 4,521,550
120 4,521,551
173 4,521,549
313 4,521,552
333 4,521,553
522 4,521,554

CLASS 524

63 4,521,555
88 4,521,556
94 4,521,557
145 4,521,558
289 4,521,559
371 4,521,560
406 4,521,596
459 4,521,561
490 4,521,562
555 4,521,563

CLASS 525

54.1 4,521,564
64 4,521,565
247 4,521,566
261 4,521,567
276 Re.31,907
309 4,521,568
316 4,521,569
415 4,521,570
437 4,521,571
507 4,521,572

CLASS 526

125 4,521,573
204 4,521,574
206 4,521,575
213 4,521,576
261 4,521,577
287 4,521,579
288 4,521,578
307.2 4,521,580
340.2 4,521,587

CLASS 528

57 4,521,581
67 4,521,582
119 4,521,583
214 4,521,584
271 4,521,585
297 4,521,586
363 4,521,588
380 4,521,589
502 4,521,590

CLASS 530

501 4,521,336

CLASSIFICATION OF PATENTS

CLASS 534		16	4,521,598	503	4,521,606	198	4,521,615	461	4,521,625		4,521,636
560	4,521,337	97	4,521,599	**CLASS 549**		**CLASS 562**		487	4,521,626		4,521,637
821	4,521,591	352	4,521,600	39	4,521,607	456	4,521,616	511	4,521,627	665	4,521,634
CLASS 536		**CLASS 546**		397	4,521,608	467	4,521,617	**CLASS 568**		**CLASS 585**	
4.1	4,521,592	45	4,521,601	533	4,521,609	535	4,521,618	1	4,521,628	640	4,521,638
55.3	4,521,593	184	4,521,602	**CLASS 560**		**CLASS 564**		313	4,521,629	**CLASS 604**	
98	4,521,594	304	4,521,603	27	4,521,610	128	4,521,620	435	4,521,630	8	4,521,210
127	4,521,595	**CLASS 548**		91	4,521,611	307	4,521,621	478	4,521,631	85	4,521,211
CLASS 544		301	4,521,604	124	4,521,612	406	4,521,622	492	4,521,632	126	4,521,212
3	4,521,597	440	4,521,605	152	4,521,613	430	4,521,623	639	4,521,633	323	4,521,213
				193	4,521,614	446	4,521,624	659	4,521,635		

CLASSIFICATION OF DESIGNS

D2—	25	279,040		381	279,056		386	279,072			279,088	D18—	2	279,104		191	279,120
	28	279,041		399	279,057		402	279,073			279,089		7	279,105		208	279,121
	29	279,042		453	279,058	D8—	14.1	279,074		149	279,090			279,106	D22—	13	279,122
		279,043		482	279,059		30	279,075		151	279,091			279,107	D23—	32	279,123
	320	279,044		502	279,060		102	279,076		162	279,092			279,108		162	279,124
D3—	35	279,045		509	279,061	D9—	371	279,077		211	279,093			279,109	D24—	4	279,125
	36	279,046		545	279,062		376	279,078		340	279,094			279,110		36	279,126
		279,047			279,063		410	279,079	D14—	5	279,095		10	279,111	D26—	3	279,127
	71	279,048		561	279,064		453	279,080			279,096		12	279,112			279,128
D4—	106	279,049	D7—	17	279,065	D10—	38	279,081		6	279,097	D19—	26	279,113		9	279,129
D6—	316	279,051			279,066	D11—	43	279,082		70	279,098		42	279,114		37	279,131
	334	279,052		37	279,067		152	279,083		73	279,099		51	279,115		62	279,130
	348	279,050		312	279,068		155	279,084		115	279,100	D21—	34	279,116	D28—	7	279,132
	361	279,053		325	279,069			279,085	D15—	5	279,101		65	279,117	D30—	32	279,133
	362	279,054			279,070	D12—	110	279,086	D17—	20	279,102		120	279,118	D34—	43	279,134
	373	279,055		359	279,071		147	279,087		22	279,103		159	279,119			

CLASSIFICATION OF PLANTS

P—	7	5,482	10	5,483		5,484	31	5,485	38	5,486		5,487

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

71—	61	T105,501									

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
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Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
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Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,520,524	4,520,869	4,521,468	09 :	4,521,857	4,521,725	4,521,469
	4,520,879	4,520,893	4,521,485		Re.31,903	4,521,743	4,521,492
	4,521,110	4,520,897	4,521,499		Re.31,908	4,521,776	4,521,516
	4,521,229	4,520,918	4,521,525		4,520,567	4,521,806	4,521,611
	4,521,782	4,520,920	4,521,610		4,520,644	13 :	4,520,605	4,521,620
02 :	4,520,872	4,520,926	4,521,623		4,520,739	4,520,687	4,521,650
04 :	4,520,529	4,520,928	4,521,647		4,520,760	4,521,036	4,521,720
	4,520,715	4,520,935	4,521,652		4,520,808	4,521,147	4,521,722
	4,521,067	4,520,941	4,521,678		4,520,817	4,521,367	4,521,726
	4,521,187	4,520,945	4,521,686		4,520,832	4,521,464	4,521,727
	4,521,441	4,520,946	4,521,690		4,520,904	4,521,834	4,521,752
	4,521,692	4,520,953	4,521,693		4,521,015	4,521,902	4,521,800
	4,521,697	4,520,954	4,521,699		4,521,017	15 :	4,520,525	4,521,828
	4,521,737	4,520,970	4,521,734		4,521,109	16 :	4,520,921	4,521,856
	4,521,765	4,520,973	4,521,736		4,521,161	17 :	4,520,563	4,521,880
	4,521,799	4,520,975	4,521,746		4,521,281	4,520,564	4,521,897
	4,521,850	4,520,979	4,521,747		4,521,325	4,520,565	18 :	4,520,518
	4,521,851	4,520,992	4,521,762		4,521,371	4,520,602	4,520,546
	4,521,898	4,520,997	4,521,770		4,521,530	4,520,603	4,520,627
05 :	4,521,911	4,521,012	4,521,771		4,521,533	4,520,617	4,520,707
06 :	4,520,514	4,521,018	4,521,772		4,521,544	4,520,620	4,520,767
	4,520,526	4,521,021	4,521,773		4,521,546	4,520,652	4,520,798
	4,520,527	4,521,022	4,521,783		4,521,563	4,520,682	4,520,875
	4,520,528	4,521,037	4,521,791		4,521,583	4,520,720	4,520,894
	4,520,537	4,521,040	4,521,792		4,521,615	4,520,748	4,521,026
	4,520,555	4,521,062	4,521,818		4,521,824	4,520,759	4,521,128
	4,520,585	4,521,066	4,521,835		4,521,895	4,520,800	4,521,146
	4,520,647	4,521,095	4,521,839		4,521,910	4,520,868	4,521,173
	4,520,648	4,521,114	4,521,843	10 :	4,521,111	4,520,912	4,521,302
	4,520,650	4,521,118	4,521,854		4,521,241	4,520,924	4,521,399
	4,520,654	4,521,135	4,521,855		4,521,263	4,520,944	4,521,421
	4,520,656	4,521,166	4,521,858		4,521,493	4,520,955	4,521,562
	4,520,671	4,521,182	4,521,870		4,521,510	4,520,960	4,521,598
	4,520,691	4,521,189	4,521,874		4,521,521	4,520,978	4,521,669
	4,520,696	4,521,198	4,521,875		4,521,557	4,520,981	4,521,810
	4,520,701	4,521,206	4,521,887	11 :	4,521,896	4,521,002	4,521,811
	4,520,793	4,521,211	4,521,891	12 :	4,520,558	4,521,010	4,521,826
	4,520,795	4,521,220	4,521,900		4,520,599	4,521,014	4,521,915
	4,520,796	4,521,225	4,521,901		4,520,616	4,521,038	19 :	4,520,618
	4,520,797	4,521,240	4,521,903		4,520,709	4,521,060	4,520,667
	4,520,799	4,521,243	4,521,907		4,520,785	4,521,184	4,520,669
	4,520,801	4,521,278	08 :	4,520,763	4,520,786	4,521,197	4,521,658
	4,520,802	4,521,292	4,520,769		4,520,813	4,521,203	20 :	4,520,878
	4,520,805	4,521,308	4,520,819		4,521,085	4,521,207	4,520,983
	4,520,806	4,521,319	4,520,820		4,521,116	4,521,212	4,521,354
	4,520,810	4,521,370	4,520,923		4,521,167	4,521,213	4,521,511
	4,520,821	4,521,373	4,520,995		4,521,305	4,521,227	21 :	4,521,489
	4,520,824	4,521,375	4,521,003		4,521,350	4,521,264	22 :	4,520,804
	4,520,834	4,521,389	4,521,130		4,521,392	4,521,343	4,520,900
	4,520,843	4,521,425	4,521,349		4,521,434	4,521,366	4,520,994
	4,520,846	4,521,443	4,521,401		4,521,518	4,521,394	4,521,131
	4,520,860	4,521,451	4,521,402		4,521,645	4,521,427	4,521,140
	4,520,865	4,521,457	4,521,498		4,521,649	4,521,466	4,521,345

	4,521,624		4,521,051		4,521,127		4,521,670		4,521,136		4,520,870
23	: 4,521,181		4,521,055		4,521,156		4,521,674		4,521,293		4,520,888
	4,521,760		4,521,056		4,521,188		4,521,695		4,521,300		4,520,917
24	: 4,520,513		4,521,057		4,521,192		4,521,700		4,521,590		4,521,019
	4,520,568		4,521,120		4,521,193		4,521,733		4,521,708		4,521,041
	4,520,606		4,521,142		4,521,205		4,521,754	41	: 4,520,509		4,521,042
	4,520,765		4,521,164		4,521,237		4,521,796		4,520,581		4,521,043
	4,520,833		4,521,194		4,521,247		4,521,803		4,520,702		4,521,077
	4,520,984		4,521,219		4,521,253		4,521,809		4,520,742		4,521,155
	4,521,104		4,521,282		4,521,271		4,521,831		4,520,791		4,521,232
	4,521,210		4,521,288		4,521,272		4,521,832		4,520,854		4,521,275
	4,521,235		4,521,363		4,521,274		4,521,840		4,521,004		4,521,287
	4,521,238		4,521,411		4,521,295		4,521,846		4,521,006		4,521,330
	4,521,260		4,521,416		4,521,297		4,521,847		4,521,259		4,521,372
	4,521,306		4,521,435		4,521,298		4,521,865		4,521,474		4,521,388
	4,521,398		4,521,447		4,521,303		4,521,879	42	: 4,520,549		4,521,414
	4,521,531		4,521,494		4,521,316		4,521,906		4,520,587		4,521,446
	4,521,550		4,521,532		4,521,329		4,521,919		4,520,588		4,521,467
	4,521,601		4,521,569		4,521,359	37	: 4,520,530		4,520,676		4,521,548
	4,521,656		4,521,599		4,521,376		4,520,635		4,520,677		4,521,572
	4,521,668		4,521,626		4,521,404		4,520,636		4,520,693		4,521,578
	4,521,688		4,521,633		4,521,408		4,520,719		4,520,727		4,521,581
	4,521,702		4,521,679		4,521,460		4,520,989		4,520,753		4,521,609
	4,521,779		4,521,712		4,521,478		4,521,044		4,520,788		4,521,628
	4,521,781	27	: 4,520,825		4,521,537		4,521,234		4,520,907		4,521,635
	4,521,893		4,520,827		4,521,539		4,521,379		4,521,047		4,521,637
25	: 4,520,516		4,520,876		4,521,541		4,521,426		4,521,174		4,521,640
	4,520,522		4,520,890		4,521,551		4,521,685		4,521,215		4,521,696
	4,520,556		4,520,925		4,521,608		4,521,862		4,521,218		4,521,698
	4,520,586		4,520,969		4,521,613	38	: 4,520,790		4,521,231		4,521,701
	4,520,630		4,521,030		4,521,627		4,520,877		4,521,299		4,521,775
	4,520,672		4,521,091		4,521,629	39	: 4,520,575		4,521,304		4,521,786
	4,520,678		4,521,129		4,521,634		4,520,598		4,521,332		4,521,808
	4,520,704		4,521,144		4,521,677		4,520,609		4,521,335		4,521,820
	4,520,741		4,521,262		4,521,703		4,520,621		4,521,357		4,521,827
	4,520,751		4,521,290		4,521,714		4,520,663		4,521,381		4,521,852
	4,520,818		4,521,312		4,521,730		4,520,684		4,521,405		4,521,853
	4,520,931		4,521,313		4,521,739		4,520,689		4,521,424		4,521,861
	4,520,976		4,521,333		4,521,755		4,520,750		4,521,463		4,521,868
	4,520,996		4,521,490		4,521,804		4,520,807		4,521,475	49	: 4,520,736
	4,521,176		4,521,503		4,521,886		4,520,838		4,521,501	50	: 4,521,000
	4,521,180		4,521,644		4,521,916		4,520,853		4,521,509		4,521,087
	4,521,214		4,521,819	36	: Re.31,907		4,520,861		4,521,520	51	: 4,520,572
	4,521,369		4,521,884		4,520,512		4,520,895		4,521,540		4,520,601
	4,521,407	28	: 4,521,239		4,520,591		4,520,902		4,521,561		4,520,734
	4,521,410	29	: 4,520,710		4,520,651		4,520,908		4,521,600		4,520,922
	4,521,445		4,520,811		4,520,716		4,520,986		4,521,636		4,521,029
	4,521,588		4,520,909		4,520,758		4,521,008		4,521,664		4,521,075
	4,521,641		4,520,985		4,520,794		4,521,023		4,521,713		4,521,307
	4,521,684		4,521,115		4,520,815		4,521,031		4,521,715		4,521,484
	4,521,718		4,521,165		4,520,830		4,521,052		4,521,761		4,521,517
	4,521,753		4,521,199		4,520,835		4,521,065		4,521,844		4,521,547
	4,521,837		4,521,344		4,520,852		4,521,089	44	: 4,520,510		4,521,659
	4,521,849		4,521,395		4,520,867		4,521,154		4,521,027		4,521,859
	4,521,909	30	: 4,521,864		4,520,887		4,521,222	45	: 4,520,520		4,521,912
26	: 4,520,540	31	: 4,520,519		4,520,959		4,521,224		4,520,542		4,521,917
	4,520,547		4,520,803		4,520,977		4,521,230		4,520,747		4,521,918
	4,520,576		4,520,841		4,521,064		4,521,254		4,520,823	53	: 4,520,580
	4,520,589	32	: Re.31,904		4,521,106		4,521,267		4,521,045		4,520,966
	4,520,593		Re.31,905		4,521,119		4,521,283		4,521,121		4,521,132
	4,520,633		4,520,590		4,521,185		4,521,360		4,521,336		4,521,255
	4,520,638		4,520,698		4,521,273		4,521,362		4,521,374		4,521,683
	4,520,639		4,520,836		4,521,309		4,521,377		4,521,666		4,521,707
	4,520,640	33	: 4,521,097		4,521,318		4,521,479		4,521,830		4,521,780
	4,520,653		4,521,171		4,521,320		4,521,495	47	: 4,520,674	54	: 4,521,573
	4,520,658		4,521,848		4,521,365		4,521,496		4,520,749	55	: 4,520,615
	4,520,664		4,521,881		4,521,391		4,521,523		4,521,334		4,520,659
	4,520,757	34	: 4,520,515		4,521,403		4,521,528		4,521,556		4,520,713
	4,520,772		4,520,554		4,521,409		4,521,558		4,521,585		4,520,717
	4,520,773		4,520,561		4,521,422		4,521,559	48	: 4,520,550		4,520,728
	4,520,782		4,520,604		4,521,436		4,521,564		4,520,571		4,520,814
	4,520,858		4,520,641		4,521,438		4,521,574		4,520,592		4,520,847
	4,520,891		4,520,743		4,521,442		4,521,841		4,520,594		4,521,209
	4,520,911		4,520,744		4,521,449		4,521,842		4,520,629		4,521,639
	4,520,929		4,520,822		4,521,452		4,521,869		4,520,632		4,521,689
	4,520,930		4,520,855		4,521,471		4,521,871		4,520,649		4,521,694
	4,520,949		4,520,896		4,521,472		4,521,885		4,520,655		4,521,705
	4,520,957		4,520,942		4,521,580	40	: 4,520,566		4,520,681		4,521,748
	4,520,991		4,520,952		4,521,603		4,520,610		4,520,697		4,521,756
	4,521,005		4,520,958		4,521,616		4,520,692		4,520,766		4,521,757
	4,521,048		4,520,988		4,521,621		4,520,837		4,520,816		4,521,758
	4,521,050		4,521,009		4,521,646		4,521,011		4,520,842		4,521,823

DESIGN PATENTS

01	: 279,121		279,116		279,070	26	: 279,093		279,053	41	: 279,124
	279,131		279,129		279,077		279,114		279,055	42	: 279,040
06	: 279,042		279,133	18	: 279,134	27	: 279,050		279,071	44	: 279,111
	279,043	08	: 279,089	19	: 279,041		279,120		279,099	45	: 279,088
	279,060	09	: 279,058		279,069	29	: 279,101		279,132	47	: 279,102
	279,074	12	: 279,059	21	: 279,048		279,118	37	: 279,056	48	: 279,122
	279,080		279,061		279,123	32	: 279,092	39	: 279,062	50	: 279,130
	279,083	13	: 279,063	22	: 279,051	33	: 279,044		279,087	53	: 279,094
	279,113	17	: 279,068	24	: 279,045	36	: 279,052				

PLANT PATENTS

01	: 5,485	06	: 5,486	5,487	25 : 5,482	5,483	5,484

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

01	: T105,501					

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PATENTS

June 11, 1985

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

oute to:

U.S. DEPARTMENT OF COMMERCE

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
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OFFICIAL GAZETTE of the
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June 11, 1985 Volume 1055 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of May 7, 1985 and was published in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

International PCT fees were changed effective May 28, 1985 and were announced in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International fees	
Basic fee (first 30 pages)	230.00
Basic Supplemental fee (for each page over 30)	4.00
Designation fee (for the first 10 national or regional offices)	55.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
May 7, 1985. *Acting Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on June 8, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,333,179 through 4,334,324

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,347,624, Re. S.N. 646,168, Filed Aug. 31, 1984, Cl. 250/445T, X-RAY DIAGNOSTIC APPARATUS FOR PRODUCING TRANSVERSE LAYER IMAGES, Edgar Tschunt, Owner of Record: *Siemens Aktiengesellschaft, Berlin and Munich, Germany,* Attorney or Agent: James van Santen, et al., Ex. Gp.: 256

4,436,519, Re. S.N. 728,623, Filed Apr. 29, 1985, Cl. 604/175, REMOVABLE HEMOSTASIS VALVE, William J. O'Neill, Owner of Record: *Argon Medical Corp., Athens, Tex.,* Attorney or Agent: Lawrence S. Levinson, et al., Ex. Gp.: 336

4,477,687, Re. S.N. 727,001, Filed Apr. 22, 1985, Cl. 136/229, THERMOCOUPLE AND METHOD OF MAKING THE THERMOCOUPLE AND OF MOUNTING THE THERMOCOUPLE ON A HEAT EXCHANGER TUBE, Philip F. Finney, Owner of Record: *Inventor,* Attorney or Agent: Edmond T. Patnaude, et al., Ex. Gp.: 223

4,504,000, Re. S.N. 727,929, Filed Apr. 26, 1985, Cl. 223/104, SEWING BOX, John S. Doyel, Owner of Record: *Inventor,* Attorney or Agent: Ivan S. Kavrukov, et al., Ex. Gp.: 247

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,360,683, Reexam. No. 90/000,773, Requested: May 6, 1985, Cl. 315/209, SOLID-STATE PULSE GENERATOR FOR ELECTRIC-DISCHARGE MACHINING, Kiyoshi Inoue, Owner of Record: *Inventor,* Attorney or Agent: Herbert Dubno, Ex. Gp.: 220, Requester: Colt Industries Operating Corp., W. Hartford, Conn.

3,900,886, Reexam. No. 90/000,779, Requested: May 13, 1985, Cl. 358/82, SONIC COLOR SYSTEM, Jan R. Coyle, et al., Owner of Record: *Inventors,* Attorney or Agent: Newton H. Lee, Jr., Ex. Gp.: 260, Requester: Atari Holdings, Inc., New York, N.Y.

4,074,176, Reexam. No. 90/000,778, Requested: May 13, 1985, Cl. 318/371, MOTOR PROTECTOR, Harry G. Parke, Owner of Record: *Marine Electric Corp., Brooklyn, N.Y.,* Attorney or Agent: Wender, Murase & White, Ex. Gp.: 217, Requester: Wender, Murase, et al., Washington, D.C.

4,124,899, Reexam. No. 90/000,774, Requested: May 2, 1985, Cl. 307/465, PROGRAMMABLE ARRAY LOGIC CIRCUIT, John M. Birkner, et al., Owner of Record: *Monolithic Memories, Inc., Sunnyvale, Calif.,* Attorney or Agent: Skjerven, Morrill, et al., Ex. Gp.: 254, Requester: Walter J. Madden, Jr., Skjerven, et al., Santa Clara, Calif.

4,340,682, Reexam. No. 90/000,780, Requested: May 13, 1985, Cl. 524/507, ADHESIVE CONSISTING ESSENTIALLY OF AN ISOCYANATE TERMINATED RICINOLEATE PREPOLYMER AND A CHLORINATED POLYVINYL CHLORIDE, Norris R. Legue, et al., Owner of Record: *Synthetic Surfaces, Inc., Scotch Plains, N.J.,* Attorney or Agent: John N. Bain, Ex. Gp.: 151, Requester: Lord Corp., Arlington, Va.

4,387,440, Reexam. No. 90/000,777, Requested: May 10, 1985, Cl. 364/900, MODEM CONTROL CODE MULTIPLEXING, Michael D. Eaton, Owner of Record: *Business Computer Corp., Sunnyvale, Calif.,* Attorney or Agent: Limbach, Sutton, et al., Ex. Gp.: 230, Requester: Racal Data Communications, Inc., Milpitas, Calif.

4,428,768, Reexam. No. 90/000,775, Requested: May 3, 1985, Cl. 75/10, PROCESS FOR THE RECOVERY OF PLATINUM GROUP METALS FROM REFRACTORY CERAMIC SUBSTRATES, Joseph G. Day, Owner of Record: *Johnson Matthey Co., London, England,* Attorney or Agent: Cushman, Darby, et al., Ex. Gp.: 110 Requester: Owner

Examination

Pursuant to the provisions of 37 C.F.R. §§10.5, 10.6 and 10.7, an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys and agents will be held on Tuesday, Oct. 8, 1985.

With the exception of those persons who actively served four years in the examining corps of the Patent and Trademark Office for whom the examination is waived, all persons recognized for practice before the Patent and Trademark Office in patent cases must pursuant to the noted rules, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by 37 C.F.R. §10.14, which does not require the passing of an examination.

37 C.F.R. §10.6(d) provides, in part, that, "[A]ny officer or employee of the United States who is disqualified by statute (18 U.S.C. 203, 205) from practicing as an attorney or agent in proceedings or other matters before Government departments or agencies, may not be registered to practice before the Office . . . [but,] an officer or employee whose official duties require the preparation and prosecution of applications for patent and who fulfills the requirements of . . . [part 10 of 37 C.F.R.] may be registered to practice before the Office to the extent necessary to carry out his or her official duties." If a person is an officer or employee of the United States who is not disqualified for registration under 37 C.F.R. §10.6(d) when that persons applies to take the examination, that person's application for registration *must* be accompanied by his or her supervisor's *verified statement* that his or her official duties as a United States officer or employee require him or her to prepare and prosecute applications for patent. If, after applying, a person becomes an officer or employee of the United States, and is not disqualified for registration under 37 C.F.R. §10.6(d), that person must submit the same verified statement from his or her supervisor, preferably promptly upon his or her employment. After passing the examination, a person may be considered eligible for registration. If a person is disqualified for registration under 37 C.F.R. §10.6(d) when he or she applies, or becomes so disqualified after applying, but before he or she is registered, approval of his or her application to take the examination will be subject to the following conditions:

1. If the person passes the examination, that person will not be registered so long as he or she remains disqualified for registration under 37 C.F.R. §10.6(d). However, if within one (1) year from the date notification of passing is mailed, that person's status changes and he or she is no longer disqualified under 37 C.F.R. §10.6(d), that person will be considered eligible for registration upon satisfactory proof of his or her change in status.
2. If a person has not become registered within one (1) year from the date notification of passing is mailed, that person may not become registered thereafter except upon taking and passing another regulary scheduled examination.

Under 37 C.F.R. §10.7(b), persons seeking registration must submit "satisfactory proof of good moral character and repute and of sufficient basic training in scientific and technical matters . . . ." The initial submissions of many persons are inadequate, and often they must be supplemented before applicants are approved to take the examination. To afford adequate time to present a satisfactory supplemental showing, it is recommended that persons file their applications early, preferably at least two months before the July 31, 1985 final date set out *infra.* All supplemental showings of qualifications and all applications received after July 31, 1985 will be consid-

ered only in connection with their admission to the next succeeding examination.

The examination will be given under the supervision of the Office of Personnel Management (formerly Civil Service Commission), and may be taken at specific locations in which the Office of Personnel Management conducts examinations.

July 31, 1985 is the final date for receipt in the Patent and Trademark Office of applications to take the examination together with a $75 fee and all necessary satisfactory showings required by 37 C.F.R. §§10.7(a) and (b).

Application blanks may be obtained from the Office of Enrollment and Discipline, Bldg. 3, 10th Floor, Rm. D23, Crystal Plz., Arlington, Va. or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Office of Enrollment and Discipline.

CAMERON WEIFFENBACH,
May 14, 1985. *Office of Enrollment and Discipline.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of any of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before July 12, 1985:

Bogatie, George E., 3728 S.E. Dana Dr., Bartlesville, Okla. 74006.
Marcus, Michael S., 9504 Yawl Ct., Burke, Va. 22015
Schecter, Manny W., 6166B Essex House Sq., Alexandria, Va. 22310
Schultz, William H., 4920 Redford Rd., Bethesda, Md. 20816

CAMERON WEIFFENBACH,
May 15, 1985. *Director Office of Enrollment and Discipline.*

Removal from Register

Pursuant to the provisions of 37 CFR §10.11(b), a letter was directed on Nov. 19, 1984, to the last post office address furnished to the Office of Enrollment and Discipline by each of the persons whose name and address appear on the following list. With respect to some of the letters, no reply was received within the period of forty-five (45) days therein set. Other letters were returned by the Post Office with notations to the effect that the addressee was deceased, unknown, or had moved and left no forwarding address.

Accordingly, the names of the following persons have been removed from the Register of Patent Attorneys and Patent Agents.

Edward J. Connors, Jr., P.O. Box 10929, 909 Washington Blvd., Stamford, Conn. 06904
Harrison E. McCandlish, LeBlanc, Nolan, Shur & Nies. 1911 Jeff. Davis Hwy., Arlington, Va. 22202
Walter P. O'Rourke, Sr., 2800 Ontario Rd., N.W., Suite 502, Washington, D.C. 20009
David A. Saar, Black & Decker Mfg. Co., Inc., 701 E. Joppa Rd., Towson, Md., 21204
William Sabourin, 157 W. 5th St., San Bernardino, Calif., 92415
Peter D. Sachtjen, Rockwell Internatl. Corp., Pat. Dept. PD-55, 600 Grant St., Pittsburgh, Pa., 15219
Truman Sunderland Safford, II, 25 Cathlow Dr., Riverside, Conn., 06878
Roy Harold Saffrey, Fetherstonhaugh and Co., 500 University Ave., Toronto, Canada
Nicholas E. Sakellariou, 3017 Heritage Dr., Apt. 11, Joliet, Ill., 60435
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Arthur A. Sapelli, NCR Corp., World Headquarters, Dayton, Ohio, 45479
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Benjamin H. Sherman, Hill, Gross, Simpson, Van Santen, Steadman, Chiara & Simpson, 70th Flr., Sears Tower, 233 S. Wacker Dr., Chicago, Ill., 60606
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William Robert Sherman, 22 Seagate Rd., Darien, Conn., 06820
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Raymond H. Synnestvedt, Box 333, Bryn Athyn, Pa., 19009

May 14, 1985.

CAMERON WEIFFENBACH,
Director, Office of Enrollment and Discipline.

Response to Drawing Requirements

The "Change in Drafting Practice" announcement, made in Mar. 1982 (1017 O.G.4), indicated that corrections to drawings or formal drawings had to be filed within a three-month period set in a Notice of Allowance (Rev. 2-85).

Henceforth, the period for response for filing corrections to drawings or formal drawings will be set in the Notice of Allowability, PTOL-37.

For your information, the period for response is a shortened statutory period of three (3) months, which may be extended under the provisions of 37 CFR 1.136 (a). The three (3) month shortened statutory period is calculated from the "Date Mailed" indicated on the Notice of Allowability (Rev. 2-85).

Apr. 30, 1985.

JAMES E. DENNY,
Deputy Assistant Commissioner for Patents.

United States Patent and Trademark Office
Before the Commissioner of Patents and Trademarks

Joseph F. Nakamura,

Solicitor, U.S. Patent and Trademark Office,
v.
Horace S. Harper, Jr.,

Respondent.

Proceeding No. 84-2

Notice by Publication

Notice is hereby given to the above named respondent, that proceedings under 35 U.S.C. §32 have been instituted against him. A copy of the *NOTICE OF PROCEEDINGS UNDER 35 U.S.C. §32*, including the charges against respondent, was twice mai led to the respondent's address of record. The notice was twice returned by the U.S. Postal Service.

Respondent may obtain of copy of the above-mentioned notice from:

Richard E. Schafer
Associate Solicitor
U.S. Patent and Trademark Office
P.O. Box 15667
Arlington, Va. 22215
(703) 557-4035

This notice will appear in the Official Gazette for four consecutive weeks beginning with the issue of June 11, 1985.

Respondent has thirty days from the date of the last notice to file an answer to the charges against him. Failure to file an answer will be taken as an admission of the charges. 37 CFR §1.348 (c).

JOSEPH F. NAKAMURA,
Solicitor

By: RICHARD E. SCHAFER
Associate Solicitor.

Patents Available for Licensing or Sale

Des. 271,400. FOCUSSING CONTROL WITH ASTIGMATIC DIFFERING MEANS. *Chester Knighten,* Box 62, Foreman, Ark. 71836.

3,862,876. PROTECTIVE EDGE WEIGHTED COVER CLOTH. *L. Graves,* 5927 S. Grant, Littleton, Colo. 80121.

4,239,030. FIELD BURNER APPARATUS. *Everett H. Benson* — Correspondence to: Ruth L. Benson, 20568 S.E. Norse Rd., Eagle Creek, Oreg. 97022.

4,477,912. CORRELATION DATA COMMUNICATIONS SYSTEM. *James A. Oliff, Esq., Parkhurst & Oliff,* 277 S. Washington St., Suite 212, Alexandria, Va. 22314. Phone: 703-836-6400.

4,464,141. SHAFT COUPLING. *James A. Oliff, Esq., Parkhurst & Oliff,* 277 S. Washington St., Suite 212, Alexandria, Va. 22314, Phone: 703-836-6400.

4,323,118. APPARATUS FOR CONTROLLING AND PREVENTING OIL BLOWOUTS. *Conrad Bergmann,* 1365 Lincoln Ave., San Jose, Calif. 95125.

4,159,103. SLEEVE ACTUATED VALVE. *James A. Oliff, Esq., Parkhurst & Oliff,* 277 S. Washington St., Suite 212, Alexandria, Va. 22314. Phone: 703-836-6400.

4,499,644. APPARATUS FOR REPLACING A CHAIN. *George M. Goldsby,* Rte. 1, Ripley, Tenn. 38063.

4,403,807. BABYSEAT ATTACHMENT FOR SHOPPING CART. *Mrs. Dawn G. Wilkinson,* Rte. #1, Box 403, Fennville, Mich. 49408.

3,690,211. LONG SHOULDER PAD (for violin and viola). *Dorothy D. Long,* 13222 N. 22nd St., Phoenix, Ariz. 85022.

4,509,922. LEGAL EDUCATIONAL GAME AND METHOD OF TEACHING SUBJECT MATTER. *National Legal Information Services,* c/o Carl W. Battle, 301 Race St., Suite 315, Philadelphia, Pa. 19106. Phone: 215-592-3052.

4,476,961. PROCESS FOR PERFORMING THE CONSTRUCTION OF A PARKING GRIP CHOCK FOR A VEHICLE AND PARKING GRIP CHOCK FOR A VEHICLE MANUFACTURED FROM SHEET. *Luigi Picotti* — Correspondence to: Shlesinger, Arkwright, Garvey & Fado, 2001 Jefferson Davis Hwy., Suite 607, Arlington, Va. 22202. (703-521-1500).

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: General Electric Co., Motor Business Group, 1635 Broadway, P.O. Box 2204, Fort Wayne, Ind. 46801-2204, Attention: Patent Counsel.

4,349,807. HEATING AND COOLING THERMOSTAT WITH ADJUSTABLE LIMITS AND METHODS OF MANUFACTURING AND OPERATING THE THERMOSTAT.

4,355,458. METHOD OF MAKING AN ELECTRICAL CONTROL.

4,484,116. PRIME MOVER AND METHOD OF OPERATING AN ELECTRICAL SWITCH.

4,500,824. METHOD OF COMMUTATION AND CONVERTER CIRCUIT FOR SWITCHED RELUCTANCE MOTORS.

3,998,643. This patent has been withdrawn from the list of Patents Available for License or Sale by General Electric.

American Hospital Supply Corp. is prepared to grant non-exclusive licenses under the following patents to parties newly entering into the manufacture and/or assembly and sale of disposable blood pressure monitoring equipment.

Applications for licenses and license terms should be addressed to: Lyman E. Lance, President, American Pharmaseal Medical/Surgical Division, American Hospital Supply Corp., 1015 Grandview Ave., Glendale, Calif. 91209.

4,267,833. METHOD OF FLUSHING A MEDICAL FLUID.

4,267,834. SYSTEM FOR FLUSHING A MEDICAL FLUID.

4,267,835. MEDICAL FLUSHING VALVE.

PATENT NOTICES

Certificates of Correction for the Week of June 11, 1985

Re. 31,637	4,446,358	4,479,220	4,491,037
Re. 31,709	4,450,306	4,479,352	4,491,557
Re. 31,828	4,451,421	4,480,003	4,491,617
D. 271,149	4,451,453	4,480,901	4,492,781
D. 274,608	4,452,842	4,481,532	4,493,312
3,975,536	4,453,952	4,481,888	4,494,878
4,232,943	4,454,120	4,482,227	4,494,964
4,249,270	4,456,461	4,482,849	4,495,373
4,263,368	4,460,670	4,484,030	4,495,711
4,268,399	4,464,451	4,484,321	4,495,835
4,286,318	4,465,359	4,484,586	4,495,888
4,302,284	4,467,366	4,484,674	4,496,702
4,310,651	4,469,251	4,485,366	4,496,891
4,310,815	4,473,221	4,485,699	4,497,151
4,327,804	4,474,783	4,485,727	4,497,230
4,372,256	4,474,946	4,485,766	4,497,346
4,374,514	4,475,048	4,485,874	4,497,457
4,381,147	4,475,443	4,485,939	4,497,729
4,387,680	4,475,713	4,486,294	4,498,277
4,394,938	4,476,002	4,486,323	4,498,686
4,395,285	4,476,280	4,486,542	4,498,753
4,404,474	4,476,295	4,486,552	4,498,864
4,409,069	4,476,415	4,486,567	4,498,904
4,417,007	4,476,903	4,486,586	4,499,240
4,425,111	4,477,126	4,486,786	4,500,078
4,426,260	4,477,555	4,486,857	4,500,379
4,429,000	4,477,600	4,487,121	4,500,402
4,434,140	4,477,982	4,487,762	4,501,025
4,439,426	4,478,537	4,489,309	4,501,536
4,442,631	4,478,626	4,489,930	
4,442,842	4,478,676	4,490,517	
4,443,432	4,478,900	4,490,978	

Disclaimers

4,075,493.—*Kenneth A. Wickersheim,* Palo Alto, Calif. OPTICAL TEMPERATURE MEASUREMENT TECHNIQUE UTILIZING PHOSPHORS. Patent dated Feb. 21, 1978. Disclaimer filed Apr. 22, 1985, by the assignee, *Luxtron Corp.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 8, 9 and 22 of said patent.

4,388,495.—*Myron H. Hitchcock,* Englewood, Colo. SPEECH RECOGNITION MICROCOMPUTER. Patent dated June 14, 1983. Disclaimer filed Apr. 15, 1985, by the assignee, *Figgie International, Inc.*

Hereby enters this disclaimer to claim 14 of said patent.

4,450,877.—*Stephen E. Walker,* Buckingham; *Keith Bedford,* Newport Pagnell; and *Terence Eaves,* Woburn Sands, England. PHARMACEUTICAL PREPARATIONS IN SOLID UNIT DOSAGE FORM. Patent dated May 29, 1984. Disclaimer filed Mar. 29, 1985, by the assignee, *Hoechst Aktiengesellschaft.*

Hereby enters this disclaimer to claims 2 and 10 of said patent.

4,457,206.—*Peter P. Toulios,* Oakbrook and *Kenneth D. Hartman,* Dekalb, Ill. MICROWAVE-TYPE PROJECTILE COMMUNICATION APPARATUS FOR GUNS. Patent dated July 3, 1984. Disclaimer filed Mar. 25, 1985, by the assignee, *Ares, Inc.*

Hereby enters this disclaimer to claims 1–30 of said patent.

4,492,704.—*Jerome H. Fleisch,* Indianapolis; *Winston S. Marshall,* Bargersville and *George J. Cullinan,* Trafalgar, Ind. QUINOLINE QUINONES AND ANTI-ASTHMATIC USE THEREOF. Patent dated Jan. 8, 1985. Disclaimer filed Apr. 15, 1985, by the assignee, *Eli Lilly and Co.*

Hereby enters this disclaimer to claims 1–4 and 15–19 of said patent.

4,500,676.—*Endre A. Balazs,* Riverdale and *Adolf Leshchiner,* Brooklyn, N.Y. HYALURONATE MODIFIED POLYMERIC ARTICLES. Patent dated Feb. 19, 1985. Disclaimer filed Mar. 15, 1985, by the assignee, *Biomatrix, Inc.*

The term of this patent subsequent to Dec. 11, 2001 has been disclaimed.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
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Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
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New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4243
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 11, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	3-08-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	11-05-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	1-04-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	5-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-23-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	4-30-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-03-83
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	5-26-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-08-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-14-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-17-83

Expiration of patents: The patents within the range of numbers indicated below expire during May 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,381,303 to 3,386,102, inclusive
Plant Patents ..... Numbers 2,811 to 2,813 inclusive

REEXAMINATIONS

JUNE 11, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,602,706 (357th)

DATA-PROCESSING METHOD AND MEANS FOR CLASSIFYING SIGNALS IN A FIRST OR SECOND STATE

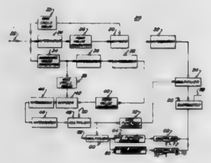
Joseph R. Levitt, Moorestown, N.J., assignor to Data Display Systems, Inc., New York, N.Y.

Reexamination Request No. 90/000,481, Dec. 14, 1983.

Reexamination Certificate for Patent No. 3,602,706, issued Aug. 31, 1971, Ser. No. 787,335, Dec. 27, 1968.

Int. Cl.³ G06G *7/22*; A61B*5/04*

U.S. Cl. 364—551



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–12** are cancelled.

[1. Machine implemented process for determining the physical state of a system characterized by a time-varying signal which comprises the following steps, each of which is executed by automatic computing apparatus

a. obtaining a time-varying signal characterizing a system in either a first or second physical state,

b. transforming the time-varying signal obtained in step into a coordinate system having at least one curvilinear coordinate, (a) by a nonlinear coordinate transformation which transformation transforms said signal into defined first or second classes corresponding to the first and second physical states of step (a)

c. and determining whether said transformed signal of step (b) is the first or second class defined by step (b) for establishing whether the system of step (a) is in said first or second state.]

B1 4,287,404 (358th)

ELECTRODE FOR ELECTRICAL DISCHARGE MACHINING

Danielle Convers, Geneva; Francois Ballevs, Vernier, and Jean Pfau, Geneva, all of Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland

Reexamination Request No. 90/000,485, Jan. 6, 1984.

Reexamination Certificate for Patent No. 4,287,404, issued Sep. 1, 1984, Ser. No. 14,927, Feb. 26, 1979.

Claims priority, application Switzerland, Mar. 3, 1978, 2317/78; May 5, 1978, 4872/78

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 W

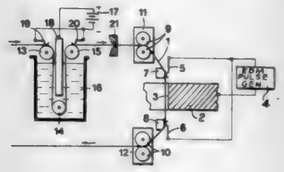
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **7** is cancelled.

Claims **1–3**, **6**, **8–11**, **13** and **14** are determined to be patentable as amended.

Claims **4**, **5**, and **12**, dependent on an amended claim, are determined to be patentable.

1. In combination with an EDM apparatus, a *wire* [filament] electrode for electrical discharge [machining] *cutting* of a workpiece wherein said *wire* [filament] electrode is *continuously moving* [displaced] longitudinally *in a single direction* and *is displaced* laterally through the workpiece *during cutting of the workpiece*, said *wire* [filament] electrode



comprising a core made of material having a relativey high mechanical strength and a relatively thin metallic surface coating on said core, said metallic surface coating comprising at least 50% of a metal having a low temperature of vaporization selected from the group consisting of zinc, cadmium, [tin,] lead, antimony, bismuth and an alloy thereof, *wherein said wire electrode is continuously supplied to a machining zone formed between a lateral surface of said wire electrode and said workpiece during cutting of said workpiece.*

B1 4,285,380 (359th)

PANEL FASTENER

Bulent Gulistan, Woodland Hills, Calif., assignor to VSI Corporation, Pasadena, Calif.

Reexamination Request No. 90/000,196, May 6, 1982.

Reexamination Certificate for Patent No. 4,285,380, issued Aug. 25, 1981, Ser. No. 25,363, Mar. 30. 1979.

Int. Cl.³ F16B *43/00*

U.S. Cl. 411—103

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** is confirmed.

1. In a panel fastener of the type having a stud assembly that has a stud and which is adapted to be attached to a substructure, a stud nut adapted to be attached to a panel and to engage the stud, and a retaining ring adapted to hold the stud nut to a top panel while permitting the stud nut to move along its axis for approaching toward and retracting away from the stud

assembly, the retaining ring being in compressive radial bearing with the stud nut over a continuous range of axial positions of the stud nut with respect to the panel, an improvement which comprises:

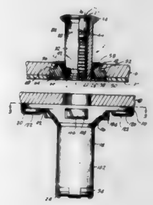
(a) a clear through bore in the stud nut;

(b) an internally threaded section at one end of the bore;

(c) a hardened wrenching insert at the other end of the bore having a wrenching socket adapted to receive a wrenching tool;

(d) a thin plug in the bore between the wrenching insert and the internal threads to separate the two;

(e) a grommet adapted for attachment to the top panel, and having a wall defining an axial bore for receiving the stud nut, a standoff base adapted for receipt in a counterbore in the top panel and for extending below the lower surface of the top panel to present a barrier to a gasket from moving radially inward towards the axis of the stud nut, an annular interior groove in the standoff portion opening into the axial bore and spaced from a lower surface of the standoff portion by a portion of the wall defining the axial bore, the groove receiving and capturing the retaining ring, a neck integral with and axially adjacent the standoff base, and having a major outer diameter less than the major outer diameter of the standoff base, and a seating and clamping section integral with and axially adjacent the neck, the seating and clamping section being adapted to be flared



radially outward from the axis of the axial bore to define a conical seat for a head of the stud nut and to cooperate with the standoff base in clamping the grommet to the top panel.

REISSUES

JUNE 11, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,909

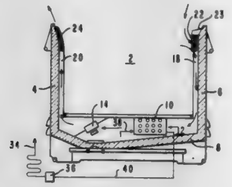
REFRIGERATED DISPLAY CASE HAVING AMBIENT AIR DEFROST

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Original No. 4,295,340, dated Oct. 20, 1981, Ser. No. 60,459, Jul. 25, 1979. Continuation-in-part of Ser. No. 11,804, Feb. 14, 1979,. Application for reissue Oct. 19, 1983, Ser. No. 543,468

Int. Cl.[3] **A47F** *3/04;* **F25D** *21/12*

U.S. Cl. 62—82 **32 Claims**



1. An open top refrigerated display case being selectively operative in a refrigeration cycle and a defrost cycle, said case comprising: a bottom wall and four side walls; a single air conduit extending along a first of said side walls, along said bottom wall and a second of said side walls, said first and second side walls being opposing side walls, said air conduit having first and second openings at its opposite ends and each of said openings being located near the top portion of the respective said side wall; means for refrigerating air moving through said conduit during a refrigeration cycle, said means for refrigerating being arranged within said air conduit, air circulating means arranged within said air conduit, said air circulating means circulating within said air conduit in a forward direction during a refrigeration cycle and circulating air in a reverse direction during a defrost cycle, and said air circulating means drawing in ambient air from outside of said display case through said first opening when said air circulating means circulates air within said air conduit in the reverse direction; means for switching operation of said display case between a refrigeration cycle and a defrost cycle and correspondingly causing said air circulating means to change the direction of circulation of air within said air conduit; and means for directing air leaving said air conduit upwardly and over the outside of the adjacent said side wall so as to flow away from said case when such air is flowing in said reverse direction so that such air is prevented from reentering said air conduit.

Re. 31,910

REMOVABLE CORE CYLINDER LOCK

Roy N. Oliver, Salem, Va., assignor to Medeco Security Locks, Inc., Salem, Va.

Original No. 4,328,690, dated May 11, 1982, Ser. No. 175,220, Aug. 4, 1980. Application for reissue May 3, 1984, Ser. No. 606,689

Int. Cl.[3] **E05B** *27/04*

U.S. Cl. 70—369 **7 Claims**

1. A removable core cylinder lock comprising:

(a) a cylinder lock shell have a cavity therethrough for reception of a cylinder lock case;

(b) means defining a retaining recess in the wall of the cavity intermediate the ends of the shell;

(c) an interchangeable cylinder lock case with an outside configuration to slidably fit into the cavity into the shell, the case including a plurality of pin tumbler holes and an interrupted cylindrical shape passage extending lengthwise of the case;

(d) a cylinder locking retainer having parallel pin tumbler holes and a cylindrical shaped passage shaped to correspond with the interrupted cylindrical shaped passages in the lock case to form a completed cylindrical passage through the lock case and retainer, the retainer being rotatable in the shell to a limited extent;

(e) a projection on the outer surface of the cylinder retainer for cooperating with the retainer recess when the retainer is rotated in one direction and clearing the retainer recess when the retainer is rotated in an opposite direction;

(f) means defining a latch bar groove in the wall of the completed cylindrically shaped passage in the lock case and retainer;

(g) twisting pin tumblers each having a pointed inner end and a longitudinal groove, one pin tumbler positioned in each pin tumbler hole in the lock case and retainer;

(h) a driver pin in each of the pin tumbler holes above the pin tumbler and means for biasing the driver pins and pin tumblers toward the longitudinal center of the case;

(i) a latch bar having projections from one side thereof cooperating with the longitudinal grooves in the pin tumblers when the tumblers are correctly oriented by a twisting movement, the opposite side of the latch bar from the projection being shaped to cooperate with the latch bar groove such that when any one projection is not in a tumbler groove, the latch bar will be kept seated in the latch bar groove

(j) a cylinder having a key way, pin tumbler holes, a slot for lateral movement of the latch bar, and an outside cylindrical surface for rotary movement inside the completed cylindrical passageway in the case and the retainer;

(k) an operating key having at least some bits cut at skew angles to cause the tumblers to raise to a shear line defined by the outside surface of the cylinder and the completed cylindrical passage and to twist to present the longitudinal groove to the latch bar projections at each tumbler position thereby allow the operating key to rotate the cylinder and operate the locks;

(l) a control key having its bits cut at the same angles as the operating key, the bits causing the tumblers to raise to a core removal shear line defined by the surface of the retainer and a cooperating surface of the case for at least one tumbler and defined for the remaining tumblers by the outside surface of the cylinder and the completed cylinder passage, and to cause the tumblers to twist to present the

longitudinal groove of each tumbler to the latch bar projections to allow the key to retract the retainer projection from the recess and allow the core to be removed.

Re. 31,911

COUPLED SHELLS FOR VACUUM POWER SERVO BOOSTER

Ryuji Ohta, and Michio Kobayashi, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Japan

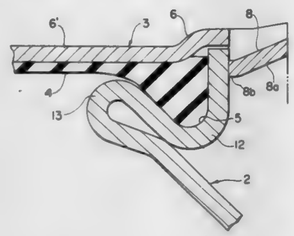
Original No. 4,296,680, dated Oct. 27, 1981, Ser. No. 85,830, Oct. 17, 1979. Application for reissue Oct. 27, 1983, Ser. No. 545,980

Claims priority, application Japan, Dec. 1, 1978, 53/148803; Dec. 1, 1978, 53/148804

Int. Cl.[3] F01B *19/00*; F16J *3/02*

U.S. Cl. 92—98 D

7 Claims



7. A vacuum power servo booster comprising:

a generally disc-shaped first shell,

a generally cup-shaped second shell, said first and second shells defining an outer casing of said booster, and

a diaphragm secured between said first and second shells which divides the casing into two chambers,

an annular groove being integrally formed at a peripheral end portion of said first shell, said annular groove opening radially outwardly and said annular groove being defined by a first annular bent portion bulging radially inwardly from the peripheral end portion of said first shell and a second annular bent portion at an inward position of said first shell, said second annular bent portion being oriented approximately along the axial direction of said booster and bulging toward said second shell, said second shell having a cylindrical portion adapted for insertion of said first shell therein, peripheral end portions of said diaphragm being interposed between said annular groove and said cylindrical portion, and

said second shell being provided with at least one axial recess in said cylindrical portion, said first shell being provided with at least one radially outward protrusion adapted to be received in said recess, said first shell being further provided with a plurality of arcuate radial recesses at the outer peripheral surface thereof, and a plurality of locking portions arranged in an alternating manner between said recesses, said second shell being provided with locking means for engaging said locking portions, said locking means comprising radially inwardly extending arcuate locking pawls, said pawls being inclined toward the axis of said second shell so as to define guide surfaces, whereby peripheral portions of said diaphragm may smoothly pass over said guide surfaces in sliding contact therewith, without damage to said diaphragm.

Re. 31,912

INERTIAL SPIN WELDING OF THERMOPLASTIC AND THERMOPLASTIC COATED CONTAINER PARTS

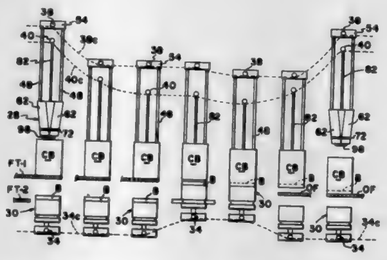
Vincent F. Fortuna, Huntington Beach, Calif., and Donald N. MacLaughlin, Midland, Mich., assignors to Cosden Technology, Inc., Dallas, Tex.

Original No. 4,386,999, dated Jun. 7, 1983, Ser. No. 415,126, Sep. 7, 1982. Continuation-in-part of Ser. No. 234,344, Feb. 13, 1981, abandoned. Application for reissue Jul. 20, 1983, Ser. No. 515,418

Int. Cl.[3] B23K *27/00*; B29C *27/08*; B29D *23/03*; B28C *1/08*

U.S. Cl. 156—494

12 Claims



1. Spin welding apparatus comprising upper and lower mandrel means mounted for vertical movement toward and away from each other along a common vertical axis, said upper mandrel means being adapted to releasably support an open ended cylindrical container body and said lower mandrel means being adapted to releasably support a container bottom of thermoplastic material having an axially upwardly projecting peripheral flange insertable into said container body with a press fit, first drive means for driving at least one of said mandrel means in rotation about said vertical axis relative to the other mandrel means, and second drive means for driving said mandrel means in movement along said vertical axis to seat said container bottom within said container body while said mandrel means are rotating relative to each other to insert and frictionally weld said container bottom in said container body; with radially expansible and contractable body engaging means mounted on the lower end of said upper mandrel means in symmetrically disposed relationship about said vertical axis, said engaging means being normally disposed in a contracted position wherein said engaging means may be axially inserted into a container body, expanding means for radially expanding said engaging means to an expanded position wherein the radially outer surfaces of said expanding means lie on a common cylindrical surface having a diameter equal to the specified internal diameter of said container body and further comprising a seating member mounted at the lower end of said upper mandrel means and engagable with said container bottom to establish the depth to which said container bottom is inserted within said container body by operation of said second drive means.

Re. 31,913

APPARATUS FOR THE CONTINUOUS EXTRACTION OF OILS AND SOLUBLE SUBSTANCES FROM SOLID MATERIALS

William M. Barger, Piqua, Ohio, assignor to The French Oil Mill Machinery Company, Piqua, Ohio

Original No. 4,313,912, dated Feb. 2, 1982, Ser. No. 195,577, Oct. 8, 1980. Application for reissue Jan. 30, 1984, Ser. No. 574,802

Int. Cl.[3] B01D *11/02*

U.S. Cl. 422—267

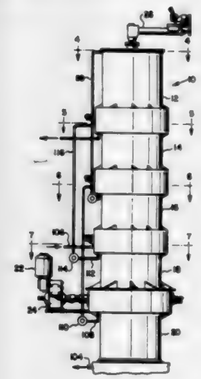
8 Claims

1. In a continuous solvent extracting apparatus, having a cylindrical housing, material distribution means in an upper portion of said housing, a plurality of vertically stacked extractor sections each including a plurality of vertically disposed radially extending walls for receiving material therebetween from said material distribution means, screening means beneath said walls for retaining processed material in a section and passing miscella therethrough, a collecting pan associated with and beneath each screening means for collecting miscella passed therethrough, miscella distribution means for removing miscella from said pans and supplying miscella to an upper portion of each section and material removal means for removing material from a lowermost extractor section, wherein the improvement comprises:

said plurality of walls are stationary and abut said housing with each adjacent pair of walls and said housing forming a basket with said baskets in each section being in registry with said baskets in all other sections;

each said screening means being horizontally disposed, disc-shaped, mounted for rotation and having an opening defined therein generally co-extensive with a basket when in registry therewith;

each said pan having an opening defined therein in alignment with said opening defined in said associated screening mean for passing material from a basket of one section to a basket of a subsequent section and mounted for rotation with said associated screening means; and



means for rotating each said associated screening means and said pan simultaneously.

PLANT PATENTS

GRANTED JUNE 11, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,488

CUPRESSUS MACROCARPA

Donald J. Liddle, 42 Ngarara Rd., Waikanae, Wellington, New Zealand

Filed Apr. 6, 1983, Ser. No. 482,620
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—50 **1 Claim**

1. A new and distinct variety of Cypress *Cupressus macrocarpa* named "Golden Halo" substantially as shown and described which is a sport of the *Cupressus macrocarpa* "Gold Spread" characterized particularly by low spreading habit and unique arching of branches from the base, stiff outward facing branching system, and by bright yellow coloring of the foliage, being most pronounced in the new stem growth in summer.

5,489

AFRICAN VIOLET PLANT NAMED CLEVELAND

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,396
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. An African violet plant named Cleveland, as described and illustrated, and particularly characterized by its intensive purple-red flower color which is resistant to fading under high temperatures, its girl type leaves, which are medium to dark green and shiny, with bright green leaf centers, strong and upright flower stems, and by its vigorous yet compact growth habit.

5,490

CHRYSANTHEMUM PLANT — NAMED ILLINI MIST

John R. Culbert, Clinton, Ill., assignor to University of Illinois, Chicago, Ill.

Filed Apr. 25, 1983, Ser. No. 488,072
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct form of chrysanthemum plant named Illini Mist, as described and illustrated, and particularly characterized by its flat capitulum form and single capitulum type; pink tubular shaped spoon tipped ray florets; 60–70 mm. diameter across face of capitulum; excellent flower production, and its short and compact growth habit.

5,491

CHRYSANTHEMUM PLANT NAMED FROSTY

Leonard H. Shoesmith, Surrey, United Kingdom, and Peter S. Hesse, Bradenton, Fla., assignors to Pan American Plant Company, Parrish, Fla.

Filed Apr. 26, 1983, Ser. No. 488,771
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant named Frosty, as described and illustrated, and particularly characterized by its flat capitulum form, single anemone flower type, white ray floret color, immature lime green to mature pale yellow disc florets, 35–45 mm. diameter across capitulum face, semi-upright branching habit, and its relatively short plant height.

5,492

POINSETTIA NAMED ANGELIKA

Gregor Gutbier, Linz am Rhein, Fed. Rep. of Germany, assignor to Paul Ecke, Jr., Encinitas, Calif.

Filed Jul. 1, 1983, Ser. No. 510,422
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct poinsettia cultivar, substantially as herein shown and described, particularly distinguished by its habit of blooming earlier and at a lower temperature than Poinsettia V-14 (U.S. Plant Pat. No. 4,384) which it most nearly resembles.

PATENTS

GRANTED JUN. 11, 1985

ERRATA

For CLASS	See PATENT NO.
225–002	4,522,323
361–407	4,522,449
358–075	4,522,506
416–187	4,522,558
043–016	4,522,572
514–002	4,522,811
514–007	4,522,812
514–011	4,522,813
514–054	4,522,814
514–034	4,522,815
514–052	4,522,816
514–095	4,522,817
514–155	4,522,818
514–187	4,522,819
514–288	4,522,820
514–320	4,522,821
514–376	4,522,822
514–400	4,522,823
514–414	4,522,824
514–517	4,522,825
514–569	4,522,826
514–671	4,522,827
514–646	4,522,828
514–652	4,522,829
514–690	4,522,830
514–169	4,522,831
514–200	4,523,206

PATENTS

GRANTED JUNE 11, 1985

GENERAL AND MECHANICAL

4,521,921

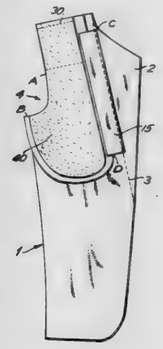
EXPANDABLE CHEST PIECE AND METHOD OF CONSTRUCTING A GARMENT USING SAME

Ray J. Bregatta, Cherry Hill, N.J., assignor to Pellon Corporation, New York, N.Y.

Filed Sep. 10, 1982, Ser. No. 416,748

Int. Cl.³ A41D *1/02, 27/02*

U.S. Cl. 2—93 **12 Claims**



1. An expandable chest piece for a garment comprising:

a carrier member composed of relatively stiff textile material and configured to have a first connecting edge in the vicinity of the lapel break line and a second connecting edge in the vicinity of the arm hole of a garment;

an elongated connecting strip composed of relatively stiff textile material and configured to extend substantially the entire length of the first connecting edge; and

means, composed of relatively flexible textile material, connecting the strip to the carrier member for movement from a rest position wherein the connecting strip overlaps the first edge with the outer edge of the strip spaced therefrom and substantially parallel thereto to an extended position wherein the outer edge is spaced further from the first edge.

7. In a method of constructing a garment wherein a chest piece is connected to the garment fabric between the arm hole and the lapel break line, the improvement comprising the steps of:

a. prefabricating the chest piece by providing a carrier member composed of relatively stiff textile material and configured to have a first connecting edge in the vicinity of the lapel break line and a second connecting edge in the vicinity of the arm hole of the garment and connecting an elongated connecting strip composed of relatively stiff textile material and configured to extend substantially the entire length of the first connecting edge to the carrier member for movement from a rest position wherein the connecting strip overlaps the first edge with the outer edge of the strip spaced therefrom and substantially parallel thereto to an extended position wherein the outer edge is spaced further from the first edge;

b. positioning the chest piece on the fabric with the second edge aligned with the arm hole;

c. aligning the outer edge of the connecting strip with the lapel break line and connecting same to the fabric, without changing the position of the carrier member, by moving the connecting strip from the rest position, if necessary; and

d. connecting the second edge to the fabric.

4,521,922

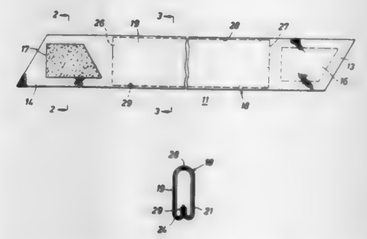
EVAPORATIVE NON-DRIPPING SWEAT BAND

Albert W. Mitchell, Houston, and Richard W. Miller, Sugar Land, both of Tex., assignors to Wet Wraps, Inc., Houston, Tex.

Filed Feb. 3, 1983, Ser. No. 463,396

Int. Cl.³ A42B *1/00*

U.S. Cl. 2—171 **10 Claims**



1. A head-encircling non-dripping sweat band comprising:

(a) an elongated tubular body adapted to be placed between the hairline and eyebrows of the user and secured by a pair of loose ends rearwardly of the users head;

(b) gripping means for releaseably securing said loose ends together;

(c) said body formed by a porous cloth cover folded lengthwise and being cut across its grain to provide bias panels to each side of the lengthwise fold;

(d) a layer of porous thick resilient batting material extending over a portion of the width of the panels and being enclosed within said porous cloth cover, said layer is secured by lengthwise stitching adjacent the fold in said cloth cover and by lengthwise stitching along its edges and to edges along said panels, and

(e) said batting material in said body extending in length across the user's brow and to his temples so that perspiration from the brow is wicked by said batting material for evaporation through said porous cloth, and any excess perspiration will travel to the ends of said batting material for release into the users sideburns; said body during use being pulled into a substantially flat belt-like band across the users brow but resuming its original tubular configuration upon release of tensioning force.

4,521,923

NAME BELT WITH SELECTIVE LETTER INSERTS

Charles P. Mackey, P.O. Box 847, Chickasha, Okla. 73018

Filed Dec. 13, 1983, Ser. No. 561,041

Int. Cl.³ A41F *9/00*

U.S. Cl. 2—338 **17 Claims**

1. A decorative name belt comprising:

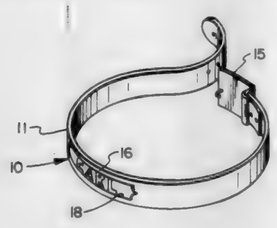
an elongated flexible belt member having opposed inner and outer surfaces and including fastening means for securing the belt around a person's waist, said belt member including means forming a recess in said outer surface of said belt member;

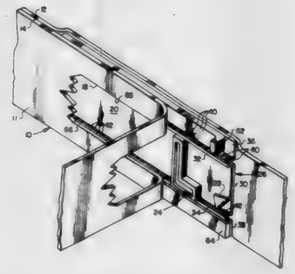
support means on said belt member for supporting a plurality of indicia members in said recess at selective spaced intervals to provide decorative indicia on said belt;

at least one indicia member including means cooperable with said support means for securing said one indicia member in said recess in a selected position;

said one indicia member comprises a separate member selectable at will for securement to said support means by cooperating surfaces on said one indicia member and said support means, respectively; and,

said support means includes an elongated support member having a web portion disposed between opposed flange means, said flange means each including means defining a plurality of spaced apart slots formed therein, and said one indicia member includes at least one boss projecting





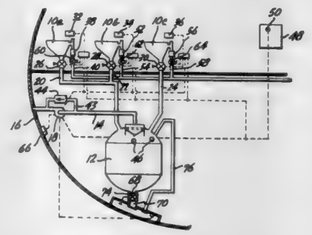
from one side of said indicia member and a key extending from an opposite side of said indicia member, said boss and said key being insertable in selected ones of said slots on respective ones of said flange means for retaining said indicia member on said support member.

4,521,924
ELECTRICALLY DRIVEN ARTIFICIAL ARM
Stephen C. Jacobsen; David F. Knutti, and R. Todd Johnson, all of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah
Filed Mar. 1, 1983, Ser. No. 470,927
Int. Cl.[3] A61F *1/00, 1/06*
U.S. Cl. 3—1.1 **28 Claims**



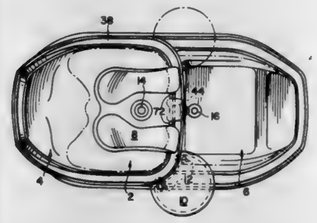
20. In a prosthesis for a person with an amputation above the elbow, said prosthesis including an upper arm socket which is adapted to be attched to the stump or shoulder portion of the person's torso and an elbow and forearm section attached to said upper arm socket, an improved connection means between the upper arm socket and the elbow section which provides humeral rotation, said improved connection means comprising:
an annular fitting which is adapted to be attached to the end of the upper arm socket, said annular fitting having a cylindrical end portion which extends away from the upper arm socket and which as a substantially flat, circular end face, said cylindrical end portion being substantially coaxial with the longitudinal axis of the upper arm socket, said cylindrical end portion further having a circumferencial flange or ring adjacent to the flat, circular end face thereof;
providing the elbow section with a substantially flat upper end;
an annular friction band having an annular recess formed around the inside surface at one end portion thereof so that the annular recess is adapted to engage the circumferential flange on said annular fitting, with the other end portion of the friction band adapted for attachment to the upper end of the elbow section to hold the flat upper end of the elbow section in parallel closely spaced relationship with the flat, circular end of the annular fitting; and
an adjustable tension band adapted to encircle the friction band and to provide adjustable compression of the friction band,
whereby the ease with which the elbow section can be rotated relative to the upper arm socket can be adjusted incrementally between essentially free rotation and various degrees of restrained rotation by adjusting the tension band to increase or decrease the compression exerted by the tension band on the friction band.

4,521,925
NONRECIRCULATING VACUUM FLUSH TOILET SYSTEM UTILIZING FRESH WATER
Tyen C. Chen, Bellevue; Forrest B. Busching, Tacoma; William D. Hale, Everett, and Bjorn R. Kristoffersen, Kirkland, all of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Jun. 30, 1982, Ser. No. 393,828
Int. Cl.[3] E03D *3/10*
U.S. Cl. 4—362 **14 Claims**



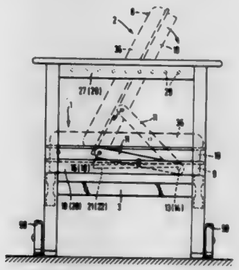
1. A vacuum flush toilet system utilizing fresh water to assist in flushing for use in aircraft, said toilet system comprising:
a toilet bowl for receiving waste;
a waste-holding tank;
drain means coupled in fluid communication between said toilet bowl and said waste-holding tank for conveying waste from said toilet bowl to said waste-holding tank;
flush valve means associated with said drain means selectively operable to permit the passage of waste through said drain means;
evacuation means coupled to said waste-holding tank for creating at least a partial vacuum in said waste-holding tank;
water introduction means connected to said toilet bowl and to a source of fresh water for supplying fresh water to said toilet bowl; and
a water inlet valve means connected to said water introduction means and selectively operable to stop the flow of fresh water to said toilet bowl.

4,521,926
BATH CHAIR
Christian L. Kuether, 5302 Crawford St., Houston, Tex. 77004
Filed Sep. 24, 1982, Ser. No. 425,042
Int. Cl.[3] A47K *3/022*
U.S. Cl. 4—579 **11 Claims**



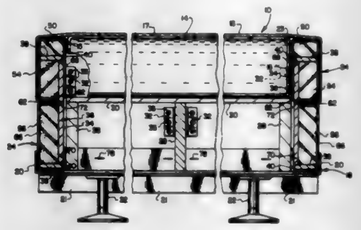
1. Apparatus for bathing comprising:
a chair having a seat portion and a back portion;
means for securing said chair to a bathtub comprising stabilizing means attached to said chair for gripping interior walls of said bathtub,
whereby said chair may be placed in a bathtub and secured thereto and,
wherein said stabilizing means comprises a flexible ring secured to said chair and further comprises means to compress said ring along one direction to expand said ring in a dimension transverse to said direction to secure said stabilizing means to said bathtub.

4,521,927
DAVENPORT CONVERTIBLE TO A DOUBLE BED OR A SINGLE BED
Oswald Brunn, Bunzlauer Platz 1, 8000 Munich 50, Fed. Rep. of Germany
Filed Feb. 6, 1984, Ser. No. 577,247
Int. Cl.[3] A47C *17/32, 17/16*
U.S. Cl. 5—37 R **13 Claims**



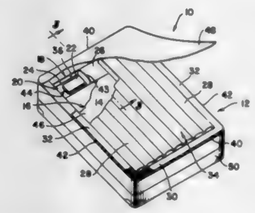
1. A davenport comprising: two beds disposed on a supporting frame having a front edge, each bed having a front edge, a rear edge, and two opposite end frame members, one bed being foldable upwardly with respect to the other bed to form a sofa back such that the front edge of the sofa back is located above the rear edge of the other bed, one bed being adapted to be placed over the other bed face up and congruently therewith, two coupling bars joining the respective end frame members of said beds, two pivot pins arranged at a certain distance from the rear edge of said other bed and pivotally connecting the respective coupling bar to the respective end frame member of said other bed, and two pairs of pins for connecting the respective coupling bar to the respective end frame member of the one bed, one pair of said pairs of pins being releasable from engagement with the coupling bars.

4,521,928
WATERBED FRAME CONSTRUCTION
Michael C. Stephenson, 2520 44th St., Lubbock, Tex. 79413
Filed Jun. 15, 1983, Ser. No. 504,384
Int. Cl.[3] A47C *19/00, 27/08*
U.S. Cl. 5—400 **14 Claims**



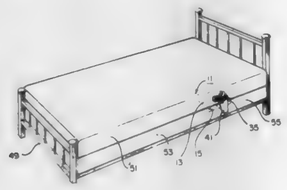
1. A frame for supporting a waterbed mattress comprising:
a substantially rectangular perimeter frame portion comprising opposed parallel side frame members and opposed parallel end frame members forming an enclosure for containing a flexible waterfilled bladder comprising said mattress to prevent lateral bulging of said mattress, and means forming a support deck for supporting said mattress, said side and end members being formed by elongated shallow channel section members having a vertically extending web and opposed generally horizontally extending flanges, the lower one of said flanges being adapted for supporting said frame on a bed sub-frame and the upper one said flanges forming a perimeter edge of said frame adjacent the sleeping surfaces of said mattress, and resilient cushion pad means extending along the outer sides of the webs of at least said side members and one of said end members, said pad means being formed to include a substantially horizontally extending slot along said side members and said at least one end member for receiving the peripheral edge of an article of bedclothing to retain said article covering said mattress.

4,521,929
HEATED WATERBED
Donald W. Keefer, Pasadena, Md., assignor to Classic Corp., Jessup, Md.
Filed Feb. 6, 1984, Ser. No. 577,360
Int. Cl.[3] A47C *27/08*
U.S. Cl. 5—422 **14 Claims**



1. A heated waterbed comprising:
(a) an outer frame and a frame base together defining a central cavity;
(b) a sunken frame positioned underneath a portion of the central cavity, the sunken frame defining a cavity well;
(c) a heating unit positioned at the bottom of the cavity well;
(d) a water-filled container overlying the heating unit in the cavity well; and
(e) a plurality of water-filled receptacles together forming a waterbed mattress positioned in the central cavity, a portion of each water-filled receptacle being in contact with the water-filled container in the cavity well.

4,521,930
PISTOL MOUNTING BRACKET
Jack C. Henson, 881 Elwood, Abilene, Tex. 79065
Filed Nov. 8, 1982, Ser. No. 439,827
Int. Cl.³ A47B *96/06*
U.S. Cl. 5—508 **1 Claim**

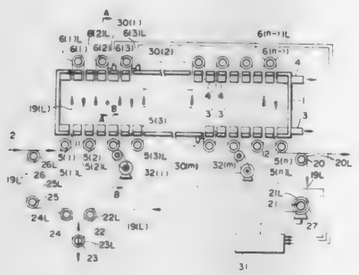


1. A pistol mounting bracket for mounting a pistol holster onto a bed, the pistol holster being of the type having a pistol receiving pouch and a belt loop attached to the pouch for securing the holster to the body of the wearer, comprising:

a generally planar support arm having a longitudinal extent adapted to be fitted under a bed mattress, the length of said support arm being selected so that the weight of said bed mattress is sufficient to retain said support arm on said bed; and

a holding arm, generally rectangular in shape, having a fixed end connected to said support arm and depending therefrom in a plane generally perpendicular to the plane of the support arm and having an opposite flange end adapted to be slidingly received within the belt loop of said holster pouch with means for supporting a pistol holster, said means including a protruding portion at an outer extent of said flange end which provides greater relative width to said holding arm at said flange end than at said fixed end to thereby resist sliding movement of said holster loop along an axis parallel to the longitudinal axis of said holding arm.

4,521,931
METHOD FOR THREADING FILAMENTS ON ROLLERS OF OXIDIZING FURNACE AND APPARATUS THEREFOR
Kosuke Katsuki; Youiti Nishioka, both of Ehime, and Susumu Nomura, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Dec. 5, 1983, Ser. No. 558,352
Claims priority, application Japan, Dec. 7, 1982, 57-214241
Int. Cl.³ D06B *3/04*
U.S. Cl. 8—149.2 **17 Claims**



1. A method for threading acrylic filaments on one roller after another of an oxidizing furnace by moving said filaments from the entrance to the exit of said oxidizing furnace, said method comprising:

(a) maintaining an atmospheric temperature in said oxidizing furnace at 180° C. to an oxidizing temperature;

(b) fastening the tips of said filaments to be threaded to a filament-fastening bar spanning a pair of right and left chains which engage chain wheels attached at the both ends of each roller freely rotatable against said roller and turn in a zigzag manner around one chain wheel after another from said entrance to said exit of said oxidizing furnace;

(c) moving, under said atmospheric temperature, said paired chains and said filament-fastening bar attached to said chains from said entrance to said exit of said oxidizing furnace and threading said filaments on the rollers while said filament-fastening bar turns successively around said rollers; and

(d) controlling the moving speed of said chains with progress of heat-treating of the filaments so as to match the behavior of shrinkage and elongation of said filaments during the movement of said chains from said entrance to said exit of said oxidizing furnace.

5. An apparatus for threading acrylic filaments on rollers of an oxidizing furnace wherein there are a series of first rollers and a series of second rollers with a spacing to said first rollers, and on said first rollers and said second rollers are successively threaded said filaments which are partly embraced by said oxidizing furnace maintained at 180° C. to an oxidizing treatment temperature, said apparatus comprising:

(a) a pair of chain wheels provided at the both ends of each of said rollers freely rotatable against said rollers;

(b) a pair of chains which engage successively said chain wheels at the both ends of each of said rollers and turn in a zigzag manner around one roller after another;

(c) a chain-drive means to move said chains from the entrance to the exit of said oxidizing furnace;

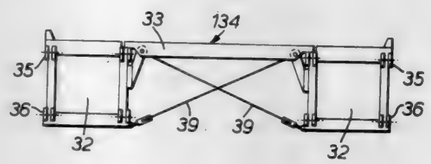
(d) limit switches located to match the shrinkage and elongation behavior of said filaments within said oxidizing furnace, said limit switches acting with progress of said chains;

(e) a working rod provided as one part of said chains and serving to manipulate said limit switches;

(f) a filament-fastening bar installed between said paired chains; and

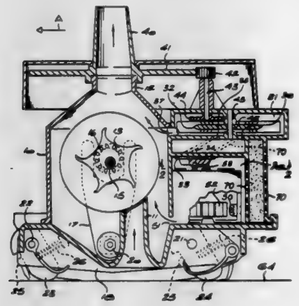
(g) a speed control means to adjust the speed of said chains driven by said chain-drive means according to the changing behavior of said filaments, based on signals issued from said limit switches worked by said working rod.

4,521,932
TRANSPORTABLE BRIDGE STRUCTURE
Thomas S. Parramore, Bournemouth, England, assignor to Fairey Engineering Limited, Stockport, England
Filed Dec. 7, 1982, Ser. No. 447,550
Claims priority, application United Kingdom, Dec. 8, 1981, 8137003
Int. Cl.³ E01D *15/12*
U.S. Cl. 14—2.4 **23 Claims**



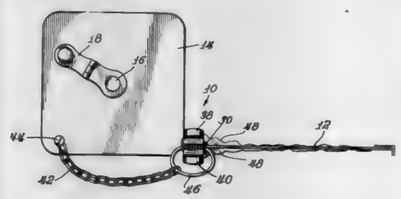
1. A bridge module comprising two longitudinal main girder structures and a central deck having a deck surface capable of supporting vehicles, and the central deck extending substantially the entire length of the module, foldable connecting means foldably connecting said main girder structures to each side of said central deck in a manner such that said main girders are foldable between an operative position in which said main girder structures provide extensions of said deck surface on either side of said central deck for use, and a closed position in which said main girder structures are folded beneath said deck.

4,521,933
RANDOM STEERING DEVICE FOR A SUBMERGED SUCTION CLEANING HEAD
Johann N. Raubenheimer, Johannesburg, South Africa, assignor to Johann Nicolaas Raubenheimer, Johannesburg, South Africa
Continuation of Ser. No. 422,160, Sep. 23, 1982, abandoned. This application Apr. 30, 1984, Ser. No. 604,450
Claims priority, application South Africa, Sep. 24, 1981, 81/6630; Apr. 2, 1982, 82/2293
Int. Cl.³ E04H *3/20*
U.S. Cl. 15—1.7 **3 Claims**



1. A suction cleaning device for cleaning submerged surfaces connected to a suction system by means of a flexible suction hose comprising: a housing adapted to be caused to travel over a surface to be cleaned, a spigot attached to said suction hose and journalled in the housing for rotation relative to the housing and having its axis normal to the surface in use; a drive gear fixed to the spigot; a passage through the housing to provide a first path of flow for liquid flowing to the suction hose; a first turbine in the housing rotated by flow of liquid through the passage; inclined friction feet pivoted on the housing and biased in a position to be actuated by the first turbine to cause the housing to move by a rocking action; a bypass passage through the housing to provide a second path of flow for liquid flowing to the suction hose; a second turbine positioned in the bypass and caused to rotate by liquid flowing in the bypass; a gear train between the second turbine and the drive gear; and means for intermittently blocking and unblocking the bypass so that the second turbine applies torque to the drive gear intermittently and for short periods of time.

4,521,934
TAPE WIPER
Gary Castle, 4811 Forster, Schiller Park, Ill. 60176
Filed Nov. 25, 1982, Ser. No. 555,137
Int. Cl.³ A47L *17/06*
U.S. Cl. 15—236 R **9 Claims**



1. A portable device for cleaning the surfaces of a long, flexible tape as the tape is wound through a guide into a hub, comprising

a. a pair of jaws extending across the tape, said jaws being complementary to one another and each jaw being shaped to engage an opposite surface of the tape with the tape located between the jaws when the jaws are closed,

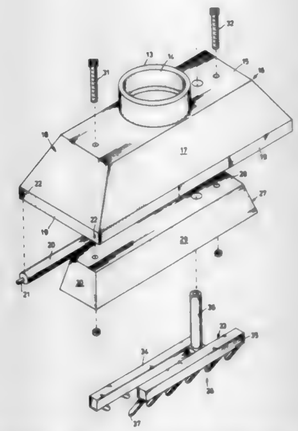
b. means hingedly secured the jaws together at one end thereof,

c. each jaw including a portion of an interlocking tip, said tips being located at an end of said jaws opposite to said securing means, and said tips interlocking when said jaws are closed to contain said tape between the confines of the combination of said tips, said jaws and said securing means,

d. means resiliently urging said jaws toward one another to close said jaws about the tape, and

e. means on each jaw for stripping undesired debris from the tape as the tape is wound onto a hub.

4,521,935
VACUUM SPRAY HEAD
Charles R. Johnston, Wilmington, N.C., and Gregory M. Green, Port St. Lucie, Fla., assignors to Container Products Corp., Wilmington, N.C.
Filed Aug. 29, 1983, Ser. No. 527,256
Int. Cl.³ A47L *11/34*
U.S. Cl. 15—322 **4 Claims**



1. A vacuum spray head for a cleaning apparatus adapted to clean grate type surfaces with the apparatus having a heated cleaning fluid source and a vacuum recovery system, wherein the improvement comprises,

(a) a hood having a top wall and side and end walls extending downwardly and outwardly therefrom and terminating in a depending peripheral flange,

(b) a shield carried within and spaced from said hood,

(c) means providing communication between the vacuum recovery system and the space between said hood and said shield,

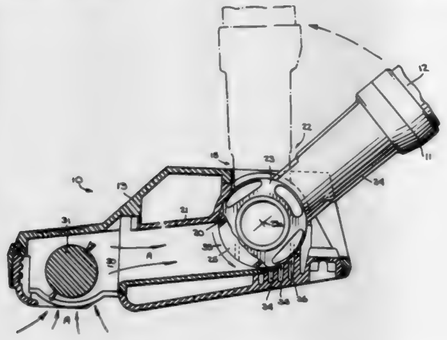
(d) elongated rollers of a length greater than said shield and carried by said peripheral flange of said end walls and extending in parallel relation to the side walls within said hood for rolling engagement with the parallel slats of a grate to be cleaned,

(e) a fluid dispensing means within said shield extending parallel to said elongated rollers for dispensing cleaning fluid simultaneously in opposite parallel directions to said rollers onto the opposite sides of the slats of the grate to be cleaned,

(f) means connecting said fluid dispensing means to the heated cleaning fluid source, and

(g) means extending between said hood and said shield for adjustably positioning said shield and said fluid dispensing means within said hood in a direction perpendicular to said elongated rollers so as to vary the distance of said fluid dispensing means to the side of the slats of the grate to be cleaned.

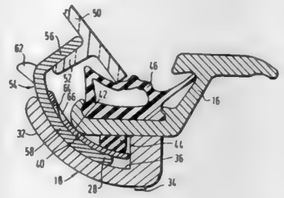
4,521,936
SELF-CLEANING JOINT
Peter M. Medwed, Pound Ridge, N.Y., assignor to Electrolux Corporation, Stamford, Conn.
Filed Sep. 30, 1983, Ser. No. 537,643
Int. Cl.³ A47L *5/00*
U.S. Cl. 15—377 **10 Claims**



1. A vacuum cleaner power nozzle, comprising:
a body having a passage for the flow of air therethrough;
means within said passage, supported by said body, for agitating a surface to be cleaned; and
power means for driving said surface agitating means;
said body further comprising an articulated joint in said passage, said joint comprising:
a chamber having walls defined by said body, and
a tubular member having outer walls and having a first portion disposed within said chamber and rotatable about an axis in said chamber between first and second positions, and a second portion extending from said chamber and having a coupling for attaching a vacuum cleaner hose,
said chamber having a first recess in said wall of said chamber for collecting dust which enters between said outer wall of said first portion and said wall of said chamber, said recess being positioned such that dust collected therein is removed by the flow of air through said passage when said first portion is in said second position.

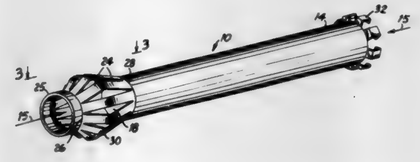
4,521,937
HINGE COMPRISING AN ARCUATE SPADE MEMBER AND AN ARCUATE SOCKET
Sidney E. Fisher, Birmingham, England, assignor to Britax Weathershields Limited, England
Filed Jun. 14, 1983, Ser. No. 504,281
Claims priority, application United Kingdom, Jun. 25, 1982, 8218536; Feb. 14, 1983, 8303953
Int. Cl.³ E05D *11/10, 1/04*
U.S. Cl. 16—332 **6 Claims**

1. A hinge for mounting a panel in an opening comprising a spade member secured to one surface of the panel and a socket portion secured to an edge of the opening, the spade member having an arcuate portion projecting from said surface in an arc centred on a desired hinge axis, and the socket portion having an open-ended arcuate channel, centred on said desired hinge axis and at least one wall of said channel being formed by a wall member mounted on resilient means which, when relaxed, causes the width of the part of said channel to be less than the thickness of the arcuate portion of the spade member, the wall member being pivoted at an intermediate point on a rigid fulcrum spaced from a wall of the channel opposite to the



wall member by a distance such that the spade member is a sliding fit therein, and the resilient means is arranged to pivot the wall member on said fulcrum so as to reduce the width of the inner end of the channel and increase the width of the outer end thereof.

4,521,938
CASING SIZING MEANS, METHOD AND APPARATUS
Vytautas Kupcikevicius, Chicago, Ill., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Jun. 23, 1983, Ser. No. 507,006
Int. Cl.³ A22C *11/00*
U.S. Cl. 17—49 **15 Claims**

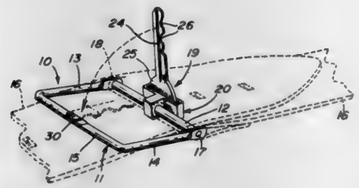


1. Sizing means for use in diametrically stretching a food casing prior to the stuffing thereof, said sizing means comprising:
(a) a substantially rigid tubular member of a size sufficient to fit slidably over a stuffing horn of a stuffing apparatus and within a casing to be stuffed;
(b) a plurality of longitudinally extending sizing fingers formed from the wall of said tubular member by a plurality of slits spaced about the periphery thereof, said slits being coextensive and extending longitudinally of said tubular member; and
(c) hinge means intermediate the ends of each sizing finger, said hinge means being arranged to permit the in unison movement of a midportion of each of said sizing fingers to an outwardly spaced position responsive to an axial compression of said tubular member, said sizing fingers, with the midportions thereof spaced outwardly, being radially expanded to a size sufficient to diametrically stretch a casing to be stuffed.

15. A method of diametrically expanding a food casing about a stuffing horn outlet by engaging an expandable internal sizing means against the inner periphery of the casing, said method comprising the steps of:
(a) providing a casing article constituting a tubular member having an aft portion, a shirred casing on the aft portion with the shirred casing having an unshirred casing portion extending over a fore end of the tubular member, said member having adjacent its fore end a plurality of longitudinally extending, substantially unyielding sizing fingers arranged about the outer periphery of the stuffing horn, and formed from the wall of said tubular member by co-extensive longitudinal slits, each of said sizing fingers including an intermediate portion which is articulated for

radial movement with respect to the longitudinal axis of said stuffing horn to and from a casing stretching position;
(b) mounting said casing article to said stuffing horn by fixing a first end of said tubular member with respect to the longitudinal axis of said stuffing horn;
(c) longitudinally adjusting a second end of said tubular member along said stuffing horn towards and away from said first end; and
(d) flexing each of said sizing finger intermediate portions in unison radially outwardly against the inner surface of the unshirred casing portion to a casing stretching position in direct response to the longitudinal adjustment of said tubular member second end towards said first end, the amount of said radial movement being determined by the extent of said longitudinal adjustment.

4,521,939
BELT BUCKLE
Carol Chabot, and Ovila Chabot, both of 75 du Collège St., Pont-Rouge, Canada (G0A 2X0)
Filed Dec. 28, 1983, Ser. No. 566,472
Int. Cl.³ A44B *11/24*
U.S. Cl. 24—188 **1 Claim**



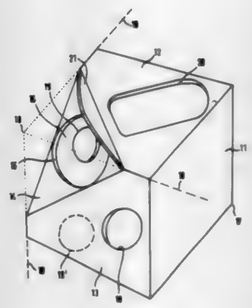
1. A belt buckle comprising an open frame including a pair of opposite lateral frame portions and a pair of opposite transverse frame portions peripherally extending around the central belt passage, one of said transverse frame portions adapted to be attached to one end of a belt, a lock key-securing member mounted for rotation about said one transverse fame portion, said key-securing member having a T-shape and including a leg and a flat sleeve forming the cross-leg of said T-shaped member, said leg having a transverse bore receiving said one transverse frame portion, said sleeve overlying said one transverse frame portion, being open at both ends, said ends lying in planes parallel to said one transverse frame portion, said sleeve having a rectangular shape with its longitudinal axis generally parallel to said one transverse frame portion, said belt adapted to be used in association with a lock key of the type having a head and a notched stem for actuating a key-actuated lock, said sleeve adapted to receive the head of said key, and further including means carried by said sleeve for adjustably securing said head of said key within said sleeve, with the outer end of the stem of said key adapted to abut against said other transverse portion.

4,521,940
HOSE CLAMP
Hans Oetiker, Oberdorfstrasse 21, CH-8810 Horgen, Switzerland
Filed Feb. 23, 1982, Ser. No. 351,549
Int. Cl.³ F16L *33/04*
U.S. Cl. 24—282 **22 Claims**

1. A clamp which comprises a clamping band having two ends and threaded means for tightening the clamping band about an object to be fastened, said threaded means including a first member retained near one band end, a second member retained near the other band end, said first and second members being each provided with through-bores, and a screw member having a screw head larger than the through-bore of the first member and a threaded portion adapted to extend at least through the through-bore of said first member and operable to tighten the clamp by drawing together the first and second members and thereby reduce the diametric dimension of the clamp, characterized in that one band end extends beyond the area of the threaded means underneath the overlapping band portion of the other band end to cover the resulting gap underneath the threaded means and thereby prevent the bulging-out of the object to be fastened into the gap, and further means within the area of overlap between said one band end and the otherlapping band portion near the other band end to provide a substantially stepless transition in the circumferential direction between said one band end and the adjoining band portion, and the first and second members being of at least approximately part-cylindrical shape rotatably retained in pocket-like loops of at least approximately complementary, part-cylindrical shape to enable positional adjustment of said members during tightening of the clamp.



4,521,941
CORNER FITTING FOR FREIGHT CONTAINERS
Helmut Gerhard, Weitefeld, Fed. Rep. of Germany, assignor to Westerwälder Eisenwerk Gerhard GmbH, Fed. Rep. of Germany
Filed Dec. 22, 1981, Ser. No. 333,556
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048718; Apr. 23, 1981, 3116254
Int. Cl.³ B65D *88/12, 90/08*
U.S. Cl. 24—287 **49 Claims**



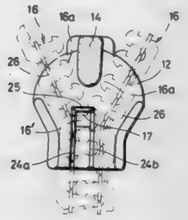
1. Corner fitting for freight containers comprising:
three mutually perpendicular side walls connected to one another to form a section of a corner of a cube having its apex pointing outwardly from a freight container when in an in use position,
and an oblique triangular surface extending tranversely to a diagonal through the corner apex and joining the three side walls,
said triangular surface and at least one of said side walls including openings for container handling elements.

4,521,942

LOCKABLE SLIDE FASTENER SLIDER

Kiyoshi Oda, Namerikawa, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Mar. 4, 1983, Ser. No. 472,007
Claims priority, application Japan, Mar. 6, 1982, 57-31883[U]
Int. Cl.³ A44B *19/30*
U.S. Cl. 24—419 **5 Claims**



1. A lockable slider for a slide fastener having a pair of rows of coupling elements, said slider comprising:

(a) a slider body including a pair of first and second wings joined at one end by a neck to define therebetween a substantially Y-shaped guide channel for the passage therethrough of the pair of coupling element rows, said first wing having an aperture communicating with said guide channel and bounded by a peripheral wall, said first wing having in its inside surface an elongated groove extending from said aperture to the opposite end of said first wing, said groove being defined jointly by a bottom wall and a pair of oblique sidewalls diverging toward said guide channel, said bottom wall having a width substantially the same as that of said aperture, said peripheral wall having an oblique end portion facing said guide channel and merging into said oblique sidewalls;

(b) a pull tab pivotably connected to said first wing; and

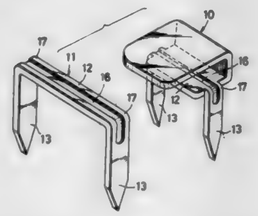
(c) a locking element operatively connected to said pull tab and movable through said aperture into and out of locking engagement with at least one coupling element of the pair of coupling element rows in said guide channel.

4,521,943

FASTENING FOR A GARMENT

Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1983, Ser. No. 534,063
Claims priority, application Japan, Sep. 20, 1982, 57-142436[U]
Int. Cl.³ A44B *1/42*
U.S. Cl. 24—689 **7 Claims**



1. A hook and eye for use on a garment, said hook being receivable in said eye when assembled onto the garment, comprising:

(a) a pair of hasps having at least two apertures;

(b) a hook base and an eye base, each said base having at least two spikes initially projecting from said base for being pierced through the garment into the apertures of one of said hasps, and for being deflected into a clenched condition against one of said hasps; and

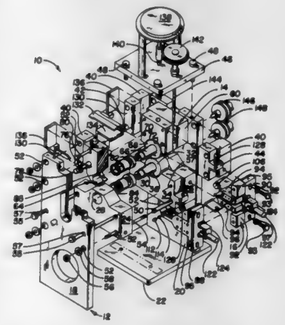
(c) means disposed around a joint between each said base and said spikes for opposing deformation of either of said hook and eye around said joint when said spikes are pierced and clenched, each of said means comprising a cold-pressed groove opening outwardly and extending longitudinally across said joint, said hook and eye each thereby having a greater hardness in a region around said grooves than at other regions thereof.

4,521,944

DOWEL-ALIGNED MULTIPLE PLATE STUFFER BOX CRIMPER CONSTRUCTION FOR FILTER TOW

Bruce W. Stockbridge, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 23, 1984, Ser. No. 573,186
Int. Cl.³ D02G *1/12*
U.S. Cl. 28—264 **10 Claims**



1. A stuffer box crimper for crimping filament tow and including upper and lower crimper rolls each including a shaft extending from each side of the crimper roll along the axis thereof, upper and lower scraper blades spaced apart from each other and defining therebetween a crimping chamber, and a clapper mounted for movement within said crimping chamber, said stuffer box crimper comprising

(a) a main frame assembly forming a support for said stuffer box crimper and defining a pair of journalled seats for the shaft of the lower crimper roll,

(b) a sub-frame assembly movably mounted within said main frame assembly and defining a pair of journalled seats for the shaft of the upper crimper roll, and

(c) a crimper chamber assembly mounted for movement into and out of said main frame assembly and including said upper and lower scraper blades and said clapper,

each of said main frame, sub-frame and crimper chamber assemblies being comprised of multiple precision ground plates held together in side-by-side contacting relationship, each plate having plate-contacting side face surface area(s) sufficient in extent to stabilize the plate in a non-rocking relation to the plate-contacting side face surface area(s) of an adjacent plate with which it is in contact and defining a predetermined number of bore holes formed through the plate and spaced in a predetermined manner, said assemblies having a corresponding number of dowel pins for close sliding relationship with said bore holes for precisely orienting and aligning said multiple precision ground plates with respect to each other, and including bolt members for holding said plates of each said assembly in said precise alignment, and

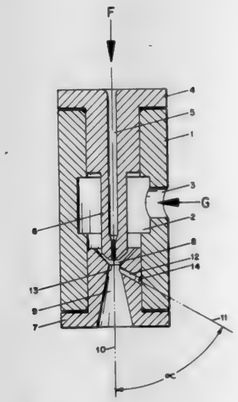
said multiple plates of said main frame assembly and of said sub-frame assembly and of said main frame assembly and of said crimper chamber assembly defining cooperating guide means therebetween for enabling (1) said sub-frame assembly and its supported upper crimper roll to be slidably moved in a vertical plane at right angles to the axis of said lower crimper roll toward and away from said lower crimper roll for adjustment of the nip between said upper and lower crimper rolls, and (2) said crimper chamber assembly to be aligned within said main frame assembly.

4,521,945

YARN BULKING JET

Peter Heinen, and Peter Gossens, both of Heinsberg-Oberbruch, Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 106,591, Dec. 26, 1979, abandoned. This application Oct. 9, 1981, Ser. No. 310,188
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856291
Int. Cl.³ D02G *1/16*
U.S. Cl. 28—273 **5 Claims**



1. Bulking device for the production of loop yarn comprising a base forming a blowing chamber with a connection for blowing medium, a pin insert with a yarn feed channel aligned coaxially to the bulking device axis extending into the blowing chamber, the pin insert having a conically pointed tip, a jet insert with a yarn delivery channel extending from the opposite end into the blowing chamber, with a conical taper on the inlet side relative to said conical tip, a diffusor being connected to the smallest cross section thereof, whereby the conically pointed bulking pin extends into the conical taper of the jet insert, further comprising a resonance chamber (12), closed at its outer end, leads into diffusor (9) just behind the inlet cross section of the latter (13).

4,521,946

CUTTER AND BELT TYPE CONVEYOR FOR WIRE SEGMENTS

Robert O. Dusel, Brookfield, and Gerald E. Blaha, Waukesha, both of Wis., assignors to Artos Engineering Company, New Berlin, Wis.

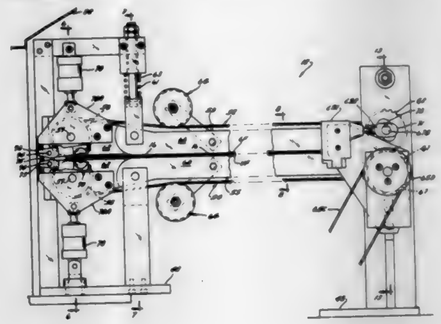
Division of Ser. No. 363,968, Mar. 31, 1982, Pat. No. 4,502,586. This application Jan. 23, 1984, Ser. No. 572,984
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—33 M **3 Claims**

1. In combination:

means for cutting a continuous strand of wire moving along a first path into segments;

and conveyor means for receiving and conveying said segments along a second path transverse to said first path while maintaining each segment so that its longitudinal axis is transverse to said second path;

said conveyor means comprising a driven pair of endless belts having confronting flights movable along said second path;



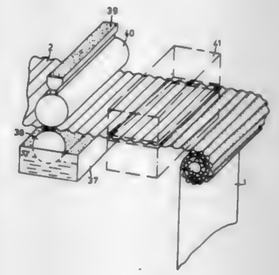
said conveyor means further comprising means for periodically separating and reclosing a portion of said confronting flights to facilitate reception of a wire segment therebetween for conveyance.

4,521,947

METHOD FOR MANUFACTURING A CATALYTIC REACTOR CARRIER MATRIX

Manfred Nonnenmann, Schwieberdingen; Heinrich Oltmanns, Eberdingen, and Manfred Hohhäusel, Stuttgart, all of Fed. Rep. of Germany, assignors to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co. KG., Fed. Rep. of Germany

Continuation of Ser. No. 156,486, Jun. 4, 1980, Pat. No. 4,381,590. This application Sep. 30, 1982, Ser. No. 428,452
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1979, 2924592
Int. Cl.³ B23P *13/00*
U.S. Cl. 29—157 R **5 Claims**



1. In a method for manufacturing a carrier or supporting matrix for a catalytic reactor designed for cleaning or purifying the exhaust gases in an internal combustion engine of a motor vehicle, the reactor comprising high temperature resistant steel sheets coated with a catalyst material, said steel sheets comprising a first relatively flat sheet and a second corrugated sheet alternately disposed in layers, the individual layers of the steel sheets being soldered together, the improvements comprising:

(a) providing at least a cleaned portion of each of said flat and corrugated steel sheets;

(b) applying a binding agent to the flat sheet along selected areas of said cleaned portion thereof;

(c) applying a predetermined amount of pulverent solder to the selected areas on which binding agent has been applied, said selected areas being strips extending in the direction of corrugations of the corrugated steel sheets, or at right angles thereto, so that solder is present only in the

vicinity of said strips and a substantial area intermediate the strips is free of solder;

(d) subsequently coiling the flat and the corrugated steel sheets to form a honeycomb element wherein said selected areas with a predetermined amount of solder thereon are adjacent cleaned portions of the opposing surface of said alternately disposed sheet; and

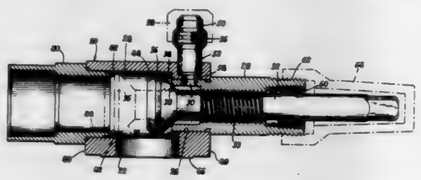
(e) thereafter sumultaneously soldering together all the layers with respect to each other by heating up the matrix such that said solder adheres to said adjacent cleaned portion.

4,521,948

METHOD FOR FABRICATING A VALVE

Charles E. Laue, Wilmette, Ill., assignor to Hamilton-Pax, Inc., Chicago, Ill.

Filed Feb. 3, 1983, Ser. No. 463,536
Int. Cl.³ B21K *1/20*; B23P *13/00*
U.S. Cl. 29—157.1 R **3 Claims**



1. A method of making a valve comprising the steps of forming a body with six walls by cutting from a substantially hexagonal steel bar a segment which is thinner than the minimum width of the hexagonal cross-section of the body, drilling a round chamber in one side of the body spaced from its opposite side and from said walls, drilling two substantially coaxial holes into said chamber from two oppositely facing of said walls, respectively, one of said holes being of larger diameter than the other, fitting an internally threaded steel sleeve into the smaller-diameter of said holes, with its inner end defining a back seat, drilling a charging port into said other side of said body with a smaller-diameter portion of said port extending through said body and through said sleeve at a point spaced outwardly from said chamber and inwardly of the sleeve's threads, inserting a valve stem through the larger-diameter of said holes and threading it into said sleeve until a head on one end of said stem is within said chamber with the other end of the stem projecting beyond said sleeve for actuation of the head, fitting a steel charging nipple into said port until it seats against the body around said smaller-diameter portion of said port at an area spaced from said sleeve, fitting another steel sleeve into the larger-diameter of said holes to define a front seat at the inner end of said other sleeve, said head being alternately engageable with the inner ends of respective sleeves to alternately engage one seat, while disengaging the other said head when disengaged from the back seat opening the charging port to said chamber, and then brazing said sleeves and nipple simultaneously to said body around said holes and said port, respectively.

4,521,949

METHOD OF LOOSENING AND ADJUSTING TIGHTLY-JOINED ELEMENTS

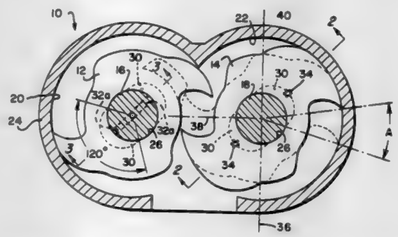
James M. Aumick, Addison, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 20, 1983, Ser. No. 459,306
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—446 **8 Claims**

1. A method of loosening and adjusting tightly-joined elements, in which a first one of the elements comprises a rotor which has a bore formed therein which is tightly fitted about a mating surface of a second element, such as a shaft or the like, wherein the rotor has a first quadrant of a given mass, and a second quadrant of a mass which is less than said given mass, comprising the steps of:

introducing a fluid under pressure between the bore of the first element and the mating surface of the second element; wherein said fluid-introducing step comprises

introducing a given quantity of fluid under pressure between the bore and the mating surface whereat the latter are



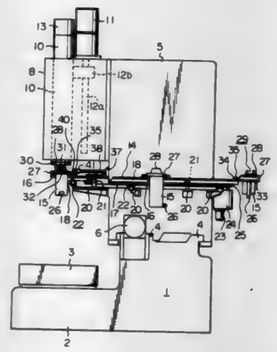
radially aligned with said first quadrant, and introducing a quantity of fluid under pressure which is less than said given quantity between the bore and the mating surface whereat the latter are radially aligned with said second quadrant to expand the bore of the rotor relative to the shaft, and adjusting the position of the rotor on the shaft while the bore thereof is expanded relative to the shaft.

4,521,950

AUTOMATIC TOOL CHANGE MACHINE TOOL

Hiroshi Kase, Takatsuki; Yoshiaki Matsumoto, Mino, and Kouji Ohkawa, Toyonaka, all of Japan, assignors to O-M Limited, Osaka, Japan

Filed Jul. 30, 1982, Ser. No. 403,543
Claims priority, application Japan, Aug. 13, 1981, 56-127347[U]; Aug. 13, 1981, 56-120741
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **16 Claims**



1. An automatic tool change machine tool comprising:

a machine bed;

a worktable mounted on the machine bed;

a vertical column mounted on said machine bed and having a tool stock disposed at an upper part of said vertical column;

a vertically moveable tool bar received in said tool stock having at a lower part thereof means for receiving a toolholder, said toolholder receiving means being provided at the lowermost part thereof with a tool receiving bore having a conical tapered face;

a draw bar vertically movably arranged in said tool bar for pulling a toolholder toward and releasing the toolholder from said receiving means of said tool bar, said draw bar having at the lowermost end thereof a toolholder engagement means;

a magazine in the shape of an annular plate turnably mounted on said vertical column so as to be turnable about a vertical axis in a horizontal plane, said magazine having a plurality of toolholder receptacles arranged in the outer circumference thereof;

a plurality of toolholder supports, each being retractably arranged on each said toolholder receptacle and having a retraction permitting means at an inner base portion of each said toolholder supports, each of said toolholder supports being a plate-like fork member having parallel prongs interconnected with one another by an inner base portion;

a plurality of toolholders each holding a cutting tool and removably stored in said toolholder receptacles of said magazine, each said toolholder having a lateral extension means engageable with the corresponding toolholder support arranged on said toolholder receptacle, an upper tapered part capable of being complementary fitted in said tool receiving bore of said toolholder receiving means of said tool bar, and an engagement means capable of being engaged with said toolholder engagement means of said draw bar;

an indexing means for indexing each of said plurality of receptacles of said magazine to a predetermined tool change position where a toolholder is attached to or detached from said toolholder receiving means of said tool bar; and

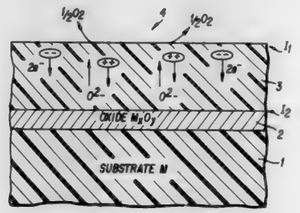
an actuating means for actuating the retraction of each said toolholder support from a corresponding receptacle and the pushing of each said toolholder support onto a corresponding receptacle while the corresponding receptacle of said toolholder magazine is indexed to said predetermined tool change position, said actuating means including an extendable and retractable piston rod having at the outermost part a recessed portion engageable with said retraction permitting means when said piston rod is in an extended position.

4,521,951

METHOD OF REDUCTION OF A COMPOUND FORMING A LAYER ON A SUBSTRATE AND THE APPLICATION OF SAID METHOD TO THE FABRICATION OF A FIELD-EFFECT SEMICONDUCTING STRUCTURE

Michel Croset, and Louis Mercandalli, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 23, 1983, Ser. No. 506,994
Claims priority, application France, Jun. 25, 1982, 82 11215
Int. Cl.³ H01L *21/20, 21/31*
U.S. Cl. 29—571 **18 Claims**



1. A method of fabricating a semiconducting structure comprising reducing at least one layer of oxidized compound containing a predetermined chemical species, which layer covers at least part of the surface of a semiconducting substrate, said reduction being conducted in a first step comprising covering the surface of said substrate with a layer of a solid electrolyte which is an ionic conductor for said predetermined chemical species, followed by a second step comprising carrying out said reduction through said layer of solid electrolyte.

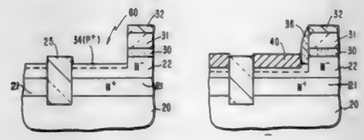
18. A method of fabrication of a field-effect semiconducting structure of the MIS type comprising the steps of the method of reduction according to claim 1, including an additional step carried out after the second step of the method of reduction and consisting in deposition of a metal zone which covers predetermined regions of the surface of the solid electrolyte layer in order to form a stack of at least one layer of reduced semiconductor, a dielectric layer formed by the solid electrolyte layer and a metal layer, said stack constituting the MIS structure.

4,521,952

METHOD OF MAKING INTEGRATED CIRCUITS USING METAL SILICIDE CONTACTS

Jacob Riseman, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1982, Ser. No. 446,156
Int. Cl.³ H01L *21/265, 21/24*; C23F *1/02*
U.S. Cl. 29—590 **15 Claims**



1. Method for making an electrical contact having a significant side component to a silicon semiconductor device comprising:

forming a metal silicide contact on the surface of a silicon body;

thermally oxidizing the surface of said metal silicide to form a silicon dioxide layer thereover and resulting in moving said metal silicide contact into said silicon body to the extent that said side contact component is formed greater than about 50 nanometers in depth;

forming an opening in said silicon dioxide layer to said metal silicide; and

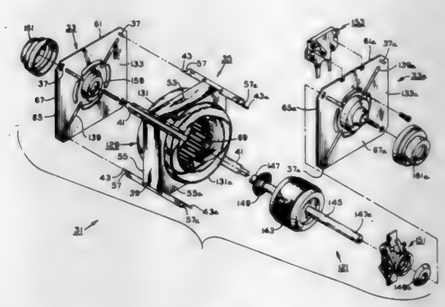
making electrical contact to said metal silicide contact.

4,521,953

METHOD OF ASSEMBLING A DYNAMOELECTRIC MACHINE

James L. King, and John E. Hennessy, both of Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

Filed Apr. 10, 1984, Ser. No. 598,902
Int. Cl.³ H02K *15/14*
U.S. Cl. 29—596 **33 Claims**



1. A method of assembling a dynamoelectric machine having at least one end frame and a stator assembly, the at least one end frame including a pair of opposite faces, and a set of aper-

tures having sidewalls intersecting with the opposite faces, respectively, and the stator assembly including a stator core having a bore therethrough, a set of beams mounted to the stator core and extending in generally axial directions therefrom, at least one set of abutments on the beams, a set of tabs extending from the abutments and sized predeterminately smaller than the sidewalls of the apertures in the at least one end frame, and a set of yieldable sections in the tabs predeterminately located between a free end portion of the tabs and the abutments on the beams, respectively, the method comprising the steps of:

arranging the apertures in the at least one end frame about the tabs on the beams and extending the tab free end portions beyond one of the opposite end faces of the at least one end frame, respectively;

seating the other of the opposite end faces of the at least one end frame in engagement with at least some of the abutments on the beam;

adjusting the at least one end frame generally radially on the beams into an assembly position with respect to the stator core when the other opposite end faces of the at least one end frame is seated against the at least some abutments in the beams and arranging thereby the sidewalls of the apertures in the at least one end frame generally in spaced apart relation from the tabs on the beams, respectively;

applying a force onto the one opposite face of the at least one end frame and urging thereby the other opposite face of the at least one end frame toward the seating engagement thereof with the at least some abutments on the beams;

displacing the free end portions of the tabs generally about the yieldable sections therein into overlaying relation with confronting parts of the at least one end frame on the one opposite face thereof and at least in part retaining thereby the at least one end frame against axial displacement from its assembly position on the beams with respect to the stator core, respectively;

deforming generally simultaneously a set of overlaying sections from the tab free end portions and the confronting parts of the at least one end frame in the overlaying relation thereof and interlocking one of the deformed overlaying sections with one of the tab free end portions and the confronting parts of the at least one end frame in the overlaying relation thereof so as to retain the at least one end frame against rotational and radial displacement from its assembly position on the beams with respect to the stator core, respectively; and

maintaining the spaced apart relation between the tabs on the beams and the sidewalls of the apertures in the at least one end frame during both the displacing and retaining step and the deforming and interlocking step without retaining the at least one end frame against rotational and radial displacement from its assembly position with respect to the beams other than the force applied onto the at least one end frame in the applying and urging step, respectively.

4,521,954

METHOD FOR MAKING A DRY TYPE TRANSFORMER

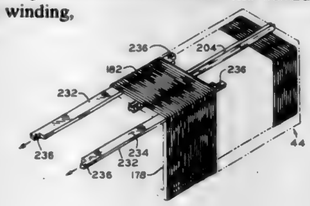
Leo C. Rademaker; Philip J. Hopkinson; Gordon M. Bell, all of Fort Wayne, and Noah D. Hay, Huntertown, all of Ind., assignors to General Electric Company, New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,735
Int. Cl.³ H01F *41/06*
U.S. Cl. 29—605 **15 Claims**

1. The method of making a dry type air cooled transformer comprising the steps of:

forming a magnetic core by stacking a plurality of laminations to form a plurality of interleaved lamination layers each comprising a pair of leg portions and a pair of yoke portions connecting the leg portions, the yoke and leg portions being connected end to end and surrounding a core window, each of the leg and yoke portions comprising a plurality of stacked said laminations each having a favored magnetic direction extending lengthwise of the lamination, at least some of the leg and yoke laminations in each layer having a mitered end placed in abutment with a mitered end of an adjacent leg by a yoke portion, the abutting mitered ends forming core joints extending at an angle to the favored magnetic directions of the respective abutting laminations,

forming a coil comprising a plurality of superimposed layers of wound conductor by winding a conductor about a form and placing duct spacers between at least certain of the conductor layers in end portions of the coil during winding to space the certain layers apart thereby forming a plurality of air ducts through the coil end portions, each conductor layer being wound in a rectangular configuration having four corners at which the conductor is bent during winding,



the duct spacers extending through the ducts and being spaced apart from the conductor corners in the respective ducts to provide a pair of air channels in each duct contiguous with the respective conductor corners,

compressing side portions of the coil not having duct spacers therein to compress together the conductor layers therein and reducing the thickness of the side portions in the area of the coil window,

while continuing to compress the side portions, bonding the compressed conductor layers together to retain the coil sides in their compressed states, and then

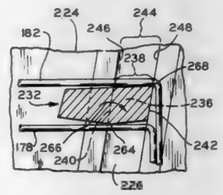
mounting the coil on a leg portion of the core with one of the coil compressed sides being disposed in the core window.

4,521,955

METHOD OF MAKING A DUCTED DRY TYPE TRANSFORMER

James M. Closson, Harlan, and Noah D. Hay, Huntertown, both of Ind., assignors to General Electric Company, New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,738
Int. Cl.³ H01F *7/06*
U.S. Cl. 29—605 **29 Claims**



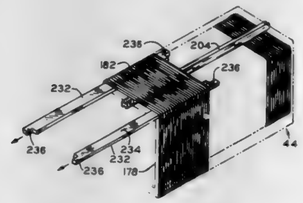
1. A method of making a dry type air cooled transformer comprising: forming a coil by winding a plurality of turns of conductor about a coil axis to form a first coil layer, placing first and second duct spacers over the first coil layer on one end of the coil, the duct spacers being spaced apart in the circumferential direction relative to the coil axis, tightly winding a plurality of turns of conductor on the first coil layer over the duct spacers to form a second coil layer, the duct spacers spacing the second layer from the first layer to form an air duct in the coil one end, then placing third and fourth duct spacers over the second coil layer directly over the first and second spacers, respectively, in a direction outward from the coil axis; tightly winding a plurality of turns of conductor on the second coil layer over the third and fourth duct spacers to form a third coil layer, the third and fourth duct spacers spacing the third coil layer from the second coil layer to form a second air duct; then loosening each of the first and third duct spacers by moving a surface thereof in a direction to provide clearance between the first and third spacers and the first, second and third coil layers and sliding the first and third duct spacers axially out of the coil and leaving the second and fourth duct spacers in place, the step of loosening the first spacer occurring before the step of sliding the first spacer out of the coil is commenced and the step of loosening the third spacer occurring before the step of sliding the third spacer out of the coil is commenced; and placing the coil on a magnetic core.

4,521,956

METHOD FOR MAKING A TRANSFORMER HAVING IMPROVED SPACE FACTOR

Gordon M. Bell, and Philip J. Hopkinson, both of Fort Wayne, Ind., assignors to General Electric Company, New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,886
Int. Cl.³ H01F *41/06*
U.S. Cl. 29—605 **15 Claims**



1. A method of making a dry type air cooled transformer comprising:

providing a magnetic core having at least two legs and a core window between the legs,

forming a rectangular coil comprising a plurality of superimposed layers of wound conductor surrounding a vacant coil window with adjacent conductor layers separated from each other by respective layers of sheet-like insulation material having a bonding material on both sides thereof, the layers being bent at four corners during winding,

inserting duct spacers between at least some of the conductor layers in an end portion of the coil during formation of the coil to space the layers apart in the end portions thereby providing air ducts in the coil extending generally parallel to the layers for the passage of cooling air, the duct spacers spaced from said corners to form a pair of air channels in each duct, said channels being contiguous to respective coil corners,

clamping at least one side of the coil to exert compression forces thereon in a direction normal to the conductor layers and insulation layers in the one side thereby compressing together the conductor layers and insulation on said one side of the coil,

while continuing to exert the compression forces, altering the physical properties of the bonding material to bond the adjacent conductor layers to the insulation layers therebetween to form a permanently compressed coil side,

unclamping the coil, and then

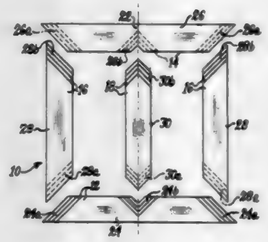
placing one of the core legs inside the coil window such that the compressed side of the coil is disposed in the core window.

4,521,957

METHOD OF CONSTRUCTING A MAGNETIC CORE

Ramon M. McLeod, Rome, Ga., assignor to General Electric Company, King of Prussia, Pa.

Continuation of Ser. No. 355,785, Mar. 8, 1982, abandoned. This application May 11, 1984, Ser. No. 608,550
Int. Cl.³ H01F *41/02*
U.S. Cl. 29—609 **5 Claims**



1. A method of constructing a magnetic core comprising the steps of:

A. providing a plurality of first laminations each having mitered ends and parallel sides to present a trapezoidal configuration, said first laminations having equal lengths;

B. providing a plurality of second laminations each having mitered ends and parallel sides to present a trapezoidal configuration, said second laminations having incrementally varying lengths;

C. arranging a plurality of said second laminations in a first stacked group with their mid-length points in registry such as to present visible stepped-lap joint halves at each end of said first group;

D. arranging a plurality of said second laminations in a second stacked group with their mid-length points in registry such as to present concealed stepped-lap joint halves at each end of said second group, the number of said second laminations in each said second stacked group being equal to the number of said second laminations in each said first stacked group;

E. arranging said first laminations in plural stacked third groups with the mid-length points thereof incrementally, longitudinally offset to present visible stepped-lap joint halves and concealed stepped-lap joint halves at opposite ends of each of said third groups, the number of said first laminations in each said stacked third group being equal to the number of said second laminations in each said second stacked group;

F. assembling a pair of said third groups to said first group such that said concealed stepped-lap joint halves at corresponding one ends of said third group pair are respectively joined with the visible stepped-lap joint halves at the two ends of said first group;

G. assembling said second group to said third group pair such that said concealed stepped-lap joint halves at the two ends thereof are joined with the visible stepped-lap joint halves at the corresponding other ends of said joint group pair; and

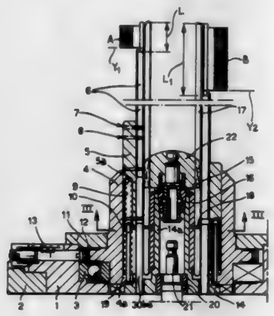
H. repeating steps F. and G. a requisite number of times to complete the build of said core.

4,521,958

PRE-WOUND COILS INSERTING DEVICE FOR USE IN THE MANUFACTURE OF DYNAMO-ELECTRIC MACHINES

Giorgio Barrera, Leumann, Italy, assignor to Officine Meccaniche Pavesi & C. S.p.A., Turin, Italy

Filed Oct. 28, 1983, Ser. No. 546,358
Claims priority, application Italy, Oct. 28, 1982, 68261 A/82
Int. Cl.³ H02K *15/06*
U.S. Cl. 29—734 **10 Claims**



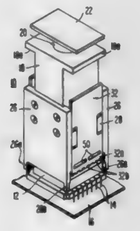
1. A device for inserting pre-wound coils into stator slots of dynamo-electric machines, comprising:
- an annular series of coil-guide blades having free ends intended to receive the pre-wound coils to be inserted into the stator slots,
- an annular series of wedge-guide blades surrounding the coil-guide blades and having free ends terminating a short distance before the free ends of the coil-guide blades in such a way as to allow the stator to rest on the free ends of the wedge-guide blades by positioning it around the coil-guide blades,
- a thrust member slidable through the series of coil-guide blades for inserting the coils into the stator slots,
- said wedge-guide blades being axially displaceable in a direction away from their free ends, and
- resilient means urging said wedge-guide blades in the direction of the free ends thereof.

4,521,959

DEVICE FOR THE CONTROLLED EXTRACTION OF ELECTRONIC CIRCUIT COMPONENTS

George J. Sprenkle, Phoenixville, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 5, 1983, Ser. No. 510,754
Int. Cl.³ H05K *13/04*
U.S. Cl. 29—741 **10 Claims**



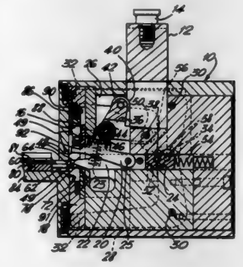
1. An extraction tool for use in removing an electronic component from an interconnection medium, comprising:
- a body member of substantially rectangular cross section and having a central longitudinal aperture therein,
- a pair of side plates immovably affixed to a respective first pair of opposite sides of said body member and extending longitudinally therebeyond, said side plates being adapted to contact said interconnection medium and to straddle said component,
- a shaft slidably and rotatably disposed in said aperture of said body member, a coaxial spring member situated in said aperture and enclosing a portion of said shaft,
- a pair of substantially planar gripper members, means coupling said gripper members to said shaft, said gripper members being disposed adjacent the respective second pair of opposed sides of said body member, said gripper members having respective jaw-like sections at homologous extremities thereof, said jaw-like sections being retracted with respect to opposed edges of said component when said tool is in a rest condition, whereupon the application of an external force to said shaft in the direction of said component is capable of moving said gripper members to an extended preset position and establishing a compressive force in said spring member, means coupled to said shaft for retaining said gripper members in said extended preset position upon the cessation of said external force applied to said shaft, whereby said jaw-like sections are able to engage said opposed edges of said component, and whereupon the subsequent release of the compressive force stored by said spring member acting through said gripper members is capable of applying an extraction force of predetermined magnitude to said component.

4,521,960

APPARATUS FOR TERMINATING FLAT FLEXIBLE CABLES

Werner Maack, Seeheim, and Richard Zendler, Erbach, both of Fed. Rep. of Germany, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 30, 1983, Ser. No. 509,545
Claims priority, application United Kingdom, Jul. 2, 1982, 8219129
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—749 **8 Claims**



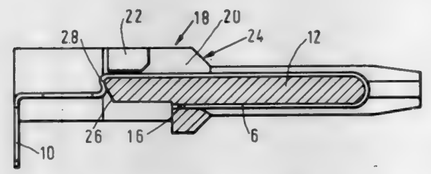
1. Apparatus for inserting the conductors of an end portion of a flat flexible cable into conductor-receiving portions of electrical terminals of an electrical connector, the apparatus comprising a connector supporting anvil, a conductor insertion punch for moving conductors aligned with the terminals laterally of their axes and into the conductor-receiving portions, and first actuator means for driving the punch from a retracted position through a working stroke towards the anvil to insert the conductors of the cable which has been positioned between the punch and a connector supported on the anvil into the conductor-receiving portions, the first actuator means being effective subsequently to drive the punch through a return stroke away from the anvil, the apparatus further comprising a pair of cable notching jaws, second actuator means operatively associated with said first actuator means for moving the jaws along a path of movement between a first position in which they lie between the punch and the anvil, when the punch is in its retracted position, and a second position in which the jaws are retracted from between the punch and the anvil, third actuator means operatively associated with said first and second actuator means for moving the anvil between a first position in which a connector supported thereon is displaced from the path of movement of the jaws when the jaws are in their first position and a second position in which the connector intersects the path of movement of the jaws when the jaws are in their second position, jaw opening and closing means operatively associated with said first, second and third actuator means for retaining the jaws in an open position when the jaws are in their first position and for closing the jaws about the cable end prior to the movement of the jaws from their first to their second position; the first, second and third actuator means being timed so that subsequently to the insertion of the conductors into the conductor-receiving portions, the jaws are returned from their second to their first position, and the punch is driven through its return stroke to allow the connector to be ejected from between the punch and the anvil.

4,521,961

METHOD FOR THE MANUFACTURE OF A MULTI-POLAR CONTACT STRIP

Rolf Roeschlein, Paderborn, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,550
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214532
Int. Cl.³ B23P *15/00*
U.S. Cl. 29—884 **5 Claims**



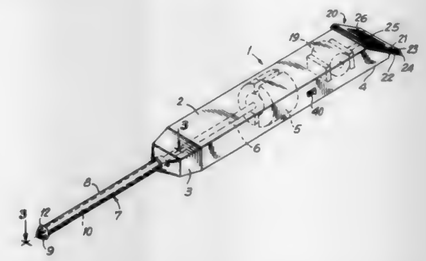
1. Process of producing a multipolar multipoint connector with a plurality of metal contact prongs arranged one beside another, with their first ends bent around the front edge of a carrier, with their second ends projecting out over the rear edge of the carrier, where the first ends of the contact prongs bent backward are accommodated in pockets formed on the bottom side of the carrier, and the parts of the contact prongs situated on the top side of the carrier are accommodated in receptacles formed on the top side of the carrier, and where the second ends projecting over the rear edge of the carrier are bent down as soldering lugs or the like, characterized by the following process steps:
- (a) the contact prongs (4) are punched out of a raw material as a strip cohering through webs (2), where the prongs remain joined together by webs (2) situated in the region projecting over the rear edge (26) of the carrier (12);
- (b) the first ends (6) are bent back in common;
- (c) the contact prongs (4) are jointly slipped onto the carrier (12), where their bent-back first ends (6) engage in assigned pockets (16), and the parts of the contact prongs (4) situated on the top side of the carrier (12) grip by their laterally projecting lugs (8) under assigned projections (22);
- (d) the ends (10) projecting over the rear edge (26) are bent at a right angle around the rear edge (26) somewhat in the shape of stairs;
- (e) the webs (2) are punched out and the second ends (10) are bent down.

4,521,962

GROOMING DEVICE

Harold Van Natta, 339 Canna Dr., Valdosta, Ga. 31601

Filed Feb. 27, 1984, Ser. No. 584,004
Int. Cl.³ B26B *19/20, 19/26*
U.S. Cl. 30—34.1 **19 Claims**



1. A grooming device for use in cutting hair growing at diverse locations of the human head outside the scalp area, comprising:
- a housing;
- means for cutting hair located in and adjacent various channels of the human head, including a protective element and a cutting element mounted in said protective element for rotation about an axis;
- means for mounting said cutting means on said housing for movement in unison between a retracted position in which said cutting means is at least predominantly situated within the outline of said housing, and an extended position in which said cutting means extends to a considerable extent beyond the outline of said housing;
- means for driving said cutting element in rotation relative to said protective element about said axis at least in said extended position of said cutting means;
- means for trimming hair, mounted at a location of said housing that is remote from the location of said cutting means, said trimming means including two trimming blades mounted on said location for movement relative to one another, at least that of said trimming blades that is more remote from said housing having a recess therein;
- means for driving said trimming means, including an electric clipper; and
- at least one distancing element mounted on said housing for movement between a retracted position in which it is accommodated in said recess of said remote cutting blade, and at least one extended position in which it is spaced a predetermined distance from said remote trimming blade.

4,521,963

HYDRAULIC CABLE AND ROD CUTTING AND CRIMPING DEVICE

Michael A. Lind, Salt Lake City, and Michael R. Dunn, Sandy, both of Utah, assignors to New Draulics, Inc., Salt Lake City, Utah

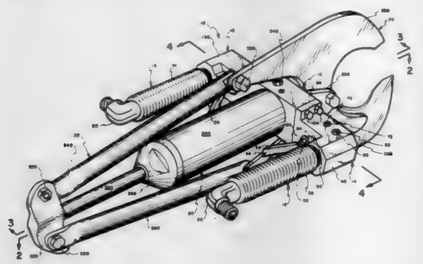
Filed Sep. 28, 1982, Ser. No. 426,014
Int. Cl.³ B23D *21/10*
U.S. Cl. 30—92 **1 Claim**

1. A mechanism for cutting and the like comprising:
- two way cylinder assembly means comprising interior piston means carrying piston rod means comprising an exposed portion of variable length;
- valve means by which influent and effluent fluid is selectively delivered to and removed from the cylinder assembly means;
- opposed jaw means disposed forward of the cylinder assembly means, for cutting and the like movable between open and closed positions comprising means operatively responsive to displacement of the piston rod means to dis-

place the jaw means between said open and closed positions;

actuating means associated with the valve means by which the flow path influent and effluent fluid is selectively controlled;

spaced first and second spaced handle means, each handle means at least partially co-extensive with although laterally spaced from the cylinder assembly means by which the mechanism is manually held and manipulated during use;



the actuating means comprising two trigger means, one located adjacent each handle means, both of which must be actuated for the valve means to cause the opposed jaw means to close;

the valve means comprising flow control spool means and the two trigger means each comprising means controlling the location of the spool means and a trigger by which said controlling means are manipulated.

4,521,964

TOOL FOR MEALS WITH THE FUNCTION OF SCISSORS

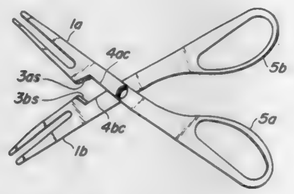
Takashi Maruyama, 12-9, Kitakarasuyama 9-chome, Setagaya-ku, Tokyo 157, Japan

Filed Apr. 18, 1983, Ser. No. 486,229

Claims priority, application Japan, Apr. 23, 1982, 57-58413[U]; Feb. 14, 1983, 58-19014[U]; Mar. 7, 1983, 58-31650[U]

Int. Cl.³ B26B *13/00*

U.S. Cl. 30—148 **1 Claim**



1. A tool for meals with the function of scissors, fork and crusher, comprising two blade bodies, each blade body being composed of:

(a) a tip portion, said tip portion having a sharp edge adapted to coact as a scissor portion, said tip portion having a fork set diverging and separating from a back portion of said sharp edge and in parallel with said back portion, said back portion being similar to a tip portion of the usual fork for meals by overlapping the sharp edges of said two blade bodies;

(b) a central portion, said central portion being pivotably connected by a pin to a central portion of the other blade body;

(c) a handle portion extending from said central portion;

(d) said central portion having a planar surface, said tip portion having a curvilinear plane curving in a predetermined direction from said planar surface, said handle portion having a curvilinear plane curving in an opposite direction with respect to said planar surface;

(e) said fork set having a shoulder integrally formed with said central portion, said shoulder and a portion of said central portion defining a dull edge, both of said shoulders and both of said portions of said central portion defining a crushing enclosure, whereby, when the handle portions are actuated to position the sharp edges opposing each other, a scissor action is obtained, and when the handle portions are pivoted over each other, the dull edges are positioned opposite each other, crushing action is obtained.

4,521,965

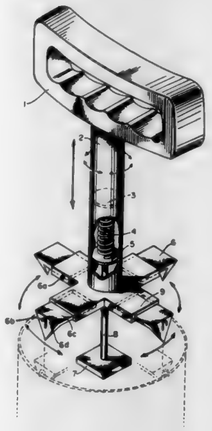
HAND-DRIVEN, RECIPROCATING CAN OPENER

Leroy Walker, 4719 Rhodes Dr., New Orleans, La. 70126

Filed Jul. 7, 1983, Ser. No. 511,536

Int. Cl.³ B67B *7/34*

U.S. Cl. 30—410 **14 Claims**



1. A can opener for cutting open the tops of cylindrical metal cans, comprising:

a vertically disposed, main shaft;

handle means connected to the upper portion of said shaft for grasping in the user's hand and moving the shaft vertically up-and-down and rotating it about a vertical axis;

a multiple number of radially extending arms connected to and extending out laterally away from the lower portion of said shaft;

cutting blade means located at the ends of said radial arms for cutting the can top as said main shaft is reciprocated and turned; and

inverted "U" shaped hook means located at the distal ends of said radial arms for engaging and holding the upwardly extending peripheral circular lip of the can during the can opening process.

4,521,966

METHOD AND APPARATUS FOR DETERMINING THE POSITION OF THE CENTER OF A CIRCULAR OBJECT

Thomas Karlsson, Lidkoping, Sweden, assignor to Lidkopings Mekaniska Verkstads AB, Lidkoping, Sweden

Filed Aug. 30, 1983, Ser. No. 527,799

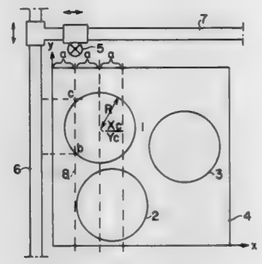
Claims priority, application Sweden, Sep. 14, 1982, 8205233

Int. Cl.³ G01B *7/28*

U.S. Cl. 33—1 M **6 Claims**

1. Method of determining the position of the center of a circular object with a known diameter on a generally flat surface comprising the steps of:

sequentially moving a sensor along a plurality of know paths proximate said surface, each said path comprising a line portion, with the greatest distance between two adjacent line portions being less than the radius of said circular object;



measuring the position of the sensor at two points in the same line portion where said sensor passes over the circumference of said object between said sensor and said surfaces; and

calculating the position of the center of said object using the measured positions of the sensor at said two points.

4,521,967

HEIGHT GAUGE

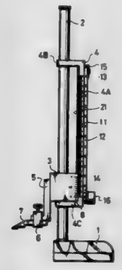
Kenju Uchino, Utsunomiya, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 487,939

Claims priority, application Japan, May 8, 1982, 57-77248

Int. Cl.³ G01B *3/20, 5/02*

U.S. Cl. 33—169 R **8 Claims**



1. A height gauge, comprising:

a base;

an elongated support erected on said base;

a main slider slidably mounted on said support in the lengthwise direction thereof;

means for releasably securing said main slider to said support;

a main graduated scale formed on said main slider in the direction of movement of said main slider along said support, said scale being free of numerical indications designating distances between graduations of said main scale;

a measuring slider slidably supported on said support in the lengthwise direction thereof, said measuring slider being adjacent to one side of said main slider and having vernier graduations thereon readable in conjunction with said main scale;

a pair of upper and lower pulleys mounted near opposite ends of said main slider on the opposite side thereof from said measuring slider;

a flexible endless belt resiliently tensioned around said pulleys for movement therewith, said belt having numerical value indications formed thereon at regular intervals which correspond to graduations of said main scale, said belt being positioned parallel and adjacent to said main scale, on the opposite side thereof from said measuring slider to allow numerical readings of said main scale to be made using said belt; and

means for adjustably securing said measuring slider to said main slider, including a toothed rack formed on said main graduated scale parallel to the direction of movement of said main scale along said support, a pinion mounted on said measuring slider and engaged with said rack, and a hand grip for driving said pinion to move said measuring slider relative to said main graduated scale.

7. A height gauge, comprising:

a base;

a first elongated support erected on said base;

a second elongated support erected on said base parallel to said first support;

means rigidly connecting the ends of said first and second supports remote from said base;

a graduated scale formed on said second support in the lengthwise direction thereof, said scale being free of numerical indications designating distances between graduations of said scale, and said scale being movable in the lengthwise direction of said second support over a predetermined distance range;

a measuring slider slidably supported on said first support in the lengthwise direction thereof;

a flexible endless belt mounted on said second support for movement in the lengthwise direction of said graduated scale, said belt having numerical value indications formed thereon at regular intervals which correspond to graduations of said main scale, said belt being positioned to allow numerical readings of said main scale to be made using said belt; and

means for adjustably securing said measuring slider to said first support.

4,521,968

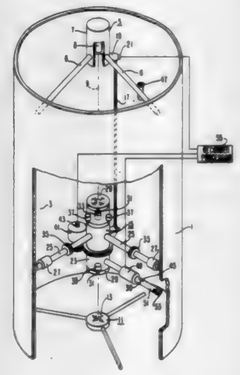
MAPPING SYSTEM FOR AN INTERNAL CYLINDRICAL SURFACE

Larry C. Wiltermood, Port Orchard, Wash.; David J. Barich, and Fred G. Siedow, both of San Jose, Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 12, 1982, Ser. No. 434,098

Int. Cl.³ G01B *7/12, 7/28*

U.S. Cl. 33—178 E **3 Claims**

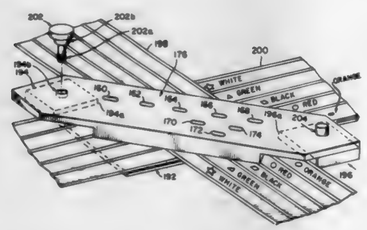


1. A system for mapping an internal cylindrical surface comprising:

a first spider disposed adjacent one end of said cylindrical surface;

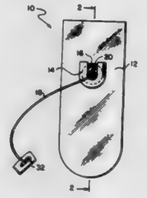
a second spider disposed adjacent the other end of said cylindrical surface;
a third spider disposed within said cylindrical surface intermediate said ends;
said first spider having a laser disposed therein which projects a beam of light generally normal thereto and from its center;
said second spider having a target centrally disposed thereon and so disposed within the cylindrical surface that when said beam of light strikes the center of said target said beam of light is generally aligned with the axis of said cylindrical surface;
means for positioning said third spider within said cylinder and producing a signal indicative of the depth therein of said third spider relative to said one end of said cylinder;
means for affixing said third spider at any depth relative to said one end of said cylinder;
said third spider having a centrally disposed opening extending therethrough, a first target disposed at one end of said opening and a second target disposed at the other end of said opening;
means for moving said first and second targets from the axis of said opening in said third spider to a position where said opening will pass said beam of light unobstructed therethrough;
an arm rotatably disposed on said third spider to rotate about the axis of said opening in said third spider;
means for adjusting the azimuth and X-Y position of said central opening within said third spider after said third spider has been affixed at one position within said cylinder so that said axis of said central opening can be aligned with said axis of said cylindrical surface utilizing said beam of light and said first and second targets disposed at the ends of said opening;
means for determining a set angular position of said rotatable arm with respect to a fixed point on said cylindrical surface;
means for rotating said arm and producing a signal of said arms angular position with respect to said set angular position;
said arm having a predetermined length, having a movable end which is biased outwardly and having means for producing a signal indicative of the distance between the axis of said arm and the distal end of said movable end thereof; and
means for recording signals indicative of the depth of said third spider with respect to said one end of the cylindrical surface, said angular position of said arm with respect to said set angular position and the distance between the axis of said rotatable arm and said distal end thereof.

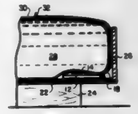
4,521,969
APPARATUS FOR ELECTRICAL CONNECTION OF MULTICONDUCTOR CABLES
William S. Greenwood, Nutley, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.
Filed May 25, 1979, Ser. No. 42,442
Int. Cl.³ H02G *5/04*; H05K *1/00*; G01B *3/30*
U.S. Cl. 33—180 R **6 Claims**



1. Apparatus for use in the connection of flat multiconductor cables disposed in mutually overlapping relation and defining a matrix of connection zones wherein each zone has a unique pair of cable conductors in registry therewith, said apparatus comprising: a connection guide defining openings therethrough in registry with less than all of said connection zones; and selector means variably positionable with respect to said connection guide for rendering accessible for use only selective of said connection guide openings.

4,521,970
WATER BED SHEET ANCHORING APPARATUS
James M. Jester, 3530 Atoll, San Diego, Calif. 92111
Filed Sep. 6, 1983, Ser. No. 529,410
Int. Cl.³ A44B *1/42*; G01B *3/00*
U.S. Cl. 33—180 R **17 Claims**



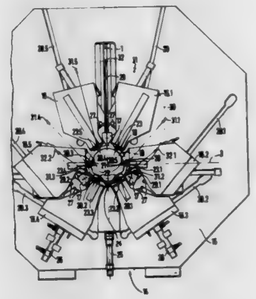


1. A sheet holder for a water bed, comprising:
a generally thin flat panel having a top surface and a bottom surface;
an anchoring slot opening to the top and toward one end thereof defined by a pair of spaced apart rails wherein said slot and rails project above the top surface of said panel for overlapping and engaging the edges of a button.

4,521,971
MEASURING HEAD FOR SCREW THREAD MEASURING MACHINES
Manfred Mayer, Oberndorf, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany
Filed Jun. 8, 1983, Ser. No. 502,125
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222583
Int. Cl.³ G01B *5/16*
U.S. Cl. 33—199 B **9 Claims**

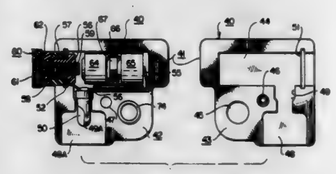
1. A measuring head for screw thread measuring machines capable of measuring threads of a piece to be measured which has an outer diameter with a measuring point and which may be of any size within a predetermined limit, comprising a base plate having a thruhole and a plurality of straight support grooves extending thereover, clamping and measuring elements displaceably received in said support grooves, said plate having a vertical cross-sectional axis of its thruhole which coincides with the vertical axis of the outer diameter of the measured piece clamping and measuring elements being uniformly distributed around the outside diameter of said measured piece, and being displaceable in an associated support groove from an outer position into an inner position to contact the measured piece at a measuring point, said support grooves extending parallel to a straight line connecting a measured

point at the outer diameter of the measured piece with a point at which the vertical cross-sectional axis of the outer diameter



of the measured piece and the lower circular arc of the measured piece intersect.

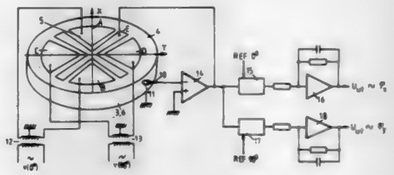
4,521,972
ILLUMINATED SIGHTING STRUCTURE FOR ARCHERY BOWS
Marlow W. Larson, 2735 S. 4050 West, Ogden, Utah 84401
Filed Apr. 28, 1983, Ser. No. 489,499
Int. Cl.³ F41G *1/34, 1/46*
U.S. Cl. 33—265 **9 Claims**



1. An illuminator unit for illuminating the sight tips of archery bows, said unit including, in combination: housing structure provided with a light aperture; a light mounted proximate and illuminating through said light aperture; an electrical circuit, including battery means, disposed in said housing structure and coupled to said light for selectively energizing the same, said electrical circuit including non-conductive resilient spacer means, compressible along its elemental width to complete said circuit, interposed in said electrical circuit; and actuatable means threadedly engaging said housing structure for selectively compressing said resilient spacer means whereby to electrically complete said circuit.

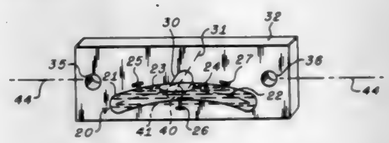
8. In combination: an archery bow having a bracket provided with a series of sights; an illuminator unit mounted to said bracket and housing light means for illuminating said sights, said illuminator unit having a non-conductive housing means provided with electrical circuit means, having a non-conductive circuit interruptor, coupled to said light means, and screw means threaded through said housing means for selectively compressing and then releasing the compression as to said interruptor arranged to complete said circuit means when compressed, for thereby completing and also for interrupting said circuit means.

4,521,973
ELECTRONIC LEVELLING CELL
Klas R. Wiklund, and Lars A. Ericsson, both of Täby, Sweden, assignors to Getronics AB, Danderyd, Sweden
PCT No. PCT/SE82/00311, § 371 Date May 11, 1983, § 102(e) Date May 11, 1983, PCT Pub. No. WO83/01304, PCT Pub. Date Apr. 14, 1983
PCT Filed Oct. 1, 1982, Ser. No. 495,349
Claims priority, application Sweden, Oct. 2, 1981, 8105840
Int. Cl.³ G01C *9/06, 9/20*
U.S. Cl. 33—366 **14 Claims**



1. A device for detecting deviation of a plane from level position, including a conductive gravity-levelled reference element defining a horizontal reference surface, at least one pair of conductive, rigidly mounted sensing electrode members jointly defining said plane and disposed adjacent the reference surface in confronting relation therewith, a dielectric fluid separating the reference surface from the sensing electrode members, the reference element, the pair of sensing electrode members and the dielectric fluid forming a pair of capacitors the capacitances of which vary oppositely in response to deviation of said plane from parallelism of the reference surface and a line joining the pair of electrode members, and means for detecting variations of the capacitances of the pair of capacitors, characterized in that the detecting means includes an alternating current source connected to the pair of capacitors and for applying oppositely phased first and second alternating voltages to respective ones of the capacitors, the product of the capacitance and the applied voltage being equal for both capacitors when the reference surface and said line are parallel, and an inverting amplifier including a feed-back capacitor and having its input connected to the gravity-levelled element.

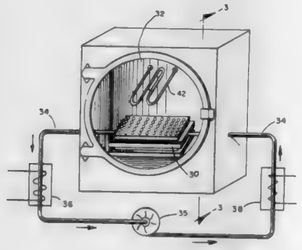
4,521,974
TEMPERATURE STABLE ARCUATE BUBBLE GRAVITY SENSOR MOUNT
Thomas W. Neis, Phoenix, and Harold L. Swartz, Glendale, both of Ariz., assignors to Sperry Corporation, New York, N.Y.
Filed Aug. 30, 1983, Ser. No. 527,910
Int. Cl.³ G01C *9/24*
U.S. Cl. 33—379 **7 Claims**



1. A temperature stable bubble gravity sensor comprising:
an electrolytic bubble gravity sensor having an arcuate shaped enclosure disposed in a plane passing through a central arc,
first mounting means, having a longitudinal axis and a first and second end, for mounting said sensor, said first end being bonded to said sensor so that said longitudinal axis is substantially orthogonal to said plane in which said central arc is disposed, whereby measuring errors arising from ambient temperature variations are reduced;
means for bonding said first end to said sensor; and

second mounting means, fixed to said second end of said first mounting means, for mounting said first mounting means and sensor.

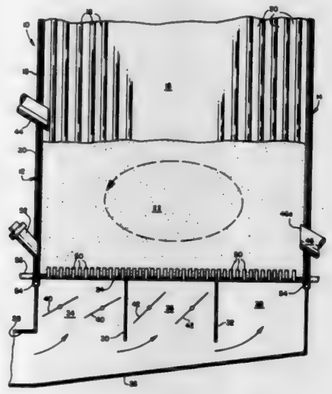
4,521,975
LYOPHILIZING AND FORMING BIOLOGICALS HAVING A PREDETERMINED UNIT DOSAGE
Donald L. Bailey, Thornton, Colo., assignor to Marquest Medical Products, Inc., Englewood, Colo.
Division of Ser. No. 260,179, May 4, 1981, abandoned. This application Jul. 30, 1982, Ser. No. 403,309
Int. Cl.³ F26B *5/06*
U.S. Cl. 34—5 **7 Claims**



1. A process involving lyophilization of biological material for producing pledgets of biological material in predetermined unit dosages for providing at least one of said pledgets in a syringe, comprising the steps of:
providing a predetermined amount of liquid;
providing a predetermined amount of biological material;
providing a container including a top portion and having a plurality of wells formed in said container, each of said wells defining a volume for receiving a desired amount of biological material solution;
forming a desired solution of biological material to produce pledgets of predetermined unit dosages using the magnitude of the predetermined amount of the liquid, the volume of each of said wells, and the predetermined magnitude of the amount of biological material;
placing said biological material solution in said wells of said container;
positioning said container in a chamber;
lyophilizing said biological material solution in said wells using said chamber to produce pledgets, each of said pledgets having a predetermined dosage of biological material;
removing each container from said lyophilizing chamber;
exposing said pledgets of said biological material in said wells wherein said pledgets can be removed;
removing each of said pledgets having a predetermined dosage of biological material from said plurality of wells, wherein said pledgets are separated from any apparatus used with said lyophilizing step; and
placing at least one of said pledgets in a barrel of the syringe for use in preventing coagulation of blood.

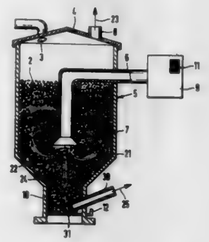
4,521,976
METHOD OF OPERATING A FLUIDIZED BED HEAT EXCHANGER UTILIZING INDUCED CIRCULATION
Robert D. Stewart, Verona, and Robert L. Gamble, Wayne, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.
Division of Ser. No. 322,310, Nov. 17, 1981, Pat. No. 4,446,629. This application Nov. 25, 1983, Ser. No. 555,119
Int. Cl.³ F26B *3/08*
U.S. Cl. 34—10 **1 Claim**

1. A method of operating a fluidized bed heat exchanger comprising the steps of supporting a bed of particulate material on a perforated grate, introducing additional particulate material to a first portion of said bed, discharging spent bed material from a second portion of said bed, and introducing air, via nozzles associated with the perforations in said grate, into both of said portions of said bed to fluidized said bed, the number of



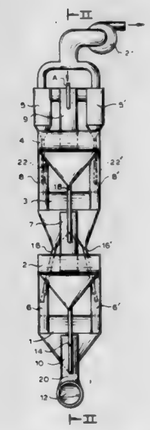
perforations formed through said plate, and the number of nozzles, increasing in a direction across said plate from said first bed portion to said second bed portion to vary the flow rate of air introduced into said first bed portion from the flow rate of air introduced into said second bed portion.

4,521,977
METHOD AND AN APPARATUS FOR EXTRACTING GASES AND VAPORS FROM A DRYING HOPPER FILLED WITH BULK MATERIAL
Roderich W. Gräff, Kollwitzweg 19, 6100 Darmstadt-Arheilgen, Fed. Rep. of Germany
Filed Sep. 6, 1983, Ser. No. 529,532
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234431
Int. Cl.³ F26B *3/06*
U.S. Cl. 34—32 **11 Claims**



1. A method of drying a bulk of plastic granules, comprising the step of providing a hopper including an upper part and a bottom part; feeding the granules through a feeding opening for the granules in the upper part of the hopper; withdrawing the granules through an outlet port for the granules at the bottom part of the hopper; supplying air into the hopper through an air inlet pipe; distributing the air in the hopper by an air distributor into which the air inlet pipe opens and which extends into the interior of the hopper into the bulk of granules above the outlet port; discharging a portion of the air through a first air outlet pipe situated in the upper part of the hopper; and discharging a remaining portion of the air through a second air outlet pipe fixed in the hopper near the outlet port such that said remaining portion of the air is caused to follow a path from the air distributor through the granules in the space between the air distributor and the outlet port to cause complete drying of the granules in the bottom part of the hopper.

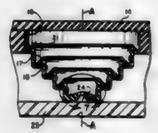
4,521,978
HEAT EXCHANGER FOR THERMALLY TREATING A PULVERULENT MATERIAL
Gérard Ghestem, Santes, France, assignor to Fives-Cail Babcock, Paris, France
Filed Dec. 7, 1983, Ser. No. 558,938
Claims priority, application France, Dec. 14, 1982, 82 20909
Int. Cl.³ F26B *17/14*
U.S. Cl. 34—57 R **5 Claims**



1. A heat exchange apparatus for thermally treating a pulverulent material by a countercurrent flow of a gas, which comprises
(a) a source of the gas,
(b) a series of alternating types of at least two superposed separators, each one of the separators having a cylindrical body with a horizontal axis, one of the separator types having an inlet at a mid-point of the cylindrical body and two outlets at respective ends thereof, and the other separator type having an outlet at a mid-point of the cylindrical body and two inlets at respective ends thereof,
(c) gas duct means connecting the superposed separators to the source of gas so that the gas flows from the source of gas in series to successive ones of the separators, the gas duct means comprising
(1) a first gas duct leading tangentially with respect to the cylindrical body to the inlet of each one of the separators having the inlet at the mid-point thereof, and
(2) second gas ducts leading tangentially with respect to the cylindrical bodies from the outlets of each one of the separators having two outlets to the inlets of a succeeding one of the separators having two inlets at the respective ends,
(d) means for feeding the pulverulent material to be treated into the gas duct means remote from the gas source whereby the pulverulent material passes into each one of the separators suspended in the gas current and is separated therefrom in the separators, and
(e) conduit means connecting the separators for delivering the separated pulverulent material from a respective one of the separators to a separator preceding the same in the direction of the gas flow.

4,521,979
SHOCK ABSORBING SHOE SOLE
Anton J. Blaser, 700 E. Mason St., Santa Barbara, Calif. 93101
Filed Mar. 1, 1984, Ser. No. 585,271
Int. Cl.³ A43B *13/20*
U.S. Cl. 36—29 **7 Claims**



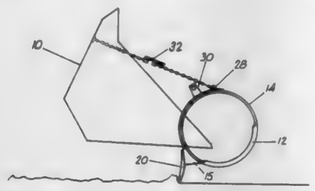


1. A shock absorbing shoe sole including, in combination:
(a) a supporting pad having a plurality of circular recesses on its underside; and
(b) a like plurality of identical individual enclosures covering said recesses, each enclosure comprising a series of annular walls successively axially spaced from the recess associated with the enclosure and having successively decreasing diameters, the walls being in partially nested relationship, the extending end of each wall connecting to the beginning end of the next successive smaller diameter wall so that an accordion pattern results, the enclosure defining an air chamber, the connecting portions of the walls having air escape openings, the end of the smallest diameter wall having an air slot functioning as a valve whereby when a person walks on the sole, the various air chambers defined by the enclosures are repeatedly collapsed in telescoping, accordian fashion wholly into their associated recesses, all air being substantially exhausted to avoid any appreciable captured air which could act as heat retaining thermal air pockets, and expanded when pressure is relieved with each step, so that the sole breathes and keeps the wearer's foot cool, the same action resulting in a shock absorbing and cushioning action by the sole.

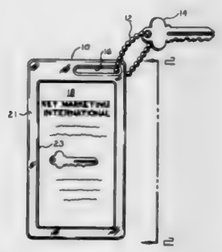
4,521,980
GRADING AND SMOOTHING ATTACHMENT FOR A LOADER BUCKET
Nikola Solaja, 17 Whittle Pl., Osborne Park, Western Australia, 6017, Australia
Filed Jun. 19, 1984, Ser. No. 622,232
Claims priority, application Australia, Jun. 21, 1983, PF9919
Int. Cl.³ E02F *3/96*
U.S. Cl. 37—117.5 **7 Claims**

1. An attachment for a loader with a scoop bucket, said attachment positioned to travel ahead of the scoop bucket, wherein the attachment comprises an elongated body member generally in the form of a hollow cylinder, a centrally disposed lateral slot formed within the length of the body member defining opposite ends in the body for mating engagement with the bucket, a blade extending laterally of the elongated body member and projecting outwardly therefrom, and means for securing the attachment to the bucket by mating said bucket in said slot, said blade being disposed relative to the bucket such

that when the bucket is orientated in a first position the blade is arranged to engage with the ground and to grade the ground upon movement of the loader and when the bucket is orientated in a second position the body member is arranged to engage with the ground and to smooth the ground upon movement of the loader.



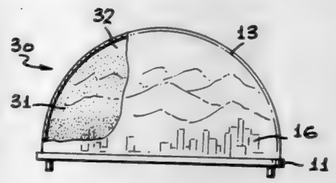
4,521,981
KEY HOLDER
Robert Kasprzycki, Meriden, and Chester Fudge, Rockfall, both of Conn., assignors to International Key Marketing Incorporated, Bristol, Conn.
Filed May 2, 1983, Ser. No. 490,260
Int. Cl.³ A44C *3/00*
U.S. Cl. 40—2 A **2 Claims**



1. Key tags for hotel keys and the like for use with an indicia bearing insert of resilient flexible sheet material, said tag comprising a base panel and an apertured frame portion with a slot through at least one edge portion of the frame for receiving said insert therethrough, said tag including a retaining surface for engaging the insert to retain the same within said frame, said base panel being of stepped construction having a lower level disposed adjacent said slot and an upper level adjacent the opposite edge of said tag, said slot opening through said frame at about the same height as the lower level of the stepped base panel whereby the resilient insert is tensioned as it is being inserted through said slot and its leading edge portion extends over the upper level of said base, the tension being released when said insert is fully inserted into said frame so that it will flex into engagement with said retaining surface.

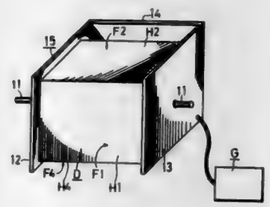
4,521,982
NOVELTY VIEWER
Nicholas Altuchow, P.O. Box 1387, Reseda, Calif. 91335
Filed May 7, 1984, Ser. No. 607,674
Int. Cl.³ G09F *19/00*
U.S. Cl. 40—407 **1 Claim**

1. A novelty viewer comprising:
an elongated base having rounded ends;
an enclosure carried on said base having a fluid content;
a sheet disposed against a portion of the inner surface of said enclosure;
an animated structure of a city disposed on said base within said enclosure and immersed in said fluid;
said fluid adapted to visually appear in at least three layers within said enclosure having the lowermost layer denser in color than the upper layers;
said sheet carries graphic indicia or illustrations characterized as a background for said animated city structure;



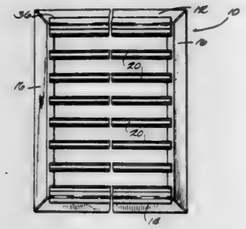
a plurality of particles of different size and weight suspended in said fluid;
selected particles of similar size and weight constituting and defining said three layers with particles of greatest density and weight defining the lowermost level.

4,521,983
ROTATING DISPLAY ELEMENT AND DISPLAY UNIT USING THE SAME
Yoshimasa Wakatake, No. 405, 9-5 Tamagawa 1-chome, Setagaya-ku, Tokyo 158, Japan
PCT No. PCT/JP83/00332, § 371 Date Jun. 7, 1984, § 102(e) Date Jun. 7, 1984, PCT Pub. No. WO84/01653, PCT Pub. Date Apr. 26, 1984
PCT Filed Oct. 7, 1983, Ser. No. 619,160
Int. Cl.³ G09F *11/02*
U.S. Cl. 40—473 **4 Claims**



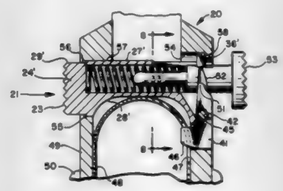
1. A rotating display element, characterized by the provision of a display surface member having a plurality of display surfaces, and a permanent magnet type motor mechanism;
wherein the display surface member is mounted on the rotor of the permanent magnet type motor mechanism so that it incorporates therein the permanent magnet type motor mechanism;
wherein the plurality of display surfaces of the display surface member are arranged side by side around the axis of the rotor;
wherein either one of the rotor and stator of the permanet magnet type motor mechanism has first and second double-pole permanent magnet members respectively having north and south magnetic poles and disposed side by side in the direction of extension of the axis of the rotor;
wherein the north and south magnetic poles of the first double-pole permanent magnet member are disposed around the axis of the rotor at an angular distance of 180° from each other;
wherein the north and south magnetic poles of the second double-pole permanent magnet member are disposed around the axis of the rotor at an angular distance of $\pm\alpha°$ (where $\alpha°$ has a value represented by $0° \leqq \alpha° < 180°$) from the north and south magnetic poles of the first double-pole permanent magnet member and at an angular distance of 180° from each other;
wherein the other of the rotor and the stator of the permanent magnet type motor has a first magnetic member provided with first and second magnetic poles acting on the north and south magnetic poles of the first double-pole permanent magnet member, a second magnetic member provided with third and fourth magnetic poles acting on the north and south magnetic poles of the second double-pole permanent magnet member, a first exciting winding wound on the first magnetic member in manner to excite the first and second magnetic poles in reverse polarities, and a second exciting winding wound on the second magnetic member in a manner to excite the third and fourth magnetic poles in reverse polarities;
wherein the first and second magnetic poles of the first magnetic member are disposed around the axis of the rotor at an angular distance of 180°; and
wherein the third and fourth magnetic poles of the second magnetic member are disposed around the axis of the rotor at an angular distance of $\pm 90° \pm \alpha°$ from the first and second magnetic poles of the first magnetic member and at an angular distance of 180° from each other.

4,521,984
MENU BOARD FRAME AND INSERT
Ledell L. Murray, Noblesville, Ind., assignor to General Indicator Corporation, Pardeeville, Wis.
Continuation of Ser. No. 433,836, Oct. 12, 1982, abandoned. This application Nov. 17, 1983, Ser. No. 553,142
Int. Cl.³ G09F *13/04*
U.S. Cl. 40—576 **4 Claims**



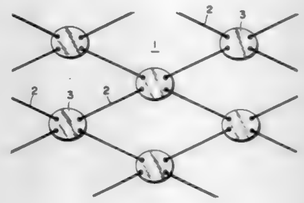
1. A sign assembly comprising,
a frame having horizontal and vertical members,
each member having a "Z-shaped" cross section with parallel front and back portions interconnected by a leg normal to each portion, the back portion extending from the leg towards the outside of the frame and the front portion extending from the leg towards the inside of the frame,
a plurality of parallel, spaced apart extruded rails extending between the vertical frame members,
each rail having front, rear, top and bottom surfaces of equal length,
opposed slots in the top and bottom surfaces adjacent the front surface and the rear surface of the rail so the front and rear of the rail are connected to the main body of the rail by front and rear webs respectively,
each end of the rear web of each rail being received and retained in a slot in the inner edge of the front portion of the vertical frame members,
the vertical frame members being dimensioned so the slots adjacent the front of the rails are positioned in front of the frame members to allow items to be received in the ends of the slots.

4,521,985
AMBIDEXTROUS GUN MAGAZINE RELEASE
Alan K. Smith, 211 Betty Dr., and Stephen R. Alexander, 814 Scottsdale Dr., both of Richardson, Tex. 75080
Filed May 16, 1983, Ser. No. 494,864
Int. Cl.³ F41C *25/06*
U.S. Cl. 42—7 **23 Claims**



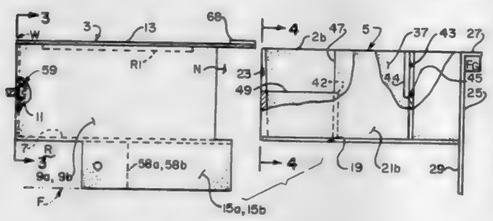
1. A magazine release for a semi automatic gun including: a magazine catch lock release structure with, a catch body having a longitudinally extended opening, a catch lock release member having a body slidably received in said longitudinally extended opening of said magazine catch body, resiliently compressable spring means held in said longitudinally extended opening resiliently compressed between said magazine catch body and said catch lock release member when said magazine catch lock release structure is inserted in and restrained in place in a gun receiver and a magazine cam surfaced catch locking lever pivotally mounted on said magazine catch body; said catch locking lever including tip means engaging said catch lock release member for movement of the lever tip means with longitudinal movement of said catch lock release member relative to said magazine catch body; said catch locking lever also having a lock paw moveable into and out of a catch slot provided in a magazine with pivot movement of said locking lever; a cam surface of said locking lever rides over a surface of a magazine being inserted into the gun receiver until the magazine catch slot comes into locking alignment with said lock paw that is then snapped into locking engagement in the magazine catch slot as urged by said spring moving said catch lock release member and pivoting the lever for such cam lock action; and with said catch lock release member manually moveable inward against the resilient force of said spring to pivot said lever for catch lock release of the lever lock paw from said catch slot for magazine release.

4,521,986
NET FABRIC FOR TRAWLING
Tatsumi Koga, 40 Victoria Heights, Nelson, New Zealand
Filed Jul. 24, 1984, Ser. No. 633,895
Claims priority, application Japan, Sep. 19, 1983, 58-172841
Int. Cl.³ A01K *73/02*
U.S. Cl. 43—9 **9 Claims**



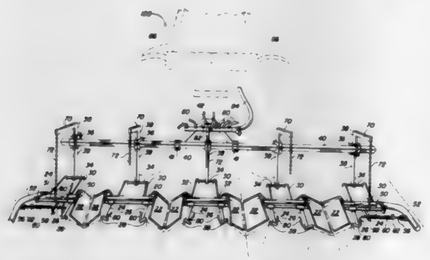
1. A net fabric for a trawling net, comprising:
metallic net legs forming meshes, and plates for connecting said net legs at their intersections, said plates resisting the flow of water through the net.

4,521,987
BAIT STATION AND TRAP
Charles E. Knote, 2323 Brookwood Dr., Cape Girardeau, Mo. 63701
Filed Oct. 11, 1983, Ser. No. 540,407
Int. Cl.³ A01M *1/20*
U.S. Cl. 43—131 **11 Claims**



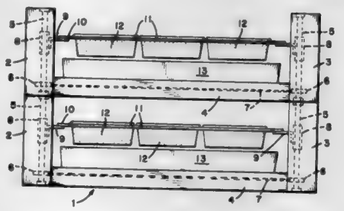
1. A bait station or trap comprising an open front housing and a tray insertable into said housing in the open front of the housing, said housing having means for supporting it above the surface on which it rests, said tray having a floor and partition means thereon defining an entrance chamber, a bait chamber, and a circuitous path between said entrance chamber and said bait chamber, said tray floor having an access opening therethrough in register with said entrance chamber wherein a pest must enter said bait station from below said tray floor and must travel said circuitous path from said entrance chamber to said bait chamber.

4,521,988
SELF ALIGNING CROP SPRAYING APPARATUS
Gary W. Thacker, 4450 W. 8th St., Yuma, Ariz. 85364
Continuation-in-part of Ser. No. 347,892, Feb. 11, 1982, abandoned. This application Sep. 27, 1982, Ser. No. 424,528
Int. Cl.³ A01C *23/02*
U.S. Cl. 47—1.7 **16 Claims**



1. Self aligning sled apparatus for spraying a chemical mixture to the ground surface proximate plant stems in a crop row comprising:
- at least one sled adapted to be towed by a prime mover between two rows of crops, said sled defining a U-shaped bar adapted to ride on the ground surface between the crop rows and to be guided by engaging the plant stems in the crop rows on opposite sides;
- a pair of angled shields attached to said U-shaped bar and adapted to engage a crop row's plant foilage and lift it upwards as the sled is towed;
- a pair of parallel linkages attached between said sled U-shaped bar and prime mover permitting freedom of movement between said sled and the prime mover;
- a modified sled adapted to be towed adjacent said sled having said U-shaped bar, said modified sled including a L-shaped bar adapted to ride on the ground surface proximate a crop row;
- an angled shield attached to said L-shaped bar adapted to engage the crop row plant foilage and to raise the foilage as the sled is towed;
- a spring loaded arm pivotally connected to said L-shaped bar, said spring loaded arm arcuate shaped and adapted to engage the stems of the crop row plants in an adjacent crop row where by such engagement, said L-shaped arm is urged against the stems of the plants in the crop row between the adjacent sled having the U-shaped bar, and
- spraying apparatus attached to said angled shields of said U-shaped bar and said L-shaped bar, said spraying apparatus including spray nozzles oriented towards the ground proximate the crop row plant stems.

4,521,989
SPROUTING APPARATUS
Bruno Meyer, Lindenstrasse 2, D-5238 Hachenburg, Fed. Rep. of Germany
Filed Nov. 1, 1983, Ser. No. 547,719
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242037
Int. Cl.³ A01G *31/02*
U.S. Cl. 47—14 **18 Claims**



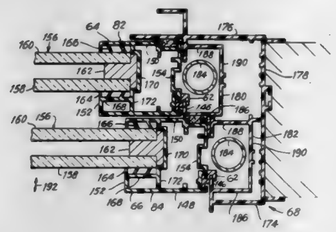
1. An apparatus for the generation of sprouts from materials capable of sprouting comprising
- a side frame;
- a dish disposed closely spaced relative to the side frame for holding a feed liquid for the materials capable of sprouting;
- a support provision attached to the side frame for supporting the side frame and the dish;
- a support means;
- a spindle disposed vertically;
- a drive motor connected to the spindle;
- a lift nut attached to the support means and secured to the spindle and secured against rotation, whereby the motor rotates the spindle and provides vertical displacement of the lift nut;
- a support plate having an open area and supported by the support means;
- a sprouting container provided as a sieve, placed into the open area of the support plate, and adapted to dip into the dish when the movable part of the lift drive is in a corresponding position.

4,521,990
RETAINER FOR ATTACHING FLORAL LID CONTAINER
John F. Murray, Pacific Palisades, Calif., assignor to Teleflora, Inc., Los Angeles, Calif.
Continuation of Ser. No. 546,960, Oct. 31, 1983, abandoned. This application Apr. 19, 1984, Ser. No. 601,734
Int. Cl.³ A01G *5/00*
U.S. Cl. 47—41.12 **17 Claims**

1. In combination,
- a container for holding a bouquet of flowers with the flower stalks projecting through an opening in the container;
- a lid removably mountable on said container to close said opening when said container is not in use for holding the flowers;
- a crossbar releasably engageable with said lid;
- a body of stalk supporting material removably positioned within said container for receiving and supporting the ends of the flower stalks with the flowers positioned outside said container; and
- a shaft fixedly connected at one end to said crossbar extending generally perpendicularly therefrom, said shaft having its opposite end received within and supported by said body of stalk supporting material, said shaft being of sufficient length to pass through said opening with its one end supporting said crossbar and said lid outside said container in adjacent relation to said flowers when said container is in use for holding flowers.



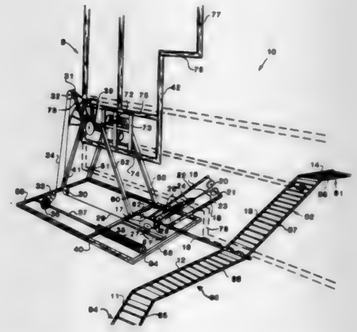
4,521,991
WINDOW APPARATUS
Bertram Sayer, Princeton, and Bernard J. Kulkaski, Somerset, both of N.J., assignors to Thermal Profiles, Inc., Plainview, N.Y.
Filed Jan. 26, 1984, Ser. No. 574,276
Int. Cl.³ E05D *15/22*
U.S. Cl. 49—161 **11 Claims**



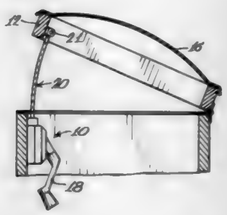
1. A window apparatus comprising window jamb means, window frame means mounted on said jamb means and capable of sliding relative to said jamb means from a closed position to an open position and capable of pivoting with respect to said window jamb means and removable locking member means engaging both said window frame means and said window jamb means to prevent said pivoting of said window frame means, said window jamb means including a lip portion perpendicular to plane of window with said locking member means engaging said lip portion.

4,521,992
RAMP-OPERATED MECHANICAL GATE SYSTEMS
Donald C. Campbell, 3600 Oro St., Redding, Calif. 96001
Filed Oct. 31, 1983, Ser. No. 547,008
Int. Cl.³ E05F *13/00*
U.S. Cl. 49—269 **7 Claims**

1. A ramp-operated mechanical gate system, comprising:
- a gate support structure;
- a gate structure pivotally attached to said gate support structure;
- a collapsible ramp of sufficient size and strength to withstand the weight of a motor vehicle and offset from said gate support structure;
- a first rod rigidly attached to and extending substantially perpendicularly from said collapsible ramp toward said gate support structure which turns when said collapsible ramp is depressed;
- a lever arm attached to and extending substantially perpendicularly from said rod, and
- power transfer means connected between said lever arm and said gate structure such that said gate structure opens when said collapsible ramp is depressed, and having at least one spring.



4,521,993
CHAIN OPERATOR FOR A WINDOW
John C. Tacheny, Owatonna, and Anthony C. Schema, Faribault, both of Minn., assignors to Truth Incorporated, Owatonna, Minn.
Filed Aug. 8, 1983, Ser. No. 521,043
Int. Cl.³ E05F *11/00*
U.S. Cl. 49—325 **20 Claims**



1. A chain operator for a window comprising, a casing having a chain storage area including a chain guide track having a curved portion extending to a chain exit from the casing, a drive sprocket in said casing engageable with said chain, drive means connected to said sprocket for converting a power input into rotation of said drive sprocket and a unitary liner fitted in said casing and having a first part for rotatably mounting the drive sprocket and a second part lining the curved portion of the guide track opposite said drive sprocket.

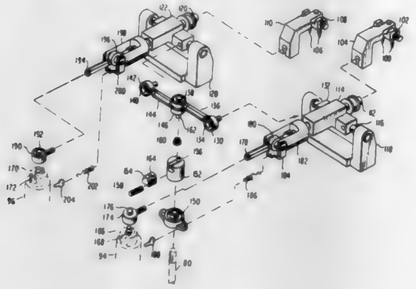
4,521,994
POLISHER-FINER APPARATUS
Joseph Tusinski, Muskogee, Okla., assignor to Coburn Optical Industries, Muskogee, Okla.
Filed Jul. 20, 1983, Ser. No. 515,409
Int. Cl.³ B24B *7/00*
U.S. Cl. 51—58 **16 Claims**

1. An apparatus for finishing a surface of a lens comprising;
- a frame;
- means connected to said frame for providing an orbital, break-up motion to a tool having a polishing surface of a selected base curve and cross curve; and
- means connected to said frame for providing a smooth, continuous Lissajous figure motion to a lens of generally

common base curve and cross curve with the tool, said means including,

means connected to said frame for mechanically supporting the lens for reciprocation in an X direction and simultaneous reciprocation in an Y direction;

means connected to said frame for driving said supporting means in an X direction of reciprocation, said means including a first cam means operably connected to said means for supporting and means for rotating said first cam; and



means connected to said frame for driving said means for supporting in a Y direction of reciprocation, said means including a second cam means and means for rotating said second cam means wherein simultaneous rotation of first cam means and second cam means produce simultaneous X movement and Y movement of the lens with respect to the tool with a generally smooth Lissajous figure.

4,521,995

WAFER ATTRACTING AND FIXING DEVICE

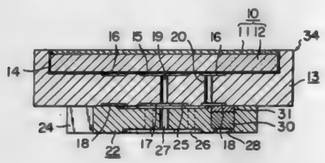
Shinji Sekiya, Tokyo, Japan, assignor to Disco Co., Ltd., Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,318

Claims priority, application Japan, May 23, 1980, 55-068471; May 23, 1980, 55-071025

Int. Cl.³ B24B *41/06*

U.S. Cl. 51—235 **4 Claims**



1. A wafer attracting and fixing device, comprising: a work head including a base seat having air sucking holes and on which is provided an attracting disc which receives a wafer and fixes the wafer to the attracting disc by sucking of air from the attracting disc through said air sucking holes, wherein said attracting disc comprises at least two layers, including an upper layer and a lower layer, of porous inorganic substance, the upper layer carrying the attracting surface and having fine pores, the lower layer being adjacent the base seat and having coarse pores, the upper and lower layers of the attracting disc being comprised of alundum grindstone grains sintered under pressure and having different grain size for respective said layers.

4,521,996

CENTRIFUGAL THROWING WHEEL FOR EJECTION OF BLASTING MATERIALS ONTO WORKPIECES

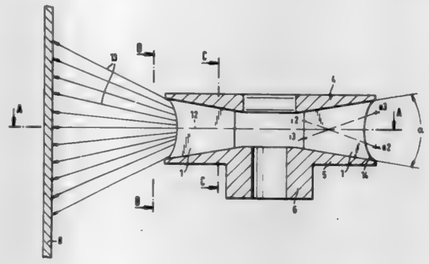
Peter Grund, Ekrath, and Peter Holz, Linnich, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 19, 1984, Ser. No. 590,719

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3309941

Int. Cl.³ B24C *5/06*; F04D *29/24*

U.S. Cl. 51—434 **12 Claims**



1. In a centrifugal throwing wheel for the ejection of blasting material onto the workpieces to be processed including two spaced discs forming a V-shaped slot widening outwards at an angle α and with radial vanes arranged between said discs, the improvement being said vanes being arranged in a plurality of uniformly spaced sets of diametrically opposite vanes, the ejection surfaces of one of said sets of vanes having a concave curvature with a curvature axis inclined to the plane of rotation at an acute angle greater than $\alpha/2$, and the ejection surfaces of another of said sets of vanes being curved with a curvature axis inclined toward the other side of said plane of rotation.

4,521,997

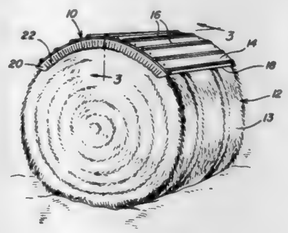
HAY BALE COVER

Harvey L. Tiberend, R.R. #1, Box 97, O'Fallon, Ill. 62269

Filed Feb. 2, 1983, Ser. No. 463,273

Int. Cl.³ E04B *1/347*

U.S. Cl. 52—3 **7 Claims**



1. A cover on a cylindrical hay bale with a preselected radius of curvature, wherein the cover comprises a longitudinally straight and transversely arcuate panel formed with a predetermined radius of curvature less than said preselected radius and overlying a portion of the cylindrical surface of said hay bale, said panel being constructed with longitudinal rigidity and arcuate flexibility to enable the normal radius of curvature of the panel to be increased and fitting snugly onto the hay bale, said panel including resilient characteristics to grippingly engage and cling to the hay bale when the radius of curvature has been increased from normal and then released to enable the cover to be mounted on the hay bale and retained thereon solely by frictional gripping engagement and without tie-downs.

4,521,998

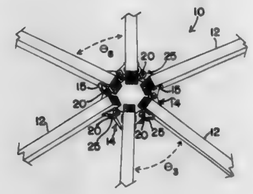
UNIVERSAL HUB FOR GEODESIC TYPE STRUCTURES

David M. DeLorme, 356 Range Rd., Cumberland, Me. 04021

Filed Jul. 8, 1983, Ser. No. 512,154

Int. Cl.³ E04B *1/32, 1/40*

U.S. Cl. 52—81 **21 Claims**



1. A new hub structure for securing struts at the vertices or nodes where a plurality of struts converge in a geodesic type spatial framework, said struts having inner and outer edges with reference to the spatial enclosure and side surfaces facing each other comprising:

a plurality of universal connectors, each connector comprising a pair of hinge faces, said hinge faces positioned on the facing side surfaces of adjacent chords converging at a vertex of the geodesic type spatial framework, each hinge face secured in parallel at the side surface of the corresponding strut at a single pivot point for rotation of the hinge face relative to the side surface of the strut during placement and orientation of struts in the geodesic type spatial framework, said universal connectors further comprising hinge ears extending from the sides of each hinge face for defining a hinge axis offset from the plane of the corresponding hinge face, said hinge ears from adjacent hinge faces of a universal connector overlapping and coinciding to define a common hinge axis between the respective hinge faces and offset from the planes of the respective hinge faces whereby said universal connectors may rotate in a first degree of freedom around the hinge axis and in second and third degrees of freedom about the pivot points securing said hinge faces at the facing side surfaces of adjacent struts whereby each said universal connector comprises a universal joint between adjacent struts converging at a vertex of the geodesic type spatial framework;

said plurality of universal connectors securing adjacent pairs of converging struts at the side surfaces facing each other to form a closed ring of universal connectors and converging struts at each vertex of the geodesic type spatial framework, said closed ring of universal connectors and converging struts forming a universal hub at each vertex of the geodesic type spatial framework in which the converging angles between adjacent struts may differ and may be varied and whereby the depth of the apex of the vertex from an underlying plane may be varied by the articulation angles of the struts relative to a plane;

said universal hub at each vertex of the geodesic type spatial framework thereby permitting the enclosure of a space with chords of variable length, variable converging angles relative to each other, and variable articulation angles, for forming a plurality of different irregular triangles in the geodesic type spatial framework by pivoting of hinge faces about the hinge axes and rotation of hinge faces relative to side surfaces of the struts;

said universal connectors further variable in the spacing of the respective hinge faces from the ends of the struts for varying the spacing of the ends of the struts relative to each other and for extending a strut substantially beyond the vertex if desired;

said hinge faces of the universal connectors and said side surfaces of the respective struts being constructed and arranged so that the hinge faces lie within the inner and outer edges of the respective struts for each operative rotational position of the universal connectors relative to the facing side surfaces of adjacent struts so that there is no interference by the universal connectors and universal hub with any inner or outer skin affixed to the inside or outside edges of the respective struts for any operative angular position of the universal connectors thereby permitting enclosure of irregular or odd spaces with a geodesic type spatial framework.

4,521,999

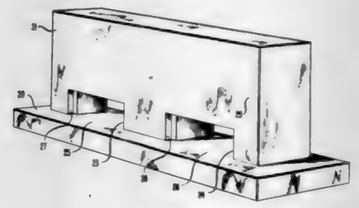
INTERMENT ARRANGEMENTS FOR CREMATED REMAINS

Elaine W. Flanagan, Norwich, N.Y., assignor to Starmax, Inc., Satellite Beach, Fla.

Filed Apr. 23, 1982, Ser. No. 371,262

Int. Cl.³ E04H *13/00*

U.S. Cl. 52—103 **25 Claims**



1. An above-ground interment arrangement for cremated remains contained in remains vessels, the arrangement having a plurality of repository chambers adapted for receiving the remains vessels, the arrangement comprising:

foundation means having an upper surface for supporting the remains vessels, a portion of said upper surface forming a lowermost internal surface of the repository chambers; and

monument body means cut integrally from a unitary block, said monument body means having a base surface plane and a first lateral facia, said base surface plane having a plurality of inwardly notched portions so as to be open with respect to said base surface plane and said first lateral facia, said notched portions forming an uppermost internal surface of the repository chambers, said monument body means being arranged on said foundation means with said flat surface of said foundation means in contact with said base surface of said monument body means, said notched portions of said monument body means and said upper surface of said foundation means defining the repository chambers, access to the repository chambers being had through said openings in said first lateral facia.

4,522,000

EARTHQUAKE SAFETY SUPPORT FOR TRANSPORTABLE BUILDING

Fred S. Barari, 1941 Hamilton Ave., San Jose, Calif. 95125

Continuation-in-part of Ser. No. 259,867, May 4, 1981, abandoned. This application Apr. 29, 1982, Ser. No. 372,974

Int. Cl.³ E02D *27/34*

U.S. Cl. 52—167 **6 Claims**

1. A stabilizing support for the transportable building, the underside of the building having a plurality of parallel beams arranged to be supported above the ground, said support comprising:

a base disposed for resting on the ground, said base having a single planar vertically extending flange;

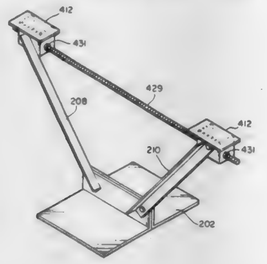
a pair of rigid support arms of substantially equal length, each of the support arms extending diagonally upward from the base for attachment to a first beam, each of the

support arms having a lower end affixed to the vertically extending flange of the base and an upper end disposed to be connected to said first beam with both support arms in a vertical plane;

a single rigid stabilizing arm extending diagonally upward from the base to a second beam, having one end affixed to the vertically extending flange of the base and the other end disposed to be connected to said second beam; and

bracket means for engaging at least one of the upper end of the stabilizing arm and the upper end of each of the first pair of support arms to the first and second beams, respectively; and clamp means including:

a pair of clamp halves each having a top lobe and a bottom lobe, the top lobe having a smaller vertical dimension than the bottom lobe, between said top and bottom lobes there is defined a parabolic concave inner surface wherein the



shortest distance between the ends of the concave inner surface is greater than the combined thickness of the portion of the bracket means and the first and second beams to be clamped, each of said clamp halves also defining a hole extending through the bottom lobe substantially parallel to the major parabolic axis of the concave inner surface;

double threaded bolt means of a selected length to span the width of the beam to which the bracket means is being clamped and to pass through the hole in each of the clamp halves and to extend beyond the convex outer surface of same; and

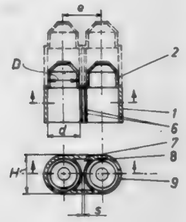
a pair of nuts screwed onto opposite ends of the double threaded bolt means for tightening the clamp halves around the portions of the bracket means and being clamped together.

4,522,001

SET OF BRICKS WITH PLUGGING CONNECTIONS

Anton Meyer, Gratzerstrasse 3, D-8070 Ingolstadt 2, Fed. Rep. of Germany

Filed Apr. 1, 1982, Ser. No. 364,228
Int. Cl.³ A63H *33/08*
U.S. Cl. 52—309.1 **12 Claims**



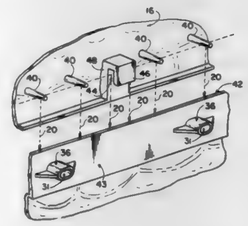
1. In a set of synthetic resin bricks with plugging connections, with side walls having rounded brick corners and with at least one cylindrical male element on one covering wall part and an equal number of female pockets for such male elements on an opposite side, the inner part of the many element bricks being reinforced by bracng walls, wherein the brick material is a soft synthetic resin having good gripping properties, keeping its form, resistant to abrasion and keeping to the condition of laws on the use of synthetic resin in connection with foodstuffs and wherein the female pockets are formed by sleeve-like wall parts which at the outer sides of the bricks take the form of the rounded off brick corners and in the inner part of the many-element bricks, limited by the straight side walls, take the form of the bracing walls and wherein the walls are relatively thin as compared to the dimensions of the synthetic resin bricks.

4,522,002

WALL PANELS

Wilfrid E. Davis, 1251 NW. 165th St., Miami, Fla. 33169, and Richard A. Davis, 7301 Poinciana Ct., Miami Lakes, Fla. 33014

Continuation-in-part of Ser. No. 422,642, Sep. 24, 1982, abandoned, which is a continuation-in-part of Ser. No. 378,629, May 17, 1982, abandoned. This application Jun. 15, 1983, Ser. No. 504,618
Int. Cl.³ E04D *1/00, 3/363*
U.S. Cl. 52—309.1 **5 Claims**



1. A panel body for covering a wall, comprising:

(a) a thin, generally rectangular body having top and bottom horizontal edge regions and left and right vertical edge portions,

(b) said top region having a plurality of holes for receiving nails for affixing said panel to said wall; and

(c) said bottom region having a plurality of upwardly recessed projecting flanges forming with said panel body a plurality of slots and a plurality of projecting bendable pins, said slots dimensioned and oriented to engage the top region of a second body, and said pins located so that;

(i) said second panel body top region may partially engage said slots while abutting said pins, and

(ii) said second panel body top region may fully engage said slots only when said pins contain an upward bend.

4,522,003

TILES AND ARRANGEMENT FOR SETTING TILES

Shigeyuki Akihama, Sagamihara; Hajime Koizumi, Tokyo; Yoshihiko Umeki, Kure; Makoto Saito, Kawasaki; Tadashi Banno, Fuchu, and Shinya Tateno, Yokohama, all of Japan, assignors to Manten Co., Ltd., Osaka and Kajima Corporation, Tokyo, both of, Japan

Filed Apr. 19, 1983, Ser. No. 486,542
Claims priority, application Japan, Apr. 19, 1982, 57-58075; Apr. 19, 1982, 57-58076
Int. Cl.³ E04F *13/08;* **E04B** *5/52*
U.S. Cl. 52—391 **5 Claims**

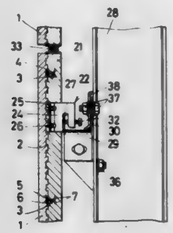
1. An arrangement for setting tiles on a surface to be tiled, comprising:

tiles having dovetail grooves in rear surfaces and being secured to mortar applied to said rear surfaces,

a plurality of anchors engaging said dovetail grooves in the rear surfaces of the tiles and being embedded in the mortar,

a plurality of hooks being partially embedded in the mortar and having rear ends projecting rearwardly out of the mortar,

each of said plurality of hooks having a base plate, side plates extending from both ends of the base plate and having



holes therein, and rod means, inserted into the holes in the side plates, for retaining each of the plurality of hooks partially embedded in the mortar; and

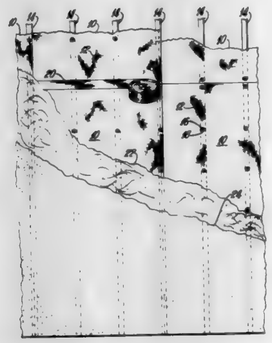
horizontal beams being fixedly mounted on the surface to be tiled and having the rear ends of all of said plurality of hooks secured thereto.

4,522,004

INSULATED WALL CONSTRUCTION

Michael E. Evans, and Bradley W. Oberg, both of Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 16, 1983, Ser. No. 505,145
Int. Cl.³ E04B *2/08*
U.S. Cl. 52—409 **8 Claims**



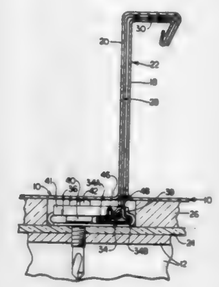
1. An insulated outer wall construction for a building, said wall construction comprising a structural outer wall, a plurality of elongated rectangular fibrous glass insulation boards mounted, with longer edges extending vertically, in covering relationship to said outer wall on a side thereof facing outwardly of the building, each of said boards being devoid of a vapor barrier and having a scrim adhesively secured thereto on an outer side thereof, the scrim including a flap along one vertical edge of the board overlapping a joint between the board and an adjacent board, fastening means mechanically securing said boards and scrim to said outer wall, and a coat of cementitious material covering said boards, scrim, and fastening means.

4,522,005

CLIP CONNECTOR FOR BUILDING PANELS HAVING INTERLOCKED SECTIONS

Paul A. Seaburg, and Warren E. Mueller, both of Middletown, Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Oct. 25, 1983, Ser. No. 545,358
Int. Cl.³ E04D *1/34*
U.S. Cl. 52—544 **13 Claims**



1. A clip connector for anchoring rigid interlocked panels to spaced supporting members comprising:

(a) a body portion having an upstanding planar element, an upper portion which mates with the interlocked panels, and a base formed from the bottom of said planar element and being substantially perpendicular thereto and extending therefrom to form toe and heel portions, respectively;

(b) a washer member slidably engaged on said base and projecting outwardly therefrom, said washer member having a first portion overlying said toe and a second portion associated with said heel and underlying said base, and an aperture extending through said first and second portions exteriorly of said base; and

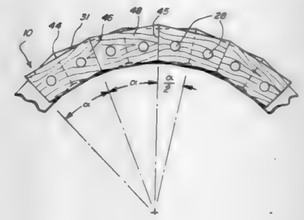
(c) a fastener extending through said aperture for securing said washer member to a supporting member, said fastener forcing said first and second portions of said washer member into restrained but slidable engagement with said base; whereby during movement of said panels, said panels are allowed to move with respect to said supporting members as said base moves with respect to said washer member.

4,522,006

DRUM AND DRUM BODY FORMED FROM ADHERED, SOLID BLOCKS OF WOOD

Keith A. Plikuhn, 6618 S. Richmond St., Chicago, Ill. 60629

Filed Jun. 13, 1983, Ser. No. 503,691
Int. Cl.³ E04C *1/30;* **B27F** *7/00*
U.S. Cl. 52—585 **34 Claims**



1. A drum comprising:

(A) a plurality of solid wood blocks permanently adhered to each other, said adhered blocks forming a solid surface having the shape of a cylinder with two open ends, each of said blocks extending from the inside to the outside of said

cylinder, each of said two ends of said cylinder defining a substantially flat plane;

(B) a drum head in contact with one of said ends of said body; and

(C) stretching means, coupled to said head, for retaining said head under pressure against said one end.

26. A method of making a drum body comprising:

(A) adhering together a plurality of solid wood blocks having substantially flat faces to form a solid surface having the shape of a cylinder with two open ends, with each of said blocks extending from the inside to the outside of said cylinder; and

(B) smoothing the outer surface of said cylinder.

4,522,007

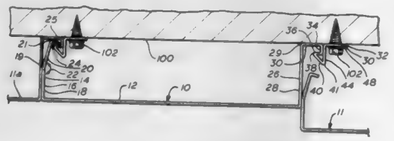
INTERLOCKING BUILDING PANEL

James A. Oehlert, R.R. 3, Box 396-F, Longview, Tex. 75603

Filed Nov. 17, 1983, Ser. No. 552,611

Int. Cl.³ E04C *1/10, 1/30;* **E04D** *3/362*

U.S. Cl. 52—588 **6 Claims**



1. An interlocking building panel comprising:

(a) an intermediate portion; and

(b) first and second interlocking portions at respective sides of said intermediate portion with each interlocking portion being adapted for interlocking engagement with an interlocking portion of an adjacent panel;

(c) said first interlocking portion being formed to define:

(1) a first side wall which includes:

(i) a lower segment extending upwardly from said intermediate portion;

(ii) an upper segment extending upwardly and inwardly from said lower segment at an obtuse, inwardly included angle; and

(2) a first lip extending inwardly from said upper segment; and

(d) said second interlocking portion being formed to define;

(i) a second side wall extending upwardly from said intermediate portion;

(ii) an upper wall extending outwardly from said second side wall in offset relation to said intermediate portion, said upper wall being adapted for fastening to adjacent supporting structure;

(iii) a leg depending from said upper wall; and

(iv) a second lip extending inwardly from said leg, with an inner edge of said second lip being sufficiently spaced apart from said second side wall to permit a first lip of an adjacent interlocking panel to pass upwardly between said second side wall and said inner edge of said second lip.

4,522,008

CLIP FOR SELF-LOCKING COLLAPSIBLE/EXPANDABLE STRUCTURES

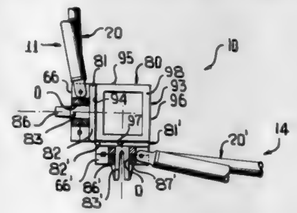
Theodore R. Zeigler, 9923 Indian Queen Point Rd., Oxon Hill, Md. 20022

Filed Aug. 19, 1982, Ser. No. 409,435

Int. Cl.³ E04H *12/18*

U.S. Cl. 52—646 **45 Claims**

1. A pair of adjacent collapsible, expandable, self-locking, self-supporting structures each comprising at least one section formed by a plurality of pairs of crossed rod elements pivotally joined in scissored fashion substantially midway between their ends, one rod element of each pair being pivotally joined at its opposite ends to two other rod elements of adjacent pairs of rod elements through associated hubs and the other rod element of said each pair being pivotally joined at its opposite ends to the remaining two rod elements of said adjacent pair of rod elements through associated hubs, whereby the pivotally connected ends of said pairs of rod elements lie and said hubs lie at corners of first and second similar polygons situated in spaced, parallel planes such that as the pairs of rod elements are scissored, the assembly is moved between a collapsed condition in which the first and second polygons are of contracted size and their planes are maximally spaced and an erected condition in which the first and second polygons are of expanded size and their planes are spaced relatively close, further rod means pivotally joined together and to the hubs at the corners of said polygons for self-locking said section in said erected condition, said further rod means comprising a first set of rod elements pivotally joined together at the plan view geometric center of said first polygon and extending therefrom to pivotally connect to hubs at the corners of said first polygon, said rod elements of said first set being of lengths such that they lie essentially in a common plane containing said hubs and



corners of said first polygon when said first polygon has expanded to a maximum size, said further rod means also including a second set of rod elements pivotally joined at hubs at corners of said second polygon and to intermediate portions of corresponding rod elements of said first set so that said rod elements of the second set can not be essentially in a common plane containing the corners and hubs of said second polygon even when the section is in erected condition, said rod elements of said second set being of lengths between their corner/hub-connected ends and their pivotal connections to the corresponding rod elements of said first set such that as said polygons are expanded, the rod elements of said first and second sets thereof interact to place all of the rod elements of said assembly under cumulative self-locking stress in said erected condition of said section, at least one hub of each section being adjacent each other, means for releasably securing said at least one hub of each section to each other, and said releasable securing means including at least two stems with each stem being interlockingly received in an associated opening of said last-mentioned hubs.

4,522,009

LOCK ROD SYSTEM FOR FLOORING GRATING AND METHOD FOR ASSEMBLING SAME

Conrad F. Fingerson, 604 Winona St., Chatfield, Minn. 55923

Filed Jan. 14, 1983, Ser. No. 458,034

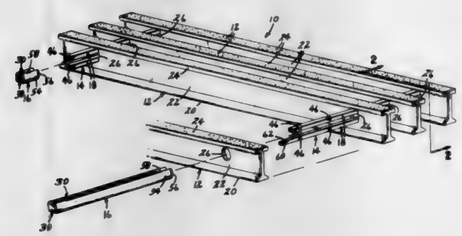
Int. Cl.³ E04C *2/22, 2/42*

U.S. Cl. 52—667 **30 Claims**

1. A fiber reinforced plastic flooring grating, comprising:

(a) a plurality of spaced support members;

(b) spacer means for interconnecting said support members, said spacer means extending through aligned apertures defined in said support members, said spacer means including first and second members having a longitudinal extent, said second member being notched at intervals corresponding to the spacing between adjacent support members, the notches being adapted to engage said support members, said first and second members being securedly attached to one another by a substantially continuous layer of adhesive dispensed along the longitudinal extent of said first and second members, said first and second



members cooperating to retain said support members at a predetermined spacing.

4,522,010

METHOD OF CONSTRUCTING A LARGE SPHERICAL TANK SUPPORTED BY A SKIRT ON LAND

Rolf F. Schrader, Moss, Norway, assignor to Moss Rosenberg Verft A/S, Moss, Norway

Filed Mar. 28, 1983, Ser. No. 479,454

Claims priority, application Norway, Apr. 15, 1982, 821241

Int. Cl.³ E04G *21/14*

U.S. Cl. 52—745 **9 Claims**

1. A method of constructing a large, land-based, skirt-supported spherical tank comprising the steps of, prefabricating said tank initially in two sections at a fabrication site by forming an upper, greater than hemispherical, tank section including a skirt support element and a bottom polar cap section, said upper tank section and said bottom polar cap section having complementary edges adapted to be joined at an erection site to form the completed tank, said edges defining a diameter smaller than the diameter of the completed tank, transporting the prefabricated tank sections to the erection site while supporting the bottom polar cap section inside of the upper tank section thereby reducing the height of the unit during transportation, lowering the bottom polar cap section at the erection site into position with said edges aligned and thereafter securing said bottom polar cap section to the upper section of the tank shell.

4,522,011

CONTINUOUS MOTION PACKER CONTROLLER

Barton M. Bauers, 30 Hillock Dr., Wallingford, Conn. 06492; John L. Raudat, Old Madison Rd., North Madison, Conn. 06443; Raymond C. Ehlers, Old Turnpike Rd., Haddam, Conn. 06438, and Timothy H. Thompson, Meetinghouse Hill Rd., Durham, Conn. 06422

Filed Dec. 27, 1983, Ser. No. 565,412

Int. Cl.³ B65B *35/54, 57/14*

U.S. Cl. 53—55 **5 Claims**

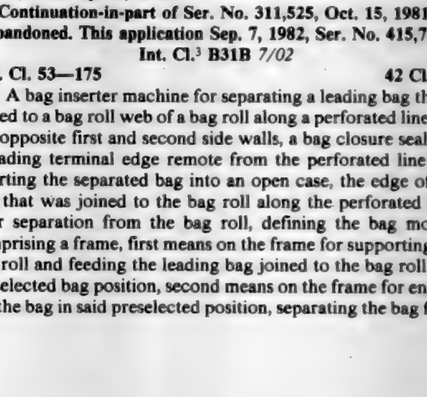
1. In a packer of the type having conveyor means for advancing a plurality of articles along a first horizontal path, an infeed station, a grid structure for receiving said articles at said infeed station, a discharge station, case conveyor means for delivering upwardly open packing cases to said discharge station along a second horizontal path, means for moving said grid structure from said infeed station to said discharge station, means for releasing said articles from said grid structure at said discharge station causing said articles to drop into said packing cases and a controller for operating said packer, said controller comprising:

controller instruction storage means for storing a plurality of controller instructions capable of directing packer operation;

a plurality of article position detectors associated with said article conveyor means and providing article present control signals to indicate the presence of an article at each corresponding detector location, said detectors being spaced from one another at predetermined intervals along the article conveyor means;

means for sensing the presence or absence of said article present control signals addressed as to their locations;

at least one packing case position detector associated with



said case conveyor means, said case detector providing a case present control signal indicating the presence of at least one case at said corresponding detector;

means for sensing the presence or absence of said case present control signal;

at least one article blocking detector associated with said grid structure, said blocking detector providing a control signal to indicate whether one or more articles has failed to drop from its position in the grid;

means for sensing the presence or absence of said grid blocking control signal;

real time processing means for accessing said controller instructions in said controller instruction storage means and for executing certain of said instructions in response to said article and case detector control signals to effect one of a number of predetermined courses of action, and

means responsive to said real time processing means for causing said packer to operate in accordance with said predetermined course of action.

4,522,012

BAG INSERTER MACHINE

Rodney C. Nelson, Braham, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 311,525, Oct. 15, 1981, abandoned. This application Sep. 7, 1982, Ser. No. 415,791

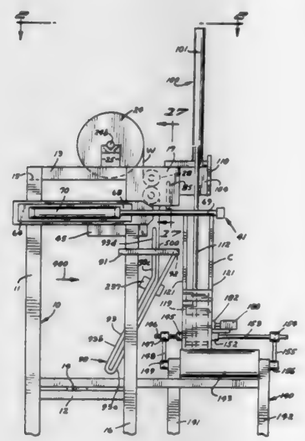
Int. Cl.³ B31B *7/02*

U.S. Cl. 53—175 **42 Claims**

1. A bag inserter machine for separating a leading bag that is joined to a bag roll web of a bag roll along a perforated line and has opposite first and second side walls, a bag closure seal and a leading terminal edge remote from the perforated line and inserting the separated bag into an open case, the edge of the bag that was joined to the bag roll along the perforated line, after separation from the bag roll, defining the bag mouth, comprising a frame, first means on the frame for supporting the bag roll and feeding the leading bag joined to the bag roll to a preselected bag position, second means on the frame for engaging the bag in said preselected position, separating the bag from

the bag roll along the preforated line and opening the bag mouth while supportingly holding the bag, the second means including separating means mounted on the frame for movement from a datum first position to a bag supporting, bag mouth open second position for engaging the bag first side wall adjacent the perforated line, bag opening means mounted on the frame for movement between a bag mouth open first position remote from the bag spearating means in its second position and

a second position to abut against the bag second side wall when the bag separating means is in its first position and cooperate with the bag separating means to clampingly engage the bag while it is joined to the bag roll, said bag opening and bag separating means each including means for grippingly engaging the respective side wall of the bag



remote from the bag closure and holding the bag in a bag mouth open condition when the bag separating and opening means are in their bag open positions, inserter means mounted on the frame for movement from a datum position to a position the bag that was being held in a bag mouth open condition is inserted into the case for moving the leading bag into the case, and control means for operating the first means to feed the bag joined to the bag roll to said bag preselected position, then the bag opening and bag separating means to clampingly engage the leading bag while it is joined to the bag roll and move the leading bag relative the feed means to separate the leading bag along the perforated line from the bag roll and after the leading bag is separated from the bag roll move the bag side walls to a bag mouth open condition, and thereafter the inserter means to insert the bag into the case.

4,522,013

YIELDABLE PLATFORM FOR FOOD WRAPPING MACHINE

Glen T. Hamilton, Jacksonville, Tex., assignor to GME, Inc., Jacksonville, Tex.

Filed Jun. 30, 1983, Ser. No. 509,386
Int. Cl.³ B65B *11/26, 49/08*
U.S. Cl. 53—220 **1 Claim**

1. A food packaging apparatus, comprising:

a product food conveyor for moving unwrapped food products;

a wrapped food product conveyor for moving wrapped food products;

a wrapping dispenser for containing wrapping;

an elevator for moving the food products proximate said dispenser from said product food conveyor, said elevator having a platform disposed thereon for receiving the food product;

a tucking arm for causing said wrapping to enclose the food product therearound, said tucking arm extending under the food product;

means for moving the wrapped food product from said platform to said wrapped food product conveyor;

said platform having:

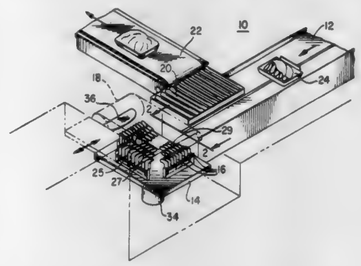
a base,

a plurality of longitudinal rods and means to mount said rods to be disposed parallel to said base and supported therefrom around the periphery of said base, said longitudinal rods arranged in groups and oriented so that the rods within a common group are substantially parallel to each other and are oriented at right angles to the rods in each of the groups adjacent thereto;

each of said longitudinal rods having a plurality of pivoting members mounted thereon in spaced apart relationship for rotating thereabout, each of said pivoting members having;

a bearing for rotation about said longitudinal rod,

a radial member having one end thereof disposed on said



bearing, the distal end thereof for traversing an arcuate path and a horizontal member disposed on the distal end of said radial member in a plane tangential to the rotational path of said radial member, said horizontal member having tapered trailing and leading edges, the surface of said horizontal member distal to said bearing having an arcuate shape;

said pivoting members on each of said longitudinal rods disposed to pivot in the direction of motion of said tucking arm to mesh with pivoting members on adjacent ones of said rods when said tucking arm passes under the food product and contacts the trailing edges of said pivoting members, the tapered trailing and leading edges preventing binding upon meshing of said pivoting members, all of said pivoting members on one of said longitudinal rods pivot synchonously such that pivoting of one of said pivoting members causes pivoting of all of said pivoting members on a common longitudinal rod; and

a spring disposed on each of said longitudinal rods and attached to said pivoting members to return said pivoting members to their original position after withdrawal of said tucking arm.

4,522,014

ON-BOARD FLAP OPENER

Chris E. Robinson, Akron, Ohio, assignor to Figgie International, Willoughby, Ohio

Filed Nov. 10, 1982, Ser. No. 440,633
Int. Cl.³ B65B *43/26, 43/38*
U.S. Cl. 53—382 **12 Claims**

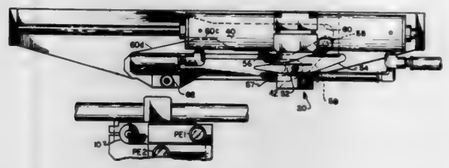
1. In a flap opener apparatus, a travel cylinder, having a longitudinal axis, movable parallel to a fixed carton moving path,

a shaft operatively carried by said travel cylinder and positioned normal to said longitudinal axis thereof,

a flap opening device, a control cam, and a control roll all operatively positioned on said shaft;

a control slot engaging said control roll and operable to move said shaft arcuately,

a powered rotor means operatively connected to said shaft to urge it through an arc when said shaft is free to move, and



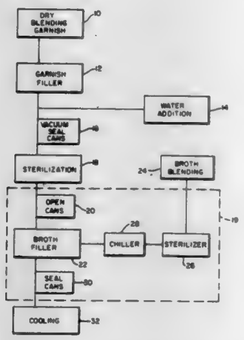
a cam operating member positioned to engage said control cam and move said shaft and said flap opener device through an arc to open a flap when said travel cylinder has moved to adjacent a limit of its travel and has said device under a flap of a case.

4,522,015

PHASED ASEPTIC STERILIZATION AND PACKAGING PROCESS AND SYSTEM

William M. Hildebolt, Mickleton, N.J., assignor to Campbell Soup Company, Camden, N.J.

Continuation of Ser. No. 221,850, Dec. 31, 1980, abandoned. This application Jan. 6, 1983, Ser. No. 456,248
Int. Cl.³ B65B *55/02*
U.S. Cl. 53—425 **21 Claims**



1. A method for sterilizing and packaging a product having solid and liquid components, comprising the steps of:

(a) placing the unsterilized solid component into a container in which the product is ultimately sealed;

(b) temporarily closing the container;

(c) heating the contents of the container to effect sterilization thereof;

(d) opening the container in a sterile environment, to prevent contamination of the contents;

(e) filling the container in said sterile environment with aseptically sterilized liquid component which is cooler than the solid component to quench the hot solid component; and

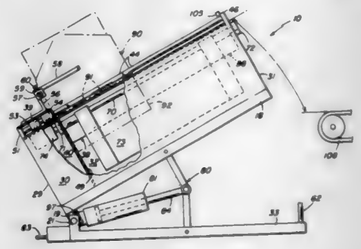
(f) sealing the filled container in said sterile environment.

4,522,016

CARTON SUPPORT AND ERECTION MACHINE

Mark A. DiRico, 416 Adams St., Quincy, Mass. 02169

Filed Sep. 30, 1983, Ser. No. 537,987
Int. Cl.³ B65B *43/26*
U.S. Cl. 53—564 **19 Claims**



1. An erecting and holding device for a shipping carton having a pair of bottom end flaps and a pair of bottom side flaps, said device comprising

a support structure for supporting a said, carton in an upright position with said bottom end flaps folded into a generally horizontal position and said side flaps unfolded and extending generally vertically downwardly,

a pair of folding members, mounted below and on opposite sides of said support structure, each of said members comprising a surface attached to a first drive means, said first drive means being adapted to swing said folding-member surfaces from a vertical position to a substantially horizontal position,

tilt means for moving said support structure between a first position in which a carton supported thereby is substantially horizontal and a second position in which a carton supported thereby is inclined with respect to the horizontal, and for supporting said support structure in said second position, said tilt means comprising a member connecting said support means to a horizontal member and said connecting member being hinged at a point which is connected to a reciprocating piston rod, whereby movement of said rod flexes said hinge, altering the effective length of said connecting member to change the height of said support means in the vertical plane through said point of connection between said support means and said member,

discharge means for discharging a carton supported by said support structure from said support structure, said discharge means comprising a U-shaped engaging member to engage one end of, and to extend at least partially around the sides of, a said carton, and a second drive means communicating with said U-shaped member to move it between a first position in which it is positioned to engage one end of a said carton supported on said support structure, and a second position spaced generally horizontally from said first position whereby movement of said member from said first position to said second position will move a said carton off of said support structure and discharge it, said second drive means being mounted along one side of said device, and

control means for activating selected ones of said first drive means, said second drive means, and said tilt means.

4,522,017

REGISTRATION OF BAGS IN A FILLING MACHINE

Richard W. Scheffers, Mount Prospect, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Sep. 30, 1982, Ser. No. 429,506
Int. Cl.³ B65B *43/26*
U.S. Cl. 53—570 **2 Claims**

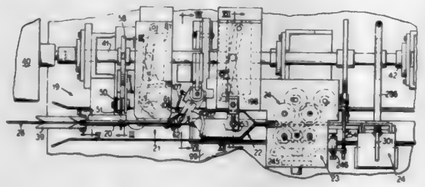
1. A device for assuring the proper registration of each bag of a laterally connected bag chain in a filling station of a mech-

anism for automatically filling bags one at a time conducted laterally therethrough along a transport path, said bags being vertically draped in said chain and each having closed bottom end and side edges and a sealable upper end mouth which is open in said filling station, said apparatus comprising:

drive means for frictionally engaging the bags of said chain and passing said chain in at least a forward direction along said transport path,

clutch means for releasing said drive means from frictional engagement with the bags of said chain,

A vertically reciprocable probe, a means for extending said probe into the open mouth of each said bag of said chain in said filling station, said probe being mounted for lateral rotation about a vertical axis,



a stop for limiting rearward rotation of said probe, and

a resilient force means for biasing said probe against said stop, when said clutch means is engaged, the resilient force means acting on said probe for drawing said chain rearward along said transport path to a predetermined registration point set by said stop,

whereby said drive means overtravels said chain forwardly along said transport path relative to said filling station and insertion of said probe into said bag mouth enables said drive means to rotate said probe forwardly along with said chain until said clutch means disengages said drive means whereupon said chain is indexed back to said registration point permitting a bag about to be filled to be properly located in said filling station.

4,522,018

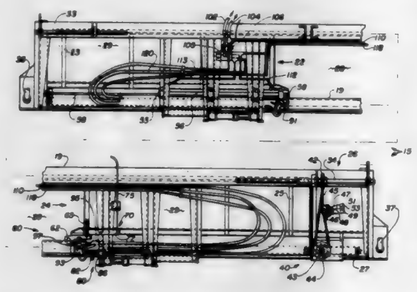
WINDROW REVERSER FOR WINDROWER DRAPER HEADER

Edward A. Blakeslee, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 16, 1983, Ser. No. 532,932

Int. Cl.³ A01D *35/12, 57/20*

U.S. Cl. 56—181 **15 Claims**



1. In a crop harvesting machine having a mobile frame adapted for movement across a field; a header connected to said frame to collect crop material from the ground and initiate the crop harvesting process, said header having first and second laterally shiftable draper sections, each said draper section including a draper rotatable in a transverse direction to laterally convey crop material thereon, each said draper section being laterally shiftable between a left position and a right position; first and second hydraulic motors operatively connected to said first and second drapers, respectively, for the selective rotation thereof in first and second opposing directions; and a hydraulic circuit for supplying hydraulic fluid under pressure to said hydraulic motors, the improvement comprising:

a reversing valve connected to said hydraulic circuit in association with said second hydraulic motor for reversing the flow of fluid through said second motor to cause said second draper to rotate in a direction opposite to the direction of rotation of said first draper under conditions where said first draper section and said second draper section are in opposing positions, creating a gap therebetween; and

means for sensing when said first and second draper sections are in opposing positions.

4,522,019

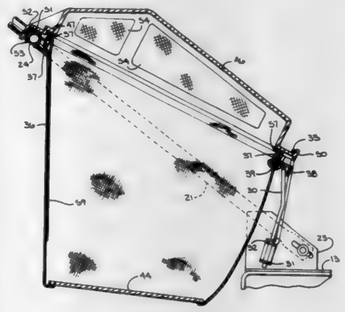
GRASS CATCHING RECEPTACLE

Merle L. Edwards, Port Washington; Wayne A. Meyer, Plymouth, both of Wis., and James M. Shook, San Jose, Calif., assignors to Bolens Corporation, Port Washington, Wis.

Filed Aug. 1, 1983, Ser. No. 519,532

Int. Cl.³ A01D *35/22, 53/06*

U.S. Cl. 56—202 **19 Claims**



1. A grass catching receptacle for a power mower of the type having a mower deck, having a bag support on a rear portion of the mower deck, having a discharge chute with an exit that opens above and towards the rear of the mower deck, and having a handlebar frame with two laterally spaced legs rising upwardly and rearwardly from the rear portion of the mower deck and with a crossbar extending across the space between the two legs at a location above and behind the mower deck, the grass catching receptacle comprising:

a collection bag with an upwardly opening mouth, the collection bag having a body that is formed at least in part by a flexible fabric, and the collection bag having a rigid bag frame disposed around the mouth,

wherein the bag frame is wider than the space between the legs of the handlebar frame, but shorter in length than the distance from the bag support to the crossbar, so that the bag frame is supportable on the bag support and the legs of the handlebar frame without covering the crossbar; and

a rearwardly pivoting, stiff, flip-top lid for covering the mouth of the collection bag, with means at a rear end of the lid for pivotably mounting the lid to the crossbar of the handlebar frame; and

wherein the collection bag and the lid have portions cooperating to form an entrance at the exit from the discharge chute, so that matter discharged therefrom will be collected and contained within the receptacle.

4,522,020

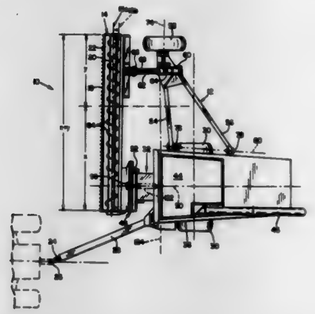
WHEAT COMBINE

Steven A. Anderson, Star Route, Arlington, Oreg. 97812

Filed Jun. 4, 1984, Ser. No. 616,903

Int. Cl.³ A01D *75/28*

U.S. Cl. 56—209 **9 Claims**



1. A pulled combine of the type having a laterally extending header with proximal and distal ends, and a wheeled feeder/separator assembly extending rearwardly from said header, wherein the improvement comprises:

circle means mounted to said header adjacent a rearward facing portion of said proximal end, for facilitating pivoting of said header along a longitudinal axis extending through the center of said circle means;

a frame member pivotally mounted to and extending laterally outwardly from said feeder/separator assembly to support said distal header end, said frame member defining a frame member pivot axis extending at a rearwardly converging angle with respect to said longitudinal axis;

header support wheel means rotatably mounted to said frame member and disposed laterally outwardly from said frame member pivot axis for supporting weight from said header; and

vertical pivot means defining a substantially vertical pivot axis disposed adjacent said circle means for facilitating the pivoting of said header as said frame member pivots upwardly and downwardly along said frame member pivot axis.

4,522,021

STATIONARY SPINDLE BRAKE FOR SPINNING AND TWISTING SPINDLES

Günther Schmitt, Hammelburg, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schafer, Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany

Filed May 23, 1984, Ser. No. 613,514

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1983, 3320458

Int. Cl.³ D01H *7/22*

U.S. Cl. 57—88 **12 Claims**

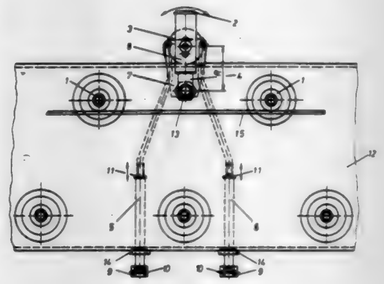
1. A spindle brake for braking a selected one of a pair of spinning spindles, wherein the pair of spindles are supported on support rail means; a belt for contacting the spindles and moving therepast to spin both of the spindles of the pair;

the brake comprising:

a holder pivotally mounted to the rail means between the spindles of the pair, the holder being pivotable toward either spindle;

a brake element mounted on the holder and pivotable therewith; a brake surface on the brake element, the brake surface being so placed on the brake element and the brake element being so placed and shaped that upon rotation of the holder around its pivot in one direction, the brake surface contacts one of the spindles to rub and brake the one spindle, and upon rotation of the holder around its pivot in the opposite direction, the brake surface contacts the other spindle to rub and brake the other spindle;

a belt lift-off roller supported to the holder, spaced from the pivot of the holder, being near enough to the brake surface and being so shaped that upon pivoting of the holder in



the one direction, the belt lift-off roller contacts and raises the belt off the one spindle, and upon pivoting of the holder in the opposite direction, the roller contacts and raises the belt off the other spindle; and

means for pivoting the holder in the one and the opposite directions.

4,522,022

ROLLERS FOR FRICTION SPINNING APPARATUS

Alan Parker, Bolton, and William M. Farnhill, Burnley, both of England, assignors to Hollingsworth (U.K.) Limited, England

Filed Nov. 7, 1983, Ser. No. 549,023

Claims priority, application United Kingdom, Nov. 9, 1982, 8231908

Int. Cl.³ D01H *1/135, 7/882*

U.S. Cl. 57—401 **10 Claims**

1. In a friction spinning apparatus comprising first and second rotatable members arranged in closely spaced relationship so as to define therebetween adjacent the line of closest approach a throat, and a fibre feed means for feeding fibres into the throat for twisting into yarn, the fibre feed means opening at one side of said line of closest approach at which said first rotatable member has its surface moving into said throat and the second rotatable member has its surface moving out of the throat;

the improvement wherein:

the surface of each of the rotatable members has a roughness characteristic of from 40 to 250 micro inches.

4,522,023

OPEN END FRICTION SPINNING MACHINE

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Ueberkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, both of, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,391

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1983, 3308249

Int. Cl.³ D01H *1/135, 1/12, 7/898*

U.S. Cl. 57—401 **15 Claims**

1. Apparatus for open end friction spinning comprising:

two friction rollers arranged adjacent to one another to form a yarn forming wedge slot therebetween,

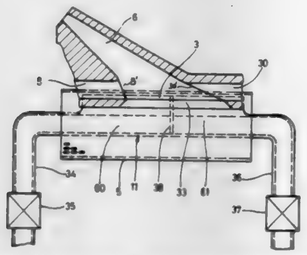
yarn withdrawing means for guiding the withdrawal of yarn from the wedge slot,

fiber feed channel means for guiding fibers to the region of the friction rollers,

transport air stream inducing means for inducing a flow of transport air to aid in the transport of the fibers in the fiber feed channel means,

and auxiliary air stream inducing means for inducing a flow

of auxiliary fiber transport air flowing in the yarn withdrawal direction in the region of the outlet opening of the



fiber feed channel means, whereby alignment of fibers to be spun into yarn in the wedge slot is enhanced.

4,522,024

METHOD FOR REDUCING THE AMOUNT OF NOX AND FOR RAISING THE OUTPUT OF A GAS TURBINE POWER STATION OF THE TYPE UTILIZING AN AIR RESERVOIR, AND A GAS TURBINE POWER STATION, OF THIS TYPE, OPERATING IN ACCORDANCE WITH THIS METHOD

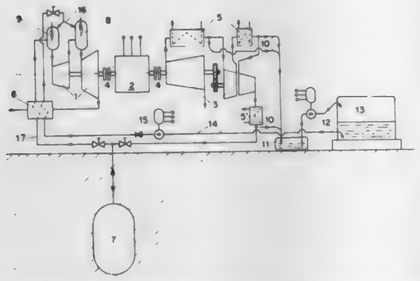
Paul Zaugg, Baden, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 8, 1982, Ser. No. 415,911

Claims priority, application Switzerland, Sep. 18, 1981, 6039/81

Int. Cl.³ F02C *7/143*

U.S. Cl. 60—39.05 **1 Claim**



1. A method for reducing the amount of NO_x, and for raising the output of a gas turbine power station of the type having a gas turbine, a generator/motor, a compressor-group, moisture condenser means associated with said compressor group and an air reservoir, said method comprising the steps of:

collecting in an intermediate condensate tank the moisture condensed in said condenser means;

storing said collected moisture in a main condensate tank;

heating exchanging a portion of said stored moisture with waste gas from said turbine to evaporate said moisture; and

introducing said evaporated moisture into combustion chamber means of said turbine.

4,522,025

APPARATUS FOR CONTROLLING LOAD DISTRIBUTION AND SPEED OF GAS SPEED OF GAS TURBINE SYSTEMS AND PARTICULARLY OF GAS TURBINE ENGINES

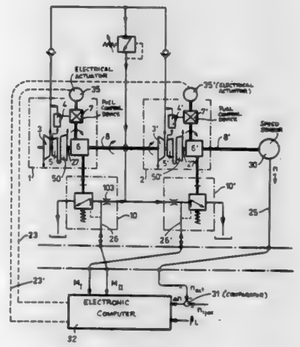
Christian Greune, Furstenfeldbruck, and Heinrich Kümmeke, Dachau-Etzenhausen, both of Fed. Rep. of Germany, assignors to MTU, Munich, Fed. Rep. of Germany

Filed Feb. 21, 1984, Ser. No. 582,015

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1983, 3306889

Int. Cl.³ F02C *9/28*

U.S. Cl. 60—39.15 **15 Claims**



1. In apparatus for controlling the load distribution and speed of gas turbine systems, and particularly of gas turbine engines each having an output shaft forming part of a common output shaft of the engines, a respective fuel control unit including a proportionally acting speed governor having adjustable speed set points, a master speed governor for the output shaft and a load distributing control unit, the master speed governors forming signals indicative of speed deviation of the engines, the load distributing control unit forming signals based on load deviation of the gas turbine engines and means for adjusting the speed set points of the proportionally acting speed governors in response to said signals, the improvement wherein the adjusting means comprises operational amplifier means for forming output signals from at least the speed deviation signals and the load deviating signals and summing amplifier means connected to said operational amplifier means for adding the output signals from the operational amplifier means to form signals $\rho_{spec}\,\rho'_{spec}$ for adjusting the speed set points of the proportionally acting speed governors.

4,522,026

POWER/TORQUE LIMITER UNIT FOR FREE TURBINE TYPE ENGINES

Gudmundur P. Peterson, Mont St. Hilaire, and Daniel d'Anjou, Montreal, both of Canada, assignors to Pratt & Whitney Canada Inc., Longueuil, Canada

Filed Feb. 7, 1983, Ser. No. 464,402

Int. Cl.³ F02C *9/28*

U.S. Cl. 60—39.281 **15 Claims**

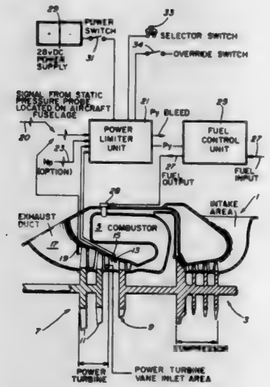
1. In a free turbine engine, which engine includes a power turbine having an inlet, an exhaust duct downstream of said turbine, an output shaft and a control valve for controlling engine power, the improvement comprising a power limit unit; said unit comprising:

first sensor means for measuring pressure at said inlet, said first sensor means being disposed in said power turbine inlet;

second sensor means for measuring temperature at said inlet, said second sensor means being disposed in said turbine inlet;

third sensor means for measuring power turbine exhaust pressure, said third sensor means being disposed in said duct;

processor means for calculating shaft horse power (SHP) from the measurements of said first, second and third sensor means;



means for generating a reference signal;

comparator means, for comparing SHP with said reference signal, said comparator means having output means;

the output means being connected to said control valve;

whereby, to reduce engine power when SHP is greater than said reference signal.

4,522,027

EXHAUST PARTICLE REMOVAL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

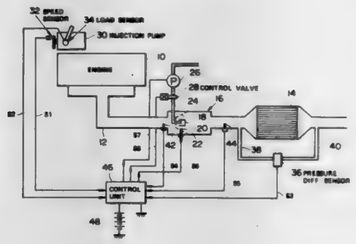
Yoji Hasegawa, Yokohama, and Motohiro Shinzawa, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Feb. 17, 1984, Ser. No. 581,071

Claims priority, application Japan, Feb. 21, 1983, 58-26307

Int. Cl.³ F01N *3/02*

U.S. Cl. 60—274 **4 Claims**



4. A method of clearing an automotive exhaust filter of clogging, combustion particulates, comprising the steps of:

(a) supplying fuel to a burner disposed in an exhaust passage upstream of the filter;

(b) igniting the supplied fuel;

(c) detecting whether the fuel supplied to the burner is burning;

(d) if the fuel is not burning after ignition, cutting off the supply of fuel to the burner and repeating the steps (a), (b), and (c); and

(e) if the fuel continues to burn for a predetermined period of time after ignition, cutting off the fuel supply to the burner.

4,522,028

REGENERATIVE BURNER CONTROL APPARATUS

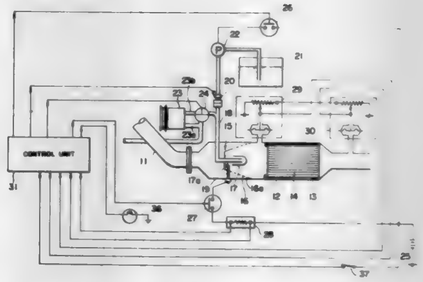
Yoji Hasegawa, Yokohama, and Motohiro Shinzawa, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Feb. 21, 1984, Ser. No. 581,908

Claims priority, application Japan, Mar. 1, 1983, 58-31777

Int. Cl.³ F01N *3/02*

U.S. Cl. 60—277 **6 Claims**



1. An apparatus for use in an internal combustion engine having an exhaust conduit for discharging exhaust particles together with exhaust gases to the atmosphere, and a trap located in said exhaust conduit for collecting exhaust particles, said apparatus comprising:

(a) a regenerative burner including a mixture supply device operable to supply a combustible mixture into said regenerative burner, and a glow plug operable to ignite and burn the combustible mixture supplied into said regenerative burner to burn the exhaust particles collected in said trap so as to regenerate said trap;

(b) a failure detector for detecting a broken wire in said glow plug, said failure detector including means for generating an inhibit signal in the presence of the broken wire in said glow plug; and

(c) first means for determining a regeneration requirement when said trap collects a predetermined amount of exhaust particles;

(d) a second means responsive to the determined regeneration requirement for operating said glow plug and for operating said mixture supply device for a predetermined period of time;

(e) third means responsive to the inhibit signal from said failure detector for preventing the operation of said mixture supply device.

4,522,029

CONTROL SYSTEM OF EXHAUST FOR INTERNAL COMBUSTION ENGINE

Takao Tomita, Niiza; Masahiro Akiba, Tokyo; Hideki Toyota, Kamifukuoka, and Yasuo Terada, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,425

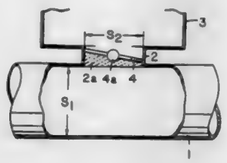
Claims priority, application Japan, Dec. 20, 1982, 57-223414

Int. Cl.³ F02B *27/02*

U.S. Cl. 60—314 **1 Claim**

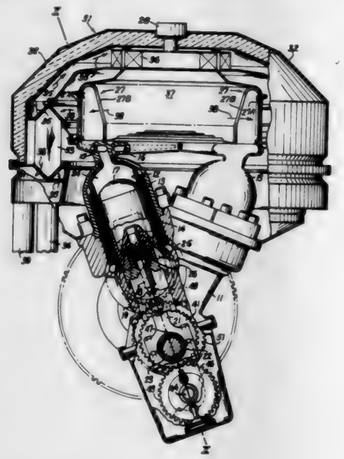
1. Exhaust system control apparatus for an internal combustion engine having an exhaust line, a sub-chamber, a branch line on said exhaust line connecting the latter to said sub-chamber, and an opening and closing valve located on said branch

line, said valve being adapted to open when said engine operates at



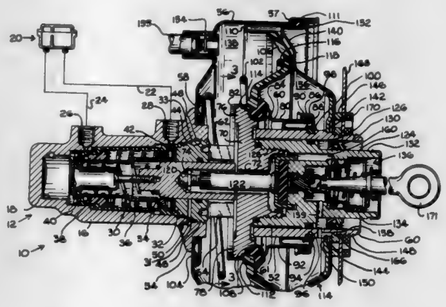
high speed, the ratio between the cross-sectional areas of said branch line and said exhaust line being about 0.6 to 0.8.

4,522,030
MULTI-CYLINDER HOT GAS ENGINE
John A. Corey, North Troy, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.
Filed May 1, 1984, Ser. No. 605,855
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—525 **33 Claims**



1. In a multi-cylinder hot gas engine the combination comprising:
(a) equal V-shaped engine block having two banks of cylinders wherein the cylinders in each bank have parallel equal length axial centerlines and the planes containing such centerlines intersect along or near the axis of a single crankshaft mounted for rotation in said engine block;
(b) a piston in each cylinder connected with the crankshaft for reciprocation in said cylinder, each cylinder having an expansion space above the piston and a compression space below the piston;
(c) an annular regenerator means disposed around each cylinder;
(d) annular heater head means including a plurality of working fluid passageways disposed above the cylinders for supplying heated working fluid to the expansion spaces of all of the cylinders;
(e) combustor means centrally disposed in said annular heater head means for heating the working fluid in said plurality of working fluid passageways;
(f) a plurality of arcuate, balanced-flow manifold means one for each cylinder, each manifold means having a first arcuate portion in fluid communication with the expansion space of the cylinder and with one end of a number of working fluid passageways and having a second arcuate portion in communication with the annular regenerator means of the same cylinder and with the other end of said number of working fluid passageways and wherein the working fluid passageways thus intercommunicating within each of the plurality of arcuate manifold means are equal in number for each cylinder.

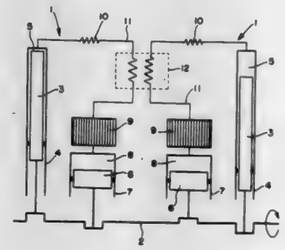
4,522,031
FLUID PRESSURIZING DEVICE
Oswald O. Kytta, and Lloyd G. Bach, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.
Filed Jun. 17, 1981, Ser. No. 274,572
Int. Cl.³ F15B *13/16*; F16J *10/02*
U.S. Cl. 60—547.1 **8 Claims**



1. A method of assembling a fluid pressurizing apparatus comprising the steps of:
placing a piston assembly in a bore of a substantially cylindrical housing, said cylindrical housing having a peripheral guide surface with a first shoulder separated from a second shoulder, said cylindrical housing having first and second slots that extend from said bore to said guide surface;
locating a cup-shaped shell on said peripheral surface with an end wall positioned against said first shoulder, said cup-shaped shell having a cylindrical section extending from said end wall, said cylindrical section having a flange located thereon;
moving a hub member through said first and second slots until an opening therein is aligned with said piston assembly and peripheral lips thereon uniformly extend above said guide surface;
passing a push rod through said opening in said hub until an end thereof engages said piston assembly;
attaching a valve housing to said hub member;
securing a first end of a sleeve to said peripheral lips on said hub member, said sleeve having a second end and a groove thereon adjacent said first end;
locating a return spring on a guide on said first end wall of said cup-shaped shell;
locating a first bead on a first diaphragm assembly in said groove of the sleeve and a second bead adjacent said flange on said cylindrical section of cup-shaped shell;
attaching a third bead on a second diaphragm assembly to said second end of said sleeve and a fourth bead on the second diaphragm to said cylindrical housing, said cup-shaped shell, piston assembly, first and second diaphragm assemblies, sleeve, and hub member defining a first chamber;
positioning a disc-shaped shell on said cylindrical housing adjacent said second shoulder, said disc-shaped shell having a peripheral surface that engages said second bead on said first diaphragm assembly, said first and second diaphragm assemblies, sleeve, cylindrical housing and disc-shaped shell defining a second chamber;

attaching a fastener to said cylindrical housing which engages said disc-shaped shell; and
applying a force to move said fastener and overcome said return spring to allow said peripheral surface on said disc-shaped shell to compress said second bead on said first diaphragm assembly against said flange on said cup-shaped shell and effectively sealing said first and second chambers from the surrounding environment.

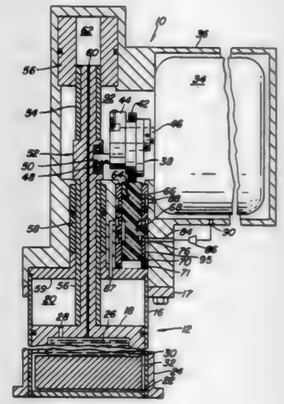
4,522,032
STIRLING-CYCLE REFRIGERATOR
Kazuaki Nakamura, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Aug. 29, 1983, Ser. No. 527,223
Claims priority, application Japan, Sep. 24, 1982, 57-164847
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **2 Claims**



1. A Stirling-cycle refrigerator comprising:
(a) a plurality of Stirling-cycle refrigerator units, each having:
(1) a displacer defining an expansion chamber;
(2) a piston defining a compression chamber; and
(3) a circuit including a heater and a cooler and interconnecting said expansion chamber and said compression chamber;
(b) a countercurrent heat exchanger shared by said circuits and disposed between said coolers and said heaters for effecting heat exchange between working gases in said circuits; and
(c) a pair of regenerators connected in said circuits, respectively, in series with said countercurrent heat exchanger.

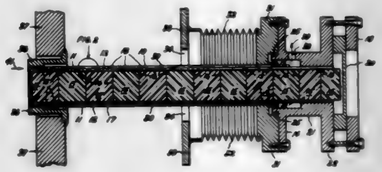
4,522,033
CRYOGENIC REFRIGERATOR WITH GAS SPRING LOADED VALVE
Jack E. Jensen, Columbus, Ohio, assignor to CVI Incorporated, Hilliard, Ohio
Filed Jul. 2, 1984, Ser. No. 627,581
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **9 Claims**

1. In a cryogenic refrigerator in which a movable displacer means defines within an enclosure first and second chambers of variable volume, and in which a refrigerant fluid is circulated in a fluid path between the first chamber and the second chamber by movement of the displacer means, chamber means for guiding a slide connected to the displacer means, a motor connected to said slide for reciprocating said slide, a valve having a reciprocable valve member for controlling the flow of high and low pressure fluid, said valve member having a peripheral groove, said motor having an actuator arranged to move said valve member in timed relation with movement of said slide so that the valve member will introduce high pressure fluid via said groove into said first and second chambers when the displacer means is at one of the extremities of its movement, said valve member being solid, and means defining a gas spring which communicates with a port for receiving



high pressure fluid for biasing said valve member toward said actuator.

4,522,034
HORIZONTAL CRYOSTAT PENETRATION INSERT AND ASSEMBLY
Evangelos T. Laskaris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Mar. 30, 1984, Ser. No. 595,199
Int. Cl.³ F17C *1/00*
U.S. Cl. 62—45 **27 Claims**

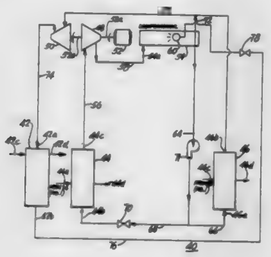


1. An insert for horizontal cryostat penetration comprising:
a thin wall, low thermal conductivity tube;
a plurality of foam plugs disposed within and substantially filling said tube; and
a plurality of thermally conductive foil patches disposed between at least two of said foam plugs.

4,522,035
METHOD AND APPARATUS FOR RECOVERING WASTE ENERGY
David Dyer, Auburn, Ala., and James L. Wise, Depere, Wis., assignors to TechMark Corporation, Newport, R.I.
Continuation of Ser. No. 227,774, Jan. 23, 1981, Pat. No. 4,437,316. This application Dec. 5, 1983, Ser. No. 558,014
Int. Cl.³ F25B *7/00*
U.S. Cl. 62—79 **8 Claims**

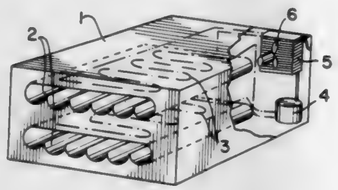
1. A method for waste energy recovery comprising the steps of:
providing a common heat transfer surface;
moving a first fluid containing waste energy along a first portion of said surface;
providing heat energy in a second fluid;
thereafter moving said second fluid along a second portion of said surface while retaining the first and second fluids totally isolated from one another;
providing a third fluid for receiving heat energy;

moving said third fluid along said heat transfer surface adjacent the first and second portions thereof while maintaining said third fluid totally isolated from said first and second fluids whereby energy from said first and second



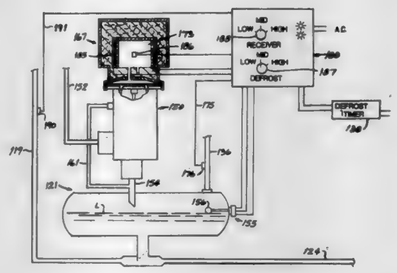
fluids are transferred to said third fluid, said first, second and third fluids being hot air, a refrigerant and water reintroducing energy into the second fluid after its energy is transferred to the third fluid.

4,522,036
COOLING DEVICE
Antonius C. M. Van Gils, Etten-Leur, Netherlands, assignor to IE PE GE B.V., Etten-Leur, Netherlands
Filed Oct. 19, 1982, Ser. No. 435,248
Int. Cl.³ G05D *23/32*
U.S. Cl. 62—157 **1 Claim**



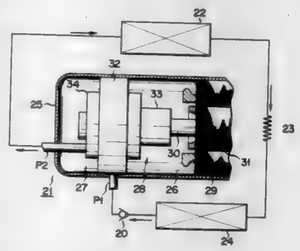
1. In a cooling system having compressor means, evaporator means for cooling a space and a lamella condensor for circulating refrigerant in a closed path, air displacing means for directing air normally in one direction over said lamella condensor to abstract heat from refrigerant flowing therethrough, and thermostat means for controlling said compressor means in response to temperature variations in said space being cooled, the improvement which comprises cycle means for cyclically causing air to flow over said lamella condensor in direction opposite said one direction independently of operation of said thermostat means whereby cyclic flow of air in said opposite direction over said condensor occurs even when cooling of said space is continuously demanded over a long period of time, including switch means for deenergizing said compressor means independently of said thermostat means so as to thaw said evaporator means, said cycle means periodically actuating said switch means so as to cause said compressor means to be deenergized.

4,522,037
REFRIGERATION SYSTEM WITH SURGE RECEIVER AND SATURATED GAS DEFROST
Roland A. Ares; Steven J. Burpo, both of St. Charles, and Wayne G. Schaeffer, Creve Coeur, all of Mo., assignors to Hussmann Corporation, Bridgeton, Mo.
Filed Dec. 9, 1982, Ser. No. 448,269
Int. Cl.³ F25B *41/04*
U.S. Cl. 62—196.4 **36 Claims**



1. A surge receiver control system for a multiple compressor refrigeration system having condenser means, a liquid header, a surge receiver in open refrigerant flow communication with said liquid header, branch liquid lines connecting multiple evaporators to said liquid line downstream of said surge receiver for refrigeration operations, and gas defrost means for selectively defrosting said evaporators; comprising a surge control valve disposed between the discharge side of the multiple compressors and said surge receiver in by-pass relation to said condenser means, said surge control valve including first means forming a closed pressure charge acting on said control valve in one direction to bias said valve toward an open position to establish fluid pressure communication between said compressors and said surge receiver, said first means being opposed by receiver pressure acting in the opposite directon for opening and closing said control valve in a modulating mode in response to a predetermined pressure differential thereacross, and said gas defrost means including second means for operating said surge control valve in a defrost mode different from said pressure differential in response to gas defrosting operations.

4,522,038
REFRIGERATING CYCLE APPARATUS
Masao Ozu, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed May 27, 1983, Ser. No. 498,783
Claims priority, application Japan, Jun. 4, 1982, 57-96034
Int. Cl.³ F25B *1/00*
U.S. Cl. 62—228.5 **6 Claims**



1. A refrigerating cycle apparatus having a compressor having suction and delivery ports, a condenser connected to said compressor delivery port, an evaporator connected to said compressor suction port, and a pressure reducing device connected between said condenser and said evaporator, said compressor comprising:

a compressor main body defining said suction and delivery ports, said main body being for compressing a refrigerant delivered therein;

means for defining a valve hole;

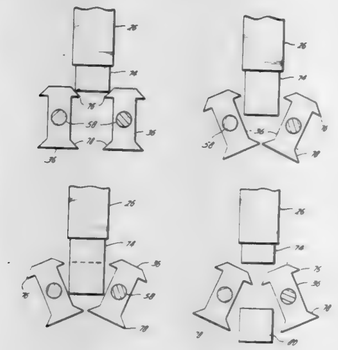
first connecting means for connecting said valve hole and said compressor suction port;

second connecting means for connecting said valve hole with said compressor delivery port;

third connecting means for connecting said valve hole and a suction port of said condenser; and

a valve plug movably mounted in said valve hole, said valve plug being adapted to move between a first position where said second connecting means communicates with said third connecting means through said valve hole in accordance with a difference in pressure at said suction port and said delivery port of said compressor when said compressor is in operation and a second position where said second connecting means does not communicate with said third connecting means through said valve hole when said compressor is stopped.

4,522,039
ICE CUBE MACHINE CUBE CUTTERS
John L. McNeill, P.O. Box 2211, Victoria, Tex. 77901
Filed Oct. 28, 1983, Ser. No. 546,706
Int. Cl.³ F25C *5/02*
U.S. Cl. 62—320 **13 Claims**



10. An ice cube making machine including at least one ice column forming tube extending vertically and means for forming ice in said tube, said tube having a lower end through which a column of ice will decend, the improvement comprising:

a pair of cutting means disposed below said tube and on the opposite sides thereof,

said cutting means each including an elongate cutting edge facing inwardly toward said decending ice column and extending generally normal to the axis thereof,

said cutting means being mounted for movement of said cutting edges inwardly toward said ice column,

oscillating means connected to said cutting means for simultaneously moving said cutting edges toward and away from each other,

ice column support means positioned below said tube and coupled to said oscillating means for supporting an ice column decending from said tube as said cutting edges move toward each other,

said cutting edges being positioned to engage the opposite side of said supported ice column and in substantially the same plane for cutting an ice cube therefrom,

said column support means being operable by said oscillating means to release said ice cube after said cube has been severed from said column by said cutting means.

4,522,040
REFRIGERATOR
Hideo Ochiai; Yoshinari Nagoya; Ryoichi Fujimoto; Susumu Yamazaki; Nobuhiko Sasamoto, and Shinichi Ishida, all of Tochigi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 16, 1983, Ser. No. 532,894
Claims priority, application Japan, Sep. 17, 1982, 57-161002
Int. Cl.³ F25D *17/06*
U.S. Cl. 62—419 **2 Claims**



1. A refrigerator comprising an outer frame means for defining a substantially rectangular parallelpiped outer contour of the refrigerator including a ceiling panel, a pair of side panels, a rear panel, and a bottom panel, said ceiling panel, side panels, rear panel, and body panel enclosing at least a refrigerating chamber; a machine chamber disposed at a bottom portion of said outer frame means for accommodating at least a compressor; a cover means disposed flush with a rear surface of said rear panel for covering a rear of said machine chamber; upper heat discharge passage means for discharging heat from at least the machine chamber to an upper part of the refrigerator including tapered grooves provided in both lateral edge portions of said rear panel; said cover means being provided with offset portions on respective lateral sides thereof; lower heat discharge passage means provided in said offset portions of said cover means for enabling a venting of said machine chamber;

heat discharge port means provided in a wall of each of said lower heat discharge passage means for providing a communication between said upper heat discharge passage means and said lower heat discharge passage means; and wherein an upper end of each of said upper heat discharge passage means is opened to an atmosphere.

4,522,041
ICE-CREAM MAKER
Waldemar Menzel, Kulmbach, Fed. Rep. of Germany, assignor to Firma Ireks Arkady GmbH, Kulmbach, Fed. Rep. of Germany
Filed Dec. 7, 1979, Ser. No. 102,101
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855910
Int. Cl.³ F25C *7/14*
U.S. Cl. 62—342 **7 Claims**

1. An ice-cream maker, comprising:

a freezing tank provided with a heating system for pasteurizing its contents;

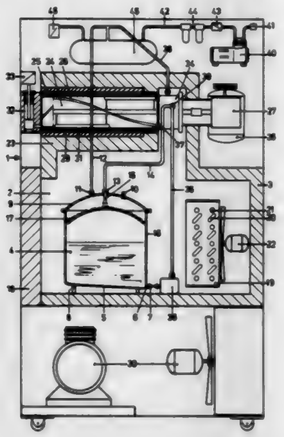
at least one storage container for ice-cream mix which can be cooled and heated;

a forward flow line and a return-flow line coupling said at least one storage container and said freezing tank via at least one interposed supply pump;

distributing means in said at least one storage container for causing ice-cream mix returned thereto via said return-flow line to flow down at least one inside wall of said storage container to form a film, said distributing means comprising a distributing disc, said disc being a separate

unit disposed below the mouth of said return-flow line and not connected to said return-flow line, and said disc leading to said at least one inside wall;

a heating and cooling chamber adapted to be selectively heated and cooled, said at least one storage container



being arranged in said heating and cooling chamber, free on all sides so that it can be washed by air all around, a heating and cooling unit and an air circulating unit being disposed in said heating and cooling chamber, so that the air circulating unit blows either heated or cooled air directly on the storage container.

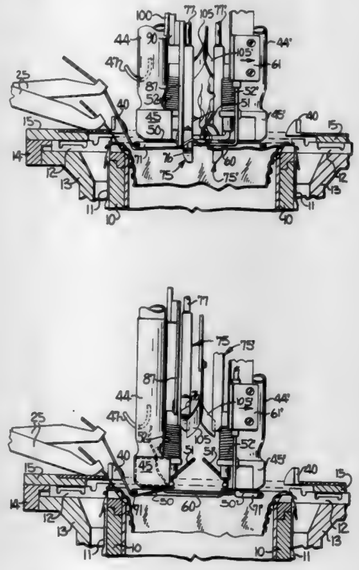
4,522,042

YARN CUTTING AND CLAMPING APPARATUS FOR CIRCULAR KNITTING MACHINES

Arvil Casstevens, Kernersville; William H. Coble; Harper Shields, both of Burlington; Roscoe M. Ferrell, Pittsboro, and Bobby R. Jordan, Burlington, all of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Filed Jul. 18, 1983, Ser. No. 514,511
Int. Cl.³ D04B *15/61*
U.S. Cl. 66—140 S **17 Claims**

1. In a circular knitting machine including a needle cylinder, a circle of needles carried by said needle cylinder, a plurality of yarn feeding stations positioned in spaced-apart relationship around said needle circle, each yarn feeding station having a plurality of yarn feed fingers individually movable between active and inactive positions, and means for knitting yarn fed by said yarn feeding fingers into adjacent solid color fabric pattern areas of different yarn, the combination therewith of means for cutting and clamping yarns moved into and out of active knitting position by said yarn feed fingers, said yarn cutting and clamping means comprising a vertically disposed suction tube having a lower end disposed within said needle circle, a clamping member associated with said lower end of said suction tube, a yarn cutter positioned between said needle circle and said clamping member, guide wire means extending within the needle circle and inwardly of and below the level of the yarn feeding position when the yarn is in active knitting position, a yarn lifting member supported for vertical movement adjacent said clamping member and operatively associated therewith, and operator means operable in response to movement of a yarn feed finger out of active knitting position for lowering said yarn lifting member below the level of said guide wire means and to engage a yarn moved to inactive position and for lifting the same into engagement with said yarn cutter and in close proximity to the lower free end of said suction tube so that the inactive yarn is cut and the free cut end



of the inactive yarn is drawn into said suction tube and held by said clamping member associated therewith.

4,522,043

KNITTING MACHINE USING COMBINATION PRESSER RAISING WHEEL

William E. Savage, Manlius, N.Y., assignor to Tompkins Bros. Co. Inc., Syracuse, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,230
Int. Cl.³ D04B *13/00, 15/28, 35/00*
U.S. Cl. 66—80 **3 Claims**



1. In a circular knitting machine having a rotating needle cylinder carrying vertically aligned spring beard needles, apparatus for bringing together a lay-in yarn that passes about the shanks of the needles and a tie yarn which includes

a sinker burr angularly disposed outside the needle circle having blades that mesh with the rotating needles within a yarn threading region, said blades being arranged to pass tie yarn upwardly into open beards moving into the threading region, said burr further including a flat bottom surface that is inclined upwardly to clear the entrance of beards positioned within the threading region,

a pressing wheel having a top surface spaced apart axially from a bottom surface, said pressing wheel being angularly disposed outside the needle circle with the top surface positioned directly beneath the sinker burr, said wheel having a profiled camming surface that extends continuously across the wheel between the top and bottom surfaces which rides in contact with the cleared beards situated in the threading region to close the entrance of each beard prior to the tie-yarn being released by the sinker burr blades to prevent the tie-yarn from falling out of the beards,

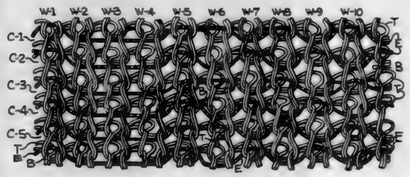
a series of landing blades radially extended from the profiled camming surface of the wheel so that the continuously extended camming surface passes between the blades, said blades meshing with the needles to land lay-in yarn over the closed beard entrances and to cast said lay-in yarn off the needles.

4,522,044

ANKLE AND ARCH SUPPORT SOCK

Roger D. Lineberry, and Harper Shields, both of Burlington, N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Filed Feb. 21, 1984, Ser. No. 581,687
Int. Cl.³ A41B *11/02;* **D04B** *9/46*
U.S. Cl. 66—185 **6 Claims**



1. An ankle and arch support sock including a leg portion adapted to cover at least the ankle of the wearer, and a foot portion with a central portion adapted to cover the arch of the wearer, said leg and foot portions being integrally knit of body yarn forming successive courses of wales of stitch loops, and an elastic yarn incorporated in the courses of the body yarn in said ankle and arch portions, said ankle and arch portions having two circumferential sections of different fabric structure characterized by the manner in which the elastic yarn is incorporated therein, one of said sections having a mock-rib fabric structure formed by said elastic yarn being incorporated in spaced-apart wales and floated inside plural wales between said spaced-apart wales, the other of said sections having a diamond pattern fabric structure formed by said elastic yarn being incorporated in alternating wales and floated inside intervening wales of alternating courses and being incorporated in the intervening wales and floated inside the alternating wales of the intervening courses.

4,522,045

PORTABLE SMALL-SIZED WASHING MACHINE

Michiko Harada, 1-62, 3-chome, Suimeidai, Kawanishi-shi, Hyogo, Japan

Filed Aug. 31, 1983, Ser. No. 528,124
Claims priority, application Japan, Sep. 20, 1982, 57-143842[U]
Int. Cl.³ D06F *7/02*
U.S. Cl. 68—22 A **2 Claims**

1. A portable washing machine comprising:

a main body,

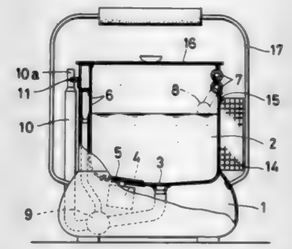
a washing tub mounted on said main body and provided with a bottom and a plurality of side walls,

a drainage opening and a pulsator provided at the bottom of the washing tub,

a wringer provided on one side wall of the washing tub,

an overflow opening provided on another side wall of the washing tub,

a motor means, secured to said main body, for driving said pulsator, and



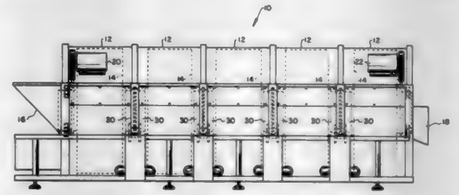
a handle means, attached to the main body, for carrying the washing machine.

4,522,046

CONTINUOUS BATCH LAUNDRY SYSTEM

Adolf E. S. Dreher, Hamburg, Fed. Rep. of Germany, assignor to Washex Machinery Corporation, Tex.

Filed Nov. 3, 1983, Ser. No. 548,477
Int. Cl.³ D06F *31/00*
U.S. Cl. 68—27 **18 Claims**



1. A continuous batch laundry system comprising:

a plurality of longitudinally aligned modules having inlet means at one end for receiving articles to be laundered and a discharge means at the other end;

each module including a rotatably supported drum within a housing, said drum being supported for oscillatory and rotary movement about a horizontal axis;

each drum including spaced end walls, each end wall of each drum including a large opening to provide communication between adjacent drums, each drum including means for retaining articles to be laundered during oscillation and for transferring said articles to an adjacent drum during rotation;

a plurality of flexible couplings for coupling adjacent drums together and for transmission of torque for rotation, one drum with another, said plurality of flexible couplings including means for compensating for angular and parallel misalignment between adjacent drums whereby rotation or oscillation of one drum will cause rotation or oscillation of said adjacent drum despite any misalignment; and

driving means for inducing rotation and oscillation in at least a selected one of said drums.

4,522,047

DOCUMENT CASE

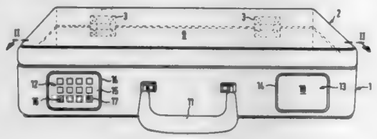
Armin Johl, Obertshausen, Fed. Rep. of Germany, assignor to Karl Seeger Lederwarenfabrik GmbH, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 440,823

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 8136526[U]

Int. Cl.³ E05B *65/52, 47/00*

U.S. Cl. 70—69 **7 Claims**



1. A document case having a concealed locking mechanism comprising

a rectangular box and a lid hinged to the box, each having a reinforcing frame extending around all four sides,

a handle fixed to the box,

an electronically-controlled combination lock assembly having lock elements fixed to the inside of the reinforcing frame of the lid, and cooperating elements fixed to the inside of the reinforcing frame of the box, and

a pair of windows in the reinforcing frame of said box, adjacent said handle,

one of said windows having a keyboard seated within its periphery,

substantially flush with the external surface of said box, said keyboard having digital selector elements connected to programming switches inside said box for controlling the opening and closing of the cooperating elements of said lock assembly,

the other of said windows having a battery-charging solar cell unit seated within its periphery, substantially flush with the external surface of said box,

said solar cell unit being connected to a storage battery inside said case to provide power for energizing both said cooperating elements and the electronic controls therefor.

4,522,048

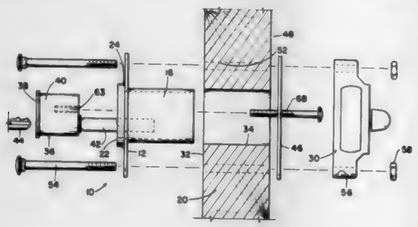
LOCK AND DOOR REINFORCING PLATE MEANS

Phillip N. Davis, 2723 S. Zunis St., Tulsa, Okla. 74114

Filed Nov. 7, 1983, Ser. No. 548,997

Int. Cl.³ E05B *63/00*

U.S. Cl. 70—417 **7 Claims**



1. A lock and reinforcing plate device for a door and comprising first and second plate means adapted to be disposed against the opposite faces of the door in substantial mutual alignment, tube means rigidly secured to the inner face of the first plate means and extending through the door in a direction toward the second plate means, an aperture provided in the first plate means in substantial axial alignment with the tube means, ring means rigidly secured to the outer face of the first plate means and concentrically arranged with respect to the tube means, lock cylinder means disposed against the outer face of the first plate means and extending into the interior of the tube means in a direction toward the second plate means, connection means extending through the second plate means and tube means for engagement with the lock cylinder means for securing the lock cylinder means in position, lock assembly means disposed adjacent the outer face of the second plate means, and in operable engagement with the lock cylinder means and securing means extending between the first and second plate means and through the door and lock assembly means for securing the device on the door.

4,522,049

ALUMINUM ALLOY FOOD CAN BODY AND METHOD FOR MAKING SAME

Ernest J. Clowes, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 14, 1983, Ser. No. 475,164

Int. Cl.³ B21B *45/00*

U.S. Cl. 72—46 **9 Claims**



1. A method for making an aluminum alloy food can body having a flanged open end for sealing with a can end by double seaming, comprising the steps of:

blanking and forming at least one cylindrical cup from an uncoated aluminum alloy sheet, said cup having a side wall, an open end, and a bottom end wall;

reforming said cup at least once to lengthen the side wall and reduce the diameter thereof, and concurrent therewith, ironing a portion of the cup side wall adjacent the open end thereof to thin said portion to a thickness less than the thickness of the side wall portion extending from the ironed portion to the bottom end wall, said ironed portion including at least the portion to be flanged;

forming a pressure resistant profile in the bottom end wall of said cup;

trimming a portion of the ironed portion adjacent the open end of the reformed cup to provide a can body of predetermined length with a uniform edge on the side wall defining the open end;

outwardly flanging a portion of the side wall adjacent the open end of said trimmed can body;

forming a plurality of annular beads in a central, intermediate portion of the side wall of said can body; and

coating at least the interior surface of said can body with a material suitable for contacting a product to be packaged in said can body.

4,522,050

THREE STAND MINI MILL METHOD AND APPARATUS

John E. Thomas, Pittsburgh, Pa., assignor to Tippins Machinery Company, Inc., Pittsburgh, Pa.

Filed Jan. 14, 1983, Ser. No. 458,041

Int. Cl.³ B21B *1/06*

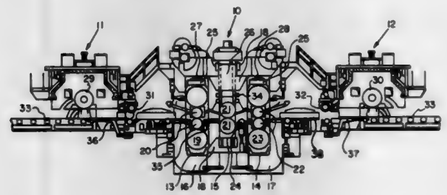
U.S. Cl. 72—229 **2 Claims**

1. A mini hot strip mill for reducing slabs to a strip product comprising:

A. an integrally formed three stand mill including a first and second four high finishing mill, each retained in a mill housing, and a two high roughing mill positioned between said first and second mills and retained in supports connecting the two mill housings;

B. a pair of coiling furnaces, one positioned upstream of said mill and the other positioned downstream of said mill; and

C. a first and second motor connected through a gear box to said mill for driving said finishing mills independently and in speed matched relationship and for jointly driving said roughing mill



whereby a slab is initially reduced to an intermediate workpiece by the roughing mill as it freely passes through the finishing mills which are maintained open in a roughing mode, said intermediate workpiece being reduced from the intermediate workpiece to the strip product on the two finishing mills while the roughing mill is maintained open and during processing said slab being coiled and decoiled in said coiler furnaces when the slab is at a thickness capable of being coiled.

4,522,051

CONTINUOUS ROLLING MILL

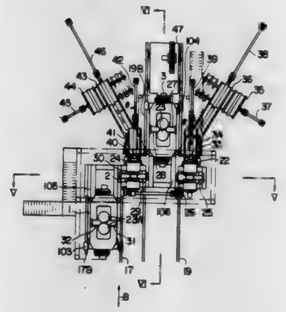
Masahiro Hayashi, Hitachi; Makoto Shimizu; Kazuo Kobayashi, both of Ibaraki, and Teruo Sekiya, Takahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 16, 1983, Ser. No. 494,705

Claims priority, application Japan, May 17, 1982, 57-81384

Int. Cl.³ B21B *13/08, 31/08*

U.S. Cl. 72—235 **16 Claims**



1. A continuous rolling mill, comprising:

horizontal roll stands and vertical roll stands disposed alternatingly along a rolling line;

rolling guides aligned between the work rolls of adjacent roll stands;

a frame supporting said roll stands;

rails transverse to the rolling line supporting said frame operatively to be movable in the direction crossing the rolling line to a first exchanging position together with said roll stands and said rolling guides;

at least some of said roll stands being mounted for movement relative to said frame in respective stand extracting directions;

rails respectively adjacent said some roll stands in alignment with said stand extracting directions when said frame is in said first exchanging position;

offsetting means for moving said some of the roll stands relative to said frame along their rails, away from the other roll stands, and from said first exchanging position to a second exchanging position where the rolling lines of the horizontal roll stands and the vertical roll stands are offset from each other so that the offset provides sufficient room that rolls may be extracted and exchanged from all the roll stands.

4,522,052

PROCESSES AND DEVICES FOR THE DRAWING OF TUBES BY EXTRUSION

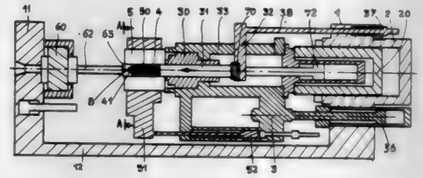
Michel Doudet, Epone, France, assignor to Clecim, Courbevoie, France

Filed Jul. 1, 1983, Ser. No. 510,096

Claims priority, application France, Jul. 1, 1982, 82 11573

Int. Cl.³ B21C *27/00, 35/06*

U.S. Cl. 72—265 **6 Claims**



1. Process for drawing tubes along a drawing axis (**10**) by extrusion of a metal billet (**4**) placed in a cylindrical receptacle (**50**) forming a container (**5**), including the steps of

(a) ramming said billet (**4**) within said receptacle (**50**) by pushing said billet against a ramming insert (**63**) closing said receptacle forming a boss (**41**) on the face of said billet (**4**) opposite said ramming insert (**63**), said boss (**41**) being inscribed within an orifice (**66**) of said die and having a plane face centered on an axis angularly diverging from said drawing axis (**10**), said ramming insert (**63**) being provided for this purpose with an impression (**8**) in the form of a circular dish with a flat bottom which has recessed the desired shape;

(b) perforating said billet (**4**) by means of an axial mandrel (**7**) whose advance is blocked before it reaches said bottom of said dish (**8**) so that it does not perforate said boss (**41**);

(c) replacing said ramming insert (**63**) in the axis of said receptacle (**50**) by an insert (**65**) holding a die (**66**);

(d) said mandrel (**7**) having a diameter smaller than that of said die and advancing into the latter;

(e) detaching said boss (**41**) without carrying along the bottom of said die (**66**), which remains attached to said billet (**4**) by one edge because of its offset in relation to said mandrel (**7**).

4,522,053

ELECTRICAL CONNECTOR PROGRAMMING TOOL

Richard W. Petersen, Taunton; John M. Pierini, South Attleboro, both of Mass., and Herbert G. Yeo, Port Charlotte, Fla., assignors to Augat Inc., Attleboro, Mass.

Filed Dec. 6, 1982, Ser. No. 447,301

Int. Cl.³ B21D *5/04, 53/36*

U.S. Cl. 720—316 **8 Claims**

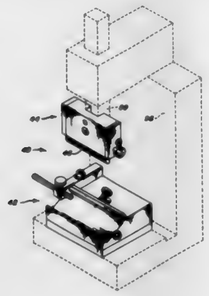
1. An electrical connector programming tool for programming an electrical connector for a flat ribbon cable of the type having a bus bar having a plurality of contacts to be programmed that are each normally in an electrically operative upstanding condition, comprising:

a tray subassembly for removably retaining the electrical

connector in an orientation where individual ones of the plurality of upstanding contacts are exposed;

a head subsembly having a like plurality of tongues individually corresponding to an associated one of the exposed upstanding contacts for impacting said contacts;

means coupled to said head and to said like plurality of tongues for individually mounting each of said tongues for motion relative to said head between a first preselected position selected to not-impact but allow a corresponding



one of the upstanding contacts to remain in the electrically operative upstanding condition and a second preselected position selected to impact a corresponding one of the upstanding contacts and bend it at an angle inclined to the angle of its upstanding condition to an electrically inoperative condition; and

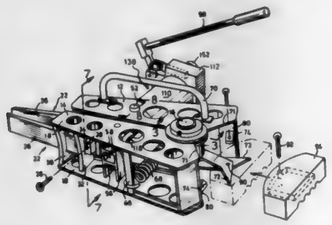
means, coupled to said tongues and to said head subassembly for releasably locking said tongues individually in a selected one of said first and said second positions.

4,522,054

EMERGENCY RESCUE APPARATUS

Randall J. Wilson, and Bruce C. Wilson, both of Don Mills, Canada, assignors to Power Pry Corporation, Don Mills, Canada

Filed Sep. 26, 1983, Ser. No. 535,806
Int. Cl.[3] B21D *1/12*
U.S. Cl. 72—392 **13 Claims**



1. Access or rescue tool comprising:

a pair of arms pivotally connected together adjacent one end of each of such arms,

whereby the opposed ends are free,

each arm comprising a pair of members spaced in the direction of the connection pivotal axis,

each such pair of members being joined by a plurality of bridging members to form a rigid framework,

a hydraulic piston cylinder having a piston contained therein, a piston rod attached to said piston and projecting from one end of said cylinder,

said piston cylinder being pivotally connected to one of said arms intermediate its connected and its free end,

said piston rod being pivotally connected to the other of said arms intermediate its connection and its free end,

said cylinder and piston rod pivotal connection being substantially parallel to the arm pivotal connection,

said piston cylinder and said piston rod being pivotally attached to said arms so that the piston rod and the axis of said cylinder extend between the spaced members forming each of said arms,

means for mounting a tool on the free end of at least one of said arms,

means for providing hydraulic fluid to said cylinder to move said piston rod in one direction relative to said cylinder,

and means operable to allow movement of said piston rod relative to said cylinder in the opposite direction,

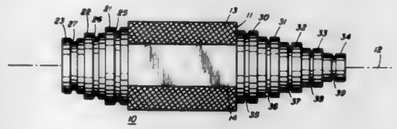
wherein a hydraulic pump for moving said piston rod in said one direction is arranged to form a rigid unit with said cylinder, said hydraulic pump having manual operating means.

4,522,055

BENDING TOOL

Eric V. Berger, Brookline, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 2, 1983, Ser. No. 548,257
Int. Cl.[3] B21D *31/00*
U.S. Cl. 72—477 **4 Claims**



1. As an article of manufacture,

a mandrel for semi-rigid coaxial cables,

said mandrel having an enlarged, generally cylindrically shaped support portion, said mandrel extending along a linear axis,

said support portion having opposed flats formed thereon to provide for stability in the event said support portion were to be secured in a vise, and said support portion being formed with a knurled surface about its cylindrical periphery to provide for stability in the event said support portion were to be hand held,

said mandrel including a first series of superimposed cylindrical portions of gradually diminishing diameters along a first direction along said axis,

said mandrel including a second series of superimposed cylindrical portions of gradually diminishing diameters along a second direction along said axis, said second direction being opposite to said first direction,

each of said cylindrical portions being formed with a circumferential groove,

each said groove of said first series having a like width and a like depth as another groove of said first series, and

each said groove of said second series having a like width and a like depth as another groove of said second series,

wherein said like width of each said groove of said first series is not equal to said like width of each said groove of said second series, and

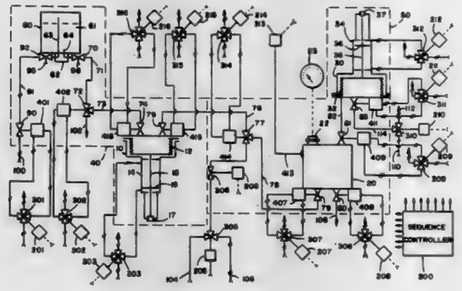
wherein said like depth of each said groove of said first series is not equal to said like depth of each said groove of said second series.

4,522,056

METHOD AND APPARATUS FOR MEASURING REID VAPOR PRESSURE

Thomas G. Chin, and Arthur Alston, both of El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 26, 1983, Ser. No. 526,737
Int. Cl.[3] G01N *7/16*
U.S. Cl. 73—64.2 **15 Claims**



1. An apparatus for measuring the Reid Vapor Pressure of a liquid hydrocarbon material comprising:

first compartment maintained at a substantially fixed temperature about the range of 32° F. to 40° F.;

a second compartment maintained at a substantially fixed temperature of about 100° F.;

means, within said first compartment, for providing a sample of the liquid hydrocarbon material;

a sample chamber within said first compartment;

first means for connecting said means for providing a sample and said sample chamber;

a measuring chamber within said second compartment;

second means for connecting said sample chamber and said measuring chamber;

an expansion chamber within said second compartment;

third means for connecting said measuring chamber and said expansion chamber;

means, associated with said measuring chamber, for measuring pressure; and

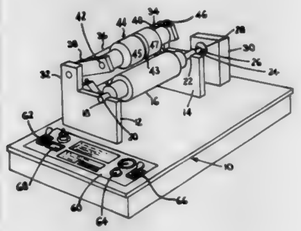
means, coupled to said means for measuring pressure for providing an output indicative of the vapor pressure of a sample of the liquid hydrocarbon material.

4,522,057

PRINTING INK PROOFER

Roman R. Kerchiss, Royton, United Kingdom, assignor to RK Chemical Company Limited, England

Filed Oct. 26, 1983, Ser. No. 545,456
Int. Cl.[3] G01N *33/32*
U.S. Cl. 73—150 R **20 Claims**



1. A method of preparing a proof or sample of an ink (as herein defined) to enable its colour and coating capability to be determined as a preliminary to the ink being employed in a printing or coating process, comprising the steps of:

(1) applying a quantity of ink to a resiliently deformable first roller;

(2) bringing the first roller into rolling contact with a second roller which is engraved with microscopic ink-trapping depressions;

(3) causing the ink on the first roller to be applied to the engraved second roller, using a doctor blade set to wipe clean the engraved roller surface and leave the ink only in depressions;

(4) controlling the pressure between the first and second rollers so that ink is transferred from the depressions onto the surface of the first roller until equilibrium is reached;

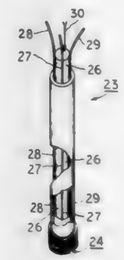
(5) introducing into the nip between the first and second rollers a sample of sheet material is equivalent to that to which the ink is to be applied in a subsequent printing process and causing the ink on the surface of the resiliently deformable first roller to be applied as a coating to the said sheet material.

4,522,058

LAMINAR-FLOW CHANNELING IN THERMAL FLOWMETERS AND THE LIKE

James H. Ewing, Brockton, Mass., assignor to MKS Instruments, Inc., Burlington, Mass.

Filed Jun. 15, 1983, Ser. No. 504,530
Int. Cl.[3] G01F *5/00*
U.S. Cl. 73—202 **5 Claims**



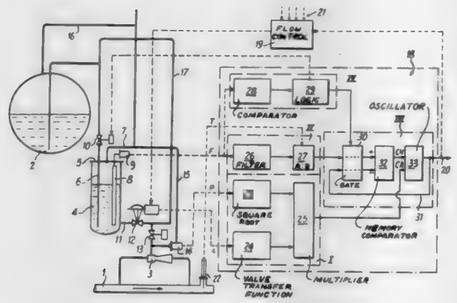
1. In combination with a flowmeter having a main fluid flow path extending through a base and a flowmetering sensor associated with a laminar-flow path in shunt relation to a relatively short path of the main flow path, means for establishing laminar-flow conditions in the shunted part of the main fluid flow path, comprising a substantially straight tubular member disposed to fit within said shunted part of the main flow path, a plurality of elongated straight structural elements clustered together within said tubular member in a self-holding mechanically fitted relationship therewith and with one another which leaves a plurality of substantially straight and relatively small fluid flow channels therethrough, said elongated structural elements including a core member coaxial and substantially coextensive with said tubular member and further including a plurality of wire-form members fitted between said core member and tubular member to produce said relatively small fluid flow channels in separated spaces therebetween, said channels all having effective length-to-diameter ratios which promote laminar flow and extending substantially fully the length of said tubular member, and means for removably fastening the assembly of said tubular member and said elongated elements as a unit within said shunted part of the main fluid flow path.

4,522,059

FLOWMETER AND INSTALLATION FOR MIXING AN ADDITIVE IN A LIQUID

Christian Rodde, Palaiseau, and Jean Desarnaud, Vanves, both of France, assignors to Octel S.A., Paris, France

Filed Feb. 2, 1983, Ser. No. 463,250
Claims priority, application France, Feb. 3, 1982, 82 01708
Int. Cl.³ G01F *3/24*
U.S. Cl. 73—223 **13 Claims**



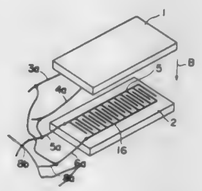
1. A flowmeter having a tank disposed between a discharge circuit in which the rate of flow is to be measured and a supply circuit from which the tank is refilled when the liquid level in the tank falls below a predetermined value, and a plunger suspended in the tank via a force sensor providing an output signal indicative of flow from the tank to the discharge circuit, means independent of the tank and the plunger to continuously supply a signal which is approximately representative of the rate of flow in the discharge circuit, and means responsive to said output signal of the force sensor outside of refilling cycles of the tank for calibrating said means independent of the tank and the plunger, so that reasonably accurate flow measurement is obtained during a refilling cycle of the tank.

4,522,060

DRY/DEW/FROST SENSOR

Michihiro Murata, Kyoto, and Shoichi Kitao, Otokuni, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 21, 1983, Ser. No. 477,410
Claims priority, application Japan, Mar. 24, 1982, 57-48415
Int. Cl.³ G01N *27/30;* **G01W** *1/00*
U.S. Cl. 73—336.5 **7 Claims**



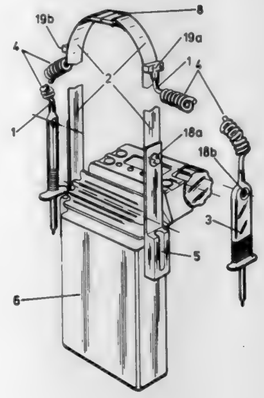
1. A dry/dew/frost sensor, comprising:
(A) a first sensor unit including:
(1) a first ceramic substrate having a permittivity which is less than the permittivity of ice; and
(2) a first pair of electrodes formed on a first surface of said first ceramic substrate and being electrically insulated and spaced apart from one another in a predetermined pattern;
(B) a second sensor unit including:
(1) a second ceramic substrate having a permittivity which is less than the permittivity of ice; and
(2) a second pair of electrodes formed on a first surface of said second ceramic substrate and being electrically insulated and spaced apart from one another in a pattern similar to said predetermined pattern; and
(C) means for mounting said first and second substrate with said first surfaces of said substrate and said first and second pairs of electrodes facing each other and being spaced insulatively apart from one another so as to define a predetermined open space between said first surfaces of said substrates, whereby the impedance of said sensor will change to different values when in a dry state, a frosted state and a bedewed state.

4,522,061

PORTABLE MEASURING DEVICE

Karl Hochreuther, Nuremberg, Fed. Rep. of Germany, and Jörg Tragatschnig, Zell am See, Austria, assignors to Metrawatt GmbH, Nuremberg, Fed. Rep. of Germany

Filed Aug. 10, 1983, Ser. No. 522,055
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1982, 3229689
Int. Cl.³ G01D *11/24, 11/30*
U.S. Cl. 73—431 **13 Claims**



1. Portable measuring device, comprising a measuring instrument, a carrying strap fastened to said measuring instrument for hanging said measuring instrument around the neck, measuring lines electrically connected to said measuring instrument and passing through at least part of said carrying strap, measuring probes connected to said measuring lines, said measuring lines being in the form of flexible spiral cables connected from said carrying strap to said measuring probes, and at least one mounting disposed on said measuring instrument for fastening unused measuring probes hanging on said measuring lines, said carrying strap having two ends fastened to said measuring instrument, said measuring lines being electrically connected to said measuring instrument in vicinity of at least one of said ends of said carrying strap, and said measuring lines emerging from said carrying strap substantially at shoulder height and each hanging down at a respective side of of said measuring instrument and leading to a respective one of said measuring probes.

4,522,062

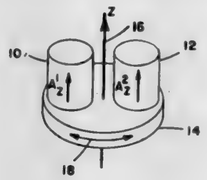
DIGITAL PROCESSOR FOR USE WITH AN ACCELEROMETER BASED ANGULAR RATE SENSOR

Rex B. Peters, Woodinville, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Sep. 2, 1983, Ser. No. 528,775
Int. Cl.³ G01C *23/00, 19/56;* **G01P** *15/08*
U.S. Cl. 73—505 **17 Claims**

5. A circuit for deriving from a pair of accelerometers which are being vibrated in a direction substantially normal to their force sensing axes at a frequency ω an angular rate signal representing the angular rate of rotation of the accelerometers, comprising:

sign switching means operatively connected to the accelerometers for multiplying the acceleration signals from the accelerometers by a zero mean periodic function of ω;



first conversion means operatively connected to said sign switching means for converting said multiplied acceleration signals to a first frequency signal; and

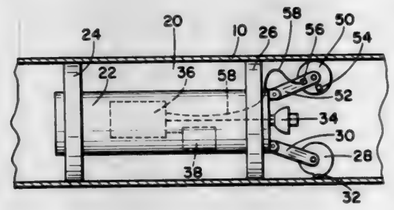
first counter means operatively connected to said first conversion means for generating from said first frequency signal a digital angular rate signal representing the rate of rotation of the accelerometers.

4,522,063

METHODS AND APPARATUS FOR INDICATING SELECTED PHYSICAL PARAMETERS IN A PIPELINE

Burton Ver Nooy, Tulsa, Okla., assignor to T. D. Williamson, Inc., Tulsa, Okla.

Filed Sep. 16, 1983, Ser. No. 532,753
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—579 **22 Claims**



1. A method of detecting selected physical parameters in a pipeline comprising the steps of:
traversing the interior of the pipeline by an instrumentation apparatus;
introducing a sequence of sound signals into the pipeline while traversing the said pipeline;
receiving sound signals from within the pipeline occurring as a consequence of the vibration of the pipeline in response to said introduced sound signals; and
determining physical parameters of the pipeline by analysis of characteristics of the received signals.

4,522,064

ULTRASONIC METHOD AND APPARATUS FOR DETERMINING THE DEPTH OF A CRACK IN A SOLID MATERIAL

John D. McMillan, Kennewick, Wash., assignor to Sigma Research Inc., Richland, Wash.

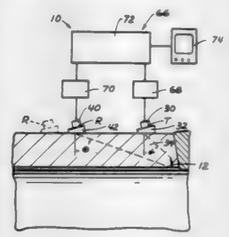
Filed Dec. 12, 1983, Ser. No. 560,752
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—592 **9 Claims**

1. In a method for ultrasonic inspection of solid material of predetermined configuration to determine the depth of a crack therein,

placing a first ultrasonic transducer acoustically coupled with a surface of the solid material;

placing a second ultrasonic transducer in acoustical coupling with the surface of the solid material spaced from the first ultrasonic transducer;

generating an ultrasonic pulse of a selected frequency into the solid material from one of the ultrasonic transducers to acoustically illuminate the crack and produce an acoustical wave form reflected from the crack;



receiving the reflected acoustical wave form at the other ultrasonic transducer and generating an electrical signal, the magnitude of which corresponds to the magnitude of the reflected acoustical wave form;

moving at least one of the ultrasonic transducers relative to the other ultrasonic transducer and relative to the crack to vary the magnitude of the electrical signal; and

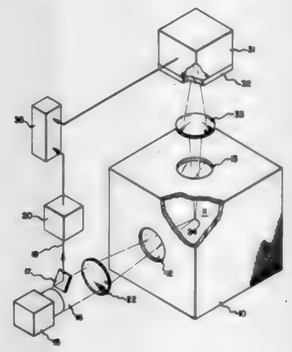
determining the distance between the ultrasonic transducers wherein the magnitude of the electrical signal is at a maximum.

4,522,065

REMOTE PRESSURE SENSOR

John C. Devins, Burnt Hills, and Amandus H. Sharbaugh, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1984, Ser. No. 595,780
Int. Cl.³ G01L *9/00*
U.S. Cl. 73—705 **7 Claims**



1. Apparatus for measuring the pressure of a gas within an enclosure comprising:
(a) means for generating a beam of light,
(b) means for focusing said beam at a preselected point within said enclosure,
(c) means for varying the intensity of said beam to cause electrical breakdown of the gas at a preselected point, and
(d) detector means for measuring the intensity of said beam at which said electrical breakdown occurs.

4,522,066

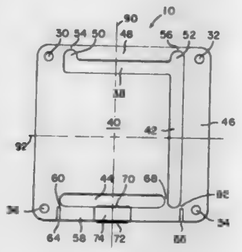
TEMPERATURE-COMPENSATED EXTENSOMETER

Walter P. Kistler, and Martin D. Chinn, both of King County, Wash., assignors to Kistler-Morse Corporation, Redmond, Wash.

Continuation-in-part of Ser. No. 377,819, May 13, 1982, abandoned. This application May 25, 1983, Ser. No. 498,042

Int. Cl.³ G01B *7/18*

U.S. Cl. 73—781 **38 Claims**



24. A system for measuring the load-induced strain along a measurement axis in a load-bearing structure while being insensitive to isotropic strains in said structure, said system comprising an extensometer mounted on said structure through two mounting bases, with said bases being mechanically coupled to a single measurement beam in a manner causing said beam to deflect in one direction responsive to a load-induced strain of one polarity applied between said bases along said measurement axis and causing said beam to deflect in the opposite direction responsive to a load-induced strain of said one polarity applied between said bases along an axis that is orthogonal to said measurement axis, and in a manner causing no deflection in said measurement beam responsive to isotropic stress in said structure, such that said measurement beam deflects responsive to load-induced strains but is unaffected by isotropic strains.

32. A method of measuring the magnitude of a load applied to a load-bearing structure along a measurement axis which is substantially insensitive to isotropic strains in said structure, said method comprising mounting an extensometer on said structure, said extensometer having an output that is proportional to the magnitude of relative movement between a pair of mounting bases along an axis of sensitivity, each of said mounting bases being mounted on said structure through at least one mounting point, with all mounting points on each base being symmetrically located with respect to an axis of symmetry of said extensometer extending generally perpendicularly to said axis of sensitivity, said extensometer being mounted on said structure with said axis of sensitivity intersecting said measurement axis at 45°.

4,522,067

THIN-FILM STRAIN GAUGE

Kurt Burger, Friolzheim, and Heiko Gruner, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE81/00228, § 371 Date Sep. 17, 1982, § 102(e) Date Sep. 17, 1982, PCT Pub. No. WO82/03458, PCT Pub. Date Oct. 14, 1982

PCT Filed Dec. 18, 1981, Ser. No. 420,258

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113745

Int. Cl.³ G01L *1/22, 9/04*; H01C *17/12*

U.S. Cl. 73—862.65 **15 Claims**

1. A temperature-compensated thin-film strain gauge, particularly a precision thin-film strain gauge capable of integration into a thin-film circuit, for measuring force, pressure, displacement, weight, or acceleration, having

an elastically deformable spring device (**10, S**) in combination with

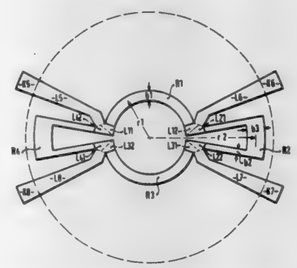
at least one elongation-sensitive resistor element, having at least one deflectable resistance region (**R1, R3**) and one substantially non-deflecting resistance region (**R2, R4**);

at least one low-impedance connection element (**L11–L42**) connecting at least said resistance regions (**R1, R3; R2, R4**); and

connection tracks (**L5–L8**), wherein, to simplify production and facilitate integration of the gauge in a larger thin-film circuit, at least one of:

the resistor element disposition (**R1, R4**);

the low-impedance connections (**L11–L42**) between the various resistance regions; and



associated connection tracks (**L5–L8**) are applied by means of at least one of thermal vapor deposition and cathode sputtering; and wherein, to prevent temperature fluctuations from giving rise to erroneous strain change measurements, the temperature coefficients of resistance (TCR's) of the materials used for the elongation-sensitive resistor element (**R1–R4**) and at least one of the low-impedance connections (**L11–L42**) and the connection tracks (**L5–l8**) are of the same order of magnitude; and wherein, to prevent loss of measurement signal strength, at least one of:

the low-impedance connections (**L11–L42**); and

the connection tracks (**L5–L8**) are of material which is different from the material of the resistance element regions (**R1–R4**).

4,522,068

ULTRASONIC DENSITOMETER FOR LIQUID SLURRIES

George E. Smith, Missouri City, Tex., assignor to Electro-Flow Controls, Inc., Missouri City, Tex.

Filed Nov. 21, 1983, Ser. No. 553,585

Int. Cl.³ G01N *9/24*

U.S. Cl. 73—32 A **4 Claims**

1. A method for directly measuring the density of a mixture of a fluid and a solid of fine, suspended particles of known character, comprising,

isolating a quantity of the fluid between a transmit transducer and a receive transducer separated by a predetermined distance,

driving said transmit transducer with pulses at a predetermined frequency,

receiving said pulses by said receive transducer following the acoustic time of transmission through said isolated fluid,

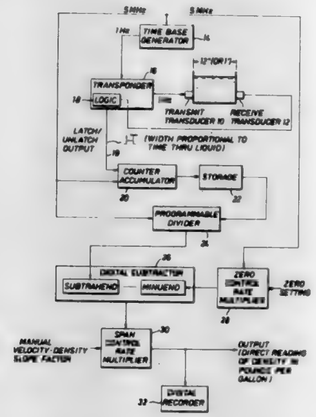
producing a latching/unlatching output signal having a leading edge occurring with each produced pulse supplied to said transmit transducer and a trailing edge occurring with each received pulse received by said receive transducer,

accumulating a count from a high frequency standard signal during the period between said leading edge occurrence and said trailing edge occurrence,

storing said accumulated count,

dividing said stored count by a number of proportional to a measurement conversion standard to produce a high frequency velocity signal,

subtracting a fixed high frequency signal from said high frequency velocity signal, said fixed high frequency signal representing a frequency corresponding to the lowest



expected fluid density, to produce a subtraction frequency corresponding to a fluid density velocity below the velocity for the lowest fluid density, and

multiplying said subtraction frequency with an empirically determined span factor to produce an output in density units of measurement.

4,522,069

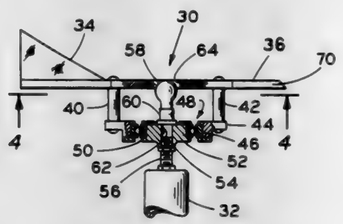
WINDVANE

Samuel Birnbaum, 11 Shadow Grove La., Holbrook, N.Y. 11741

Filed Jan. 12, 1981, Ser. No. 224,460

Int. Cl.³ G01P *13/02*

U.S. Cl. 73—188 **2 Claims**



1. A windvane adapted to be illuminated at night incident to indicating wind direction comprising, in combination, a sailboat mast, a battery-operated light mounted on top of said mast, a plastic light-transmitting windvane having an internal opening receiving said light therein mounted for rotation about said light, and light-releasing beveled edges provided about the peripheral edge of said windvane, whereby light rays impinging upon said windvane are released therefrom through said beveled edges to thereby illuminate said edges and provide a visual indication of the direction of the wind that is providing the position of rotation to said windvane.

4,522,070

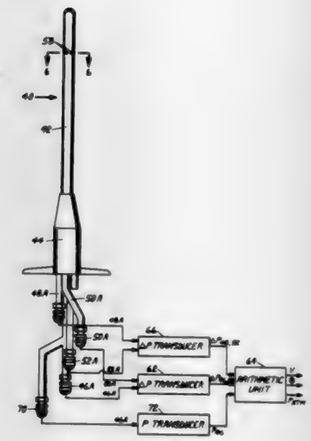
METHOD AND APPARATUS FOR CORRECTING BAROMETRIC PRESSURE FOR WIND VELOCITY AND DIRECTION

Floyd W. Hagen, Eden Prairie, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Sep. 30, 1983, Ser. No. 537,642

Int. Cl.³ G01L *7/00*

U.S. Cl. 73—384 **12 Claims**



1. A sensing instrument for sensing atmospheric pressure of a fluid medium comprising enclosure means having a shape exposed to the fluid medium, which fluid medium has a certain density is moving at a certain velocity relative to the sensing instrument, which velocity is determined by an external source, the enclosure means providing an internal chamber, the sensing instrument having at least one sensing port means having a preselected shape open to the fluid medium and to the internal chamber for sensing a measured pressure of the fluid medium, the chamber being closed to prevent fluid flow of the fluid being sensed therethrough, such measured pressure being corrected for the effects of the velocity of the fluid medium according to the formula

$$P_{ATM}=P_M+K\,V^2$$

where P_{ATM} is atmospheric pressure, P_M is measured pressure in the chamber of the enclosure means, K is a constant that is a function of the shape of the enclosure means, the shape and number of the port means and the density of the fluid medium, and V is the velocity of the fluid medium and is supplied from the outside source.

4,522,071

METHOD AND APPARATUS FOR MEASURING STRESS

R. Bruce Thompson, Ames, Iowa, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 28, 1983, Ser. No. 518,243

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—597 **12 Claims**

1. A method of determining stress in an object comprising:

generating a first horizontally polarized ultrasonic shear wave through said object, said first wave having a known direction of propagation parallel to the surface of said object,

determining the velocity of said first wave,

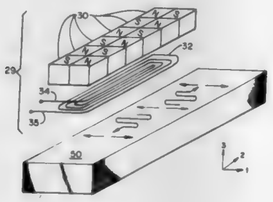
generating a second horizontally polarized ultrasonic shear wave through said object, the direction of propagation

and polarization of said second wave being interchanged with those of said first wave,

determining the velocity of said second wave, and

determining the stress in said object according to the formula:

$$\rho(V_{12}^2 - V_{21}^2) = T_1 - T_2$$



where

V_{12} = the velocity of said first wave

V_{21} = the velocity of said second wave

ρ = the density of the material, and

$T_1 - T_2$ = the stress of the material.

4,522,072

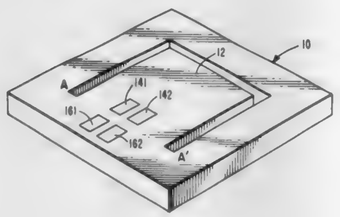
ELECTROMECHANICAL TRANSDUCER STRAIN SENSOR ARRANGEMENT AND CONSTRUCTION

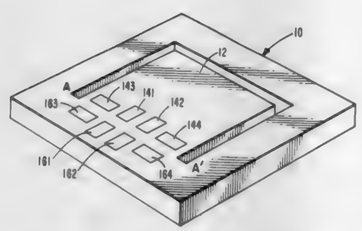
Robert E. Sulouff; Sam S. Hartin; Koy B. Cook; David V. Kerns, Jr.; Jimmy L. Davidson, and Keith O. Warren, all of Auburn, Ala., assignors to Insouth Microsystems, Inc., Auburn, Ala.

Filed Apr. 22, 1983, Ser. No. 487,731

Int. Cl.³ G01L *1/18*

U.S. Cl. 73—765 **43 Claims**





1. In an electromechanical transducer having a main body and flexing means attached to said main body for flexing in response to an external stimulus applied to said transducer, strain sensing means responsive to flexion of said flexing means for providing an output signal representative of the external stimulus, said strain sensing means comprising:

a first piezoresistive voltage divider connected across a first source of electrical power, said first piezoresistive voltage divider comprising in series a piezoresistive strain sensing element coupled to said flexing means, an output terminal, and a piezoresistive strain sensing element coupled to said main body, said first piezoresistive voltage divider providing across said piezoresistive strain sensing element coupled to said main body a voltage representing non-strain effects in said main body;

a second piezoresistive voltage divider connected across a second source of electrical power, said second piezoresistive voltage divider comprising in series a piezoresistive strain sensing element coupled to said main body, an output terminal, and a piezoresistive strain sensing element coupled to said flexing means, said second piezoresistive voltage divider providing across said piezoresistive strain sensing element coupled to said flexing means a voltage representing strain in said flexing means; and

output means coupled to said output terminals for providing, as the output signal, the voltage between said terminals.

4,522,073

MAGNETIC-INDUCTIVE FLOW METER FOR HIGH TEMPERATURES

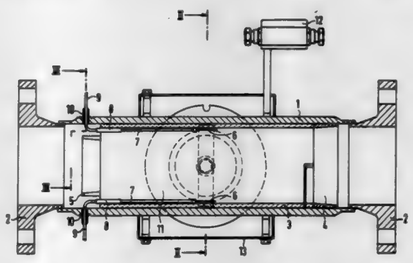
Joachim Knaak, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to INTERATOM Internationale Atomreaktorbau GmbH, Bergisch-Gladbach, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,628

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1982, 3244473

Int. Cl.³ G01F *1/58*

U.S. Cl. 73—861.12 **3 Claims**



1. Magnetic-inductive flow meter, comprising a pipe section for carrying fluid flowing in a given direction, insulation in the form of a ceramic tube disposed loosely inside of said pipe section, magnet coils disposed on the outside of said pipe section for producing a magnetic field in said pipe section perpendicular to the given flow direction, at least two electrodes disposed inside said pipe, holding pieces wedged against said ceramic tube for securing said ceramic tube against rotation, and leads connected to said electrodes and disposed inside said ceramic tube, said leads being extended through said pipe section beyond an end of said ceramic tube.

4,522,074

APPARATUS FOR MEASURING SEVERAL FORCE COMPONENTS

Hans W. Häfner, Aichach, Fed. Rep. of Germany, assignor to Pfister GmbH, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,514

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144358

Int. Cl.³ G01L *5/16*; G01M *9/00*

U.S. Cl. 73—862.04 **10 Claims**

1. An apparatus for measuring a plurality of force components such as those based on forces of a flowing medium which act on an object of measurement comprising in combination:

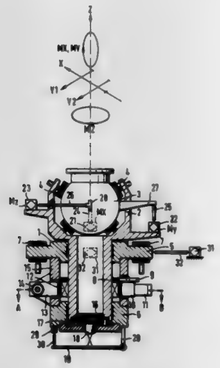
an object carrier;

frictionless bearings;

a cylinder supporting, in said frictionless bearings, the object carrier in a mobile fashion about pivotal, rotational, horizontal and vertical axes;

a support means guiding said cylinder about the vertical axis for rotational and longitudinal movement;

force measuring devices for the force components to be measured, said force measuring devices connected to the object carrier and connected to and carried by the cylinder; and



a rotary drive connected to said cylinder for setting the object carrier, by rotating the cylinder, into a desired angular position in respect of the support means;

whereby the object of measurement maintains its position relative to the force measuring devices.

4,522,075

TORQUE WRENCH

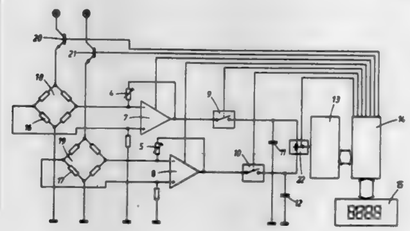
Peter Pohl, Eichenstrasse, D 4006 Erkrath 2, Fed. Rep. of Germany

Filed Jul. 25, 1983, Ser. No. 517,074

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1982, 3228086

Int. Cl.³ B25B *23/142*

U.S. Cl. 73—862.23 **19 Claims**



9. A torque wrench with an elongate deflection beam, a pair of independent strain gauges attached to a side of the beam which is stretched and compressed during normal use of the wrench, the strain gauges are spaced longitudinally of the beam and relative to each other, each strain gauge is a resistor connected in a related measuring bridge, the output of each bridge is conducted to an amplifier, the amplified voltage of each amplifier is conducted through a related switch and stored in a related measured voltage value memory, the stored voltages in the two memories are conducted to a switching means and cyclically and alternatingly conducted to an analog-to-digital converter and thence from the analog-to-digital converter to a micro-processor which compares the voltages and conducts a signal to an indicating instrument.

4,522,076

METHOD OF COLLECTING SAMPLES FROM MATERIAL ON A BELT CONVEYOR

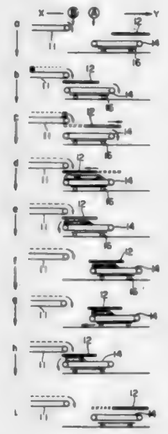
Hiroshi Shimokawa, Kitakyushu, Japan, assignor to Kabushiki Kaisha Imamura Seisakusho, Kitaminato, Japan

Filed Oct. 24, 1983, Ser. No. 544,981

Claims priority, application Japan, Oct. 27, 1982, 57-187350

Int. Cl.³ G01N *1/20*

U.S. Cl. 73—863.41 **5 Claims**



1. A method of collecting samples from a material on a belt conveyor comprising the steps of advancing a baffle member to a position beneath the delivery end of an upstream main belt conveyor continuously conveying a material, advancing a collecting belt conveyor to a position beneath said baffle member, retracting said baffle member to permit transfer of a portion of the material from said main belt conveyor onto said collecting belt conveyor running in the same direction as that of said main belt conveyor at the same speed as that of said main belt conveyor, advancing said baffle member to the position beneath said delivery end of said main belt conveyor again to terminate the transfer of the material from said main belt conveyor onto said collecting belt conveyor, stopping the operation of said collecting belt conveyor at the same time, and then running said collecting belt conveyor at low speed to collect as a sample a portion of the mass of the material transferred onto said collecting belt conveyor.

4,522,077

FLOW MEASURING SYSTEM INCLUDING A VENTURI

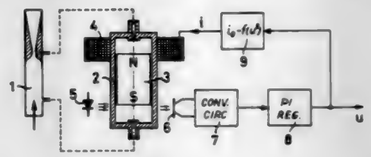
Karl Köberle, Panoramastrasse 14, D-7980 Ravensburg 19, Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 505,400

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1982, 3224285

Int. Cl.³ G01P *5/14*

U.S. Cl. 73—861.63 **9 Claims**



1. A fluid flow measuring system comprising: a venturi connected to conduct the fluid whose flow is to be measured and having two outlet ports between which a pressure differ-

ential proportional to such fluid flow is created; a movably mounted measuring element having a selected zero position and connected to said venturi to be subjected to a displacement force corresponding to the pressure differential; transducer means associated with said measuring element for producing an electrical signal representative of the displacement of said measuring element from its zero position; a regulating device having a signal input connected to receive said electrical signal, and a signal output, and presenting a transfer characteristic having an integrating component such that the signal at said output is representative of the magnitude and duration of displacement of said measuring element from its zero position; signal squaring means connected to said regulating device for generating a control signal dependent on the square of the signal at said output of said regulating device; and a hysteresis-free electromagnetic system connected to apply to said measuring element, in response to the control signal, a magnetic displacement force of a magnitude and direction to cause said measuring element to reach its zero position.

4,522,078

DEVICE FOR ADJUSTING HEIGHT OF CUSHION IN REAR PART OF SEAT

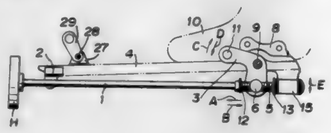
Kinsho Fukuta, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 18, 1983, Ser. No. 467,662

Claims priority, application Japan, Mar. 19, 1982, 57-39160[U]

Int. Cl.³ F16H *27/02*

U.S. Cl. 74—89.15 **18 Claims**



1. A device for adjusting the height of a seat cushion in the rear part of a seat having a rotary handle attached to the seat, a threaded rod provided with the handle, and a stationary member secured with the seat substantially at the center, comprising:

a movable element engaged with a threaded part of said rod;

a link rockably mounted at said stationary member, pivotally secured at a first end thereof to said element and pivotally secured at a second end thereof to the rear part of said seat;

a bearing section operatively associated with said stationary member for bearing an end portion of said rod;

a first stationary ring mounted on a portion of said rod at the position corresponding to a first end of said bearing section;

a first synthetic resin ring having large friction reducing effect interposed between and in contact with said first end of said bearing section and said stationary ring; and

a second stationary ring mounted on a portion of said rod at a position corresponding to a second end of said bearing section;

a second synthetic resin ring and a cushion material ring interposed in compressed manner between and in contact with a second end of said bearing section and said second stationary ring.

4,522,079

CONTINUOUSLY VARIABLE TRANSMISSION UNIT

Yves J. Kemper, Birmingham, Mich., assignor to Caterpillar Tractor Co., Peoria, Ill.

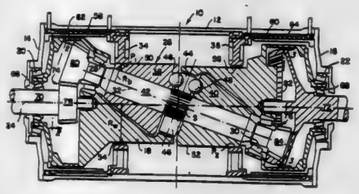
PCT No. PCT/US80/00582, § 371 Date Dec. 23, 1981, § 102(e) Date Dec. 23, 1981, PCT Pub. No. WO81/03369, PCT Pub. Date Nov. 26, 1981

PCT Filed May 19, 1980, Ser. No. 348,938

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

Int. Cl.³ F16H *15/16, 15/00, 15/50*

U.S. Cl. 74—191 **10 Claims**



1. In a continuously variable transmission having a rotatable input, a rotatable output, a frame, an alpha body supported by said frame for rotation about a first axis, a biconical beta body supported by said alpha body for rotation on a second axis inclined with respect to and intersecting said first axis at a point of axes intersection located centrally along the length of said beta body so that movement of said second axis is confined to nutation on said point and about said first axis, said beta body having a pair of beta traction surfaces of revolution about said second axis one such surface being located on each side of said point of axes intersection, means for defining a pair of omega surfaces of revolution about said first axis, said beta and omega surfaces being in rolling friction engagement with each other at two points in a plane containing said first and second axes, said beta and omega surfaces further defining a radius ratio which is variable upon shifting the location of said points of rolling friction engagement relative to said point of axes intersection, the improvement comprising:

first means for supporting said alpha body for rotation about said first axis dependent solely on the speed at which said second axis is driven in nutation about said first axis by said beta body;

second means for drivingly coupling said input and said beta body and defining a first gear ratio factor;

third means for drivingly coupling said beta body and said output and defining a second gear ratio factor differing from said first gear ratio factor; and

said first and second gear ratio factors being related to said variable radius ratio so that the range of output/input speed ratios of the transmission is greater than the range of such speed ratios attainable by said radius ratio alone.

4,522,080

LAMINATED WHEEL ASSEMBLY

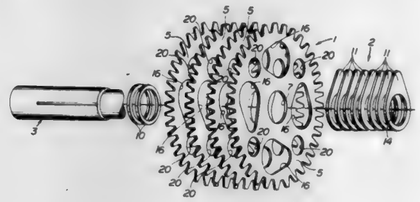
John D. Santi, Milwaukee, Wis., assignor to Briggs & Stratton Corp., Wauwatosa, Wis.

Filed Jul. 30, 1982, Ser. No. 403,465

Int. Cl.³ F16M *55/12;* **B21D** *53/28*

U.S. Cl. 74—445 **4 Claims**

1. A wheel assembly, comprising a rotatable support member, and a pair of wheels fixedly secured to said support member and disposed in axially spaced relation to one another, each of said wheels including a laminated stack of flat plates disposed in abutting relation to one another, each of said plates having an opening formed therethrough disposed in axial registry for frictionally receiving said support member so that the frictional force between said plates and said support member provides the substantially sole means for maintaining said plates in substantially abutting relationship, one of said wheels includes integral teeth formed in its periphery to provide a laminated gear and the other wheel includes an integral cam surface formed in its periphery to provide a laminated cam, and each of the individual plates of said cam is stamped from the individual plates of said gear so that at least two of the individual plates of said cam are stamped from each of the individual plates of said gear at equi-angularly spaced apart locations to provide a plurality of cam-shaped apertures therein.



4,522,081

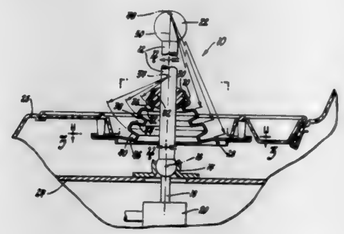
BOOT COVER FOR A FLOOR-MOUNTED TRANSMISSION LEVER

Steven J. Mackin, Pontiac, and Harry T. Tillotson, Royal Oak, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 14, 1983, Ser. No. 561,321

Int. Cl.³ G05G *9/00;* **F16J** *15/52*

U.S. Cl. 74—473 R **3 Claims**



1. An improvement in boot covers for a floor mounted manually operated transmission shift lever wherein the shift lever has a pivot axis and a handle longitudinally displaced from the pivot axis and wherein said boot cover is of a geometrical shape which converges toward an apex which is disposed substantially on the shift lever between the handle and the pivot axis; wherein the improvement comprises: said boot cover having a plurality of lower and upper spherical surfaces, each said lower surface having respective center of radii disposed at a common point displaced from the apex a distance equal to the distance between the apex and the pivot axis the largest of said radial dimensions being less than twice the distance between said apex and said pivot axis; and each said upper surface having a common center of radii disposed at the apex and the radial dimension of each said upper surface being less than the radial dimension of each said lower surface, each said lower surface being connected to each said upper surface immediately adjacent thereto and disposed toward said handle therefrom by an inner wall and to the other upper surface adjacent thereto by an outer wall.

4,522,082

PEDAL ASSIST APPARATUS

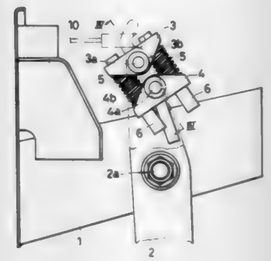
Raita Musumiya, Kawagoe; Hideo Sano, Kuki; Yasuto Izichi, Kuki; Mitsuru Inoue, Kuki, and Kenzyu Izawa, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Fukuda Press Kogyo Kabushiki Kaisha, Saitama, both of, Japan

Filed May 4, 1983, Ser. No. 491,384

Claims priority, application Japan, May 4, 1982, 57-637772; May 4, 1982, 57-63773; Jun. 23, 1982, 57-92995

Int. Cl.³ G05G *1/14*

U.S. Cl. 74—512 **4 Claims**



1. An assist apparatus for a pedal including a pedal arm supported on a machine frame through a supporting shaft so as to be turnable between its inoperative position on one side and its operative position on the other side, a first spring seat and a second spring seat facing the first spring seat turnably supported on the pedal arm and the machine frame, respectively, through a first seat shaft on the pedal arm and a second seat shaft on the machine frame which are parallel with the supporting shaft, and a spring means provided between the two spring seats so that the two seats thereby are urged along a direction of a connecting line connecting between an axis of the first seat shaft and an axis of the second seat shaft, characterized in that each of the seats is provided with inwardly projecting opposite side walls, and is turnably mounted and supported on each of the seat shafts at the opposite side walls thereof, and the spring means comprises a pair of springs disposed at symmetrical positions on both sides of the connecting line.

4,522,083

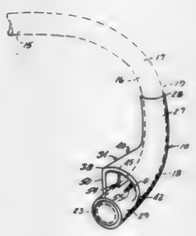
BICYCLE HANDLEBAR GRIPS

Clyde R. Morgan, Box 302, Coeur d'Alene, Id. 83814

Continuation of Ser. No. 211,073, Nov. 28, 1980, abandoned. This application Aug. 10, 1983, Ser. No. 522,189

Int. Cl.³ B62K *21/26*

U.S. Cl. 74—551.9 **6 Claims**



1. A handlebar grip for a bicycle with a racing bicycle handlebar having a drop portion which is substantially tubular about a central axis and includes (1) a substantially straight end section that extends from a terminal rear end forward in the intended direction of travel of the bicycle and (2) a front

curved section that is formed integrally with the straight section and extends upwardly therefrom in a curved shape, comprising:

an elongated cylindrical tubular body made of flexible material and having an internal cylindrical bore adapted to coaxially receive the straight end section of the drop portion of a handlebar and also to extend upward along a portion of its front curved section;

said tubular body having an upwardly curved neck segment terminating at a forward end and adapted to extend along the front curved section of the drop portion of a handlebar and an integral finger gripping segment terminating at a rear end and adapted to extend along the straight end section of the drop portion of a handlebar; said finger gripping segment having an upper side and a lower side extending between opposed inner and outer sides;

an integral enlarged palm and thumb cheek support member extending longitudinally along and above the finger gripping segment of the said tubular body;

said enlarged palm and thumb cheek support member extending radially outwardly from both the inner and outer sides of the finger gripping segment of the tubular body to partially encircle the finger gripping segment of the tubular body and being spaced apart therefrom in an overlapping position across the upper side thereof;

said enlarged palm and thumb cheek support member extending longitudinally along the tubular body from a forward end at the intersection of the finger gripping segment and the curved neck segment to a rearward end adjacent the rear end of the finger gripping segment;

said enlarged palm and thumb cheek support member having (1) a convex outer surface that extends radially outward and upward from the outer side of the finger gripping segment to support the palm of a cyclist's hand adjacent to the cyclist's fingers; (2) an overlying surface extending from the convex surface over the finger gripping segment to a thumb ridge above the inner side of the finger gripping segment for supporting the cyclist's thumb cheek and the hand palm adjacent the thumb cheek; and (3) a finger tip surface extending inward and downward from the thumb ridge to the finger gripping segment in which the finger tip surface is adapted to receive the finger tips; and

vibration absorbing means comprising resilient material interposed between said enlarged palm and thumb cheek support member and the tubular body for absorbing vibrations of the bicycle handlebar to minimize the transmission of such vibration from the handlebars to the cyclist's hands to minimize biker's fatigue and biker's nerve palsy.

4,522,084

STEERING WHEEL FOR A VEHICLE

Masahiro Takimoto, Aichi, and Satoshi Ota, Konan, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 11, 1983, Ser. No. 541,000
Claims priority, application Japan, Oct. 30, 1982, 57-190946
Int. Cl.³ C08K *5/57;* B62D *1/04*
U.S. Cl. 74—557 **6 Claims**

1. In a vehicle steering wheel formed from a molded polyvinyl chloride resin which is in physical contact with a molded polyurethane resin, the improvement wherein said molded polyvinyl chloride resin contains a color change-inhibiting amount of a heat stabilizer selected from the group consisting of:

(i) 1 to 3 phr of an organotin maleate; and

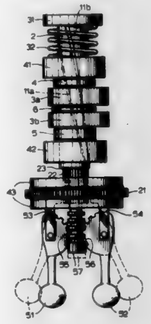
(ii) 1 to 4 phr of a zinc soap and 0.3 to 1.0 phr of an organophosphite.

4,522,085

VARIABLE LOBE CAM MECHANISM

Garold L. Kane, 1112 W. Kiowa, Colorado Springs, Colo. 80904

Filed Aug. 30, 1982, Ser. No. 412,915
Int. Cl.³ F16H *53/00;* F01L *1/34;* F16D *1/00;* F16B *3/00*
U.S. Cl. 74—568 R **15 Claims**



1. A continuously variable lobe cam mechanism for controlling the opening and closing of valves in an internal combustion engine comprising:

a camshaft having first and second oppositely directed and independently pitched slots running generally longitudinally to said camshaft on the periphery thereof;

a cam member having a cam surface and mounted on said camshaft for rotation therewith, said cam member adapted for longitudinal movement relative to said camshaft and comprising first and second cooperating cam bodies which are maintained in fixed axial position with respect to one another, each of said cam bodies being axially fixed with respect to one another and forming a portion of said cam surface and each of said cam bodies being adapted for independent limited rotational movement in opposite directions relative to said camshaft in respone to longitudinal movement of said camshaft relative to said cam bodies, each of said cam bodies further having a generally cylindrical bore extending therethrough;

first and second following means connected respectively with first and second cam bodies and being respectively slidably disposed in said first and second slots to provide opposing relative rotations of said cam bodies upon movement of said first and second following means within the respective first and second slots said first and second following means extending inwardly from the surface of said cylindrical bore of its respective first and second cam body for engagement with said first and second slot;

rotational drive means operatively attached to said camshaft; and

means operatively attached to said camshaft for moving said camshaft longitudinally with respect to said cam member as a function of the rotational speed of said camshaft.

4,522,086

CONTROL SYSTEM FOR CONTINUOUSLY VARIABLE TRANSMISSION

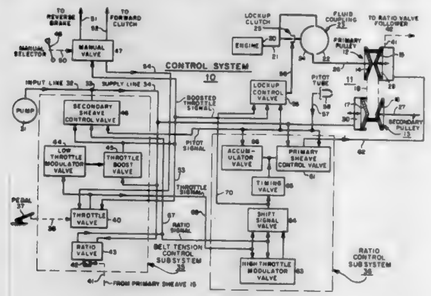
William J. Haley, Sterling Heights, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 24, 1981, Ser. No. 257,035
Int. Cl.³ B60K *41/12, 41/14*
U.S. Cl. 74—867 **9 Claims**

2. A control system for a continuously variable transmission having primary and secondary pulleys, each having a fixed sheave and a movable sheave, and a belt intercoupling the pulleys, which control system comprises

a supply line, means for establishing fluid flow in the supply line, and a secondary sheave control valve coupled to the supply line for regulating the line pressure supplied to the secondary pulley movable sheave,

a throttle valve connected to develop a throttle pressure signal as a function of throttle opening, which throttle pressure signal is utilized to regulate the secondary sheave control valve in a sense to increase said line pressure as the throttle opening indicates an increased torque demand and to decrease said line pressure as the throttle opening indicates a reduced torque demand, thus providing a throttle-sensitive



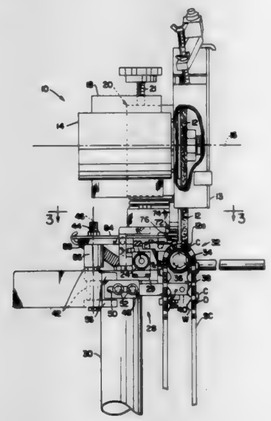
regulation of the fluid pressure in the supply line to the secondary pulley movable sheave, and further comprising a bore in which said throttle valve is positioned, a second spool positioned in the same bore, a spring positioned between the throttle valve and the second spool, a movable sleeve affixed to said second spool, and means, including a drive mode selector, for applying fluid under pressure to one end of said sleeve for displacing the second spool and compressing the spring, simulating a manual-low throttle position in the system.

4,522,087

SAW CHAIN DEPTH GAUGE GRINDER

Elmer R. Silvey, 1231 Dutton Rd., Eagle Point, Oreg. 97524

Filed Oct. 21, 1983, Ser. No. 544,435
Int. Cl.³ B23D *63/16*
U.S. Cl. 76—25 A **18 Claims**



1. A saw chain grinding machine for grinding the depth gauges of saw chain cutter links each having both a front depth gauge and a rear cutter tooth, said machine comprising:

grinding means including a grinding surface;

carrier means for mounting a saw chain with a cutter link in predetermined position for grinding the depth gauge thereof, said carrier means and grinding means being movable relative to one another in a predetermined path to move said cutter link depth gauge toward and away from said grinding means;

mounting means mounting said carrier means and said grinding means for generally vertical relative movement therebetween;

indexing means positioned along said path and cooperable with the cutter tooth to induce generally vertical relative movement between said grinding means and said carrier means when said carrier means is moved along said path to determine the grinding position of said grinding surface relative to the depth gauge;

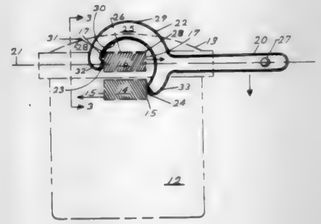
and shield means positioned along said path for engagement with the top of the cutter tooth and the indexing means to prevent direct contact between said indexing means and said cutter tooth upon said relative movement along said path between said grinding means and said carrier means.

4,522,088

TOOL FOR OPENING A PRESSURE COOKER

Malcolm F. Berglund, 858 N. 64th St., Mesa, Ariz. 85205

Filed Dec. 19, 1983, Ser. No. 563,204
Int. Cl.³ B25B *27/00*
U.S. Cl. 81—3.55 **5 Claims**



1. A manually operable hand tool for causing the lid of a pressure cooker to rotate with respect to the underlying vessel of said pressure cooker, and adapted to engage the vertical sides of vertically aligned handles of said lid and vessel, said tool comprising a handle portion elongated about a center axis, and a gripping head disposed at one extremity of said handle portion as a continuous integral extension thereof, said gripping head being of bifurcated configuration and comprised of an arcuately shaped spanning member having first and second extremities and defining an engulfing area, a forward abutment site and a rearward abutment site disposed in facing relationship adjacent said first and second extremities, respectively, said engulfing area extending above said forward abutment site and rearward of said rearward abutment site, and an upper abutment site located on said spanning member within said engulfing area, whereby placement of said tool over the aligned handles of said pressure cooker in a manner such that an upper edge of the lid handle contacts said upper abutment site causes said forward abutment site to contact a vertical side of said lid handle and said rearward abutment site to contact an opposite vertical side of the underlying vessel handle, and subsequent downward motion of said handle portion applies a concerted pushing force to said vessel and pulling force to said lid.

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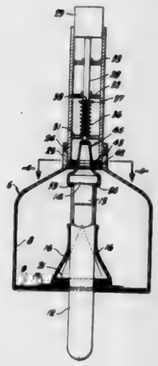
TEST TUBE CAP REMOVER

Javid R. Alvi, 7970 Larwin Dr., Citrus Heights, Calif. 95610

Filed Oct. 28, 1983, Ser. No. 546,237
Int. Cl.³ B67B *7/02*
U.S. Cl. 81—3.42 **10 Claims**

1. A test tube cap remover for use with a test tube removably engaging a cap having a flange comprising means defining an enclosure having first and second openings disposed in alignment, yielding means continuous with said enclosure and sur-

rounding said first opening for deflecting between a closed position and an open position, supporting means continuous with said enclosure and surrounding said second opening, a cap engaging means within said enclosure, means for mounting



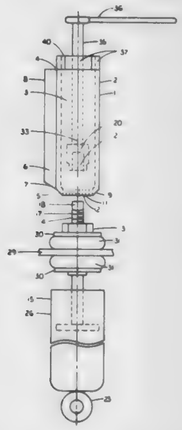
said cap engaging means on said supporting means for movement between a cap engaging and holding position and a cap releasing position, and means for moving said cap engaging means between said positions.

4,522,090

COMBINATION VEHICLE, SHOCK ABSORBER AND TOOL TO REMOVE SAID SHOCK ABSORBERS FROM SAID VEHICLE

Donald Kittle, 2427 Ingalls Ave., Apartment 304, Joliet, Ill. 60435

Filed May 2, 1983, Ser. No. 490,933
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—55 **8 Claims**



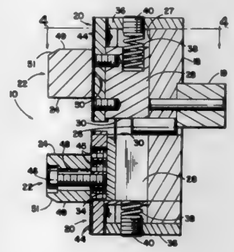
1. A combination vehicle, shock absorber and tool to remove said shock absorber from said vehicle, wherein said vehicle includes a first frame portion and a second frame portion, said first frame portion being relatively fixed in relation to the body of said vehicle, said second frame portion being relatively fixed in relation to a corresponding one of the axles and wheels of said vehicle, said shock absorber having a shock absorbing cylindrical member connected at one end to said second frame portion, and a reciprocating rod member connected at the oposite end of said shock absorber to said first frame portion, a retaining nut, said retaining nut connecting said shock absorber to said first frame portion, said first frame portion including a well having a peripheral side wall defining a cavity other than circular in cross-section in which a first portion of said side wall is relatively closer to the central axis of said well, a second portion of said side wall which is relatively farther from the central axis of said well than said first portion, said well including a bottom floor thereof, an aperture through said floor centered on its said central axis, the upper end of said reciprocating rod member of said shock absorber extending through said aperture into said well, said retaining nut being threaded on said upper end of said rod member, said tool comprising an elongated tubular member, a first opening to one end of a through-passageway through said tubular member, a second opening to the opposite end of said through-passageway, said second opening being annular and including engagement means to receive and engage said retaining nut of said shock absorber to hold against rotation relative to said tubular member, and projecting means projecting outwardly from said elongated tubular member, said projection means having an outermost edge, the distance between the outermost edge of said projection means and said central axis when said tubular member is seated on said retaining nut being greater than the distance of said first portion of said side wall to said central axis and less than the distance of said second portion thereof to said central axis.

4,522,091

BAR PULLER

Joseph F. Toffolon, Southington, Conn., assignor to Progressive Machinery Sales, Inc., Southington, Conn.

Filed Jan. 5, 1984, Ser. No. 568,378
Int. Cl.³ B23B *25/00, 13/12*
U.S. Cl. 82—38 R **19 Claims**



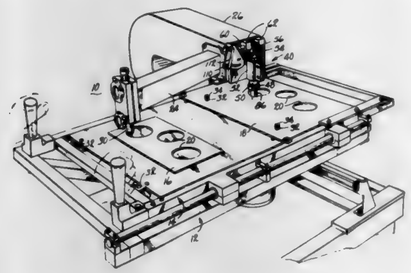
13. A bar puller for a lathe having a turret including a plurality of tool stations, said bar puller comprising a housing having a forwardly opening channel, shank means attached to said housing for mounting said bar puller at one of the tool stations, a pair of jaw assemblies slidably supported in said channel and including a pair of jaws having opposing jaw surfaces exposed forward of said channel for gripping an associated end portion of a bar, a rigid jaw centering element mounted in fixed position on said housing and disposed within said channel between said jaw assemblies, said jaw assemblies having opposing abutment surfaces thereon, and means for biasing said jaw assemblies toward each other and to a bar receiving position wherein said abutment surfaces are disposed in abutting engagement with said rigid jaw centering element and said jaw surfaces are disposed in spaced apart relation to each other to receive and grip a portion of a bar forcibly inserted into said jaws between said opposing jaw surfaces.

4,522,092

PALLET NIBBLER METHOD

Adolph S. Dorosz, 5 Bass River Rd., Beverly, Mass. 01915

Filed Jun. 29, 1983, Ser. No. 508,835
Int. Cl.³ B26D *3/00, 7/26*
U.S. Cl. 83—40 **6 Claims**



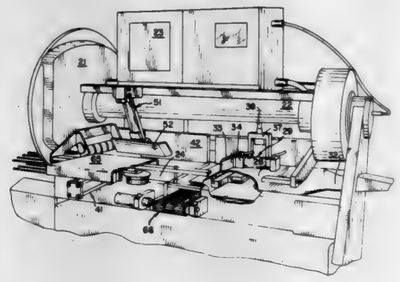
1. A method for manufacturing a configured cut-out in a sheet of material, comprising the steps of:
- arranging a first die to support a sheet of material thereon;
- bringing a second die into opposite relationship with said first die, so as to be able to secure a sheet of material therebetween;
- pushing a punch shaft through said first die;
- punching a hole through said sheet of material with said punch shaft and into said second die; and
- lowering said punch shaft while still keeping it through said hole and while moving the sheet of material to initiate nibbling of the sheet of material by said punch shaft.

4,522,093

SLICER FEED MECHANISM

James A. Rattmann, Sun Prairie, Wis., assignor to General Foods Corporation, White Plains, N.Y.

Filed Mar. 12, 1984, Ser. No. 588,267
Int. Cl.³ B26D *3/22*
U.S. Cl. 83—42 **18 Claims**



1. A feed mechanism of the type that feeds a food product to a slicing assembly having a slicer blade, the feed mechanism including a support assembly for slidingly supporting a food product, and a gripper assembly for gripping a rear end of the food product and for moving the gripped food product along the support assembly and to the slicer blade, the feed mechanism including a semi-automatic feed assembly comprising:
- a slidable shelf assembly generally parallel to the support assembly, said slidable shelf assembly being at a height greater than the height of the support assembly;
- a rear pusher assembly closely spaced from the top surface of the slidable shelf assembly and generally rearwardly located with respect to the slicing assembly; and
- means for automatically aligning a food product into a prefeed orientation with respect to the slicer blade and with respect to the gripper assembly, said automatic aligning means including means for pushing against the food product, and said prefeed orientation being below said slidable shelf assembly.

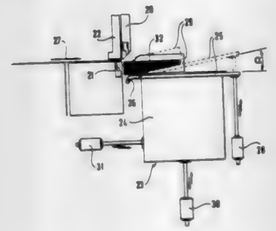
13. A method for feeding a food product to a location for slicing the food product, during which the rear end of the food product is gripped and the food product is fed along a feed path and to the slicing location, comprising:
- positioning a food product onto a slidable shelf located above and generally parallel to the feed path;
- moving the slidable shelf in a direction generally away from the slicing location while engaging the food product to limit its movement away from the slicing location, whereby the food product on the slidable shelf slides off of the slidable shelf and drops onto the feed path;
- automatically aligning the food product on the feed path into a prefeed orientation that is aligned with respect to the slicing location;
- gripping the food product and feeding the gripped food product to the slicing location in order to slice the food product into a plurality of slices; and
- moving the slidable shelf in a direction generally toward the slicing location and above the feed path of the food product.

4,522,094

AUTOMATIC LAMINATION CUTTING MACHINE FOR ELECTRIC SHUNT INDUCTION WINDING

Gérard Messé , Maule; Michel Faure, Houilles, and Marcel Ducombs, Rueil-Malmaison, all of France, assignors to Alsthom-Atlantique, Paris, France

Division of Ser. No. 262,878, May 12, 1981, Pat. No. 4,453,150.
This application Mar. 5, 1984, Ser. No. 586,464
Claims priority, application France, May 12, 1980, 80 10574
Int. Cl.³ B26D *7/32*
U.S. Cl. 83—92 **1 Claim**



1. An automatic sheet metal cutting machine which includes means for continuously supplying the machine with metal strip in adjustable lengths and at will, cutting means and means for receiving the laminations cut from the metal strip, wherein the means for receiving the laminations include a swivelling plate which can move through an angle of α at will about a pin perpendicular to the direction of motion of the laminations, means for lowering the receiving means and means for moving the receiving means downstream relative to the direction of motion of the laminations.

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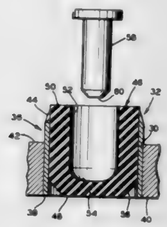
HOLE PUNCH FOR A CUTTING DIE

Philip G. Saunders, and Jack R. Simpson, both of Toledo, Ohio, assignors to Container Graphics Corporation, Toledo, Ohio

Filed Sep. 21, 1982, Ser. No. 420,729
Int. Cl.³ B26D *7/06*
U.S. Cl. 83—116 **1 Claim**

1. A cutting die forming a hole in corrugated board or the like, said cutting die including a die plate having a front surface and a back surface, an open ended tubular member held by said

die plate and having one open end terminating at the back surface of said die plate, said member having another open end extending beyond the front surface of said die plate and terminating in a cutting edge, and a body of resilient material within said tubular member and having an outer diameter normally slightly exceeding the inner diameter of said tubular member, said resilient body having a central recess in one end terminating near the cutting edge of said tubular member, said resilient body having a transverse wall at said other end thereof, with



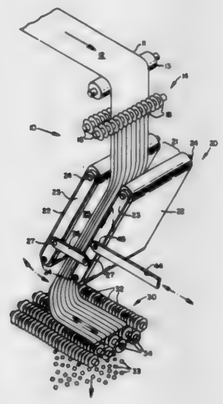
the back surface of said transverse wall, the back surface of said die plate, and said one end of said tubular member being substantially in a common plane, said recess of said resilient body extending from 75 to 90 percent of the length of said body with the thickness of said transverse wall being about equal to the thickness of the side wall of said body, the outer surface of said body being cylindrical and said body having an annular chamfer, therearound where the outer cylindrical surface thereof would otherwise meet the back surface of said transverse wall.

4,522,096

DICING APPARATUS FOR SHEET MATERIAL

Benjamin F. Niven, Jr., Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jun. 16, 1983, Ser. No. 505,414
Int. Cl.³ B26D *7/20*
U.S. Cl. 83—408 **4 Claims**



1. Apparatus for cutting continuous sheet material into quadrilateral pieces, comprising:

means for longitudinally slitting the sheet into continuous ribbons;

a cutting bed, including a first plurality of spaced parallel powered shafts defining a first cutting array, a second plurality of spaced parallel powered shafts defining a second cutting array, said first and second plurality of shafts oriented parallel to said ribbons and said first cutting array being arranged to lie in a plane vertically spaced from a plane defined by said second cutting array, each of said shafts carrying thereon a plurality of circular blades spacedly affixed thereto; and

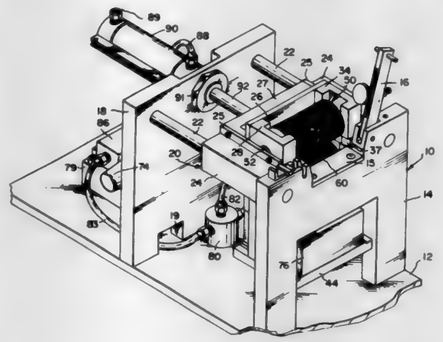
swing assembly means interposed between said slitting means and said cutting bed, for receiving said continuous ribbons and lapping said ribbons atop said cutting bed.

4,522,097

RIBBON CABLE SPLITTER

Daniel T. Adlon, Swatara, and Edward A. Bianchi, Hummelstown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 25, 1983, Ser. No. 526,302
Int. Cl.³ B26D *1/18*
U.S. Cl. 83—464 **10 Claims**



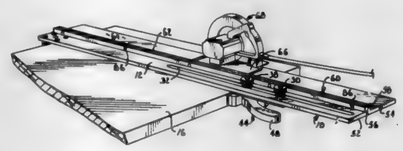
1. An apparatus for separating the individual conductors of a ribbon cable, the apparatus being of the type comprising first and second rollers having parallel axes, each roller comprising a plurality of parallel radially extending annular teeth having spaces therebetween, the centerline spacing of adjacent teeth of each roller being twice the centerline spacing of adjacent conductors of the ribbon cable, the teeth on each roller being aligned with the spaces on the other roller, the circumferential surface of each annular tooth being generally concave, the apparatus further comprising means for moving the rollers relatively together to engage said cable and to urge adjacent conductors in opposite directions to separate them, alternate conductors being urged in the same direction, characterized in that said apparatus further comprises clamping means for clamping said cable and carriage means for moving said rollers relative to said clamping means, said teeth rotating freely in response to movement of said carriage means when said cable is clamped by said clamping means and engaged by said rollers, whereby said conductors are separated along a length of the cable.

4,522,098

SAW GUIDE

Delbert N. Bliss, Rt. 4, Box 111, Winfield, Kans. 67156

Filed Feb. 27, 1984, Ser. No. 584,010
Int. Cl.³ B27B *9/04*
U.S. Cl. 83—745 **5 Claims**



1. A guide for portable circular saws having a supporting

member adapted for sliding along a surface, said guide comprising:

an elongated, rigid frame having a flat bottom surface, said frame being adapted to extend across an item to be sawed;

an abutment secured to the frame and depending therefrom, said abutment including a flat surface in position to be engaged against an edge of the item;

block means slidably mounted on the frame in longitudinally spaced apart relationship from said abutment flat surface and depending from the frame in disposition to engage against a second edge of the item to clamp the latter between the abutment and the block means;

said frame having an elongated, rigid rib intermediate the sides of the frame and extending longitudinally of the latter, said rib having a side edge adapted to receive said saw support member thereagainst to guide the saw as the saw is moved along said rib edge; and

manually operable means secured to the frame and operably coupled with said block means to move the block means toward said abutment to selectively increase the clamping force on the item clamped therebetween;

said block means including a mount, means releasably securing the mount to the frame at any selected position longitudinally thereof, a block having a flat edge surface adapted to engage said item second edge, and means securing the block to the mount to permit limited lost motion between the block and the mount toward and away from the abutment; and

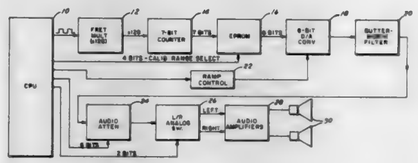
said manually operable means including a cam rotatably secured to the mount and engagable with the block in position to engage the block and move the block flat surface toward the abutment to increase the clamping force on the item responsive to manual rotation of the cam.

4,522,099

TONE GENERATOR

Thomas Melsheimer, Longmont, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Dec. 14, 1983, Ser. No. 561,172
Int. Cl.³ G10H *7/00*
U.S. Cl. 84—1.01 **7 Claims**



1. A tone generator comprising:

a clock generating a series of electrical pulses having the same frequency as the desired tone;

a frequency multiplier operatively connected to said clock, generating as its output a series of electrical pulses having a frequency equal to an integral multiple of the clock frequency;

a counter that is operatively connected to said frequency multiplier, generating as its output a binary count of the input pulses generated by the frequency multiplier; said counter having a predetermined number of binary digits such that the number of pulses generated by the frequency multiplier in response to one pulse produced by the clock will cause the counter to increment through its entire range of output values exactly once;

a memory comprising a plurality of arrays, each array comprising a series of elements in which have been stored binary values of the waveform of the tone to be generated, as sampled along one cycle of said waveform; the contents of each element within a given array of said memory being uniquely addressed by the binary count generated by the counter, and the specific array being uniquely addressed by a number of additional calibration selector bits that are set by external means; each array having a predetermined length equal to the multiplication factor of the frequency multiplier, so that the contents of the selected array are sequentially read out of the memory exactly once for each pulse generated by the clock;

a digital-to-analog converter that accepts as its input the digital values read out of the memory, and converts said digital values into an analog waveform.

4,522,100

ELECTRONIC MUSICAL INSTRUMENT FOR READING OUT AND PERFORMING MUSICAL TONE DATA PREVIOUSLY STORED

Hiroshi Ishii, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 189,760, Sep. 23, 1980,. This application Sep. 7, 1982, Ser. No. 415,439
Claims priority, application Japan, Sep. 29, 1979, 54-126185; Sep. 29, 1979, 54-126186; Sep. 29, 1979, 54-126187; Sep. 29, 1979, 54-126188
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **20 Claims**



1. An electronic musical instrument comprising:

a single keyboard having a plurality of keys, each being associated with a musical note;

memory means for storing pitch codes of the musical tone of either a melody or an accompaniment of a musical piece;

changeover switching means coupled to said keyboard for switching an operation mode of said keyboard to first and second modes, in said first mode the keys on said keyboard designating the musical notes, in said second mode the keys on said keyboard being functionally and fixedly divided into two key groups and in said second mode the keys on either of said two key groups on the keyboard permitting readout of the pitch codes stored in said memory means and the other of said key groups designating the musical notes;

musical tone generating means coupled to said keyboard, to said memory means and to said changeover switching means for generating musical tones in accordance with a key operation on said keyboard when said operation mode is switched to said first mode, and for generating musical tones corresponding to the pitch codes read out from said memory means by keys of either of said two key groups and to the musical notes designated by the keys of the other of said key groups when said operation mode is switched to said second mode;

first control means coupled to said memory means and to said changeover means and being responsive to operation of any one of the keys of one of said two key groups for causing the pitch code of said musical tone stored in said memory means to be read out and causing said musical tone to be formed by said musical tone generating means

when said operation mode is switched to the second mode; and

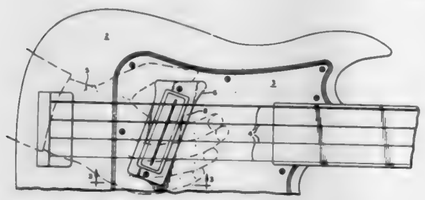
second control means coupled to said musical tone generating means and to said changeover switching means and being responsive to a manual operation of keys of the other of said two key groups for causing the musical tone corresponding to the operated keys to be formed by said musical tone generating means when said operation mode is switched to the second mode.

4,522,101

MOUNTING RING AND THUMBREST

Hartley D. Peavey, and Michael V. Powers, both of Meridian, Miss., assignors to Peavey Electronics Corp., Meridian, Miss.

Filed Oct. 18, 1982, Ser. No. 434,869
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.16 **6 Claims**



1. A mounting ring-thumbrest for an electric stringed instrument comprising:

mounting means for receiving a pickup means, and adapted to be attached to a body of the instrument, and

thumbrest means for supporting the thumb of a person playing said instrument, said thumbrest means being integrally formed with said mounting means, wherein said mounting means forms an elongate cavity for receiving said pickup, and

said thumbrest means is located at one end of said mounting means and provides a concave surface for receiving said thumb.

6. A stringed musical instrument comprising pickup means for detecting vibrations of a string, said pickup means having means for receiving a mounting screw, body means having a cavity receiving said pickup means therein, said body means having a first hole, mounting ring means at least partially surrounding said pickup means, said mounting ring means having a second hole, and spring means, wherein said mounting screw extends through said first and second holes, said spring means and into said means for receiving, and wherein said spring means extends between said means for receiving and said body means whereby said mounting ring and pickup means are secured to said body means by said screw means and said spring means.

4,522,102

SEMI-AUTOMATIC CARTRIDGE RELOADING MACHINE

Ralph D. Pickens, 49162 McCoy Ave., East Liverpool, Ohio 43920

Filed Jun. 27, 1983, Ser. No. 508,342
Int. Cl.³ F42B *33/02*
U.S. Cl. 86—27 **9 Claims**

1. In a semi-automatic cartridge reloading machine in combination:

a base structure,

a lower travelling platen supported on the base structure,

a positioning mechanism for raising and lowering the lower travelling platen relative to the base structure,

a indexing table and shell holder plate supported by the lower elevating platen and defining a plurality of operating stations spaced circumferentially about an imaginary circle having a vertical axis,

a plurality of shell rim slots equally, circumferentially spaced about each shell holder plate, each of such shell rim slots being adapted to receive a separate shell casing, and to position such received shell casings simultaneously in different ones of the operating stations,

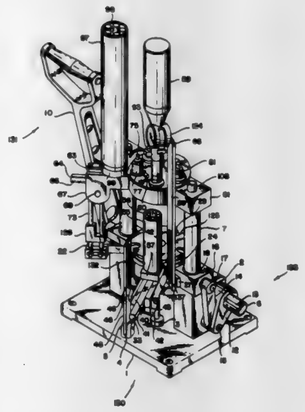
a stationary upper platen containing a plurality of tools or dies depending or extending vertically through the stationary upper platen and defining a plurality of operating stations spaced circumferentially about an imaginary circle having a vertical axis,

the improvement of an indexing drive mechanism which operates simultaneously with and in conjunction with the raising and lowering of the lower travelling platen and is engageable with the indexing table and shell holder plate for rotating the indexing table and shell holder plate to position shell casings received in the indexing table and shell holder plate sequentially in each of the operating stations comprising in combination:

a. a clevis secured to the base structure;

b. a bar pivotally secured to and extending upwardly, vertically from the clevis;

c. a bar slot formed in the upper end portion of the bar to accept a crank pin;



d. a crank pin which travels upwardly and downwardly in the bar slot simultaneously and in conjunction with raising or lowering the lower travelling platen by the positioning mechanism;

e. a curvilinear shaped crank extending axially from and secured to the crank pin at one end which rotates in one direction as the crank pin contacts the top or bottom of the bar slot and having a pinion pin secured and extending axially at the other end;

f. a housing extending radially from the circumference of the lower travelling platen which journals and supports the pinion pin and pinion;

g. a pinion comprised of a plurality of gear teeth positioned within the housing and journalling and secured to the pinion pin which rotates correspondingly with the rotation of the crank and engages a rack;

h. a rack comprised of a plurality of corresponding gear teeth formed in the underside of one end of an indexing ram which travels in a horizontal plane across the pinion as the pinion is rotated and correspondingly slides the indexing ram into and out of the lower travelling platen;

i. an indexing ram with a rack formed in the underside of one end of a pawl pivotedly secured at the other end which slides into and out of the lower travelling platen on rotation of the pinion;

j. a ram slot formed in the top surface of the lower travelling platen to accept the indexing ram and extending from the circumference to the center portion of the top surface of the lower travelling platen;

k. a pawl pivotedly secured to the end of the indexing ram which drivingly engages and rotates a ratchet secured to and extending axially from an indexing table center pin;

l. a ratchet secured to and extending axially from an indexing table center pin and recessed into a recess hole formed in the top surface at the center portion of the lower travelling platen;

m. a recess hole formed in the top surface at the center portion of the lower travelling platen to accept the ratchet and indexing table center pin;

n. an indexing table center pin positioned vertically within a recess hole secured to a ratchet and secured to the indexing table and shell holder plate to rotate the indexing table and shell holder plate to move and position shell casings between adjacent operating stations as the ratchet is engaged by the pawl on each cycle of operation;

o. a pawl return spring positioned within a spring hole formed in the pawl end of the indexing ram and biased against and between the pawl and an adjusting means set in the indexing ram to return the pawl to rest position after each cycle of operation;

p. a spring hole formed in the pawl end of the indexing ram to accept the pawl return spring;

q. an adjusting means set in the pawl end of the indexing ram to adjust the pawl return spring;

r. a pawl stop screw disposed at and extending into a stop screw hole formed in the pawl end of the indexing ram which engages the pawl and may be adjusted in and out of the indexing ram to correct for wear to the pawl or ratchet;

s. a stop screw hole formed in the pawl end of the indexing ram to accept the pawl stop screw;

t. a key slot formed through the center portion of the indexing ram to slide across a register key correspondingly disposed in the ram slot which enters the key slot on each cycle of operation to assure stop lock action of the rotation of the indexing table and shell holder plate;

u. a register key disposed in the ram slot biased vertically, upwardly against the indexing ram by a register key spring and positioned to enter the key slot formed in the indexing ram on each cycle of operation; and

v. a register key spring secured to the underside of the indexing ram to bias the register key vertically, upwardly against the underside of the indexing ram.

4,522,103

TRAP FOR AN UMBILICAL PLUG SEPARATED FROM A MISSILE

Erik L. Mitzner, Mountain View, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 4, 1982, Ser. No. 374,677
Int. Cl.³ F41F *3/04*
U.S. Cl. 89—1.811 **6 Claims**

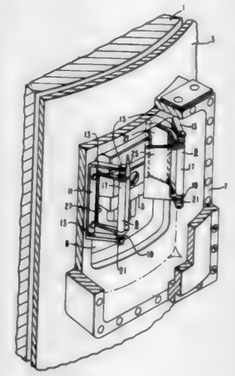
1. An umbilical plug trap for trapping and retaining an umbilical plug separated from a missile said umbilical plug trap comprising:

a pair of spaced-apart brackets;

a rotatable member rotatably disposed on each bracket;

each rotatable member having affixed rigidly thereto a first arm disposed in the path of said umbilical plug and a

second arm disposed at an angle with respect to the first arm and out of the path of the umbilical plug; and means for limiting the direction of rotation of said rotatable members and arms to a single direction and for limiting the extent of said rotation, whereby said umbilical plug contacts said first arms, rotates said rotatable member



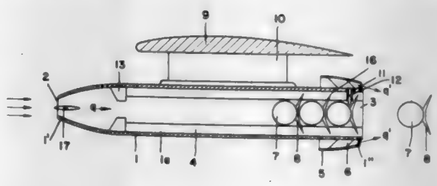
and arms to their limits and said first arms stop said umbilical plug and said second arms prevent rebounding of said umbilical plug, trapping and retaining it between said first and second arms.

4,522,104

APPARATUS FOR AN AIRCRAFT FOR DROPPING OBJECTS, ESPECIALLY BOMBS

Max Degen, Luzern, Switzerland, assignor to Schweizerische Eidgenossenschaft vertreten durch die Gruppe für Rüstungsdienste, Emmen, Switzerland

Continuation-in-part of Ser. No. 220,825, Dec. 29, 1980, Pat. No. 4,424,733. This application Sep. 26, 1983, Ser. No. 536,169
Claims priority, application Switzerland, Sep. 29, 1980, 7264/80
The portion of the term of this patent subsequent to Jan. 10, 2001, has been disclaimed.
Int. Cl.³ F41F *5/02*
U.S. Cl. 89—1.51 **19 Claims**



1. An apparatus for an aircraft for dropping objects, especially explosive objects such as bombs, grenades and mines, comprising:

a transport container capable of being mounted at the aircraft;

said transport container being provided with at least one object mounted therein and intended to be dropped from the aircraft;

said transport container having an inner circumference;

at least three guide rails arranged about said inner circumference and spaced from each other by an angle of approximately 120°;

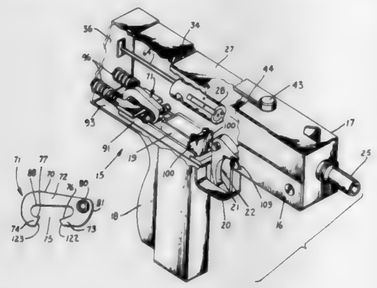
one of said guide rails being located so as to extend essentially normally relative to a substantially horizontal flight direction of the aircraft; and

means for applying to the object mounted internally of the transport container, at least during one time interval prior to dropping such object and at least partially thereat, a flight-pressure head of the aircraft.

4,522,105
FIRING MECHANISM FOR SEMIAUTOMATIC FIREARMS

Maxwell G. Atchisson, Doraville, Ga., assignor to SW Daniel, Inc., Atlanta, Ga.

Filed Jun. 6, 1983, Ser. No. 501,705
Int. Cl.³ F41C *19/00*
U.S. Cl. 89—139 **12 Claims**



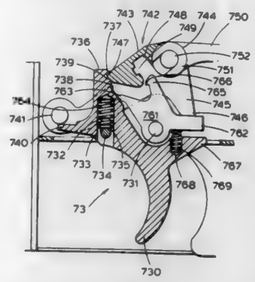
1. Firing mechanism for a firearm, comprising:
hammer means movable along a path including a firing position and a cocked position;
means biasing said hammer means for pivotal movement toward the firing position;
said hammer means having first and second confronting surfaces defining an opening in the hammer means, and having primary and secondary sear engaging surfaces, said primary sear engaging surface adjacent said first confronting surface, said secondary sear engaging surface adjacent said second confronting surface, said primary and secondary sear engaging surfaces positioned in mutually spaced apart relation across said opening;
sear means disposed between said primary and secondary sear engaging surfaces, and selectably movable between a first position and a second position;
said sear means having a primary sear surface located for engagement by said primary sear engaging surface as said hammer means is moved to the cocked position, so as to retain the hammer means in the cocked position when the sear means is in said first position;
said sear means having a secondary sear surface located for engagement by said secondary sear engaging surface as said hammer means is pivoted beyond the cocked position, with said sear means moved to said second position so that the primary sear engaging surface cannot engage the sear means, thereby retaining the hammer means behind the cocked position; and
said primary and secondary sear surfaces being located on said sear means so that said hammer means pivots to be retained at the cocked position by said primary sear surface when the sear means returns to the first position, thereby maintaining said hammer means ready to pivot to the firing position when said sear means next is moved to the second position.

4,522,106
GUN HAMMER MECHANISM

James L. Sullivan, Costa Mesa, Calif., assignor to Chartered Industries of Singapore Private Limited, Jurong Town, Singapore

Filed Oct. 25, 1982, Ser. No. 436,383
Claims priority, application United Kingdom, Oct. 30, 1981, 8132812
Int. Cl.³ F41C *5/00, 19/00;* **F41D** *11/02*
U.S. Cl. 89—140 **10 Claims**

1. An automatic or semi-automatic gun having a reciprocable bolt means and a hammer mechanism which comprises a hammer connected to rotate about a pivot, a firing pin striking surface on the hammer, and a pivot about which a pivotable strut moves, said pivot for the strut being on a side of the hammer firing pin striking surface which is remote from the hammer pivot, a bias means for urging the strut toward a firing position, the strut being arranged to be contacted by the bolt

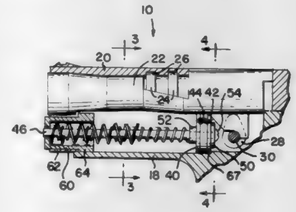


means to permit the bolt means to travel entirely rearwardly of the hammer to thereby cock the hammer, the strut holding the hammer out of the forward path of the bolt means to enable the bolt means to travel forwardly and thereby strip and chamber a cartridge.

4,522,107
SHOCK-ABSORBING RECOIL MECHANISM

Sidney H. Woodcock; Michel E. Maes, both of Bellevue, and Ronald W. Steimel, Mountlake Terrace, all of Wash., assignors to Detonics Pistol Accessories Ltd., Bellevue, Wash.

Filed Sep. 3, 1981, Ser. No. 299,000
Int. Cl.³ F41D *11/12*
U.S. Cl. 89—196 **15 Claims**



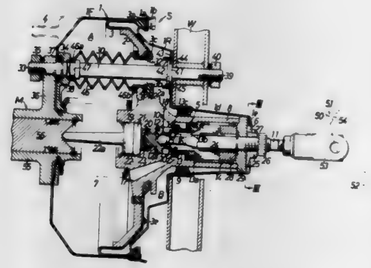
1. In a semiautomatic firearm having an elongated frame including a generally U-shaped cavity with an upwardly facing opening and a shoulder formed along the sidewalls toward the rear thereof, an elongated barrel mounted on said frame and at least partially restrained from movement therewith, an elongated slide mounted on said frame and surrounding said barrel, said slide being adapted to slide along said frame between a battery position and a recoil position, a recoil spring assembly resiliently biasing said slide toward its battery position, said assembly including an elongated spring guide extending between said frame and said slide, and a recoil spring extending rearwardly from a forward portion of said slide to a portion of said frame near said shoulder, and a shock-absorbing assembly comprising a sheet of resilient material positioned between a pair of plates, said sheet and plates having a shape corresponding to that of said U-shaped cavity, said sheet and plates being placed in said cavity with one of said plates abutting said shoulder, the material forming said resilient sheet having a low coefficient of friction and the transverse dimension of said resilient sheet being slightly larger than the transverse dimensions of said plates so that the lower inside edges of said slide contact said resilient sheet instead of said plates, whereby said slide engages the other of said plates when moving to its recoil position, thereby compressing said resilient sheet to absorb the

recoil force of said slide against said frame, and whereby said resilient sheet spaces said plates from said slide.

4,522,108
VACUUM BOOSTER DEVICE

Hiroo Takeuchi, Asashina; Nobuaki Hachiro, and Yoshihisa Miyazaki, both of Ueda, all of Japan, assignors to Nissin Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Mar. 11, 1981, Ser. No. 242,701
Claims priority, application Japan, Sep. 12, 1980, 55-126996
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—376 R **2 Claims**

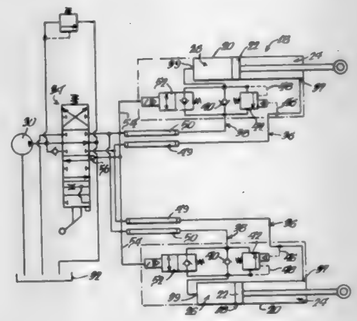


1. A vacuum booster device comprising a booster shell having a front wall and a rear wall, an axially slideable booster piston accommodated in the booster shell, a first working chamber defined in the booster shell by said front wall and the booster piston and held in communication with source of vacuum supply, a second working chamber defined in the booster shell by said rear wall and the booster piston and slectively placed in communication with the first working chamber or the external atmosphere through a control valve means, an input rod arranged opposite the booster piston for movement toward and away from the latter and connected to the control valve means so as to produce a pressure difference between both the working chambers effective to cause the booster piston to follow forward movement of the input rod, tie rods extending through the booster piston interconnecting said front and rear walls of the booster shell and passing through a through hole in said piston, flexible bellows surrounding each of the tie rods and having opposite ends fixed to an end of the tie rod adjacent said front wall and around said opening in the booster piston, respectively, so that the inside of the flexible bellows communicates continuously with the second working chamber, an adjustable stop means provided on the input rod for defining a retraction limit of the latter so as to create a pressure difference between said first and second working chambers when the input rod is in it is full-retreated position and the control valve means is held in a neutral postion keeping the second working chamber cut off from its communication with both the first working chamber and external atmosphere so that the bellows becomes expansive owing to said pressure difference between the working chambers, a piston diaphragm which cooperates with said booster piston to divide the interior of said booster housing into said first and second working chambers, said flexible bellows having a rear end tightly fixed to said through hole of the booster piston while said piston diaphragm having a through hole for said tie rod passing therethrough, and an annular bead being integrally formed around a peripheral edge of said through hole of the piston diaphragm, which annular bead has it front surface separably mated with said rear end of the flexible bellows to provide a seal to said through hole of the piston diaphragm.

4,522,109
LEAK-DETECTING HYDRAULIC SYSTEM

Gary C. Marchi, Burlington, and Richard H. Logan, West Burlington, both of Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Nov. 21, 1983, Ser. No. 553,692
Int. Cl.³ F15B *11/08, 13/04*
U.S. Cl. 91—420 **5 Claims**



1. A leak-detecting hydraulic system for selectively operating a fluid actuator having first and second opposing expansible chambers, comprising:
selectively operable, multi-position control valve means for directing pressurized hydraulic fluid to a selected one of said chambers while receiving fluid from the other of said chambers;
first fluid passage means joining said first chamber and said control valve means in fluid communication; and
second fluid passage means for joining said second chamber and said control valve means in fluid communication, said second passage means including leak-detection circuit means comprising one-way valve means for permitting pressurized fluid flow into said second chamber while preventing reverse fluid flow through said one-way valve means, and counterbalanced valve means arranged in parallel flow relation with said one-way valve means, first and second pressure-sensing lines respectively joining, in pressure-sensing relation said first fluid passage means and said second expansible chamber with said counterbalanced valve means, said counterbalanced valve means including biasing means acting in opposition to said first and second pressure-sensing lines, whereby said leak-detection circuit means being adapted to permit pressurized fluid flow from said valve means to said second chamber via said circuit means, and being further adapted to prevent fluid flow from said second chamber via said circuit means unless said first fluid passage means is pressurized with fluid.

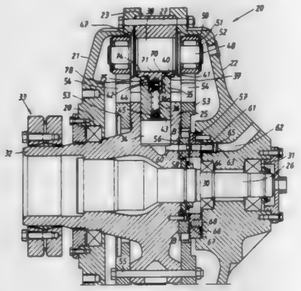
4,522,110
HYDRAULIC RADIAL PISTON MOTOR

Einar Samuelsson, Örnsköldsvik, Sweden, assignor to AB Hägglund & Söner, Mellansel, Sweden

Filed Sep. 6, 1983, Ser. No. 529,647
Claims priority, application Sweden, Sep. 8, 1982, 8205097
Int. Cl.³ F01B *13/06, 31/00*
U.S. Cl. 91—488 **18 Claims**

1. In a hydraulic radial piston motor which includes a housing; a cam disc which has an internal cam surface; a cylinder block havng a plurality of radially disposed cylinders; a plurality of pistons, a respective piston being slidably disposed in a respective cylinder; a plurality of roller cages, each roller cage being located between a respective piston and the cam disc, and each roller cage including an outer bearing surface which is shaped as part of the internal surface of a cylinder; two guide

units fixedly joined to the cylinder block, each guide unit including radially inwardly directed guide slots, the guide slots being in register on opposite sides of each respective roller cage; a plurality of cam-follower rollers, each cam-follower roller being located in a respective roller cage and having an outer surface which rolls against the internal cam surface of the cam disc, each cam-follower roller including a shaft pin at its opposite ends which mount respective guide bearings, the respective guide bearings being movable in the associated guide slots of the guide units and transmitting tangential forces



that act on the cam-follower rollers to the guide units and thus to the cylinder block, the improvement wherein

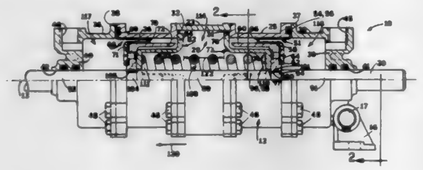
each roller cage and associated piston are separate elements which are movable with respect to one another, each roller cage having an inner bearing surface and each piston having an outer bearing surface constructed such that angular motions therebetween are possible in all directions, and

each roller cage includes a hydrostatic bearing which cooperates with the outer surface of the associated cam-follower roller.

4,522,111
DOUBLE-ACTING, FLUID ACTUATED POSITIONING ACTUATOR

Jacob Kobelt, 6110 Oak St., Vancouver, British Columbia, Canada V6M 2W2

Filed Sep. 13, 1982, Ser. No. 417,462
Int. Cl.³ F01B *19/00*
U.S. Cl. 92—48 **12 Claims**



1. A double-acting positioning actuator having: a hollow cylindrical housing; an actuating rod passing through the housing and being mounted for axial movement relative to the housing along a cylinder axis; first and second partition means cooperating with the actuating rod for axial movement therewith and for defining and separating a spring chamber and first and second actuating chambers spaced apart at opposite ends of the spring chamber within the housing; the rod and partition means being sealed relative to the chambers; a compression spring means having first and second ends and being mounted within the spring chamber; a fluid port in each actuation chamber to communicate with a pressurized fluid supply, the actuator being further characterized by:

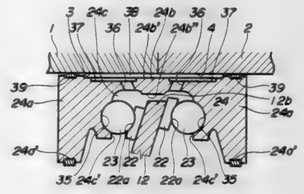
(a) first and second retaining means fitted within the spring chamber and cooperating with the first and second ends of the spring means respectively, each retaining means having a respective stop means,

(b) the spring chamber having a limiting means having opposed shoulders adapted to cooperate with the stop means of the retaining means to hold the stop means spaced apart at a particular spacing when the actuator is centered, the limiting means providing a clearance extending axially between the opposed shoulders to receive the stop means therein so as to permit limited axial movement of one of the stop means relative to the housing and the remaining stop means during a stroke of the actuating rod, the stroke being no greater than the particular spacing between the stop means when the actuator is centered.

4,522,112
SWASH-PLATE TYPE COMPRESSOR HAVING IMPROVED LUBRICATION OF SWASH PLATE AND SHOES

Hiroshi Nomura, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,615
Claims priority, application Japan, Apr. 26, 1982, 57-60804[U]
Int. Cl.³ F01M *1/06*; F04B *1/16*
U.S. Cl. 92—71 **6 Claims**



1. A swash-plate type compressor comprising:

a cylinder block having at least one cylinder bore extending axially thereof and having an inner peripheral surface;

a swash-plate arranged in said cylinder block and rotatable relative thereto, said swash plate including an outer fringe having opposite side surfaces;

at least one double-headed piston slidably received within said cylinder bore and having an outer peripheral surface, said piston including a pair of heads, each head having an inner end face, and an intermediate bridge portion intervening between said heads, said intermediate bridge portion having a first side surface forming part of said outer peripheral surface of said piston and facing said inner peripheral surface of said cylinder bore, and a second inner side surface opposite to said first side surface and facing said outer fringe of said swash plate;

said second side surface of said intermediate bridge portion defining a recess in cooperation with opposite inner end faces of said heads; and

at least two pairs of shoe and ball assemblies interposed between said piston and said outer fringe of said swash plate and maintaining said swash plate in rotatable engagement with said piston, each of said shoe and ball assemblies including a shoe disposed in slidable contact with a corresponding one of said opposite side surfaces of said outer fringe of said swash plate and a ball disposed in slidable contact with said piston and maintaining said shoe on said corresponding one of said opposite side surfaces;

said intermediate bridge portion of said piston having at least one lubricating oil-guiding hole extending therethrough from said first side surface to said second inner side surface for guiding lubricating oil from said first side surface to said second inner side surface;

said recess receiving therein said outer fringe of said swash plate and said shoe and ball assemblies;

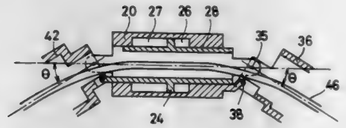
said lubricating oil-guiding hole opening in said recess for guiding lubricating oil to the inner side surface of said bridge portion, to at least said outer fringe of said swash plate and to said shoe and ball assemblies;

a lubricating oil-guiding groove formed in said first side surface of said intermediate bridge portion of said piston, said lubricating oil-guiding groove extending axially of said piston and having one end joining said lubricating oil-guiding hole, said lubricating oil-guiding groove having another end and gradually increasing in width toward said another end thereof.

4,522,113
DEVICE FOR ACCOMMODATING BENDING OF A CABLE

Koichi Tsuno, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 2, 1984, Ser. No. 576,101
Claims priority, application Japan, Feb. 12, 1983, 58-22481
Int. Cl.³ F16J *15/18*
U.S. Cl. 92—113 **2 Claims**

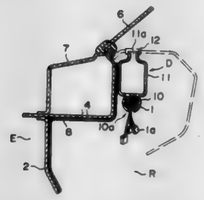


1. A remote-controlled device for accommodating bending an elongated object such as a cable, said device comprising a double-acting cylinder having a piston rod slidably mounted in said cylinder, a first holder pivotally coupled by a first coupling pin to one end of said piston rod so as to be pivotable around said first coupling pin, said first holder being pivotally coupled with some play to one end of said cylinder by a second coupling pin so as to be pivotable around said second coupling pin, said second coupling pin being parallel to and spaced at a distance from said first coupling pin, and a second holder pivotally coupled to the other end of said cylinder by a third coupling pin so as to be pivotable around said third coupling pin, and said second holder being pivotally coupled with some play to the other end of said piston rod by a fourth coupling pin so as to be pivotable around said fourth coupling pin, said fourth coupling pin being parallel to and offset at a distance from said third coupling pin.

4,522,114
AIR DUCT ASSEMBLY

Yoshio Matsuno, Sagamihara, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 10, 1983, Ser. No. 474,823
Claims priority, application Japan, Apr. 12, 1982, 57-59703
Int. Cl.³ F16L *17/12, 55/00*
U.S. Cl. 98—2.09 **1 Claim**



1. In an automobile having a passenger compartment, an air duct assembly, comprising:

a harness;

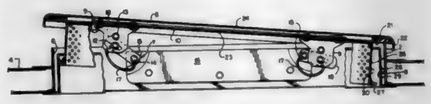
a defroster duct molded of a plastic material, said defroster duct being disposed at a forward part of said passenger compartment, extending transversely across said automobile, and having a bottom; and

a harness sheath provided at said bottom of said defroster duct, said harness sheath being molded of said plastic material integrally with said defroster duct and having a wall formed with a laterally openable, longitudinal slit, said harness sheath being sufficiently flexible such that when said harness is placed in substantially aligned contact with said slit and is forced into said sheath through said slit, said wall of the sheath is flexed such that said slit is laterally opened to permit the harness to pass through said slit into said sheath, and the harness being received in said sheath, is covered over a substantial length by said sheath so that said sheath serves as a protector for the harness to prevent the harness from coming into contact with neighboring components when the body of the motor vehicle vibrates, thereby preventing the possibility of fire due to breakage of an insulator coating of said harness.

4,522,115
VENTILATOR FOR VEHICLE

Timothy A. Kelly, and Rueben M. Turbyfill, both of Salem, Va., assignors to Ventilator Associates, Salem, Va.

Filed Jul. 29, 1983, Ser. No. 518,661
Int. Cl.³ B60H *1/26*
U.S. Cl. 98—2.14 **13 Claims**



1. A ventilator for a roof or other wall of a vehicle, comprising a frame mounted on and bounding an opening in said wall, a closure member, spring-and-link assemblies connecting said closure member at opposite sides to corresponding sides of said frame, said assemblies each including a pair of pin means each mounted on a different of said frame and closure member, and spring means and link means each connecting adjacent opposite ends to and acting between said pair of pin means for enabling said closure member to be moved against yieldable resistance between closed and any of a plurality of open positions.

4,522,116
SELECTIVE ZONE ISOLATION FOR HVAC SYSTEM

Jerry J. Tartaglino, 4911 W. Hanover, Dallas, Tex. 75209

Filed Mar. 12, 1984, Ser. No. 588,443
Int. Cl.³ F24F *11/00*
U.S. Cl. 98—39.1 **1 Claim**

1. Apparatus for opening and closing an air flow duct comprising, in combination:

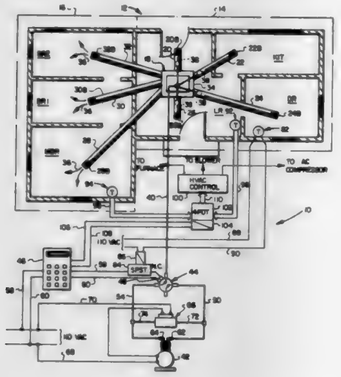
an inflatable air bladder for insertion into the air flow duct, said bladder being adapted to close the air flow duct when expanded, and to open the air flow duct when deflated;

an air compressor having inlet and discharge ports;

switching valve means coupling said compressor in fluid communication with said inflatable air bladder, said switching valve means having a first operating mode in which the discharge port is coupled to said inflatable bladder and the compressor inlet port is open to draw ambient air, and having a second operating mode in which the compressor inlet port is coupled to said bladder for drawing air therefrom with the compressor discharge port being open to ambient air; and,

pressure responsive power switching means for applying operating power to said compressor in response to the compressor discharge port pressure being less than a first pressure level corresponding with said bladder being in

the expanded, duct closed condition, and for removing operating power from said compressor in response to the



compressor inlet port pressure being less than a second pressure level corresponding with said bladder being in the collapsed, duct open condition.

4,522,117

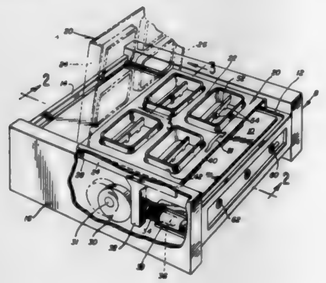
APPARATUS FOR PREPARING SCRAMBLED EGGS

Ralph E. Weimer, Lombard; Thaddeus J. Kalowski, Lisle, and Robert A. Novy, LaGrange Park, all of Ill., assignors to Restaurant Technology, Inc., Oakbrook, Ill.

Continuation-in-part of Ser. No. 355,687, Mar. 8, 1982, Pat. No. 4,433,001. This application Nov. 7, 1983, Ser. No. 549,279

Int. Cl.³ A47J *29/00*

U.S. Cl. 99—348 **16 Claims**



1. Apparatus for producing scrambled eggs comprising a grill having a grill surface and means for heating said grill surface,

a frame adjacent said grill,

a carriage mounted on said frame,

at least two egg rings mounted on said carriage, said egg rings each having a lower edge portion adapted to be disposed in intimate contact with said grill surface and for movement therealong, thereby to define with said grill surface an enclosed region within each egg ring, and

motor means on said frame operatively connected to said carriage for rapidly reciprocating said carriage and said egg rings to and fro in a reciprocating mode along said grill surface, and wherein said reciprocating means comprises means for automatically reciprocating said carriage and said egg rings at a first rate for a first portion of said rapid movement and at a second faster rate during a second portion of said rapid movement.

whereby liquid eggs disposed in said egg rings on said grill are adapted to be confined in said egg rings and are adapted to be moved to and fro and scrambled on said grill surface.

4,522,118

VACUUM AGITATOR FOR MEAT PRODUCTS

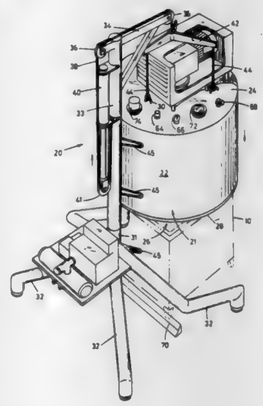
Knud Simonsen, P.O. Box 4, Nobleton, Ontario, and Mirek Holan, 50 Panorama Ct., #1509, Rexdale, Ontario, both of Canada

Filed Feb. 19, 1982, Ser. No. 350,342

Claims priority, application Canada, Feb. 23, 1981, 371477

Int. Cl.³ A23B *4/02*; **B01F** *7/16*

U.S. Cl. 99—472 **12 Claims**



1. Vacuum processing apparatus for use in combination with a container of predetermined width and height, and having a bottom wall, side walls and an open top, said apparatus comprising;

a vacuum chamber having an open bottom, side walls and a closed top, said chamber being of a width and height greater than said container to receive said container therein, and the height of such chamber being sufficient to fit completely over said oven top of and said side walls of said container with said open top and side walls freely enclosed therewith in;

stirring means within said chamber extending downwardly into said container through said open top;

power operated means for rotating said stirring means whereby the contents of said container may be stirred;

sealing means around said open bottom of said chamber whereby to hermetically enclose said container;

means for raising and lowering said chamber relative to said container, and,

means for evacuating the atmosphere within said chamber around the exterior of, and within said container.

4,522,119

OLIVE OIL RECOVERY

Harvey E. Finch, Foster City, and Salvatore P. Trapanese, Millbrae, both of Calif., assignors to FPS Development Partnership, Sacramento, Calif.

Division of Ser. No. 345,554, Feb. 4, 1982, Pat. No. 4,452,744, which is a continuation-in-part of Ser. No. 220,170, Dec. 23, 1980, Pat. No. 4,370,274. This application Apr. 13, 1984, Ser. No. 600,134

Int. Cl.³ A23N *1/00*

U.S. Cl. 99—483 **13 Claims**

1. An apparatus for recovering olive oil from olives comprising:

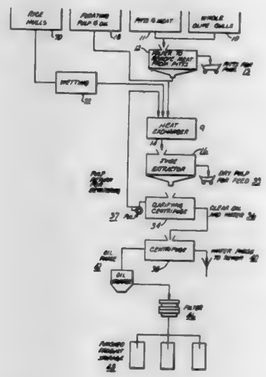
means for separating olive pits from olives to obtain a pitless olive meat;

means for mixing an inert additive with the pitless olive meat;

heat exchange means for heating the mixture to a temperature between at least about 80° F. and no more than about 110° F.;

means for introducing the additive and pitless olive meat to an extraction zone;

means for withdrawing a liquid phase comprising water,



olive oil, and a minor proportion of olive pulp from a first portion of the extraction zone;

means for withdrawing a substantially dry solid olive pulp from a second portion of the extraction zone;

means for separating the minor proportion of olive pulp from the liquid phase for obtaining a mixture comprising olive oil and water; and

means for separating water from the mixture for obtaining an olive oil substantially free of water.

4,522,120

BALE LENGTH CONTROLLING SPROCKET FOR BALING MACHINES

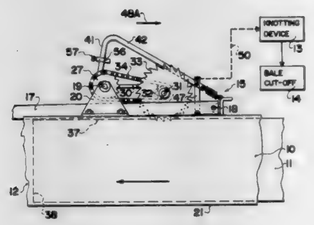
Abram J. Olfert, Box 7, Hague, Saskatchewan, Calif.X (S0K 1X0)

Filed Oct. 7, 1983, Ser. No. 539,941

Claims priority, application Canada, Oct. 7, 1982, 413072

Int. Cl.³ B65B *13/26*

U.S. Cl. 100—4 **3 Claims**



1. In a baling machine which includes a bale discharge chute having an intake end and a discharge end, a bale knotting device and cutoff device operatively connected to the knotting device and actuated thereby; the improvement comprising a star wheel located in said chute for gauging the length of the bale prior to cutting off same, said star wheel being operatively connected to the knotting device, means on said chute mounting said star wheel for floating contact with the upper surface of a bale being formed and passing through said chute, said means including further means to maintain substantially constant contact and pressure of said star wheel upon said upper surface of said bale, said means mounting said star wheel and said further means to maintain substantially constant contact and pressure of said star wheel including a mounting bracket, a shaft supported upon said chute and extending transversely thereacross for pivotally supporting said mounting bracket by one end thereof to the upper side of said chute and extending longitudinally of said chute towards the discharge end thereof, means mounting said star wheel for free rotation adjacent the distal end of said bracket, spring means reacting between said bracket and said chute to maintain a relatively constant downward pressure of said star wheel when engaging the upper surface of said bale, means actuated by said star wheel for measuring the rotation of said star wheel and further means operatively connecting said last mentioned means to the knotting device for actuating same, said means actuated by said star wheel for measuring the rotation thereof, including a chain and sprocket assembly operatively extending between said star wheel and said shaft, to rotate said shaft, a pulley secured to said shaft, said pulley having a root surface, the root surface of said pulley being serrated, an actuated lever mounted upon said chute, said lever including a substantially vertical portion having an edge engageable with the serrated root surface of said pulley and a mounting portion extending from the upper end of said substantially vertical portion, means to maintain the engagement of said edge of said substantially vertical portion, with the serrated root surface of said pulley, a recessed portion formed on the lower end of said substantially vertical portion engaging with said root surface of said pulley when said recessed portion reaches said pulley thereby end shifting said actuating lever, means pivotally mounting said actuating lever adjacent the distal end of said mounting portion of said end shifting of said actuating lever, said knotting device being actuated when said recessed portion of said actuating lever engages said pulley, and means to adjust the initial position of said substantially vertical portion relative to said pulley to control the timing of the engagement of said recessed portion with said pulley and hence the timing of the actuation of said knotting device and hence the actuation of said knotting device.

4,522,121

CHASSIS FOR A FRANKING OR POSTAGE METERING MACHINE

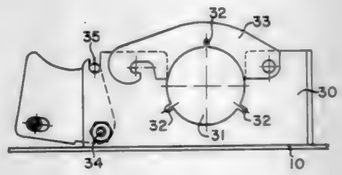
Horst Denzin, and Horst Päch, both of Berlin, Fed. Rep. of Germany, assignors to Francotyp Gesellschaft mbH, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 358,872, Mar. 16, 1982, abandoned. This application Jan. 19, 1984, Ser. No. 572,594

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1981, 8108924[U]

Int. Cl.³ B41F *1/26*

U.S. Cl. 101—92 **4 Claims**



1. Chassis for postage metering machines having a printing-cylinder shaft supported by ball bearings, comprising a base plate, a U-shaped frame carried by said base plate and formed with two similarly shaped one-piece legs and a cross piece inter-connecting said legs, the U-shaped frame having a side closed by said cross piece and an open side opposite said closed side, one-piece retaining brackets fastened to said legs at each end of said retaining brackets and pivotable about one of said ends, said legs and brackets together having holes formed

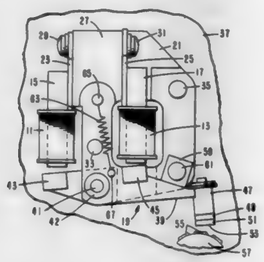
therein for completely surrounding the printing-cylinder shaft and for accommodating the ball bearings of the printing-cylinder shaft, a peripheral edge defining said holes in said legs and brackets being formed with blind incisions elongated in different directions for receiving therein means for vertically and horizontally adjusting the ball bearings in said holes, a first rod connecting said legs to one another across said open side of the U-shaped frame for mutually bracing said legs, a plurality of plates spaced along the length of said first rod and extending from one of said legs to the other and serving as carrying elements for subassemblies, said plates being supported for rotation by said first rod a second rod, carried by said plates, and pivotable into and out of said frame together with said plates about said first rod, and spacer sleeves intermediate adjacent ones of said plates being coaxially mounted on each of said rods for fixing said plates in mutually spaced relationship.

4,522,122

FAST IMPACT HAMMER FOR HIGH SPEED PRINTER

Ali T. Mazumder, Waterloo, Canada, assignor to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada

Filed May 3, 1983, Ser. No. 491,117
Int. Cl.³ B41J *9/42*
U.S. Cl. 101—93.02 **16 Claims**



1. An impact hammer assembly for a high speed printer, said assembly comprising:

a print hammer having a hammer head, a first portion, and a second portion located between said hammer head and said first portion, said print hammer being movably mounted at a pivot point between said first and second portions for movement between a rest position and a print position;

a first core of magnetic material disposed adjacent to and spaced from said first portion;

a first winding wound around said first core and being responsive to a first pulse for magnetically attracting said first portion to cause said hammer head to be impelled from the rest position toward the print position;

a second core of magnetic material positioned adjacent to and spaced from said second portion;

a second winding wound around said second core and being responsive to a second pulse for magnetically attracting said second portion to cause said hammer head to be impelled toward the rest position; and

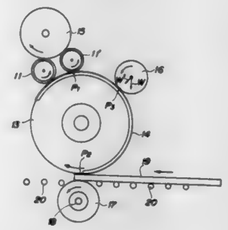
means for selectively generating the first pulse for said first winding during a first preselected period of time starting when said hammer head is substantially at the rest position and ending before said hammer head reaches the print position and generating the second pulse for said second winding during a second preselected period of time starting after said hammer head has rebounded from the print position and ending before said hammer head reaches the rest position, said generating means including first circuit means for developing the first pulse for said first winding and second circuit means for developing the second pulse for said second winding.

4,522,123

PINHOLE REMOVAL DEVICE IN PRINTING

Katsutoshi Matsumoto, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kamikyo, Japan

Filed Jun. 15, 1983, Ser. No. 504,523
Claims priority, application Japan, Jul. 6, 1982, 57-118199
Int. Cl.³ B41F *31/00*
U.S. Cl. 101—349 **1 Claim**



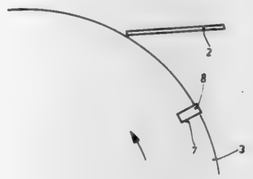
1. In printing apparatus having a rotary printing member, inking means contacting said printing member to create on said printing member an ink film to be transferred to an object to be printed, a device for preventing pinholes from forming in the ink transferred to the object comprising a leveling roller having an oil-repellant surface disposed in rolling contact with the ink film carried by the printing member, said leveling roller being mounted on an axis which is movable with respect to the axis of said rotary printing member, said leveling roller being effective to level the film of ink before it is transferred to the object.

4,522,124

INKING ROLLER FOR THE INKING EQUIPMENT OF A ROTARY PRESS

Rainer Burger, Augsburg; Gerhard Bittl, Mering, and Ingo Kobler, Anhausen, all of Fed. Rep. of Germany, assignors to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Aug. 10, 1983, Ser. No. 521,652
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230119
Int. Cl.³ B41F *31/26*
U.S. Cl. 101—350 **10 Claims**



1. Inking system for a rotary printing machine having

an ink trough (**1**);

an ink roller (**3**) having a cylindrical surface;

a doctor blade (**2**) to control the amount of ink being picked up by the ink roller from the ink trough and positionable with respect to the roller to leave a small gap (**5**) between the edge of the doctor blade and the surface of the roller;

an ink transfer roller (**4**) located to receive ink from the ink roller (**3**);

and means for inhibiting collection of contaminating particles in the ink trough (**1**),

said means comprising,

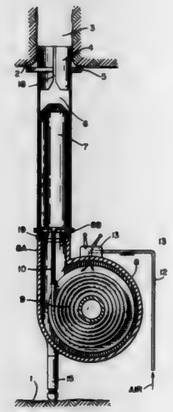
an elastic strip (**8, 10**) projecting from the cylindrical surface of the ink roller (**3**) and extending axially over the length of the roller, said strip (**8, 10**) projecting from the surface of the ink roller (**3**) by a distance of approximately the width of the gap, said elastic strip comprising a material which is soft with respect to the material forming the edge of the doctor blade, and which is elastically deformable to permit passage through a nip (**6**) formed between the ink roller (**3**) and the ink transfer roller (**4**).

4,522,125

CHARGING LARGE DIAMETER VERTICAL BOREHOLES

Horst F. Marz, Otterburn Park, Canada, assignor to C-I-L Inc., North York, Canada

Filed May 7, 1984, Ser. No. 607,647
Claims priority, application Canada, Jun. 9, 1983, 430041
Int. Cl.³ F42B *3/00*
U.S. Cl. 102—313 **3 Claims**



1. A method of charging an upwardly extending large diameter vertical borehole with a cylindrical explosive cartridge comprising the steps of providing a fluid-impervious flexible tubular element at the open end of said borehole, everting one end of said tubular element to form an inside-out face, mounting a base end of the said cylindrical cartridge against the said everted, tube face and applying pneumatic pressure within the said everted tube face to cause the tubular element to inflate longitudinally and to cause the everted tube face to travel along the said borehole pushing the said cylindrical cartridge before it to a selected location and thereafter withdrawing the inflated tube from the said borehole.

4,522,126

GUN LAUNCHED IR CLOAKING DEVICE FOR VEHICLES

Frank H. Bell, Logan, Utah, assignor to Morton Thiokol Inc., Chicago, Ill.

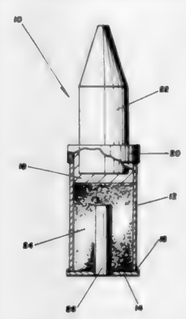
Filed Jan. 11, 1984, Ser. No. 569,803
Int. Cl.³ F42B *13/46*; G01J *1/00*
U.S. Cl. 102—370 **2 Claims**

1. A gun launched infrared cloaking device for vehicles, comprising:

a cartridge case including a frangible canister with sabot type obturation,

a solution including Aluminum Sulfate ($A1_2(S0_4)_3$) dissolved in a water carrier contained within said canister, and

a powder charge of a smokeless type contained within said cartridge case, said powder charge being just large enough when fired from a gun to cause gun ejection of the canister, canister rupture and nebulization of the solution



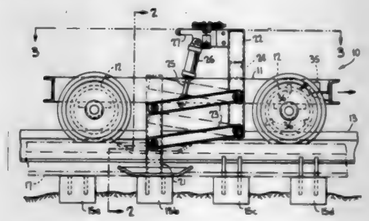
contained therein thereby to produce a mist around the vehicle that is impenetrable to infrared radiation.

4,522,127

RAILWAY TIE PLUG DRIVING APPARATUS

John R. Miller, and John L. Stubbs, both of Charlotte, N.C., assignors to Southern Railway Company, Washington, D.C.

Filed Mar. 7, 1983, Ser. No. 472,487
Int. Cl.³ E01B *31/26*
U.S. Cl. 104—17 R **4 Claims**

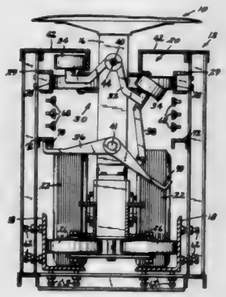


1. An apparatus for driving plugs into railway tie holes remaining after the removal of at least one rail and the associated tie plates and rail spikes thereof from railway ties of at least a section of a railway track, comprising a vehicle having a frame and wheels adapted for travel along the track, at least one vertically reciprocable tamper plate on one side of said frame for driving the plugs upon impact therewith, means for pivotally interconnecting said tamper plate with said frame, a pivotally mounted pneumatically operable piston and cylinder unit supporting said tamper plate from said vehicle frame for vertically reciprocating said tamper plate as the piston of said unit is extended and retracted, a split bracket having pivotally connected segments for supporting said unit from said frame, spring means acting between said segments for cushioning said tamper plate when making direct impacts against the railway ties, first limit switch means on said frame for extending said piston and lowering said tamper plate to drive the plugs, first means on said vehicle for actuating said first limit switch means at predetermined regular intervals, said first actuating means being mounted on one of said vehicle wheels for rotation together therewith about the wheel axis, second limit switch means on said vehicle frame for retracting said piston and elevating said tamper plate, and second means on said interconnecting means for actuating said second limit switch means at the end of each extension stroke of said piston, whereby said tamper plate is vertically reciprocated at said regular intervals for driving the plugs during movement of said vehicle along said rails.

4,522,128
SWITCH MECHANISM

J. Edward Anderson, Minneapolis, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jan. 10, 1983, Ser. No. 456,860
Int. Cl.³ E01B 25/12
U.S. Cl. 104—130 6 Claims



1. A vehicle mounted switch mechanism for use in a transportation system having a wheeled vehicle having an attached support structure, said system having a fixed guideway with diverging switching sections, the switch mechanism comprising:

a first elongated upper switch arm attached in a pivoting relationship to said support structure and having first and second switch wheels rotatably affixed at the ends of said first switch arm, said first and second switch wheels having intersecting axes of rotation, said axes intersecting at an angle of between 10 and 60 degrees;

said first upper switch arm switchable between a first position and a second position; said first position placing said first switch wheel in engaging relation with a first switch channel located within said guideway and said second switch wheel distant from a second switch channel located within said guideway; said second position placing said second switch wheel in engaging relation with said second switch channel and said first switch wheel distant from said first switch channel;

said first position of said upper switch arm causing said vehicle to select a first path at said switching sections within said guideway, and said second position of said upper switch arm causing said vehicle to select a second path at said switching sections, said first upper switch arm having a generally "W" shape, having outer legs with ends and a central inverted "V" portion, said switch wheels affixed to said ends of said outer legs of said "W";

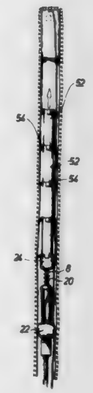
said first arm being attached at the apex of said inverted "V" portion, to said support structure so that a line passing from the point of engagement of said switch wheel with said switch channel through said apex will pass substantially perpendicularly through said switch channel; and

a first elongated lower switch arm affixed in pivoting relation near the midpoint of said first lower switch arm to said support structure below said first upper switch arm, and coupled to said first upper switch by a first slave link affixed to both said first upper and said first lower switch arms.

4,522,129
DEVICE FOR CHARGING DRILLHOLES

Leif Jerberyd, Handen, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden

Filed May 18, 1981, Ser. No. 264,556
Claims priority, application Sweden, May 28, 1980, 8003974
Int. Cl.³ B66F 1/00; H02G 1/08
U.S. Cl. 104—138 G 5 Claims



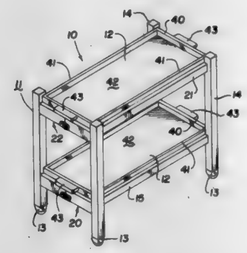
1. Device for the introduction of explosive in the desired place in a drillhole, characterized by a climber, which climbs on the walls of the drillhole and is equipped with locomotion means powered from a fluid pressure source and designed to propel the climber in the desired direction in the drillhole, said locomotion means including fluid pressure actuated expansion means associated with the climber and designed to press against the walls of the hole as to stabilize the climber in the hole and prevent it from falling downwards therein, a main valve arrangement positioned rearwardly of the climber relative to its direction of travel as the climber enters the drillhole to introduce an explosive thereinto, and operative to control the supply of fluid under pressure to said locomotion means, and means for providing an explosive charge in the drillhole forwardly of said climber, said valve arrangement including means for selectively moving said climber forwardly and backwardly, respectively, in the drillhole, said climber comprises two parts capable of motion relative to each other, enabling the climber to alternately extend and contract in the direction of the drillhole while said expansion means press against the walls of the hole, and further characterized in that said two parts are diposed to be positioned one forwardly of the other in the drillhole with the front part of said two parts of the climber engaging said explosive charge, and wherein said front part has thereon means detachable from the other of said two parts of said climber, whereby said other part can be withdrawn from the drillhole and reused.

4,522,130
COLLAPSIBLE TEA CART

Roy Worthington, 327 Harbin, Waxahachie, Tex. 75165

Filed Apr. 1, 1983, Ser. No. 481,360
Int. Cl.³ A47B 3/06
U.S. Cl. 108—159 12 Claims

1. A foldable table comprising: a pair of oppositely disposed rigid side frame members each having an upwardly and inwardly opening longitudinal recess providing a tray edge support surface; foldable end assemblies connected between said side members for operation between a first folded condition wherein said side members are in close spaced substantially parallel relation with said end assemblies folded therebetween and a second extended condition wherein said side members are in farther apart spaced substantially parallel extended condition; and tray means engageable between said side members on said supporting surfaces of said side members and between said end assemblies when said end assemblies are in

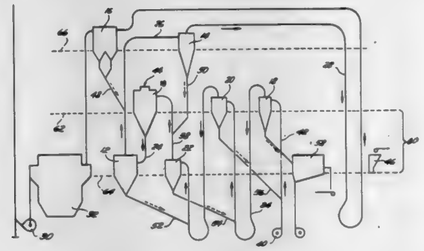


said extended condition, said tray means locking said side members in said extended condition and holding said end assemblies against folding.

4,522,131
INSTALLATION FOR THE THERMAL TREATMENT OF PULVERULENT MINERAL PRODUCTS

Jean Lebesgue, Avon, France, assignor to Fives-Cail Babcock, Paris, France

Filed May 4, 1984, Ser. No. 607,223
Claims priority, application France, May 10, 1983, 83 07754
Int. Cl.³ F23J 3/00
U.S. Cl. 110—229 3 Claims



1. An installation for the thermal treatment of a pulverulent mineral product by gases, comprising

(a) a support frame having support means at a first level,

(b) a furnace for the thermal treatment of the pulverulent mineral product in suspension in hot gases generated by the combustion of air and a fuel,

(c) two groups of series-connected cyclones connected to the furnace, one of the groups of cyclones being arranged upstream of the furnace and the other group of cyclones being arranged downstream of the furnace, and

(d) conduit means connecting the cyclones to each other and to the furnace so that exhaust gases from the furnace pass successively through all the cyclones of the one group while a current of air passes through all the cyclones of the other group before entering the furnace to serve as the combustion air, the exhaust gases heating the product before it enters the furnace and the air current cooling the treated product, wherein the improvement comprises

(e) a superstructure affixed to the support frame and having support means at a second level higher than the first level,

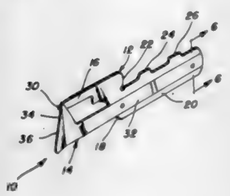
(f) the furnace and two of the cyclones located, respectively, immediately upstream and immediately downstream of the furnace being mounted on the support means of the support frame at the first level, and

(g) at least some of the remaining cyclones being mounted on the support means of the superstructure at the higher level.

4,522,132
CUT/LOOP HOOK FOR TUFTING MACHINES

Ian Slattery, Hixson, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Feb. 27, 1984, Ser. No. 583,688
Int. Cl.³ D05C 15/00
U.S. Cl. 112—79 R 7 Claims

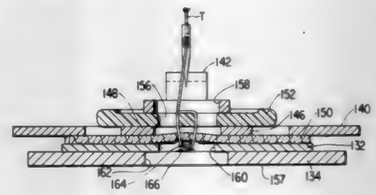


1. A combination cut/loop hook and clip for a tufting machine, said hook comprising a substantially planar body member including a blade and a shank, said blade extending forwardly from the shank and terminating at a loop seizing beak, an elongated mounting portion extending rearwardly from the shank for mounting within the tufting machine, a neck defining a reference surface formed at the rear of said blade above the shank and at least another reference surface formed on the upper edge of the mounting portion substantially normal to the neck, an elongated groove formed in one planar surface of the mounting portion, said clip comprising an elongated member having an enlargement at one end thereof and a substantially planar tail portion extending therefrom, at least a substantial part of said tail portion being of a width and thickness receivable within said groove so that a surface of said mounting portion within said groove and a surface of said part form corresponding abutting surfaces, and the opposite surface of said part forms a substantially smooth coplanar continuation of said planar surface, protuberence means defining at least one male formation on one of said corresponding abutting surfaces, recess means defining a like number of female formations in the other of said corresponding abutting surfaces, said female formations being of a size to cooperatively and securely receive a respective male formation, said enlargement having a crease disposed out of the plane of said tail and said groove and said formations being disposed such that said tail portion is spaced from said blade and said crease resiliently engages said beak.

4,522,133
FEED CONTROLLING ARRANGEMENT FOR BUTTON SEWING MACHINE

Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 12, 1984, Ser. No. 660,168
Int. Cl.³ D05B 3/14
U.S. Cl. 112—112 5 Claims



1. In a button sewing machine, a fabric supporting plate with a needle hole therein, means for clamping fabric and a button to the plate for movement thereby into positions wherein the button may be sewn to the fabric through spaced apart holes in the button, and a thread supporting tongue located on the plate

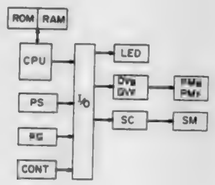
in a position to extend longitudinally in the needle hole into engagement with the underside of the clamped fabric and enable thread to be sewn under and across the tongue whereby the tongue is temporarily sewn to said fabric to prevent the fabric from slipping on the supporting plate during a button sewing operation.

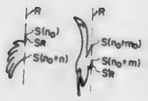
4,522,134

PATTERN GENERATING SYSTEM OF COMPUTER SEWING MACHINE

Susumu Hanyu; Hideaki Takenoya, both of Tokyo, and Shinichi Kato, Koganei, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 558,851
Claims priority, application Japan, Dec. 15, 1982, 57-218430
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—453 **1 Claim**





1. A pattern generating system of a computerized sewing machine, comprising:

a machine drive motor having a rotational speed;

a rotatable drive shaft having predetermined angular positions and rotated by said machine drive motor;

a needle for forming stitches and having positions including an upper dead point and a lower dead point;

a signal generator cooperating with said drive shaft to produce phase signals at said predetermined angular positions of said drive shaft to stop the sewing machine with said needle being held at either said upper dead point or said lower dead point;

a speed control circuit for controlling said rotational speed of said machine drive motor; and

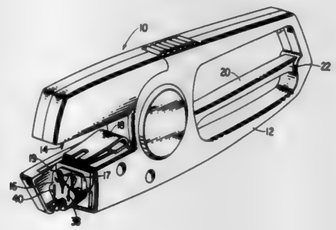
a microcomputer including program control means for controlling said speed control circuit, a memory for storing a plurality of groups of stitch control data each having an end and including a last group of stitch control data and feed control data, said groups of stitch control data being sequentially readout in a predetermined order in synchronism with the rotation of said drive shaft under control of said program means to thereby control said positions of said needle and feed positions for a predetermined number of patterns, said memory also having a first stop designating data group included at the end of each of said plurality of groups of stitch control data, except said last group of stitch control data, for stopping the sewing machine with said needle being held at said lower dead point, and a second stop designating data group included at the end of said last group of stitch control data, said program control means operating in synchronism with the rotation of said drive shaft to sequentially read out said plurality of groups of stitch control data and said first and second stop designating data groups, said speed control circuit receiving said first or second stop designating data group to stop the sewing machine with the needle being held at said upper or lower dead points respectively when one of said phase signals has been produced from said signal generator.

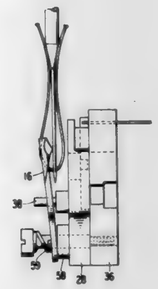
4,522,135

LOOPER AND CAM ASSEMBLY FOR CHAIN STITCH SEWING MACHINE

Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Feb. 9, 1984, Ser. No. 578,449
Int. Cl.³ D05B *57/02, 97/02, 97/10*
U.S. Cl. 112—199 **5 Claims**





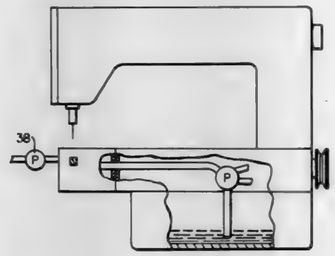
2. In a sewing machine; a needle; a frame; means mounted on the frame for reciprocating the needle; a looper and cam assembly, the looper being of a resiliently flexible material and being formed with a pair of loop seizing points, the cam including a pair of intersecting cam tracks and said cam having a gate pivotally mounted thereon; resilient means biasing the looper and cam assembly axially into a limited position in the frame; an actuator engageable with the cam on said cam tracks in the limited position of the assembly for imparting pivotal movement to said assembly and disposing the looper points for cooperation with the needle in the formation of chain stitches; and a spring having one end affixed within the frame and the other end engageable with the gate in the limited position of the cam for moving the gate into positions controlling actuator movement between the cam tracks; the looper being mounted on said cam to resiliently deflect away from the cam upon engagement of a loop seizing point with the needle, and leave the cam in its limited position wherein the cam tracks are engageable by the actuator and the gate is engageable by said spring, the cam being provided with axially projecting members which extend into sliding engagement with the looper from spaced apart locations on the cam to guide deflection of the looper while preventing pivotal movement thereof relative to the cam.

4,522,136

METHOD AND APPARATUS FOR RETARDING OIL LEAKAGE IN A SEWING MACHINE

James W. Wolff, Chicago; James W. Ruedisueli, Des Plaines, and Ralph Schinke, Chicago, all of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed Dec. 1, 1983, Ser. No. 557,088
Int. Cl.³ D05B *71/00*
U.S. Cl. 112—256 **9 Claims**



1. A sewing machine having a frame whose interior contains lubricant, sealant means disposed substantially proximate a sewing zone and between the interior of said frame and the outside environment surrounding said frame, and means for retarding lubricant leakage through the sealant means and thereby avoiding its disposition onto a workpiece, comprising:

means independent of said sewing machine for removing a sufficient amount of air from the interior of said machine such that a flow of air from the machine's outside environment is inwardly drawn to the machine's interior through the sealant means to produce an air seal.

4,522,137

METHOD OF PRODUCING STITCH PATTERNS IN AN ELECTRONIC SEWING MACHINE

Hideaki Takenoya, Hachioji; Toshiro Fujimura, Musashino; Masanori Hara, and Yoshinobu Tonomura, both of Hachioji, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 70,048, Aug. 27, 1979, abandoned. This application Jul. 9, 1981, Ser. No. 281,895
Claims priority, application Japan, Aug. 29, 1978, 53-104363
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—266.1 **3 Claims**

1. A method of producing stitch data from which different complete patterns may be sewn by an electronic sewing machine, the method being designed to avoid wasted space in a read-only memory contained within the sewing machine by avoiding repetitious storage of stitch data therein, comprising the steps of:

dividing each of the different complete patterns to be sewn into individual unit patterns, which can be selectively combined to form at least one complete pattern;

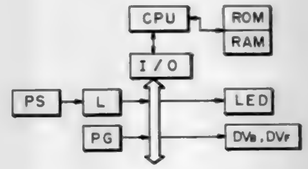
storing stitch data characteristic of the unit patterns in a read-only memory;

selecting one of the complete patterns to be sewn by actuating a pattern selecting switch;

ascertaining via a central processing unit which unit patterns are required for sewing the selected complete pattern;

ascertaining via the central processing unit an order in which such required unit patterns should be executed in sewing the selected complete pattern;

using the central processing unit to read stitch data characteristic of such required unit patterns into a random-access memory in said order; and





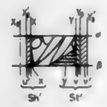
using the central processing unit to read stitch data out of the random-access memory in said order.

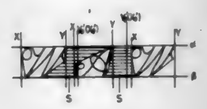
4,522,138

METHOD OF PREPARING INTERCHARACTER CONTROL DATA FOR USE IN SEWING MACHINES

Hideaki Takenoya, and Mikio Inamori, both of Tokyo, Japan, assignors to Janome Sewing Machine Industry Co., Ltd., Tokyo, Japan

Filed May 22, 1984, Ser. No. 613,094
Claims priority, application Japan, May 24, 1983, 58-89931
Int. Cl.³ D05C *5/04*
U.S. Cl. 112—266.1 **1 Claim**





1. A method of preparing intercharacter control data for use in combination with an electronic sewing machine for controlling a needle position and a fabric feed amount to produce a series of character patterns, which comprises the steps of:

providing the intercharacter control data, each of which being composed of a first stitch control data group for producing an initial stitch to determine the position of a character relative to a fabric in which the character is stitched, a second stitch control data group for forming the character and a third stitch control data group for producing stitches to determine a spacing between the character and the next character to be stitched adjacent thereto, said first, second and third stitch control data group being provided in relation with a top segment (α) and a bottom segment (β) respectively passing the top and bottom ends of the character in parallel with the fabric feeding direction, and a front segment (X) and a rear

segment (Y) respectively passing through the mostly projecting front and rear ends of the character at the right angles with the fabric feeding direction;

providing said first stitch control data group to produce the initial stitch at a position close to said front segment (X);

providing said second stitch control data group to produce said character having at least the front and rear contours, said front contour defining a substantially predetermined constant blank area (Sh') together with said top and bottom segments (α,β) and a second front segment (X_0') which is drawn passing said initial stitch in parallel with said front segment (X) and at right angles with the fabric feeding direction; and

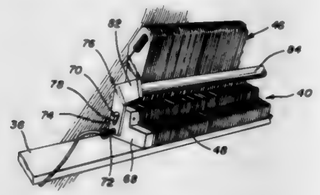
providing said third stitch control data group to produce said space determining stitches, the last stitch of which defining a substantially predetermined constant area (St') together with said top and bottom segments (α, β), said rear contour of the character and a second rear segment (Y_0') which is drawn passing through said last stitch in parallel with said rear segment (Y) and at right angles with the fabric feeding direction.

4,522,139

TUFTING MACHINE BROKEN YARN DETECTOR

Ian Beverly, Blackburn, England, assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Jul. 25, 1983, Ser. No. 516,971
Int. Cl.³ B65N *63/00, 69/36;* D05B *51/00*
U.S. Cl. 112—273 **11 Claims**



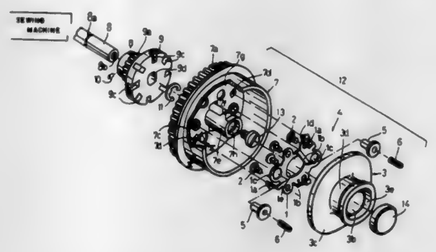
1. In a tufting machine having a multiplicity of yarn carrying needles mounted laterally across said machine and reciprocatably driven to penetrate a base material to insert loops of yarn therein, yarn feed means for feeding a yarn strand to each needle, apparatus intermediate said needles and said feed means for detecting a broken yarn, said apparatus comprising a frame supported on the tufting machine including a housing, a multiplicity of finger members, means for pivotably mounting said finger members in side-by-side relationship in said housing laterally across said machine, each of said fingers comprising a substantially flat member having planar laterally facing surfaces, means defining an eyelet extending through said surfaces for receiving a yarn strand such that each yarn strand may pass through a respective eyelet intermediate said feed means and a corresponding needle, said housing and fingers being disposed such that each finger is pivotably held in a raised position by a corresponding yarn strand and is pivotably dropped when the strand is broken, signal transmitting means mounted on said frame at a location beyond a first lateral extreme of said fingers beneath the raised position of said fingers for generating a signal, cooperating signal receiving means mounted on said frame at a location beyond the other lateral extreme of said fingers beneath the raised position of said fingers for receiving said signal when said fingers are in the raised position, said signal transmitting and receiving means being disposed such that the signal is interrupted by a finger when the corresponding yarn strand is broken and said finger drops, and locking means for holding substantially all of said fingers in a locked raised position for threading.

4,522,140

CLUTCH FOR SEWING MACHINE THREAD WINDING MECHANISM

Akio Koide, Kokubunji, Japan, assignor to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Feb. 6, 1984, Ser. No. 577,410
Claims priority, application Japan, Feb. 4, 1983, 58-14462[U]
Int. Cl.³ D05B *59/00*
U.S. Cl. 112—279 **4 Claims**



1. In a sewing machine having a main drive shaft rotated to vertically reciprocate a needle to penetrate a fabric for forming stitches thereon, a stop-motion mechanism comprising:

(a) a rotation transmission member secured near one end part of said main drive shaft and having a plurality of grooves formed thereon;

(b) a plulley rotated by driving means and having a knurled face applicable for thread winding operation and a central hollow axis, said pulley being secured to said end part of said main drive shaft and being prevented from axial movement but rotatable relative to said main drive shaft;

(c) an operating member rotatable together with said pulley but axially displaceable with respect to said pulley between two positions, one position being close to said pulley and the other being away from said pulley; and

(d) means for selectively transmitting rotation of said pulley to said rotation transmission member, said means being engaged with any of said grooves of said rotation transmission member so that rotation of said pulley is transmitted to said rotation transmission member for stitching operation, when said operating member is in the position close to said pulley, whereas said means being disengaged from said grooves so that said pulley alone is rotated for thread winding operation, when said operating member is in the position away from said pulley.

4,522,141

SHIPBOARD ICE LUBRICATION SYSTEM AND JET PUMP FOR USE THEREIN

Charles M. Aker, Lake Forest, Calif., assignor to Omnithruster, Inc., Sante Fe Springs, Calif.

Filed May 21, 1982, Ser. No. 380,522
Int. Cl.³ B63B *1/38*
U.S. Cl. 114—40 **4 Claims**

1. In combination with a ship having a hull and pump means for drawing water from the sea through an inlet in said hull, an ice lubrication system for facilitating the passage of said ship through ice laden water, said system comprising:

a first plurality of discharge openings formed in the starboard side of said hull below the chine of said ship and spaced from one another extending toward the stern from the bow portion of said hull;

a second plurality of discharge openings formed in the port side of said hull below the chine of said ship and spaced from one another extending toward the stern from the bow portion of said hull;

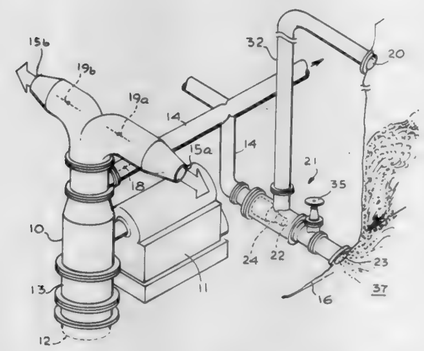
a plurality of jet pumps each having a water inlet, a gas inlet, and a gas/water outlet, each of said jet pumps being mounted in said hull with the gas/water outlet thereof adjacent to a different one of said discharge openings;

a gas source means including a plurality of air holes in the sides of said hull above said discharge openings and a plurality of air pipes each connecting a different one of said air holes to the gas inlet of a different one of said jet pumps; and

conduit means for coupling the outlet of said pump means to said jet pump water inlets for causing each of said jet pumps to produce a gas/water mixture and discharge it through the discharge opening adjacent thereto;

each of said jet pumps comprising:

a pipe section having a throat defined between an upstream converging portion and a downstream diverging portion defining said gas/water outlet and wherein said gas inlet is proximate to said converging portion; and



a nozzle means including a converging nozzle mounted substantially concentrically within said pipe section for discharging a water flow therein proximate to said pipe section converging portion for producing a suction at said gas inlet to pull gas therethrough, said nozzle means including a vortex generating means mounted upstream from said converging nozzle for creating sufficient turbulence in the outer boundary of the water flow discharged therefrom to entrain in the water flow the gas pulled through said gas inlet; and

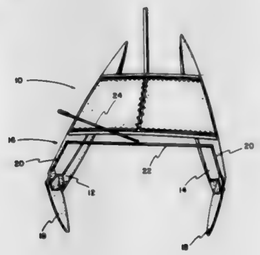
valve means associated with each of said jet pumps for selectively directing the water flow supplied thereto either to the gas/water outlet thereof or through the air pipe connected thereto for discharge through one of said air holes.

4,522,142

RUDDER-TILLER CONTROL SYSTEM FOR A BOAT

John W. Frye, Jr., Rte. 2, Box 99, Aberdeen, N.C. 28315

Continuation of Ser. No. 488,015, Apr. 25, 1983, abandoned. This application Sep. 14, 1984, Ser. No. 650,985
Int. Cl.³ B63H *25/06*
U.S. Cl. 114—163 **10 Claims**



1. In a multi-hull boat having a plurality of rudders secured thereto, a rudder-tiller arm associated with each rudder and extending therefrom, a tiller connector bar operatively interconnecting said rudder tiller arms, a tiller handle connecting to said tiller connector bar and extending therefrom, the improvement comprising a connector assembly for interconnecting selected rudder-tiller arms with said tiller connector bar for allowing rotation about a primary axis but which also allows said primary axis to move both laterally back and forth and fore-and-aftly, giving rise to at least three degrees of freedom of movement provided by said connector assembly between a respective rudder-tiller arm and said tiller connector bar, said connector assembly comprising:

a housing structure;

a female receiving cavity formed in said housing structure;

a male ball joint rotatively confined within said female receiving cavity;

a connecting pin secured to said male ball joint and extending therefrom wherein said connecting pin forms said primary axis along the longitudinal axis thereof;

a conical cut out formed around the portion of said cavity through which said connecting pin extends; and

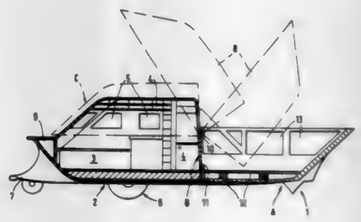
means for connecting said connecting pin of said connector assembly to a respective rudder-tiller arm and said housing structure of said connector assembly to said tiller connector bar wherein relative rotary movement may occur about the primary axis defined by said connecting pin while said connecting pin itself may move laterally back and forth or fore-and-aftly while the end of said tiller connector bar moves vertically through the rotation of said male ball joint within said female receiving cavity of said connector assembly.

4,522,143

FOLDING BOAT WITH BOW AND STERN SECTIONS

Siegfried Holzbaur, Stuttgart, Fed. Rep. of Germany, assignor to Carabo A.G., Glarus, Switzerland

Filed Jan. 31, 1983, Ser. No. 462,269
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202885
Int. Cl.³ B63B *7/00*
U.S. Cl. 114—344 **26 Claims**



1. A folding boat comprising:

a bow section having a front end and a rear wall;

a stern section privotally connected to said bow section and having a front wall and a rear end;

one of said bow section and said stern section forming a tilt-up section which is pivotally movable with respect to the other of said bow section and said stern section forming a mobile unit, between a folded-out position in which said front wall and said rear wall are in opposing relation to each other and a folded-up position in which said tilt-up section tilts over and is situated above the mobile unit, with said folding boat providing an enclosed living area;

undercarriage means on said mobile unit for permitting movement of said folding boat on land in said folded-up position; and

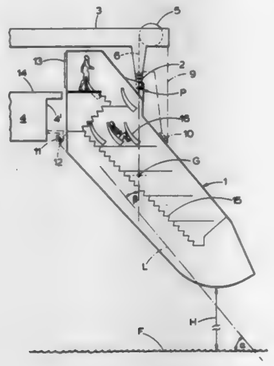
said rear wall and said front wall forming a doorway opening to said enclosed living area when said folding boat is in said folded-up position.

4,522,144

LIFE SAVING SYSTEM FOR MARINE STRUCTURE

Per G. Klem, Jar, Norway, assignor to Harding A/S, Rosendal, Norway

Continuation of Ser. No. 388,736, Jun. 15, 1982, abandoned. This application May 2, 1984, Ser. No. 605,993
Claims priority, application Norway, Jun. 30, 1981, 812231
Int. Cl.³ B63C *9/06*
U.S. Cl. 114—348 **5 Claims**



1. A free fall rescue system for use on a marine structure having a height of up to more than 20 meters, said system comprising:

an enclosed life boat having a bow, a stern, a center of gravity, a single fulcrum located above and aft of said center of gravity and a longitudinal axis;

means for suspending said life boat at said single fulcrum from the marine structure at a height of up to more than 20 meters over free water in an inclined position with said bow directed outwardly from the marine structure and downwardly and with said longitudinal axis extending with respect to the water surface at a first angle of approximately 40°–60° corresponding to a preferred angle of impact of said life boat therewith upon free fall vertically downwardly of said life boat from said inclined position;

said single fulcrum being located at a position on a line extending through said center of gravity and extending with respect to said longitudinal axis in said inclined position at a second angle substantially equal to an angle complementary to said first angle;

said suspending means supporting at said single fulcrum the entire weight of said life boat in said inclined position; and

said suspending means being selectively releasable to allow said life boat to fall freely vertically downwardly from said inclined position and to impact bow-first with the free water at said first angle.

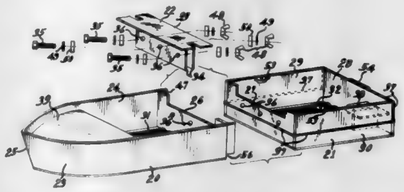
4,522,145

CONVERTIBLE BOAT AND LUGGAGE CARRIER

Selden A. Stone, 113A N. Lake Dr., Leesburg, Fla. 32788

Filed Nov. 21, 1983, Ser. No. 553,589
Int. Cl.³ B63B *7/04*
U.S. Cl. 114—352 **10 Claims**

1. In a combination boat and luggage carrier of two mating boat sections, one section being the bow section of the boat having an open top, two side walls converging to form the bow, a bottom, and a middle transverse wall, and the other section being the stern section having an open top, two side walls, a transom, and an aft transverse wall, said two sections forming an enclosed luggage carrier when their open tops are joined in face-to-face relationship; the improvement, which comprises said stern section being dimensioned to be nested substantially within said bow section when said open tops face each other and said transom is adjacent said bow and said bow section bottom is spaced above said stern section and the free edge of said stern section stern side walls being closely adjacent said bow section bottom, a three-sided socket formed by said side walls and said bottom of said bow section extending aft of said middle transverse wall and mating with said forward portion of said stern section when said bow and stern sections are aligned, and a transverse seat member including a horizontal seat and two spaced clamping members depending vertically downward from the underneath side of said seat, means connected to each of said clamping members and passing through said middle transverse wall and said aft transverse wall to form a watertight connection between said sections to form a boat.

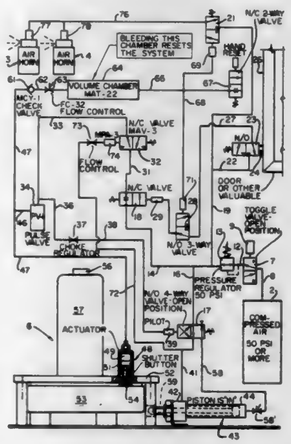


4,522,146

BURGLAR ALARM SYSTEM INCORPORATING PNEUMATICALLY OPERATED COMPONENTS

Heinz F. Carlson, 200 Kenny Crt., Santa Cruz, Calif. 95065

Filed Aug. 17, 1982, Ser. No. 409,016
Int. Cl.³ G03B *19/00;* **G08B** *1/04*
U.S. Cl. 116—2 **17 Claims**



1. A self-contained intruder alarm system that is independent of external energy sources for activation and which is adapted to be installed in a room or building into which an intruder may attempt to gain access and which is activated by an overt act by the intruder, comprising:

(a) camera means adapted to be activated by the system to photograph the intruder upon commission of the overt act;

(b) alarm means adapted to be activated by the system to sound an audible alarm as a result of the commission of the overt act by the intruder; and

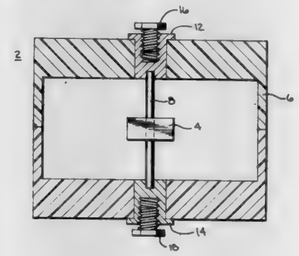
(c) pneumatic circuit means cooperatively interconnecting said camera means and said alarm means and including a source of air under pressure and a valve actuated by the commission of said overt act by the intruder to activate the circuit means to actuate the camera means and sound the audible alarm means.

4,522,147

SME SHUTTER MECHANISM

John W. Kroll, Greendale, and Roy Hyink, Wauwatosa, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 19, 1983, Ser. No. 533,247
Int. Cl.³ G01K *1/02*
U.S. Cl. 116—216 **3 Claims**



3. A shape memory effect, SME, shutter mechanism comprising:

a shutter movably mounted in a housing for actuation between given positions;

SME means in said housing for actuating said shutter in response to a given level of current flow through said SME means causing I^2R heating of the latter above its transition temperature;

terminal means in said housing for completing an electrical circuit through said SME means; wherein:

said shutter is mounted to said SME means and moved thereby between said given positions;

said SME means comprises a shaft mounted in said housing at its opposite ends;

said shutter is mounted on said shaft between said ends;

said terminal means engage said ends of said shaft;

said shaft rotates axially in response to I^2R heating thereof above said transition temperature;

said ends of said shaft are nonrotatably secured in said terminal means and said shaft torsionally rotates.

4,522,148

APPARATUS FOR COATING LIGHTGUIDE FIBER

Bahiru Kasshun, Roosevelt Township, Monmouth County, and Montri Viriyayuthakorn, Hamilton Township, Mercer County, both of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Division of Ser. No. 558,670, Dec. 6, 1983, which is a division of Ser. No. 418,317, Sep. 15, 1982, Pat. No. 4,439,467. This application May 29, 1984, Ser. No. 614,897
Int. Cl.³ B05C *3/12*
U.S. Cl. 118—405 **5 Claims**

1. An apparatus for coating an elongated material to provide a substantially bubble-free covering, said apparatus including:

reservoir means for holding a coating material;

first die means communicating with said reservoir means and including an exit orifice at one end thereof;

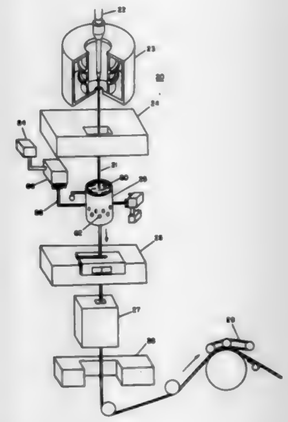
second die means for sizing coating material about the elongated material, said second die means communicating at one end thereof with said exit orifice of said first die means and having an exit orifice at an opposite end thereof which is aligned with said exit orifice of said first die means;

a cavity which is interposed between said first and second die exit orifices, the coating material being disposed in a continuum which extends from a free surface in said reservoir means, through said first die means and said cavity, and into said second die sizing means;

moving means for advancing the elongated material through said apparatus at a velocity which is sufficiently high to cause air to become entrained in the coating material, and to cause a pressure gradient to be established between said first die means and said second die means;

means for flowing coating material into said cavity at a pressure which sufficiently enhances the pressure gradient between said cavity and said first die means as to establish a sufficient volumetric upward flow of coating material into said first die means to remove any bubbles adjacent to the elongated material and to cause the coated elongated material to be substantially bubble-free; and

means for removing bubble entrained coating material flowing upwardly through said first die means into said reservoir before any substantial bubble coalescence occurs.

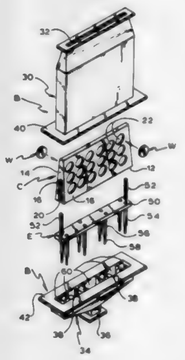


4,522,149

REACTOR AND SUSCEPTOR FOR CHEMICAL VAPOR DEPOSITION PROCESS

Dennis Garbis, Dix Hills; Joseph Y. Chan, Kings Park; Amedeo J. Granata, Flushing, and Robert C. Heller, Stony Brook, all of N.Y., assignors to General Instrument Corp., Clifton, N.J.

Filed Nov. 21, 1983, Ser. No. 553,962
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—725 **15 Claims**



1. A reactor for use in a chemical vapor deposition process comprising:

(a) a reaction vessel having a gas inlet, a gas outlet and a substantially vertical gas flow path therebetween;

(b) a substantially solid susceptor configured as a truncated

wedge, said susceptor comprising a body having a top, a bottom, a pair of longitudinally spaced ends, and a converging pair of opposed faces; each of said faces having means to receive a plurality of wafers and maintain the wafers exposed to said gas flow path, said susceptor being disposed within said reaction vessel with said opposed faces converging in a direction counter to that of said gas flow path; and

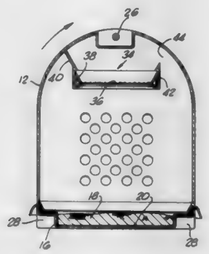
(c) heating means disposed about said reaction vessel for heating said susceptor.

4,522,150

CAT LITTER DISPOSAL HOUSING

Leonard Gershman, 10853 Rose Ave., #55, Los Angeles, Calif. 90034

Filed Jun. 12, 1984, Ser. No. 619,837
Int. Cl.[3] A01K *23/00*
U.S. Cl. 119—1 **19 Claims**



10. A cat litter disposal system comprising:

a housing of sufficient size to easily accommodate a cat or other small animal;

litter storage means included in the bottom of said housing for receiving and storing particulate cat litter;

said housing including a removable container having a screen bottom mounted near but spaced from the top of said housing, said screen having openings slightly larger than the individual particles of the particulate cat litter, the space between one side of said container and one upper side portion of said housing being blocked, and the space between the other side of said container and said housing being open; and

means for rotating said housing through 360 degrees to move the cat litter from said litter storage means into said removable container;

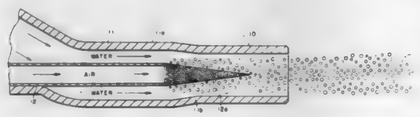
whereby the bulk of the cat litter falls through said screen, back to said litter storage means, and the fecal matter and associated litter is retained in said removable container.

4,522,151

AERATOR

Dominic S. Arbisi, 13001 Berkshire Dr., Minnetonka, Minn. 55343, and Coy E. Replogle, 8133 Portland Ave. South, Bloomington, Minn. 55420

Filed Mar. 14, 1983, Ser. No. 475,074
Int. Cl.[3] A01K *63/00*; **B01F** *5/04*
U.S. Cl. 119—3 **6 Claims**



1. A device for aerating liquid comprising,

a nozzle member having a liquid discharge passage with an air discharge passage in spaced relation therewithin,

means for supplying liquid under pressure to said liquid discharge passage,

means for supplying air under pressure to said air discharge passage,

a conical air dispersing member perforated throughout a substantial portion of its length and attached to the end of said air discharge passage to distribute the flow of air into a substantial length of the stream of liquid surrounding said perforated conical air dispersion member and discharging the air into said stream in small bubbles through the perforations in said conical air dispersing member,

the end of the air and liquid discharge passage is spaced outwardly from the downstream end of the conical member,

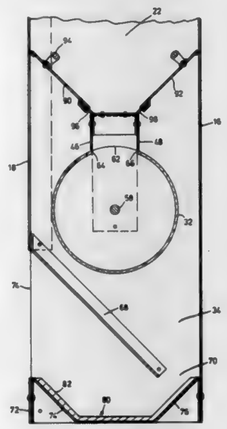
the liquid discharge passage has a frusto conical segment surrounding a substantial upstream portion of the length of said perforated conical member to maintain the velocity of the flowing liquid surrounding said perforated conical air dispersing member and provide a substantially reduced pressure zone surrounding said perforated member to increase the venturi action and the absorption of the air into the liquid stream within the nozzle unit.

4,522,152

ANIMAL FEEDER

James R. Meyer, Rte. 3, Box 267, Warrenton, Mo. 63383

Continuation-in-part of Ser. No. 406,303, Aug. 9, 1982, abandoned. This application Feb. 24, 1984, Ser. No. 583,109
Int. Cl.[3] A01K *5/00*
U.S. Cl. 119—56 R **7 Claims**



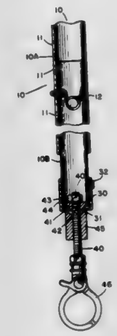
2. A feeder for animals, such as pets and the like, comprising a housing, said housing being comprised of a top feed storage compartment, a pair of downwardly sloping walls defining a V-shaped hopper at the bottom of said feed storage compartment, said walls being spaced from one another at the bottom do define a feed opening, a cylindrical metering valve communicating with said feed opening for dispensing a selected amount of feed, said cylindrical metering valve being hollow and having a slot-like arcuate axially extending opening, handle means for rotating said cylindrical metering valve into and out of registry with said feed opening to fill and dispense feed from the cyclindrical metering valve, and a bottom animal feeding compartment in said housing, at least one of said downwardly sloping walls comprising a plate-like wall member having means for supporting a lower portion against a fixed lower hopper wall and an upper portion extending in a rest position against an inside wall of the hopper, said fixed lower hopper wall being interiorly spaced from said inside wall of the hopper, said plate-like wall member being removable to expose a passageway from the feed storage compartment at the top of the housing to one side of the cylindrical metering valve to the bottom animal feeding compartment whereby the interior of the housing may be substantially filled for extended self-feeding periods.

4,522,153

TRAINING AND CONTROL LEASH

Charles Vander Horst, 916 S. Reynolds Rd., Lot 137, Toledo, Ohio 43615

Filed Aug. 27, 1984, Ser. No. 644,935
Int. Cl.[3] A01K *27/00*
U.S. Cl. 119—109 **8 Claims**



1. A training and control leash comprising a rigid control rod;

a removable hollow cap surrounding the bottom end portion of said control rod and said removable cap being provided with a circular aperture opening central of its bottom cover;

an elongated threaded bolt of less diameter than the diameter of said aperture extending partially within said removable cap;

a swivel ball piece disposed within said removable, hollow cap and provided with a smooth hollow cylindrical opening throughout its center through which the upper end portion of said threaded bolt protrudes;

a threaded nut screwed on the upper protruding end portion of said threaded bolt to retain said swivel ball on said threaded bolt and within said hollow cap;

a removable collar clamp means secured to the lower end portion of said threaded bolt for removably clamping said threaded bolt and said control rod to a dog collar;

an adjustable threaded thumb nut screwed on to said threaded bolt between said collar clamp means and said hollow cap in order to adjust by screwing means the extent of swivel desired in the control of a dog or animal being controlled.

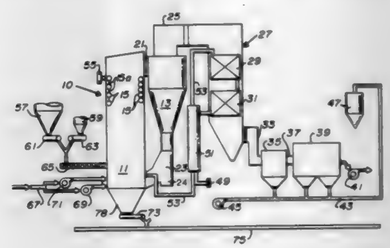
4,522,154

FLUIDIZED BED COMBUSTION BOILER

Edward S. Taylor, Del Mar, Calif., and Leif W. Bengtsson, Helsinki, Finland, assignors to Pyropower Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 351,581, Mar. 1, 1982, abandoned, which is a continuation-in-part of Ser. No. 240,245, Mar. 3, 1981, abandoned. This application Feb. 8, 1984, Ser. No. 578,068
Int. Cl.[3] F22B *1/00*
U.S. Cl. 122—4 D **6 Claims**

1. A circulating fluidized bed combustion boiler for producing steam from water containing a substantial proportion of dissolved solids, comprising, a substantially vertical elongated combustion chamber, circulation means for circulating a combusting fluidized bed upwardly through said combustion chamber from the lower end thereof to the upper end thereof, said circulating means including means for withdrawing gasses and entrained solids from the upper end of said combustion chamber and for separating solids from said fluidized bed after passage through said combustion chamber and for storing said solids for return to said combustion chamber at the lower end thereof, and tube means arranged in a single layer around the outer periphery of said combustion chamber, said tube means comprising at least one coiled tube with the convolutions thereof being joined by a web throughout substantially the



entire length of said tube, said means including inlet means positioned toward the lower end of said combustion chamber and including outlet means positioned toward the upper end of said combustion chamber and being of a configuration to provide an ascending helical flow path for fluid passing therethrough and such that the region of higher steam quality in said tube means coincides with the region of lowest heat transfer coefficients, and means for establishing a flow of fluid in said tube means to result in a steam quality and flow velocity sufficient to prevent deposition of solids on said tube means.

4,522,155

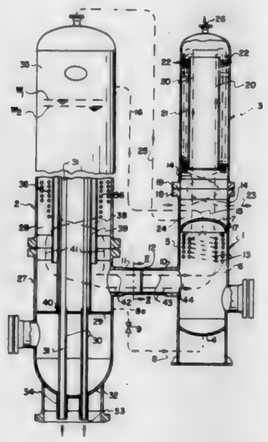
METHOD AND APPARATUS FOR CONTROLLING THE HEATING EFFECT OF HIGH TEMPERATURE GASES TO BE SUPPLIED TO A HEAT EXCHANGER

Frohmut Vollhardt, Siegen-Bürbach, and Heinz Haacker, Kreuztal-Ferndorf, both of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburgg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed May 25, 1982, Ser. No. 381,748
Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121297
Int. Cl.[3] F22B *1/00*
U.S. Cl. 122—7 R **17 Claims**

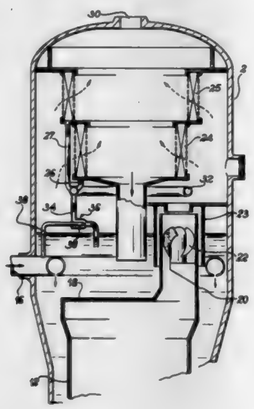
1. A heat exchanger device comprising a steam producing gas cooler having a water steam space therein and a tubular conduit for the passage of high temperature gases therethrough, a vessel having a bottom wall with an inlet above said bottom wall connected to the high temperature gases of said steam producing gas cooler, said vessel having a tubular portion for the high temperature gases connected from said inlet to a discharge, a liquid connection from said steam producing gas cooler to the bottom of said vessel, means in said liquid line for controlling the amount of liquid passed into said vessel, the inlet for said high temperature gas being located above the

bottom of said vessel and a superheater disposed over said vessel and having a tubular connection therein for the passage



of the high temperature gases from said vessel through said superheater.

4,522,156
STEAM GENERATOR
Jean E. Chaix, Manosque, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Jun. 7, 1982, Ser. No. 386,075
Claims priority, application France, Jun. 16, 1981, 81 11833
Int. Cl.³ F22B *1/06*
U.S. Cl. 122—34 **2 Claims**



1. A steam generator comprising: an enclosure having a vertical axis;

a plurality of U-tubes having inner and outer wall surfaces within said enclosure, primary liquid circulating within said U-tubes contacting the inner wall surfaces and secondary liquid contacting the U-tube outer wall surfaces;

a cylindrical envelope sealed at its upper part by a cover and surrounding said plurality of U-tubes, said cylindrical envelope and the inner wall of said enclosure together defining an annular passage, a secondary liquid supply line communicating with a portion of said enclosure above said cover, said portion in turn communicating with the upper part of said annular passage, and the lower part of said annular passage communicating with the interior of said envelope;

at least one passageway communicating through said cylindrical envelope cover to an upper part of said enclosure;

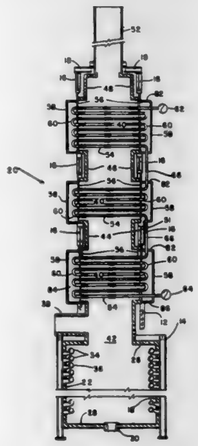
a centrifugal water/steam separator within said passageway;

at least one steam dryer of annular configuration surrounding the axis of said enclosure within said upper part of said enclosure for separating water from steam;

at least one discharge pipe connected to the lower part of said dryer for removing water separated from steam by said dryer; and

a suction device connected to said discharge pipe for sucking in water separated by said dryer, said suction device including a removal pipe for discharging water separated by said dryer, a convergent section defined in said removal pipe, a duct connected at an inlet end to said secondary liquid supply line and having a nozzle at an outlet end injecting secondary liquid into said convergent section for producing suction.

4,522,157
CONVECTION SECTION ASSEMBLY FOR PROCESS HEATERS
Thomas F. O'Sullivan, Montclair, N.J., and Thomas W. Gronauer, Briarcliff Manor, N.Y., assignors to Lummus Crest Inc., Bloomfield, N.J.
Continuation of Ser. No. 431,901, Sep. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 221,801, Dec. 31, 1980, abandoned. This application Feb. 21, 1984, Ser. No. 581,818
Int. Cl.³ F22B *37/24*; F28F *9/00*
U.S. Cl. 122—510 **15 Claims**

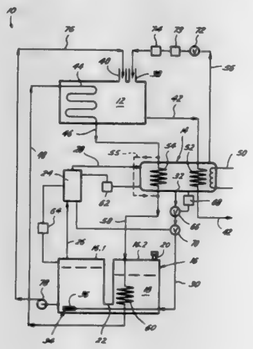


1. A convection section assembly for a heater which comprises:

a plurality of vertically disposed support members; a flue means; at least two heat transfer segments mounted in vertical array, each segment comprising a pair of horizontally disposed beam support members mounted to said vertically disposed support members and located outside said flue means, the length of said members being a dimension of choice; a plurality of parallel and vertically disposed tube sheet members mounted to said beam support members and having orifices; wall means for enclosing ends of said tube sheet members; a plurality of horizontally disposed tube means including return bends for passage of a process fluid therethrough positioned within the orifices of said tube sheet members, said tube sheet members requiring no additional support means intermediate their extremities; inlet conduit means for introducing a process fluid to be heated into said tube means of said heat transfer segments; and outlet conduit means for withdrawing the heated process fluid from said tube means of said heat transfer segments.

12. A heater assembly for process fluids, which comprises a first plurality of vertically-disposed support members; side and end walls enclosed by top and bottom walls mounted to said vertically-disposed support members and defining a heating zone having reactant tube means; burner means for heating said reactant tube means; inlet conduit means for introducing a process fluid to be heated into said reactant tube means; outlet conduit means for withdrawing a reactant gas from said reactant tube members; a second plurality of vertically disposed support members; a flue means; at least two heat transfer segments mounted in vertical array, each segment comprising a pair of horizontally disposed beam support members mounted to said second plurality of support members and located outside said flue means, the length of said members being a dimension of choice; a plurality of parallel and vertically disposed tube sheet members mounted to said beam support members and having orifices; wall means for enclosing ends of said tube sheet members; a plurality of horizontally disposed tube means including return bends for passage of a process fluid therethrough positioned within the orifices of said tube sheet members, said tube sheet members requiring no additional support means intermediate their extremities; inlet conduit means for introducing a process fluid to be heated into said tube means of said heat transfer segments; and outlet conduit means for withdrawing the heated process fluid from said tube means of said heat transfer segments.

4,522,158
SUPPLY OF HYDROCARBON FUELS
Lester R. Wisegerber, 38 Brown La., Dayton, Tex. 77535
Filed Dec. 3, 1982, Ser. No. 446,674
Int. Cl.³ F02B *43/08*
U.S. Cl. 123—1 A **30 Claims**



1. A fuel supply system for the supply of a hydrocarbon fuel to an internal combustion engine, the sytem comprising:

(a) a pressure storage vessel for storing a hydrocarbon fuel vapor under pressure;

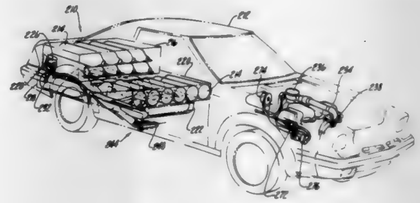
(b) compressor means for withdrawing hydrocarbon fuel vapor from a liquid hydrocarbon fuel tank and feeding the vapor under pressure to the pressure storage vessel;

(c) heating means for maintaining the fuel vapor in a heated condition during use;

(d) recycle means for recycling fuel vapor from the pressure storage vessel to the fuel tank for heating and agitating fuel in such a fuel tank;

(e) supply means leading from the pressure storage vessel for the supply of fuel vapor to an internal combustion engine during use.

4,522,159
GASEOUS HYDROCARBON FUEL STORAGE SYSTEM AND POWER PLANT FOR VEHICLES AND ASSOCIATED REFUELING APPARATUS
Larry J. Engel, Rochester, and John W. Turko, River Rouge, both of Mich., assignors to Michigan Consolidated Gas Co., Detroit, Mich.
Filed Apr. 13, 1983, Ser. No. 484,521
Int. Cl.³ F02B *43/00*
U.S. Cl. 123—1 A **34 Claims**



1. In a system having a gaseous hydrocarbon fuel powered vehicle and a refueling apparatus for said vehicle, the improvement comprising in combination:

inlet means on said refueling apparatus adapted to be connected in fluid communication with a source of said gaseous fuel;

compressor means on said refueling apparatus for compressing said gaseous fuel in order to increase the pressure thereof up to a first predetermined pressure level;

cooling means on said refueling apparatus for decreasing the temperature of said compressed gaseous fuel;

sorbent filter means on said refueling apparatus for sorptively removing at least a portion of certain predetermined constituents of said gaseous fuel therefrom;

discharge means on said refueling apparatus for supplying said compressed gaseous fuel to said vehicle, said discharge means including a discharge fluid conduit selectively and releasably connectable to a fuel inlet means on said vehicle in order to selectively refuel the same;

at least one storage vessel on said refueling apparatus, said refueling apparatus storage vessel containing a sorbent material therein for sorptive storage of a first predetermined quantity of said compressed gaseous fuel in said refueling apparatus storage vessel;

vehicle storage means for storing a second predetermined quantity of said compressed gaseous fuel on said vehicle, said vehicle storage means including a sorbent material for sorptively storing said second predetermined quantity of said compressed gaseous fuel;

refueling apparatus control means for supplying said filtered and compressed gaseous fuel to said vehicle from either said compressor means or said refueling apparatus storage vessel, said control means causing said filtered and compressed gaseous fuel to be supplied to said vehicle from said refueling apparatus storage vessel when the pressure therein is generally at or above a second predetermined pressure level and further causing said refueling apparatus storage vessel to be bypassed by said filtered and compressed gaseous fuel when said refueling apparatus storage vessel pressure drops below a third predetermined level, said refueling apparatus control means further causing said filtered and compressed gaseous fuel to be supplied to said refueling apparatus storage vessel after said discharge fluid conduit has been selectively disconnected from said vehicle fuel inlet means or alternatively after the pressure of the compressed gaseous fuel in said vehicle storage means has increased to a fourth predetermined pressure level, said compressed gaseous fuel being supplied to said refueling apparatus storage vessel until the pressure in said refueling apparatus storage vessel is generally at said second predetermined pressure level;

a prime mover on said vehicle having means for combining

said compressed gaseous fuel with air to produce mechanical energy necessary to move said vehicle;

means on said vehicle for conveying said compressed gaseous fuel to said vehicle storage means from said fuel inlet means and for conveying said compressed gaseous fuel from said vehicle storage means to said combining means of said prime mover; and

vehicle sorbent filter means on said vehicle associated with said conveying means for sorptively filtering the flow of said compresssed gaseous fuel to said vehicle storage means, said vehicle sorbent filter means including a sorbent material.

4,522,160

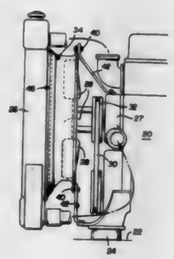
FAN-SHROUD STRUCTURE

Leonard E. Speers; John D. Inhofer, both of Terre Haute, and Philip D. Redenbarger, Centerpoint, all of Ind., assignors to J. I. Case Company, Racine, Wis.

Filed Jan. 23, 1984, Ser. No. 572,738

Int. Cl.³ F01P *5/06*

U.S. Cl. 123—41.49 **4 Claims**



1. A shroud structure for use with a radiator and liquid cooled internal combustion engine having a multi-bladed fan rotatably mounted on said engine intermediate said engine and said radiator, said engine and radiator being mounted for movement relative to each other, said shroud structure including:

a one-piece generally rigid fiberglass shroud having a generally rectangular base perimeter portion which is integral with and merges into an opposed annular bell-mouthed venturi perimeter portion;

said venturi perimeter portion surrounding said rotatable fan and being attached to said engine such that a small clearance is formed between the blades of said fan and the inner periphery of said venturi portion;

said rectangular base perimeter portion being fitted between a pair of finger-like gripping ring portions of a complementary generally rectangular bulbous flexible seal which is secured to said radiator, and said flexible bulbous seal accommodating the relative movement between said engine and radiator to prevent damage to said shroud structure from said rotatable fan.

4,522,161

VALVE SEAT INSERTS

Roger H. Slee, Warwick, England, assignor to AE PLC, Rugby, England

Filed Sep. 9, 1983, Ser. No. 530,682

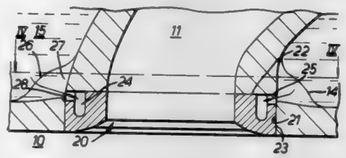
Claims priority, application United Kingdom, Sep. 11, 1982, 8225966

Int. Cl.³ F01L *3/22*

U.S. Cl. 123—41.85 **9 Claims**

1. A water-cooled internal combustion engine comprising at least one cylinder and valve-controlled inlet and exhaust ports communicating with said cylinder, at least one of said ports including an annular valve seat insert fitted in an annular rabbet, the rabbet communicating with the water-cooling system through apertures provided therein, the valve seat insert being provided with a passage extending therearound and opening on to the rabbet, the passage communicating with the water-cooling system of the engine through apertures provided in the valve seat insert and said apertures provided in the rabbet to allow water to flow to, through, and out of the passage, so cooling the valve seat insert and an associated valve, the number and arrangement of the rabbet apertures and the valve seat insert apertures being such that at least four rabbet apertures and valve seat apertures are in communication, whatever the angular disposition of the valve seat insert relatively to the rabbet.

8. A method of manufacturing of a water-cooled internal combustion engine of the kind comprising at least one cylinder having valve-controlled inlet and exhaust ports communicating with said cylinder, the method comprising casting a portion of the engine with a port, with passages for cooling water



and with a part in which a rabbet is to be formed for receiving a valve seat insert, the rabbet-forming part of the casting being annular with a continuous outer surface in which the rabbet is formed and an inner surface forming a surface of the cooling water passage, the inner surface being cast with an angularly-spaced succession of projections and depressions therearound, such that the edge between two surfaces defining the rabbet, when formed, passes through the depressions to form, between adjacent projections, apertures leading into the rabbet, forming said casting with said rabbet and then fitting in said rabbet a valve seat insert including an annular body having two adjacent annular surfaces that are normal to one another and which engage said rabbet surfaces, and a passage extending around the valve seat and opening onto one of said insert surfaces to communicate with said rabbet apertures for the flow of cooling water therethrough.

4,522,162

PORTABLE GAS-POWERED TOOL WITH LINEAR MOTOR

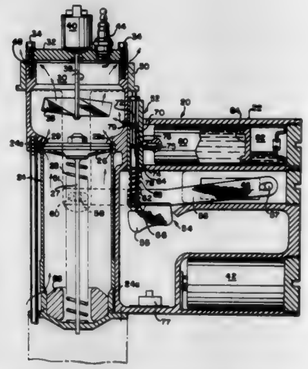
Milovan Nikolich, Chicago, Ill., assignor to Signode Corporation, Glenview, Ill.

Division of Ser. No. 227,193, Jan. 22, 1981, abandoned. This application Nov. 14, 1983, Ser. No. 551,559

Int. Cl.³ F02B *71/00*

U.S. Cl. 123—46.5 C **5 Claims**

1. The method of self-starting a working member comprising the steps of: providing a combustion chamber, providing a working member exposed to the products of combustion in said chamber, introducing a fuel and air mixture into said chamber, mixing and turbulating the fuel and air in said chamber under atmospheric conditions independent of the operation of said working member, and thereafter igniting the mixture to



form an explosion in the combustion chamber prior to initial movement of the working member.

4,522,163

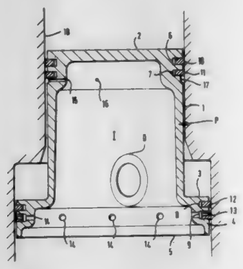
STEPPED PISTON AND STEPPED PISTON ENGINE

Bernard Hooper, Maybank House, Hope St., Wordsley, Stourbridge, West Midlands, England (DY8 5QB)

Filed Jan. 18, 1983, Ser. No. 459,062

Int. Cl.³ F01M *3/04*

U.S. Cl. 123—73 F **10 Claims**



1. A stepped piston for an engine of the kind having at least one cylinder, the cylinder comprising a pumping part of a first diameter and a working part of a second diameter, combustion of a fuel/air mixture taking place in the working part of the cylinder, the first diameter of the pumping part being greater than the second diameter of the working part, the piston comprising a body with a smaller diameter working part slidable in the working part of the cylinder, and a larger diameter pumping part slidable in the pumping part of the cylinder, the working part extending from the top of the piston to a step, and the pumping part extending from the step to a lower end of the piston, an interior hollow opening to the outside at the lower end of the piston, at least one piston ring groove formed in an outer surface of the working part of the piston, and at least one piston ring groove formed in another surface of the pumping part of the piston, each piston ring groove, in use, receiving a piston ring, at least two metering openings providing controlled flow of a predetermined amount of lubricant from the interior hollow to the outer surface of the working part of the piston, the total cross-sectional area of the openings being of an amount in the range determined according to the formula:

$$M = \frac{A}{K}(PN)^{\frac{3.7}{K}}$$

where M is the total cross-sectional area of the openings in square mm, A is the cross-sectional area of the working part of the piston in square cm, P is the brake mean effective pressure of the engine at maximum power in atmospheres, N is the engine speed at maximum power in revolutions per minute, and K lies between 29 and 41.

4,522,164

COLD-START ASSISTING DEVICE FOR COMBUSTION ENGINES

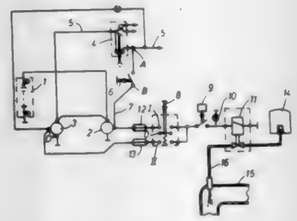
Gerhard Fränkle, Remshalden, and Peter Joppig, Korb, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 20, 1983, Ser. No. 486,806

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222941

Int. Cl.³ F02M *1/16*

U.S. Cl. 123—180 R **16 Claims**



5. Cold-start assisting device for an internal combustion engine which drives a device for producing electrical potential and which has a starter for starting the engine, a battery for providing operating potential to the starter, and means for selectively coupling the battery to the starter, the assist system including a source of cold-starting fluid, means for coupling the cold-starting fluid source to the engine's induction system including a cold-starting fluid valve, and an electric circuit for selectively coupling the valve to the device for producing electrical potential for actuation thereby such that the absence of electrical potential from the device prevents operation of the valve through the circuit when the engine is dead.

4,522,165

NOISE REDUCING COVER FOR AN INTERNAL COMBUSTION ENGINE

Naoki Ogawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Continuation-in-part of Ser. No. 155,237, Jun. 2, 1980, abandoned. This application Jul. 25, 1983, Ser. No. 516,982

Claims priority, application Japan, Jun. 2, 1979, 54-68214; Jun. 2, 1979, 54-68215; Jun. 23, 1979, 54-85445[U]; Jun. 23, 1979, 54-85446[U]

Int. Cl.³ F02F *7/00*

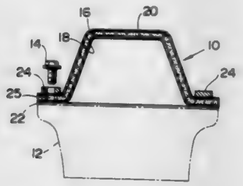
U.S. Cl. 123—195 C **23 Claims**

1. A noise reducing cover for an internal combustion engine, comprising:

a body portion formed into a self supporting three dimensional shape of a first vibration and sound absorbing porous material;

an inner layer formed of a second vibration and sound absorbing material, securely connected to the inner side of said body portion to form a composite, the inner layer

being adapted to be directly connected to a surface of the engine and impervious to liquids; and



wherein the Shore hardness (HsD) of said composite is lower than 70.

4,522,166

DEVICE FOR THE IMPROVING OF THE STARTING OF AN ENGINE

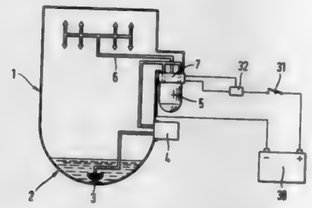
Ilkka Toivio, and Terttu Toivio, both of Likolammenkatu 15, 15850 Lahti 85, Finland

Filed Dec. 6, 1983, Ser. No. 558,423

Claims priority, application Finland, Dec. 7, 1982, 823746; PCT Int'l Appl., May 4, 1983, PCT/FI83/00039; Finland, Aug. 18, 1983, 832963

Int. Cl.³ F01M *1/00*

U.S. Cl. 123—196 A **7 Claims**



1. A device for improving the cold starting of an internal combustion engine having an engine lubricating oil system including an oil reservoir, a main engine oil duct and an oil filter interposed between said oil reservoir and main engine oil duct comprising means defining a chamber, said chamber means having an inlet and an outlet, said chamber being connected in said lubricating oil system whereby said inlet is connected for receiving oil from said reservoir and said outlet connected in communication with said engine oil duct, a heating element disposed in said chamber in heat transfer relationship to the oil flowing therethrough, said chamber means being interposed directly between said main oil engine duct and said oil filter and including flow guide means interposed in said chamber for directing the flow of oil therethrough from said inlet to said outlet, said flow guide means comprises a baffle plate disposed normal to said inlet and outlet, an end wall connected to and circumscribing said baffle plate, and said heating element being connected to said end wall in heat transfer relationship to the oil flow defined by said baffle plate, a battery, and an electrical circuit connecting said heating element to said battery, said circuit comprising switch means interposed between said heating element and said battery, whereby said heating element can be energized and de-energized, depending on the position of said switch, and a thermostatic control disposed in said circuit for controlling the temperature of the oil being heated in said chamber.

4,522,167

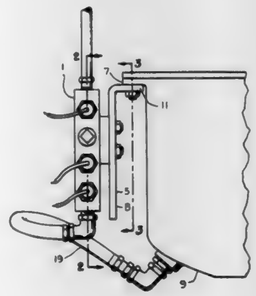
LUBRICATING OIL MONITOR

Erwin E. Hurner, 2605 S. Rivershore, Moorhead, Minn. 56560

Continuation-in-part of Ser. No. 218,918, Dec. 22, 1980, Pat. No. 4,421,078, which is a continuation-in-part of Ser. No. 192,077, Sep. 29, 1980, abandoned. This application Dec. 15, 1983, Ser. No. 561,739

Int. Cl.³ F01M *11/12*

U.S. Cl. 123—196 S **9 Claims**



1. An apparatus for attachment to an internal combustion engine to monitor lubricating oil levels within an oil pan of a lubrication system thereof comprising;

means defining an elongated monitoring chamber, said chamber having a bottom and said means further defining on either said thereof a plurality of ports communicating with said chamber, said ports on one side being offset vertically from the ports on the other side thereof;

means for mounting said elongated chamber in a vertical orientation;

means in fluid communication between the bottom of said chamber and said oil pan;

means communicating with an upper part of said chamber and said lubrication system for equalizing gaseous pressure above oil in said chamber and said lubrication system;

means for detecting presence or absence of oil at a level within said chamber.

4,522,168

METHOD AND APPARATUS FOR CONTROLLING FUEL-INJECTION AMOUNT IN DIESEL ENGINE

Toshihisa Ogawa, Susono; Hideo Miyagi, Okazaki; Masaomi Nagase, and Kiyotaka Matsuno, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 13, 1983, Ser. No. 513,293

Claims priority, application Japan, Jan. 31, 1983, 58-013910

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—198 D **4 Claims**

1. A method for controlling the fuel-injection amount in a diesel engine having a rotational angle sensor for detecting the engine speed, comprising the steps of:

detecting whether said rotational angle sensor is in an abnormal state;

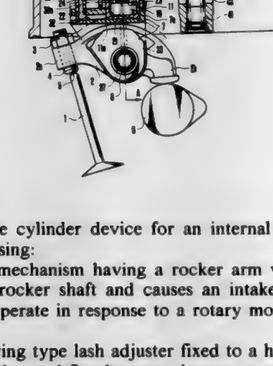
detecting whether said engine is being recranked when said rotational angle sensor is in an abnormal state;

determining a delay time period for delaying cranking of the engine, the delay time period being determined longer during re-cranking than during initial cranking;

detecting whether the accelerator opening is smaller than a predetermined opening;

detecting whether the vehicle speed of a vehicle in which said engine is disposed is less than a predetermined speed;

detecting whether an elapsed time period is equal to said determined delay time period while said accelerator opening is smaller than said predetermined opening and the vehicle speed is less than said predetermined speed; and



performing a fuel-cutting operation when said elapsed time period is equal to said determined delay time period.

4,522,169

VARIABLE CYLINDER DEVICE FOR INTERNAL COMBUSTION ENGINES

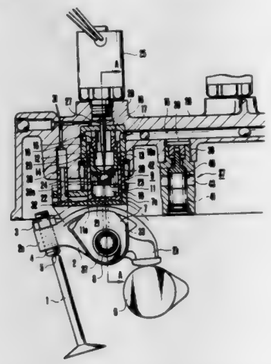
Fuminao Arai, Chiryu, and Yoshio Okabe, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 23, 1983, Ser. No. 535,259

Claims priority, application Japan, Sep. 29, 1982, 57-170669; Sep. 29, 1982, 57-147790[U]; Sep. 29, 1982, 57-147792[U]

Int. Cl.³ F01L *1/24;* **F02D** *13/06*

U.S. Cl. 123—198 F **5 Claims**



1. A variable cylinder device for an internal combustion engine, comprising:

a valve lift mechanism having a rocker arm which rocks around a rocker shaft and causes an intake or exhaust valve to operate in response to a rotary movement of a camshaft;

an oil-supplying type lash adjuster fixed to a housing at its upper portion and fitted to a rocker support at its lower end portion, said rocker shaft being fixed to said rocker support;

a mechanism for shifting the rocking fulcrum of said rocker arm so that the rocker arm rocks around its one end which is in contact with the upper end of a valve stem of said intake or exhaust valve, causing said rocker support to be movable up-and-down with the rocker shaft, thereby maintaining a closed position of said intake or exhaust valve;

said rocker support having a pipe protruding upwards and slidably inserted into a longitudinal hole formed in said housing and a lubrication oil passage which connects said pipe with a sliding surface between said rocking shaft and said rocker arm;

said housing having a main oil passage for supplying oil to said lash adjuster and a lubrication oil passage which connects said main oil passage with said longitudinal hole in the housing; and

said sliding surface between the rocking shaft and the rocker arm being supplied with lubrication oil from said main oil passage through said lubrication oil passage in said housing, said pipe protruding from the rocker support and said lubrication oil passage in said rocker support.

4,522,170

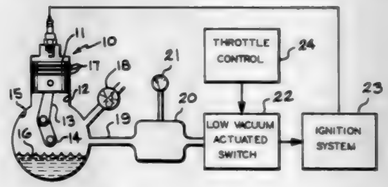
LOW ENGINE OIL SENSING METHOD

Michael Lenk, Toledo, and Richard S. Podiak, Maumee, both of Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Apr. 30, 1984, Ser. No. 605,350

Int. Cl.³ F02B *77/00*

U.S. Cl. 123—198 DC **7 Claims**



1. In a reciprocating piston engine having a crankcase containing a lubricating oil and having a crankcase gas pressure which varies as the piston reciprocates, a method for sensing a low crankcase oil volume while the engine is operating comprising the steps of: venting through a check valve positive pressure gas in the crankcase to maintain an average vacuum in the crankcase of the operating engine, such vacuum decreasing in average magnitude as the volume of oil in the crankcase decreases; and determining from the magnitude of the crankcase vacuum when there is insufficient oil in the crankcase.

4,522,171

PRE-COMBUSTION OR TURBULENCE CHAMBER FOR INTERNAL COMBUSTION ENGINES

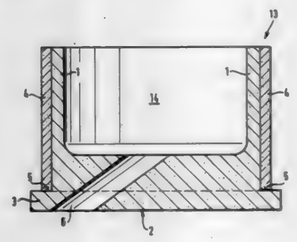
Ulf Dworak, Baltmannsweiler; Hans Olapinski, Aichwald; Dieter Fingerle, Hochdorf, and Ulrich Krohn, Leonberg, all of Fed. Rep. of Germany, assignors to Feldmühle Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 16, 1983, Ser. No. 505,072

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222815; Jan. 29, 1983, 3303048

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—270 **14 Claims**



1. Pre-combustion or turbulence chamber for an internal combustion engine, comprising side walls and a bottom wall forming an inner chamber, said side walls and bottom wall are formed of a material having a good thermal conductivity,

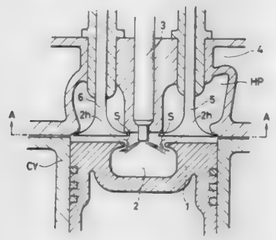
means for providing thermal insulation for at least said side walls of said inner chamber, wherein the improvement comprises that said side walls and bottom wall are formed by an inner molded body defining the inner chamber, said means comprises an outer molded body providing thermal insulation for said inner molded body, said outer molded body secured to said inner molded body with said inner molded body in closely fitting contact with said outer molded body, said outer molded body enclosing at least said side walls of said inner molded body, said inner molded body is formed of a material having thermal conductivity of at least 12 W/m·K) and selected from one of the group consisting of sintered aluminum oxide, sintered silicon carbide, sintered silicon nitride, a high temperature alloy consisting of 57 to 75% by weight nickel, up to 20% by weight chromium, between 0 and 18% by weight cobalt, up to 1.5% by weight aluminum and up to 2.4% by weight titanium so that all of these components add up to 100% by weight, and said outer molded body is formed of a ceramic material selected from the group consisting of sintered aluminum titanate or sintered zirconium oxide having a thermal conductivity of less than 10 W/m·K).

4,522,172

DIRECT INJECTION INTERNAL COMBUSTION ENGINE OF COMPRESSION IGNITION TYPE

Yujiro Oshima, and Taro Aoyama, both of Aichi, Japan, assignors to K.K. Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jul. 8, 1983, Ser. No. 512,055
Claims priority, application Japan, Jul. 9, 1982, 57-120195
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—276 **12 Claims**



1. A direct injection internal combustion engine of a compression ignition type comprising:

a piston reciprocated within a cylinder,

a cavity formed in a top surface of said piston, said cavity being formed in said piston top surface so as to have its inlet opening throttled while allowing remaining portions to have a large cross-sectional area, the ratio of the area A of said inlet opening to the area Ao of said piston top surface satisfying the following relationship:

$$0.07 \leqq A/Ao \leqq 0.25;$$

and a fuel injection nozzle, comprising; fuel swirling means for effecting a swirling motion of the fuel, and an injection port positioned at the central portion of said cavity and directed within the cavity,

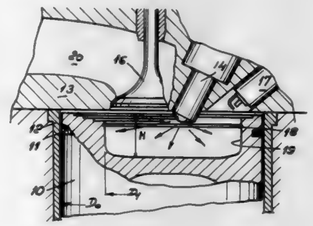
said nozzle injecting fuel from said injection port toward the circumferential wall of said cavity in a spray pattern of a hollowed conical shape having a predetermined spray angle and tangential velocity component.

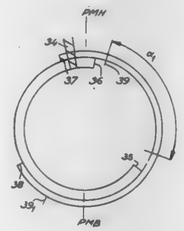
4,522,173

INTERNAL COMBUSTION ENGINE USABLE WITH A HIGH VAPORIZATION HEAT FUEL

Georges Agache, Orléans, France, assignor to Chenesseau, Orleans, France

Filed Oct. 20, 1983, Ser. No. 544,120
Claims priority, application France, Oct. 22, 1982, 82 17719
Int. Cl.³ F02F *3/26*
U.S. Cl. 123—276 **10 Claims**





1. An internal combustion engine with dirct injection and controlled ignition, for use with a high vaporization heat fuel, comprising at least a cylinder with air intake means and exhaust gas outlet means; a piston slidably received in said cylinder for reciprocating said cylinder and defining with said cylinder a combustion chamber; means for creating, in said combustion chamber, a swirling movement of the intake air, which comprise a recess formed in a surface of said piston limiting said chamber, substantially having a rotational symmetry and disposed with respect to said air intake means so that the gases are set in rotation in the recess, a spark plug carried by the cylinder wall in the vicinity of the periphery of said recess and means supported by the cylinder for injecting into the chamber a controlled amount of fuel with an adjustable injection advance of at least 140° during cold start and more than 180° on normal operation.

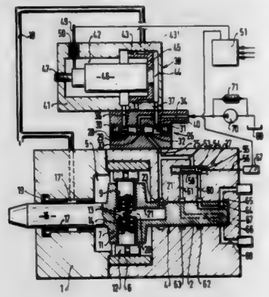
4,522,174

METHOD FOR THE INJECTION OF FUEL AND FUEL INJECTION APPARATUS FOR PERFORMING THE METHOD

Rudolf Babitzka, Kirchberg, and Ernst Linder, Mühlacker, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 7, 1983, Ser. No. 559,118
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1982, 3248713
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—300 **7 Claims**

2. A fuel injection apparatus for an internal combustion engine having externally supplied ignition comprising at least one work chamber enclosed within a cylinder by at least one pump piston, said work chamber being connectable during a compression stroke of said at least one pump piston with an injection location via at least one feed line and connected during an intake stroke of said at least one pump piston with a fuel supply conduit and, in order to control the duration of injection, said cylinder is connected at specific segments of the compression stroke, with a relief chamber via a controlled relief line, the fuel injection apparatus comprising a distributor being driven at pump rpm for rotation in a cylinder, by means of said distributor, fuel pumped by said at least one pump piston is delivered in sequence, in the course of the rotation of the distributor, to injection lines, which in accordance with the



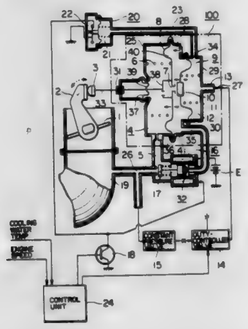
number of injection locations to be supplied are disposed spaced apart from one another by identical angular distances and distributed on the circumference of the cylinder, for injecting fuel into specific combustion chambers of an engine in which the distributor has two distributor openings, which are connectable in alternation, depending on load, with the pump work chamber and which are spaced apart from one another by an angular distance in the direction of rotation which is equal to the angular distance between two injection lines leading away from said cylinder.

4,522,175

ROTATIONAL SPEED CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES

Hiroshi Kamifuji; Tomoo Ito, and Chiaki Niida, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 10, 1984, Ser. No. 598,740
Claims priority, application Japan, Apr. 11, 1983, 58-62296
Int. Cl.³ F02N *3/06*
U.S. Cl. 123—339 **5 Claims**



1. A rotational speed control apparatus for an internal combustion engine comprising:

(a) a throttle valve disposed in an intake pipe;

(b) a driving diaphragm arranged for interlocking operation with said throttle valve through an actuating shaft for driving said throttle valve;

(c) a driving negative pressure chamber defined by said driving diaphragm and a front cover;

(d) a driving negative pressure passage connecting said driving negative pressure chamber to said intake pipe at a position downstream of said throttle valve for introducing a driving negative pressure into said driving negative pressure chamber;

(e) a signal-responsive diaphragm provided with an air regulating valve member regulating the quantity of air introduced into said driving negative pressure chamber through an air passage opening into said driving negative pressure chamber;

(f) a signal negative pressure chamber defined by said signal-responsive diaphragm and an end cover;

(g) a signal negative pressure passage connecting said signal negative pressure chamber to a signal negative pressure source for introducing a controlled signal negative pressure into said signal negative pressure chamber;

(h) signal negative pressure control means including a signal negative pressure regulating valve for controlling said signal negative pressure;

(i) abnormal operation detecting means for detecting an abnormal operation occurring when the negative pressure in said signal negative pressure chamber deviates from the level set for the normal operation of said signal-responsive diaphragm; and

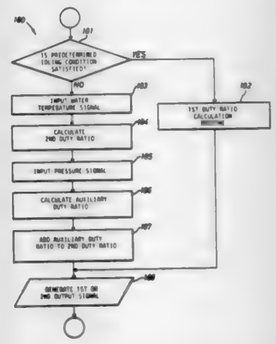
(j) pressure control means for controlling the internal pressure of said driving negative pressure chamber so that, when said abnormal operation detecting means detects the abnormal operation, the internal pressure of said driving negative pressure chamber is shifted to the level at which said driving diaphragm is rendered substantially non-operable.

4,522,176

AIR FLOW CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Mitsunori Takao, Kariya; Takahiko Kimura, Nagoya, and Yuji Hirabayashi, Chita, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 1, 1984, Ser. No. 636,602
Claims priority, application Japan, Aug. 4, 1983, 58-142735
Int. Cl.³ F02D *33/02*
U.S. Cl. 123—339 **5 Claims**



1. An air flow control apparatus for controlling an amount of air flow under control of a throttle valve in an internal combustion engine, the control apparatus comprising:

first means for producing a first signal indicative of operating condition of said engine;

second means for detecting change of the atmospheric pressure and for producing a second signal indicative of the actual atmospheric pressure;

third means for determining whether or not a value of said first signal indicates an idling condition of said engine if so, producing a first determination signal and if not, producing a second determination signal;

fourth means responsive to said first determination signal for determining, in dependence upon the value of said first signal, a first parameter indicative of an amount of air flow into said engine necessary for maintaining the operation of said engine in a desired idling condition;

fifth means responsive to said second determination signal for determining, in dependence upon the value of said first signal, a second parameter indicative of an amount of air flow into said engine based on a first predetermined relationship between the second parameter and loaded condition of said engine;

sixth means for determining, in dependence upon a value of said second signal, a third parameter indicative of an additional amount of air flow into said engine based on a second predetermined relationship between the third parameter and the atmospheric pressure;

seventh means for compensating the second parameter in accordance with the third parameter;

eighth means for producing a first output signal indicative of the first parameter and for producing a second output signal indicative of the compensated second parameter; and

ninth means responsive to said first and second output signals for controlling an amount of air flow respectively in accordance with idling and loaded conditions of said engine.

4,522,177

TEMPERATURE COMPENSATED FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

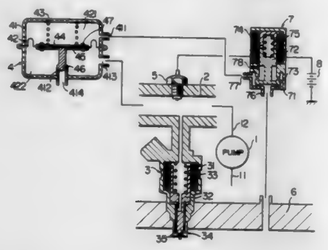
Hisasi Kawai, Toyohashi; Toshikazu Ina, Aichi; Toshihiko Igashira, Toyokawa; Ken Nomura, Okazaki; Masakazu Yoshida, Toyota; Takao Komoda, Okazaki, and Makio Hamanishi, Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Oct. 15, 1982, Ser. No. 434,540

Claims priority, application Japan, Oct. 19, 1981, 56-165644; Oct. 19, 1981, 56-166713; Oct. 26, 1981, 56-170965

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—478 **3 Claims**



1. A fuel injection system for internal combustion engines comprising:

sensor means for detecting the temperature of at least one of fuel and cooling water in an engine;

means for supplying gasoline fuel to said engine; and

fuel delivery control means for increasing the quantity of fuel supplied by said fuel supply means when said temperature detected by said temperature sensor means is higher than 40° C. to compensate for a decrease in fuel supplied caused by fuel vaporization,

wherein said fuel supply means comprises fuel injection valve means, and

where said fuel delivery control means comprises a pressure regulator including a first diaphragm chamber for receiving negative pressure in an intake pipe of said engine or atmospheric pressure and a second diaphragm chamber separated from said first diaphragm chamber by a diaphragm for receiving fuel in a fuel supply passage, and negative pressure change-over means for selectively introducing said intake pipe negative pressure and said atmospheric pressure into said first diaphragm chamber of said pressure regulator, whereby said intake pipe negative pressure is introduced into said first diaphragm chamber when the fuel temperature detected by said temperature sensor means is lower than said predetermined value and said atmospheric pressure is introduced into said first diaphragm chamber when said fuel temperature is higher than said predetermined value, thereby injecting the fuel under a high pressure when said fuel temperature is high.

4,522,178

METHOD OF FUEL CONTROL IN ENGINE

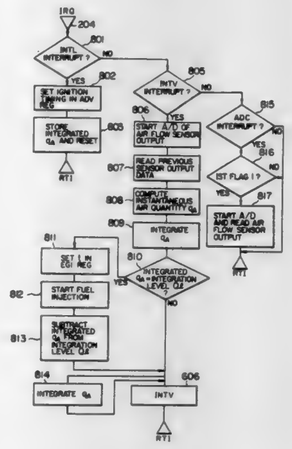
Matsuo Amano; Shinichi Sakamoto, both of Hitachi; Takeshi Hirayama, Mito, and Takao Sasayama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 2, 1983, Ser. No. 471,435

Claims priority, application Japan, Mar. 3, 1982, 57-32345

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—478 **5 Claims**



1. In a fuel control system including:

a plurality of sensors sensing various operation parameters of an engine;

a digital computer for controlling the quantity supplied to the engine depending on the outputs from said sensors;

a pulse generating circuit for generating a pulse signal for controlling the quantity of supplied fuel in response to the output from said digital computer; and

fuel supplying means for supplying fuel on the basis of the pulse signal generated from said pulse generating circuit,

a method of controlling fuel supplied to the engine comprising the steps of:

computing the quantity of air taken into the engine on the basis of the output from one of said sensors;

integrating the quantity of intake air computed in the first step;

determining the level for setting the period of generation of the pulse signal on the basis of the output from one of said sensors; and

generating pulses of predetermined pulse width from said pulse generating circuit when the integrated value of the quantity of intake air in the second step reaches the level set in the third step such that the period of generation of said pulse and hence the timing of the fuel supply is varied depending on the integrated value and the set level.

4,522,179

ENGINE SPEED DETECTING SYSTEM FOR MULTIPLE-DISPLACEMENT ENGINE

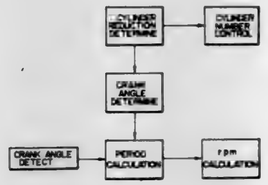
Hirofumi Nishimura; Hiroyuki Oda; Tadashi Kaneko; Akira Takai, and Nobuo Takeuchi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 16, 1984, Ser. No. 641,384

Claims priority, application Japan, Aug. 23, 1983, 58-152387

Int. Cl.³ F02D *17/00*

U.S. Cl. 123—481 **7 Claims**



1. An engine speed detecting system for a multiple-displacement engine which can be selectively operated in a full-displacement state or in a part-displacement state according to the operating condition of the engine, all the cylinders being fed with fuel in the full-displacement state and fuel supply to a part of the cylinders being cut to make inoperative the cylinder or the cylinders in the part-displacement state, said engine speed detecting system comprising,

a cylinder-reduction determination means for determining whether the engine is to be operated in the full-displacement state or in the part-displacement state,

a cylinder number control means for controlling the operating state of the engine according to an output of the cylinder-reduction determination means,

a crank angle detecting means for generating a signal every predetermined crank angle,

a period calculating means which receives the signals from the crank angle detecting means and calculates the time interval corresponding to the predetermined crank angle,

a crank angle determination means which receives an output of the cylinder-reduction determination means and sets said predetermined crank angle used for calculation of said time interval in the part-displacement state to include a crank angle corresponding to the power stroke of the operative cylinder in the part-displacement state, and

an engine speed calculating means for calculating the engine speed on the basis of the time interval calculated by the period calculating means.

4,522,180

AIR-FUEL RATIO CONTROL APPARATUS

Hiroki Matsuoka, and Toshimi Murai, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 4, 1983, Ser. No. 491,643

Claims priority, application Japan, Nov. 12, 1982, 57-197729

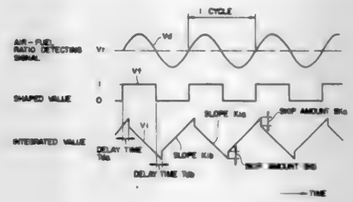
Int. Cl.³ F02D *33/00*

U.S. Cl. 123—489 **26 Claims**

1. An air-fuel ratio control apparatus comprising:

means for generating an air-fuel ratio detecting signal related to the ratio of an air-fuel mixture supplied to a combustion chamber;

processing means for: (1) generating an integrated amount which is increased or decreased in relation to said air-fuel ratio detecting signal on the basis of a parameter value to correct a fuel amount supplied to an intake system, (2) detecting the frequency of said air-fuel ratio detecting signal,



and (3) correcting said parameter value on the basis of the frequency of said air-fuel ratio detecting signal such that the frequency of said air-fuel ratio detecting signal becomes a basic frequency which is a frequency of said air-fuel ratio detecting signal when the air-fuel ratio in said combustion chamber reaches a predetermined value; and

means for controlling the amount of fuel supplied to said intake system on the basis of said integrated amount.

4,522,181

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Max Greiner, Gerlingen, and Karl Konrath, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

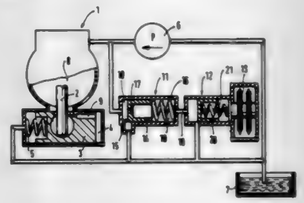
Division of Ser. No. 410,668, Aug. 23, 1982, Pat. No. 4,475,521.

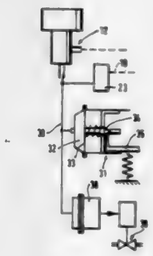
This application May 9, 1984, Ser. No. 608,632

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138606

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—502 **4 Claims**





1. A fuel injection pump for internal combustion engines comprising a fuel supply pump driven in synchronism with the fuel injection pump, a pressure side of said fuel supply pump arranged to communicate with a work chamber ahead of an

adusting piston, said adjusting piston serves to adjust the injection onset and is exposed to a restoring force in a chamber connected via a discharge line to a discharge opening, said discharge opening being controlled by a control piston of a pressure control valve including a relief chamber in order to generate an rpm-dependent control pressure at the pressure side of said pressure control valve, said control piston being exposed to a restoring force and further arranged to enclose on one side a control pressure chamber, said control pressure chamber being in communication with said pressure side of said fuel supply pump via a throttle connection and with said relief chamber via a relief line connected with a pressure valve including a housing, a valve closing member which is exposed to a valve spring, the initial stress of said valve spring being variable by means of a support point which is displaceable in accordance with air pressure, in which said valve closing member of said pressure valve comprises a slide means, and a control line branches off from said relief line between a pressure maintenance valve and said pressure valve, said control line leading to an adjusting device for adjusting a fuel injection quantity and to a further adjusting device for affecting an exhaust gas recirculation quantity.

4,522,182

FUEL SYSTEM FOR COMPRESSION IGNITION ENGINE

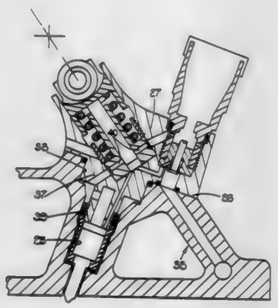
Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries plc, Birmingham, England

Filed Jul. 19, 1982, Ser. No. 399,812

Claims priority, application United Kingdom, Jul. 24, 1981, 8122968; Mar. 23, 1982, 8208400

Int. Cl.³ F02M *39/02*

U.S. Cl. 123—509 **3 Claims**



1. A fuel system for a compression ignition engine comprising a body adapted to be mounted on the cylinder head of the engine, a mounting formed integrally with the body, and a fuel injection nozzle carried by said mounting, said fuel injection nozzle extending in use through a bore in the cylinder head into a combustion space of the engine, an injection pump including a reciprocable plunger accommodated in the body, the line of action of the plunger being out of line with the axis of the nozzle, and a surface defined on said body for engagement with a complementary surface on the cylinder head of the engine, said surface acting to transmit to the cylinder head at least some of the forces to which the body is subjected during operation of the pump, said body defining a second surface which extends substantially at right angles to the axis of the nozzle, said second surface being clamped in use to a further surface on the cylinder head of the engine, said first mentioned surface on the body extending substantially at right angles to said second surface.

4,522,183

METHOD FOR CONVERTING A RETROGRADE SUBSTANCE TO THE GASEOUS STATE

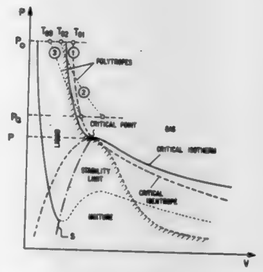
Gerd E. A. Meier, Goettingen, Fed. Rep. of Germany, and Philip A. Thompson, Arlington, Va., assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Continuation of Ser. No. 984, Jan. 4, 1979, abandoned. This application Nov. 1, 1983, Ser. No. 548,011

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1978, 2800894

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—558 **15 Claims**



1. Method for abruptly converting a retrograde substance having a characteristic specific heat $\hat{c}_v > 11.2$ from a liquid to a gaseous state, comprising reducing the pressure on the liquid polytropically with the addition of heat from an initial state of elevated pressure of 0.5 to 16 bar and corresponding to a point in the region of a pressure-volume diagram of the substance which lies to the lower volume side of a boundary formed by the branch of the critical isentrope of the substance extending from the critical point to higher pressures and by the stability limit of the substance, to a final state which corresponds to a point on the greater volume side of said boundary, wherein the stability limit defines the locus of the points on isentropes corresponding to a plurality of initial states, the exceeding of which in the direction toward greater volumes causes the liquid state of the retrograde substance to become unstable, said locus of points passing through the critical point and intersecting each isentrope approximately at the point of minimum pressure for each isentrope.

4,522,184

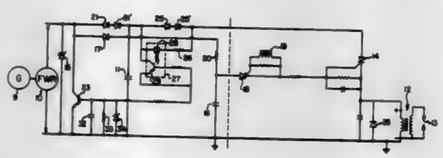
SILICON CONTROLLED RECTIFIER SHUT-OFF CIRCUIT FOR CAPACITIVE DISCHARGE IGNITION SYSTEM

Joseph M. Lepley, Youngstown, Ohio, assignor to Altronic, Inc., Youngstown, Ohio

Filed Apr. 23, 1984, Ser. No. 603,162

Int. Cl.³ F02P *3/08*

U.S. Cl. 123—599 **9 Claims**



1. A capacitive discharge ignition system for an internal combustion engine and for use with a generator powered current source comprising a storage capacitor charged through a diode, at least one thyristor for discharging the storage capacitor to transfer energy to at least one spark plug and a trigger circuit for gating the at least one thyristor in

synchronism with an internal combustion engine with which the ignition system may be associated,

the improvement comprising

(a) the storage capacitor being discharged through a diode circuit,

(b) a circuit for sensing flow in the discharge diode circuit and generating a discharge signal indicative thereof,

(c) a solid state device for switching the output of the generator to ground, and

(d) a means for gating the solid state device into conduction in response to said discharge signal.

4,522,185

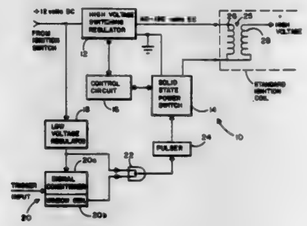
SWITCHING ELECTRONIC IGNITION

Minh-Tri Nguyen, 2602 S. Pacific Ave., Santa Ana, Calif. 92704

Filed Nov. 14, 1983, Ser. No. 551,060

Int. Cl.³ F02P *15/08*

U.S. Cl. 123—637 **16 Claims**



1. An electronic ignition system for automobile engines and the like, the engines of the type that employ a battery and at least one spark plug for responding to a trigger source for igniting a fuel mixture as a result of a high voltage derived from the battery and applied to the spark plug through an ignition coil; the ignition system comprising:

a switching regulator having an input connected to said battery and an output of high voltage than available from said battery connected to the primary winding of said ignition coil,

a power switch connected to said primary winding and activated for selectively connecting said winding to ground potential for generating a sufficient current in said winding to spark said spark plug with sparks of substantially constant voltage and current,

a pulser for generating pulses at a constant frequency and connected to said power switch for activating said switch upon the occurrence of each pulse generated by said pulser, and

a signal conditioner and window generator having an input connected to said trigger source and an output connected to said pulser for responding to said trigger source by activating said pulser for a period of time that is inversely proportional to engine speed.

4,522,186

IGNITION CIRCUIT FOR AN INTERNAL COMBUSTION ENGINE

Atsushi Hashizume, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,269

Claims priority, application Japan, Dec. 16, 1982, 57-222524

Int. Cl.³ F02P *3/04*

U.S. Cl. 123—643 **5 Claims**

1. An ignition circuit for an internal combustion engine comprising:

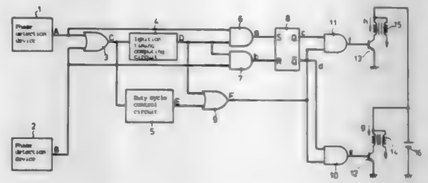
igniting means;

at least two phase detection means associated respectively with at least two cylinders for producing phase signals corresponding to phase of relative motion of respective pistons within the cylinders,

first gate means for producing time sequential pulse signals by combining said phase signals,

ignition timing computing circuit for developing a signal defining ignition timing corresponding to engine operation parameters,

a duty cycle control circuit for developing a signal for controlling duty cycle of primary current pulses for said igniting means,



a flip-flop alternately set and reset in response to output signal pulses of said ignition timing computing circuit,

at least two other gates responsive to the outputs of said duty cycle control circuit and said flip-flop for distributing pulses from said duty cycle control circuit to said at least two cylinders, said pulses being synchronized to said flip-flop output, and,

at least two switching devices to be controlled by said igniting output pulses of said corresponding one of said at least two other gates for switching primary currents of said ignition coils.

4,522,187

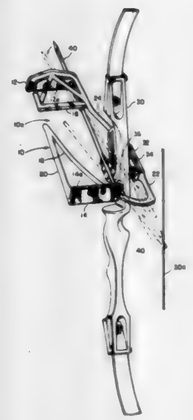
ARCHERY QUIVER AND METHOD

William G. Tafel, 2702 Trindal St., Eau Claire, Wis. 54701

Filed Apr. 25, 1983, Ser. No. 487,968

Int. Cl.³ F41B *5/00, 5/06*

U.S. Cl. 124—24 A **14 Claims**



1. In combination with a bow having a front convex side and a rear concave side with a bow string connected to the ends thereof and positioned on the concave rear side of the bow and an arrow rest located on a projection side of the bow where the arrow is located during the drawing, sighting, and releasing operations, a bow-mounted quiver adapted to provide a supply of arrows positioned in close proximity to the sighting and projection path of arrows to permit rapid fire shooting of all arrows stored in the quiver, said quiver comprising,

a magazine having a tip arrow-holding clip member with

arrow-holding recesses formed therein and a bottom clip member spaced below said top clip member and having arrow-holding recesses formed therein, said top clip member being disposed, when mounting on a bow, in forwardly and upwardly spaced relation to said bottom clip member with both of said clip members being cantilevered from the projection or arrow rest side of the bow to provide clearance for shifting arrows from their recesses on said magazine toward the projection side of the bow into sighting projection position when released from said clip members prior to notching of an arrow, and

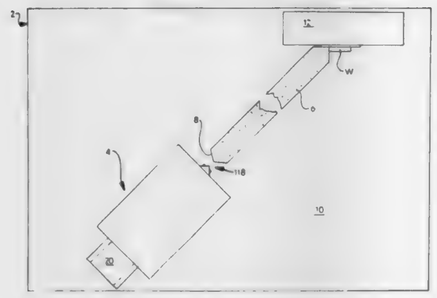
means for mounting said magazine in operative position on said bow.

4,522,188

GIMBAL-MOUNTED DRESSING DEVICE FOR GRINDING MACHINE

Royal E. Houghton, Box 113, Ascutney, Vt. 05030, and Stanley J. Walasewicz, Box 84, Cavendish, Vt. 05142

Filed Sep. 7, 1982, Ser. No. 415,633
Int. Cl.³ B24B *53/06*
U.S. Cl. 125—11 CC **9 Claims**



1. In a dressing device for dressing a grinding wheel having a working face comprised of intersecting substantially planar working surfaces defining a working face included angle therebetween, the combination of a gimbal means from which a dresser means is suspended and swung about two intersecting axes defining therebetween an included angle substantially equal to said working face included angle, said dresser means including a twin point dresser with the points oriented relative to the working surfaces such that swinging of the gimbal means about one axis causes one dresser point to swing in a plane to dress one working surface and about the other axis causes the other dresser point to swing in a plane to dress the other working surface, and cam means on the gimbal means for actuating said gimbal means to swing said dresser means successively about one of said axes and then the other so as to dress the working surfaces one at a time.

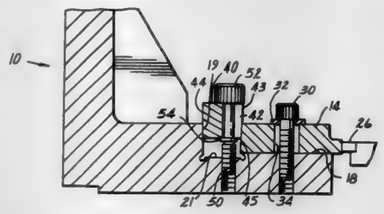
4,522,189

ADJUSTABLE CAM BAR ASSEMBLY

James D. Phillips, Posen, Mich., assignor to J. D. Phillips Corporation, Alpena, Mich.

Filed Jul. 28, 1983, Ser. No. 517,998
Int. Cl.³ B29B *53/00*
U.S. Cl. 125—11 TP **5 Claims**

1. An adjustable cam bar assembly for use in guiding a dresser for the grinding wheels of a multi-wheel grinder or the like, comprising a support having an elongated cam support surface and an abutment surface disposed at a substantial angle to said support surface, a plurality of cams on said support surface along the length thereof, each cam having a contoured surface on the side thereof remote from said abutment surface adapted to be engaged by the stylus of a dresser in a dressing operation, and means for individually mounting each cam on said support surface in transversely adjusted position in which its contoured surface projects a predetermined distance from said abutment surface comprising a wedge between said abutment surface and each cam and capable of being advanced or



retracted to precisely locate said cam in adjusted position, means for individually advancing and retracting each wedge, and means for clamping each cam in adjusted position.

4,522,190

FLEXIBLE ELECTROCHEMICAL HEATER

William E. Kuhn, Lexington, Ky.; Kwoh H. Hu, Weston, Mass., and Stanley A. Black, Ventura, Calif., assignors to University of Cincinnati, Cincinnati, Ohio

Filed Nov. 3, 1983, Ser. No. 548,541
Int. Cl.³ F24J *1/00*
U.S. Cl. 126—263 **25 Claims**



1. An electrochemical heating device capable of generating heat at a controlled rate, comprising:

a. a container adapted to be placed against an article so as to transfer heat developed within the container to the article;

b. at least one stand-alone flexible heating element disposed within said container;

c. said flexible heating element comprising a totally integrated sintered composite structure of blended powdered polymeric material and supercorroding metallic alloy powders dispersed throughout in the form of a porous matrix;

d. means for sealing said container, making the container air-impermeable;

e. said flexible heating element being operable to be wetted and activated with an electrolyte to generate heat through electrochemical reactions.

4,522,191

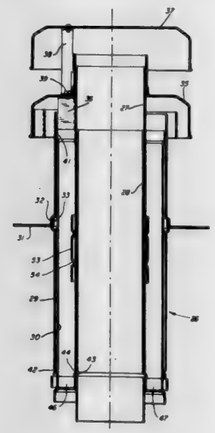
NON-PULL APART TELESCOPING ROOF JACK ASSEMBLY FOR FURNACE

Joe E. Knowles, and Mellie E. Winters, both of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.

Filed Jan. 11, 1984, Ser. No. 569,918
Int. Cl.³ F23J *11/00*
U.S. Cl. 126—307 R **6 Claims**

1. A roof jack assembly for a furnace comprising a first pair of outer telescoping tubes, a second pair of inner telescoping tubes positioned generally concentrically within the outer tubes, connecting means extending between one of the outer tubes and one of the inner tubes for causing the tubes to move

together in an axial direction while permitting relative transverse movement between the tubes and means on at least one of said pairs of telescoping tubes for preventing the tubes of said one pair from being separated said connecting means



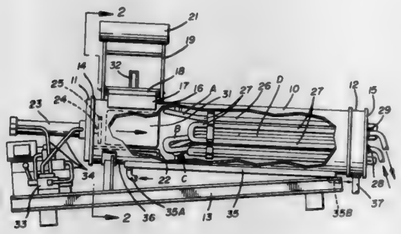
comprising at least one connecting member extending generally radially between one of the outer tubes and one of the inner tubes and extending slidably through an opening in one of said tubes.

4,522,192

EXTRUDER MELTER APPARATUS

John H. Miller, Youngstown, Ohio, assignor to Hy-Way Heat Systems, Inc., Youngstown, Ohio

Filed Jan. 23, 1984, Ser. No. 573,286
Int. Cl.³ F01C *19/45*; F27B *3/06*
U.S. Cl. 126—343.5 A **9 Claims**



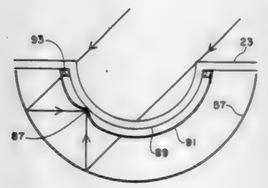
1. An extruder melter comprising an elongated tank with side and end walls, a central aperture in one of said end walls and a plurality of apertures in the other of said end walls, an access port in said tank adjacent said end wall having said central aperture, several elongated U-shaped heat transfer coils positioned in said tank longitudinally thereof and extending from said other end wall and in communication with said apertures therein and with one another and with a source of heating fluid, some of said heat transfer coils positioned in circumferentially spaced relation to one another and radially with respect to the center of said tank and at least one of said heat transfer coils positioned in the center of said tank, a ram consisting of a piston and cylinder mounted adjacent said central aperture in said one end wall of said tank, said piston movable into said tank toward and away from said heat transfer coils so as to engage and move solid meltable material positioned in said tank through said access port into and against said heat transfer coils, an outlet port in said tank for removing said meltable material when melted from said tank.

4,522,193

SOLAR COLLECTOR DEVICE

Kenneth N. Bates, 27765 Lupine Rd., Los Altos Hills, Calif. 94022

Division of Ser. No. 365,946, Apr. 6, 1982, Pat. No. 4,473,065, which is a division of Ser. No. 203,258, Nov. 3, 1980, abandoned. This application Mar. 2, 1984, Ser. No. 585,660
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—438 **12 Claims**



1. A device for collecting solar radiation comprising:

collecting means for conversion of solar radiation to another form of energy, said collecting means having a collecting region which is more highly absorptive of solar radiation when the radiation is focussed there than other regions of said collecting means where the radiation is not focussed;

focussing means positioned in spacial relationship with said collecting means for focussing solar radiation on said collecting region at all times of day, without necessitating motion during said day of said focussing means or said collecting means;

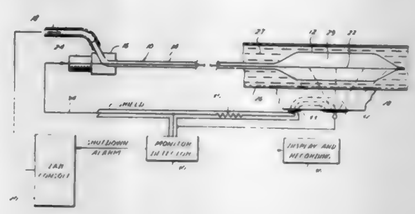
mechanical heat transferring means spaced apart from said collecting means for moving into contact with said collecting means in an area of contact in said collecting region where said radiation is focussed and in response to said focussed radiation, said area of contact moving continuously and maintaining uninterupted contact between said mechanical heat transferring means and said collecting means during the day as the sun moves.

4,522,194

METHOD AND AN APPARATUS FOR INTRA-AORTIC BALLOON MONITORING AND LEAK DETECTION

Nils A. Normann, Houston, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Continuation-in-part of Ser. No. 467,623, Feb. 18, 1983, abandoned. This application Jun. 10, 1983, Ser. No. 503,117
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—1 D **19 Claims**

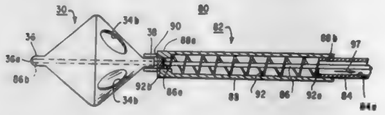


1. An apparatus for monitoring the operation of an intra-aortic balloon inserted into the aorta of a body in which the balloon includes an electrical conductor therein for extending out of the body comprising,

an intra-aortic balloon for inserting into the aorta of a body,

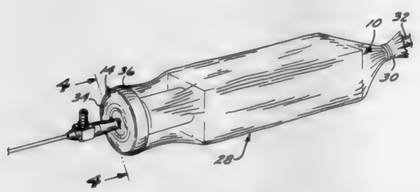
said balloon including an electrically conductor therein for extending out of the body,
an electrode affixed to the exterior of the body,
an electrical current source connected to the electrode and to the electrical conductor, and
an impedance measuring means electrically connected to the electrode and the electrical conductor for measuring the impedance of the balloon for monitoring its operation.

4,522,195
APPARATUS FOR LEFT HEART ASSIST
Peter Schiff, Rte. 7, Cookeville, Tenn. 38501
Division of Ser. No. 267,374, May 25, 1981, Pat. No. 4,407,271, which is a continuation-in-part of Ser. No. 172,753, Jul. 28, 1980,. This application Jun. 13, 1983, Ser. No. 503,527
Int. Cl.³ A61B *19/00*; A61M *25/00*
U.S. Cl. 128—1 D **13 Claims**



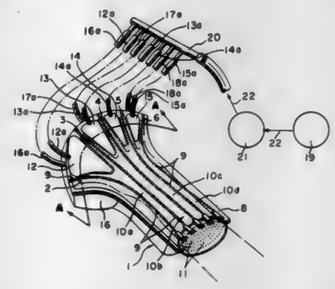
1. Mechanical blood pumping apparatus for assisting in the pumping function of the heart comprising:
a blood pumping element within a femoral artery of the patient to be treated;
slender coupling means having a first end coupled to said pumping element and having a second end extending outside of the body of the patient being treated; and
drive means connected to the second end of said coupling means for reciprocally moving said pumping element in said femoral artery between a start position and a position displaced from the start position to assist the pumping function of the heart;
first coupling means for resiliently coupling said coupling means to said pumping element; and
second coupling means for resiliently coupling said coupling means to said drive means.

4,522,196
REUSABLE, STERILE COVERING FOR A SURGICAL CAMERA
Frank W. Cunningham, 1801 Via Estudillo, Palos Verdes Estates, Calif. 90274, and David Weir, 1602 Royce St., Camarillo, Calif. 93010
Continuation of Ser. No. 387,353, Jun. 11, 1982, abandoned. This application Jun. 11, 1984, Ser. No. 619,683
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 **8 Claims**



1. A sterile covering for use in combination with an endoscope and a camera having a lens-to-endoscope coupling characterized by a cavity adapted to receive one end of said endoscope adjacent the base of said cavity, said coupling being operative to temporarily couple said endoscope within said cavity, said covering comprising:
a flexible body portion for covering said camera; and
an end portion attached to said body portion and made of material which is rigid relative to the flexible material of said body portion for repeated insertion into and withdrawal from said cavity without losing its shape, said end portion including an end portion base for location adjacent the base of said cavity, said end portion base having an optically clear central section for providing a clear optical path between said camera and said endoscope, said end portion base further including a layer of flexible and optically clear material which is thin relative to the material of said end portion, said layer being attached to said end portion base in registry with said central section for alignment with the optical path between said camera and endoscope whereby said endoscope may be successively coupled and decoupled from said coupling without contamination of said endoscope by said camera.

4,522,197
GLOVES FOR RECOVERING THE FUNCTIONS OF THE CARPAL JOINT, THE HAND AND THE FINGERS
Tsuneo Hasegawa, Tokyo, Japan, assignor to Man Design Co., Ltd., Tokyo, Japan
Filed Aug. 11, 1983, Ser. No. 522,232
Claims priority, application Japan, Aug. 11, 1982, 57-138467; Jun. 10, 1983, 58-102717
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—26 **13 Claims**



1. A glove for the recovery of the functions of the carpal joint, the hand and the fingers of an individual, comprising in combination:
a glove-shaped body including stall portions adapted to separately receive an individual's fingers, a main portion adapted to cover the palm and back of an individual's hand, and an arm portion adapted to cover the forearm including the carpal joint;
a plurality of fanning sacs interposed between the respective stall portions for effecting fanning of the respective fingers;
a plurality of extension sacs arranged on the palm portion for effecting extension of the fingers, the hand and the carpal joint, said extension sacs extending from said stall portions toward and along said arm portion; and
a plurality of compressed air charge/discharge tubes connected to all of said fanning and extension sacs, for supplying compressed air simultaneously or selectively into all of said fanning and extension sacs or specific fanning and extension sacs through said tubes, and for discharging the compressed air after the lapse of a predetermined time;
whereby repeated charging and discharging of compressed air passively effect rhythmical and intermittent movement, such as fanning and extension, of the functionally disordered carpal joint, hand and fingers for the recovery of flexion contraction and extension disorder, and gives rise to a primary factor which can induce active movement.

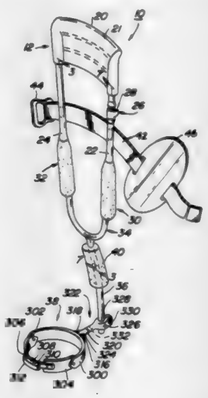
4,522,198
PENILE PROSTHESIS
Gerald W. Timm, Minneapolis; Donald L. Sandford, Lauderdale; Timothy J. Claude, Coon Rapids, and Richard A. Helms, Elk River, all of Minn., assignors to Dacomed Corporation, Minneapolis, Minn.
Filed Apr. 18, 1983, Ser. No. 485,648
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **6 Claims**



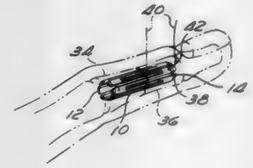
1. A penile prosthesis, comprising:
a. a first end;
b. a second end;
c. an outer elongated sheath formed from physiologically inert and pliable material;
d. an articulated column of segments having slidable joints therebetween and enclosed within said sheath;
e. switch means for switching the prosthesis between a rigid condition and a flaccid condition, said switch means disposed intermediate of said articulated column and the first end of the prosthesis and enclosed within said sheath, said switch means including an axially slidable portion interconnected to a first end of elongated tension means which is fixedly secured at a second end proximate the second end of the prosthesis; said tension means cooperating with said articulated column for imparting rigidity to said prosthesis when said articulated column is compressed and said tension means is in a tensioned condition, and for imparting flexibility to said prosthesis when said tension means is in an untensioned condition and said articulated column is not compressed, said switch means having first and second operative states, said switch means compressing said articulated column and placing said tension means in a tensioned condition when in said first state and placing said tension means in an untensioned condition and said articulated column in a noncompressed state when in said second state; and
f. said switch means being alternately switched from one state to the other by axial displacement of the first end of said tension means under user control.

4,522,199
BODY WEIGHT SUPPORT SYSTEM
Thomas P. Waddell, 1306 Broadview West, Downingtown, Pa. 19335, and Robin Renzetti, Coatesville, Pa., assignors to Thomas P. Waddell, Downingtown, Pa.
Filed Aug. 11, 1983, Ser. No. 521,965
Int. Cl.³ A61F *3/00*
U.S. Cl. 128—80 G **45 Claims**

1. A body weight support system for releasable securement to at least one leg of a person, comprising upper support means, lower support means and flexure means, said upper support means extending along the thigh and terminating at its upper end adjacent the buttocks-high interface to form a seat and terminating at its lower end adjacent the knee, said lower support means extending along the calf and terminating at its upper end adjacent the knee and at its lower end adjacent the foot, said flexure means being located adjacent said knee and being connected between said upper and lower support means, said flexure means being adjustable for permitting the person to repeatedly freely bend and unbend said knee through any angular range up to a predetermined angle of bend at which a resistance exists to further flexure, said upper and lower support means including securement means for releasably securing said system to said leg, characterized by tensioning means for setting said predetermined angle of bend and energy dampening means separate from said tensioning means for establishing a resistance to movement of said flexure means beyond said predetermined angle and for permitting dampened flexure beyond said predetermined angle to absorb shocks transmitted to the body of the wearer.



4,522,200
ADJUSTABLE INTRAMEDULLAR ROD
Denis P. Stednitz, Redondo Beach, Calif., assignor to ACE Orthopedic Company, Los Angeles, Calif.
Filed Jun. 10, 1983, Ser. No. 502,923
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 BC **4 Claims**



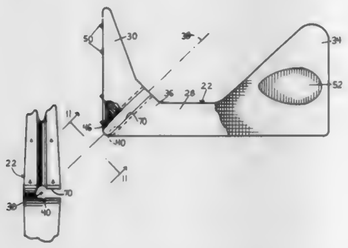
1. An intramedullar rod for use in orthopedic surgery for setting broken hand and foot bones comprising a single unitary substantially right cylindrical body of biologically compatible resilient metal, having substantially smooth uniform interior and exterior surfaces, the cylinder having first and second ends and having formed in the cylinder walls at least four slots, at least two of said slots extending from the first end more than one-half the distance toward the second end, and two of said slots extending from the second end more than one-half the distance toward the first end, the slots being substantially equally spaced from one another alternating from the respective ends substantially symmetrically about the circumference of the cylindrical body, the cylindrical body being formed of a single piece of resilient metal, and being so configured and constructed as to be compressible diametrically, and to exert a resilient force to return toward a predetermined noncompressed diameter, whereby when in use inserted in the medullar cavity of mating ends of a fractured bone, the cylindrical body exerts a constant, resilient force outwardly against the interior of such fractured bone without the use of other implements.

4,522,201

ORTHOPEDIC SURGERY DRILL GUIDE APPARATUS

John R. Tongue, 111 "C" Ave., Lake Oswego, Oreg. 97043

Filed Apr. 14, 1983, Ser. No. 485,047
Int. Cl.[3] A61F *5/04*
U.S. Cl. 128—92 EB 4 Claims



1. Orthopedic surgical guide apparatus for use in the preparation of a fractured bone, such as a hip bone, in an orthopedic procedure requiring the drilling along a common axis of two different-diameter bores in such a bone, said apparatus comprising

a first guide element having means defining a generally planar support surface for seating against such a bone, and means defining a first guide bore which opens to said surface with an axis disposed at a predetermined angle relative to the plane of said support surface for receiving and clearance-guiding a drill having a diameter equaling the larger of such two different diameters, and

a second guide element having an elongate cylindrical body portion removably-clearance-fittable within said first guide bore, and a second guide bore extending axially centrally through said body portion for receiving and clearance-guiding a drill having a diameter equaling the smaller of such two different diameters,

said first guide element further including a drill escape aperture communicating with and extending laterally relative to the axis of said first guide bore.

4,522,202

CURVED INTRAMEDULLARY LOWER LEG SPIKE

Wolf-Dieter Otte; Heinz Otte, both of Volkach, Fed. Rep. of Germany, and Siegfried Schider, Reutte, Austria, assignors to Schwarzkopf Development Corporation, New York, N.Y.

Continuation of Ser. No. 338,376, Jan. 11, 1982, abandoned. This application Dec. 29, 1983, Ser. No. 566,740
Claims priority, application Austria, Jan. 12, 1981, 72/81
Int. Cl.[3] A61F *5/46*
U.S. Cl. 128—92 BC 7 Claims

1. A curved, unitary intramedullary, lower leg spike suitable for being driven laterally at an acute angle with respect to the longitudinal axis of a bone, into a spike-receiving duct in said bone, said spike comprising a longitudinal portion, a curved portion, a striking end, and a shaped outer surface which extends along said longitudinal portion up to said striking end, said shaped outer surface being adapted to provide stability against twisting, said striking end having structured elements for actively engaging a driving tool to said spike, and further defining an exposed face area wherein a line drawn in a plane which lies across said face area and which intersects the front planar surface of said spike forms an acute angle with the longitudinal axis of said spike at said striking end, said spike



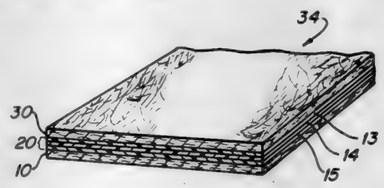
being adapted to contact corticalis along said outer surface up to said striking end.

4,522,203

WATER IMPERVIOUS MATERIALS

Alfred T. Mays, East Windsor, N.J., assignor to Chicopee, New Brunswick, N.J.

Filed Mar. 9, 1984, Ser. No. 588,037
Int. Cl.[3] A61F *13/00;* A61M *15/08;* B32B *27/00;* D04H *1/04*
U.S. Cl. 128—132 D 9 Claims



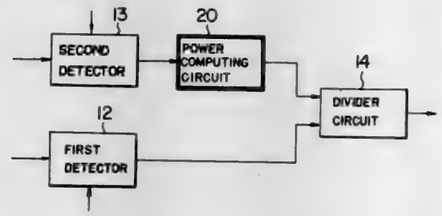
1. A water impervious laminated material comprising an inner plastic film sandwiched between two layers of conjugate fibers, each of said layers of conjugate fibers having a first face and an opposite face, said conjugate fibers being composed of a lower melting component and a higher melting component, wherein a substantial proportion of the surfaces of said fibers comprises said lower melting component, said plastic film comprising a three-layer structure having an inner layer sandwiched between and bonded to two outer layers, said inner layer of said film structure having a melt temperature higher than the melt temperatures of each of said outer layers of said film structure, said lower melting components of both layers of said conjugate fibers which lie on said first faces having been fuse bonded to the adjacent outer layers of said film structure at a temperature below the melt temperature of said higher melting component of said fibers, so that the latter component retains its initial fiber-like integrity.

4,522,204

RESPIRATORY GAS CONCENTRATION MEASURING APPARATUS

Muneshige Kurahashi, Saitama, and Shinji Yamamori, Tokyo, both of Japan, assignors to Nihon Kohden Corporation, Tokyo, Japan

Filed Jun. 8, 1983, Ser. No. 502,133
Claims priority, application Japan, Jun. 22, 1982, 57-106174
Int. Cl.[3] A61B *5/00*
U.S. Cl. 128—719 1 Claim



1. A system for measuring the concentration of a respiratory gas that absorbs light having a first wavelength, including:

(a) a connector tube having an open first end for receiving the respiratory gas, an opposite open end, and an air-tight window between ends;

(b) a light source located adjacent a first side of the window for directing light through said window;

(c) a chopper located adjacent a second side of the window in the path of the light directed through the window, including

(1) at least one first filter means for passing through the light of a first wavelength from said light source, and

(2) at least one second filter means for passing through the light from said light source of a wavelength that is not absorbed by said respiratory gas;

(d) motor means connected to the chopper to position said first and second filter means alternately in said light path;

(e) a photodetector means located adjacent the chopper for receiving light passing therethrough and converting the light having passed through said filter means into a first electric signal;

(F) a first detector means connected to the photodetector means for receiving the first electric signal therefrom and operated synchronously with said motor means for generating a second electric signal indicative of the amount of light passing through the first filter means;

(g) a second detector means connected to the photodetector means for receiving the first electric signal therefrom and operated synchronously with said motor means generating a third electric signal indicative of the amount of light passing through the second filter means; the improvement comprising:

(h) a power computing circuit means connected to the second detector means for receiving the third electric signal therefrom and generating a fourth electric signal equal to the third electric signal raised to a preset mth power, m being the ratio between

(1) a temperature-dependent coefficient $\theta_1$of the second electric signal which varies exponentially with a temperature variation, and

(2) a temperature-dependent coefficient θ_2 of the third electric signal which varies exponentially with a temperature variation; and

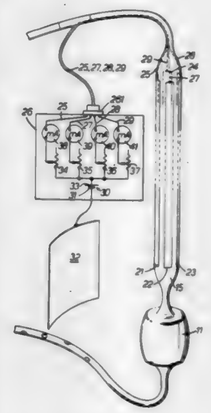
(i) a divider circuit means connected to the first detector means and the power computing circuit means for receiving the second and fourth electric signals and dividing the second electric signal by the fourth electric signal to produce a temperature independent electric signal indicative of the concentration of the respiratory gas in the connector tube.

4,522,205

THERAPEUTIC DEVICE AND METHOD OF INDUCING THROMBOSIS IN A BLOOD VESSEL

Thomas V. Taylor, Altrincham, England, and James M. Neilson, Edinburgh, Scotland, assignors to The University Court of The University of Edinburgh, Edinburgh, Scotland

PCT No. PCT/GB81/00176, § 371 Date May 3, 1982, § 102(e) Date May 3, 1982, PCT Pub. No. WO82/00768, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 3, 1981, Ser. No. 375,287
Claims priority, application United Kingdom, Sep. 3, 1980, 8028356
Int. Cl.[3] A61N *1/04*
U.S. Cl. 128—303.17 22 Claims



1. Apparatus for inducing thrombosis in a blood vessel in surface tissue at a particular site on a living human or animal body, comprising a therapeutic electrode in the form of an inflatable balloon having an electrically conductive surface area, wherein inflation of the balloon maintains said surface area, by fluid pressure, in contact with the tissue, a counter-electrode separate from the balloon, and a source of time-steady direct electrical current for connection to the therapeutic electrode as anode and the counter-electrode, as cathode wherein said therapeutic electrode is adapted to be inflated to a gauge pressure of at least 30 mm Hg, and comprises at least two spaced, electrically conductive electrode elements, each including an individual connection to said source of direct current, and wherein the apparatus includes means to monitor and adjust the current flowing through each electrode element such that the current density at the surface of any electrode element can be made equal to the current density at the surface of any other electrode element.

4,522,206

SURGICAL INSTRUMENT

Terry L. Whipple, Richmond, Va., and Douglas D. Sjostrom, Wakefield, Mass., assignors to Dyonics, Inc., Andover, Mass.

Filed Jan. 26, 1983, Ser. No. 461,251
Int. Cl.[3] A61B *17/16*
U.S. Cl. 128—312 18 Claims



16. A surgical instrument suitable for cutting a range of body tissue including cartilagenous tissue and the like,

comprising an axially elongated support,

at the distal end thereof, first and second, opposed cutting jaws, at least one of said jaws being pivotable about a pivot axis disposed generally transversely to the axis of said elongated support,

said jaws constructed and arranged, when open, to provide a distally directed end aperture through which tissue can enter, and said jaws closable by an actuator to cut tissue extending through said end aperture into the space between said distal jaws,

said jaws being cooperatively constructed to provide an open throat between proximal portions of said jaws,

said elongated support defining an open, tissue fragment transport, suction passage extending through the length of said support,

a suction line connector associated with the proximal end of said fragment transport passage,

means to by-pass the path of suction from said suction connector, and

means for selectively deactivating the suction by-pass means to cause a fluid pressure differential to act through the distal end of the instrument, and for activating said suction by-pass means to substantially reduce the fluid pressure differential acting through the distal end of the instrument,

said suction by-pass means comprising at least one port defined through the wall defining said suction passage, and

said means for selectively activating and deactivating the suction by-pass means comprising a sleeve moveably positioned about said wall,

said sleeve being positioned relative to said ports by the selective position of the actuator of said jaws,

said jaws and throat constructed and arranged so that fluid differential pressure acting through the distal end of said instrument and through said throat and transport passage causes a fragment of tissue cut by said jaw closing action to be drawn from between said jaws, and transported through said open throat and fragment transport passage, and out of said instrument via said connector,

whereby said fragment can be removed while said instrument can remain in situ for repeated cutting cycles.

4,522,207

SPRING ACTIVATED HEMOSTATIC CLIP APPLICATOR

Charles H. Klieman, 3737 E. Century Blvd., Lynwood, Calif. 90262, and Richard M. Densmore, Fountain Valley, Calif., assignors to Charles H. Klieman, Los Angeles, Calif.

Continuation-in-part of Ser. No. 231,976, Feb. 6, 1981, abandoned, which is a continuation-in-part of Ser. No. 183,360, Sep. 2, 1980, Pat. No. 4,325,376, which is a continuation of Ser. No. 822,076, Aug. 5, 1977, abandoned. This application Oct. 6, 1982, Ser. No. 433,028

Int. Cl.³ A61B *17/12*; B31B *1/00*

U.S. Cl. 128—325 **13 Claims**



1. In a surgical clip applying device of the type having a main body, a clip magazine for holding a plurality of clips, clip deforming means for receiving and deforming the clips, clip feed means for moving the clips from the clip magazine to the deforming means, the improvement comprising, means for actuating the clip feed means including

(i) two handle portions; and

(ii) energizing means coupled to the main body, the clip feed means and one handle portion, for storing energy and selectively supplying the energy to the clip feed means, said energizing means including a camming surface coupled to said one handle portion, a cam follower, and a spring coupled to the main body, the cam follower and the clip feed means wherein movement of said one handle portion with respect to the other handle portion causes the camming surface to engage the cam follower and flex the spring thereby storing energy in the spring, and a subsequent movement of said one handle portion with respect to the other handle portion causes the energizing means to supply the energy stored in the spring to the clip feed means so as to cause a clip to be moved rapidly from the clip magazine to the clip deforming means and wherein the energizing means further includes a ratchet member coupled to the cam follower and a latch member pivotally coupled to the main body and adapted to engage the ratchet member so as to prevent release of the energy stored in the spring, and further adapted to disengage from the ratchet member when the energy is to be supplied to the clip feed means.

4,522,208

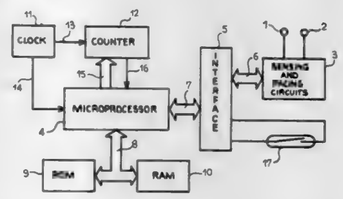
METHOD FOR DETERMINING PARAMETER VALUES OF AN IMPLANTED PROGRAMMABLE PACEMAKER

Jacques Buffet, Le Raincy, France, assignor to Cardiofrance Compagnie Francaise D'Electrocardiologie, Le Grand, France

Continuation-in-part of Ser. No. 254,860, Apr. 16, 1981, abandoned. This application Feb. 24, 1984, Ser. No. 583,578

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PT **3 Claims**



1. A method of determining the values of the programmable parameters of an implanted programmable pacemaker, comprising:

operating the pacemaker in asynchronous mode with a pacing period T;

assigning to each parameter value a time ΔT which is a fraction of the period T;

in a pair of successive pacing intervals with the combined duration of 2T shortening one interval and lengthening the other by the amount ΔT; and

comparing the relative lengths of said intervals, thereby identifying the parameter value.

4,522,209

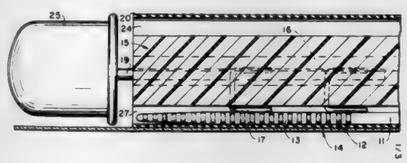
COCHLEAR PROSTHESIS TEST SYSTEM

James F. Patrick, Lane Cove; Peter A. Crosby, Drummoyne; Janusz A. Kuzma, Stanmore, and David K. Money, Pennant Hills, all of Australia, assignors to The Commonwealth of Australia, Australia

Filed Apr. 11, 1983, Ser. No. 483,862

Int. Cl.³ A61N *1/00*

U.S. Cl. 128—419 R **20 Claims**



1. A test system comprising a sealed sterile package, said package containing a medical device whose proper operation is to be verified prior to opening of the package; means in said package, not forming part of said medical device, for indicating the status of said medical device when said medical device is operated; means for connecting said indicating means to said medical device; and means for enabling operation of said medical device while it is in said package prior to the opening thereof.

4,522,210

METHOD OF SKIN TREATMENT AND DEVICE FOR CARRYING OUT THE SAID METHOD

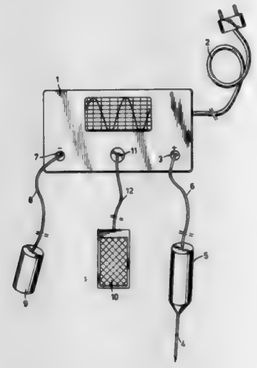
Philippe Simonin, 30 Allée Horace, Vernet 78170 La Celle St. Cloud, France

Filed Mar. 23, 1983, Ser. No. 478,025

Claims priority, application France, Apr. 2, 1982, 82 05796

Int. Cl.³ A61N *1/00*

U.S. Cl. 128—421 **4 Claims**



1. Method for the aesthetic treatment of wrinkled or puckered skin having depressions from the wrinkle or pucker to remove such wrinkles and puckers from the skin, which comprises introducing a needle immediately under the skin and in substantially parallel relationship to the wrinkle or pucker to be removed, said needle being connected to a positive terminal of a low frequency generator having a current return electrode connected to the negative terminal thereof, and passing a low frequency current of between about 100 and 500 cps through said needle for a time sufficient to effect filling of the depression of the wrinkle or pucker, thus improving the aesthetic appearance of the skin.

4,522,211

MEDICAL ELECTRODE CONSTRUCTION

Rex O. Bare, and Earl F. Robinson, both of Lawerance, Kans., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Division of Ser. No. 100,904, Dec. 6, 1979, Pat. No. 4,365,634. This application Oct. 9, 1981, Ser. No. 310,118

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—640 **11 Claims**

1. In combination, a disposable medical electrode and a conductor element in the form of a lead wire having a connector assembly on one end thereof, said electrode including; a support arrangement having an adhesive coating on at least one surface portion thereof for attachment of the electrode to the skin of a patient; a terminal member affixed to the other surface portion of said support arrangement in the form of a plastic-like semi-flexible sheet, said sheet having a first, terminal carrying segment of an area considerably less than that of the support arrangement surface portion to which it is attached such that the periphery of said first segment is disposed inwardly of the periphery of said support arrangement, and an elongate tab segment extending from said first, terminal carrying segment and terminating within the periphery of said support arrangement; a conductive pattern formed on said terminal member including a terminal portion on said first segment and a conductive portion in association with said terminal portion and extending along said tab segment; an annular coating of adhesive on said first, terminal carrying segment attaching said terminal member to the support arrangement, said annular adhesive coating surrounding said terminal portion, and said adhesive coating overlying said conductive portion inwardly of the tab segment thereby to prevent the migration of moisture along said conductive portion, said annular adhesive coating terminating within the periphery of said first,



terminal carrying segment thereby leaving said tab segment free of attachment to said support arrangement for engagement thereof with said connector assembly; said tab segment further including at least one aperture formed therein; said lead wire connector assembly including a housing, a metal terminal member disposed within said housing, and a protuberance formed on said housing and engaged with said aperture in said tab segment, such that upon assembly, said tab segment is disposed in said housing, with said metal terminal member in engagement with the conductive portion on said tab segment, and said connector assembly protuberance is engaged in said aperture of the tab segment to prevent inadvertent disconnection of said connector assembly and said electrode.

4,522,212

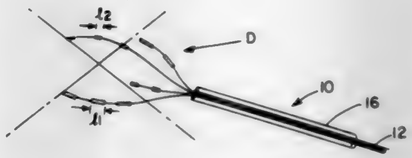
ENDOCARDIAL ELECTRODE

Sandra L. Gelinas, North Attleboro; Daniel G. Cerundolo, Hingham, and John E. Abele, Concord, all of Mass., assignors to Mansfield Scientific, Inc., Mansfield, Mass.

Filed Nov. 14, 1983, Ser. No. 551,243

Int. Cl.³ A61D *5/04*

U.S. Cl. 128—642 **16 Claims**



1. An endocardial electrode assembly, said assembly comprising three or more elongated insulated wire spring legs joined together at least in a region spaced from the distal end of said assembly, said assembly constructed to be inserted into the heart while surrounded by a distal portion of a catheter, and to be exposed to active position by proximal movement of the catheter to a partially withdrawn position relative to said assembly.

the legs comprising insulated conductors connected to respective sets of spaced electrodes carried by the legs, said spring legs having predetermined shape and position to spring relatively apart to cause the electrodes to engage with wall tissue within a cavity of the heart, in the manner

that a three dimensional array of spaced electrode contact points can be simultaneously made with the wall of the beating heart.

the sets of electrodes on respective spring legs comprising distinctive geometrical patterns, over the ventricle-contacting span of the legs, such that the active sets of electrodes provide recognizable patterns when within a ventricle of the heart and viewed with a fluoroscope, the respective locations of at least some of the electrodes of these patterns being staggered relative to electrodes on other legs in the manner to reduce lateral clumping, thus to permit the numerous electrodes to be housed in a catheter sized to be conveniently introduced into the heart.

4,522,213

MONITORING DEVICE FOR MEDICAL APPARATUS

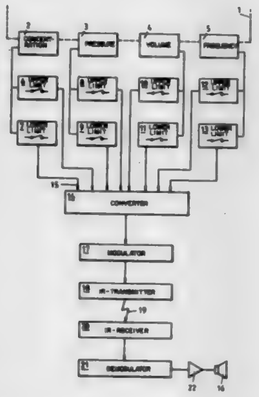
Carl F. Wallroth, Lubeck, and Rainer Bäuerle, Bad Schwartau, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 4, 1984, Ser. No. 568,112

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1983, 3302321

Int. Cl.³ A61B *5/08*

U.S. Cl. 128—716 **5 Claims**



1. In a monitoring device for a respirator which is capable of generating a plurality of parameter level signals corresponding to physiological quantities for a patient, said physiological quantities including the concentration of oxygen in respiratory gas for the patient, a concentration of anesthesia for respiratory gas of the patient, the pressure of respiratory gas for the patient, the volume of respiratory gas for the patient and the frequency of respiration for the patient, the circuitry comprising:

separate low limit value transmitter means for receiving each parameter level signal and for generating a low level signal when the parameter level signal is below a selected limit value for the parameter level signal;

separate high limit value transmitter means for receiving each parameter level signal and for generating a high limit signal when the parameter level signal is above a selected limit value for the parameter level signal;

signal converter means for converting each low and high limit signal into a separate intelligible language level signal indicating the type of physiological quantity which corresponds to the parameter level, and the fact that the parameter level is outside its selected limit value;

modulator means connected to said signal converter means for converting each intelligible language signal into a modulated signal;

wireless transmitter means connected to said modulator means for transmitting each modulated signal across a distance;

a plurality of wireless receiver means each for receiving at least one modulated signal from said wireless transmitter means over said distance and each adapted to be worn by a medical person attending for the patient;

demodulator means connected to each receiver means for demodulating said modulated signal into said intelligible language signal;

amplifier means connected to each demodulator means for amplifying said intelligible language signal; and

earphone means connected to each amplifier means for producing audible intelligible language and adapted to be worn by the medical person.

4,522,214

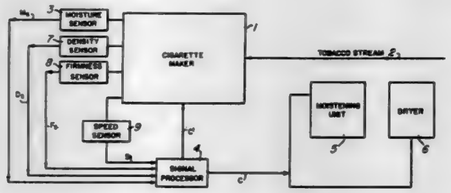
METHOD AND APPARATUS FOR CONTROLLING A CIGARETTE MAKER TO PRODUCE A CIGARETTE ROD WITH PREDETERMINED MOISTURE CONTENT

Jerome S. Osmalov, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 111,521, Jan. 14, 1980, abandoned. This application Jan. 27, 1982, Ser. No. 343,021

Int. Cl.³ A24C *5/14, 5/39*

U.S. Cl. 131—79 **31 Claims**



1. Apparatus for making a cigarette rod, said apparatus comprising:

a cigarette maker for making a cigarette rod;

control means for controlling the moisture content of tobacco being input to said cigarette maker, in a manner effective to cause the cigarette rod to have a predetermined moisture content; and

sensor means for generating a moisture sensor signal representative of the moisture content of the cigarette rod; said control means being for controlling the moisture content of the input tobacco responsive to said moisture sensor signal.

4,522,215

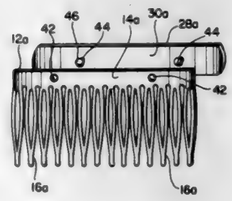
HAIR COMB WITH DETACHABLE ORNAMENT

Henry A. Verducci, 52 Zella St., Providence, R.I. 02908

Filed Jan. 14, 1980, Ser. No. 112,076

Int. Cl.³ A45D *24/00*

U.S. Cl. 132—11 R **4 Claims**



1. A hair comb device, comprising a longitudinally extending comb back, a plurality of spaced resilient teeth joined at an end thereof to said back in an aligned row, the other ends of said aligned teeth being free for insertion into the hair of the user, a pocket between each pair of adjacent teeth adjacent to the junction of the teeth with said comb back, a longitudinally extending ornament removably mounted in overlying relation on said comb back and including at least a pair of pins extending rearwardly therefrom, said pins being slidably receivable between adjacent teeth for movement into snap-seating engagement in the pockets located between said adjacent teeth for removably mounting said ornament on said comb back in overlying and ornamental relation.

4,522,216

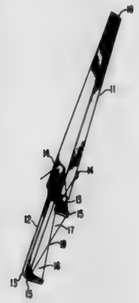
DENTAL FLOSS APPLICATOR

Robert L. Bunker, 429 Crowsmill Rd., Fords, N.J. 08863

Filed Aug. 29, 1980, Ser. No. 182,447

Int. Cl.³ A61C *15/00*

U.S. Cl. 132—92 R **4 Claims**



1. A dental floss applicator for holding a section of dental floss exposed in taut engagement for dental use comprising:

a handle section;

an arm member integrally united to one end of the handle section, said arm member fitted at its free end with two spaced apart finger members forming a yoke, said fingers spaced at least 12.77 mm apart;

a single strand of dental floss in an x-shaped configuration;

means for holding and positioning (a) said single strand of floss in an x-shaped configuration the intersection of said x-shaped configuration being equi-distant from said spaced apart fingers; and

means for securing said floss in taut condition between said fingers (.) said x-shaped configuration permitting simultaneous cleaning of three sides of a given tooth through shifting of the intersection of said x-shaped configuration while engaging said applicator in reciprocal motion about a given tooth.

4,522,217

PAIRED CONVEYOR BELTS WITH ZIGZAG TRAVEL

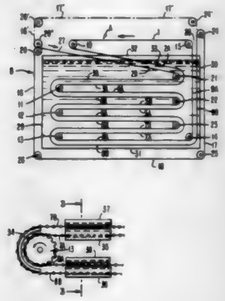
Joseph C. D'Alterio, 64 Sugar Maple La., Glen Cove, N.Y. 11542

Filed Sep. 28, 1983, Ser. No. 536,704

Int. Cl.³ A23P *1/00*

U.S. Cl. 134—75 **19 Claims**

1. A conveyor with a zigzag travel path with at least one U-turn which comprises a pair of flexible continuous conveyor belts, each said belt having openings along both of its marginal portions, a set of driven belt sprockets for each said belt meshing therewith through said openings, part of the lengths of said belts moving in the same direction with their marginal portions supported by straight guides leading to and away from each said U-turn in said zigzag path to maintain said belts with a substantially uniform spacing therebetween, a pair of said sprockets positioned at each said U-turn to mesh with said openings of one of said belts, a pair of arcked guides fixed at each said U-turn so that the marginal portions of the other of said belts have sliding support around said arced guides to maintain said substantially uniform spacing between said belts around each said U-turn, and the remaining part of the lengths of said belts being maintained apart from one another to provide a place for feeding material to said conveyor near where said belts begin to move with said substantially uniform spacing therebetween and a place for discharging said material from said conveyor after said belts begin to move apart.



4,522,218

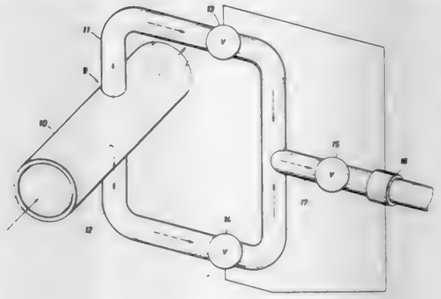
METHOD AND APPARATUS FOR SPLITTING TWO-PHASE FLOW AT PIPE TEES

A. Riza Konak, Calgary, Canada, assignor to Exxon Production Research Co., Houston, Tex.

Filed Sep. 29, 1983, Ser. No. 536,939

Int. Cl.³ F17D *3/00*; G05D *11/02*

U.S. Cl. 137—3 **5 Claims**



1. A process for diverting a stream of a flowing fluid having at least one gas phase and at least one liquid phase from a pipeline into a branch line, which comprises:

(a) withdrawing a first portion of said fluid from said pipeline in a generally upward and radially outward direction, and at a first flow rate;

(b) simultaneously withdrawing a second portion of said fluid from said pipeline in a generally downward and radially outward direction, and at a second flow rate;

(c) combining said first and second portions into said branch line; and

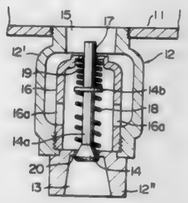
(d) regulating said first and second flow rates so that said first and second portions combine to form a stream of fluid in said branch line at a predetermined, desired quality.

4,522,219

FREEZE PREVENTING VALVE

Ichizo Ohkata, Yokohama, Japan, assignor to Kato Hatsujo Kaisha Ltd., Yokohama, Japan

Filed Apr. 25, 1984, Ser. No. 603,768
Claims priority, application Japan, Dec. 31, 1983, 58-251434
Int. Cl.³ E03B *7/12*
U.S. Cl. 137—62 **2 Claims**



1. A freeze preventing valve comprising:

a valve body longitudinally provided with an inserting hole at the upper part thereof in a hollow valve housing connected to a steam feed pipe,

a valve element having a shaft disposed movably through the inserting hole of said valve body to be able to open an exhaust port opened at the lower end of the housing, to be vertically guided through the inserting hole of the housing and having a collar secured at an intermediate position on said shaft,

a spring of shape memory alloy interposed between the upper surface of a valve seat of the valve housing and the lower surface of the collar for urging the valve element to close said valve by moving the valve element upwardly,

a bias spring mounted between the lower surface of the upper part of the valve body and the upper surface of the collar for urging said valve element to open said valve,

said valve body being formed with a plurality of holes to be closed to the exhaust port by said valve element when steam is introduced from said pipe, through the housing, into said valve body, to heat and expand said spring of shape memory alloy and to be opened to the exhaust port by upward movement of said valve element when condensed water from the pipe is introduced, through the housing, into said valve body to contract said spring of shape memory alloy by the tension of said bias spring.

4,522,220

DIAPHRAGM MODULE FOR PNEUMATIC CONTROL SYSTEMS

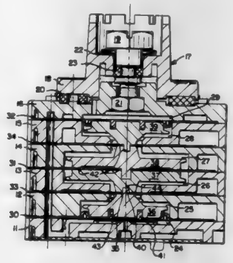
Vladimir Multrus, Limeshain, Fed. Rep. of Germany, assignor to Honeywell GmbH, Offenbach, Fed. Rep. of Germany

Filed Jan. 31, 1983, Ser. No. 462,588
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204100
Int. Cl.³ G05D *16/00*
U.S. Cl. 137—85 **3 Claims**

1. A diaphragm module for pneumatic control systems comprising at least a pressure comparing stage for converting an applied pressure difference into a force and a force/pressure transducer being controlled by the pressure comparing stage wherein, in a multiple-part housing, chambers are formed by comparing and tightening diaphragms with pressures to be compared with each other being applied to said chambers and wherein by means of diaphragms disks loosely piled up in the housing and being admitted by the comparing diaphragms the resulting force is accordingly converted into a displacement of the diaphragm disks, characterized by the following features:

a. said diaphragm disks comprise central pin projections and recesses, wherein said pin projections of a diaphragm disk is inserted into a recess of an adjacent diaphragm disk via a central hole provided in a corresponding one of said diaphragms, respectively;

b. said housing and the diaphragm disks comprise annular ribs which are pressed into corresponding diaphragms for tightening when pressure is applied; and,



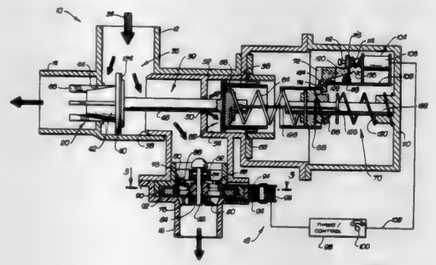
c. at least two diaphragm disks comprise in their planar surfaces concentric annular grooves which are engaged by annular collars of related diaphragms.

4,522,221

TIMED FLOW CONTROL VALVE ASSEMBLY

Donald R. Chivens, Northridge; Paul Greskovics, Manhattan Beach, and Edward C. Kelm, Pasadena, all of Calif., assignors to Autarkic Flow Controls, Los Angeles, Calif.

Filed Aug. 15, 1983, Ser. No. 523,711
Int. Cl.³ E04H *3/20*
U.S. Cl. 137—118 **50 Claims**



50. A swimming pool filtration and cleaning system, comprising, in combination:

a circulation pump for pumping pool water through a filter unit prior to return to the swimming pool;

a water-powered in-the-pool cleaning device; and

a flow control valve assembly for controlling and regulating water flow through a return conduit to the pool and to the cleaning device, said flow control valve assembly including:

a valve inlet for receiving water under pressure from the pool filtration and cleaning system;

a primary outlet coupled to the return conduit;

a secondary outlet coupled to the in-the-pool cleaning device;

a regulator valve;

means for positioning said regulator valve in a first operative state permitting water flow through both said primary and secondary outlets and modulating water flow through said primary outlet to maintain water pressure at said secondry outlet at a predetermined and substantially constant pressure level for a predetermined time interval; and

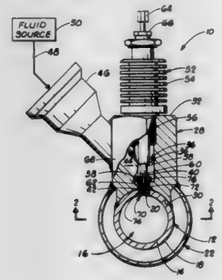
means for positioning said regulator valve in a second operative state at the conclusion of said predetermined time interval closing said secondary outlet to water flow and permitting substantially unobstructed water flow through said primary outlet.

4,522,222

NON-PLUGGING INJECTION VALVE

Henry S. Carey, Jr., Wilsonville, Ala., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Sep. 22, 1982, Ser. No. 421,534
Int. Cl.³ B08B *3/04, 9/00*
U.S. Cl. 137—240 **10 Claims**



1. In a process for deashing coal by the treatment of pulverized coal with a solvent fluid at elevated temperature and pressure wherein the solvent-coal mixture is permitted to separate into two phases in a separation zone with the heavier phase gravitating to the lower end of the vessel defining the separation zone, in a valve apparatus for the process, the improvement comprising:

an annular pipe conduit having a flow passage extending therethrough, an outer peripheral surface, and an injection aperture formed through the conduit and intersecting the flow passage, the injection aperture being adapted for receiving fluid to be injected into the flow passage, one end of the conduit being connected to the vessel defining the separation zone for receiving the heavier phase and passing the heavier phase through the flow passage;

a valve body having a valve chamber formed in a portion of the valve body, a bore extending through a portion of the valve body intersecting the valve chamber and intersecting a portion of the valve body, an exit port extending through a portion of the valve body intersecting the valve chamber and intersecting a portion of the valve body, the bore being adapted for receiving the fluid and passing the fluid into the valve chamber, the valve body being mounted on an outer surface of the pipe conduit and the exit port being aligned with the injection port in the conduit a plug means being connected to the valve body through the exit port, a portion of the plug means being connected to the valve body within the exit port and another portion of the plug means being connected to the pipe conduit within the injection aperture when a frusto-conical surface on the plug means engages a frusto-conical surface on the interior of the valve body; and

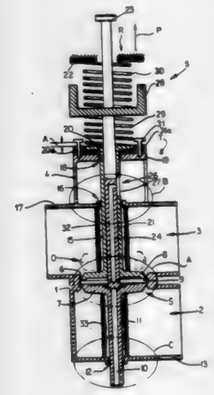
a valve closure member having a punch portion and being supported in the valve body, the valve closure member being moveable to a valve closure position when the valve closure member engages the plug means for interrupting fluidic communication between the valve chamber and the exit port and moveable to an open position establishing fluidic communication between the valve chamber and the exit port, the punch portion of the valve closure member extending through the portion of the plug means that is connected to the valve body within the exit port and another portion of the punch portion extending through the portion of the plug means that is connected to the pipe conduit through at least a portion of the injection aperture in the valve closure position of the valve closure member, the solvent fluid being passable through the bore, into the valve chamber, through the exit port and into the flow passage in the conduit in the open position of the valve closure member to prevent deposits from forming about the valve closure member.

4,522,223

DOUBLE POPPET VALVE

Manfred Balsys; Dieter Kling, both of Biberach; Hans Maier, Laupheim; Franz Miller, Biberach, and Walter Schmid, Ummendorf, all of Fed. Rep. of Germany, assignors to Albert Handtmann Armaturenfabrik GmbH & Co., KG., Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 505,390
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224852
Int. Cl.³ F16K *11/20;* **B08B** *9/02*
U.S. Cl. 137—240 **9 Claims**



1. A double-seat valve comprising an advancing valve head movable axially between a closed position and an open position, a coaxial follower valve head having a closed position intermediate said open and closed positions of the advancing valve head and having an open position in which it is engaged with the advancing valve head, and a valve housing providing for communication between a pair of ducts when said valve heads are in their open positions and defining a seat for each said valve head which the valve head sealingly engages when it its closed position, said valve housing being cooperable with the valve heads in their closed positions to define a leakage chamber between them which is substantially sealed from each of said ducts by one of said valve heads and which is drained to a leakage outlet remote from said ducts, said double-seat valve being characterized by:

A. said follower valve head having a diameter at least as large as that of said advancing valve head;

B. each of said valve heads having radially outwardly facing sealing means around its periphery;

C. said valve housing having therein a passage for communicating said ducts which has a pair of cylindrical surface portions, one for each of said valve heads, each said cylindrical surface portion

(1) having a diameter for slidable sealing engagement by its valve head and

(2) extending a substantial distance axially along said passage, with one end adjacent to the other cylindrical surface portion and an oppposite end remote therefrom, said seat for each valve head comprising a zone of its cylindrical surface portion that is intermediate said ends thereof;

D. an actuating rod to which one of said valve heads has a coaxial connection, said actuating rod having a feed bore therein,

(1) one end of which is communicated with a cleaning fluid inlet that is axially spaced from both of said valve heads and

(2) the other end of which is communicated with a plurality of nozzle bores that are between the valve heads and open radially outwardly for discharge towards said cylindrical surface portions; and

E. actuating means for moving each of said valve heads independently of the other axially within its said cylindrical surface portion between its seat and a defined position in which the valve head is spaced from its seat and is at the axial side thereof that is remote from the other valve head but maintains sealing engagement with its cylindrical surface, to provide for cleaning the valve seats without contamination of said ducts.

4,522,224

GATE VALVE CONSTRUCTION

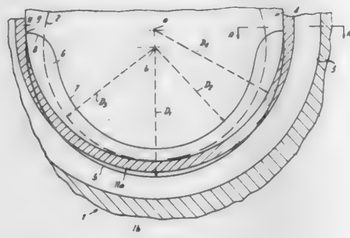
Hans Stalder, and Hans Sidler, both of Eschenbach, Switzerland, assignors to Sistag, Maschinenfabrik Sidler Stalder AG, Switzerland

Filed Jun. 19, 1984, Ser. No. 622,219

Claims priority, application Switzerland, Jun. 24, 1983, 3455/83

Int. Cl.³ F16K *3/30, 25/00*

U.S. Cl. 137—242 **2 Claims**



1. A gate valve comprising:

a casing (1) having a throat passage (2) with a guide groove (3) therein, said casing having a guide strip (11) covering a front portion of said guide groove;

a seal strip (12) in said guide groove; and

a valve plate (4) movable perpendicularly to said throat passage in said guide groove and against said seal strip, said plate having a front surface with a curved front lower edge (7), a rear surface with a curved rear lower edge (5*a*), opposite planar narrow sides each having parallel front edges (4*b*) and rear edges (4*a*), said rear edges connected to said rear lower edge, a lower rim (5) defined between said rear lower edge (5*a*) and a curved lower inner edge (5*b*), and a curved concave recess (6) defined between said front lower edge (7) and said inner edge (5*b*), said front lower edge (7) having concavely curved shear arches (8) extending outwardly into contact with a lower end of said front parallel edges (4*b*) at an intersection (9), said inner edge (5*b*) having concavely curved shear arches (10) curving upwardly into contact with said intersections (9), said front lower edge (7) having a smaller diameter than said inner edge (5*b*), and at least a portion of said seal strip (12) being deformed into said concave recess (6) when said lower rim (5) engages said seal strip (12) to provide an effective seal between said valve plate (4) and the casing (1).

4,522,225

COCK FOR THE HEATING CIRCUITS OF A VEHICLE

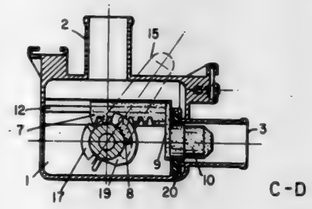
Joaquin R. Llauge, and Alberto P. Isanta, both of Barcelona, Spain, assignors to ITW Espana S.A., Barcelona, Spain

Filed Nov. 18, 1982, Ser. No. 442,829

Claims priority, application Spain, Nov. 19, 1981, 261579

Int. Cl.³ B60P *3/30*

U.S. Cl. 137—351 **4 Claims**



1. A liquid valve for the liquid heating circuits of a vehicle, including a sealed case having means communicating between its interior and exterior including a liquid inlet and a liquid outlet, means for mounting the valve on said vehicle, a mechanism for opening and closing at least one of said inlet and said outlet, said case including a planar wall of substantial extent carrying guide means generally parallel to one of said communicating means, a member having a rack thereon movable along said guide means and carrying a valve plug capable of closing off a seat in said one communicating means, a rotatable means carried adjacent said planar wall and having a toothed segment engageable with and actuating said rack along said guide means thereby moving said valve plug into and out of engagement with said seat, sealed means communicating through said case and cooperating with external actuating means to rotate said rotatable means to thereby open and close said valve by movement of said rack linearly within said case, said rotatable means having a generally cylindrical element including said toothed segment with a coaxial cylindrical appendage extending from one end and journaled in a mating recess in said planar wall, a rotatable shaft at one end and nonrotatably connected to said element while serving as said sealed means and emerging from the casing to receive at its opposite faceted end said external actuating means in the form of a lever connected at one end to said shaft and at the opposite end to an activating means such as a cable, said opposite end of said shaft being furthermore recessed to receive an o-ring seal.

4,522,226

VALVE FOR AUTOMATIC STOPPAGE OF WATER SUPPLY

Tamio Yamagiwa, Tokyo, Japan, assignor to Hi-Sonic Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1984, Ser. No. 650,528

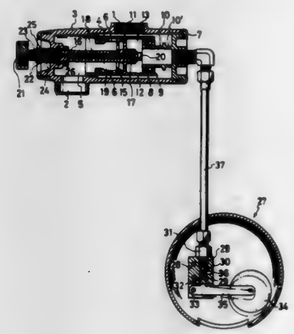
Claims priority, application Japan, Oct. 21, 1983, 58-163085[U]; Oct. 21, 1983, 58-163086[U]

Int. Cl.³ F16K *21/18, 31/143*

U.S. Cl. 137—390 **2 Claims**

1. A valve for automatic stoppage of water supply comprising: a valve body having an inlet port adapted to be connected to a faucet and an outlet, said body having its open and closed ends; a hollow valve seat member fixed at its one end to the interior of said valve body so as to form a chamber communicating with said outlet port and having a plurality of openings formed therein; a cap secured to the open end of said body and having an inner hollow element with a sealing portion; a hollow valve member extending between and slidably engaging said hollow valve seat member and said sealing portion of said cap, said hollow valve member being provided at its central portion with a transverse partition wall; a pressure chamber formed between said transverse partition wall and said hollow element of said cap within said hollow valve member; a valve

rod extending through the end closure of said valve body into said chamber and fixed at its inner end to said transverse partition wall, said valve rod having an axial bore and a plurality of radial apertures formed in the wall defining said bore, said chamber and said pressure chamber being communicated with each other through said axial and radial apertures; a valve actuating rod extending through said valve rod and provided at its inner end with a valve member adapted to open and close the open end of said axial bore in said valve rod, said valve actuating rod being provided on the outer end thereof with a knob spaced from the exposed end of said valve rod; a spring adapted to bias said valve member so as to close the open end



of said axial bore; a float-type stop valve attached to a bath tub so as to operate at a desired water level; a connecting pipe through which said pressure chamber is connected to said float-type stop valve to allow pressurization and depressurization of said pressure chamber; a small aperture formed in said hollow element to provide a communication between said inlet port and said pressure chamber to pressurize said pressure chamber to maintain the hollow valve member closed and said valve actuating rod being operable independently to actuate said valve actuating rod valve member to allow the water supply to the bath tub even when said float-type stop valve closes said connecting pipe when the desired water level has been reached.

4,522,227

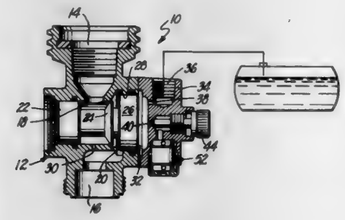
FILL VALVE RESPONSIVE TO LIQUID LEVEL

Gerald D. Mylander, 22486 Alcudia, Mission Viejo, Calif. 92692

Filed May 10, 1983, Ser. No. 493,259

Int. Cl.³ F16K *21/18*

U.S. Cl. 137—393 **15 Claims**



1. A fill valve responsive to liquid level, said fill valve being connectable into a system between a supply and a tank to control the filling of the tank, said fill valve having a body and a passage through said body through which a compressible fluid passes to fill the tank, a valve in said body to close the passage through said body to cut off filling of the tank;

a control chamber within said body and pressure-responsive means adjacent said control chamber and connected to said valve for closing said valve upon adequate increase in pressure in said control chamber;

at least first and subsequent serially connected orifices, with said control chamber connected between said first and subsequent orifices, said first orifice being connectable to a liquid level-sensing tube in a tank and said subsequent orifice being for discharge to atmosphere so that the pressure in said control chamber is a function of the pressure and liquid or vapor state of the compressible fluid flowing through the first orifice; and

a pressure booster in association with said subsequent orifice, said pressure booster comprising a cylinder having a head end and a piston within said cylinder defining a head end space for receiving the compressible fluid, a valve spool on said piston away from said head end of said cylinder, a land being disposed at a lower end on said valve spool, said land coacting with said subsequent orifice to decrease the open area of said subsequent orifice when said pressure booster piston moves toward the head end of its cylinder, a restricted fluid passage between said booster piston and said cylinder and between the land side and cylinder head side of said booster piston, said booster piston being without the necessity of spring bias because of the compressibility of the fluid within the head end space so that its position is controlled by the pressure within the head end space and the pressure on the valve spool so that when pressure rises rapidly in said control chamber, said pressure booster piston moves without the need for any dampening effect and automatically increases restriction in said subsequent orifice to further automatically raise the pressure in said control chamber to reliably shift said valve spool and automatically reopens thereafter without requiring change in the control chamber pressure.

4,522,228

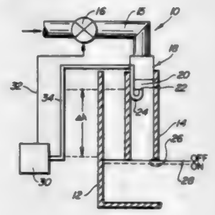
FLUIDIC LEVEL CONTROL SYSTEM

Daniel N. Campau, 656 Duxbury Ct., Grand Rapids, Mich. 49506

Filed Jun. 12, 1984, Ser. No. 620,071

Int. Cl.³ F15C *1/14;* **F16K** *21/18*

U.S. Cl. 137—393 **20 Claims**



1. A liquid level control system for controlling the flow of liquid into a reservoir, storage tank or other container, comprising:

nozzle means for developing a liquid flow stream therethrough, valve means in said liquid flow stream for opening and closing the nozzle;

fluid amplifier means associated with said nozzle and including a fluid power stream, signal developing means for receiving a fluid pressure signal from said fluid power stream, and sensing means for diverting said fluid power stream from said signal developing means in response to the static presence of the interface at a predetermined sensing level of liquid in said reservoir;

pressure responsive switch means coupled to said valve means and located at a level below the signal developing means of said fluid amplifier means and at a depth equal to a hydrostatic pressure head sufficient to operate the switch means; and

conduit means communicating between said signal developing means and said pressure responsive switch means to

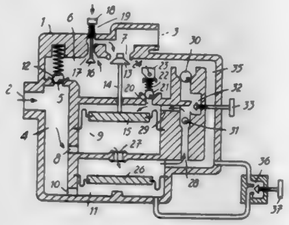
create said hydrostatic pressure head within the conduit means corresponding to a height of approximately the distance between the switch means and the signal developing means above the switch means to maintain the switch means and, therefore, the valve means in a first condition when said fluid power stream delivers a fluid pressure signal to said signal developing means and a second condition when the fluid power stream is diverted from the signal developing means.

4,522,229

SAFETY DEVICE FOR WATER-PIPES

Guido Van de Moortele, Antwerp, Belgium, assignor to Standard Société Anonyme, Luxemburg, Luxembourg

Filed Aug. 3, 1984, Ser. No. 638,102
Claims priority, application Belgium, Aug. 10, 1983, 2/60179
Int. Cl.³ F16K *17/00*
U.S. Cl. 137—460 **5 Claims**



1. Safety device for water-pipes, comprising a housing with an inlet connected to a water supply pipe and with an outlet connected to a water discharge pipe, in said housing a supply chamber connected to a discharge chamber leading into said outlet, said supply chamber being also connected to a measuring chamber and a precontrol chamber, a valve provided between said supply and discharge chambers, a shut-off valve provided between said discharge chamber and said outlet, said shut-off valve forming part of a diaphragm provided in said measuring chamber, a push-down reset valve provided in said discharge chamber to apply pressure to said outlet and to open said shut-off valve, a push-button for pressing down said reset valve, and adjustable valve provided between said discharge chamber and the upper part of said measuring chamber for setting the desired water consumption, a precontrol diaphragm provided in said precontrol chamber for closing off an opening provided between this chamber and said measuring chamber, a channel provided between said discharge chamber and said precontrol chamber, a second channel provided between said discharge chamber and said precontrol chamber, an opening provided between said measuring chamber and first mentioned channel, a valve for closing first mentioned channel between said precontrol chamber and last mentioned opening of said measuring chamber, a regulating means for regulating the flow rate between said measuring chamber and said discharge chamber and for adjusting the shut-off speed of said shut-off valve, and a flow regulator provided between the upper part of said precontrol chamber and said discharge chamber for adjusting the flow in the by-pass connection of the device.

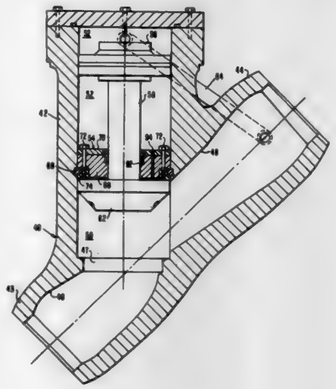
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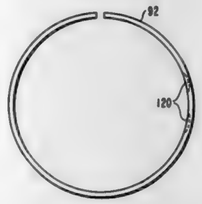
ORIFICE PLATE SEAL RING FOR CONTROLLED CLOSURE CHECK VALVE

Robert L. Clapper, Cary, N.C.; Richard J. Gradle, and Earl A. Bake, both of Pittsburgh, Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Feb. 23, 1983, Ser. No. 468,832
Int. Cl.³ F16K *31/38*
U.S. Cl. 137—496 **9 Claims**

1. A check valve comprised of a body having inlet and outlet passages and a control chamber within said body, an orifice plate dividing said chamber into dashpot chamber and a valve chamber which is in communication with said inlet and outlet passages, a valve seat in said valve chamber separating said inlet and said outlet passages, a valve closure element mounted for reciprocation in said valve chamber between a valve open position an a valve closed position where said element is seated upon said seat, a piston mounted for reciprocation in said dashpot chamber, a piston rod extending through an opening in said orifice plate connecting said closure element and said piston, means to apply the pressure in said outlet passage to the





piston to urge the piston and closure element toward valve closed position when the pressure in said outlet passage exceeds the pressure in said inlet passage, passage means through said orifice plate to allow the flow of fluid from said dashpot chamber to said valve chamber at a first rate of flow, sealing means responsive to the pressure differential between said dashpot chamber and said valve chamber to close a portion of said passage means and reduce the rate of flow from said dashpot chamber to a second rate of flow when said pressure in said dashpot chamber exceeds the pressure in said valve chamber by a predetermined amount.

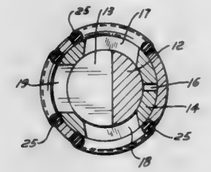
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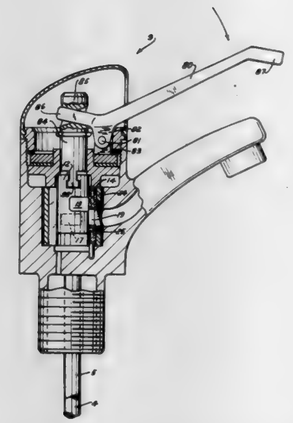
SANITARY WATER VALVE

Konrad Bergmann, Wittlich, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.

Continuation-in-part of Ser. No. 509,126, Jun. 30, 1983, abandoned. This application Jun. 22, 1984, Ser. No. 623,641
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1982, 3224991
Int. Cl.³ F16K *11/02, 19/00*
U.S. Cl. 137—625.17 **31 Claims**

1. A sanitary water valve comprising a stationary cylinder having at least one water inlet orifice, a rotatable and longitudinally shiftable piston positioned in said cylinder to control the flow of water through said at least one water inlet orifice from a closed to an opened position; said cylinder having a longitudinal extending continuous lengthwise slot and said piston and cylinder having mating surfaces, which form a watertight,





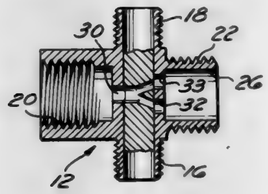
mechanical seal between their mating surfaces without the necessity of using static seal means.

4,522,232

SHOWER FLOW CONTROLLER

Kenneth F. Ferguson, 16467 Seneca, Victorville, Calif. 92392

Filed Apr. 30, 1982, Ser. No. 373,300
Int. Cl.³ F16K *5/04, 5/10;* B05B *1/30*
U.S. Cl. 137—625.32 **9 Claims**



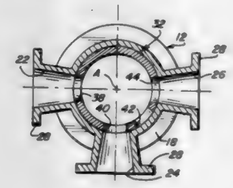
1. A flow controller for interconnecting a shower pipe to a shower head or the like, comprising:
an input end structure having an internally threaded inlet for connection to said shower pipe, said inlet including an inlet aperture;
an output end structure having an externally threaded outlet for connection to said shower head, said outlet forming an outlet cavity having an axis in the direction of said flow and an inner cavity side wall;
means for controlling the flow of water, said means disposed between said input end structure and said output end structure, said means containing a Y-shaped passage therethrough, said passage comprising:
(a) an inlet portion forming the leg of said Y-shaped passage, said inlet portion for receiving the flow of water from said inlet aperture; and
(b) two outlet portions forming the arms of said Y-shaped passage, said outlet portions having walls for directing said flow of water, said walls terminating at a location spaced from said cavity side wall toward said axis, said walls aligned to direct the entire flow of water directly at said inner cavity side wall to atomize said water inside said output end structure, said cavity side wall defining an outlet end of considerably larger cross section than the greatest distance between said walls of said controller outlet portions; and
said controlling means comprising a controlling shaft rotatably movable with respect to said input end structure and said output end structure to selectively vary the flow of water through said Y-shaped passage by varying the alignment between said inlet portion and said inlet aperture.

4,522,233

MULTI-POSITION PLUG VALVE

Yousef Mojadad, Lenexa, Kans., assignor to Smith & Loveless, Inc., Lenexa, Kans.

Filed Sep. 29, 1982, Ser. No. 427,635
Int. Cl.³ F16K *11/083*
U.S. Cl. 137—625.47 **14 Claims**



1. A multi-position valve, comprising:
a valve body defining an interior bore and first, second, and third valve ports communicating with the interior bore, said valve body further defining a main port communicating with the interior bore of the valve body; and
plug means adapted to fit within said interior bore of said valve body for rotation with respect thereto, said plug means being selectively positionable within said valve body and including means for providing fluid communication, via the interior of said plug means, between said main port and: (1) any selected individual one of said first, second, and third valve ports; (2) said first and second valve ports only; (3) said first and third valve ports only; (4) said second and third valve ports only; and (5) all of said first, second, and third valve ports, said plug means being further positionable to isolate all of said valve ports from said main port.

4,522,234

MULTIPLE CONDUIT DRILL PIPE

Jackson M. Kellner, Midland, and William R. Garrett, Houston, both of Tex., assignors to Smith International Inc., Newport Beach, Calif.

Continuation of Ser. No. 100,757, Dec. 6, 1979, abandoned, which is a continuation of Ser. No. 859,049, Dec. 9, 1977, abandoned, which is a continuation of Ser. No. 718,370, Aug. 27, 1976, abandoned, which is a division of Ser. No. 643,254, Dec. 22, 1975, Pat. No. 4,040,495. This application Dec. 21, 1981, Ser. No. 333,136
Int. Cl.³ F16L *39/00;* E21B *1/06*
U.S. Cl. 138—108 **17 Claims**

1. Multiple conduit pipe comprising
a first member including connector means at each end for making connection with correlative connector means on

the like members of like pipe to be connected to the ends of said first member,

first fluid passage means providing for fluid passage through said first member from one end of the first member to the other all the way through the first said connector means to place said first fluid passage means in fluid flow communication with the like fluid passage means through like members of like pipes when connected to the ends of said first member,

said first member and said first fluid passage means comprising a first tube with tubular telescopic pin and box connector means at the ends thereof,

a second member including further connector means at each end for making connection with correlative connector means on the like members of like pipe to be connected to the ends of said second member,

said second member and said further connector means comprising a second tube with tubular, shouldered, threaded, pin and box screw means at the ends thereof,

said second tube and screw connector means being disposed concentrically about said first tube and telescopic connector means respectively,

outer diameters of said first tube and the first said connector means being smaller than the inner diameters of said second tube and said further connector means respectively, with second fluid passage means formed therebetween extending from one end of the pipe to the other to place said second fluid passage means in fluid flow communication with like fluid passage means through like pipes when said further connector means at each end of said second member are connected to correlative connector means of such like pipes,

said telescopic connector means being free of rigid shoulders that will abut rigid shoulders on correlative telescopic connector means of like pipes when said shouldered screw connector means are made up fully with correlative screw connector means of like pipe,

first positioning means extending between the first and second members rigidly connecting one end of the first member to the adjacent one end of said second member, and

second positioning means extending between the first and second members elastomerically restraining the other end of the first member relative to the adjacent other end of said second member,

both of said members being integral between said first and second positioning means, whereby because of said first positioning means rigidly connecting said first and second members, said first member cannot rotate without limit nor move axially without limit relative to said second member at said second positioning means, but said second positioning means, being elastomeric, allowing for a certain amount of relative rotation, turning, and twisting between said members thereat,

said second positioning means independent of said first positioning means allowing only a limited amount of axial movement of said other end of the first member away from said one end of the second member.

4,522,235

HOSE STRUCTURE

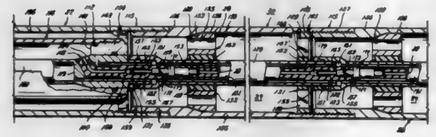
Karl K. Kluss, Concord, N.C.; Terry F. Allen, Barberton, and John M. Sawyer, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

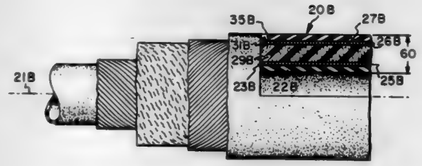
Continuation of Ser. No. 320,990, Nov. 13, 1981, abandoned, which is a continuation of Ser. No. 111,070, Jan. 10, 1980, abandoned. This application May 4, 1983, Ser. No. 491,495

Int. Cl.³ F16L *11/08*

U.S. Cl. 138—130 **11 Claims**







1. A suction and discharge hose having a central longitudinal axis and comprising:

(i) an inner tube of elastomer material;

(ii) a cover layer of elastomeric material spaced radially outwardly of said inner tube and forming an outer surface for the hose;

(iii) at least one reinforcing layer of elastomer having embedded therein reinforcing cords extending in opposite hand helical patterns about the hose axis;

(iv) at least one filler layer disposed intermediate said inner tube and said cover layer and being separate and distinct from said inner tube and from said cover layer and from said at least one reinforcing layer, said filler layer being of elastomeric material having a tensile modulus at 50 percent elongation of about 400 to about 800 pounds per square inch and a hardness from about 70 to about 85 Shore A, said filler layer elastomeric material having a total thickness from about one fifteenth to about one fifth of the mean radius of the filler layer elastomeric material from the hose axis;

(v) from about 10 to about 18 percent by weight discontinuous elongated fibers embedded in randomly distributed manner in substantially parallel relation in said filler layer, said fibers being oriented so as to extend generally in a helical pattern about the hose axis at an angle of at least 45° relative to the hose axis so as to reinforce the hose against collapse.

4,522,236

ELECTRICAL SYSTEM FOR MONITORING WARP YARNS IN WEAVING MACHINES

Heinz P. Löhr, Hergatz, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Mar. 15, 1983, Ser. No. 475,495

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210333

Int. Cl.³ D03D *51/28*

U.S. Cl. 139—353 **6 Claims**



1. In a system for electrically monitoring warp yarns in a weaving machine, wherein electrically conducting monitoring rail means include at least one continuous first rail member and at least one sectioned second rail member, insulating means electrically insulating said first and second rail members from each other, said second sectioned rail member including a plurality of rail sections also electrically insulated from each other but arranged in a row extending substantially in parallel to said continuous first rail member, and drop wire means operatively arranged for electrically connecting said continuous first rail member to any one of said rail sections of said second rail member in response to any warp yarn rupture, the improvement comprising an electrical monitoring circuit including individual indicator means electrically connected in series with adjacent rail sections (**11, 12,** . . .) for forming an electrical series circuit of rail sections alternating with said individual indicator means, a source of electrical power, conductor means electrically connecting said first continuous rail member to one terminal of said electrical power source, and further conductor means electrically connecting said series circuit to another terminal of said electrical power source, whereby at least one of said individual indicator means is energized by said electrical power source in said electrical monitoring circuit when said drop wire means drop to thereby pinpoint a location where a warp yarn rupture occurred.

4,522,237

APPARATUS FOR DISPENSING LIQUIDS

Keizo Endo, Yokohama; Hiroshi Matsumura, Kamakura; Yoshifumi Hasunuma, Yokohama; Siro Masai, and Noboru Oguma, both of Kanagawa, all of Japan, assignors to Tokyo Tatsuno Co., Ltd., Tokyo, Japan

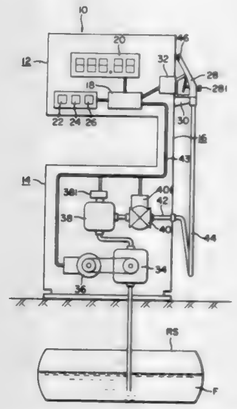
Filed Jul. 8, 1982, Ser. No. 396,199

Claims priority, application Japan, Aug. 20, 1981, 56-129326; Aug. 20, 1981, 56-129327; Aug. 20, 1981, 56-129328; Aug. 21, 1981, 56-130237

Int. Cl.³ B67C *5/377*; B65B *3/36*

U.S. Cl. 141—95 **17 Claims**

1. Apparatus for dispersing a liquid comprising pump means for pumping said liquid, conduit means through which said liquid is pumped, flow meter means in said conduit means measuring the amount of liquid passing through said conduit means, control valve means in said conduit means for controlling the flow of said liquid through said conduit means, dispensing nozzle means connected to said conduit means for dispensing said liquid, a liquid sensor means mounted in an end portion of said nozzle means for sensing liquid in said end portion and transmitting a detecting signal when said liquid is sensed, a valve opening memory circuit storing memory of a plurality of valve opening positions for said control valve means, a valve control circuit operable upon receiving said detecting signal from said liquid sensor means to cause said valve opening memory circuit to transmit a control signal corresponding to any one of said plurality of valve opening positions, a counter circuit operable to receive a signal from said flow meter means and provide a counting signal indicative



of the amount of liquid through said flow meter means, said counter circuit also being operable to provide an integral dispensing signal, and an integral dispensation control circuit responsive to said control signal and said detecting signal along with said integral dispensing signal to transmit a dispensing ceasing signal to said valve control circuit to close said control valve means after the apparatus has dispensed an amount of liquid which is rounded off to a predetermined digit.

4,522,238

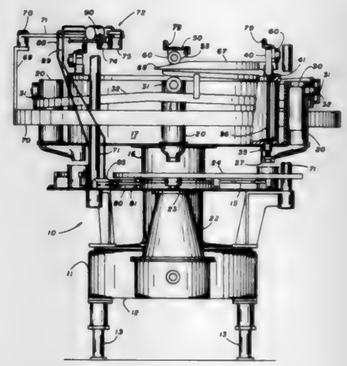
VALVE CONTROL MECHANISM FOR RECIPROCATING VALVES OF A POSITIVE DISPLACEMENT ROTARY FILLING MACHINE

Everett S. Minard, Sacramento, Calif., assignor to Elmar Industries, Inc., Santa Clara, Calif.

Filed Feb. 16, 1983, Ser. No. 467,182

Int. Cl.³ B65B *57/02*

U.S. Cl. 141—142 **4 Claims**



1. In a filling machine comprising a frame having rotatably mounted on an axis thereon a reservoir,

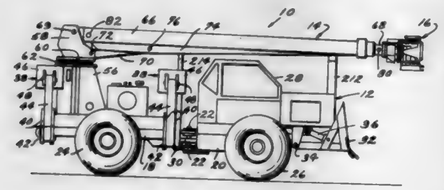
a plurality of filling stations
each including
a cylinder,
a piston reciprocable therein,
a discharge nozzle, and
a valve selectively positionable to place said cylinder into communication with either said discharge nozzle or said reservoir; and
a filling star for holding cans beneath said discharge nozzles as said filling stations are rotated on said frame; and
means comprising a feed star rotatable on a separate axis in synchronism with said filling star for supplying empty cans to said filling star the improvement comprising
a no-can-no-fill valve operating means comprising
a cam track,
a cam follower pivotally mounted on an axis on each of said valves, valve control means selectively settable to either free said cam follower for pivotal movement on said valve without displacement of said valve or to lock said cam follower against movement in relation to said valve whereby said valve will be displaced by said cam follower as it moves along said cam track, and a selectively settable trip shoe assembly carried by said frame at a position in advance of the position at which receptacles are fed to said filling star by said feed star for setting said valve control means to either of its aforesaid settings according to the setting of said trip shoe assembly, as said valves move past said assembly during rotation of said filling stations whereby said valve control means are reset to a different setting only in response to a change in the setting of said trip shoe assembly.

4,522,239

SWATH CUTTING AND GRIPPING TREE DELIMBER

Walden M. Gaitten, deceased, late of Sylacauga, Ala. (by Dorothy A. Gaitten, executrix), assignor to Southeastern Technology, Inc., Bessemer, Ala.

Filed Oct. 14, 1983, Ser. No. 542,229
Int. Cl.³ B27L *1/00*
U.S. Cl. 144—2 Z **31 Claims**



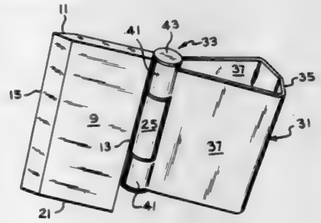
1. Apparatus for removing limbs of standing trees to maintain a power line right-of-way free of tree limb interference comprising
a self-propelled vehicle having power operated ground stabilizing means,
a telescoping boom,
means mounting one end of the boom on said vehicle for horizontal swinging movement about an upright axis and for vertical pivoting movement,
a limb cutting assembly on the opposite free end of said boom, said assembly including
a mounting structure,
means mounting said mounting structure on said boom for movements about a longitudinal axis with respect to said boom,
a power operated cutter having a convex cutting periphery,
means mounting said cutter on said mounting structure for movement between a retracted inoperable position and an extended operative position wherein said convex cutting periphery extends longitudinally outwardly from said mounting structure and is exposed both longitudinally outwardly and transversely outwardly so as to enable the same to be moved with a transverse swath cutting action by virtue of the movements of the boom, and
limb gripping means carried by said mounting structure for movement from an inoperative position disposed longitudinally inwardly of said cutter so as to permit the swath cutting action thereof and an operative position disposed longitudinally outwardly of said cutter when the latter is in its retracted position so as to grippingly engage a limb or a group of limbs and hold the same in a position to be cut in response to the movement of the cutter from its retracted position into its extended position.

4,522,240

SPLITTING WEDGE FOR LOG SPLITTER

Robert H. Green, 17518 Euler Rd., Bowling Green, Ohio 43402, and James D. Simon, 10410 S. Dixie Hwy., Portage, Ohio 43451

Filed Feb. 8, 1984, Ser. No. 578,003
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 E **13 Claims**



13. A wood splitter comprising:
two substantially parallel and adjacent tubes, said tubes defining a support base for wood that is to be split;
a thin cutting member having a first end a second end, said first end defining a sharp edge for initiating a cut in said wood to be split, said first end being disposed to first engage said wood, said cutting member extending between and being connected to said tubes, said cutting member being disposed at an angle of about 65° to about 85° with respect to said tubes, said cutting member being secured to said tubes along said neutral axis of said tubes whereby said cutting member exerts torsional forces as well as bending force on said tubes when said wood to be split is advanced against said cutting member; and,
a triangular-shaped wedge member having an apex and a base, said apex of said wedge member being pivotally connected to said second end of said cutting member and said base being spaced apart from said cutting member, said base pivoting about an axis that passes through said apex of said triangular-shaped wedge member, said base being from about 2 to about 5 times the thickness of said cutting member whereby said wedge member can pivot with respect to said cutting member as said wood is split to follow the grain in said wood to reduce the splitting force required to split said wood.

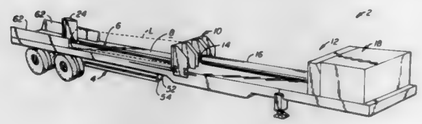
4,522,241

LOG SPLITTER

Gene P. West, Grass Valley, Calif., assignor to Gene West, Inc., Nevada City, Calif.

Filed Aug. 5, 1983, Ser. No. 520,654
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **6 Claims**

1. A log splitter comprising:
a frame having an upper log supporting surface and an I-beam support member, said log supporting surface having elongate first and second portions, said second portion having an opening extending along the length thereof;
a push block;
means for driving said push block along said first portion of said log supporting surface;
a splitting wedge extending through said opening in said second portion;
means for movably mounting said splitting wedge to said I-beam support member for movement along said second portion;



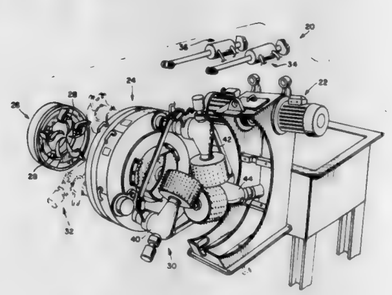
means for selectively driving said push block towards said splitting wedge and means for selectively driving said splitting wedge toward said push block, to split a log supported by said support surface between said wedge and said push block; and
a bark ramp extending from a forward edge of the splitting wedge downwardly toward the support surface and outwardly away from the splitting wedge with a distal end of said ramp being generally level with a central portion of said support surface so debris pushed by log toward said splitting wedge is diverted up and away from said splitting wedge by said bark ramp.

4,522,242

HYDRAULIC FED LOG DEBARKER

James H. Hutson, Rte. 4, Box 925, Pell City, Ala. 35125

Filed Sep. 30, 1982, Ser. No. 430,794
Int. Cl.³ B27L *1/00*
U.S. Cl. 144—208 E **7 Claims**



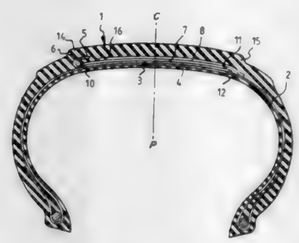
1. A log debarker comprising:
a frame,
a stator supported by said frame,
a rotor,
a journaling means for journaling said rotor in said stator for rotation about a longitudinal axis of said rotor,
a rotating means for rotating said rotor about said longitudinal axis,
a plurality of debarking tools attached to said rotor,
an infeed means positioned on the infeed end of said stator for feeding logs axially into said rotor,
an outfeed means positioned on the opposite outfeed end of said stator,
a lubricating means that uses a lubricant for lubricating said journaling means,
a flushing means that uses said lubricant of said lubricating means as a flushing medium for flushing contaminants from said journaling means, and
a pumping means for pumping said lubricant over said journaling means.

4,522,243

REINFORCING BELT FOR TIRES WITH A RADIAL CARCASS

Michel C. Eveque-Mourroux, Diekirch, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 2, 1984, Ser. No. 585,749
Int. Cl.³ B60C *9/20, 9/22*
U.S. Cl. 152—528 **7 Claims**



1. A reinforcing belt for pneumatic tires comprising two plies of steel cords oriented at opposite angles of between 15° and 25° with the mid-circumferential plane of the tire, whereby the radially innermost ply of steel cords is a folded ply comprising a main body portion which extends substantially over the whole tread width and having only a single folded portion, said single folded portion being folded radially outwardly and extending over less than half the tread width thereby forming a fold in a first shoulder of the tire, and whereby the radially outermost ply of steel cords is unfolded and has a median portion and two end portions, the radially outermost ply of steel cords extends substantially over the whole of the tread width and has its first end portion lying within a bite formed by the fold of the radially innermost ply of steel cords and its second end portion situated in a second shoulder of the tire, whereby the median portion and second end portion of the radially outermost ply of steel cords have disposed radially outwardly thereof at least one layer of textile cords which layer or layers extend axially no further than the edge of the folded portion of the radially innermost ply of steel cords in the direction of the first shoulder of the tire and which layer or layers extend at least up to the edge of the radially innermost ply of steel cords in the direction of the second shoulder of the tire and whereby the textile layer or layers comprise parallel cords which make an angle with the mid-circumferential plane of the tire of between 0° and 10°.

4,522,244

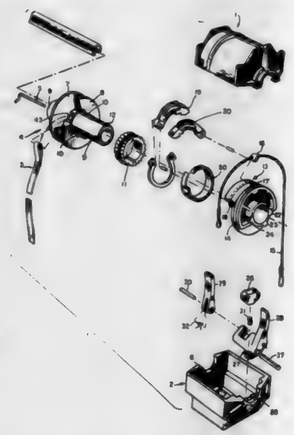
BEARING BRACKET FOR OUTER-WALL VENETIAN BLINDS

Hans Brolin, Mullsjö , Sweden, assignor to AB Perma System, Mullsjö , Sweden

Filed Jun. 17, 1983, Ser. No. 505,328
Claims priority, application Sweden, Jun. 18, 1982, 8203812; European Pat. Off., Feb. 16, 1983, 83-8500 38.7
Int. Cl.³ E06B *9/30*
U.S. Cl. 160—170 **4 Claims**

1. Bearing bracket, mainly for outer-wall Venetian blinds and comprising a lifting roll (4), a turning roll (13) and a coupling (11, 19, 20), disengagably connecting said rolls (4, 13), the coupling comprising a ratchet wheel (11) having two rows of ratchet teeth (35, 36) and two pawls (19, 20) for cooperation with one row each of ratchet teeth (35, 36) on the ratchet wheel (11) and which during rotation of the lifting roll (4) carries the turning roll (13) to predetermined adjustment positions for the skewing of the blind laths (40) in which positions pawl (19, 20) is brought out of latching engagement with

corresponding set of teeth (35, 36) on the ratchet wheel (11) to disengage the rolls (4, 13), and further comprising a sleeve (50) arranged around the ratchet wheel (11) within which sleeve (50) the ratchet wheel (11) is rotatable, sleeve 50 having opening (56, 57) through which the teeth (33) of the pawls (19, 20) are brought into engagement with the ratchet teeth (35, 36) on

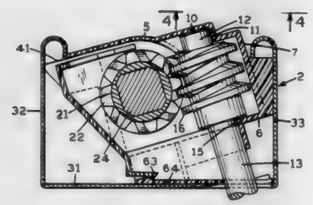


the ratchet wheel (11), sleeve (50) further including two abutments (54, 55) of which, during the rotation of the ratchet wheel (11) one or the other depending on the direction of rotation will be brought into contact with this engaged pawl (19, 20) and lifts this so that the teeth (33) thereof are free from the teeth (35, 36) on the ratchet wheel (11).

4,522,245
HOUSING FOR A VENETIAN BLIND TILTER MECHANISM

Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas Inc., Totowa, N.J.

Continuation-in-part of Ser. No. 455,527, Jan. 4, 1983. This application May 6, 1983, Ser. No. 492,392
Int. Cl.³ E06B *9/38*
U.S. Cl. 160—177 **12 Claims**

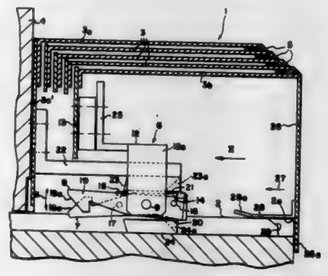


1. A housing for a venetian blind tilter mechanism comprising a single piece integrally molded body member comprising two spaced oppositely disposed upstanding side walls each having a rear portion and a front portion, and at least one connecting means joining said side walls, and said body member having a portion forming a top journal bearing to support an end of a rotatable tilter shaft carrying a worm gear, a portion forming a bottom journal bearing aligned with the top journal bearing for rotatably supporting a portion of the tilter shaft, two aligned apertures in said side walls adapted to form side journal bearings for rotatably supporting a worm wheel in meshing engagment with said worm gear, and said body member having an opening formed by said side walls through which said tilter shaft and worm gear may be inserted to position the tilter shaft in the bottom journal bearing and an end thereof in the top journal bearing and through which the worm wheel may be inserted and positioned in the apertures in the side walls whereby the worm wheel will be positioned in aligned meshing engagement with the worm gear.

4,522,246
PROTECTIVE COVER FOR A MACHINE BED

Heiner Bierbrauer, and Wolfgang Diels, both of Munich, Fed. Rep. of Germany, assignors to Gebr. Hennig GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 192,448, Sep. 30, 1980,. This application Jul. 1, 1983, Ser. No. 510,416
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941126
Int. Cl.³ E06B *3/32*
U.S. Cl. 160—223 **14 Claims**



1. In a protective cover construction for a bed of a machine tool having a part displaceable relative to the bed, said cover comprising a relatively large, a relatively small, and at least one intermediate size telescoping cover boxes overlying said bed; means securing the largest of said cover boxes to said machine part for movement therewith; and a locking mechanism operable selectively to enable and disable relative telescoping movement of said cover boxes, the improvement wherein said locking mechanism comprises a pair of pivotal, independent latching pawls carried by the smallest of said cover boxes, first retainer means fixed on said bed for latching engagement with one of said pawls to limit movement of the smallest cover box in one direction relative to said bed, and second retainer means carried by said largest box for latching engagement with the other of said pawls to couple the smallest and largest cover boxes together and prevent relative telescoping movement thereof, the arrangement being such that at any time at least one of said latching pawls is in engagement with its associated retainer means.

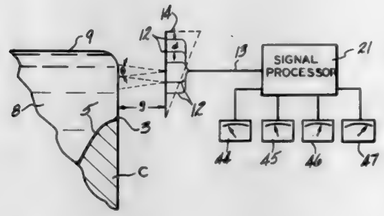
4,522,247
INFRARED IMAGING FOR ELECTROMAGNETIC CASTING

Gary L. Ungarean, Woodbridge, and John C. Yarwood, Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 11, 1980, Ser. No. 111,244
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—150 **20 Claims**

1. An infrared imaging system for determining the position of the liquid-to-solid interface at the periphery of a material load in an electromagnetic casting apparatus during a casting run, said electromagnetic casting apparatus including a primary casting zone defined at least in part by the inner surfaces of an inductor and defining a solidification zone including said liquid-to-solid interface, comprising:

means for sensing and collecting infrared radiation within said primary casting zone emanating from a vertical peripheral surface at the solidification zone of said load; and

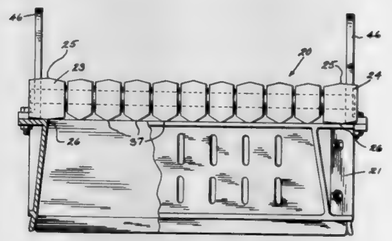


means responsive to said sensing and collecting means for providing a signal representative of the position of said liquid-to-solid interface.

4,522,248
SEGMENTED MOLD WEIGHT AND COMBINATION WITH MOLD JACKET

Wilmer J. Friesen, Hutchinson, Kans., assignor to Vulcan Engineering Co., Helena, Ala.

Filed Aug. 19, 1982, Ser. No. 409,358
Int. Cl.³ B22C *21/00*
U.S. Cl. 164—394 **6 Claims**



1. A mold weight and a mold jacket for use with foundry sand molds having an upper surface provided with at least one area of down sprues; said mold weight comprising a pair of spaced frame members, generally rigid means connecting said members, and a plurality of segmental weight elements disposed between the frame members and carried by the connecting means, said weight elements being further disposed to avoid the area for down sprues, said frame members and said weight elements being movable within limits relative to each other and the connecting means; said mold weight being supportable on the upper edge of the mold jacket; said mold weight and mold jacket being movable vertically relative to each other for respective engagement upon a sand mold and for subsequent removal from the sand mold; said mold jacket upon removal from the sand mold picking up the mold weight with vertical movement and imparting thereby a desired impact to the mold weight to rock and vibrate the weight elements and thereby loosen and clean off any sticking and caked sand picked up from the sand mold.

4,522,249
CONTINUOUS CASTING OF STEEL

Joseph A. Mulcahy, Brooklin, Canada, assignor to J. Mulcahy Enterprises Incorporated, Whitby, Canada

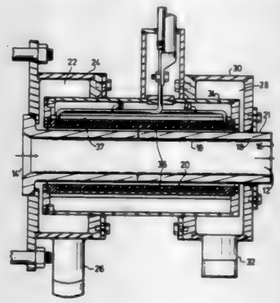
Filed Oct. 3, 1983, Ser. No. 538,216
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—466 **15 Claims**

1. In a method of continuous casting of molten metals by passing the molten metal through a cooled elongate molding zone to effect solidification of the same and removing the solidified metal from the molding zone, the improvement which comprises subjecting said molten metal in said molding zone to a rapidly pulsating high intensity magnetic field to cause inward flexure of said molten metal.

9. A molding apparatus suitable for the continuous casting of metals, comprising:

an elongate tubular mold defining a molding cavity therein, having inner and outer walls and having an inlet for molten metal at one end and an outlet for solidified metal in billet form at the other end, said mold being constructed of electroconductive material;

an annular cavity surrounding and spaced from the outer surface of the tubular mold to define an annular flow passage for the passage of cooling water from one end to the other;



first annular housing means enclosing a first cavity communicating with one end of said annular flow passage and also communicating with an inlet for cooliing water;

second annular housing means enclosing a second cavity communicating with the other end of said annular flow passage and also communicating with an outlet for cooling water;

an electrical coil associated with said tubular mold to apply a magnetic field to said mold upon the passage of an electrical current therethrough, and

means for applying a pulsating d.c. current to said electrical coil to produce a pulsating high intensity magnetic field which induces movement of said mold to decrease the cross-sectional dimension of said molding cavity.

4,522,250
CONTINUOUS CASTING WITH GLYCEROL TRIOLEATE PARTING COMPOSITION

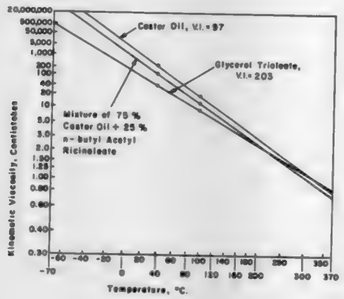
Joseph T. Laemmle, Delmont; John Bohaychick, New Kensington, both of Pa., and Willie Lansdale, Newburgh, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 29, 1982, Ser. No. 454,268
Int. Cl.³ B22D *11/07*
U.S. Cl. 164—472 **12 Claims**

1. A process for the continuous casting of aluminum and its alloys wherein molten metal is cast into a cooled mold having a lubricated inner mold wall, said process comprising the steps of

(a) lubricating an inner wall of a cooled, continuous casting mold with a parting composition consisting essentially of at least about 50 wt% glycerol trioleate, about 0–5 wt% of an oxidation inhibitor and about zero to an effective concentration of a biocide, and

(b) casting a molten metal comprising aluminum or an aluminum base alloy into said mold, whereby said parting com-



position reduces the frequency of hot tears on the surface of the cast metal and has a reduced consumption rate.

4,522,251

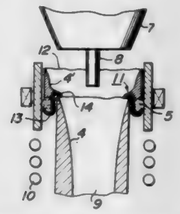
METHOD OF INCREASING CASTING WIDTH FOR A SLAB DURING A CONTINUOUS CASTING OPERATION

Takao Koshikawa; Tsunehiro Ueda, and Tadao Ozeki, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation-in-part of Ser. No. 56,092, Jul. 9, 1979, abandoned, and Ser. No. 276,715, Jun. 23, 1981, abandoned. This application Jan. 17, 1983, Ser. No. 458,646

Int. Cl.³ B22D *11/04*

U.S. Cl. 164—491 **5 Claims**



1. A method of increasing the width of a slab during a continuous casting operation, comprising:

providing a tapered casting mold having a narrow side;

pouring molten steel into the mold to produce a continuously cast slab;

stopping temporarily the pouring of the molten steel and the casting of the slab;

moving the narrow side of the mold to a predetermined width corresponding to a predetermined increased width of the slab, so as to form a space between the narrow side of the mold and the solidified shell of the slab;

inserting into the space, a closing member provided with a curved metal plate and suspenders, the metal plate having a length 0–2 mm shorter than the thickness of the slab, and a width 1–5 mm smaller than the increased width of the slab at the location of the closing member, but being substantially the same as the increased width of the slab at the lower end of the mold;

engaging the suspenders with the upper edge of the solidified shell of the slab;

filling a cooling and sealing material in the space formed on the closing member, up to a height of one-half of the suspended length of the closing member, and forming a clearance of 1–5 mm between the closing member and the narrow side of the mold; and

starting again the pouring of the molten steel and the casting of the slab, followed by the drawing out thereof.

4,522,252

METHOD OF OPERATING A LIQUID-LIQUID HEAT EXCHANGER

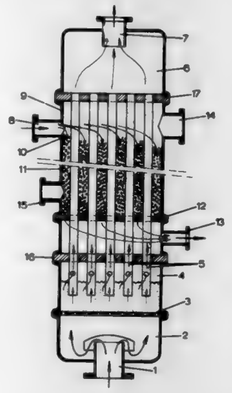
Dick G. Klaren, Hillegom, Netherlands, assignor to Esmil B.V., Amsterdam, Netherlands

Filed May 17, 1983, Ser. No. 495,517

Claims priority, application Netherlands, May 21, 1982, 8202096

Int. Cl.³ F28C *3/16;* **F28F** *9/24*

U.S. Cl. 165—1 **5 Claims**



1. Method for improving the speed of passage of a second heat-exchanging medium in operating a liquid-liquid heat exchanger comprising the steps of passing a first heat exchanging medium upwardly through a plurality of upwardly directed tubes while a granular mass is kept fluidized in said tubes by the flow of the first medium and passing a second heat-exchanging medium downwardly through a chamber through which said tubes extend spaced apart whereby heat-exchange takes place in the chamber through the tube walls, said chamber containing around and betwwen the tubes a loosely packed solid particulate ceramic filling material through which the second medium flows, and the longitudinal superficial velocity of the second medium between the tubes ($U_{l,s}$) satisfying the relation $0.05 < U_{l,s} < 0.25$ m/sec.

4,522,253

WATER-SOURCE HEAT PUMP SYSTEM

Bennett Levin, Narberth, Pa., assignor to The Bennett Levin Associates, Inc., Philadelphia, Pa., Retirement Plan Trust

Filed Aug. 10, 1983, Ser. No. 521,928

Int. Cl.³ F24F *3/14*

U.S. Cl. 165—18 **10 Claims**

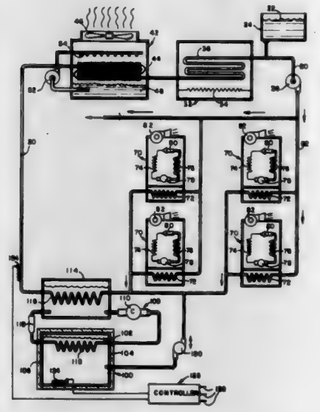
1. A heat pump system for efficiently heating and cooling a plurality of zones, comprising:

a circulation conduit for circulating a heat transfer fluid in a loop including a controllable fluid heater, a controllable fluid cooler and a pump for forcing the fluid around the loop, the fluid having a first temperature;

a plurality of zone heat pumps, each disposed between an individual zone of the plurality of zones and the circulation conduit, each of the zone heat pumps having means for controllably transferring heat in both directions between the fluid and the individual zone;

a heat storage loop including a connecting heat pump having an evaporator in heat transfer contact with the fluid in the circulation conduit and a condenser in heat transfer contact with a heat storage fluid in contact with a thermal reservoir, the connecting heat pump being operative to transfer heat from the heat transfer fluid in the circulation conduit to the heat storage fluid in contact with the reservoir, said heat storage fluid having a second temperature,

higher than said first temperature, whereby excess heat is concentrated and stored in a small volume; and,



means for extracting heat from the reservoir and adding extracted heat to the heat transfer fluid in the circulation conduit.

4,522,254

HEAT STORAGE TROUGH

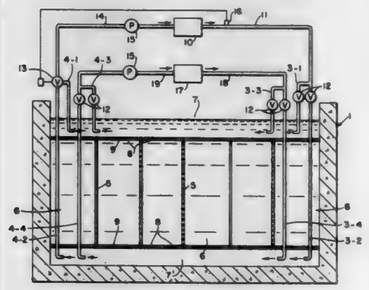
Hajime Koizumi; Shumpei Ohara, both of Tokyo; Kiyoshi Kouda, Funabashi; Muneshige Nagatomo; Noriyasu Sagara, both of Tokyo; Satoshi Togari, Tama, and Hiroo Izumiyama, Kodaira, all of Japan, assignors to Kajima Kensetsu Kabuhiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1982, Ser. No. 419,958

Claims priority, application Japan, Sep. 30, 1981, 56-156004

Int. Cl.³ F24J *3/02;* **F28D** *21/00*

U.S. Cl. 165—34 **12 Claims**



1. A heat storage device comprising: a heat transfer fluid storage tank having an interior wall surface; a vertically elongated cell within said tank having vertical wall means formed to enclose an unobstructed interior chamber, said wall means starting and terminating at its outer periphery; an upper horizontal perforated plate extending and secured about its periphery to said vertical wall means and positioned below the top edge of said tank to provide an upper storage space therebetween; and a lower horizontal perforated plate extending and secured about its periphery to said vertical wall means and positioned above the bottom of said tank to provide a lower storage space therebetween, said upper and lower plates being positioned closer to said tank top edge and said tank bottom respectively than to each other; means to transport heat transfer fluid to and from said upper storage space; means to transport heat transfer fluid to and from said lower storage space; and means to selectively regulate the flow of heat transfer fluid into and out of said upper and lower spaces; a primary heat exchanger; a secondary heat exchanger; conduit means to selectively transport heat transfer fluid from said primary heat exchanger to said upper and lower spaces; conduit means to selectively transport heat transfer fluid from said upper and lower spaces to said primary heat exchanger; conduit means to selectively transport heat transfer fluid from said secondary heat exchanger to said upper and lower spaces; and conduit means to selectively transport heat transfer fluid from said upper and lower spaces to said secondary heat exchanger.

4,522,255

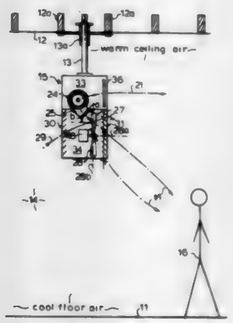
SPOT THERMAL OR ENVIRONMENTAL CONDITIONER

Gary C. Baker, P.O. Box 998, Jonesboro, Ark. 72401

Filed Aug. 5, 1982, Ser. No. 405,437

Int. Cl.³ F25B *29/00;* **F24F** *7/007*

U.S. Cl. 165—48 R **14 Claims**



1. In a building structure having a floor and a ceiling for limiting the vertical movement of the air in the space therebetween, the air temperature in the lower level floor zone of said space being lower than that in the upper level ceiling zone, and a housing having at least one compartment therein mounted substantially between said zones, a spot thermal conditioning apparatus selectively operable in warming and cooling modes, respectively, and comprising

first power means for flowing a first mass of said warm ceiling air into said compartment;

second independent power means for concurrently flowing a second mass of said cool floor zone air into the compartment, said masses intersecting at an acute angle to form an air mixture having a temperature intermediate the temperatures of the air in said ceiling and floor zones;

said first means being positioned immediately adjacent said second means and causing said first mass to intersect said second mass in proximity to said second means;

means for varying the ratio between said flowing masses to cause predominantly warm ceiling air and subordinately cool floor air to be flowed into said mixture during the warming mode and subordinately warm ceiling air and predominantly cool floor air to be flowed into the mixture during the cooling mode, and

means for projecting a concentrated high velocity stream of said air mixture horizontally and downwardly from said compartment, said stream being tightly focused toward an open spot work area substantially surrounded by said floor zone air.

4,522,256

APPARATUS FOR THE EXTRACTION OF VAPOR FROM A MASH AND/OR WORT TUB

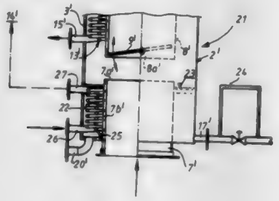
Alfons Wolfseder, Freising, Fed. Rep. of Germany, assignor to Anton Steinecker Maschinenfabrik GmbH, Freising, Fed. Rep. of Germany

Filed Feb. 22, 1983, Ser. No. 468,128

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1982, 3214065

Int. Cl.³ F28F *13/06*

U.S. Cl. 165—103 **13 Claims**



1. Apparatus for extracting vapor from a mash or wort tub having a vapor delivery pipe through which said vapor flows, said apparatus comprising an upright housing closed at its bottom by a wall through which said delivery pipe extends, said housing having an external side wall encircling a vapor vent pipe having its lower end in spaced, substantially axial alignment with said vapor delivery pipe, said vent pipe being spaced from said side wall to form with said bottom wall a condensing chamber between said side wall and said vent pipe; helical tube condenser means accommodated in said condensing chamber; valve means mounted adjacent the lower end of said vent pipe for selectively directing vapor issuing from said delivery pipe to said chamber, or to said vent pipe, or to both; and means at the bottom of said chamber for draining condensate therefrom.

4,522,257

TUB VAPOR CONDENSER

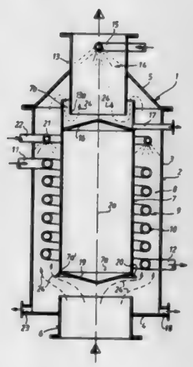
Alfons Wolfseder, Freising, Fed. Rep. of Germany, assignor to Anton Steinecker Maschinenfabrik GmbH, Freising, Fed. Rep. of Germany

Filed Feb. 22, 1983, Ser. No. 468,162

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1982, 3214065

Int. Cl.³ F28B *3/04*

U.S. Cl. 165—113 **13 Claims**



1. A two stage condenser for use with vapours gas rising from a mash or wort tub, said condenser comprising an upright hollow housing having a side wall, a bottom, and a cover; a hollow body within said housing having a peripheral wall and bottom wall; a vent pipe sealingly extending through the bottom of said housing, said peripheral wall of said body and said side wall of said housing defining an annular chamber therebetween in communication with said vent pipe; a vent tube sealingly extending through said cover and projecting into said hollow body from the upper end thereof, the cross-sectional dimension of said vent tube being smaller than that of said peripheral wall to define therebetween an annular passage in communication with said annular chamber; a deflector within said body adjacent said vent tube for deflecting into the latter gas from said annular chamber; cooling means within said annular chamber for cooling said gas and condensing vapour therefrom; means for spraying a liquid into said vent tube and onto said deflector; first extraction means for extracting liquid collected on said deflector; and second extraction means independent of said first extraction means for extracting condensate from said annular housing.

4,522,258

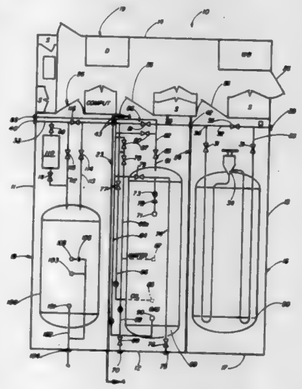
UNITIZED WELL TESTING APPARATUS FOR USE IN HOSTILE ENVIRONMENTS

Jack J. DeWald, 7323 W. Roadway, New Orleans, La. 70124

Filed May 14, 1982, Ser. No. 378,107

Int. Cl.³ E21B *43/00, 43/34*

U.S. Cl. 166—57 **9 Claims**



1. A modular well testing unit for use in hostile environments, comprising:

a. a plurality of modular sections providing upon assembly a composite, unitized, enclosed structure for housing the components of the well testing unit, each modular section being self supporting and transportable;

b. means for assembling the modular sections together to form the composite, unitized, enclosed structure;

c. wall and insulation means for each of the units which are adapted to provide upon assembly of the modular sections an internal controlled environment surrounded by a substantially continuous external shell;

d. internal access means between adjacent sections for allowing access between adjacent modular sections without traveling outside the external shell;

e. production fluid intake means for intaking a production gas/fluid stream from an oil/gas well to be tested;

f. crude oil outlet means for discharging oil from the assembled enclosure;

g. a plurality of well testing fluid handling components comprising at least in part heat exchanger means, surge tanks, transfer pump and separator means for separating the production stream into components disposed respectively in said modular sections; and

h. manifold means in each modular unit for forming fluid flow connections between the outlet means, the inlet means and the components, said manifold means including connection means for forming easily detachable direct fluid conveying connections between adjacent modular units so that the manifold means for all the modular units can be connected without traveling outside the external shell.

4,522,259

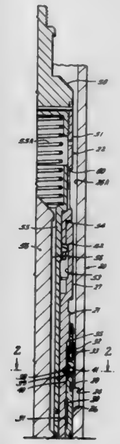
WELL APPARATUS

Neil H. Akkerman, Kingwood, Tex., assignor to AVA International Corporation, Houston, Tex.

Filed Apr. 29, 1983, Ser. No. 489,827

Int. Cl.³ E21B *23/02*

U.S. Cl. 166—237 **55 Claims**



1. For use in a well string having a well conduit with a locking groove and a cylindrical bore, apparatus comprising a wire line running tool, a well tool including a body releasably connectible to the running tool for lowering therewith into the well string, locking means carried by the body in normally contracted position, sensing means carried by the body, and means responsive to movement of the sensing means into engagement with the bore for enabling the locking means to be expanded into the locking groove, and, when the locking means is so expanded, enabling the running tool to be released from connection to the body upon further manipulation of the running tool.

4,522,260

METHOD FOR CREATING A ZONE OF INCREASED PERMEABILITY IN HYDROCARBON-CONTAINING SUBTERRANEAN FORMATION PENETRATED BY A PLURALITY OF WELLBORES

Herbert B. Wolcott, Jr., Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 366,510, Apr. 8, 1982, Pat. No. 4,446,918. This application Feb. 23, 1984, Ser. No. 583,065

Int. Cl.³ E21B *43/24, 43/247, 43/30*

U.S. Cl. 166—245 **13 Claims**

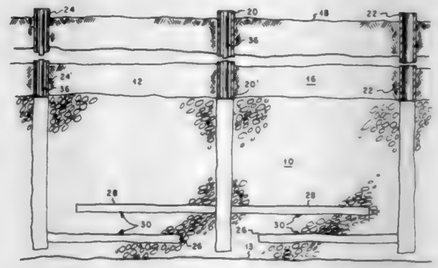
1. A method for creating a zone of increased permeability in a subterranean hydrocarbon-containing formation selected from the group consisting of tar sands, heavy oil-containing formations, oil shales and tight gas reservoirs penetrated by a plurality of wellbores, said method consisting essentially of:

(a) penetrating said formation with a first wellbore;

(b) positioning a plurality of other wellbores about said first wellbore, each of said other wellbores having at least one substantially horizontal borehole extending therefrom into the vicinity of said first wellbore;

(c) extending a plurality of substantially horizontal boreholes from said first wellbore into the vicinity of said other wellbores

(d) positioning explosive charges in at least a portion of said boreholes; and,



(e) detonating the explosive charges to produce a rubblized zone between said first wellbore and said other wellbores.

4,522,261

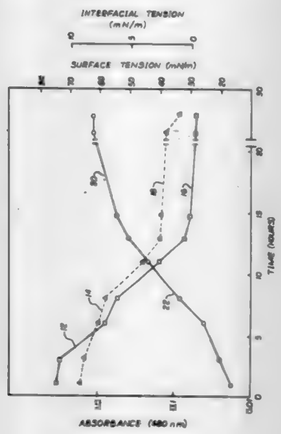
BIOSURFACTANT AND ENHANCED OIL RECOVERY

Michael J. McInerney; Gary E. Jenneman; Roy M. Knapp, and Donald E. Menzie, all of Norman, Okla., assignors to The Board of Regents for the University of Oklahoma, Norman, Okla.

Filed Apr. 5, 1983, Ser. No. 482,308

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—246 **22 Claims**



1. A process for enhancing the amount of oil recoverable from a waterflooded oil-containing formation comprising:

injecting a quantity of viable *Bacillus licheniformis* strain JF-2 cells into the waterflooded oil-containing formation; and

injecting a quantity of *Bacillus licheniformis* strain JF-2 nutrient into the waterflooded oil-containing formation.

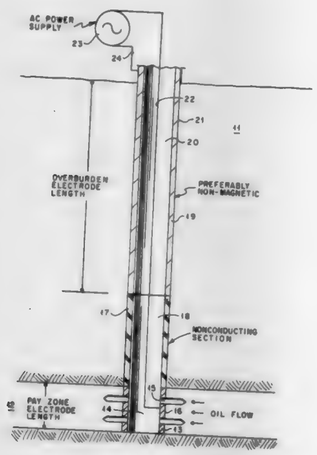
17. A process for enhancing the amount of oil recoverable from a waterflooded oil-containing formation comprising:

injecting a quantity of lichenysin into the oil-containing formation.

4,522,262
SINGLE WELL ELECTRICAL OIL STIMULATION

Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 30, 1983, Ser. No. 509,736
Int. Cl.³ E21B *36/04, 43/24*
U.S. Cl. 166—248 9 Claims



1. In a single well method of applying heat to a subsurface formation containing a viscous hydrocarbonaceous material to stimulate oil production therefrom, said subsurface formation being overlain by an overburden, the improvement comprising the steps of:

(a) causing an alternating current to flow between a lower metal electrode of relatively small surface area located essentially in said subsurface formation and an upper tubular metal electrode of relatively large surface area located in said overburden, said upper electrode being essentially comprised of an electrically conductive non-magnetic metal thereby causing said current to flow through said upper electrode with reduced hysteresis losses in said upper electrode in comparison to the hysteresis losses that would occur if said upper electrode were essentially comprised of steel, at least a part of said lower electrode being tubular and being connected at its upper end to the lower end of an electrically nonconducting tubular isolation means; and

(b) producing hydrocarbonaceous fluid through said lower electrode to the surface of the earth.

7. Apparatus for applying heat to a subsurface formation containing a hydrocarbonaceous material, said subsurface formation being overlain by an overburden, comprising:

(a) alternating current power source;

(b) lower steel electrode means positioned opposite said formation, said lower electrode means being electrically connected to said power source, at least a portion of said lower electrode means being tubular in shape, the outer surface of said lower electrode being in contact with said formation;

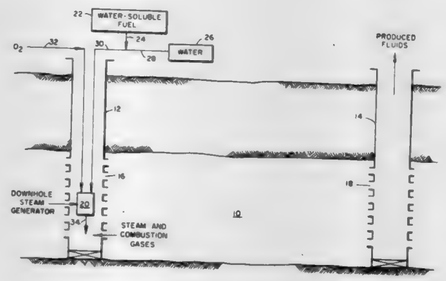
(c) upper electrically conductive nonmagnetic metal electrode means positioned in said overburden, said upper electrode means being electrically connected to said power source, said upper electrode being predominantly tubular in shape, the outer surface of said upper electrode means being in contact with said overburden; the surface area of said upper electrode means being at least five times larger than the surface area of said lower electrode means; and

(d) electrically nonconductive tubular-shaped intermediate isolation means connected at its lower end to said lower electrode means.

4,522,263
STEM DRIVE OIL RECOVERY METHOD UTILIZING A DOWNHOLE STEAM GENERATOR AND ANTI CLAY-SWELLING AGENT

Daniel N. Hopkins, Dallas, and Earl S. Snavely, Arlington, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 23, 1984, Ser. No. 573,094
The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—272 29 Claims



1. In a method of recovering viscous oil from a subterranean, permeable, viscous oil-containing formation, said formation being penetrated by at least one injection well and at least one spaced-apart production well, said wells in fluid communication with a substantial portion of the formation, comprising:

(a) mixing a water-soluble fuel with water containing an anti clay-swelling agent;

(b) injecting said mixture of water-soluble fuel dissolved in water containing an anti clay-swelling agent under pressure into a steam generation zone in said injection well;

(c) injecting substantially pure oxygen into said steam generation zone under pressure via said injection well which contacts the pressurized mixture of water-soluble fuel and water thereby effecting spontaneous combustion of said fuel to generate a mixture of wet steam and combustion gases that pass through the formation, displacing oil and reducing the oil's viscosity; and

(d) recovering fluids including oil from the formation via the production well.

15. In a method for recovering viscous oil from a subterranean, permeable, viscous oil-containing formation, said formation being penetrated by at least one well, said well in fluid communication with a substantial portion of the formation, comprising:

(a) mixing a water-soluble fuel with water containing an anti clay-swelling agent;

(b) injecting said mixture of water-soluble fuel dissolved in water containing an anti clay-swelling agent under pressure into a steam generation zone in said injection well;

(c) injecting substantially pure oxygen into said steam generation zone under pressure via said well which contacts the pressurized mixture of water-soluble fuel and water thereby effecting spontaneous combustion of said fuel to generate a mixture of wet steam and hot combustion gases that pass through the formation, displacing oil and reducing the oil's viscosity;

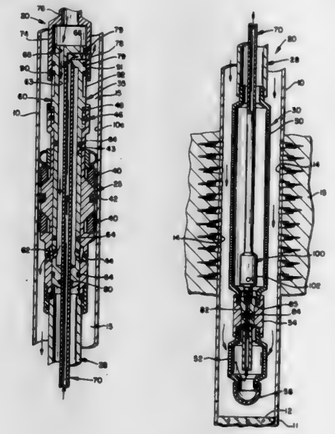
(d) continuing injecting said pressurized mixture of water-soluble fuel dissolved in water and substantially pure oxygen for a predetermined period of time; and

(e) thereafter, discontinuing fluid injection of step (d) and opening said well to production so that fluids including oil are recovered from the formation.

4,522,264
APPARATUS AND METHOD FOR TREATING WELLS

Johnny C. McNeer, Lake Charles, La., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Sep. 2, 1983, Ser. No. 529,165
Int. Cl.³ E21B *43/04, 43/10*
U.S. Cl. 166—278 22 Claims



1. Apparatus for treating a well, comprising:

a. well packer means;

b. well screen means connected below said packer means;

c. means providing lateral flow port means between said packer means and said screen means; and

d. service seal unit tool means attached to said packer and attachable to a pipe string, said service seal unit tool means including:

i. tubular body means telescopically engaged in said packer means,

ii. means on said tubular body means sealing both above and below said lateral port means,

iii. tubular wash pipe means extending through said tubular body means and said packer and having its upper end opening outwardly into the well annulus above the packer while its lower end opens into said screen means, said wash pipe having a lateral circulation port in its wall communicating with the interior of the screen means,

iv. means sealing between the screen means and the wash pipe below said lateral circulation port, and

v. means initially closing said lateral circulation port said means being movable to port-open position automatically when the pressure exterior of the wash pipe exceeds the pressure interior thereof by a predetermined amount.

4,522,265
METHOD FOR FRACTURING OF OIL SHALE

Teh F. Yen, Altadena, and Mankin Chan, Los Angeles, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed Feb. 25, 1980, Ser. No. 124,167
Int. Cl.³ E21B *43/27;* C10B *53/06*
U.S. Cl. 166—307 10 Claims

1. A method of treating shale to induce fracturing, said shale being a carbonaceous rock whose organic content is substantially kerogen, said shale having a gas permeability of less than 10^{-5} darcys, but having sufficient organic content and/or shallow burial, comprising the step of contacting said shale

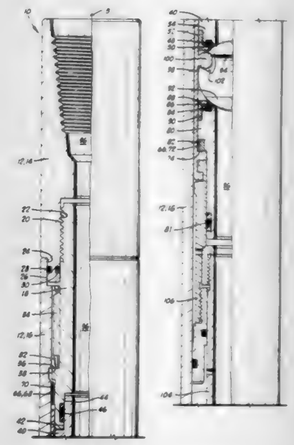


with an effective amount of an amino compound for a time sufficient to fracture said shale.

4,522,266
DOWNHOLE TESTER VALVE WITH RESILIENT SEALS

Burchus Q. Barrington, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 5, 1982, Ser. No. 355,231
Int. Cl.³ E21B *34/06*
U.S. Cl. 166—330 9 Claims



1. A downhole tool apparatus comprising:

a cylindrical downhole housing;

a ball valve disposed in said housing;

an operating means, operatively associated with said ball valve for rotating said ball valve within said housing upon relative longitudinal movement between said operating means and said ball;

first and second seat holder assemblies disposed on diametrically opposite sides of said ball valve, said first seat holder assembly including:

a first seat holder;

a first seat retainer detachably connected to said first seat holder to define a first annular groove for receiving first seat; and

an annular resilient first seat captured in said first annular groove so that said first seat holder and first seat retainer must be disconnected to remove saif first seat from said

first annular groove, and wherein said first seat extends out of said first annular groove so that said ball valve engages said first seat without engaging said first seat holder or said first seat retainer; and

adjustable holding means, operably associated with said first and second seat holder assemblies, for holding said first and second seat holder assemblies in place on said opposite sides of said ball valve, said holding means being adjustable via a threaded connection between two parts thereof to vary a compressional preload of said first seat and of an annular resilient second seat of said second seat holder assembly against said ball valve, said adjustable holding means including:

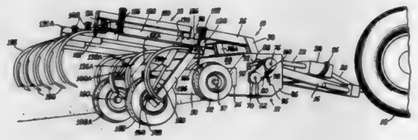
a cylindrical collar having said ball valve and portions of said first and second set holder assemblies disposed therein, said collar having a longitudinal opening through which a pin of said operating means extends, said collar being one of said two parts forming threaded connection.

4,522,267

SHREDDER/PLOW COMBINATION

Richard A. Lewison, Pocahontas, Iowa, assignor to Ronald D. Wetherell, Cleghorn, Iowa

Filed Dec. 13, 1982, Ser. No. 448,937
Int. Cl.³ A01B *49/04*
U.S. Cl. 172—28 **19 Claims**



1. A shredder/plow combination adapted to be drawn by a tractor in an intended direction of travel, said tractor having a source of hydraulic power, a rear hitch and a rear power takeoff, said shredder/plow combination comprising:

a trailer hitch frame having a rear end and a front end adapted to be securely coupled to the rear hitch of said tractor;

a shredder assembly coupled to the rear end of said hitch frame and including:

a housing wherein is mounted a rotor having an axis of rotation generally perpendicular to said intended direction of travel and a plurality of cutting blades mounted thereon; and

an upwardly arched structural member coupled to and positioned generally above and supporting said housing and including an aft portion and a forward portion, with said structural member including an upwardly extending forward support element coupled to the rear end of said frame, an upwardly extending rear support element and a generally horizontally oriented center support element coupling said forward and rear support elements with said rear support element having a coupling means thereon;

power coupling means for connecting the rear power takeoff off said tractor to said rotor for angularly displacing said cutting blades;

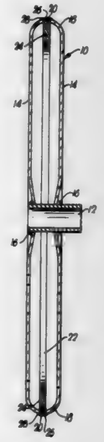
a toolbar assembly including a plow unit mounted thereon, said toolbar assembly including a forward portion thereof coupled to said rear coupling means of said rear support element of said structural member, and transport wheels coupled to said assembly.

4,522,268

PACKER WHEEL

George H. Morris, and Douglas C. Nicholls, both of Yorkton, Canada, assignors to Morris Rod Weeder Co. Ltd., Yorkton, Canada

Filed Dec. 6, 1982, Ser. No. 447,414
Int. Cl.³ A01C *7/20, 13/00*
U.S. Cl. 172—518 **16 Claims**



1. A packer wheel comprising:

a central hub;

a pair of spaced, relatively thin, dish-shaped, generally parallel sheet metal sides having continuous, outermost, inturned margins terminating in opposed, continuous, circular edges disposed in spaced, facing relationship,

said margins converging inwardly and being transversely arcuate, presenting outermost convex surfaces and cancave innermost surfaces,

each side having the margin and the edge thereof integral therewith,

said sides being in circumscribing engagement with the hub and being welded directly thereto in concentric relationship thereto;

a rigid, strengthening annulus of metallic material disposed between said sides medially thereof in surrounding relationship to the hub, said annulus in its entirety being spaced from the hub, and being supported solely by said margins,

said annulus having a continuous, annular periphery proximal to said edges and concentric to the hub;

weld means rigidly uniting the annulus and the sides adjacent said periphery and said edges, and extending radially outward from said margins; and

a peripheral, outwardly extending, ground-engaging, blunt, ground-packing wear rim bearing the load carried by said wheel against the ground,

said weld means continuing uninterruptedly throughout the circumference of said sides.

4,522,269

DUAL MOTOR TORQUE DELIVERING TOOL

Nils G. Adman, Huddinge, and Rolf A. Jacobsson, Johanneshov, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

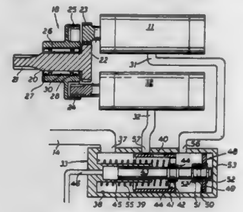
Filed Nov. 18, 1982, Ser. No. 442,769
Claims priority, application Sweden, Nov. 23, 1981, 8106935
Int. Cl.³ B23Q *5/06*
U.S. Cl. 173—12 **6 Claims**

1. In a pneumatic power tool for tightening threaded joints, comprising a housing (10), an air supply passage (14) in said housing (10) communicating with an external pressure air source, a primary motor (11) for obtaining an initial degree of pretension in the joint, a secondary motor (12) for obtaining together with said primary motor (11) the desired final degree of pretension in the joint, said primary and secondary motors (11, 12) each having an air inlet, and a power train (18, 19) for transmitting the power of said primary motor (11) and said secondary motor (12) to an output spindle connectable to the joint,

the improvement comprising:

an air supply valve (33; 133) which includes a cylinder bore (38; 138) in the housing (10) and a valve element (39; 139) which is sealingly guided in said cylinder bore (38; 138),

said cylinder bore (38; 138) having an inlet port (37; 137) communicating with said air supply passage (14), a first service port (56; 156) communicating with said air inlet of



said primary motor (11), and a second service port (57; 157) communicating with said air inlet of said secondary motor (12),

said valve element (39; 139) being arranged in said clyinder bore (38; 138) to control only said second service port (57; 157), said valve element (39; 139) being shiftable between a second service port (57; 157) covering position and a second service port uncovering position, and

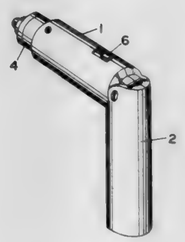
said valve element (39; 139) being balanced between the air pressure in said air supply passage (14) and the back pressure from said primary motor (11) such that an increased back pressure from said primary motor (11) as said initial degree of pretension is reached causes said valve element (39; 139) to move from said second service port covering position to said second service port uncovering position, thereby energizing said secondary motor (12).

4,522,270

HAND-HELD ELECTRIC TOOL

Ichiro Kishi, Hikone, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 30, 1983, Ser. No. 509,773
Claims priority, application Japan, Jul. 16, 1982, 57-124706
Int. Cl.³ B25G *1/00*
U.S. Cl. 173—163 **11 Claims**



1. An electric tool adapted in use to rotatably drive a bit for fastening, drilling and like operations by an electric motor incorporated therein, comprising:

an elongated housing having a first longitudinal axis and housing said motor and a check for holding the bit, drivingly connected thereto, the chuck being accessible from the forward end of the housing;

an elongated grip having a second longitudinal axis; and

said grip being connected at its forward end to the rearward end of the housing by pivot means so as to be selectively pivotal between a straight position where the second longitudinal axis thereof is in line with the first longitudinal axis of the housing or an angled position where the second longitudinal axis thereof crosses with the first longitudinal axis of the housing;

said pivot means comprising a stationary member on either the rearward end of the housing or the forward end of the grip, and a movable member on the other of said rearward end of the housing or forward end of the grip;

said stationary member comprising (a) a pivot tang of smaller dimension than said housing or grip, (b) a main pivot axis near the distal end of said pivot tang, (c) a retractable cover carried by said stationary member having a proximal end pivotally supported on a secondary axis parallel to said main pivot axis and a distal end projecting outwardly and parallel to said pivot tang; said movable member comprising (a) an open end encompassing the stationary member, except the retractable cover, when the tool is in its straight position; (b) means interconnecting with said main pivot axis to hinge said movable member thereon; (c) means positioned to slidably receive the distal end of said retractable cover so that when said tool is in straight position, the stationary member is substantially encompassed by the open end and the retractable cover and when said tool is in its angled position, the major portion of said retractable cover is slid into said receiving means.

4,522,271

METHOD AND APPARATUS FOR DAMPING VIBRATIONS IN DRILL COLLAR STRINGS

Albert G. Bodine, and James N. Gregory, both of 7787 Woodley Ave., Van Nuys, Calif. 91406

Filed Oct. 17, 1983, Ser. No. 542,456
Int. Cl.³ E21B *17/16*
U.S. Cl. 175—56 **9 Claims**



1. In a drill assembly having a drill bit collar string connected to the drill bit pipe for use in rotatably driving the drill collar string and bit, the improvement being means for damping vibratory energy developed in the drill collar string comprising:

an elongated jacket member connected to the drill collar string at a region thereof away from the bit having low accoustical impedance,

means for continually providing fluid communication be-

tween the interior of said jacket member and the ambient environment to facilitate the damping and,

separate pieces of mass reactive material installed within said elongated jacket for limited freedom of motion both longitudinally and laterally relative to each other and to the walls of the jacket,

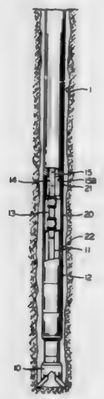
vibratory energy developed in the drill collar string being transferred to said pieces of material causing said pieces to randomly strike against each other thereby dissipating said energy.

4,522,272

APPARATUS FOR DIRECTIONAL DRILLING OF SUBTERRANEAN WELLS

Herbert W. Beimgraben, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Mar. 8, 1983, Ser. No. 473,185
Int. Cl.³ E21B *7/08*
U.S. Cl. 175—74 **3 Claims**



1. An apparatus for effecting directional drilling of a well bore with use of a rotary drill bit, comprising: a drive shaft extending to said rotary drill bit; a first sleeve like housing surrounding and supporting said drive shaft; a motor having an output shaft; a second sleeve like housing enclosing and supporting said motor output shaft; a universal joint connection between said motor output shaft and said drive shaft; concentric male and female threads interconnecting the upper end of first housing and the lower end of said second housing in the axial vicinity of said universal joint connection; said concentric male and female threads having common axes angularly displaced from the housing axes, whereby rotational displacement of one housing relative to the other will angularly displace the axis of the rotary drill bit to change the well bore direction; a radial shoulder formed on each of said housings at the inboard end of said male thread and on the outboard end of said female thread, a selected number of annular shims being insertable between said shoulders to determine the angular displacement of said housing upon tightening of said threads to compress said shims between said radial shoulders, the planes of said radial shoulders being respectively perpendicular to said common axes of said male and female threads.

4,522,273

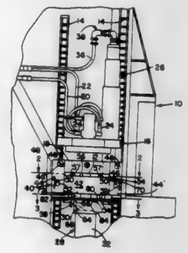
DRILLING RIG

Leslie N. Larson, P.O. Box 334, Mabel, Minn. 55954

Filed May 4, 1981, Ser. No. 260,045
Int. Cl.³ E21B *3/02, 7/20*
U.S. Cl. 175—135 **16 Claims**

1. In combination with drilling apparatus which includes a length of drill rod having an axis of elongation and a bit element at a remote axial end thereof, a drilling tower supporting the drill rod by an end opposite the remote axial end, means carried by the tower for imparting linear axial force to the drill rod in a direction toward the end of the rod at which the bit element is mounted and rotational movement to the drill rod about its axis of elongation, and a segment of casing, similar in length to the drill rod, encircling the drill rod and having an end adjacent the bit element and an opposite end; a device for driving the casing into a hole formed by the bit element to provide an inner retaining wall therefor, comprising:

(a) a percussion assembly mounted to the tower and having a piston laterally spaced from the axis of the drill rod, said piston being disposed for rapid cyclic reciprocation along an axis generally parallel to the axis of the drill rod;



(b) a rigid lever member normally disposed generally transverse to the drill rod and extending between first and second ends, diametrically opposed about the drill rod, and around the drill rod;

(c) means pivotally mounting said member to the tower for receipt of the linear axial force and by said first end for pivoting thereabout, with said second end positioned to be strikingly engaged on an anvil side of said member by said piston as it reciprocates; and

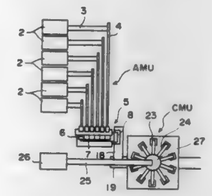
(d) a percussion transmission element disposed axially intermediate said lever member and the casing, said element having a first shoulder axially engaged by a side of said lever member facing oppositely from said anvil side and a second shoulder axially engaging the end of the casing opposite the end adjacent the bit element.

4,522,274

COMBINATORIAL WEIGHING METHOD

Satoshi Konishi, Shiga, and Takashi Sashiki, Nagaokakyo, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Nov. 5, 1982, Ser. No. 439,595
Claims priority, application Japan, Nov. 10, 1981, 56-180674
Int. Cl.³ G01G *19/22, 13/02*
U.S. Cl. 177—25 **13 Claims**



1. A combinatorial weighing method for obtaining a final mixture of articles of plural categories, in which the articles in each category are contained in the mixture at a number ratio equal or closest to a target number ratio, the final mixture having a total weight equal or closest to a target weight, said method comprising the steps of:

(a) setting a number of articles for each category of articles to provide a primary number ratio close to the target number ratio;

(b) measuring the total weight of a primary mixture obtained by extracting the set number of articles in each category determined in said step (a) and mixing these articles together;

(c) computing a weight shortfall by finding the difference between the total weight of the primary mixture and the target weight;

(d) supplying a plurality of weighing machines with supplemental articles which are used to compensate for the weight shortfall, and selecting an optimum combination of weighing machines giving a combined weight equal or closest to the weight shortfall; and

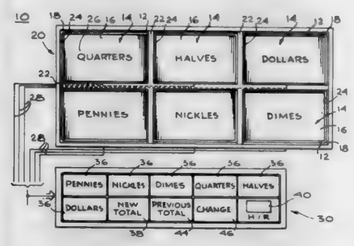
(e) obtaining a final mixture by discharging the supplemental articles from the selected weighing machines forming the optimum combination and mixing these supplemental articles with the primary mixture.

4,522,275

CASH TOTALIZING APPARATUS AND METHOD

Norman L. Anderson, 14160 Redhill Ave. #16, Tustin, Calif. 92680

Filed Jan. 16, 1984, Ser. No. 571,113
Int. Cl.³ G01G *23/22, 19/52, 19/00*
U.S. Cl. 177—25 **16 Claims**



1. An improved cash totalizing apparatus, said apparatus comprising, in combination:

a plurality of separate weight-responsive electronic measuring means, each of said electronic measuring means being adapted to be connected to a different one of a plurality of coin compartments and to generate a signal indicative of the weight of coins in said compartment;

an electronic totalizer display unit interconnected to said electronic measuring means and responsive to said signals, said unit having computing means and display means for depicting at least one of the number of coins in each said compartment and the monetary sum of the coins in each said compartment, and at least one of the present total monetary sum of all coins in said compartments and the total monetary sum of all coins added to or removed from said compartments during a predetermined transaction time period.

4,522,276

INDIVIDUAL NUCLEAR FUEL ROD WEIGHING SYSTEM

James L. Fogg, Columbia; George E. Vining, West Columbia; John H. Smith, and Cecil A. Howell, both of Columbia, all of S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

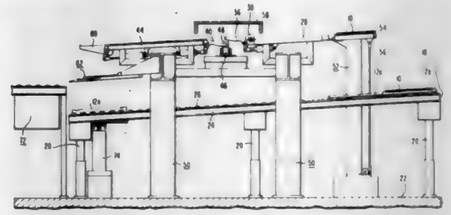
Filed Jun. 20, 1983, Ser. No. 505,669
Int. Cl.³ G01G *19/00, 23/02;* **B65G** *11/33*
U.S. Cl. 177—145 **10 Claims**

1. A system for individually weighing nuclear fuel rods carried on a tray moving from a beginning position to an end position along a length of a materials handling conveyor, comprising:

(a) an overhead ramp disposed above said materials handling conveyor;

(b) means for lifting said rods from said tray, when said tray is at said beginning position, and placing them on said overhead ramp;

(c) a scale fixedly disposed above said materials handling conveyor;



(d) means for loading said rods, one at a time, from said overhead ramp onto said scale for individual weighing; and

(e) means for transferring each weighed said rod from said scale to said tray, when said tray is at said end position.

4,522,277

ROCKING SCALE

Bernard Kotzin, 510 Anderson St., Manhattan Beach, Calif. 90266

Filed Apr. 22, 1983, Ser. No. 487,723
Int. Cl.³ G01G *1/36, 21/22*
U.S. Cl. 177—250 **6 Claims**



1. A weighing device including a body having opposed ends, support means located on said body for supporting said body in a horizontal position on a surface in such a manner that said body can tilt so that either of said ends is higher than the other and holding means for holding an object to be weighed located adjacent to one of said ends of said body in which the improvement comprises:

a counterbalance member located on said body,

guide means on said body holding said counterbalance member so that it can be moved towards and away from said holding means,

indicia means for indicating weight of an object held by said holder by the position of said counterbalance member on said body,

the position of said end of said body upon which holding means is located relative to the position of the other end of said body indicating the weight of an object held by said holder more or less than a specific value indicated by said indicia means,

said indicia means serving to indicate the weight of an object held in said holder when the position of said body relative to said surface is horizontal,

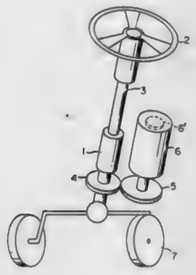
said holding means is only capable of holding an envelope vertically at a specific distance along the horizontal line of the location where said support means engages said surface when the position of said body is horizontal.

4,522,278

TORQUE SENSOR

Junji Kitagawa; Shigeyuki Akita, both of Okazaki; Norimichi Kasegawa, Susono, and Akira Nakamura, Shizuoka, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Division of Ser. No. 325,484, Nov. 27, 1981, Pat. No. 4,448,275.
This application Feb. 15, 1984, Ser. No. 580,186
Claims priority, application Japan, Nov. 28, 1980, 55-168709; Dec. 26, 1980, 55-186270
Int. Cl.³ B62D *5/04*
U.S. Cl. 180—79.1 **7 Claims**



1. A torque sensor comprising:

a first rotor capable of being suitably driven for rotation;

first sensing means provided on said first rotor, for detecting the rotation thereof;

a second rotor provided in the neighborhood of said first rotor and rotatable with respect thereto;

a torsion bar mechanically coupling said first and second rotors;

second sensing means provided on said second rotor and disposed orthogonally to said first sensing means to couple with said first sensing means electromagnetically and to generate an electric signal according to the degree of the electromagnetic coupling between said two rotors variable with relative rotation of said rotors caused via said torsion bar; and

an electric processing circuit for receiving the signal from said second sensing means and generating a signal corresponding to the magnitude of the twist of said torsion bar according to the received signal.

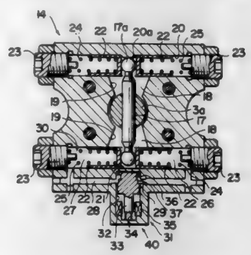
4,522,279

STEERING DEVICE FOR A VEHICLE

Hirotaka Kanazawa, Hiroshima, Japan, assignor to Mazda Motor Corporation, Japan

Filed Mar. 21, 1983, Ser. No. 477,635
Claims priority, application Japan, Mar. 24, 1982, 57-47848; Apr. 21, 1982, 57-67879; Jul. 20, 1982, 57-127136; Jul. 20, 1982, 57-127137; Jul. 31, 1982, 57-134320
Int. Cl.³ B62D *1/20*
U.S. Cl. 180—143 **9 Claims**

1. A steering device for a vehicle having a steering wheel operatively connected to dirigible wheels of the vehicle by way of a steering linkage so that the dirigible wheels are turned in response to rotation of the steering wheel wherein a rotating portion of the steering linkage which is rotated to transmit the steering force of the steering wheel upon rotation of the steering wheel is divided into first and second parts, and the first and second parts are connected by way of resilient means and a damper, the resilient means being adapted to be elastically deformed to produce a rotational displacement between the first and second parts of the rotating portion upon rotation of the steering wheel, said steering device having an adjustment



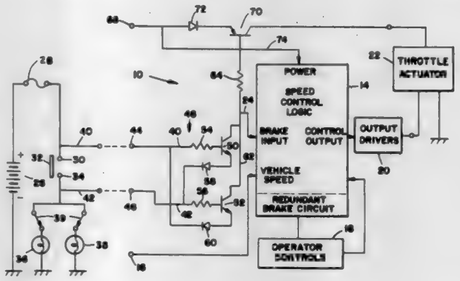
means for changing the damping characteristics of said damper according to the speed of the vehicle.

4,522,280

AUTOMATIC DISENGAGEMENT DEVICE FOR AUTOMOTIVE CRUISE CONTROL SYSTEM

Peter G. Blaney, Walnut Creek, Calif., assignor to Zemco, Inc., San Ramon, Calif.

Filed Jun. 18, 1982, Ser. No. 389,684
Int. Cl.³ B60K *31/00*
U.S. Cl. 180—175 **2 Claims**



1. In a vehicle having a cruise control system and a brake system including a brake switch operable by a pedal and having two contacts, one of which is connected to a power source and the other of which is connected to ground potential, said cruise control system included a logic control section with a set speed input, an actual speed input and providing an output for controlling a throttle actuator to maintain a preselected set speed, and a power lead means connecting a vehicle power bus with said throttle actuator, the improvement of an automatic disconnect device comprising:

an exclusive NOR circuit having a pair of input leads each connected to one contact of said brake switch, a pair of transistors, the base of each transistor being connected to one said input lead, the emitters of each transistor being connected to the opposite input lead, and the collectors connected in parallel to a single output lead that is connected to said control logic section;

a switching transistor in series with said power lead means and a control resistor connected between the base of said switching transistor and said output lead of said exclusive NOR circuit, said output lead normally being held at a low potential by said exclusive NOR circuit which also provides the bias necessary through said control resistor to said switching transistor to cause power to be transmitted from said vehicle power bus to said throttle actuator;

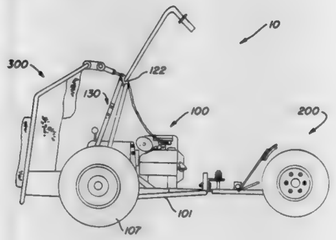
whereby when the vehicle brake switch is closed or if it malfunctions to destroy a return path to ground, said exclusive NOR circuit will cease conducting, thereby allowing said output lead to be pulled to a high potential by the lack of current through said control resistor and providing a primary disengage signal to said control logic section while also removing sufficient bias from said switching transistor to cause it to cease conduction and disconnect said power lead means from said throttle actuator, thereby poviding a secondary safety disengagement for the cruise control system.

4,522,281

MOTORIZED COLLAPSIBLE GOLF CART

William R. Snider, 3238 St. Charles Dr., Steubenville, Ohio 43852

Filed Apr. 20, 1983, Ser. No. 486,778
Int. Cl.³ B62D *55/16*
U.S. Cl. 180—208 **5 Claims**



1. an improved golf cart construction comprising three major components, wherein:

the first major component comprises; a wheeled platform member having a platform mounted above an axle; a brake machanism; and, an elongated rod mounted on the forward end of the platform;

the second major component comprises; a wheeled power member, having an axle mounted above a tubular framework that provides a support surface for a power mechanism, wherein one end of the tubular framework is dimensioned to rest on the rear portion of the said platform when the first and second major components are disassembled; a folding handle assembly comprising a generally V-shaped handle bar member; wherein both the lower portion and the handle bar member are pivotable with respect to the said power mechanism; and, a coupling bracket adapted to connect the said first major component to the second major component, wherein the coupling bracket comprised a generally C-shaped apertured bracket mounted on the rear of the said tubular framework, and the apertures in the bracket are dimensioned to receive the elongated rod on the wheeled platform member and one end of the elongated rod is threaded and provided with a helical spring and cap member, to complete the connection between the first and second major components; and

the third major component comprises a golf club retaining device having a plurality of flexible receptacles and releasable golf club shaft engaging means disposed across a generally rectangular tubular framework, and clamping means for releasably securing said third major component to the second major component.

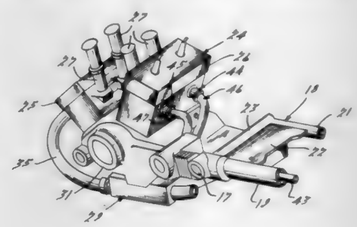
4,522,282

EXHAUST SYSTEM FOR MOTORCYCLE

Hiroshi Yamamoto, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Sep. 27, 1982, Ser. No. 423,559
Int. Cl.³ C60K *13/04;* **F01N** *7/08*
U.S. Cl. 180—219 **15 Claims**

1. In an exhaust system for a motorcycle or the like comprising an engine having an exhaust port, a frame assembly having an element juxtaposed to said exhaust port, and an exhaust device supported at a location spaced from said exhaust port and having an exhaust gas inlet, the improvement comprising an exhaust pipe affixed to said engine in communication with



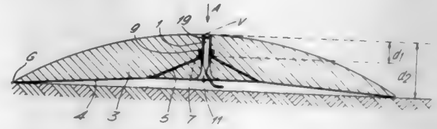
said exhaust port, said exhaust pipe being relatively short in length, and a separately removable connecting pipe extending from the outlet end of said exhaust pipe to said exhaust device exhaust gas inlet.

4,522,283

NOISE MEASUREMENT

Michael J. T. Smith, Newark, England, assignor to Rolls-Royce Limited, London, England

Filed Jun. 4, 1982, Ser. No. 385,264
Claims priority, application United Kingdom, Jun. 17, 1981, 8118642
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—175 **15 Claims**



7. A device for facilitating sound intensity measurements near a sound-reflecting surface, comprising:

a pad of sound absorbent material having an overall shape which converges from a large basal area to a vertex thereby to provide a gradual change in acoustic impedance from said vertex of said pad to said sound-reflecting surface, at least the perimeter of said large basal area being intended to engage said sound-reflecting surface, and

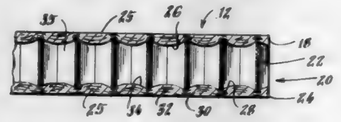
means for housing a microphone within a hole in said pad such that in use said microphone's sound-sensing portion can be positioned substantially at said vertex, the pad incorporating a plate having a shape which converges from a relatively large basal area to a narrower vertex area, said plate having a basal area and a base-to vertex dimension which are substantially smaller than the corresponding dimensions of said pad, said plate being positioned within said pad so that said vertex area is positioned underneath said sound-sensing portion of said microphone, thereby providing a sound-reflecting surface within said pad which is closer to said sound-sensing portion of said microphone than is said sound-reflecting surface beneath said device when said device is positioned thereon, whereby said plate acts to reduce the intensity of low frequency interference pattern at said microphone caused by reflection of low frequency and sound from said sound-reflecting surface beneath said device.

4,522,284

COMPOSITE PANEL STRUCTURE

William W. Fearon, Worthington, and Arnel M. Macy, Columbus, both of Ohio, assignors to Peabody Noise Control, Inc., Dublin, Ohio

Filed Apr. 20, 1983, Ser. No. 486,944
Int. Cl.³ E04B *1/82*
U.S. Cl. 181—292 **8 Claims**



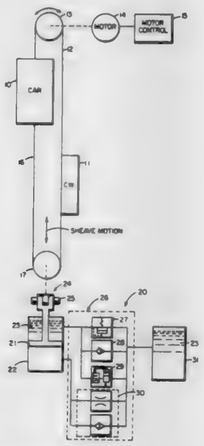
1. A composite panel structure having acoustical absorbing properties, comprising:
a core having structure means forming cells open to at least one side of the core; and
an acoustically semi-transparent facing of fibrous material and a binder formed to provide a relatively hard outer surface of partially bonded fibers with interstices therebetween, the facing being bonded to the structure means at said open side of the core and having portions extending into the adjacent open cells of the core to a depth sufficient to provide a mechanical interlock between the facing and the core to increase the strength of the structure in resisting shear forces adjacent the facing, said portions of the facing being relatively soft and partially filling the adjacent open cells of the core to enhance absorption of acoustic energy directed upon the facing.

4,522,285

HYDRAULIC TIE-DOWN FOR ELEVATORS

John K. Salmon, South Windsor, and Irving A. Hiller, Gales Ferry, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Oct. 20, 1983, Ser. No. 543,703
Int. Cl.³ B22B *11/04*
U.S. Cl. 187—22 **4 Claims**



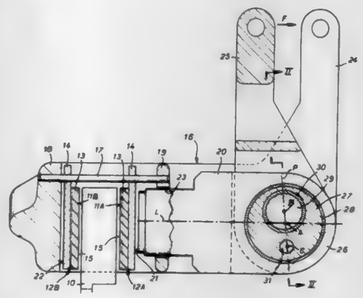
1. An elevator comprising:
a motor drive;
a car;
a counterweight;
a drive rope connecting the car, counterweight, and motor drive for propelling the car and counterweight generally vertically;
a second rope extending from the bottom of the car to the bottom of the counterweight;
a sheave that is located below the car and which guides the second rope as the car and counterweight move;
said elevator characterized in that it includes a hydraulic control for controlling the vertical movement of the sheave that comprises:
a piston connected to the sheave;
a cylinder in which said piston moves vertically within fluid that is contained in the cylinder;
a reservoir for the fluid;
a valve control that controls fluid flow between the cylinder and the reservoir as the piston moves in response to the sheave's movement and comprises first valve means for allowing a maximum fluid flow rate from the cylinder to the reservoir during a piston upstroke and for stopping said flow in response to maximum positive rate of change in the fluid flow from the cylinder to the reservoir during a piston upstroke.

4,522,286

BRAKE CONTROL DEVICE

Gino Villata, Via Moriondo, 24, 14021 Buttigliera d'Asti, and Oreste Becchio, Via San Giuseppe, 1, 12030 Caramagna Piemonte, both of Italy

Filed Apr. 19, 1982, Ser. No. 369,636
Claims priority, application France, Apr. 17, 1981, 81 07811
Int. Cl.³ F16D *55/08*
U.S. Cl. 188—72.7 **16 Claims**



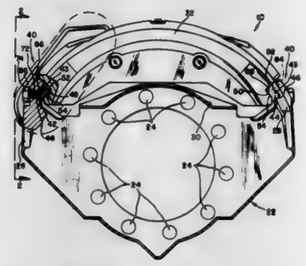
1. A brake control device of the kind operable to apply at least one friction element against a rotatable friction track, comprising a support, a push-rod slidably engaged with said support for movement between an extreme position of rest, and an extreme braking position in which said push-rod applies said at least one friction element against the friction track, a lever connected to the push-rod by cam means, said cam means comprising on the one hand a core fixed to said lever and rotatably mounted on said push-rod and, on the other hand, a cylindrical journal mounted on the support, said core being rotatably mounted about said cylindrical journal and having a cylindrical outer surface which is eccentric relative to said cylindrical journal, said core and said lever consisting of two separate parts which are mounted side by side for conjoint rotation about said journal, and assembly means by which said core and lever are fixed to each other.

4,522,287

DISC BRAKE WITH CAMMING MEMBER AND TORSION SPRING FOR VIBRATION CONTROL

Kurt R. Heidmann; Jon S. Canale, and Hans Burkhardt, all of Elyria, Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed May 7, 1982, Ser. No. 375,925
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.35 **10 Claims**



1. Disc brake assembly comprising a rotor mounted for rotation with a member to be braked, said rotor having a pair of friction faces, a pair of friction elements disposed adjacent said friction faces, a caliper for urging said friction elements into braking engagement with said friction faces, a support member for said caliper, and means for slidably mounting said caliper on said support member, said slidably mounting means including a camming member carried by said support member and slidably engaged by said caliper, and means for yieldably rotating said camming member, said rotating means including a torsion spring engaging said camming member and yieldably biasing the latter in a predetermined rotative direction, said torsion spring including a loop, one end of said loop terminating in a first connecting portion for securing said loop to said camming member, the other end of said loop terminating in a second connecting portion engaging said caliper to thereby stress said loop to cause the latter to provide a yieldable rotating force through said first connecting portion to said camming member.

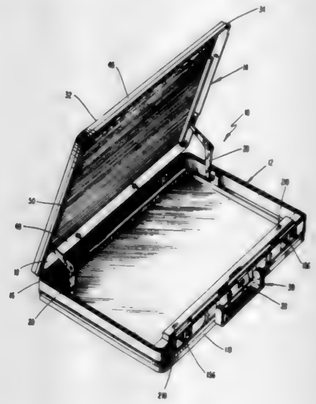
4,522,288

LUGGAGE

John A. Wickman, Swansea, Mass.; John J. Killion, III, Warren, R.I., and Charles Deschenes, North Attleboro, Mass., assignors to American Tourister, Inc., Warren, R.I.

Filed Nov. 7, 1983, Ser. No. 549,552
Int. Cl.³ A45C *5/10*
U.S. Cl. 190—106 **4 Claims**

1. In a container of the type comprising a box member, a lid member hinged thereto, and at least one stay assembly interconnecting said members to retain said lid member in an open position, the improvement wherein said stay assembly comprises first and second links interconnected at mutually adjoining ends for rotation about an axis, another end of said first link being rotatably connected to one of said members, and another end of said second link being rotatably connected to the other of said members, said links being relatively rotatable about said axis between lid-open and lid-closed positions, a resiliently flexible non-metallic washer interposed between said adjoining ends of said links such that said axis passes through said washer, said washer being disc-shaped and including a generally planar first side bearing against said adjoining end of said first link and a second, opposite side facing said adjoining end of said second link, means preventing relative rotation between said washer and said first link, while relative rotation between said washer and said second link is permitted, said first side of said washer including at least one recess which renders an overlying section of said second surface to be resiliently flexible away from the plane of said adjoining end of said second link, a shoulder formed on said section of said second surface and projecting toward said second link, a projection disposed on said adjoining end of said second link and directed toward said washer so as to flex said resiliently flexible section away from said plane and into said recess in response to relative rotation between said lid and box members to a lid-open position until said projection travels beyond said shoulder enabling the latter to rebound toward said plane, whereby said shoulder yieldably resists reverse travel of said projection.

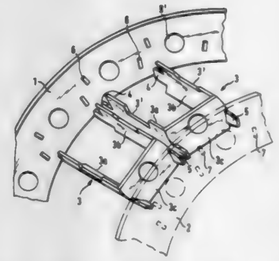


4,522,289

RETAINER RING FOR A FREEWHEEL CLUTCH

Emil Giese; Ruprecht Maurer, both of Bad Homburg, and Max Hagen, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Ringspann Albrecht Maurer K.G., Bad Homburg, Fed. Rep. of Germany

Filed Dec. 22, 1982, Ser. No. 452,043
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1981, 3151727
Int. Cl.³ F16D *41/07*
U.S. Cl. 192—41 A **11 Claims**



1. A retainer ring for a freewheel clutch, comprising:
(a) an annular disc having an axis and two opposite faces perpendicular to said axis; and
(b) a plurality of separate, mutually independent sprag-guiding clips mounted on one of said faces of said annular disc in a circumferential distribution about said axis; each clip extending parallel to said axis and defining a cage for holding captive by itself, at least in a radial direction, a sprag having a circumferential surface and opposite end faces; each clip comprising
(1) two parallel, circumferentially spaced legs extending from said one face and being parallel to said axis; said legs bounding said cage and extending along opposite sides of the circumferential surface of the sprag; and
(2) a web interconnecting said two legs at ends thereof

remote from said one face of said annular disc; said web bounding said cage and extending along one of the end faces of the respective sprag.

4,522,290

FRICTIONAL LINING FOR A WET CLUTCH OR BRAKE

Rainer Klink, Kernen, Fed. Rep. of Germany, assignor to Deutsche Automobilgesellschaft mit beschrankter Haftung, Fed. Rep. of Germany

Filed Nov. 16, 1982, Ser. No. 442,126

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3145999

Int. Cl.³ F16D *13/62, 13/72, 43/18*

U.S. Cl. 192—107 M **8 Claims**



1. A frictional lining for a wet clutch or brake comprising a resin-free wood with an average raw density in dried condition (δo) of at least about 550 kilograms per cubic meter, the fibers of the resin-free wood running substantially parallel to the frictional direction of the clutch or brake.

4,522,291

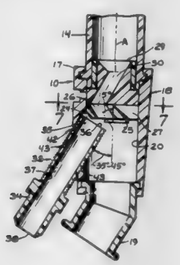
SEED FLOW DIVIDER ATTACHMENT FOR SEED DRILLS

D. Neal Smick, Box 158, Connell, Wash. 99326

Filed Jun. 27, 1983, Ser. No. 508,027

Int. Cl.³ B65G *11/00*

U.S. Cl. 193—23 **20 Claims**



1. A seed flow divider attachment for a seed drill having a primary seed delivery tube for receiving seed from a seed hopper and guiding the seed along a primary flow path to a discharge, the attachment comprising:

a hollow insert having a central open bore extending between open ends, mountable to the seed drill such that the seeds flowing along the primary flow path will pass through the open central bore;

deflector means within the hollow insert for angularly deflecting seed passing through the hollow insert through a prescribed angle of deflection;

seed interceptor means mounted to the hollow insert adjacent the deflector means to intercept a prescribed percentage of seed deflected by the deflector means and direct the intercepted seed to a secondary flow path divergent from the primary seed flow path;

wherein the seed interceptor means includes a tube for receiving and guiding interceptor seed from the primary flow; and

adjusting means for selectively positioning the tube within the hollow insert to correspondingly vary the amount of seed intercepted thereby and directed to the secondary flow path.

4,522,292

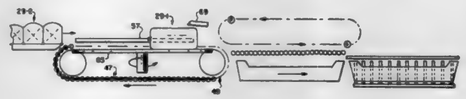
PATTERN FORMING APPARATUS AND PRODUCT ORIENTER THEREFOR

Maynard R. Euverard, Williamsburg, Va.; James J. Diver, South Holland, and Thomas C. Schneider, Oak Forest, both of Ill., assignors to Velten & Pulver, Inc., Chicago Ridge, Ill.

Filed Jan. 12, 1983, Ser. No. 457,431

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—374 **35 Claims**



1. Product orienting apparatus comprising means for conveying product in a generally longitudinal path of travel, and support means disposed in said path, said support means including reorienting means defining a fixed reorienting plane and movable for reorienting said product in said plane with respect to said path, said support means including transfer means continuously movable parallel to said reorienting plane for receiving said product from said conveying means along said path and supportively carrying said product to a position overlying said reorienting means and depositing the product thereon and discharging the reoriented product along said path.

4,522,293

DEVICE FOR TRANSFERRING EGGS FROM A FEEDING CHAIN TO RETAINING MEMBERS MOVING BEHIND EACH OTHER

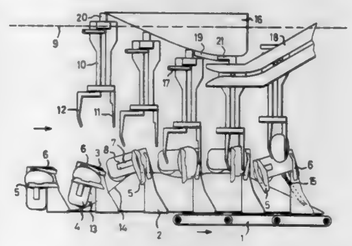
Hendrik J. van Kattenbroek, Barneveld, Netherlands, assignor to Moba Holding Barneveld B.V., Barneveld, Netherlands

Filed Dec. 21, 1981, Ser. No. 332,597

Claims priority, application Netherlands, Jan. 9, 1981, 8100085

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—377 **9 Claims**



1. Device for transferring eggs from a source of eggs in which the egg axes are horizontal, said device comprising

an endless conveying means for conveying in a vertical plane;

first retaining members mounted on said conveying means for receiving and gripping an egg which axis is horizontal, each of said first retaining members comprising a plurality of gripping fingers, at least one of which is movable with respect to at least another gripping finger, and means for rotating the egg into a position in which the egg axis is vertical;

a conveyor;

a plurality of second retaining members mounted on said conveyor and comprising a plurality of gripping fingers, at least one of which is movable with respect to at least another gripping finger, said conveyor moving said second retaining members along a predetermined path in a line, one behind the other, said path being such that corresponding ones of said first and second retaining members are located vertically above one another in a predetermined region of said path and move in the same direction;

means for controlling said movable fingers of said first and second retaining members when in said region;

means coordinated with said controlling means for rotating each of said first retaining members in a parallel direction to the direction of movement when in said region such that when said parallel rotation occurs, said first retaining member movable finger is moved away from said another gripping finger and said second retaining member movable finger is moved toward said another gripper finger; and

means for vertically moving said first and second retaining members relative to each other when in said region.

4,522,294

METHOD AND APPARATUS FOR GROUPING ITEMS

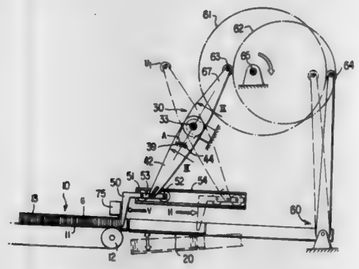
Theo Walz, Neunkirch, Switzerland, assignor to SIG - Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Jan. 21, 1983, Ser. No. 460,050

Claims priority, application Switzerland, Jan. 21, 1982, 381/82

Int. Cl.³ B65G *25/00, 47/26*

U.S. Cl. 198—429 **5 Claims**



1. An apparatus for grouping items comprising

(a) a supply conveyor for advancing items in an edgewise supported, upright oriented face-to-face series; said supply conveyor having a discharge end;

(b) a receiving trough adjoining said discharge end of said supply conveyor for receiving items from said supply conveyor; said receiving trough having a length;

(c) a collector slide arranged for movement on said receiving trough along the length thereof for controlling the admission of items from said supply conveyor to said receiving trough;

(d) a drive mechanism for moving said collector slide;

(e) a lever system connecting said drive mechanism with said collector slide; said lever system including electromagnetic clutch means for operatively coupling said collector slide to or disconnecting said collector slide from said drive mechanism; and

(f) a control system operatively connected with said electromagnetic clutch means; said control system including

(1) switch means connected to said electromagnetic clutch means;

(2) item counting means for counting items on said receiving trough and generating a counting signal, said counting means being connected to said switch means for applying to said switch means said counting signals; and

(3) length sensing means generating length signals representing the length of path travelled by said collector slide on said receiving trough; said length sensing means being connected to said switch means for applying to said switch means said length signals; said switch means controlling said electromagnetic clutch means as a function of said counting signals and said length signals.

4,522,295

DEVICE FOR DIVIDING A STREAM OF LOOSE MATERIAL

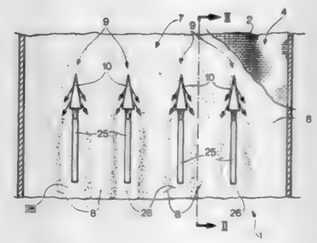
Enzo Seragnoli, Bologna, Italy, assignor to G.D Società per Azioni, Bologna, Italy

Filed Oct. 24, 1983, Ser. No. 545,004

Claims priority, application Italy, Nov. 17, 1982, 3593 A/82

Int. Cl.³ B65G *47/22*

U.S. Cl. 198—493 **5 Claims**



1. Device (7) for dividing a stream of loose material into at least two secondary streams, said loose material consisting of a layer (5) of said material fed in a given direction (6) on the conveying surface (4) of a conveying device (1), said secondary streams consisting of strips (8) of said material parallel to each other and to the direction of feed (6) and arranged so as to contact said conveying surface (4); the dividing device (7) comprising means (19) for supplying fluid under pressure to each adjacent pair of the said strips (8), at least one pair of nozzles (20, 21) for supplying the said fluid under pressure; the nozzles (20, 21) of each said pair being arranged facing the said conveying surface (4), at a greater distance from it than the thickness of the said layer (5), at an angle to the said conveying surface (4), in the same direction as the said direction of feed (6) and essentially symmetrical with it; the speed at which the said fluid under pressure comes out of the said nozzles (20, 21) parallel to the said direction of feed (6) being greater than the speed at which the said conveying surface (4) is travelling.

4,522,296

FLAIL AUGER FOR SEMI-LIQUID MANURE SPREADER

David M. Rieke, Celina, Ohio, assignor to The Paul Revere Corporation, Coldwater, Ohio

Continuation-in-part of Ser. No. 372,423, Apr. 27, 1982, abandoned. This application Feb. 16, 1984, Ser. No. 580,936

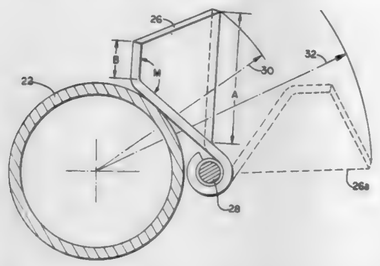
Int. Cl.³ B65G *33/30*

U.S. Cl. 198—548 **8 Claims**

1. A flail auger assembly for a material unloader having a holding tank with a shaft rotatably mounted and extending through the lower portion of the holding tank, one end of the shaft penetrating an aperture in a wall of the holding tank through which material is removed, there also being means for rotating the shaft associated with the holding tank; and

a plurality of flails mounted at spaced intervals along the length of the shaft, each of said flails being independently secured thereto by a pivot for permitting lateral rotation of said flails relative to said shaft so that the flails can assume a compressed position with a small radius of effectiveness adjacent to the shaft or an extended position with a large radius of effectiveness in response to the resistive qualities of the material in said holding tank and the centrifugal forces imparted to said flails by the rotating shaft,

said flails being oriented with respect to the shaft to cooperate with the holding tank to impart both stirring of the material within the holding tank and a lateral component



of thrust on said material by one flail to the next flail along the shaft for moving material out through the aperture in the wall.

4,522,297

TRANSPORTER FOR HEAVY LOADS

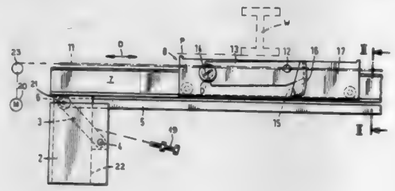
Leopold Jaegers, Rudolf-Diesel-Str. 1, D-5350 Euskirchen, Fed. Rep. of Germany

Filed Jan. 7, 1983, Ser. No. 456,384

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1982, 3200495

Int. Cl.³ B65G *25/00*

U.S. Cl. 198—774 **18 Claims**



1. A heavy-load transport apparatus comprising:
a stationary support beam extending horizontally in a transport direction and adapted to support an elongated heavy load with same lying on the support beam and extending horizontally transversely thereto;
a guide beam extending in the direction generally parallel to the support beam;
a carriage riding on the guide beam and displaceable in the direction therealong;
lifting means connected to the guide beam for vertically displacing same between an upper position with the carriage at least partly above the support beam and a lower position with the carriage below the support beam, whereby when the carriage underlies the load and is raised from the lower to the upper position it raises the load off the support beam;
drive means including a flexible drive element having a generally straight stretch extending parallel to the direction adjacent the guide beam for displacing the carriage along the guide beam;
a pivot on the carriage defining a horizontal pivot axis generally perpendicular to the direction;
a rigid connection arm extending generally horizontal and parallel to the direction between the carriage and the stretch, the arm having an inner end connected to the carriage at the pivot for angular displacement of the arm about the axis and an outer end connected to the stretch, whereby as the carriage is raised and lowered the outer end pivots down and up substantially without vertically deflecting the stretch; and
a pocket-forming vertical guide slot fixed on the carriage and receiving the outer end of the arm, the slot forming for the arm a stop engageable upward against the outer end only in the upper position of the carriage, whereby force can be transmitted directly by the stop between the outer arm end and the carriage in the upper carriage position.

4,522,298

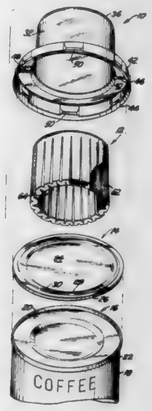
COFFEE FILTER PACKAGE ARRANGEMENT

Royal Weinberger, Clifton, N.J., assignor to North American Systems, Inc., Bedford Heights, Ohio

Filed Jul. 2, 1984, Ser. No. 627,049

Int. Cl.³ B65D *79/00, 21/00, 85/62*

U.S. Cl. 206—216 **12 Claims**



1. A coffee filter package comprising:
a cylindrical upper receptacle portion for receiving a supply of nested coffee filters and retaining them in pleated form;
a peripheral skirt portion depending from the lower end of the receptacle portion for snapping onto the lid of a coffee can, and
inwardly directed resilient locking tabs for removably securing the filter package onto the coffee lid, whereby said package with filters can be commercially distributed on the top of a coffee can and subsequently utilized by a consumer for filter dispensing.

4,522,299

RIGID POLYETHYLENE CARRY GOLF BAG WITH STAND

George W. Clark, and Christopher B. Keene, both of Orono, Canada, assignors to 434743 Ontario Inc., Orono, Canada

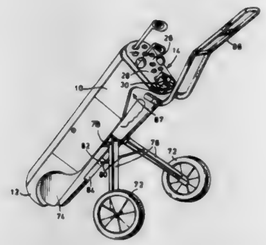
Filed Jan. 23, 1984, Ser. No. 573,291

Int. Cl.³ A63B *55/00;* B62B *1/04*

U.S. Cl. 206—315.3 **5 Claims**

1. A golf club bag comprising:
an integral one-piece tubular outer shell, having a closed bottom end, and an open upper end;
a top panel closing said open upper end of said tubular shell, and having a plurality of shaft apertures therein;
a core defining guide channels forming handle recesses for reception of club handles therein fastened within said shell and extending from said upper end of said shell downwardly and terminating short of the closed end of said shell;
stops at the lower end of said channels for supporting the ends of club handles;
handle means on the exterior of said tubular shell;
releasable closure means for said upper end of said tubular shell

dimensioned and shaped to cover the heads of clubs located in said tubular shell;
a pair of movable legs swingably mounted on said outer shell;
spring means normally biassing said legs into a closed position;



linkage means extending between said handle means and said legs whereby said legs may be moved against said spring, into an extended position;
struts linked at one end to said legs, and,
slide means, and a guide for said slide means on said shell, said struts being connected at their other ends to said slide means.

4,522,300

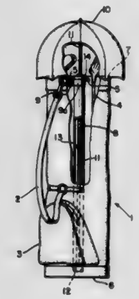
CLUB PROTECTIVE DEVICES FOR GOLF BAGS

Newman Hamblet, 11807 Sussex Square Dr., Richmond, Va. 23223

Filed Sep. 13, 1983, Ser. No. 531,617

Int. Cl.³ A63B *55/00;* A45B *11/00;* A47G *25/12*

U.S. Cl. 206—315.4 **20 Claims**



1. In combination, a golf club container for use by an individual in transporting golf clubs, a protective device having a protective head dimensioned and configured such that the head can protect an open upper end of the club container and club contents thereof when situated adjacent and above said upper end, said protective device having a shaft extending downwardly beyond the open upper end of the club container, support means carried by said club container for receiving said shaft so as to permit raising and lowering of said shaft and protective head relative to the club container, said support means including limit means for defining a lower support position for said shaft such that the protective head will lie above and closely adjacent the upper end of the club container and any club contents therein, said shaft being dimensioned such that the protective head together with the shaft can be raised sufficiently to permit full removal of a club from the upper end of the club container while part of the shaft remains in said support means, whereby said shaft and protective head can be freely moved between said lower support position for container and club protection and a raised position for club removal without separating said shaft and support means.

4,522,301

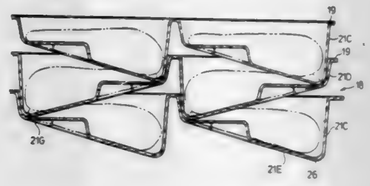
TRAY

Shreyas H. Ajmera, Downsview, Canada, assignor to Baker's Bakery Ltd., Downsview, Canada

Filed Jun. 15, 1984, Ser. No. 621,257

Int. Cl.³ B65D *21/04*

U.S. Cl. 206—507 **4 Claims**



1. An improved tray carrying a plurality of spaced apart recesses, suitable for carrying a plurality of forms of raw croissant dough, of a design and configuration permitting a plurality of such trays to be stacked one on the other without deforming the forms of raw croissant dough carried in such recesses is provided, the improvement comprising a specially configured tray carrying a plurality of similarly spaced apart cavities, each cavity having a mouth substantially coplanar with the plane of the top of the tray, an inclined base to carry the fatter portion of the croissant in the deeper portion of the base, a peripheral wall defining the vertical space between the mouth and the inclined base of each cavity, and a raised portion raised from the shallower portion of the inclined base and extending from the peripheral wall, of suitable dimensions such that normally a croissant resting within a cavity reaches not higher than the plane of the mouth of the cavity and not higher than the plane of the raised portion raised from the inclined base, and, each cavity presents an inclined protuberance on the underside of the tray whereby at least two trays stacked one on the other may be oriented 180 degrees with respect to each other so as to align the deeper portion of each protuberance to rest upon the raised portion raised from the inclined base of a cavity of an underlying tray.

4,522,302

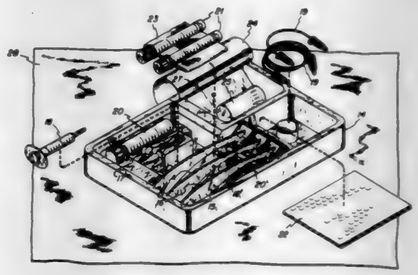
PRE-STERILIZED MEDICAL PROCEDURE KIT PACKAGES

Myron Paikoff, Colonie, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Mar. 5, 1984, Ser. No. 586,362

Int. Cl.³ B65D *1/34, 77/04, 83/04*

U.S. Cl. 206—570 **5 Claims**



1. A medical procedure package comprising in combination:
A. a sealed, pre-sterilized outer package wrap containing therein:
B. an essentially unitary, two-compartment kit wrapped

within an inner package wrap, said kit containing in the first of said compartments:

(a) a medical procedure set-up tray and associated essential medical procedure components, said outer package wrap, set-up tray, essential medical procedure components and inner package wrap being compatible with ethylene oxide sterilization, and in the second of said compartments:

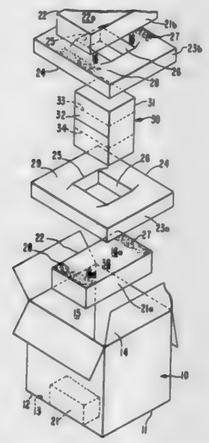
(b) a medicament containing rubber closured vial contained within a sealed ethylene oxide impermeable container, said sealed container being also compatible with ethylene oxide sterilization, said vial and said container prior to sealing being sterilized by, and compatible with, heat sterilization, and said outer and inner package wraps, set-up tray, medical procedure components and vial-containing container being sterilized by ethylene oxide.

4,522,303

PAYLOAD-PROTECTING SHIPPING CONTAINER

James A. Starr, San Jose, Calif., assignor to Atasi Corporation, San Jose, Calif.

Filed Dec. 22, 1983, Ser. No. 564,814
Int. Cl.³ B65D *85/38*
U.S. Cl. 206—588 **16 Claims**



1. In a shipping container for protection of a payload from shock loading comprising:

an outer rectangular box having at least one open but closable end;

a rectangular resilient bottom cap abutting a closed end of said outer box;

a first rectangular resilient block abuttingly mounted on said cap and having a central aperture to support one end of an inserted payload, said first block having a height sufficient to support said one end of an inserted payload, and said first block having length and width dimensions corresponding to the internal length and width of said outer box;

a second rectangular resilient block having a central aperture to support a second end of said inserted payload, said second block having a height sufficient to support said second end of said inserted payload, said second block having length and width dimensions corresponding to the internal length and width of said outer box; and

a rectangular resilient top cap abutting a top surface of said second block and having a top surface in a plane corresponding to the closable end of the outer box in closed position, the improvement comprising:

means for adhering only selected edge portions outwardly spaced from said central apertures in each of said blocks to corresponding portions of the bottom and top caps abutting each of said blocks leaving unadhered portions for stress relieving said blocks upon imposition of a force.

10. In a shipping container for protection of a payload from shock loading comprising:

an outer rectangular box having at least one open but closable end;

a rectangular resilient bottom cap abutting a closed end of said outer box;

a first rectangular resilient block abuttingly mounted on said cap and having a central aperture to support one end of an inserted payload, said first block having a height sufficient to support said one end of an inserted payload, and said first block having length and width dimensions corresponding to the internal length and width of said outer box;

a second rectangular resilient block having a central aperture to support a second end of said inserted payload, said second block having a height sufficient to support said second end of said inserted payload, said second block having length and width dimensions corresponding to the internal length and width of said outer box; and

a rectangular resilient top cap abutting a top surface of said second block and having a top surface in a plane corresponding to the closable end of the outer box in closed position, the improvement comprising:

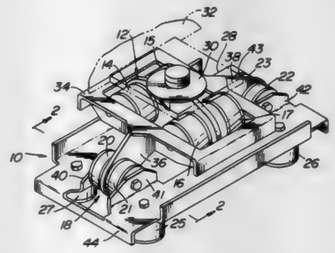
means for forming slits in said first and second blocks extending into said blocks at an angle from each of the corners of said apertures for stress relieving said blocks upon the imposition of a force, where said stress relieving occurs near the corners of said apertures as the sides of said slits are forced to separate.

4,522,304

SHOCK MOUNT APPARATUS

Walter C. Dean, II, Collegeville, Pa., assignor to The Budd Company, Troy, Mich.

Filed Apr. 19, 1982, Ser. No. 369,652
Int. Cl.³ F16F *15/00*; B65D *81/08*
U.S. Cl. 206—591 **4 Claims**



1. A shock mount assembly directly connected between a component to be transported and a structural body comprising:

(a) a mounting plate connecting said component to said shock mount assembly;

(b) attachment elements connecting said shock mount assembly to said structural body;

(c) said shock mount assembly including first, second and third elastomeric shock members;

(d) a first frame member spaced below said mounting plate;

(e) said mounting plate having downward extending portions;

(f) said first elastomeric shock member being connected between said downward extending portions of said mounting plate and said first frame member;

(g) a second frame member spaced below said first member;

(h) said first frame member having downward extending portions;

(i) said second elastomeric shock member being connected between said first and second frame members;

(j) said downward extending portions of said mounting plate and said first frame member being at right angles to each other;

(k) said third elastomeric shock member extending downward from said second frame and connected to said structural body;

(l) said first, second and third elastomeric shock members being connected to their respective frames in three different planes and each of said shock members being at right angles with respect to each other; and

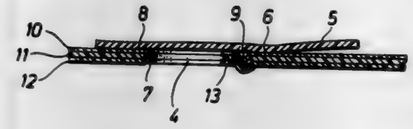
(m) said first, second and third elastomeric shock members all having the same operating characteristics and further being disposed so that one elastomeric member is primarily in compression and the other two elastomeric members are primarily in shear.

4,522,305

OPENING ARRANGEMENT FOR PACKING CONTAINERS WITH PRESSURIZED CONTENTS

Kenth Jacobsson, Södra Sandby, Sweden, assignor to Tetra Pak Developpement SA, Pully, Switzerland

Filed Aug. 23, 1982, Ser. No. 410,714
Claims priority, application Sweden, Aug. 28, 1981, 8105092
Int. Cl.³ B65D *37/00*
U.S. Cl. 206—632 **1 Claim**



1. An opening arrangement for a laminated packing container, comprising:

a laminated packing container wall having three layers of thermoplastic material and a pouring opening provided therethrough;

a cover strip sealed in a liquid-tight manner to an outer layer of said laminate, said cover strip having a non-sealed part for facilitating removal of said cover strip;

a sealing zone between said cover strip and said outer layer completely surrounding and being spaced from an edge of the pouring opening to avoid rupturing said edge upon opening said container, said sealing zone having a point directed toward said non-sealed part of said cover strip;

a countersunk area defining a pouring edge and comprising a long narrow recess extending along a portion of the pouring opening, said pouring edge being bent in an outwardly direction and extending at an angle to the container wall to guide said contents away from said laminate but remaining completely inside a plane defined by said outer layer of said laminate so as not to interfere with said cover strip; and

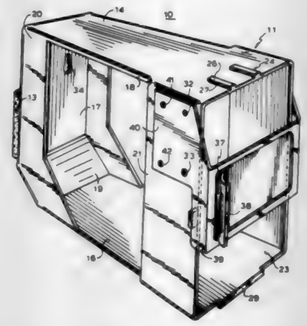
the seal in the sealing zone between the cover strip and the outer layer being stronger than a bond between the outer thermoplastic layer and the central thermoplastic layer such that removal of said cover strip also delaminates said outer layer from said laminate, said delamination being initially concentrated at said point of said sealing zone.

4,522,306

RACK MODULE

William Silver, New York, N.Y., assignor to Thomson-Leeds Company, Inc., New York, N.Y.

Filed Mar. 2, 1983, Ser. No. 471,231
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—49.1 **11 Claims**



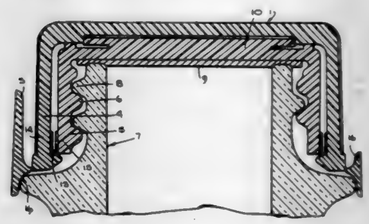
1. A rack module comprising a body member including vertically spaced parallel horizontal top and bottom walls, a vertical rear wall depending from the rear edge of said top wall and vertical side panels extending between corresponding forward side edges of said top and bottom walls and having front edges delineating with the front edges of said top and bottom walls an access opening to said module extending for substantially the full height and width of said module, complementary coupling members located on the outside faces of said top and bottom walls respectively, a visor member including a face plate, means coupling said visor member to said body member for swinging about a transverse axis between an open position with said face plate located above said top wall thereby providing full front access to said body member access opening and a closed position with said face plate being in registry with said access opening and having a lower edge disposed above the level of the bottom of said access opening to delineate with said bottom wall front edge an article dispensing opening and means for mounting said module to a support member.

4,522,307

CHILD-RESISTANT TAMPER-EVIDENT CLOSURE

Gerald E. Steiner, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Oct. 19, 1983, Ser. No. 543,334
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—219 **4 Claims**



1. A tamper-indicating child resistant closure for a container having closure engaging members on its neck comprising the combination of:

a cup-like outer shell with a cover and a depending skirt;

a cup-like inner shell;

thread-like means on said inner shell for engaging said closure engaging members,

ratchet means for coupling said shells only while being turned onto the container;

normally spaced friction means on the lower edges of said shells facing radially outwardly on the inner shell and radially inwardly on the outer shell for releaseably engaging said shells for cap removal; and

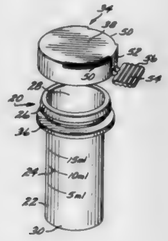
removable means for releaseably holding said friction means disengaged.

4,522,308

MANUALLY MOUNTABLE TAMPER EVIDENT ORAL LIQUID DOSE VIRAL AND SEAL ASSEMBLY

James J. Sullivan, 1329 N. Foothill Rd., Ojai, Calif. 93023

Filed Jan. 18, 1984, Ser. No. 572,154
Int. Cl.³ B65D *41/62*
U.S. Cl. 215—253 **5 Claims**



1. A tamper evident and substantially leak-proof oral liquid dose vial and seal assembly having a substantially cylindrical vial of approximately 5 to 100 milliliters in volume, and a seal adapted for one-time sealing of the vial and to be substantially destroyed when removed from said vial, the assembly comprising:

a first lip disposed on the circular outer circumference of the vial substantially adjacent to the mouth of the vial;

a base plate of the seal disposed on the top of the vial to cover the mouth;

a substantially circular sealing rib disposed at substantially right angle to the base plate and projecting inwardly into the interior of the vial in sealing engagement with interior walls of the vial;

a lip of the seal attached to the base plate of the seal and projecting downwardly from the base plate around the circumference of the base plate;

a plurality of ribs projecting inwardly from the lip of the seal below the rib of the vial and in engagement therewith;

a first frangible portion of the seal comprising a first narrow continuous strip of thin walled material which extends approximately one eighth to one third around the circumference of the base plate between the base plate and the lip of the seal, and which further extends into the lip of the seal from the base plate to the lower end of said lip;

a second frangible portion of the seal comprising a second narrow continuous strip of thin walled material which extends approximately one eighth to one third around the circumference of the base plate between the base plate and the lip of the seal, and which further extends into the lip of the seal from the base plate to the lower end of said lip, a portion of the lip of the seal being disposed between the first and second frangible portions of the seal, and

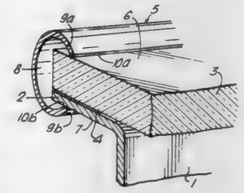
a tab, adapted to be gripped and pulled by an operator, attached to the portion of the lip of the seal which is disposed between the first and second frangible portions whereby upward pulling of the tab breaks the frangible portions, disengages at least one rib of the lip of the seal from the lip of the vial and removes the seal from the vial.

4,522,309

CATHODE-RAY TUBE

Colin D. Overall, Reigate, and Leslie H. Francis, Horley, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 8, 1983, Ser. No. 559,589
Claims priority, application United Kingdom, Jan. 7, 1983, 8300351
Int. Cl.³ H01J *29/86*
U.S. Cl. 220—2.1 A **6 Claims**



1. A cathode ray tube envelope comprising a metal rear housing having a flange, a glass faceplate secured to the flange to close the envelope, a pressure-bonded seal disposed between the faceplate and the flange, and means for clamping the faceplate to the flange,

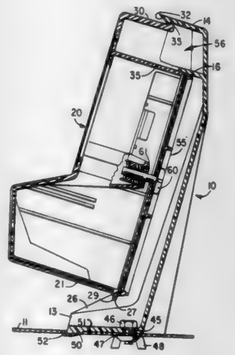
said clamping means comprising a plurality of resilient channel-shaped spring clamps arranged around the faceplate-flange periphery, each spring clamp having converging side walls which, at the portions nearest each other, engage respective outer surfaces of the faceplate and the flange, thereby maintaining compression of said seal.

4,522,310

HOUSING HOLDER AND COOPERATING DETACHABLE HOUSING

Frank Mikic, and William T. Pagac, both of Kenosha, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Mar. 15, 1982, Ser. No. 358,356
Int. Cl.³ F16M *13/00*
U.S. Cl. 220—4 R **2 Claims**



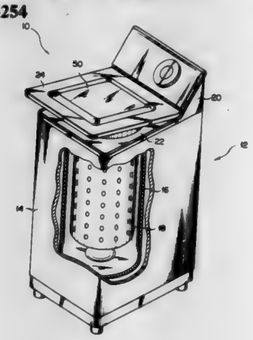
1. A housing holder and cooperating detachable housing, comprising an elongated holder adapted to be mounted on a support, said holder including an integral rigid foot portion and an integral resilient head portion generally aligned with and spaced from said foot portion, a cooperating detachable housing sized to be accommodated between and engaged by said foot and head portions of said holder, cooperating interlocking means on said rigid foot portion and said housing, cooperating interlocking means on said resilient head portion and said housing, whereby flexing of said resilient head portion readily establishes and releases interlocking relation of said respective cooperating interlocking means and thus the attachment and detachment of said holder and said housing, an integral rigid shelf portion on said holder spaced below said head portion, a cooperating rigid partition on said housing located to underlie said shelf portion when said housing is attached to said foot and head portions, and a removable rear panel closing that portion of the open rear of said housing between said rigid partition and the housing bottom, the unclosed portion of the housing rear between said partition and the housing top providing an access opening enabling the housing top to serve as a self-contained handle for said housing.

4,522,311

LID WITH A SEE-THROUGH PLATE

Yoshio Ikeda, Aichi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 10, 1983, Ser. No. 456,849
Claims priority, application Japan, Feb. 8, 1982, 57-19405
Int. Cl.³ B65D *51/18*
U.S. Cl. 220—254 **12 Claims**



1. A lid to close an access port of an apparatus comprising:

a lid body defining an opening to permit visual inspection of the interior of the apparatus, said lid body including (a) a recessed engaging groove defined around the periphery of said opening, (b) first engaging means disposed in said engaging groove, and (c) hinge means for connection to said apparatus to permit said lid body to pivotally move between open and closed positions to respectively open and close the access port;

a removable transparent member sized and configured to cover said opening and including second engaging means for engaging said first engaging means to thereby couple said transparent member to said lid body in response to said transparent member being moved into an engaged position and for disengaging said first engaging means to thereby permit removal of said transparent member in response to said transparent member being moved to a disengaged position; and

holding means defining an aperture and removably mounted to said lid body so that said aperture is in registry with said transparent member and so that said holding means covers said engaging groove for holding said transparent member in said engaged position; wherein

said lid body further includes plural retaining members disposed in said engaging groove each defining a flange; and wherein

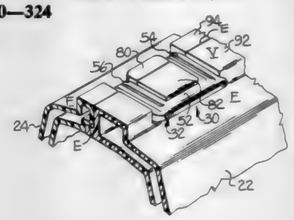
said holding means includes plural elastic pawl means each defining an engaging surface, each said pawl means elastically engaging a respective flange of said retaining members to removably hold said transparent member in said engaged position with said lid body whereby upon removal of said holding means, movement of said transparent member to said disengaged position is permitted to thereby allow removal of said transparent member from said lid body.

4,522,312

CONTAINER AND ASSOCIATED LATCH STRUCTURE

Juergen Rathgeber, Raleigh, and William W. Ward, Clayton, both of N.C., assignors to Southern Case, Inc., Raleigh, N.C.

Filed Sep. 14, 1983, Ser. No. 532,226
Int. Cl.³ B65D *45/16*
U.S. Cl. 220—324 **12 Claims**



1. In a container having base and cover parts that are movable between open and closed positions and define respective confronting edges that abut each other when the container is in the closed position, a latch assembly comprising:

a buckle comprising spaced apart attachment and latching portions and a body portion joining the attachment and latching portions, said attachment portion including rod means defining a central rod segment and a pair of outwardly extending end rod segments;

rod receiving undercuts formed on one of said container parts adjacent the confronting edge thereof, said undercuts including a central undercut for receiving said buckle central rod segment and a pair of end undercuts for receiving respective ones of said buckle end rod segments, said undercuts forming a journal for pivoting of the buckle to a latch securement position where the buckle body portion bridges the abutting confronting edges; and

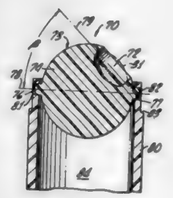
cooperative means on the latching portion of the buckle and the other container part for releaseably securing the buckle to the other part when the buckle is in the mentioned latch securement position.

4,522,313

ARTICLE DISPENSER

Paul D. Jennings, 1039 E. Almond Ave., Orange, Calif. 92666, and Kenneth L. Jennings, Rte. 2, P.O. Box 83-4, Strafford, Mo. 65757

Filed Sep. 13, 1983, Ser. No. 531,684
Int. Cl.³ B65D *83/04*
U.S. Cl. 221—1 **22 Claims**



20. A method of dispensing an article from a storing vessel equipped with a pivotally suspended sphere having a hemisphere with a cavity in proximity of the pivotal suspension, characterized by the steps of:

(a) inverting the dispenser thereby causing the hemisphere to be positioned facing the internal confines of the vessel;

(b) transferring the article from the vessel to the surface of

the hemisphere, said article sliding along the spherical contour of the hemisphere into the cavity; and

(c) restoring the dispenser to its initial position prior to execution of step (a) thereby causing the hemisphere with the cavity bearing the article to be positioned external to the inner confines of the vessel.

21. A dispenser incorporating a vessel capable of storing at least one article, characterized by:

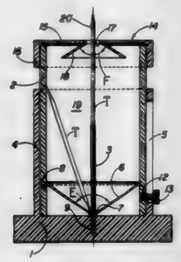
a ball structure having a curved contour and being pivotally coupled at two locations to said vessel for rotation about one axis, said contour having a cavity therein that is nearer to one of said two locations than to the other of said two locations.

4,522,314

TOOTHPICK DISPENSER

Alexander Nelson, 1027 E. Pleasant St. #303, Milwaukee, Wis. 53202

Filed Mar. 17, 1983, Ser. No. 476,055
Int. Cl.³ A24F *15/04*
U.S. Cl. 221—190 **5 Claims**



1. A toothpick dispenser for dispensing a toothpick in a vertical position, comprising:

a stationary base having an upright cylindrical housing that defines a longitudinal axis, said base includes a closed bore formed therein along said axis;

a cylindrical body having an open top and a closed bottom for containing a plurality of toothpicks longitudinally on their ends in substantially vertical positions, said body telescopically received within said housing for vertical axial sliding movement therein between an upper loading position and a lower dispensing position,

an upstanding support member projecting axially from said base within said housing for receiving a single toothpick on its end in an upright vertical position when said housing is moved to its loading position, said support member includes an axially extending cone-shaped opening in the free end thereof dimensioned to substantially correspond to the dimensions of a tapered end of a toothpick, said free end of said support member being split axially to provide a pair of resilient fingers to permit axial movement of a toothpick therein upon the application of a longitudinally directed force on a toothpick, and having its lower end slidably frictionally engaged in a press fit manner within said closed bore to permit adjustment of the height of the free end of said support member;

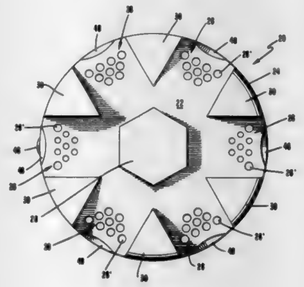
said closed bottom sloping inwardly and downwardly toward a central opening formed therein, said central opening dimensioned to slidably receive said support member so that when said body is moved upwardly to its loading position the lower end of a single toothpick passes through said central opening and is received by said support member and when said body is moved downwardly to its dispensing position said support member closes said opening and said toothpick projects axially from said body.

4,522,315

CLOSURE CAP FOR MULTI-COMPARTMENT CONTAINERS

Karl G. Rapp, Iserlohn, Fed. Rep. of Germany, assignor to United Industries Sales Organization, Inc., North Miami, Fla.

Filed Feb. 22, 1982, Ser. No. 350,568
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 8133868[U]
Int. Cl.³ A47G *19/24*
U.S. Cl. 222—142.1 **12 Claims**



1. A dispensing closure cap for a container having a plurality of compartments communicating with an open mouth of said container, said cap comprising:

a body mountable on the container in sealing engagement therewith for closing the container mouth;

a top wall defined by said body including a central raised hub and at least one dispensing opening for each of the container compartments;

a non-rotatable lid assembly mounted on said cap body comprising a lid for each at least one dispensing opening pivotably connected to a central mounting means comprising a polygonal ring-shaped member; and,

a corresponding polygonal configuration provided on said hub so that said mounting member is mounted on said hub in a mating relationship, said mounting member provided as a flexible member and said hub is provided with side walls which taper inwardly from top to bottom such that said mounting member is releasably mounted on said hub in a snap-fit relationship therewith;

said lid assembly is provided as an integral one-piece unit made of plastic with each lid spaced from said mounting member and connected thereto by flexible hinge means, each hinge means comprises a leg member connecting the corresponding lid and said mounting member and including a pivot joint defined at a junction between the corresponding leg member and lid and formed by a V-shaped crimp in the junction;

each said leg member comprising depending triangular side walls adjacent said mounting member so as to reinforce the leg member;

said cap body removably mounted on the container and provided with a generally cylindrical shape defining a circular sidewall, said side wall having a stepped inner surface defining a first, lower section having a first diameter and a second, upper section having a second diameter, said second diameter corresponding to the outside diameter of the container such that said second inner surface section is in sealing engagement with the container when said cap is mounted on the container, said first diameter being larger than said second diameter.

4,522,316

CONTAINER FOR PLASTIC SUBSTANCES

Armin Hoffmann, Germering, and Armin Herb, Peissenberg, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Apr. 29, 1983, Ser. No. 489,850
Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3217044
Int. Cl.³ B65D *88/54*
U.S. Cl. 222—327 **9 Claims**



1. A container for a plastic substance, such as a plastic adhesive, a filling compound, a sealing compound or putty, comprising an axially elongated sleeve having a first end and a second end spaced apart in the axial direction, said sleeve having an inner surface defining a hollow space for holding the substance, a discharge outlet located at the first end of said sleeve, said sleeve being open at the second end, an extrusion piston inserted into said sleeve and forming a closure for the hollow space inwardly of the second end of the sleeve, said piston having an outer surface in sliding contact with the inner surface of said sleeve and said piston forming a closure for the end of the hollow space closer to the second end of said sleeve, said extrusion piston arranged to be slidably displaced through the hollow space within said sleeve in the direction from the second end to the first end thereof for displacing the substance out of the hollow space in said sleeve through said discharge outlet, a sealing ring located within said sleeve between the inner surface thereof and the outer surface of said extrusion piston for forming a seal for the end of said hollow space closer to the second end of said sleeve, and said sealing ring is displaceable at least relative to said extrusion piston so that said extrusion piston can be displaced through said hollow space toward the first end of said sleeve in out-of-contact relation to said sealing ring while extruding the substance out of said space through said discharge outlet, said sealing ring has a cross-sectional configuration decreasing in the direction from the second end toward the first end of said sleeve.

4,522,317

DOSAGE DISPENSER DEVICE FOR A VISCOUS PRODUCT

Antonin Goncalves, Groslay, France, assignor to L'Oreal, Paris, France

Filed Apr. 27, 1983, Ser. No. 488,982
Claims priority, application France, May 6, 1982, 82 07900
Int. Cl.³ B67D *5/42*
U.S. Cl. 222—391 **4 Claims**

1. In a dosage dispenser device for a viscous product comprising:

(a) a cylindrical barrel having a longitudinal axis and intended to contain a viscous product to be dispensed;

(b) a piston slidable in a leakproof manner in the barrel;

(c) a rack disposed in the barrel;

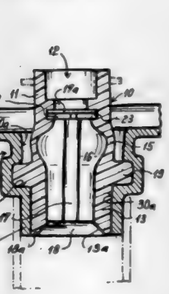
(d) means mounting the rack on the barrel for displacement parallel to the axis of the barrel between first and second positions;

(e) actuating means intended to displace the rack between its said first and second positions, said actuating means having outlet means associated therewith; and

(f) catch means integral with the piston and mounted on the rack intended to transmit the displacements of the rack to the piston when the rack is displaced in a first direction along its length and to slide along the rack when the rack is displaced in the reverse direction; the improvement wherein

(a) the actuating means for the rack comprise a slide mounted for displacement in translation in a first transverse direction having a first slope in relation to the barrel longitudinal axis; and

(b) the dosage dispenser device further comprises a first cam element and a first cam follower element, the cam element having a guide surface which is disposed in a second transverse direction having a second slope in relation to said longitudinal axis of the barrel, wherein the second slope is different from the first, and one of said first cam element and first cam follower element is integral with the slide and the other of said first cam element and first cam follower element is integral with the rack, said barrel comprising



(i) a flat wall substantially parallel to the first transverse direction along which the slide is displaced;

(ii) a dispensing opening traversing said flat wall and opening out of the interior of the barrel; and wherein the slide has

(iii) a flat part substantially parallel to the said first transverse direction and forming an obturator for said dispensing opening of the barrel; and

(iv) a dispenser duct formed in the slide and having a first opening adjacent to said obturator, said obturator and the said first opening of the dispenser duct being alternately opposite said dispenser opening of the barrel when the slide is in a respective one of a first slide position and a second slide position in relation to the barrel.

4,522,318

DISCHARGE VALVE FOR USE IN A PRESSURIZED CONTAINER

Luigi Del Bon, 141 Feldstrasse, 4663 Aarburg, Switzerland

Continuation-in-part of Ser. No. 218,084, Dec. 19, 1980, abandoned. This application May 2, 1983, Ser. No. 490,658
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—402.24 **2 Claims**

1. A discharge valve-and-lid assembly comprising a lid

adapted for closing a pressurized container from which a liquid product is to be dispensed, with the aid of a propellant, said lid having an opening therein, and a self-closing discharge valve mounted in said opening of said lid, said valve comprising

(a) a tubular actuating member having a substantially rigid upper end portion having an outlet orifice for the product, a substantially rigid lower end portion having an intake orifice for product into the valve, a tubular passage having an inner passage wall and connecting said two orifices at all times, a valve seat about said intake orifice; and annular recess means extending radially outwardly from said tubular passage into said inner wall thereof in an anchoring zone in said rigid upper end portion;

(b) an elongated obturating member lodged in said tubular passage spaced from said inner passage wall to permit flow of product through said passage toward said outlet orifice, said obturating member being axially displaceable, relative to said lower end portion of said actuating member, between an open position and a closed position, said obturating member having an upper and a lower end and comprising radially extending anchoring arm means projecting into said annular recess means so as to positively secure the outer end of said arm means therein against axial displacement in the upper end portion of said tubular passage, but permitting passage of product through said anchoring zone at all times, the lower end of said obturating member comprising an obturating head sealingly engaging said valve seat, when in closed position,

said tubular actuating member further comprising,

(c) an elastically foldable wall zone, intermediate said anchoring zone and said valve seat, having at least one bulge and adapted for acting as spring means, whereby, upon downward axial force being exercized on said actuating member to compress said foldable wall zone and thereby shortening said actuating member, said upper end of said actuating member forces said obturating member downward in unison therewith so that said obturating head is disengaged from said valve seat in downward direction and frees said tubular passage for product flow therethrough, and

(d) fastening means on the outside of said actuating member being adapted for fixedly connecting said tubular actuating member, at a zone thereof below said elastically foldable wall zone, with said lid when said valve is mounted in said lid opening,

said lid having about said lid opening an axially extending sleeve portion having an internal passage therethrough and radially outwardly recessed groove means therein in which said fastening means of said tubular actuating member are firmly lodged, said sleeve portion further having, downwardly from said groove means, a tubular portion snugly surrounding said substantially rigid lower end portion of the actuating member over substantially the entire length thereof, thereby enhancing the rigidity of the valve seat and ensuring a good seal with the obturating head in the closed position.

4,522,319

RETENTION DEVICE FOR FLOW RATE CONTROL TUBE WITHIN A DISCHARGE CONTAINER

Simon J. Richter, Marietta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

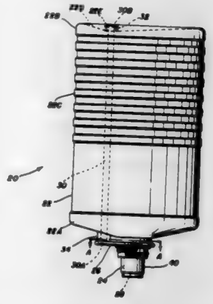
Filed Jun. 16, 1983, Ser. No. 504,865
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—481.5 **10 Claims**

1. A package for dispensing liquids with a controlled rate of flow comprising:

a container having a closed end and a discharge end defining a discharge opening through which liquids may be dispensed;

a flow rate control tube having first and second open ends, the tube extending substantially longitudinally of said container with the first open end of said tube extending through said closed end of said container and said second open end disposed within said container at a predetermined distance from said discharge opening to control the flow rate of liquid through said discharge opening; and

retention means for retaining said second open end of said tube at a predetermined position laterally offset from said



discharge opening, said retention means including a socket in the wall of said container, said socket being configured to retain the open end of said tube therein;

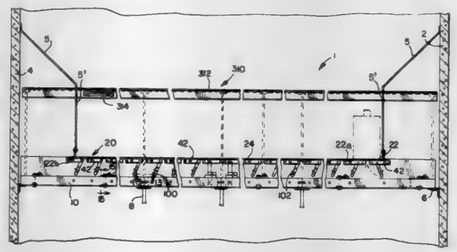
whereby said container may be filled with liquid through said discharge opening without interference from said second open end.

4,522,320

KILN FLOOR SYSTEM

Norman H. Andreasen, 1520 W. Norwood Ave., Itasca, Ill. 60143

Continuation of Ser. No. 235,656, Feb. 18, 1981, abandoned. This application Apr. 27, 1984, Ser. No. 604,400
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—484 **21 Claims**



1. A kiln floor system comprising

frame means adapted to be supported within a kiln,

a plurality of kiln floor sections carried by said frame means to form an upper floor surface for retaining a quantity of grain,

each of said floor sections being pivotally mounted on said frame means for movement between a closed position and an open position to permit grain retained on said floor surface to be dumped therefrom,

each of said floor sections being pivotally mounted on an axis offset from the centerline of said floor sections to create a torque about sad axis toward said open position in said closed position of each of said floor sections under load of a quantity of grain,

force applying means operatively coupled to said plurality of floor sections to maintain said floor sections in a closed configuration and to selectively cause sequential movement of said floor sections to said open configuration for dumping the quantity of grain support thereon, said force applying means includes a plurality of pivotally mounted pneumatic cylinders respectively coupled to at least one respective

floor section, each of said pneumatic cylinders being spaced laterally outward from said floor sections in a direction parallel to said axis to be located in an aisle in spaced relationship adjacent said floor sections, the extensible end of at least some of said plurality of pneumatic cylinders are pivotally coupled to at least two floor sections,

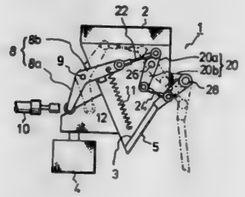
a link member coupled to said extensible end of each of said at least some of said pneumatic cylinders and coupling said at least two floor sections to said extensible end for causing initial pivotal movement on a sequential basis of said at least two floor sections during extension of said extensible end.

4,522,321

GATE DRIVING DEVICE

Kinjiro Kinoshita, Himeji, Japan, assignor to Yamato Scale Company, Limited, Hyogo, Japan

Filed Sep. 29, 1983, Ser. No. 537,036
Claims priority, application Japan, Oct. 5, 1982, 57-175457
Int. Cl.³ F16K *31/52*
U.S. Cl. 222—504 **4 Claims**



1. In a hopper having a discharge opening at the bottom, said opening being provided with a flapdoor type gate; a gate driving device comprising a first bell crank having first and second arms and pivoted on a horizontal axis for receiving original driving force applied to said first arm, a second bell crank having first and second arms and pivoted on another horizontal axis, a first connecting rod for connecting the second arm of said first bell crank to the first arm of said second bell crank, a second connecting rod for connecting the second arm of said second bell crank to said gate; characterized in that the locations and geometries of said bell cranks and connecting rods are selected such that, when said gate is in closed state, the second arm of said first bell crank and said first connecting rod align on a straight line, and that, when said gate is in open state, thhe second arm of said second bell crank and said second connecting rod align on another straight line.

4,522,322

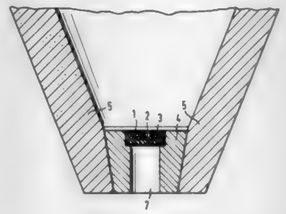
SELF-OPENING CLOSURE FOR A CASTING CRUCIBLE USED IN ALUMINOTHERMIC REACTIONS

Hans Guntermann, and Gerhard Skreba, both of Essen, Fed. Rep. of Germany, assignors to Elektro-Thermit GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,689
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211831
Int. Cl.³ B22D *41/08*
U.S. Cl. 222—597 **4 Claims**

1. In a self-opening closure means for casting crucibles used in aluminothermic reactions, made of an inorganic material resistant to mechanical stresses, generating no gases when heated, and of high melting point,

the improvement which comprises that said closure means is composed of a sealing disk (2) made of a fibrous aluminum silicate, the ratio of the thickness of the sealing disk to its diameter being 1:5 to 1:1, the melting point of the aluminum silicate being equal to or greater than about 1650° C.,



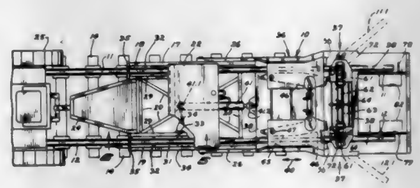
and a metal plate (1) with a thickness of about 0.1 to 3 mm mounted on the sealing disk (2).

4,522,323

RAIL LIFTING AND BREAKING MACHINE

Roy E. LaBounty, 1607 8th Ave., Two Harbors, Minn. 55616

Filed Jul. 27, 1983, Ser. No. 517,632
Int. Cl.³ B26F *3/00*; B23P *17/02*
U.S. Cl. 225—2 **15 Claims**



1. A method of breaking railroad track rails of the type having a top with a head and a bottom with a base flange and having obverse and reverse sides, consisting in the steps of

supporting and confining the rail against tilting to its side,

placing the rail across a stationary anvil whereby an edge of the anvil traverses the obverse sides of the rail,

applying clamping pressure against the reverse side of the rail adjacent the anvil and simultaneously forming notches in the reverse sides of both the head and base flange of the rail,

and subsequently applying breaking force against the reverse side of the rail and adjacent the notches to break the rail over the anvil and in a sideward direction.

4,522,324

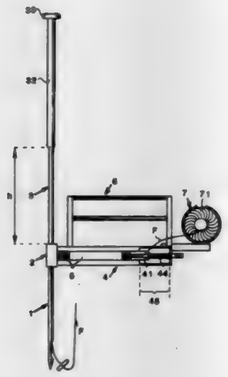
STITCHING DEVICE

Karl W. Schneider-Muro, In der Breiti 13, CH-8047 Zürich, Switzerland

Filed Mar. 19, 1984, Ser. No. 591,315
Claims priority, application Switzerland, Mar. 31, 1983, 1804/83
Int. Cl.³ D05B *85/10, 87/02, 97/10*
U.S. Cl. 223—102 **8 Claims**

5. A stitching device comprising an elongated hollow needle having a passage extending therethrough from one end to the other and having a bracket intermediate the ends thereof, a magazine holding a stack of apertured plates and mounted on said bracket and communicating with said passage, a thread-

equipped bobbin mounted on said magazine with the thread extending serially through the apertures of said plates, and a



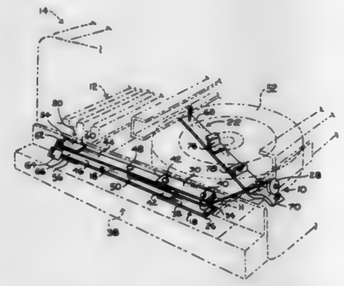
push rod mounted in said passage for sequentially pushing thread-equipped plates from said magazine out of said needle.

4,522,325

DEVICE FOR RAISING AND LOWERING A SPARE TIRE

Donnell W. McMillan, 7949 Cranberry Cir., Cupertino, Calif. 95014

Filed Oct. 24, 1983, Ser. No. 544,513
Int. Cl.³ B65D *43/04*
U.S. Cl. 224—42.21 **9 Claims**



1. A device for raising and lowering a spare tire from beneath a pickup truck's bed comprising:

(a) an elongated spare tire cross strap having a first end pivotally attached to said truck beneath said bed;

(b) a pivot base attached to said truck;

(c) a retaining member spaced from said pivot base and attached to said truck;

(d) an actuating lever having a first end attached to said pivot base by a pivot, and a second end engagable with said retaining member;

(e) a first pulley having a substantially vertical axis of rotation attached to said pivot base proximate said pivot of said actuating lever;

(f) a second pulley having a substantially horizontal axis of rotation attached to said truck beneath said bed; and

(g) a cable trained over the two pulleys having a first end attached to said actuating lever proximate said first end thereof, and having a second end attached to a second end of said cross strap;

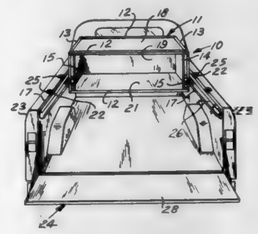
whereby moving said second end of said actuating lever towards said retaining member raises said second end of said cross strap, and moving said second end of said actuating lever away from said retaining member lowers said second end of said cross strap.

4,522,326

ROLLING TOOL BOX

Dennis J. Tuohy, III, 35 Wood Ave., Port Monmouth, N.J. 07758

Filed Apr. 10, 1984, Ser. No. 598,722
Int. Cl.³ B60P *1/52*
U.S. Cl. 224—310 **1 Claim**



1. A rolling tool box, comprising, in combination, a frame and a plurality of flat panels mounted around said frame forming a rectangular six-sided enclosure for storing tools therewithin, and means for slidably supporting said tool box between opposite side walls of an automotive truck freight bed so as to slide said tool box between a forward end and a tailgate rear end of said bed; said box having a pivotable acess door on a wall facing said tailgate rear end for placement and removal of said tools when in said tool box; and said means comprising roller plates affixed on opposite side walls of said tool box, a plurality of sidewardly extending roller shafts supported on said roller plates and each carrying a rotatable roller; and a roller-supporting track mounted on an inner side of each said freight bed side wall, each said track comprising a fixed roller-guide channel receiving said rollers, and an adapter adjacent a rear end of said channel, said adapter comprising a pivotable channel for receiving said roller, each said pivotable channel being pivoted at its closed rear end on a fastener affixed on said bed side wall, said pivotable channel being pivotable upwardly from a horizontal position aligned with said fixed channel; and a separate pole having a hook on one end for pulling or pushing said box along said tracks, and said pole being stored inside one said channelled track when not in use, for locking said box from sliding.

4,522,327

SURGICAL FASTENER APPLYING APPARATUS

Herbert W. Korthoff, Wilton, and Thomas M. Tompkins, Trumbull, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed May 18, 1983, Ser. No. 495,828
Int. Cl.³ A61B *17/04*
U.S. Cl. 227—19 **30 Claims**

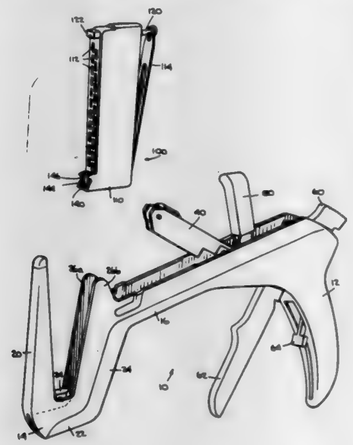
1. Apparatus for applying a plurality of surgical fasteners to body tissue in a longitudinal array comprising:

a longitudinal anvil member for receiving the ends of a plurality of surgical fasteners driven parallel to a first axis which is perpendicular to the longitudinal axis of the anvil member;

a first pin located adjacent a first end of the anvil member and having a longitudinal axis substantially parallel to the first axis;

a longitudinal fastener holding assembly containing a plurality of surgical fasteners and adapted for driving the fasteners parallel to a second axis which is perpendicular to the longitudinal axis of the fastener holding assembly, the fastener holding assembly having a first aperture adjacent a first end of the fastener holding assembly for removably

receiving the first pin, the first aperture permitting the fastener holding assembly to both translate relative to the anvil member substantially parallel to the first axis and



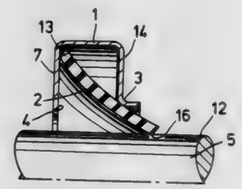
pivot relative to the anvil member about axes which are mutually perpendicular to the first axis and the longitudinal axis of the anvil member.

4,522,328

SHAFT SEAL

Helmut Hölzer, Weinheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Feb. 3, 1983, Ser. No. 463,438
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204193
Int. Cl.³ F16K *41/00*; F16J *15/00*
U.S. Cl. 277—47 **17 Claims**



1. In a shaft seal having a housing (1) with first and second flanges (7, 14) which bound an inwardly open annular groove, and a seal ring (2) having gripping means at one end for anchoring the seal ring to the shaft (5) liquid tight and for rotation therewith when the seal ring is on the shaft and a sealing lip (13) at the other end which bears against the inner face (4) of the second flange (7) to complete the seal between the shaft (5) and housing (1), the improvement comprising:

the seal ring (2) having the shape of a frustrated hollow cone with the gripping means (16) at the small end thereof and closest to the first flange (14); and

the first flange (14) of the housing (1) extending inwardly far enough for an annular support surface (3) thereof to bear against the seal ring (2) between the gripping means (16) and sealing lip (13) sufficiently to deform the seal ring elastically inwardly,

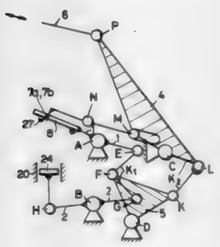
whereby axial and radial vibrations of the shaft flex the seal ring against the support surface to maintain the seal at the sealing lip.

4,522,329

APPARATUS FOR PRESSING-IN BELT CONNECTORS

Hermann Stolz, Mühlheim, Fed. Rep. of Germany, assignor to Mato Maschinen-und Metallwarenfabrik Curt Matthaei GmbH & Co KG, Offenbach, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 375,814
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122592
Int. Cl.³ B25C *7/00*; B23P *11/00*
U.S. Cl. 227—153 **5 Claims**



1. An apparatus for securing belt connectors with staples to an end of a belt, comprising support means, belt end holding means mounted to said support means for holding a belt end in place during the securing of the belt connectors to the belt end, upper tool means (8) for providing a counter force, first lever means (1) journalled to a first fixed point (A) in said support means and connected to said upper tool means for operating said upper tool means, lower tool means arranged for cooperation with said upper tool means, second lever means (2) journalled to a second fixed point (B) in said support means and connected to said lower tool means (24), drive means (6,4) including a drive lever (4) journalled to a third fixed point (C) in said support means for driving said upper and lower tool means, first driven toggle lever means (K1) including a first movable toggle joint (F) and operatively interconnecting said first and second lever means (1, 2), a control lever (5) journalled to a fourth fixed point (D) in said support means, second driving toggle lever means (K2) including a second toggle joint (L) movable with said drive lever (4) and pivotally connected (at K) to said control lever (5), said control lever (5) also being pivotally connected to said first movable toggle joint (F) for operating said upper tool means in advance of operating said lower tool means to provide a non-symmetrical closing movement of said upper tool means relative to said lower tool means and for locking said driven toggle lever means (K1) into a fixed position when said drive lever (4) has reached a certain position to permit further operation of said drive lever (4) without driving said first and second lever means.

4,522,330

GRID AND SLEEVES WELDING FIXTURE AND METHOD

John S. Kerrey, and Robert Duncan, both of Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 1, 1982, Ser. No. 414,203
Int. Cl.³ B23K *37/04*
U.S. Cl. 228—182 **10 Claims**

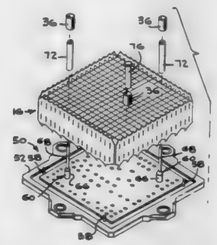
1. A method for assembling a grid and sleeves for welding comprising:

providing a grid of intersecting straps forming uniform size square cells with strap edges coplanar on one side of said grid;

providing a plurality of sleeves for joining to said grid at said one side thereof, said sleeves having an inner diameter substantially equal to the distance between opposing faces of straps forming a cell;

providing a flat plate comprising positioning means, and

having abutment means and spaced locating pins extending from a surface thereof, said pins each having a large diameter portion adjacent said plate for mating with the straps forming a said cell remote from said side of said grid, said pins each having a small diameter portion extending beyond said large diameter portion;



placing said grid on said locating pins and against said abutment means with each pin extending into a cell; and

placing said sleeves in engagement with grid straps forming cells of said grid into which said pins extend.

4,522,331

METHOD OF BRAZING WITH LOW MELTING POINT COPPER-TIN FOILS

Howard H. Liebermann, and Claude D. Tahlmore, both of Randolph Township, Morris County, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 3, 1983, Ser. No. 500,740

Int. Cl.³ B23K *35/30, 35/14;* **C22C** *9/02*

U.S. Cl. 228—263.18 **3 Claims**

1. A process of brazing together two or more metal parts which comprises:

(a) interposing a filler metal between the metal parts to form an assembly, the filler metal having a melting point less than that of any of the parts;

(b) heating the assembly to at least the melting temperature of the filler metal; and

(c) cooling the assembly; wherein the improvement comprises employing, as the filler metal, a homogeneous copper based foil having a composition consisting essentially of 0.1 to 28 atom percent tin, said foil formed from a melt of said composition at a quenching rate of at least about 105° C./S, the balance being copper and incidental impurities.

4,522,332

VOLUME EXPANDING BEVERAGE PACKAGE

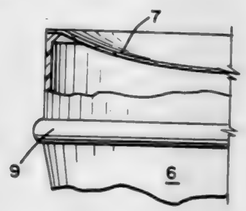
Werner G. Munk, Bergstrasse 12, D-7981 Vogt über Ravensburg, Fed. Rep. of Germany

Filed Feb. 11, 1983, Ser. No. 465,773

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1982, 3205751

Int. Cl.³ B65D *43/08*

U.S. Cl. 229—43 **10 Claims**



1. A non-returnable beverage package for enclosing a beverage and capable of being opened for having, and enjoying the beverage comprising

a container having rotation symmetry for the beverage adapted to be capable of expanding the volume available for the beverage in the container based on a cup sealed with a covering foil where the container has an upper about cylindrical section constructed to fit closely under a cylindrical section of a hood cover, an outer bead surrounding the lower edge of the cylindrical part and adapted to support and match the hood edge, a lower frustro-conical part adjoining the outer bead, and a closed bottom; and

a coordinated cover for sealing liquid for enlarging the volume provided to the beverage in the package, where the cover provides volume itself and is formed as a hood having a lower about cylindrical portion and an upper frustro-conical part, which is closed at the top.

4,522,333

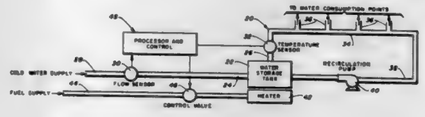
SCHEDULED HOT WATER HEATING BASED ON AUTOMATICALLY PERIODICALLY ADJUSTED HISTORICAL DATA

Frederick Blau, Jr., Fountain Valley; John M. Gross, San Jose, and Tom R. Vandermeyden, Norwalk, all of Calif., assignors to Fluidmaster, Inc., Anaheim, Calif.

Filed Sep. 16, 1983, Ser. No. 532,665

Int. Cl.³ F23N *1/08*

U.S. Cl. 236—20 R **32 Claims**



1. In a water heater control system for constantly controlling the heating and use of hot water from a water tank of the type having water inlet and outlet means for feeding water to and from the tank, heating means for heating the water at the tank, heating control means for controlling the heating means, adjustable water temperature sensing means for sensing water temperature at the water tank and by controlling the heating control means maintaining the water temperature between determined limits, water distribution means operably connected to the water means for distributing hot water for use; the control system further including: water flow sensing means for sensing an amount of water flow through said water tank; processor and control means operationally connected to said heating control means and said water temperature sensing means and said water flow sensing means for determining the start of a particular time period which is one of a definite group of consecutive time periods and each is a repeat of the same one of preceding groups of time periods, for setting said heating control means and said water temperature sensing means and said water flow sensing means for throughout said particular time period exactly according to the overall averages of actual settings recorded in actual use during at least a certain previous of said same one of a previous group of time periods, for actually recording settings directly exactly as they occur of said heating control means and said water temperature sensing means and said water flow sensing means throughout and according to the water actually used during the particular time period and actual degrees of temperature above a given agreed upon minimum required for maintaining hot water with its use, for repeating for each succeeding of said group of consecutive time periods to the end thereof, for starting and continuing using a next group of consecutive time periods and based on the present actually recorded settings of certain previous groups of consecutive time periods, for continuing with following groups of consecutive time periods and based on actually recorded settings taken at least from certain preceding of said groups of consecutive time periods.

4,522,334

THERMOSTATIC CONTROL DEVICE

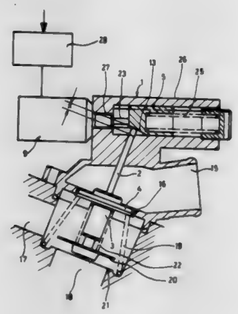
Roland Saur, Stuttgart, Fed. Rep. of Germany, assignor to Behr-Thomson Dehnstoffregler GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,192

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1982, 3226104

Int. Cl.³ F01P *7/02*

U.S. Cl. 236—34.5 **21 Claims**



1. An apparatus for the regulation of the temperature in a cooling circulation of a combustion motor which includes a thermostatic valve means for controlling the cooling medium flow from the combustion motor through a direct return and a heat exchanger to the combustion motor, said valve means including a thermostatic working element having a housing which supports a valve plate for controlling flow leading to the heat exchanger and a working piston which engages against an abutment body within an abutment housing and which moves outwardly in response to heating; wherein a second thermostatic working element is provided as a position adjusting member connected to said abutment body, and wherein the position of said abutment body is adjustable such that the point of engagement with said working piston may be varied to change the distance to said housing and valve plate.

4,522,335

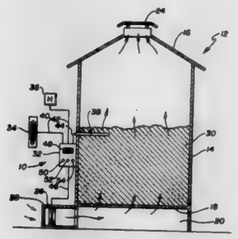
METHOD AND APPARATUS FOR AERATION OF STORED GRAIN

Daniel R. Kallestad, Excelsior, Minn.; Bruce A. Kress, Laura, Ohio, and Kenneth I. Satre, Frost, Minn., assignors to Sentry Technologies, Inc., Excelsior, Minn.

Filed Dec. 30, 1983, Ser. No. 567,427

Int. Cl.³ F26B *21/00;* **E04H** *7/00*

U.S. Cl. 236—44 C **20 Claims**



1. A method for controlling aeration of stored grain which is to be maintained at or near a specified desired grain moisture content comprising the steps of:

measuring the current ambient air temperature;

measuring the current ambient air relative humidity level;

determining the equilibrium moisture content corresponding to said current ambient temperature and relative humidity readings;

determining a running average ambient temperature from a plurality of time-spaced measurements of ambient air temperature taken over a specified period of time; and

aerating said grain when said current ambient air temperature is within a predetermined acceptable range of said running average ambient temperature and said equilibrium moisture content is within a predetermined acceptable range of the desired grain moisture content.

4,522,336

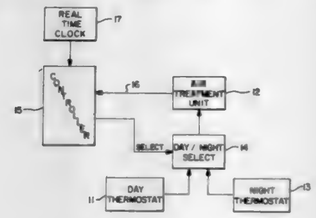
ADAPTIVE OPTIMUM START/STOP CONTROL SYSTEM

Charles H. Culp, Vernon Hills, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 9, 1982, Ser. No. 448,148

Int. Cl.³ G05D *23/00*

U.S. Cl. 236—46 R **12 Claims**



1. An adaptive optimum start/stop controller for controlling an air treatment apparatus at a reduced energy consuming level during periods of non-occupancy of a building and for energizing the air treatment apparatus before occupancy so that the building is comfortable by occupancy, said controller comprising:

temperature sensing means for sensing space temperature within said building;

controller means responsive to said temperature sensing means and to real time for determining optimum start/-stop times so that said building is controlled at energy conservation levels during non-occupancy and comfortable levels during occupancy, said controller means adjusting said optimum start/stop times based upon whether space temperature attained a desired temperature during a prior start/stop operation within an accuracy window of time encompassing the start of a corresponding prior occupancy/non-occupancy period; and,

communication means adapted to connect said controller means to said air treatment apparatus.

4,522,337

DIGITAL CONTROL CIRCUIT

Kenzi Toudo, and Motoshi Miyanaka, both of Yanai, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 17, 1983, Ser. No. 458,454

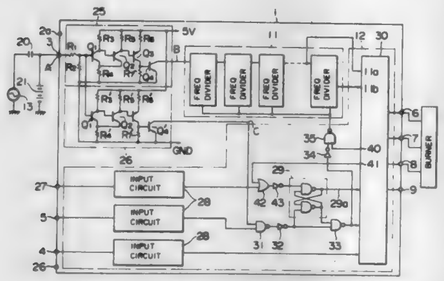
Claims priority, application Japan, Mar. 26, 1982, 57-47198

Int. Cl.³ F23N *5/20;* **H03K** *5/13*

U.S. Cl. 236—46 F **11 Claims**

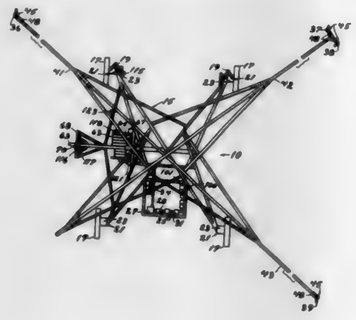
11. A digital control circuit comprising means for providing a clock pulse signal of predetermined magnitude; control means responsive to said clock pulse signal and at least one control signal for generating a first signal for controlling a load; detection means connected to the output of said clock pulse signal providing means for detecting the magnitude of the pulses of said clock pulse signal and for generating a second signal when said magnitude falls below a preselected voltage

level; and means connected to said detection means for preventing generation of said first signal by said control means in



response to receipt of said second signal; said control means comprising combustion control means for a burner.

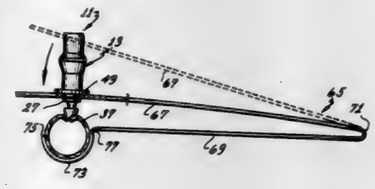
4,522,338
IRRIGATION SYSTEM
Christopher G. Williams, 1106 E. 5th, Spokane, Wash. 99202
Filed Dec. 30, 1982, Ser. No. 454,549
Int. Cl.³ A01G *25/09*
U.S. Cl. 239—177.2 **21 Claims**



1. An irrigation system, comprising:
a water delivery pipe;
cart means for movably supporting the water delivery pipe;
drive means on the cart means for selectively moving the cart means and water delivery pipe;
sprinkler guns spaced longitudinally along the water delivery pipe, rotatable thereon about axes for delivering water in overlapping spray patterns;
selectively operable motor means for each gun for driving the sprinkler guns to rotate about the axes; and
rotational speed control means connected with the motor means for selectively controlling the individual motor means to vary the rotational speed of each gun such that water application rates can be selectively varied about the overlapping spray patterns.

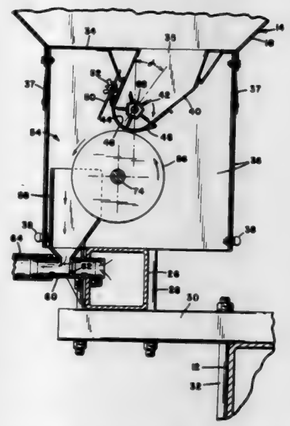
4,522,339
IRRIGATION FITTING WITH INSTALLATION BARB AND ASSOCIATED BARB INSTALLATION TOOL
Robert B. Costa, Santee, Calif., assignor to RIS Irrigation Systems, El Cajon, Calif.
Filed Jun. 3, 1983, Ser. No. 500,779
Int. Cl.³ B05B *15/00*
U.S. Cl. 239—272 **18 Claims**

1. An irrigation fitting cooperable with an installation tool to penetrate the wall of an irrigation conduit, said irrigation fitting comprising:
a body having a flow passage therein opening at a first location adjacent one end of the body;
said one end of said body being shaped to form a piercing point for penetrating the wall of the irrigation conduit whereby said one end of said body can enter the irrigation conduit and the opening can communicate with the interior of the irrigation conduit;
said flow passage opening at a second location spaced from said first location;



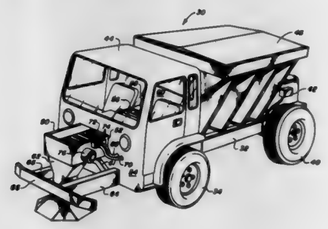
a shoulder on said body intermediate said first and second locations so that the installation tool can be moved generally radially of the fitting over the shoulder to engage the shoulder to force the piercing point to penetrate the wall of the irrigation conduit; and
orienting means on said body intermediate said shoulder and said second location and adjacent the shoulder for engaging the installation tool when the installation tool engages the shoulder to angularly orient the irrigation fitting relative to the installation tool.

4,522,340
GRANULAR MATERIAL APPLICATOR WITH SPEED COMPENSATOR
Dale E. Gandrud, Owatonna, Minn., assignor to Gandy Company, Owatonna, Minn.
Filed Jul. 1, 1983, Ser. No. 509,658
Int. Cl.³ A01C *15/04*
U.S. Cl. 239—654 **12 Claims**



8. Apparatus for applying granular materials, which comprises:
a hopper having a closed arcuate bottom end with a plurality of laterally spaced-apart predetermined discharge openings therein, the arcuate bottom end of said hopper being oriented at a predetermined acute angle of inclination off vertical;
an adjustable gateplate mounted on the bottom end of said hopper, said gateplate having a plurality of similar laterally spaced-apart openings therein for registry with the openings in said hopper to form adjustable composite material discharge openings;
a feed rotor mounted for rotation inside the bottom end of said hopper;
the openings in said hopper and said gateplate including substantially straight, lowermost edges oriented substantially parallel to the rotational axis of said feed rotor;
a plurality of transfer rollers mounted for rotation beneath and having uppermost portions located closely adjacent to the bottom end of said hopper near the lowermost edges of the discharge openings for receiving material urged through the opening by said feed rotor, said transfer rollers and feed rotor being rotatable about substantially parallel transverse axes;
means underlying a portion of said rollers opposite said hopper bottom for receiving material from said transfer rollers and distributing the material for application; and
means for effecting rotation of said feed rotor and transfer rollers in opposite directions responsive to travel of the applicator so that material is fed through the discharge opening by said feed rotor onto said revolving transfer means for transfer.

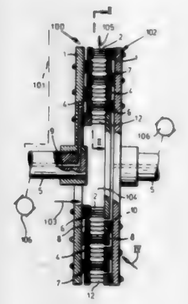
4,522,341
ADAPTABLE MATERIAL SPREADING VEHICLE
Albert J. Wall, 462 Lexington St., and James T. Wall, 137 Russell St., both of Woburn, Mass. 01801
Filed Aug. 30, 1983, Ser. No. 527,700
Int. Cl.³ E01C *19/20*
U.S. Cl. 239—672 **11 Claims**



1. An adaptable material spreading vehicle comprising:
a vehicle body having a frame and front and rear wheels;
an engine mounted to the frame over the rear wheels and operably connected to drive the rear wheels;
a cab forwardly mounted to said frame, said cab having a longitudinally extending channel therethrough and having front and back walls each having a port adjacent an end of said channel;
a removably mounted hopper between said cab and said engine;
a conveyor positioned through said cab and extending both beneath said hopper and ahead of said cab;
a spreader attached to the end of said conveyor ahead of said cab, said spreader being visible from said cab; and means for driving said conveyor and spreader.

4,522,342
IMPACT MILL
Dieter Münschenborn, Schwerte, and Robert Rautenbach, Aachen, both of Fed. Rep. of Germany, assignors to Heinrich Nickel, Dortmund-Mengede and Ernst Eggeling, Dortmund-Lucklemberg, both of, Fed. Rep. of Germany
Filed Nov. 17, 1983, Ser. No. 552,497
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1982, 3242950; Nov. 20, 1982, 3242951
Int. Cl.³ B02C *13/22*
U.S. Cl. 241—57 **12 Claims**

1. In an impact mill having a housing containing a milling unit centrally supplied with a material to be milled and peripherally discharging comminuted material, the improvement wherein said milling unit comprises:
a pair of counterrotating discs rotatable about a common axis, each formed with a multiplicity of angularly spaced milling tools in respective rotation circles centered on said axis reaching toward an opposite disc whereby the tools of said discs interdigitate; and
at least two diametrically opposed pocket-forming vanes on each of said tools extending substantially radially therefrom, one of said vanes of each tool being more remote from said axis than the other vane of the respective tool, the said one of said vanes being inclined forwardly in a direction of rotation of the respective disc at an angle greater than 0° and up to 20° to a radius from said axis and the said other vane of each tool being inclined rearwardly with respect to the direction of rotation of the respective disc at an angle greater than 0° and up to 20° to a radius from said axis.



4,522,343
MICRONIZED GRINDING APPARATUS
Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.
Filed Dec. 13, 1982, Ser. No. 448,950
Int. Cl.³ B02C *15/02, 15/08, 23/40*
U.S. Cl. 241—58 **3 Claims**



1. In an apparatus for grinding coal to micron fineness in a grinding chamber having a circumferential wall supporting a grinding surface, grinding rolls operably mounted in the grinding chamber to grind coal against said grinding surface, means for introducing coal to said grinding chamber, air bustle means surrounding the grinding chamber and receiving a supply of air, and a plurality of openings to and spaced around the circumferential wall of the grinding chamber, the improvement characterized in the mounting of air flow restrictor means in the circumferential wall openings, all of said restrictor means comprising tubes having a somewhat restricted throat like a venturi thereby presenting openings between the air bustle and the grinding chamber for directing the air flow at increased velocity into a like number of horizontal streams substantially tangentially along the circumferential wall and to cause rapid spinning of the mass of the coal particles for substantially

evenly distributing coal and air along the grinding surface, and said restrictor tubes creating a back pressure on the air in the air bustle to substantially evenly distribute the air throughout the air bustle and direct the air flow at said increased velocity into the grinding chamber so as to force the mass of the coal particles to follow streams substantially tangential to the circumferential wall.

4,522,344

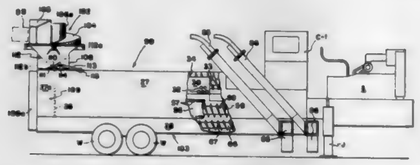
WOOD CHIP SCREENING AND PROCESSING METHODS AND APPARATUS

Norval K. Morey, Winn, Mich., assignor to Morbark Industries, Inc., Winn, Mich.

Continuation-in-part of Ser. No. 291,795, Aug. 10, 1981, Pat. No. 4,396,501. This application May 10, 1983, Ser. No. 493,296

Int. Cl.³ B67B *13/00*

U.S. Cl. 241—79 **10 Claims**



1. Apparatus for separating and classifying chipped whole trees comprising a mix of wood and bark overs, wood chips including some with adhering bark, and bark and leaf fines, comprising:

a. a whole tree chipper;

b. a vehicular frame;

c. receptacle means thereon for receiving chipped whole tree material from the chipper;

d. a first screen system, with openings of a size to pass the wood chips and fines, and retain the overs, mounted on the frame to receive the mix from the receptacle means;

e. an underlying second screen system on said frame, with openings of a reduced size to pass the fines and retain the wood chips, extending at least partially coextensively with said first screen system;

f. a conveyor on said frame for receiving the fines underlying the second screen system; and

g. means for selectively bypassing the screen systems and directing the chipped whole tree material received by said receptacle means directly to the fines conveyor.

4,522,345

APPARATUS FOR WINDING WIRE NET WITH SIMPLE TWIST

Pierre Pilboue, Charleville, France, assignor to Trefileries et Cableries Chiers-Chatillon-Gorcy, Luvallois-Perret, France

Division of Ser. No. 216,656, Dec. 15, 1982, Pat. No. 4,389,025. This application Jun. 20, 1983, Ser. No. 506,038

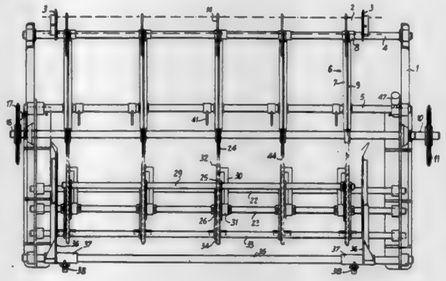
Claims priority, application France, Dec. 19, 1979, 79 31109

The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.

Int. Cl.³ B65H *17/06, 17/20*

U.S. Cl. 242—55 **8 Claims**

1. Apparatus for folding wire mesh fed in the form of an elongated sheet composed of simple twist rows of the type in which each row of mesh is of zig-zag configuration with alternate generally V-shaped equally spaced peaks and valleys, the peaks of one row are looped through the valleys of an adjacent row to connect the rows together, and adjacent rows of mesh can be folded back alternately toward each other in accordian fashion around lines of articulation formed by the looped-together peaks and valleys of adjacent rows, said apparatus comprising, at least two supports each having an upwardly facing surface for receiving said mesh, said surfaces of said support being elongated in the direction of feed of the mesh sheet, and in spaced-apart vertical planes in the path of and parallel to the direction of feed of the mesh sheet, said surfaces of said supports being spaced from each other by a distance substantially equal to a multiple of the distance between the



peaks of the rows of mesh, to enable said upwardly facing surfaces of the supports to engage and support the mesh at the underside of peaks and valleys to permit the mesh to fold by gravity about said lines of articulation.

4,522,346

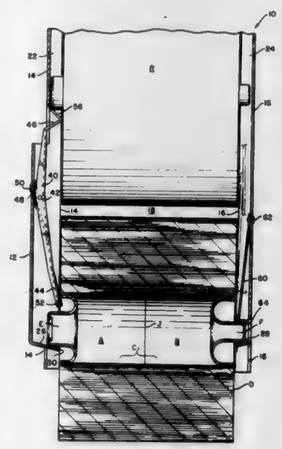
METHOD AND APPARATUS FOR DISPENSING WEB MATERIAL FROM SPLIT CORE ROLLS

Paul W. Jespersen, Houston, Tex., assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Dec. 6, 1983, Ser. No. 558,454

Int. Cl.³ B65H *19/00, 19/04*

U.S. Cl. 242—55.3 **15 Claims**



7. A dispenser for rolls of flexible web material wound on axially aligned core sections defining an intact roll core while web material remains wound on such sections comprising:

a housing providing opposed parallel track means extending between roll dispensing and reserve roll positions within said housing to guidingly receive roll core supports projecting from opposite ends of the rolls;

abutment means associated with said track means to retain a first roll in said roll dispensing position; and

lever means pivotally mounted on said housing having a lower sensing end to sense an intact roll core in said dispensing position and an upper support end to retain a second roll in said reserve roll position, said support end of said lever means retaining said second roll in said reserve position during sensing of an intact core in said dispensing position and said sensing end tending to buckle

the core sections upon exhaustion of web material from the intact roll core to disengage the core sections from said track means whereupon said lever means shifts said support end to free said second roll from retention in said reserve roll position to move to said roll dispensing position.

4,522,347

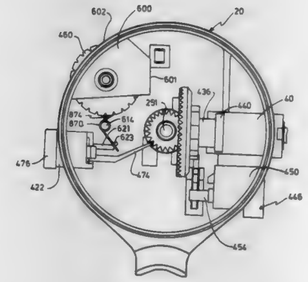
DRAG ADJUSTMENT CLICK SPRING ASSEMBLY

Steven L. Swisher, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Oct. 5, 1983, Ser. No. 539,314

Int. Cl.³ A01K *89/00*

U.S. Cl. 242—84.5 A **14 Claims**



8. In a fishing reel of the type having a housing, a line-carrying spool, a friction creating member positionable against the spool, a deck plate upon which the spool and friction creating member are mounted, a drag wheel mounted with the deck plate for rotation about a substantially longitudinally extending axis, means for varying a force applied between the spool and the friction creating member which is actuated by rotation of the drag wheel, and means for indicating and restraining rotation of the drag wheel comprising:

a plurality of notches on the drag wheel; a

spring member having a resilient leg engageable with the notches; and

means for removably slip-fitting the spring member with the reel without the use of separate fasteners, the resilient leg interacting with the notches to restrain rotation of the drag wheel and produce an audible clicking sound to remind the reel operator of the rotation of the drag wheel.

4,522,348

PORTABLE, MANUALLY OPERABLE DISPENSER FOR STRETCH FILM AND THE LIKE, AND PROCESS OF APPLYING

Russell B. Strout, Winchester, and Jerold J. Golner, Lowell, both of Mass., assignors to Borden, Inc., Columbus, Ohio

Filed Jul. 13, 1982, Ser. No. 397,939

Int. Cl.³ B65H *23/06*

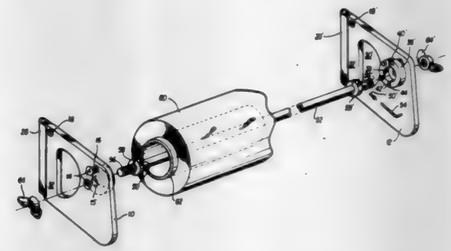
U.S. Cl. 242—96 **7 Claims**

1. A dispenser for a web of wrapping material in the form of a roll of the material that is wound on a tubular core, comprising

at least one side member having a side plate with a hand hold opening and a bearing member disposed thereon for supporting the core of said roll and permitting the core and roll to rotate for dispensing the web of wrapping material from the roll, wherein

said bearing member is in the form of a means insertable in the core, and includes a bearing surface on which the core end can rotate, said bearing surface further having at least one part that is expandable for engagement against the inside surface of the core to function as a braking means to permit tensioning of the film as the film is paid out, and

a brake controller including a pushable member mounted within said hand hold opening, a push rod mounted for reciprocating movement on said side plate and oriented substantially perpendicularly to the axis of rotation of the roll, said push rod being operatively connected to said pushable member and to said bearing member, said controller being operable through a squeezing force applied by a hand inserted within said hand hold opening and squeezing said pushable member to cause engagement of



said expandable part to a desired degree to adjust the braking force on the core while said core is rotating on said bearing member and thereby control the tension in the wrapping material as it is applied, wherein said brake controller and said bearing member coact to provide a mechanical advantage between the squeezing force and the resulting braking force.

4,522,349

HAND-HELD FISHING REEL

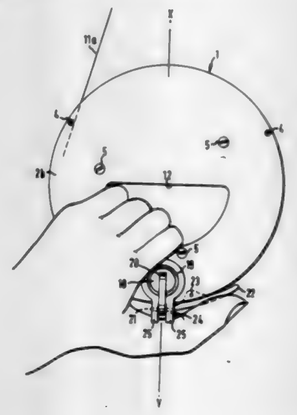
Ernest J. Clerk, 18 South Av. Rest Pen, Kingston 10, Jamaica

Filed Aug. 22, 1983, Ser. No. 525,466

Claims priority, application United Kingdom, Sep. 2, 1982, 8225043

Int. Cl.³ B65H *75/40*

U.S. Cl. 242—96 **5 Claims**



1. A hand-held fishing reel comprising: a housing having an opening therein suitable for inserting a hand to hold the housing; an annular spool rotatably mounted with respect to the housing and having a central opening therein bounded by an inner spool surface, the central opening in the spool always being concentric with the opening in the housing; gear teeth arranged around the said inner spool surface; a gear wheel rotatably mounted within the housing that meshes with the said gear teeth; a crank handle located on one side of the housing; and a shaft passing through the said housing and connecting the handle to the gear wheel, wherein the gear

wheel engages the said teeth along an edge portion of the inner spool face remote from the handle.

4,522,350

SAFETY BELT EMERGENCY LOCKING RETRACTOR

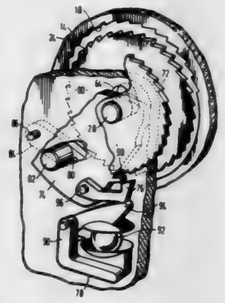
Hans-Hellmut Ernst, Sulfeld, Fed. Rep. of Germany, assignor to Britax-Kolb GmbH & Co., Fed. Rep. of Germany

Filed Nov. 15, 1983, Ser. No. 551,946

Claims priority, application United Kingdom, Nov. 20, 1982, 8233186; Jan. 5, 1983, 8300178

Int. Cl.³ B65H *75/48*

U.S. Cl. 242—107.4 A **14 Claims**



1. An emergency locking retractor comprising a pair of mutually parallel frame members, a spool comprising a shaft to receive the belt, a respective disc, having teeth on its periphery, mounted adjacent to each end of the shaft, complementary locking formations on the frame members, bearing rotatably mounting the spool on the frame members so as to permit limited translational movement of the spool relative to the frame members in a direction perpendicular to the axis of rotation of said spool between an engaged position in which said teeth of said disc engage with said complementary locking formations on the frame members to inhibit rotation of the spool and a disengaged position in which the spool is free to rotate, resilient means biasing the spool into its disengaged position, and inertia responsive actuating means arranged to cause movement of the spool into its engaged position, wherein the actuating means comprises a rachet wheel mounted on the spool for rotation and translational movement therewith, a pivotally mounted control member, a pawl pivotally mounted on one of the control member and the ratchet wheel, ratchet teeth on the other of the control member and the ratchet wheel, and inertia responsive means for moving the pawl into engagement with the ratchet teeth so that angular movement of the ratchet wheel in the belt unwinding direction causes angular movement of the control member, such angular movement of the control member being arranged to cause movement of the spool into locking engagement with the frame members, the control member moving with the spool as the latter moves into locking engagement.

4,522,351

MOTOR DIFFERENTIAL DRIVE REEL TENSIONING SYSTEM

Richard J. Yessian, Martinsville, and William A. Oetting, Green Brook, both of N.J., assignors to Lockheed Electronics Company, Inc., Plainfield, N.J.

Filed Sep. 30, 1983, Ser. No. 537,579

Int. Cl.³ B65H *59/38, 59/40*

U.S. Cl. 242—189 **16 Claims**

1. A compact, low power reel drive web tensioning system comprising:

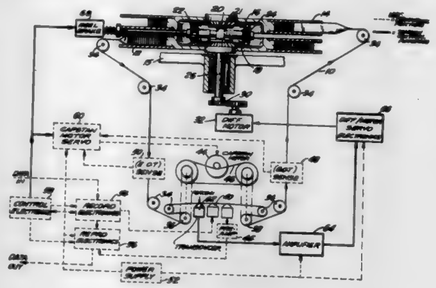
(a) a first rotatably mounted supply reel;

(b) a second rotatably mounted reel;

(c) differential gear means coupled to said first and second reels to permit counter-rotation of said reels at different speeds;

(d) a variable torque motor coupled to said differential gear means for rotating said first and second reels;

(e) inductive transducer means for sensing the tension in said web, said transducer means being adapted to engage the tape and provide an output corresponding to the tension in said tape; and



(f) servo-control means having an input connected to the output of said transducer means and an output connected to said motor for controlling same, said servo-control means varying the output supplied to said motor to vary the torque of said motor to maintain constant tension on said web.

4,522,352

DRIVE AND MOUNTING FOR COAXIAL TAPE REELS

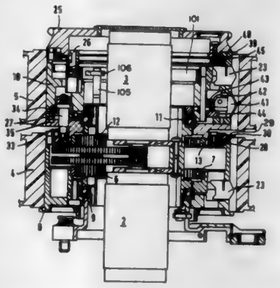
Gerhard Falk, Rossdorf, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 9, 1984, Ser. No. 598,086

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1983, 3312817

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—193 **2 Claims**



1. Combined driving and mounting device for first and second tape reels for a machine in which said tape reels are used in coaxial alignment, each reel having its individual motor and drive and being mountable on respective first (**10**) and second (**11**) hollow hub structures aligned on a common axis, said hub structures together substantially surrounding said drives (**12, 13; 6, 7**) and at least a portion of each of said motors (**2, 3**) and having cylindrical outer surfaces for centering said reels, said second hub structure (**8**) having, at its axial end facing away from said first hub structure (**10**), at least one support element affixed thereto (**21**) for said second reel, said support element protruding radially from said cylindrical surface of said second hub structure, said device further comprising:

a rotary actuating control crown (**25**) centered on said common axis and fitting within and protruding from the end of said first hub structure (**10**) facing away from said second hub structure (**8**), said control crown (**25**) being mounted so as to permit control rotation thereof relative to at least said first hub structure (**10**);

a first set (**37, 37', 37''**) of a plurality of arc-shaped single-arm levers and a lever support ring (**35**) therefor on which said levers of said first set are pivoted at one end of said respective levers, said lever support ring (**35**) being disposed at the end of said first hub structure (**10**) facing said second hub structure (**8**) and said levers providing movable support elements (**137,137', 137''**) for said first reel (**5**), a mechanical linkage (**27, 27', 27'', 34, 43**) being provided between said control crown (**25**) and said levers of said first set for making said support elements movable radially so as to be selectively protruding radially from and withdrawn radially within a circle concentric with said cylindrical surface of said first hub structure;

first (**45**) and second (**28**) threaded clamp support rings screwed respectively interiorly into said first (**10**) and second (**8**) hub structures, said first support ring being at the end of said first hub structure facing away from said second hub structure and said second support ring being at the end of said second support structure facing said first support structure, each said clamp support ring having a pair of arc-segmental single-arm levers (**29, 40**) pivoted thereon at diametrically opposite positions on said ring and a pin-and-guideway circumferentially sliding positioning engagement (**97, 98; 93, 99**) for the respective ends of said levers opposite their pivoted ends, said levers (**29, 40**) of said clamp support rings having protrusions (**30, 39**) in their mid-portions;

rotary cam and follower mechanisms (**95**) for each of said clamp support rings for selectively urging outward said protrusions of levers of the respective rings in response to an initial rotation of the respective ring relative to the respective hub structure in which the ring is threaded produced by actuation of said control crown (**25**), said control crown being actuatable further for clamping a reel by means of said protrusions in response to further rotation of the respective ring in its threaded mounting, said control crown (**25**) being similarly actuatable in the reverse direction for unclamping the reel and for permitting said protrusions to spring back to a position clearing the respective hub structure for axial removal of a reel.

4,522,353

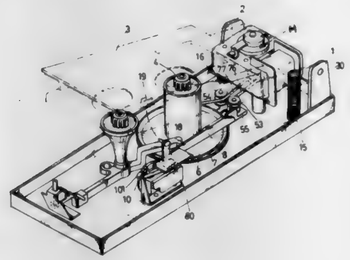
AUTOMATIC CASSETTE EJECTING DEVICE

Chun T. Yeh, No. 6, Lane 308 Pao-Shan Rd., Hsinchu City, Taiwan

Continuation-in-part of Ser. No. 208,190, Nov. 19, 1980, Pat. No. 4,380,322. This application Oct. 4, 1983, Ser. No. 538,795

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—198 **3 Claims**



1. An improved tape rewinding apparatus for a video cassette including a frame and a motor mounted therein, a cassette compartment lid having an end pivoted to said frame, and a winding spindle driven by a transmission belt, the apparatus comprising:

catch means disposed at said cassette compartment lid for fastening and holding said cassette compartment lid in a closed position; and

a tension sensing member abutting against said transmission belt on both a tight side strand and a slack side strand of said transmission belt in such a direction that with increasing belt tension, said tension sensing member is moved to actuate said catch means in response to an increase in the tension difference between said tight side strand and said slack side strand of said transmission belt when the winding spindle is precluded from rotating while the transmission belt is urged to move by said motor.

4,522,354

FISHING REEL HAVING A SPOOL ROTATION CONTROL MECHANISM

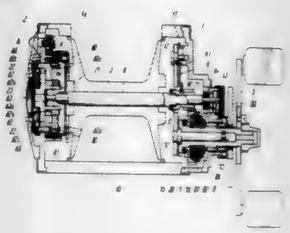
Jun Sato, and Hideki Nakajima, both of Sakai, Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan

Filed Oct. 5, 1983, Ser. No. 539,173

Claims priority, application Japan, Oct. 13, 1982, 57-155550[U]

Int. Cl.³ A01K *89/02*

U.S. Cl. 242—219 **3 Claims**



1. A fishing reel comprising:

a pair of frames;

a spool shaft supporting a spool, said spool shaft being supported rotatably between said frames;

a drive mechanism for driving said spool shaft and comprising a handle shaft supporting a handle, a main gear supported rotatably to said handle shaft, a drag mechanism for transmitting a driving force from said handle shaft to said main gear, and a pinion engageable always with said main gear;

a clutch provided between said spool shaft and said pinion;

a clutch operating mechanism for operating said clutch to engage or disengage said spool shaft to or from said drive mechanism;

a first anti-reverse-rotation mechanism for preventing said spool shaft from reverse rotation when said clutch is engaged, said first anti-reverse-rotation mechanism comprising a stopper gear rotating together with said main gear, a stopper supported movably to one of said frames and engageable with said stopper gear so as to impede reverse rotation of said main gear, and an operating member supported to said frame for operating said stopper causing it to engage with or disengage from said stopper gear; and,

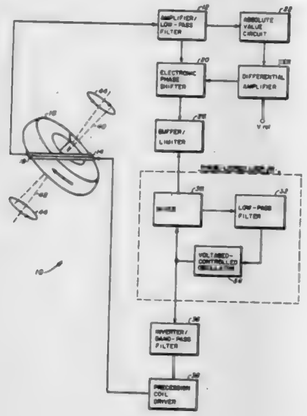
a second anti-reverse-rotation mechanism for allowing said spool, when said clutch is engaged, to reversely rotate through said drag mechanism, said second anti-reverse-rotation mechanism comprising an anti-reverse-rotation gear fixed to said handle shaft and an anti-reverse-rotation pawl pivotably supported to said frame for engaging with said anti-reverse-rotation gear.

4,522,355

APPARATUS FOR SCANNING A ROTATING GYROSCOPE

Robert D. Moran, Dahlgren, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 31, 1983, Ser. No. 499,576
Int. Cl.³ F41G *7/36*; G01C *19/28*
U.S. Cl. 244—3.2 **5 Claims**



1. An improved apparatus for scanning a rotating gyroscope of the type having a rotor magnet, a cage coil disposed about said rotor magnet and a precession coil wound contiguous to and under said coil, wherein the improvement comprises:

first operatively connected to said cage coil for phase shifting a cage coil derived signal as a function of its amplitude;

a phase-locked loop operatively connected at its input to the output of said first means and having a free running frequency approximately equal to the spin frequency of said rotor magnet so that said phase-locked loop locks-up upon the application of the phase shifted cage coil derived signal from said first means, and so that said phase-locked loop outputs a waveform that is 180° out of phase with the phase shifted cage coil derived signal at its input; and

second means operatively connected at its input to the output of said phase-locked loop and at its output to said precession coil for driving said precession coil with a constant amplitude signal phase-locked to the phase shifted cage coil derived signal so as to drive said rotor magnet about its spin axis in a predetemined scan pattern about the missile body axis of an associated missile system.

4,522,356

MULTIPLE TARGET SEEKING CLUSTERED MUNITION AND SYSTEM

Clair K. Lair, Upland; Jules Jonas, Claremont, and Keith D. Anderson, Upland, all of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Nov. 12, 1973, Ser. No. 415,452
Int. Cl.³ F41G *7/22*; F42G *13/32*
U.S. Cl. 244—3.15 **4 Claims**

1. A multiple target seeking clustered munition system, comprising:

a plurality of target seeking missiles arranged in a cluster, each of said missiles having a body with aerodynamic sustaining and controlling surfaces mounted thereon;

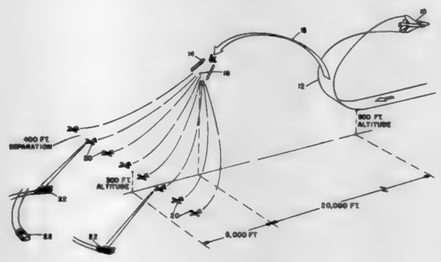
conveyance means for holding and carrying said clustered missiles, and including means for releasing the missiles therefrom in the vicinity of a target;

target seeking means operably mounted in said missile body, the target seeking means including a receiver sensitive to radiation from a target and its surroundings, and having means for identifying the target against the background;

a receiving antenna coupled to said receiver;

drive means for driving the antenna in a search scan pattern, and being responsive to signals from the target seeking means to drive the antenna in a target tracking scan upon identification of a target;

target identification means having pulse amplitude and pulse width discriminating means for identifying a target signal pulse in a background signal of different and substantially constant level, and including pulse counting means for



determining the number of target pulses in each scan of the antenna;

propulsion means operably mounted in said missile body for propelling said missile in cruising flight after release from the conveyance means;

a warhead operably mounted in said missile body;

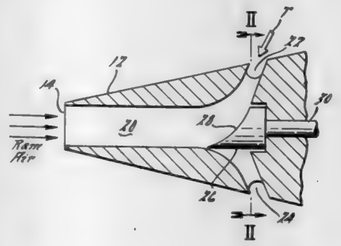
and guidance means coupled to said controlling surfaces, said guidance means being responsive to signals from said target seeking means to guide said missile in cruising flight and, upon identification of a target, to operate said controlling surfaces and guide the missile to the target.

4,522,357

RAM AIR STEERING SYSTEM FOR A GUIDED MISSILE

William R. Bains, Lake Elsinore, and Calhoun W. Sumrall, Irvine, both of Calif., assignors to Ford Aerospace & Communications Corp., Dearborn, Mich.

Filed Jan. 19, 1983, Ser. No. 489,662
Claims priority, application PCT Int'l Appl., Jan. 19, 1983, PCT/US83/00082
Int. Cl.³ F41G *7/00*; B64C *21/08*
U.S. Cl. 244—3.22 **3 Claims**



1. A system for directionally controlling a fired projectile spinning at a predetermined rate in a predetermined direction when traveling over its flight path comprising:

means at the nose end of said projectile for defining a cylindrical chamber having one end open for receiving ram air;

a pair of oppositely disposed air passages extending from said chamber means to opposite sides of said projectile;

means between said chamber means and said passages for responsively diverting said ram air in a predetermined direction through at least one of said passages to control the steering direction of said projectile; and

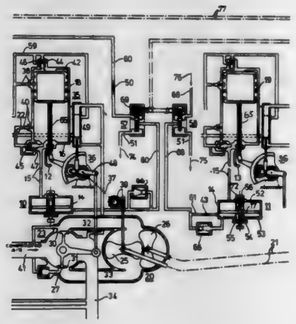
wherein said diverting means is rotationally driven to rotate at said predetermined rate in a direction opposite to said predetermined direction in order to maintain said diverting means in a predetermined spacial location to effect a particular steering force thrust vector.

4,522,358

METHOD AND APPARATUS FOR THE DISPLACEMENT OF TWO THRUST REVERSERS OF JET ENGINES OF AN AIRCRAFT IN SYNCHRONISM DURING THE THRUST REVERSAL PHASE

Hans Dinger, Friedrichshafen; Hilbert Holzhauer, Stetten, and Erberhard Lang, Grafelfing, all of Fed. Rep. of Germany, assignors to MTU, Munich, Fed. Rep. of Germany

Filed Jun. 13, 1983, Ser. No. 503,695
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222672
Int. Cl.³ F02K *1/60*
U.S. Cl. 244—110 B **27 Claims**



1. In a system for the displacement of two thrust reversers for two jet engines of an airplane, each thrust reverser having a drive motor operated by compressed air, a valve controlling the flow of compressed air to the motor, set-point indicator means including an input piston controllable by the action of compressed air, a differential transmission, and a feedback system from said motor to said differential transmission, said valve being actuated by said input piston and said motor via said differential transmission, the improvement comprising means for interrupting the displacement of one of said thrust reversers at an intermediate point in the path of travel thereof in the event that said one thrust reverser reaches said intermediate point before the other thrust reverser reaches a corresponding intermediate point in its path of travel, and means for eliminating such interruption of the displacement only when both of the thrust reversers have reached their respective said intermediate points in their paths of travel whereafter the thrust reversers simultaneously commence travel through the remainder of their paths of travel.

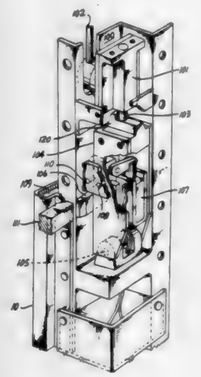
4,522,359

DOOR ANTI-HIJACKING LATCH/LOCK MECHANISM WITH PNEUMATIC DECOMPRESSION OVERRIDE

Royce F. Church, Lynnwood; Donald B. McCaffrey, Edmonds, and Leo W. Plude, Redmond, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1982, Ser. No. 444,245
Int. Cl.³ B64C *1/14*
U.S. Cl. 244—129.5 **4 Claims**

1. An aircraft door anti-hijacking latch lock mechanism having means for providing pneumatic decompression override, said latch lock mechanism having an engaged mode only in response to application of electrical power, said latch lock mechanism further operative in a release mode in response to switch actuation on a pilot panel, loss of electrical power, or key actuation from outside the control cabin of the aircraft



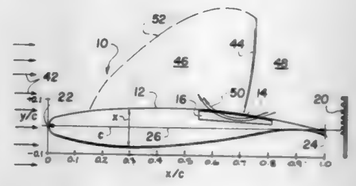
wherein said means for providing pneumatic decompression override includes a spring returned striker and spring loaded ball detent arrangement.

4,522,360

PASSIVE DRAG CONTROL OF AIRFOILS AT TRANSONIC SPEEDS

Richard Barnwell, Newport News; Dennis Bushnell, Wicomico, both of Va.; Henry T. Nagamatsu, Schenectady; Lakhdar Bahi, Troy, both of N.Y., and Janet Ross, Burbank, Calif., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

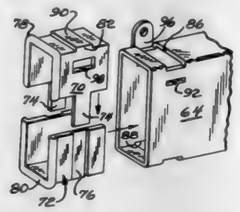
Filed Apr. 27, 1983, Ser. No. 489,056
Int. Cl.³ B64C *21/08*
U.S. Cl. 244—204 **13 Claims**



1. An airfoil for transonic speeds having a leading edge and comprising a porous top surface area extending from a location at about 50 to 60% of a chord length from the leading edge, to a location at about 80 to 90% of the chord length from the leading edge, and passive means defining a cavity under said porous top surface area and in the airfoil having a depth of from 0.05 to 0.2% the chord length.

9. A passive method of reducing drag of an airfoil at transonic speeds comprising providing a porous surface area on the airfoil extending as close as 50% of a chord length from a leading edge of the airfoil to as far as 90% of the chord length from the leading edge of the airfoil, and defining a cavity below the porous surface area for passing air from a high pressure area downstream of a pressure wave established on the airfoil during transonic speeds, to a low pressure area upstream of the shock wave and not elsewhere.

4,522,361
LOCKING SPREADER LEG FOR TRIPOD
Paul C. Mooney, c/o Quick Set, Inc., 3650 Woodhead Dr., Northbrook, Ill. 60062
Filed Nov. 18, 1982, Ser. No. 442,852
Int. Cl.³ A47B *91/00*
U.S. Cl. 248—188.8 **12 Claims**

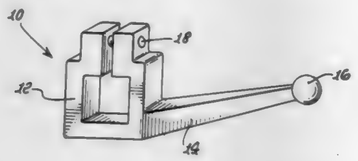


1. A locking mechanism for first and second telescoping leg members, said first leg member telescopically received within said second leg member, comprising:

first and second clamps within and longitudinally fixed with respect to said second leg member, said first leg member being received between said first and second clamps; and

means associated with said clamps for selectively either releasing said clamps to allow relative longitudinal motion of said leg members, or biasing said clamps together into frictional contact around said first leg member to prevent relative longitudinal motion of said leg members.

4,522,362
SUPPORT DEVICE PARTICULARLY USEFUL FOR DRAFTING TEMPLATES AND THE LIKE
Kelly Owen, 79 Hunter Point Rd., Pomona, Calif. 91766
Filed Aug. 19, 1983, Ser. No. 524,647
Int. Cl.³ A47F *7/00*
U.S. Cl. 248—207 **6 Claims**



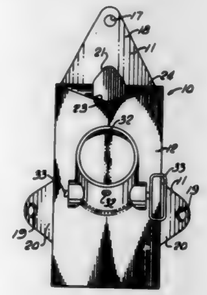
1. A support device particularly useful for holding drafting templates and the like in a condition readily accessible to a draftsman, the support device comprising:

an integral base member having a substantially rectangular cross-section disposed with respect to X, Y, and Z orthogonal axes, said axes having a point of intersection with respect to one another; said base member being oriented with its center at the intersection of said X, Y, and Z orthogonal axes;

means for adjustably fastening said base member to said support device said means provided at an upper side portion of said base member; and

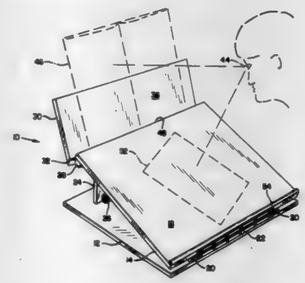
a substantially linear post extending outwardly from a lower side portion of said base member, said post being angled in a range of from about 5° to about 45° with respect to said X axis and said post being angled in a range of from about 5° to about 45° with respect to said Z axis.

4,522,363
GRAVITY SELF-ALIGNING ARTICLE MOUNT
Clifton F. Stuart, Rte. 1, Box 137, Lynnville, Tenn. 38472
Filed Aug. 19, 1982, Ser. No. 409,441
Int. Cl.³ F16B *3/08*
U.S. Cl. 248—225.2 **8 Claims**



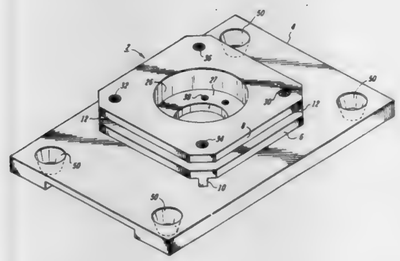
1. In an article mount for suspension mounting of an article to a support, including, a first mounting bracket adapted for securement to a support and a second mounting bracket adapted for securement to an article to be suspended from said support and for mating suspension engagement with said first bracket, a vertically extending horn secured to upper portions of one of the brackets and an opening in upper portions of the other of said brackets for receiving and seating the horn to hang the article bracket from the support bracket, the improvement comprising, said brackets having engaging body portions which underly said horn and opening and which body portions further respectively have mating convex and concave contoured seating surfaces adapted to gravitationally self-align one of said brackets with the other to vertical after said horn has been engaged in said opening.

4,522,364
DESK TOP
Gregory S. Charney, 605 NE. Liberty, Portland, Oreg. 97211, and Terrance D. Hohner, 1090 SW. Gaines, Portland, Oreg. 97201
Filed Mar. 3, 1983, Ser. No. 471,857
Int. Cl.³ F16F *15/00*
U.S. Cl. 248—460 **4 Claims**



1. A portable desk top adapted to rest on a support surface comprising; a first platform having a top surface and an upper edge, a first foldable support means for the first platform having an open position for supporting the first platform with the top surface inclined front to back relative to the support surface, a second platform having a top surface, and a second foldable support means supporting the second platform at the upper edge of the first platform with the top surface of the second platform inclined at a determined angle front to back relative to the top surface of the first platform, said second foldable support means comprised of a pivotal connecting means forming a pivotal juncture between the lower end of the second platform and the upper edge of the first platform, and further comprised of a stop positioned on one of the first and second platforms in the path of the relative pivoting movement of the other of the platforms to abuttingly engage said other of the platforms and thereby to limit rearward pivoting of the second platform at the determined angle relative to the first platform, said stop comprising the sole support of the second platform at the determine angle, said second foldable support means further including a raised strip on the bottom of the second platform, and said pivotal connecting means forming a pivotal juncture between the raised portion of the strip and the upper edge of the first platform whereby in the open position the top surface of the second platform is offset rearwardly from the top surface of the first platform thereby forming a book supporting ledge, and said second foldable support means permitting the pivoting forwardly of the second platform to fold the top surface thereof onto the top surface of the first platform for carrying.

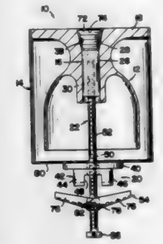
4,522,365
DUAL-AXIS POSITIONING APPARATUS ADJUSTING THE ANGULAR POSITION OF AN OPTICAL ELEMENT
Gilbert Tabares, Playa del Rey, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Feb. 18, 1983, Ser. No. 467,638
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—466 **2 Claims**



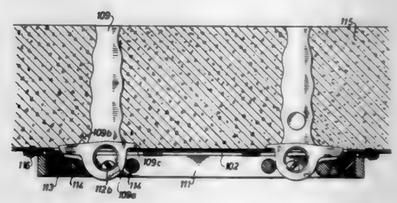
1. A positioning apparatus of unitary construction comprising first, second and third generally planar members with the second member between the first and third members, a first pair of rigid connecting sections rigidly linking first and second oppositely disposed portions of a first of said planar members to a second of said planar members, a second pair of rigid connecting sections rigidly linking other oppositely disposed portions of said first of said planar members to a third of said planar members, and means for moving portions of one of said planar members relative to the other of said planar members and for moving other portions of said one of said planar members relative to only one of said planar members.

4,522,366
VASE LOCKING DEVICE
George B. Howell, III, 1036 S. Sterling, Tampa, Fla. 33609
Filed Aug. 3, 1983, Ser. No. 519,844
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—551 **7 Claims**

1. A vase locking device for use with a grave or monument to alternately secure a combination vase and base in either the stored or upright position comprising an adaptor apparatus coupled to the vase including a first and second adaptor element and a lower lock member comprising a base member having a locking element affixed to one surface thereof (coupled to the base selectively coupled together), the base selectively secured to the vase by an interconnecting member extending between said lower lock member and said first or second adaptor element such that said vase locking device secures the vase to the base in the stored position with said first adaptor element and the vase and base in the upright position with said second adaptor member.



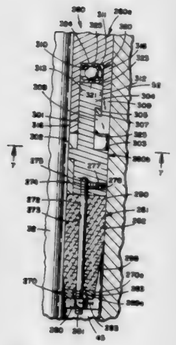
4,522,367
MATRIX ARRAY FOR MANUFACTURING CONCRETE SLEEPER BLOCKS
Stig Thim, Växjö , Sweden, assignor to A-Betong AB and Sabema Material AB, both of Växjö , Sweden
Division of Ser. No. 475,661, Mar. 15, 1983, Pat. No. 4,495,127.
This application Sep. 12, 1984, Ser. No. 649,861
Claims priority, application Italy, Jul. 9, 1982, 22322 A/82
Int. Cl.³ B28B *23/06*
U.S. Cl. 249—86 **3 Claims**



1. A matrix array for manufacturing concrete sleeper blocks (**115**) for a railway switching-point comprising a plurality of separate matrices having the form of substantially planar discs or plates (**102**) of substantially the same width as the upper surface of the sleeper blocks and having varying lengths corresponding to the desired lengths of individual sleeper blocks, and being provided with holes (**102*a***) arranged at predetermined varying locations for detachably mounting attachment means (**109**) intended to be cast in the sleeper blocks, characterized in that the attachment means are detachably mounted in accurately predetermined positions in frame members (**111**) affixed to the discs, said attachment means having parts provided with bores or holes (**109*a***) outside of the cast sleeper blocks, and, before the casting operation, being detachably mounted to the frame members by elongated securing members (**112**) having a longitudinal crank-shaft profile, said securing members extending through the bores or holes in said parts and through opposite holes (**111*a***) in said frame members to secure the attachment means, and said frame members upon casting and hardening of the sleeper blocks being detachable from the discs and the in-cast attachment means for renewed use.

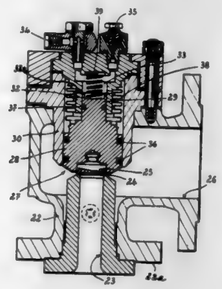
4,522,368
CLOSURE DEVICE
Donald E. Sable, 4100 Spring Valley Rd. #900, Dallas, Tex. 75240
Filed Dec. 19, 1983, Ser. No. 562,821
Int. Cl.³ E21B *33/02*
U.S. Cl. 251—1 B **6 Claims**





1. A closure device for a well head having a substantially vertical flow conductor extending into a well bore and an elongate member extending longitudinally into said vertical flow conductor, said closure device including: a tubular main body connectible to said well head in axial alignment with the vertical flow conductor for and with the elongate member to extend therethrough into the well head and the well flow conductor, said main body having lateral port means above the well head and a seal seat above said port means; a tubular operator ram telescoped downward in said main body and extending toward said seal seat, annular compressible seal means mounted on said operator ram engageable with said seal seat upon downward movement of said operator ram in said main body and compressible between said operator ram and said seal seat for engaging and sealing between the elongate member and said main body while the elongate member is stationary when said operator ram is moved downwardly in said main body toward said seal seat; co-engageable means on said operator ram and said main body above said seal seat for moving said operator ram longitudinally in said main body upon rotation of said operator ram relative to said main body, first seal means disposed above said seal seat for sealing between said operator ram and said main body; and second seal means disposed above said compressible seal means for sealing between the elongate member and said operator ram, said first seal means comprising a plurality of longitudinally spaced independent seal means, said co-engageable means being disposed between said seal seat and said first seal means, said operator ram comprising an upper section and a lower section connected rotatably to said upper section, one of said upper sections and said lower section having a purality of collet fingers, the other of said sections having a lock flange, and co-engageable latch means for limiting upward movement of said upper section relative to said lower section while permitting rotational movement of said upper section relative to said lower section.

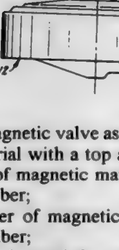
4,522,369
PILOT-CONTROLLED SAFETY VALVE
André Gemignani, Avenue Allende,, Martigue (Bouches-du-Rhone), France
Filed Aug. 16, 1983, Ser. No. 523,696
Claims priority, application France, Aug. 17, 1982, 82 14491
Int. Cl.³ F16K *31/126*
U.S. Cl. 251—61.5 **5 Claims**



1. A pilot-controlled safety valve for the protection of a vessel by venting pressure therefrom at a predetermined maximum level, said valve comprising:
a valve housing connected to said vessel and formed with a valve passage communicating therewith;
a valve seat formed along said passage;
a valve member movable along an axis toward and away from said seat for selectively blocking and unblocking said passage;
a support element carrying said valve member and guided in said housing for movement along said axis;
a metal bellows sealingly connected to said support element and to said housing, said support element forming a command chamber with said housing; and
means connecting said command chamber to said vessel, thereby enabling the displacement of said support element and said valve member, said support element being stepped and having a large section turned toward said seat and a small section turned away from said seat, said housing having a pair of sleeves each axially guiding one of said sections, said bellows being received between said sleeves.

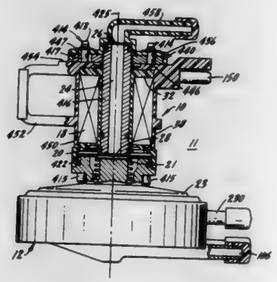
4,522,370
VALVE
Timothy J. Noack, Lewisville, Tex., and Lester C. Rathie, Dartmouth, Canada, assignors to Otis Engineering Corporation, Carrollton, Tex.
Filed Oct. 27, 1982, Ser. No. 437,172
Int. Cl.³ F16K *31/143*
U.S. Cl. 251—63.5 **9 Claims**

1. A lubricator-retainer valve comprising, a body having a flowway therethrough, a cooperative valve member and seat controlling flow through the flowway, said valve member movable along said flowway, means for moving said valve member between open and closed positions including a first pressure responsive member exposed to pressure fluid from a control line connector, a two-position mandrel means movable between a first position in which the valve member is in closed position and a second position in which the valve member is in open position, said mandrel means engaging and preventing movement of said valve member from closed to open position when in said first position, and pressure responsive latch means



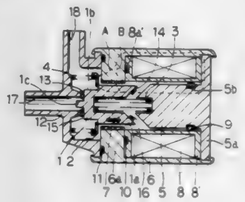
including a second pressure responsive member exposed to a second pressure fluid from a lock connector releasably latching the mandrei means to said housing in said first position in response to pressure applied to said second pressure responsive member, said mandrel means arranged such that when latched to said housing any force applied to move said valve member toward open position places said mandrel means in compression.

4,522,371
PROPORTIONAL SOLENOID VALVE
Clarence D. Fox, and Tibor Baron, both of Decatur, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Jun. 20, 1983, Ser. No. 506,138
Int. Cl.³ F16K *31/06*
U.S. Cl. 251—139 **5 Claims**



1. An electromagnetic valve assembly having a first member of magnetic material with a top and a bottom;
a top member of magnetic material, affixed near the top of the first member;
a center member of magnetic material extending through said top member;
a seat extending beyond the center member;
a base member, attached to the bottom of the first member, to define a chamber adjacent the seat;
a magnetic closure member, positioned within the chamber at a predetermined distance from said seat which, with the first member, the top member and the center member, completes a flux path including an air gap defined between the magnetic closure member and the center member; and
means for establishing the flow of electromagnetic flux through said flux path;
said first member defines an extension extending above said top member, said top member having at least two portions, at least one of said top member portions being movable relative to said other portion, and defining an aperture to receive said extension and a channel to receive a securing means;
wherein said movable portion is movable about said extension to vary the reluctance in the electromagnetic flux path.

4,522,372
ELECTROMAGNETIC VALVE
Kiyotoshi Yano, Aki; Yutaka Suzuki, Nishio, and Yoshichika Yamada, Kuwana, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Nov. 21, 1983, Ser. No. 554,108
Claims priority, application Japan, Jan. 18, 1983, 58-7089
Int. Cl.³ F16K *31/06*
U.S. Cl. 251—141 **2 Claims**



1. An electromagnetic valve having a single coil through which an electric current is applied, a yoke encasing said coil, a stator core positioned in said coil for passing the magnetic flux generated by said coil therethrough, a moving core positioned in the vicinity of said stator core for passing said magnetic flux therethrough to be moved in response to said electric current applied to said coil, and a fluid passage with an inlet port and an outlet port to be controlled by the movement of said moving core, further comprising:
first means through which said magnetic flux generated by said coil with a first level of current passes for moving said moving core to a first position, and
second means through which the magnetic flux generated by said coil with a second level of current passes as a primary passage for moving said moving core to a second position,
wherein said moving core controls said fluid passage to a first cross-sectional area in said first position, and to a second cross-sectional area in said second position, and
wherein said first means includes a moving plate carried by said moving core and positioned apart from a shoulder of said yoke when said coil is not energized, and said second means includes a sleeve positioned between said shoulder and said moving core, such that said moving plate moves to contact said shoulder, pushing said moving core to said first position when said first level of current is applied, and said moving core moves to said second position to be apart from said moving plate when said second level of current is applied over said sleeve.

4,522,373
VALVE DETENT
William C. Shelbourn; Patrick Kuhn, and Michael A. Vig, all of Bismarck, N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.
Filed Sep. 6, 1983, Ser. No. 529,241
Int. Cl.³ F16K *35/04;* **F15B** *13/04*
U.S. Cl. 251—297 **3 Claims**

1. A detent mechanism for a hydraulic control valve which has a valve housing having a bore therein and a multi-position spool located in said bore and movable longitudinally therein, the detent mechanism comprising,
a detent housing secured on said valve housing,

said detent housing defining an opening which is coaxial with said bore,

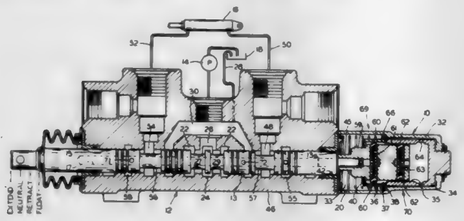
a first wall portion and a second wall portion in said detent housing and a groove in said first wall portion,

a detent spool connected to said valve spool for conjoint movement therewith and operative in said detent housing,

a first detent member carried by said detent spool and arranged to engage said groove in a detent position of said valve,

a first spring carried by said detent spool which urges said first detent member into contact with said first wall portion,

a second detent member carried by said detent spool and arranged to engage said second wall portion,



a second spring carried by said detent spool which urges said second detent member into contact with said second wall portion in at least one valve position,

a ramp on said first wall portion arranged to be engaged by said second detent member to provide increased resistance to axial movement of said valve spool as said first detent member approaches said groove at said detent position,

said second wall portion comprising a movable sleeve member which interacts with said detent spool, and

said movable sleeve member having an outwardly extending shoulder, a spring retainer, and a centering spring held between said shoulder and said spring retainer.

4,522,374

VALVE SPOOL

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to Mac Valves, Inc., Wixom, Mich.

Filed Mar. 3, 1983, Ser. No. 471,858

Int. Cl.³ F16K *11/18*

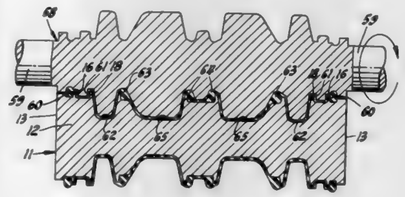
U.S. Cl. 251—356 **6 Claims**

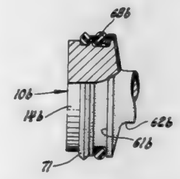
1. A sliding valve spool for an air valve characterized in that it comprises:

(a) an elongated valve spool body having an inner and an outer peripheral groove on each end thereof, and a plurality of longitudinally spaced apart integral intermediate annular valve flanges to form a one-piece construction body;

(b) said valve spool body having an integral elastomeric material molded thereon, around the periphery thereof, and said integral elastomeric material including an annular centering seal molded in one of each of said inner and outer peripheral grooves at each end of the valve body, and an annular valve member is molded around each of said plurality of integral annular valve flanges, and said molded integral elastomeric material extends around the periphery of the valve spool one-piece construction body over the other of each of said inner and outer peripheral grooves and between each of said annular centering seals and the integral annular valve members; and,

(c) each of the elastomeric annular centering seals and annular valve members are of equal diameter, and an annular pressure seal groove is formed in the molded material, at each end of the valve spool body, in the other one of each of said inner and outer peripheral grooves, and an annular





pressure seal is mounted in each annular pressure seal groove.

4,522,375

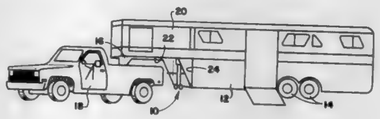
ELECTRICAL LIFT FOR TRAILERS

Carmen Howell, Rte. 1, Box 869, Owasso, Okla. 74055

Filed Dec. 27, 1982, Ser. No. 452,944

Int. Cl.³ B60S *9/02*

U.S. Cl. 254—425 **2 Claims**



1. In combination,

a trailer having opposed paralleled sidewalls and having wheels and a forwardly extending portion having the lower edge thereof of increased ground height clearance providing a vertical trailer surface forwardly of said trailer wheels and between said trailer sidewalls;

a downwardly extending fifth wheel connector type arrangement for removably coupling said trailer to a pivotal connection carried by a towing vehicle;

an elongated vertical housing affixed to the trailer vertical surface (a) rearwardly of said trailer fifth wheel connector, (b) centrally between said trailer sidewalls, and (c) forwardly of said trailer wheels;

a vertical support post member telescopically and downwardly extending from said housing, the lower end thereof being adaptable to engage the earth's surface;

a horizontal plate affixed to said vertical support post member and having a threaded opening therethrough;

a vertically externally threaded shaft received in said plate threaded opening and coaxially of said housing and said support post member;

a gear affixed to the upper end of said vertical support member whereby the gear rotates the vertical axis of the post member;

a horizontal shaft rotatably received by said housing in the upper portion thereof;

a worm gear affixed to said horizontal shaft and in engagement with said horizontal gear affixed to said vertical threaded shaft whereby the rotation of said horizontal shaft in one direction telescopically downwardly extends said support post member to engage the earth's surface and lift said trailer forward end, and rotation of said horizontal shaft in the opposite direction upwardly withdraws and support post to lower said trailer onto a towing vehicle pivotal connection;

a second gear on said horizontal shaft;

an electric powered gear motor drive supported on said trailer vertical surface centrally between said trailer sidewalls and directly above said vertical housing, the gear motor drive having a horizontal drive shaft extending therefrom having a drive gear thereon;

a chain coupling said gear motor drive gear to said horizontal shaft second gear;

a source of electrical energy; and

reversing switch means connecting said source of electrical energy to said gear motor drive whereby said support post member may be extended or withdrawn to raise and lower the forward portion of said trailer.

4,522,376

GAS FLUSHING INLET ARRANGEMENT IN A METALLURGICAL VESSEL AND METHOD OF OPERATION OF SUCH AN ARRANGEMENT

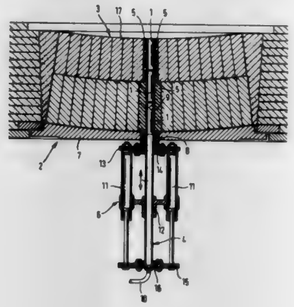
Wilhelm Langenfeld, Düsseldorf, Fed. Rep. of Germany, assignor to Didier-Werke A.G., Wiesbaden, Fed. Rep. of Germany

Filed May 15, 1984, Ser. No. 610,419

Claims priority, application Fed. Rep. of Germany, May 20, 1983, 3318422

Int. Cl.³ C21B *7/16*

U.S. Cl. 266—47 **21 Claims**



1. A gas flushing inlet arrangement in the wall of a melt-containing lined metallurgical vessel for the introduction of gases into the vessel, said wall having an exterior portion and an inner portion, said arrangement including at least one gas pipe inlet member passing through said vessel wall and containing at least one gas permeable insert, wherein said arrangement includes means for selectively advancing said gas pipe inlet member slidably with respect to a longitudinal axis of said pipe insert into said vessel wall, said advancing means being mounted adjacent said exterior portion of said wall.

4,522,377

METHOD AND APPARATUS FOR PROCESSING SLAG

Frederick M. Degner, Waupaca, Wis., assignor to The Budd Company, Troy, Mich.

Filed Sep. 19, 1983, Ser. No. 533,594

Int. Cl.³ F27D *3/14*

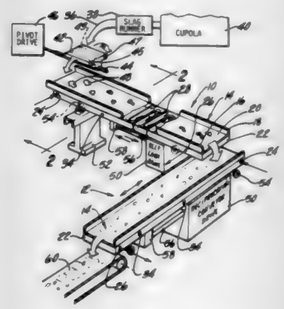
U.S. Cl. 266—196 **6 Claims**

1. Apparatus for processing a stream of molten slag, said apparatus comprising:

an elongated conveyor member having a generally flat major upper surface;

cooling means for cooling the upper surface of the member;

means for diverting the stream of molten slag onto different locations on the upper surface of the conveyor member; and



means connected to the conveyor member for imparting reciprocal lengthwise motion to the conveyor member substantially free of vertical motion thereto to thereby transport the slag over the cooled surface until the molten slag is solidified.

4,522,378

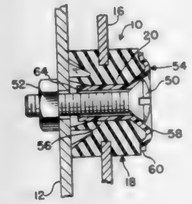
WIPER MOTOR MOUNTING GROMMET

John F. Nelson, New Lenox, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Nov. 2, 1983, Ser. No. 548,253

Int. Cl.³ F16F *7/00*

U.S. Cl. 267—141.4 **3 Claims**



1. The combination of a one-piece integral resilient grommet of elastomeric material and a non-deformable spool for mounting a fractional horsepower motor or the like on a support surface in a spaced apart relation and to reduce the vibration and associated noise propagation to a negligible amount, said grommet comprising a center sleeve portion of resilient deformable material having a cylindrical center opening, a pair of spaced apart vibration dampening members integrally formed of resilient deformable material around said sleeve portion, each of said vibration dampening members having a circular end wall extending radially from said sleeve portion and an outer annular wall extending coaxially of said cylindrical center opening, a first set of radially extending ribs of resilient deformable material extending axially from one of said circular end walls between its sleeve portion and its outer annular wall, and a second set of radially extending ribs of resilient deformable material extending axially from the other of said circular end walls between its sleeve portion and its outer annular wall, where said first and second set of radially extending ribs are angularly offset in an axial direction from each other, and said non-deformable spool includes a hollow shank portion with an outer diameter slightly smaller than said cylindrical center opening and a head portion having a central aperture the size

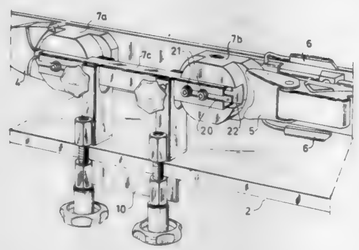
of said outer diameter for said hollow shank portion, and the other end face of said resilient grommet being shaped to conform to the underside of said head portion of said spool such that said head portion engages substantially the entire surface area of said other end face and where said circular end wall of said pair of spaced apart vibration dampening members are separated by a selected distance to define an annular recess for mounting said motor or like component to be vibrationally isolated.

4,522,379

SKI HOLDER

Erik V. Lindgren, P1 1101, S-790 15 Sundborn, Sweden

Filed Feb. 22, 1983, Ser. No. 468,690
Claims priority, application Sweden, Feb. 23, 1982, 8201125
Int. Cl.³ B25B *1/20*
U.S. Cl. 269—47 **5 Claims**



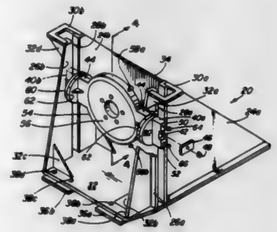
1. A holder for attaching skis having a binding including a ski-stopper mechanism to a stationary support, comprising:
(a) a ski boot dummy to be inserted into the binding correspondingly as a ski boot while retracting the ski stopper mechanism,
(b) a holder part having means for attachment to said support and means for removably securing said ski boot dummy to said holder part,
said means for attaching said ski boot dummy to said holder part permitting attachment of the dummy in a first position, in which the bottom side of the ski is turned upwards, and second and third positions, in which either of the side edges of the ski are turned upwards; wherein said ski boot dummy comprises
(i) a front part corresponding to the toe portion of a ski boot,
(ii) a rear part corresponding to the heel portion of a ski boot, and
(iii) an intermediate part interconnecting said front part with said rear part, said intermediate part being arranged to be removably attached to said holder part;
(wherein at least one of said front and rear parts can be displaced along said intermediate part and can be secured thereto in positions corresponding to the desired binding size;
wherein said intermediate part is provided with longitudinal slots at at least one end thereof; and
wherein the corresponding front or rear part can be removably secured to said intermediate part by means of elongate fastening means extending through said longitudinal slots.

4,522,380

ADJUSTABLE JIG ASSEMBLY

Darren C. Peddle, Lower Sackville, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed Sep. 6, 1983, Ser. No. 529,639
Claims priority, application Canada, Oct. 27, 1982, 414249
Int. Cl.³ B23Q *1/04*
U.S. Cl. 269—71 **11 Claims**



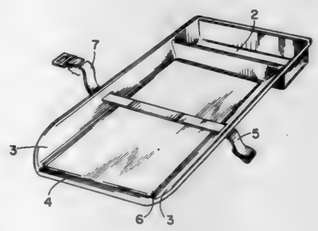
1. An adjustable jig assembly for holding a workpiece in a desired position, comprising
a stand having wall members defining a pair of opposed substantially vertically extending slide channels;
mounting means slidable in said slide channels and adapted to be secured at desired positions therealong;
a housing for retaining a work piece engaging member, said housing extending between and mounted on said mounting means for rotation about a first axis and being adapted to be secured to said mounting means in desired angular positions about said axis, said housing including a collar section having threaded bores therein; and
a disc-shaped work piece engaging member adapted to be attached to a work piece, said member being mounted in said collar section for rotation about a second axis normal to said first axis, and threaded members engageable with said threaded bores and the circumference of said member for securing said work piece engaging member in desired angular positions about said second axis.

4,522,381

ONE PIECE SANITARY DIAPER CHANGING STATION

Lanny E. Ludwick, 1005 12th St., Huntington Beach, Calif. 92648

Filed Jun. 17, 1983, Ser. No. 505,454
Int. Cl.³ A61G *13/00*
U.S. Cl. 269—328 **2 Claims**



1. A one piece sanitary diaper changing device for use in changing the diapers or other clothing of an infant comprising:
a rigid one piece container having two sections one of the sections having a rectangular flat surface and on two opposite sides sidewalls both sidewalls of sufficient height and at an angle to prevent the infant from rolling or sliding over the edge of the device, the sides of the rectangular flat surface not having the sidewalls have a raised edge that joins with

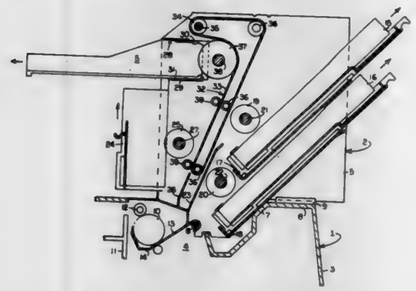
the sidewalls to form a seal to contain liquids on the rectangular flat surface, the other section, is located on one of the sides of the rectangular flat surface not having the sidewalls and has a compartment integrally formed as part of the container; a pad covering the rectangular flat surface; a safety strap located across the rectangular flat surface.

4,522,382

SHEET AND ENVELOPE FEED APPARATUS FOR A PRINTER AND ASSOCIATED METHODS

Mosi Chu, Setauket, and Meng S. Kuo, Ponkonkoma, both of N.Y., assignors to Primages, Inc., Bohemia, N.Y.

Filed Nov. 23, 1983, Ser. No. 555,116
Int. Cl.³ B41F *13/54*
U.S. Cl. 270—1.1 **29 Claims**



1. Sheet feeder apparatus for a printer comprising a first tray for first sheets of paper, a first drive means for feeding sheets of paper from the first tray to the printer where a printing operation is effected on at least one of the faces of the sheets of paper, a second tray for further sheets of paper, a second drive means for feeding the sheets of paper from the second tray to the printer where a printing operation is effected on at least one of the faces of the further sheets of paper, a third tray for envelopes, a third drive means for feeding envelopes from the third tray to the printer where a printing operation is effected on the faces of the envelopes, the first, second and third drive means being driven to feed the sheets of paper and envelopes to the printer in successive groups each consisting of an envelope and sheets of paper representing an item of correspondence, and conveyor means for receiving the sheets of paper and the envelopes in successive groups from the printer and delivering the printed sheets of paper and envelopes to a stacking station at which the printed sheets of paper and printed envelopes are stacked one after the other successively in the order printed and wherein the printed face of each sheet of paper faces away from the next successive sheet of paper whereby the sheets of paper for each item of correspondence are collated in sequential order of printing.

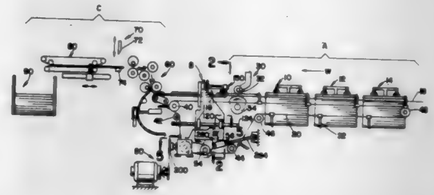
4,522,383

RECIPROCATING STITCHER ASSEMBLY

Keith S. Macey, Rocky River, Ohio, assignor to K. S. Macey Machine Company, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 381,529, May 4, 1982, Pat. No. 4,479,642, which is a continuation-in-part of Ser. No. 364,225, Apr. 1, 1982, abandoned. This application Sep. 29, 1982, Ser. No. 427,671
Int. Cl.³ B42B *1/02*
U.S. Cl. 270—53 **41 Claims**

1. A method of binding stacks of sheets, the method comprising the steps of:
continuously conveying the stacks longitudinally at regular intervals along a workpath;
cyclically reciprocating at least one stitcher head and clincher longitudinally of the workpath in coordination with the conveying of the stacks, each reciprocation cycle occurring in the same time as the stacks advance by said regular interval;
during a portion of each reciprocation cycle, carrying each stack in a preselected relationship with the stitcher head and clincher such that the regular interval between the



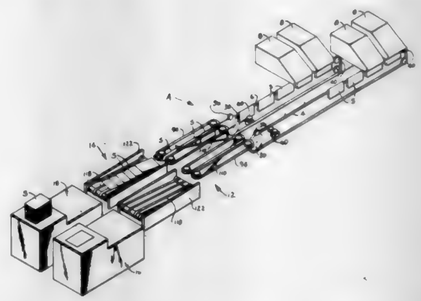
carried stack and the other stacks is temporarily disrupted; and,
actuating the stitcher head and clincher during said reciprocation cycle portion at the same point in each reciprocation cycle, such that the stacks are stitched at substantially the same areas thereof.

4,522,384

MACHINE FOR COLLATING SIGNATURES IN THE SADDLE FORMAT

Robert A. Beckley, Mount Vernon, Ill., assignor to World Color Press, Inc., Effingham, Ill.

Filed Sep. 30, 1983, Ser. No. 537,865
Int. Cl.³ B65H *39/02*
U.S. Cl. 270—54 **20 Claims**



1. A machine for collating signatures in a saddle format, said machine comprising: first and second endless gathering chains located side-by-side and parallel to each other and having feed and discharge ends, the first gathering chain being longer than the second gathering chain so that the feed end of the first chain is located beyond the feed end of the second chain; at least two feeding means located in succession along each gathering chain for depositing signatures on the chains such that the folds of the signatures are along the upper portions of the chains and the pages on each side of the folds drape downwardly along the sides of the chains, whereby that the signatures as they move along the chains are in a vertical position, the first feeding means in the succession along each chain depositing its signatures directly on the chain and each subsequent feeding means in the succession depositing its signatures on the signatures deposited by the feeding means immediately ahead of it in the succession, the feeding means for the first chain being located ahead of the feed end of the second gathering chain as well as ahead of the feeding means for the second chain; layup means located immediately beyond the discharge ends of the first and second gathering chains for turning the compiled signatures from a substantially vertical to a substantially horizontal position and for discharging the compiled signatures in first and second rows in a substantially horizontal

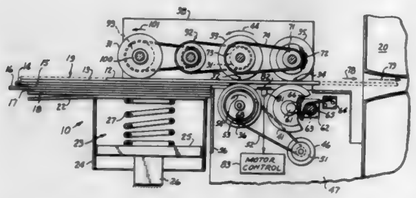
position; a shingling conveyor located beyond the layup means for receiving the two rows of compiled signatures discharged from the layup means and for further arranging those compiled signatures in a shingled condition, likewise in first and second rows; and first and second stacking means for converting the first and second shingled rows of compiled signatures into stacks.

4,522,385

SHEET FEEDER SYSTEMS

Rafn Stefansson, San Marino, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sep. 22, 1982, Ser. No. 421,655
Int. Cl.³ B65H *3/52*
U.S. Cl. 271—10 **20 Claims**



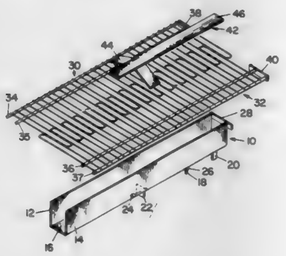
1. In a method of transporting sheets from a stack, the improvement comprising in combination the steps of:
advancing from said stack each top sheet in turn to a first location;
rejecting at said first location any adjacent sheet moving along with said top sheet from said stack;
providing driving means for driving said advancing top sheet at said first location away from the stack;
engaging said top sheet at a second location while said top sheet is being driven at said first location;
continuing to drive said top sheet at said first location with said driving means until said top sheet has been driven past said first location; and
accelerating said engaged top sheet at said second location away from said first location only after said top sheet has been driven past said first location.

4,522,386

PAPER FEEDING MECHANISM

Bruce Brown, and William C. Brown, both of 926-C N. Maclay Ave., San Fernando, Calif. 91340

Filed Jun. 10, 1983, Ser. No. 503,494
Int. Cl.³ B65H *1/08*
U.S. Cl. 271—147 **5 Claims**



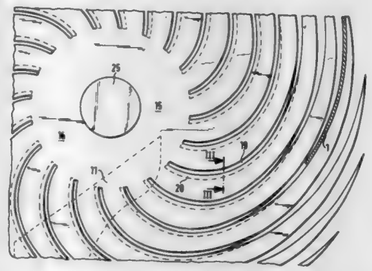
1. An adjustable paper feeding device for a printing press having a paper pile platform which rises to feed paper to the press and paper pile side supports, said adjustable paper feeding device comprising a concave base center support piece fixedly attached to the paper pile platform, removable and adjustable left and right interlocking grills resting on the concave base center support and frictionally attached by means integral with the grills to the paper pile side supports, a flexible rear paper pile feeding guide mounted above the paper pile platform to flex in a vertical direction as the interlocking grills rise to contact the rear paper pile feeding guide.

4,522,387

DEVICE FOR STACKING SHEET-SHAPED OBJECTS

Karl Leuthold, Munich, Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation und Organisation GmbH, Fed. Rep. of Germany

Filed Aug. 9, 1983, Ser. No. 521,724
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1982, 3232348
Int. Cl.³ B65H *29/00*
U.S. Cl. 271—187 **6 Claims**



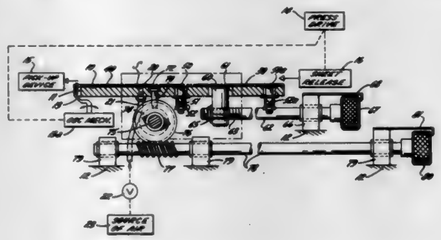
1. A device for stacking sheet-shaped objects, comprising: a plurality of disks arranged adjacent to each other on a driving shaft, said disks having spiral slots running from the outside towards the inside thereof, the slots of respective disks overlapping one another in an axial direction, overlapping slots together forming a pocket into which the objects may be fed singly by a transport system, at least one of said spiral slots forming each pocket being staggered relative to another of said spiral slots at least in an area of their length.

4,522,388

ARRANGEMENT FOR APPLYING COMPRESSED AIR TO UNDERSIDE OF SHEET ON FEED TABLE OF PRINTING PRESS

Heinrich Heine, Gutersloh; Georg Herzan, Sulzbach, and Fred Kunkel, Offenbach am Main, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 471,503, Mar. 2, 1983, abandoned. This application Jun. 30, 1983, Ser. No. 509,367
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 3209259
Int. Cl.³ B41F *21/12;* **B65H** *9/04*
U.S. Cl. 271—245 **9 Claims**



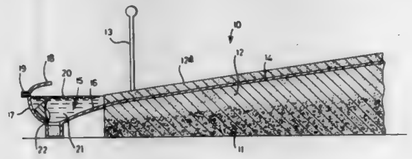
2. A sheet feeding assembly for a printing press comprising, in combination a feed table having a front edge, a set of front stops cyclically interposable at the front edge of the table, the table being longitudinally inclined downwardly in the direction of its front edge, means for releasing a sheet so that it travels towards the front edge of the table where it is temporarily retained in a registered position by the front stops, a port extending upwardly through the feed table at a position spaced from the front edge by a distance which is relatively short as compared to the length of the feed table, the port being connected to a source of compressed air, a rear feed plate seated on the feed table upstream of the port and having a front edge portion terminating in a transversely extending front edge, a front feed plate seated on the feed table downstream of the port and having a rear edge portion terminating in a transversely extending rear edge, the plates being substantially coplanar with their respective front and rear edges in proximity and uniformly spaced with respect to one another, the front edge portion of the rear feed plate being undercut to form an overhang which defines a transversely extending air conducting cavity and which overlaps the port so that air is directed from the cavity at an angle upwardly and forwardly of the table to lubricate the passing sheet and to urge the sheet in the direction of the front stops, means for varying the rate of discharge of the air through the port, and adjustable means for upwardly camming the front edge portion of the rear feed plate with respect to the feed table through a short distance so that the front edge of the rear feed plate is variably higher than the rear edge of the front feed plate thereby to vary the angle of discharge of the air against the sheet.

4,522,389

PARTICULATE SURFACE SPORTS TRACK SURFACE AND METHOD FOR RECONDITIONING SUCH TRACK SURFACE

John I. Malcolm, Middleton, Nr. Tamworth, England, assignor to Coinaqua Limited, Warwick, England

Filed Aug. 16, 1982, Ser. No. 408,279
Claims priority, application United Kingdom, Aug. 18, 1981, 8125136
Int. Cl.³ A63K *1/02*
U.S. Cl. 272—4 **10 Claims**



1. A track for sporting activities having an annular inner border and a generally parallel outer border, a particulate surfacing between the inner and outer borders comprising a depth of particulate material, and a conditioning system for conditioning the surfacing, said system comprising a reservoir for liquid having inner and outer annular borders, said reservoir extending alongside one of the borders of the surfacing adjacent the surfacing, and means to cause a surge of liquid to propagate from the reservoir across and through the surfacing, said surge having sufficient energy to cause movement of the particulate material of the surfacing.

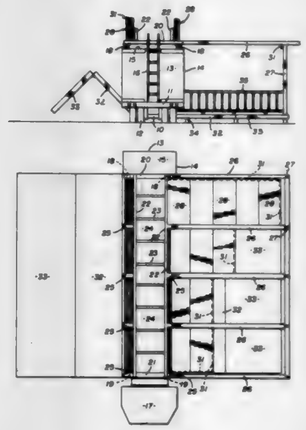
10. A method of conditioning a particulate surfacing of a track comprising the steps of:
providing a track for sporting activities having an annular inner border and a generally parallel outer border, a particulate surfacing between the inner and outer borders comprising a depth of particulate matter, and a conditioning system for conditioning the surface, said system including a reservoir for liquid having first and second annular borders, said first border of said reservoir extending alongside one of the borders of the surfacing adjacent the surfacing; and
causing a surge of liquid to propagate from the reservoir, over said first border and across and through the surfacing to move particulate matter of the surfacing in any selected portion of the entire track.

4,522,390

BUMPER CAR RIDE

Paul S. Kudler, New Waterford, Ohio, assignor to Majestic Rides Mfg. Co., New Waterford, Ohio

Filed May 8, 1984, Ser. No. 608,176
Int. Cl.³ A63G *1/10;* **E04B** *1/344;* **E04H** *3/10*
U.S. Cl. 272—29 **5 Claims**



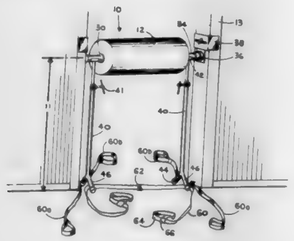
1. An improvement in a portable bumper car ride structure, said structure including a trailer having fixed floor and ceiling sections and a plurality of fold out floor sections hingedly affixed to one another and to the fixed floor section and a plurality of fold out ceiling sections hingedly affixed to one another and to said fixed ceiling section of said trailer, said floor and ceiling sections being metallic and forming electrical conductors for energizing a plurality of bumper cars positioned on said floor sections and having trolleys engaging said ceiling sections, the improvement comprising means supporting said fold out floor and ceiling sections and means for preventing the trolleys of the bumper cars from becoming disengaged from the fold out ceiling sections when the same are folded out, said portable bumper car ride structure comprising said trailer, said fixed floor and ceiling sections and said fold out floor and ceiling sections, said means supporting said fold out ceiling sections and for preventing the trolleys of the bumper cars from becoming disengaged from the fold out ceiling sections including horizontally spaced longitudinally extending trusses supporting said fixed ceiling section of said trailer, fixed support means on said trailer supporting said longitudinally extending trusses, longitudinally spaced sidewardly extending brackets on said trusses, support beams removably engaged in said brackets and positioned sidewardly of said fixed ceiling section, said ceiling sections hinged to one another in accordian fold relationship, rollers on the sides of said fold out ceiling sections movably engaging said support beams and a plurality of angularly positioned guard flanges on the respective outer free edges of said ceiling sections, said fold out ceiling sections being movable from a first vertical position between said brackets and against the outer opposite sides of said longitudinally extending trusses to a horizontal second position between said support beams.

4,522,391

EXERCISING DEVICE

George Rundall, 7701 Warner Ave., Apt. Q-231, Huntington Beach, Calif. 92647

Filed May 24, 1982, Ser. No. 381,435
Int. Cl.[3] A63B *21/04*
U.S. Cl. 272—62 8 Claims



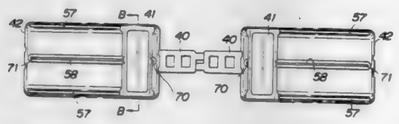
2. A device for exercising the back of a user comprising:
(a) upright support means having a base portion;
(b) horizontal support means supported on said upright support means at about the height of the pelvic region of the user for supporting the weight of the user when the pelvic region of the user is disposed on said horizontal support means; and
(c) strap means attached at and extending from substantially the level of said base portion and coupled to the feet of the user for restraining the feet, said strap means being of sufficient length for permitting the user to extend and raise his feet to substantially the height of said horizontal support means while the pelvic region of said user is disposed on said horizontal support means;
(d) said strap means comprising a single length of strap looped through buckle means attached at said base portion such that the strap means can slide through said buckle means.

4,522,392

SPRING TYPE LEG EXERCISING DEVICE

Masakatsu Torii, Saitama, Japan, assignor to Saitama Kako Co., Ltd., Japan

Filed Aug. 16, 1982, Ser. No. 408,154
Int. Cl.[3] A63B *21/02*
U.S. Cl. 272—142 8 Claims



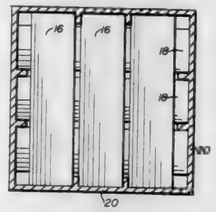
1. A physical exercise device comprising central connecting means for connecting a pair of base frame members together, said pair of base frame members having the same construction and symmetrically connected to the opposite sides of said central connecting means, a pair of foot boards symmetrically mounted on top of said respective base frames said connecting means connecting the frames so that said foot boards may be reciprocated in paths that are parallel to each other or in line with each other; and spring means connected between each associated base frame and the associated foot board, and each said spring means biasing each associated foot board in a direction opposite to the direction in which a user's efforts has forced the foot board being acted upon.

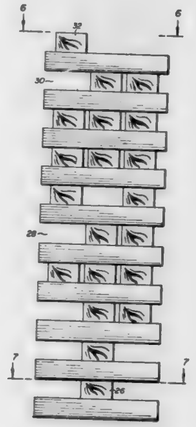
4,522,393

CENTER OF GRAVITY BLOCK REMOVAL, APPRAISAL AND BALANCING GAME

Richard A. Dunn, 42 Olympia St., Clifton, N.J. 07011

Filed Sep. 16, 1983, Ser. No. 532,687
Int. Cl.[3] A63F *9/00*
U.S. Cl. 273—1 GF 2 Claims





1. A center of gravity block removal, appraisal and balancing game structure, comprising:
(a) a sixteen level stack of horizontal odd and even levels consisting of elongate solid rectangular platform blocks, each block being identical in length, width and height to every other block, said blocks being approximately three (3) by three-quarters ($\frac{3}{4}$) by one-half ($\frac{1}{2}$) inch, in which said odd numbered levels of said stack comprise three parallel rows having their lengths precisely aligned and defining, by said odd numbered levels, a first plurality of horizontal planes, and said even numbered levels of said stack comprise three parallel rows having their lengths precisely aligned and defining, by said even numbered levels, a second plurality of horizontal planes in which the rows of said even levels are precisely orthogonal to the rows of said odd levels and are horizontally and vertically balanced upon and between the rows of said odd levels;
(b) the material of said platform blocks having a weight and coefficient of sliding friction permitting the disengagement of the individual blocks from one level and the inter-engagement of said blocks onto a higher level;
(c) the ratio of the original height of the sixteen level stack to the length of a row of a level of the stack being at least two-to-one; and
(d) means for quick initial assembly of said sixteen level stack comprising a solid rectangular rack made of a transparent material having internal grooves for the acceptance, guidance and arrangement of said platform blocks into the initial sixteen level criss-crossed stack configuration defined above, wherein said rack may further function as a storage container and carrying case for the game structure;
whereby said elongate blocks may be singularly and successively removed from any one level and then placed onto a new level and row, thereby forming a new level every third move, on top of the previous uppermost level of the stack, this process alternately continuing by alternate players until one player is eliminated by reason of his induction of the collapse of the stack.
2. The method of playing a balancing game, comprising the steps of:
(a) forming a sixteen level, criss-crossed stack of horizontal odd and even levels, said levels consisting of rows of parallel, elongate, planar solid rectangular blocks, employing a rack having a plurality of alignment grooves in order to quickly and conveniently set up said sixteen level, criss-crossed stack;
(b) disengaging one of said elongate blocks from said stack using only the fingers of one hand;
(c) placing said one block in a new level on top of the previous uppermost level of the stack, again using only the fingers of one hand; and
(d) repeating steps (b) and (c) above, starting new levels when and only when a prior level has been completed, these sets of steps (b) and (c) alternately continuing by alternate players until one player is eliminated by reason of his induction of the collapse of the stack.

4,522,394

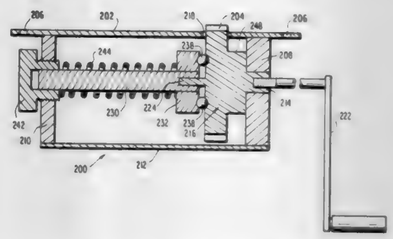
COLLAPSIBLE, MOVABLE APPARATUS FOR SUPPORTING HEALTH-SPORTS DEVICES

Alphe Broussard, 64 Avenue Mohamed Diouri, Kenitra, Morocco

Filed Jun. 27, 1984, Ser. No. 624,954
Int. Cl.[3] A63B *63/08, 69/22*
U.S. Cl. 273—1.5 R 9 Claims

1. Collapsible, movable apparatus for containing health-sports devices and equipment comprising:
(a) a telescoping post support having at least two telescoping segments;
(b) means for moving each of the adjacent telescoping segments in relation to each other;
(c) support means adopted to fit slidably on the top telescoping segment without overlapping onto the next telescoping segment;
(d) a large horizontally-positioned ring mounted on support means (c);
(e) a platform pivotally mounted under the ring so as to be able to swing downwardly when unconnected from the ring; and
(f) a basket ball backboard vertically mounted to the top portion of the top telescoping segment, the bottom end of the telescoping post being adapted to fit into a tube positioned in the ground or other horizontal surface.
9. A brake winch comprising:
(a) a casing which includes a first end, a second end, and a side cover which contains an opening therein near said first end of said casing, said first end having a central aperture and said second end having a central aperture;
(b) gear means positioned within said casing having a shaft rotatably positioned in said aperture of said first end of said casing, said gear means having a cylindrical shape and having teeth around the perimeter thereof, said teeth of said gear means being of sufficient length so as to substantially protrude through said opening in said side cover of said casing, a short central rod being positioned on the flat side of said gear means, facing said second end of said casing, a plurality of small indentations in said flat face of said gear means facing the second end of said casing and being located equidistant from each other on a circular line having said central rod as its center point;
(c) a cap threadingly positioned in the said aperture of said second end of second casing, of said cap having a hole in the inner-facing portion therein;
(d) a hollow shaft fixedly positioned on one end in said hollow portion of said cap and fitting over said short central rod of said gear means facing said end of said casing in such a manner that said hollow shaft is rotatable in relationship to said short shaft, the bottom portion of hollow shaft being an extended rim, a plurality of small indentations in said flat face of said extended rim of said hollow shaft and being the identical number to said small indentations in said flat surface of said gear means;





(e) a spring being located around hollow shaft between said extended rim of said hollow shaft and the bottom surface of said cap means, said spring pressing said rim against said gear means when said cap means is turned inwardly; and
(f) a plurality of ball bearings or other spheroid objects positioned each of said sets of small indentations, said ball bearings serving to lock said gear means in place and to serve as a brake on the turning of said gear means, a hole being located in the extended surface of said portion of said gear means which rotatably fits in said first end of said case, to facilitate the insertion of a handle for the turning of said gear means.

4,522,395

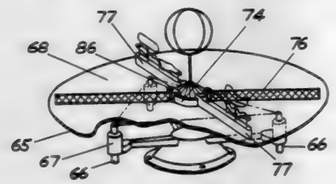
GAMES APPARATUS

Guenter Arndt, 511 Main Rd., Orewa, New Zealand

Continuation of Ser. No. 169,914, Jul. 17, 1980, abandoned. This application Feb. 3, 1984, Ser. No. 576,178
Claims priority, application New Zealand, Jul. 19, 1979, 191056
Int. Cl.[3] A63B *67/18*
U.S. Cl. 273—30 7 Claims

6. Games apparatus of the type wherein one or more players project a ball with a racquet, bat, or the like, comprising, a

planar games playing surface defining a playing area on and above said surface; means supporting said playing surface above the ground; a rototable hub projecting vertically upwards from the geometric center of said playing surface; means



to rotate said hub; and net means mounted on said hub for rotation therewith, said net means extending above and across said playing surface in a plane substantially perpendicular to said playing surface.

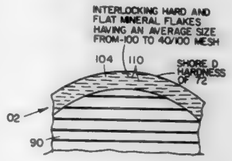
4,522,396
GAME BALL
Thomas L. Girard, Pratt, Kans., and Monty D. Lewis, Greeley, Colo., assignors to Indoor Activities Unlimited, Pratt, Kans.
Filed Oct. 6, 1983, Ser. No. 539,530
Int. Cl.³ A63B *37/12*
U.S. Cl. 273—58 K **3 Claims**



1. A ball for a game in which a player attempts to strike said ball with a hitting device, said ball comprising:
a low mass material weighing less than 2 ounces;
a substantially spherical configuration with an outside diameter of at least 2 inches; and
an outer surface defining a plurality of interconnecting concave indentations therein, each of said indentations having a width on said surface of at least ⅛ inch.

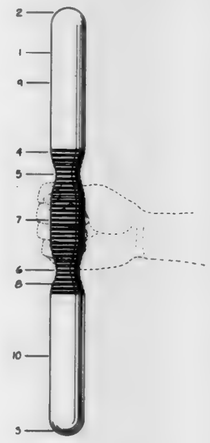
4,522,397
FILLED SHELL BOWLING BALL
Charles M. Miller, Jr., and Samuel J. Orlando, both of San Antonio, Tex., assignors to Columbia Industries, Inc., San Antonio, Tex.
Continuation-in-part of Ser. No. 106,749, Dec. 26, 1979, Pat. No. 4,328,967. This application Jan. 29, 1982, Ser. No. 344,187
The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.
Int. Cl.³ A63B *37/14*
U.S. Cl. 273—63 D **13 Claims**

1. A bowling ball having high performance particles substantially uniformly distributed throughout the outer layer and upon the surface of said ball:
said particles being armored particles and being hard and inflexible as compared to the substrate of said ball's outer layer, most of said armored particles being long and thin and having a long side at least ten times longer than said thin side is wide
some of said armored particles being located at or just below said outer surface to form a substantially continuous armored layer about said ball causing said ball to have an appreciably greater resistance to penetration by a Shore D Hardness test needle than a bowling ball of identical composition to the claimed ball but without said armored layer,
said armored particles being sufficiently small and of sufficient type to allow said ball to roll upon a bowling lane without appreciable discontinuities in forward motion and without appreciable damage to said bowling lane,



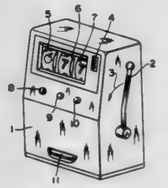
said armored particles being sufficiently numerous and large to cause an increase in the surface hardness of said ball as measured by a Shore D Hardness Tester by at least one percent above the surface hardness of a bowling ball of identical composition to the claimed ball but without said armored particles.

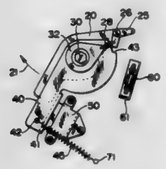
4,522,398
POLICE BATON
Franklin J. Swartz, 89 State St., 9th Floor, Boston, Mass. 02109, and Alex Anatolev, 645 Beacon St., Boston, Mass. 02215
Filed Feb. 4, 1983, Ser. No. 463,966
Int. Cl.³ F41B *15/02*
U.S. Cl. 273—84 R **4 Claims**



1. A hand-held police baton comprising;
a shaft having a substantially constant outer diameter throughout its length except for;
a first double tapered section forming a first waist area in said shaft and
a second double tapered section forming a second waist area in said shaft, said waist areas being arranged symmetrically around the center of said shaft, the distance between said waist areas being adapted to accommodate the width of an operator's hand and being approximately equal to one-third the total length of the baton.

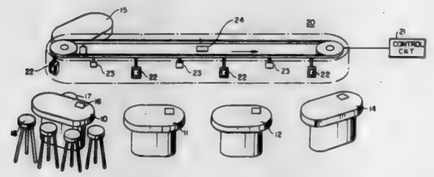
4,522,399
DEVICE FOR GENERATING IMPACT SOUND FOR SLOT MACHINE
Ikuo Nishikawa, Tochigi, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan
Continuation of Ser. No. 518,939, Aug. 1, 1983, abandoned. This application Aug. 29, 1984, Ser. No. 645,525
Claims priority, application Japan, Aug. 2, 1982, 57-116221[U]
Int. Cl.³ A63F *5/04*
U.S. Cl. 273—143 R **6 Claims**





1. In a slot machine of the type in which a display of a plurality of rotating juxtaposed reels is initiated by rotating a handle, the improvement comprising:
a first member movable in an interlocked relation to said handle;
a second member coupled to said first member and movable in unison therewith free from movement relative thereto during forward rotation of said handle;
means for disengaging said first and second members from each other substantially at the end of the full forward rotation of said handle;
a spring for biasing said second member in the direction opposite to the direction of movement of said first member;
said second member being mounted for rapid free return motion under the influence of said spring; and
a third member for producing an impact sound when struck by said second member in the return motion thereof after disengagement from said first member.

4,522,400
CONVEYOR SYSTEM AND METHOD FOR RANDOMLY TRANSPORTING CARD RACKS TO GAMBLING TABLES
Pat Trilli, 1529 Dean St., New York, N.Y. 11213
Filed Apr. 2, 1984, Ser. No. 595,690
Int. Cl.³ A63F *1/10*
U.S. Cl. 273—148 A **15 Claims**



1. Apparatus for distributing racks of cards to a plurality of card tables as located in a casino and arranged about a given path about the casino floor, comprising
a drivable belt means arranged to traverse said given path, said belt means having positioned thereon a plurality of housings each capable of conveying a rack of cards for each of said tables and spaced apart on said belt means according to the spacing between said tables, whereby when one housing is in the vicinity of one table each of the other housings is in the vicinity of an associated table,
control means coupled to said belt means for driving the same about said path and means responsive to the position of said housings for randomly stopping said belt means to cause a random distribution of said housings with respect to said tables, whereby each of said tables will be associated with a different housing according to the operation of said means for randomly stopping said belt means, to thereby enable each table to receive different racks of cards during play.

12. A method of distributing card racks between a plurality of card tables as located in a casino and arranged about a given path about the casino floor comprising the steps of:
transporting said plurality of card racks from table to table in a closed and continuous path,
randomly stopping the transport of said racks at said tables to cause a different rack to stop at a different table in a random manner,
replacing said rack of cards as stopped at said table with the rack of cards presently used at said table and repeating the steps of transporting, stopping and replacing.

4,522,401
MANIPULATABLE PUZZLE TOY
William O. Gustafson, 2712 E. Robinson Ave., Fresno, Calif. 93726
Filed Sep. 8, 1981, Ser. No. 299,738
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **2 Claims**



2. A puzzle comprising: a three dimensional support; a plurality of closed loop tracks carried by said support and lying in mutually perpendicular intersecting planes; a plurality of equilateral, quadrilateral elements of at least two distinguishable types disposed in said tracks for movement therein, said elements occupying substantially the entire extent of said tracks; said elements being constrained for movment in the tracks in which they are disposed except at the track intersections at which the elements can be selectively transferred from one track to another, said elements each having a prescribed orientation which is not changed when the elements are transferred from one track to another.

4,522,402
TRIANGULAR PRISM GAME-PUZZLE
Rohan G. Henry, 1230 Walnut St., Newton, Mass. 02161
Filed Feb. 16, 1983, Ser. No. 466,978
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **9 Claims**

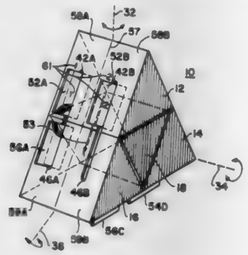
1. A puzzle-game comprising:
first, second, third and fourth triangular prism-shaped members;
a first face of each of the first, second and third triangular prism-shaped members being rotatably fastened, respec-

tively, to the first, second and third prism faces of the fourth prism-shaped member;

a plurality of pairs of corresponding indicia members;

means for removably retaining no more than two indicia members on each of the second and third faces of the first, second and third prism-shaped members;

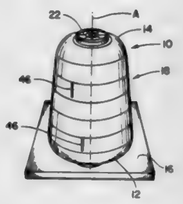
means for allowing only one of the indicia members to be moved at a time from one of said second and third faces of one of said first, second, and third prism-shaped-members



to one of said second and third faces of an adjoining one of said first, second, and third prism-shaped members;

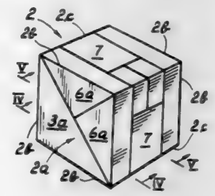
whereby a combination of successive movements of indicia members from a face of a prism-shaped member to an adjacent face of a neighboring prism-shaped member and rotation of prism-shaped members the puzzle may be solved and pairs of corresponding indicia members may be caused to be positioned in adjacent positions on the faces of the prism-shaped members.

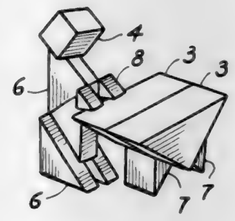
4,522,403
BALANCE TOY
Michael W. Maciorowski, 5421 S. Keeler Ave., Chicago, Ill. 60632
Filed Dec. 27, 1983, Ser. No. 565,382
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—154 **9 Claims**



1. A balance toy comprising a body having a top portion and a bottom portion and having a plurality of sections mounted therebetween, each said section moveable with respect to the other about a common axis, said common axis comprising an elongated rod connecting the top portion and the bottom portion and maintaining the sections adjacent each other between the top and bottom portions, at least two of said sections having a weighted portion spaced from said axis; and means for causing said toy to tilt when said weighted portions are not arranged so as to counter balance one another.

4,522,404
SUBDIVIDED BLOCK COMPONENTS REASSEMBLABLE INTO THREE DIMENSIONAL FIGURES
Vincenzo Di Gregorio, Via Alta Del Poggio, 6, 22050 - Montevecchia - (COMO), Italy
Filed Jun. 14, 1984, Ser. No. 620,843
Int. Cl.³ A63F *9/12*
U.S. Cl. 273—157 R **13 Claims**





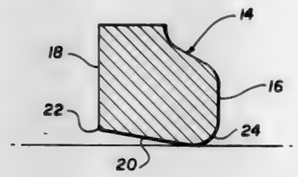
1. A didactic game defined by a block subdivided into suitable portions to compose three-dimensional figures, characterized in that said block is generally fashioned after a quadrangular prism having for its bases equal-sided parallelograms, and in that said portions comprise: first prismatic bodies identical to one another and defining together a volume at least close to one half the volume of said block and being configured as right prisms having isosceles triangle bases, said first prismatic bodies being bounded by the outer surface of said block, a first section plane containing two opposed corner edges of the lateral surface of said quadrangular prism, and at least one second section plane extending perpendicular to said corner edges and parallel to said isosceles triangle bases, second prismatic bodies fashioned as right prisms with triangular bases extending parallel to the bases of said first prismatic bodies and to a height equal to or being a submultiple of the height of each of said first prismatic bodies, and at least one inner body in the form of a right parallelepipedon having rectangular bases extending parallel to the bases of said first prismatic bodies and the same height as each of said first prismatic bodies, said inner body having a lateral face lying on said first section plane and the lateral corner edges of the opposed lateral face lying on the surface of said block.

4,522,405
GOLF PUTTER
Charles A. Clawges, P.O. Box 356, Georgetown, S.C. 29440
Filed May 31, 1984, Ser. No. 615,598
Int. Cl.³ A63B *53/04*
U.S. Cl. 273—167 A **1 Claim**

1. A golf putter, comprising:

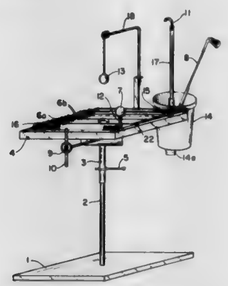
a head having a front face for striking golf balls, a rear face and a bottom surface,

said bottom surface being substantially smooth and being disposed in a substantially flat plane that is inclined downwardly and substantially continuously from said front face toward said rear face, said flat plane extending from the lower edge of said front face to a position proximate said rear face, said bottom surface being joined generally tangentially to a curved surface connecting said bottom surface and said rear face,



whereby the lower edge of said front striking face is slightly elevated relative to said curved connecting surface and said bottom surface will slide over the surface of a green like a sled in the event it engages the surface of the green before said front face engages the golf ball.

4,522,406
GOLF PRACTICE GAME
William R. Tarquinio, 1312 Great Oak Dr., Pittsburgh, Pa. 15220
Filed Sep. 28, 1983, Ser. No. 536,615
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—197 A **9 Claims**



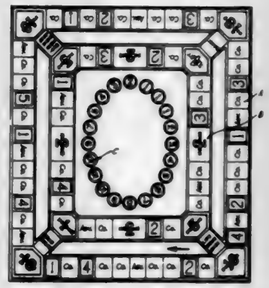
1. A golf practice game for the elderly comprising a base, a vertical post rigidly mounted on the center of said base, a rectangular table mounted on top of said post, said post constituting the sole supporting means for said table, means on said post for adjusting the height of said table, an artificial turf strip slidably mounted on said table by rubber bands to return it to its initial position after being forcibly struck by a golf club, a golf tee mounted on said table, and means for supporting short golf clubs and means for supporting golf balls, both said means supported by the said table, whereby said golf practice game is self contained.

4,522,407
FINANCIAL BOARD GAME
Bruce E. Hatherley, 2 Little Nicholson St., Balmain NSW 2041, Australia
Continuation of Ser. No. 227,897, Jan. 23, 1981, abandoned. This application Sep. 27, 1984, Ser. No. 655,315
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—256 **21 Claims**

18. Apparatus for playing a game wherein players conduct financial transactions, comprising,

index indicating means for providing a randomly variable index of the purchasing power of currency, said index indicating means comprising an index track which has a plurality of index stations representing different values of said index, and an index marker which is movable along said index track, said index marker having a direction indicator thereon so that a designated player may determine the direction of movement to be taken by the index marker,

two main tracks provided with a plurality of stations including property stations, income stations and index-changing stations; said property stations being marked to represent different properties, said income stations being marked to indicate that income is to be paid to a player whose marker lands thereon, said index-changing stations being provided with means for dictating the number of index stations to be traversed by said index marker on said index

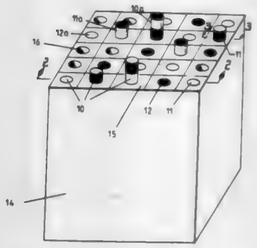


track, one said main track having a higher proportion of property stations and a lower proportion of income stations then the other main track, whereby a player may affect his financial strategy by selecting one of the main tracks for movement of his marker,

player markers movable along said main track to indicate the stations on said main track occupied by the players, and

means for providing a chance selection of the number of track stations to be moved by the player markers on the main tracks.

4,522,408
PEG BOARD GAME APPARATUS
David M. McKee, 169 Cannon Dale Rd., Columbia, S.C. 29210
Filed Mar. 1, 1984, Ser. No. 585,270
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—271 **6 Claims**



1. In a game, the combination comprising:

(a) two sets of playing pieces each, to be used by one of two players, means distinguishing one set from the other, each set comprising playing pieces of a first, second, third and fourth type;

(b) said first, second, third and fourth types of playing pieces having a cross sectional configuration of given maximum external dimension and lengths;

(c) said playing piece of the second type having a length less than the said playing piece of the first type;

(d) said playing pieces of the third and fourth type having a length equal to the difference in length between the said first and second playing pieces;

(e) said first and second types of playing pieces each having

a top color and sides patterned with both said top color and a second color;

(f) said third type of playing piece being of either said top color or said second color;

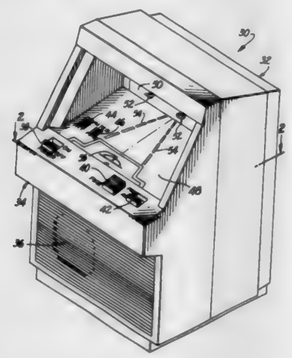
(g) a playing board to be used by players, means carried on top side dividing said top side into a plurality of parallel rows and parallel columns defining a plurality of playing squares, each of said squares including a formed hole dimensioned to receive any playing piece of said first, second, third or fourth type, each of said holes having depth dimensions equal to the length of said first type of playing piece, each of said holes also having a depth dimension sufficient to naturally obscure one or two of said fourth types of playing pieces in darkness when said fourth type of playing pieces are positioned on the bottom of said holes, whereby playing pieces of said first and second type positioned in said holes independently or in combination with said playing pieces of the said third and fourth type will display a top color even with said board surface or project above said board surface displaying a pattern of said top color and a second color, respectively.

4,522,409

TOY ARCADE GAME

Nobuo Kobayashi, Tokyo, Japan, assignor to Tomy Kogyo Company, Incorporated, Japan

Filed Feb. 3, 1983, Ser. No. 463,389
Claims priority, application Japan, Feb. 5, 1982, 57-17916
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—316 **52 Claims**



1. A toy game which comprises:

a housing;

drive means located on said housing;

target means mounted on said housing in operative association with said drive means, said target means including a target and a target coordination means, both said target and said target coordination means continuously moved on said housing by said drive means, said target moving through a target field wherein said target field includes a target hit position, said target coordination means moving between an interaction position and a non-interaction position with said target coordination means being in said interaction position when said target is in said hit position;

attack means movably mounted on said housing in association with said drive means, said attack means including an attack coordination means, said attack coordination means temporarily operatively connectible to said drive means and when so temporarily connected said drive means moving said attack coordination means;

initiator means operatively associated with said attack means, said initiator means located on said housing in a position enabling said initiator means to be acted upon by an operator of said toy and when so acted upon by said operator of said toy said initiator means operatively interacting with said attack means to temporarily operatively connect said attack coordination means with said drive means whereby said drive means moves said attack coordination means from its non-interaction position to its interaction position and then back to its non-interaction position;

interaction means slidably mounted on said housing in operative association with said target coordination means and said attack coordination means, said interaction means linearly movable on said housing between a first position and a second position, said interaction means slidable from its said first position to its said second position when both of said target coordination means and said attack coordination means are simultaneously in their respective interaction positions and said interaction means incapable of sliding from its said first position to its said second position when either one or both of said target coordination means and said attack coordination means are in their respective non-interaction position;

means associated with said interaction means for sliding said interaction means from its said first position to its said second position;

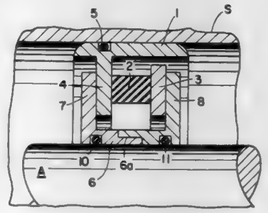
indicating means located on said housing, said indicating means capable of producing an output which is sensory perceivable by said operator of said toy, said indicating means producing said sensory perceivable output when said operator of said toy has acted upon said initiator means in association with said target being in said hit position resulting in both said target coordination means and said attack coordination means being in their interaction position thereby allowing said interaction means to move to its second position.

4,522,410

AXLE OR SHAFT SEAL WITH OVERLAPPING RING EXTENSION MEMBERS

Helmut Hölzer, Weinheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Sep. 25, 1984, Ser. No. 654,375
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337033
Int. Cl.³ F16J *15/38, 15/44*
U.S. Cl. 277—56 **20 Claims**



1. A seal for sealing about an axle or shaft rotatable axially relative to a structure thereabout, comprising:

inner and outer sealing rings for respective, fixed connection to the axle or shaft and structure thereabout, each ring having a pair of members associated therewith, at least one sealingly, and extending generally toward the other ring, the members associated with one ring being axially between the members associated with the other ring; and

a resilient element between the members associated with the one ring for urging the members associated with the one ring axially of the axle or shaft into sealing engagement with the members associated with the other ring,

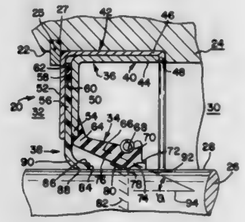
whereby to maintain uniform sealing engagement force between the members irrespective of relative axial displacement between the axle or shaft and structure thereabout.

4,522,411

FLUID SEALS WITH SELF-VENTING AUXILIARY LIPS

Thomas J. Burgan, Homewood, Ill., assignor to Chicago Rawhide Mfg. Co., Elgin, Ill.

Filed Oct. 1, 1984, Ser. No. 656,267
Int. Cl.³ F16J *15/32, 15/54*
U.S. Cl. 277—134 **10 Claims**



1. A fluid seal unit adapted to provide, in use with an associated sealed mechanism, a hydrodynamic fluid seal pumping function and a dirt exclusion function, said seal unit comprising, in combination, an annular casing unit adapted for reception within one portion of a sealed mechanism, said casing unit also including a portion to which an elastomeric seal lip may be bonded, and first and second seal lip units, said first seal lip being an elastomeric annular seal lip having a principal body portion defined in part by air and oil side frusto-conical lip surface portions meeting each other to define a generally circular primary fluid seal band adapted to contact another portion of said sealed mechanism in substantially fluid-tight sealing relation with a sealed region lying axially inwardly of said seal band, said body portion of said first lip also including hydrodynamic elements adapted to cooperate with said other part of said sealed mechanism to create a pumping action upon relative rotation between said seal lip and said sealed mechanism other part, which pumping action is effective to return oil from the air side of said seal to said sealed region, said second seal lip unit being a dirt excluder lip having a body with one margin thereof affixed to said casing and the body portions thereof spaced radially from said affixed margin being a sealed part contact portion comprising generally axially inwardly and outwardly facing surfaces and at least one sealed part contact edge lying between said inwardly and outwardly facing excluder lip surfaces, said second lip unit being constructed and arranged such that, in its relaxed condition, said sealed part contact edge lies closer to said other portion of said sealed mechanism than does said primary seal band in its installed condition, and such that said contact edge and said body portion of said second lip lying closest to said other part of said sealed mechanism lie axially closer to said primary seal band than does said margin of said exluder lip affixed to said casing, whereby said contact edge of said excluder lip may be readily lifted from said other sealed mechanism part to vent the area between said primary seal band and said contact edge in the presence of vacuum in such region, to prevent vacuum buildup in such region.

4,522,412

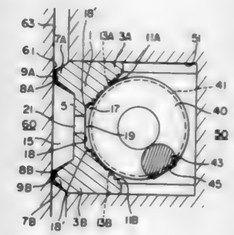
OIL RING WITH COIL EXPANDER

Yukihiko Kubo, Okaya, Japan, assignor to Keikoku Piston Ring Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 436,811, Oct. 26, 1982, abandoned. This application Jun. 11, 1984, Ser. No. 618,766
Int. Cl.³ F16J *9/06, 9/20*
U.S. Cl. 277—138 **12 Claims**

1. A piston ring comprising:

an oil-scraping oil ring, made of steel, having a generally I-shaped cross-section consisting of upper and lower side rails which are mass of rigidity and a thin web for connecting the upper and lower side rails, the thickness of said web being not more than 0.8 mm, said web having a large number of oil vent holes punched along a periphery thereof, said upper and lower side rails and web defining an outer peripheral channel for receiving oil scraped and an inner peripheral groove for receiving a coil expander, said side rails having inclined flat surfaces, in the cross-section, converging to a peripherally extending center line of the web, so as to define the trapezoidal inner peripheral groove, said annular coil expander located in said inner peripheral groove and bearing against the upper and lower side rails substantially at two points, in the cross-section, said coil expander being spaced from the web of the oil ring to provide a slight gap therebetween.

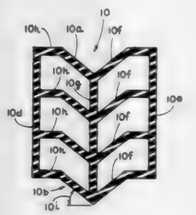


4,522,413

PAVEMENT JOINT SEAL WITH CHEVRON-SHAPED WALLS

John D. Nicholas, Holbrook, N.Y., assignor to Elastomer Seals, Inc., Copiague, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,193
Int. Cl.³ F16J *15/10*; E01C *11/10*
U.S. Cl. 277—205 **1 Claim**



1. In an extrusion of elastomeric material adapted to form the flexible sealing member between the vertical faces of an expansion joint of a concrete structure of the type having a periphery comprised of chevron-shaped top and bottom walls and two chevron-shaped intermediate walls and two parallel side walls joining said top and bottom and intermediate walls, and having a vertically-extending interior wall connecting said four chevron shapes located centrally of said top and bottom and intermediate walls, the improvements to said chevron-shaped top and bottom and intermediate walls consisting of means for maintaining continuous contact between said side walls and the concrete vertical faces in the form of horizontally-extending length portions of one third the total horizontal extent of said sealing member in said top and bottom and intermediate walls connecting said side walls to said centrally located chevron shapes, and said chevron shapes extending the remaining two thirds of the horizontal extent of said sealing member and being formed by angled wall length portions subtending an angle to the horizontal of at least 45 degrees, whereby the chevron shapes located inwardly of said wall horizontal length portions are urged through descending movement in response to diminishment in size of the expansion joint instead of being squeezed between said side walls.

4,522,414

SEAL ASSEMBLY FOR PIVOTAL ROD

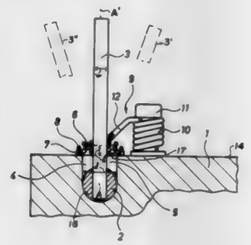
Heinz Schulte, Marktheidenfeld, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Sep. 12, 1984, Ser. No. 649,732

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1983, 3333163

Int. Cl.³ F16J *15/52*

U.S. Cl. 277—212 R **10 Claims**



1. In combination with:

a support having a flat surface and formed with a bore extending generally parallel to but beneath the surface and with a passage extending from the bore to the surface;

a control element in the bore and pivotal therein about an axis generally parallel to the surface; and

a control rod projecting from the element through the passage beyond the surface, the rod being connected to the element and pivoting therewith about the axis through an arc on pivoting of the element in the bore about the axis; a seal assembly comprising:

an elastomeric annular cuff having an inner periphery tightly engaging and secured against movement on the rod and an outer periphery engaging and slidable on the surface all around the passage and dimensioned to engage the surface all around the passage in any position of the rod, the cuff being prestressed generally parallel to the rod between its peripheries to press at the outer periphery against the surface, whereby as the rod pivots the periphery slides on the surface while remaining in sealing contact therewith.

4,522,415

PISTON RING FOR AN INTERNAL COMBUSTION ENGINE

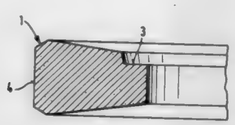
Ulf Dworak, Baltmannsweiler; Hans Olapinski, Aichwald; Dieter Fingerle, Hochdorf, and Ulrich Krohn, Leonberg, all of Fed. Rep. of Germany, assignors to Feldmühle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jan. 17, 1984, Ser. No. 571,478

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1983, 3301913

Int. Cl.³ F16J *9/20*

U.S. Cl. 277—216 **7 Claims**



1. A piston ring for an internal combustion engine made of ceramic materials comprising a piston ring (1) consisting of a body from partially stabilized zirconium oxide (PSZ) made by sintering which has a porosity of less than 3%, and a proportion of the cubic modification not exceeding 80 wt.%, a proportion of the tetragonal modification between 20 and 60 wt.%, and a proportion of the monoclinic modification not greater than 6 wt.%, the proportions of the individual modifications making up 100 wt.%, and wherein the rolling surface (4) of piston ring (1) has a centerline average roughness R_a of 0.03 to 0.1 μm.

4,522,416

VEHICULAR STEERING SYSTEM

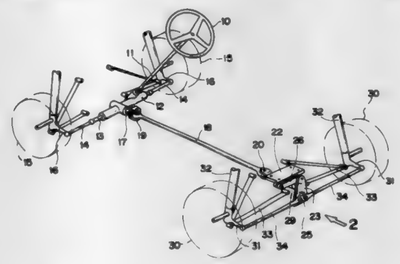
Shoichi Sano, Tokyo, and Yoshimi Furukawa, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,421

Claims priority, application Japan, Aug. 13, 1981, 56-127349; Dec. 2, 1981, 56-194249; Jun. 1, 1982, 57-93394; Jun. 1, 1982, 57-93398; Jun. 2, 1982, 57-94355

Int. Cl.³ B62D *7/00*

U.S. Cl. 280—91 **37 Claims**



1. A steering system for a vehicle provided with at least one front wheel and two rear wheels; a steering wheel; front wheel steering means for steering said front wheel in directions responsive to turning directions of said steering wheel by angles corresponding to turning angles of said steering wheel; and rear wheel steering means for steering said rear wheels in the same steering directions as said front wheel when said turning angles of said steering wheel relatively small, and in directions opposite to the steering directions of said front wheels when said turning angles of said steering wheel are relatively large, wherein:

said rear wheel steering means comprises:

a crank member operatively connected to said steering wheel;

a movable member connected to said crank member;

restriction means for restraining said movable member and permitting said movable member to perform only restricted movements in a predetermined curved pattern;

an output mechanism interconnecting said movable member with each of said rear wheels for effecting said steering of said rear wheels according to components of motion in a predetermined direction of said restricted movements;

said predetermined pattern being disposed on a virtual plane substantially including a straight line in said predetermined direction, said predetermined direction being a substantially transverse direction of said vehicle and said virtual plane being substantially orthogonal to a longitudinal center line of said vehicle;

said restriction means being adapted to move in said virtual plane when restraining said movable member;

said output mechanism comprising a pair of knuckle arm members respectively supporting said rear wheels and being pivotable in a substantially transverse direction of said vehicle, and a pair of rod members each pivotably connected at one end thereof to one of said knuckle arm members and connected at the other end thereof to said movable member;

the width dimension of said movable member in said transverse direction of said vehicle being substantially small relative to the lengths of said rod members; and

said other ends of said rod members being connected to said movable member at points equally remote from the connecting point between said crank member and said movable member.

4,522,417

STEERING SYSTEM FOR VEHICLES

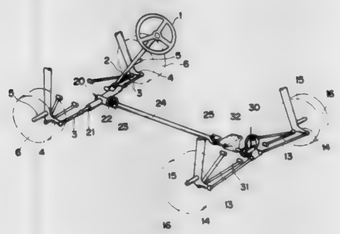
Shoichi Sano, Tokyo, and Yoshimi Furukawa, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1983, Ser. No. 544,438

Claims priority, application Japan, Oct. 22, 1982, 57-185495; Oct. 29, 1982, 57-190379; Nov. 4, 1982, 57-194374

Int. Cl.³ B62D *7/00*

U.S. Cl. 280—91 **9 Claims**



1. A steering system for a vehicle having front and rear wheels, comprising:

a steering wheel;

a front wheel steering sub-system for steering said front wheels in accordance with the steering angle of said steering wheel;

an angle take-out mechanism for taking out from said front wheel steering sub-system an angular displacement according to the steering of said steering wheel;

a pair of rear wheel turning mechanisms for respectively turning said rear wheels in accordance with two linear displacements, respectively, substantially in the transverse direction of said vehicle; and

function generating means for generating a compound function of said angular displacement to determine said linear displacements, said compound function being such that the direction of each said linear displacement in a relatively small steering angle range of said steering wheel is opposite to that in a relatively large steering angle range of said steering wheel and the maximum absolute value of the function in said small steering angle range is less than that in said large steering angle range.

4,522,418

STEERABLE WHEEL SUSPENSION ARRANGEMENT

Helmut Struck, Winnenden; Karl H. Richter, Kernen im Remstal; Michael Klein, Waiblingen; Ulrich Ruth, Stuttgart, and Walter Ulke, Neuhausen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

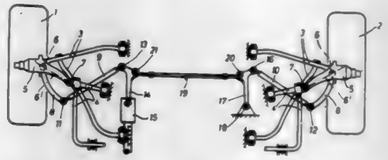
Filed May 3, 1983, Ser. No. 491,043

Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3216728

Int. Cl.³ B62D *7/08, 7/16*

U.S. Cl. 280—95 A **10 Claims**

1. Motor vehicle, in particular a passenger car, possessing an axle with steerable wheels, on which axle the wheels are connected to a steering-gear box via a steering linkage which, starting from the steering box, is composed of two part sections containing a plurality of linkage member connection joints, each part section including joints of different construction than the joints of the other part section each part section interconnecting one of the wheels with the steering-gear box, wherein



the overall stiffness of one of the two part sections is equal to the overall stiffness of the other part section.

4,522,419

RACK AND PINION TYPE STEERING DEVICE

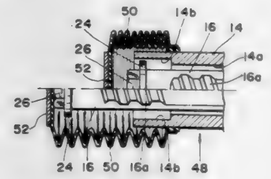
Kenji Yoshida, Zama, and Yuichi Sanada, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Feb. 11, 1983, Ser. No. 465,993

Claims priority, application Japan, Mar. 31, 1982, 57-52722

Int. Cl.³ B62D *3/12*

U.S. Cl. 280—96 **6 Claims**



1. A rack and pinion type steering device comprising:

a gear housing having a through bore formed therein;

a rack shaft axially movably received in said through bore with its opposed first and second end portions projected from the both open ends of said gear housing;

a pinion engaging with the teeth of said rack shaft to move said rack shaft axially in response to turning of the steering wheel;

a first cover member disposed about said first end portion of the rack shaft with its inside end sealingly fixed to said gear housing and its ouside end sealingly fixed to the leading end of said first end portion, said first cover member being constructed to be axially expansible and contractable in response to movements of said rack shaft; and

an elastic bellows boot disposed about said second end portion of the rack shaft with its inside end sealingly fixed to said gear housing and an outside closed end portion integral therewith to sealing cover said second end portion, said elastic bellows boot being axially expansible in response to the axial movements of said rack shaft in one direction, and said elastic bellows boot being constructed to assume its contracted position when no external force is applied thereto.

4,522,420

ALL TERRAIN VEHICLE CONVERSION SYSTEM

Gerald J. Hannappel, 708 W. Solano Dr., Phoenix, Ariz. 85013

Filed Aug. 4, 1983. Ser. No. 520,150

Int. Cl.³ B62J *7/04, 9/00*

U.S. Cl. 280—289 A **10 Claims**

1. Apparatus for conveying cargo and limiting the rearward tilt of an all terrain vehicle, said apparatus comprising in combination:

(a) a rear support means secured to the framework of the vehicle;

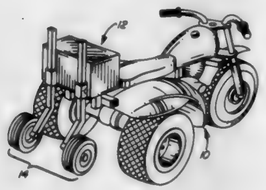
(b) a cargo box for conveying cargo;

(c) stud means extending from said cargo box for engaging and

for receiving support from said rear support means to locate said cargo box in fixed position with respect to the framework of the vehicle;

(d) means for selectively detachably attaching said stud means with said rear support means and for locking said cargo box in place to resist movement relative to the frame of the vehicle from any externally imposed loads upon said cargo box;

(e) a set of wheels locatable rearward of the vehicle for contact with the surface traversed, said set of wheels including a first and a second leg and a first and a second wheel rotatably secured to respective ones of said first and second legs;



(f) means for attaching each of said first and second legs to and receiving support from said support means; and

(g) means for securing each of said first and second legs to said attaching and receiving means in a selected one of a plurality of vertical positions to regulate the amount of tilt of the vehicle permissible before a wheel of said set of wheels contacts the surface traversed;

whereby, said cargo box provides an opportunity for carrying cargo and said set of wheels are vertically adjustable to prevent rearward tilting of the vehicle beyond a predetermined tilt angle.

4,522,421

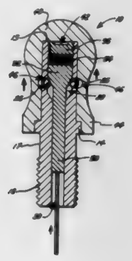
INTERCHANGEABLE TRAILER BALL ASSEMBLY

Thomas L. Vance, 2939 Second Ave. North, Hudson, Fla. 33567

Filed Apr. 20, 1983, Ser. No. 486,679

Int. Cl.³ B60D *1/06*

U.S. Cl. 280—511 **10 Claims**



1. An interchangeable trailer ball apparatus comprising:

a. an elongated bumper pin having an internal longitudinal bore, and at least one lateral bore intersecting the longitudinal bore;

b. attachment means for removably affixing the bumper pin to a vehicle bumper;

c. at least one locking element movably mounted in the lateral bore between retracted and projected positions;

d. an operable actuating rod movably mounted in the bumper pin longitudinal bore so that longitudinal movement of the rod within the longitudinal bore between respective upper and lower positions can effect movement of the locking element respectively between the retracted and projected positions;

e. a trailer ball having an opening at its lower end that is receptive of the bumper pin;

f. recess means on the trailer ball and communicating with the trailer ball elongated opening for forming a connection with the locking element when the locking element is in the projected position so that the trailer ball can be secured to the bumper pin.

4,522,422

SKI BINDING

Knut Jaeger, Kirchheim, Fed. Rep. of Germany, assignor to ESS GmbH Skibindungen, Immenstadt, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 441,373

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109754

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—617 **5 Claims**



1. A ski binding comprising

a toe unit,

a first guide track adapted to be fixedly attached to a ski and which carries the toe unit for slidable movement lengthwise of the ski,

locking means for selectively fixing the position of the toe unit relative to the first guide track,

a heel binding,

a second guide track adapted to be fixedly attached to the ski and which carried the heel binding for slidable movement lengthwise of the ski,

a connector element which is rigid in the lengthwise direction of the ski while being flexible in the plane of the ski and fixedly attached at its forward end to the toe unit, while the heel binding is slideable along the rear end of the connector element,

adjustment means for selectively fixing the position of the heel binding relative to the rear end of the connector element and having a spring element which is located in the path through which the heel binding moves relative to the connector element and which presses the heel binding with substantially constant force against a ski boot inserted into the binding,

a stationary plate near the toe unit which forms a passageway for free movement of the connector element therethrough, and

heel spacer elements on both sides of the connector element near the heel binding for the protection of the connector element.

4,522,423

SAFETY BINDING OF A BOOT ON A SKI

Gaston Haldemann, Fürigen, and Francois Wirz, Savièse, both of Switzerland, assignors to Haldemann A.G., Stans, Switzerland

Filed Jan. 18, 1983, Ser. No. 458,908

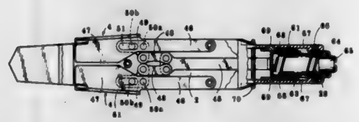
Claims priority, application Switzerland, Jan. 27, 1982, 495/82

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—624 **13 Claims**

1. Safety binding of a boot on a ski comprising two lateral clamps movably mounted under the influence of a resilient member parallel to the plane of the ski between a closed position in which these clamps coact with the boot sole and an open position, characterized by the fact that each clamp is carried by an arm pivotally mounted on the ski and is connected to one end of a longitudinally slidable strip by means of

articulatedly interconnected rods, and by the fact that the other end of the strip coacts with a crank subjected to the



action of the resilient member, whereby this crank has two stable positions corresponding to the respectively open and closed positions of the clamp.

4,522,424

SKI BINDING CLAMP

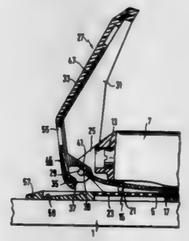
Max Luitz, Blaichach-Bihlerdorf, and Eugen Weiss, Burgberg, both of Fed. Rep. of Germany, assignors to ESS GmbH Skibindungen, Immenstadt, Fed. Rep. of Germany

Filed Jan. 14, 1983, Ser. No. 457,743

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1982, 3201319

Int. Cl.³ A63C *9/00*

U.S. Cl. 280—633 **8 Claims**



1. A ski binding clamp, particularly a toe clamp, having a base plate for attachment to a ski, a clamping unit guided along the base plate and displaceable lengthwise of the ski, and a movable locking arrangement for the clamping unit which can be locked to the base plate in predetermined displacement positions and which has a first locking member which is movably attached to the clamping unit and held by a spring in mating engagement with a second complementary locking member of the base plate, said ski binding clamp being characterized in that a double arm lever is pivotally attached to the clamping unit by means of a hinge pin, said lever having an operating arm and a disengaging arm which is shorter than the operating arm and which can be pivoted against the pretensioned force of the spring for disengaging the first locking member from the second locking member, and further characterized in that the lever has a locking projection on the side of its hinge pin which is opposite that of the disengaging arm, said locking projection bearing against said locking arrangement when said first locking member is disengaged, thereby reducing the displacement angle of which the lever is capable when said first locking member is engaged.

4,522,425

TWO WHEEL TRAILER

Harry J. Cornwall, 6275 E. Sixth St., Long Beach, Calif. 90803, and Daniel E. Hanebrink, 304 Riverside Ave., Sugarloaf, Calif. 92386

Filed Dec. 7, 1982, Ser. No. 447,617

Int. Cl.³ B62B *5/00*

U.S. Cl. 280—656 **10 Claims**

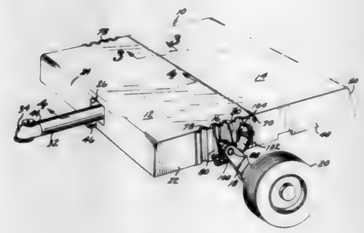
1. A two wheel trailer comprising:

a trailer body including adjacent forward and rearward sections which in their operative positions define, respectively, downwardly opening forward and rearward compartments, said forward and rearward sections being hingedly connected together for pivotal movement of said rearward section about a transverse axis into a storage position underlying said forward section;

a pair of suspension arms normally located in an outer position outwardly of the sides of said forward section, respectively, for pivotal movement about transverse pivot axes;

shock absorbing means carried by said sides of said forward section, respectively, and engageable with said suspension arms;

a pair of wheels carried by said suspension arms, respectively,



support means carried by the sides of said forward section for mounting said suspension arms, said support means being operative to enable said wheels and said suspension arms to be pivoted from said outer position to a retracted position within said forward compartment whereby, upon location of said rearward section in said storage position, substantially all of said suspension arms and all of said wheels are completely enclosed by said forward and rearward sections and locking means normally maintaining said suspension arms in said outer position but selectively operable to enable said suspension arms to move to said retracted position.

4,522,426

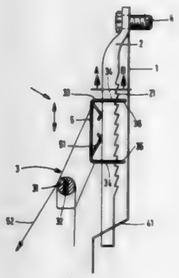
ADJUSTABLE HOLDER FOR VEHICLE SAFETY BELT

Olaf Weman, Heverlee, Belgium, assignor to Klippan GmbH Sicherheitsgerate, Norderstedt, Fed. Rep. of Germany

Filed May 9, 1983, Ser. No. 492,591

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—808 **7 Claims**



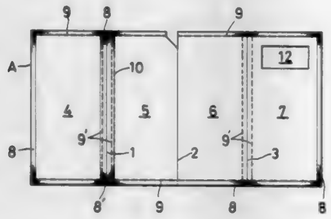
1. A holder device for adjustably securing, to a motor vehicle door column or other support member, a deflection member around which a motor vehicle safety belt or other strap is adapted to pass, said holder device comprising:

a. A toothed rack member secured in vertical position to said door column or other support members;

b. A connecting member of U-shaped cross sectional shape having upper and lower flanges each of which has a hole therethrough through which said toothed rack member is adapted to pass; and

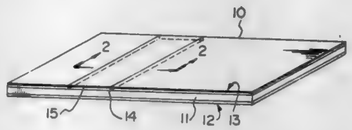
c. Compression spring biasing means for biasing said connecting member horizontally in a direction to lock said connecting member on said toothed rack member;
d. The position of said connecting member on said rack member being manually adjustable vertically by pressing said spring means to unlock said connecting member from said rack member.

4,522,427
SLIPS
Taro Yasui, 2597-3, Tanigawa Tanagawa, Misaki-cho, Sennan-gun, Osaka, Japan
Filed Feb. 9, 1983, Ser. No. 465,338
Claims priority, application Japan, Dec. 14, 1982, 57-189650[U]
Int. Cl.³ B42D *15/00, 15/04*
U.S. Cl. 281—5 **5 Claims**



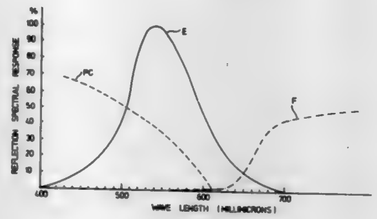
1. A combined arrangement of a series of slips and an envelope, said arrangement comprising:
a single sheet having a front side and a rear side;
said sheet being folded alternately along a center fold line and two lateral fold lines on opposite sides of and parallel to said center fold line to define two intermediate slips joined along said center fold line and two side slips joined to respective said intermediate slips along respective said lateral fold lines, such that front sides of said side slips contact front sides of respective said intermediate slips and rear sides of said intermediate slips are in contact, and such that said intermediate slips are substantially equal in width, said side slips are substantially equal in width, and said side slips are greater in width than said intermediate slips;
each said side slip and the respective said intermediate slip having formed therein, on opposite sides of the respective said lateral fold line, a pair of longitudinal lines of perforations;
each said side slip having formed therein, adjacent opposite longitudinal edges thereof, transverse lines of perforations;
each said side slip having applied to said front side thereof, along margin areas outwardly of said transverse lines of performations and along a margin area adjacent the respective lateral edge of said sheet, a layer of adhesive;
one said side slip and the respective said intermediate slip having applied to said front sides thereof, along a margin area on opposite sides of the respective said lateral fold line, a layer of adhesive having a width greater than the spacing between the respective said pair of longitudinal lines of perforations; and
each said intermediate slip having applied to said rear side thereof, along a margin area outwardly of the respective said longitudinal line of perforations, a layer of adhesive.

4,522,428
PRINTED MAGNETIC ENCODING PANEL
Edward A. Small, Nepean, and Geoff C. Wright, Ottawa, both of Canada, assignors to British American Bank Note Inc., Ottawa, Canada
Filed Nov. 12, 1982, Ser. No. 440,858
Claims priority, application Canada, Nov. 4, 1982, 414931
Int. Cl.³ B42D *15/00;* **G11B** *5/00;* **G06K** *7/08*
U.S. Cl. 283—82 **4 Claims**



1. A method of making an identification card having a magnetic encoding panel comprising the steps of applying a protective film to a core stock to leave a drop out area, printing a magnetic encoding panel on said core stock in said drop out area, and polishing both the protective film and the printed magnetic encoding panel.

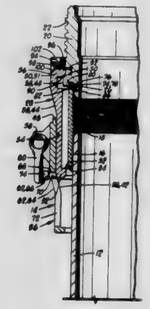
4,522,429
METHOD OF RENDERING DOCUMENTS RESISTANT TO PHOTOCOPYING, AND ANTI-COPYING PAPER AND INK THEREFOR
Norman A. Gardner, and Michael P. Voticky, both of Montreal, Canada, assignors to Nocopi Inc., New York, N.Y.
Continuation-in-part of Ser. No. 379,674, May 19, 1982, abandoned. This application Nov. 23, 1982, Ser. No. 443,819
Claims priority, application Canada, May 25, 1981, 378239
Int. Cl.³ B41M *3/14;* **B42D** *15/00*
U.S. Cl. 283—91 **33 Claims**



25. Anti-photocopying paper having a colour with a reflection spectral response of less than about 10% for light with a wave-length below about 600 millimicrons and yet which is sufficiently visually contrasting with information, when said information is typed thereon or otherwise applied thereto, to enable said information to be read by the human eye when the paper is viewed under white light.

4,522,430
QUICK CONNECT COUPLER
James L. Stromberg, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Continuation-in-part of Ser. No. 238,802, Feb. 27, 1981, abandoned. This application Aug. 26, 1981, Ser. No. 296,325
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—24 **20 Claims**

1. A coupling to connect a first member to an end portion of a cylindrical member, the end portion having a radially outward extending shoulder having a longitudinal inward facing surface, said coupling comprising:
a body member disposable about a portion of the end portion of said cylindrical member and adapted to have said first member connected thereto, said body member having a radially outer surface having, in turn, an annular collet receiving groove therein;
annular seal means for sealing between said body member and said cylindrical member;
a plurality of collet sections disposed around said body member, each of said collet sections having a first end adapted to be releasably connectable to the annular collet receiving groove in the radially outer surface in said body member and a second end adapted to be releasably engageable with a longitudinally inward facing surface of said shoulder of said cylindrical member;
an outer sleeve slidably disposed about said plurality of collet sections, said sleeve being slidable relative to said collet sections between an open position wherein said second ends of said collet sections may receive said shoulder of said cylindrical member therebetween and said first ends of said collet sections may receive therebetween the radially outer surface having an annular collet receiving groove therein of said body member and a closed position wherein said body member is sealingly coupled to said cylindrical member by said seal means and said second ends of said collet sections releasably engaging the longitudinally inward facing surface of said shoulder of said cylindrical member while said first ends of said collet sections releasably engage the annular collet receiving groove in the radially outer surface of said body member; and



release means, operably associated with said plurality of collet sections and said outer sleeve, for moving said second ends of said collet sections out of engagement with said shoulder of said cylindrical member and for moving said first ends of said collet sections out of engagement with the annular collet receiving groove in the radially outer surface of said body member upon sliding of said outer sleeve from its closed position to its open position, said release means comprising:
a radially outer tapered cam surface on said outer sleeve;
a radially inner tapered first cam surface on said outer sleeve;
a plurality of radially outer tapered second cam surfaces, each radially outer tapered second cam surface of said plurality of radially outer tapered second cam surfaces being located on a collet section of said plurality of collet sections; and
a plurality of cam follower members, each cam follower member of said plurality of cam follower members being attached to said second end of each collet section of said plurality of collet sections and having a follower surface thereon engaging said radially outer tapered cam surface on said outer sleeve
whereby said radially inner tapered first cam surface on said outer sleeve being arranged and constructed relative to said plurality of collet sections that upon movement of said sleeve from its said open position toward its said closed position said radially inner tapered first cam surface on said outer sleeve engages said second ends of said plurality of collet sections and cams said second ends of said plurality of collet sections radially inward toward said cylindrical member to engage with the longitudinally inward facing surface of said shoulder of said cylindrical member, said radially outer tapered second cam surfaces being arranged and constructed relative to said outer sleeve that upon movement of said outer sleeve from its said open position toward its said closed position said sleeve engages said radially outer tapered second cam surfaces of said plurality of, collet sections and cams said first ends of said plurality of collet sections radially inward toward said body member for said first ends of said plurality of collet sections to engage the annular collet receiving groove in the radially outer surface of said body member, and said radially outer tapered cam surface on said outer sleeve and said cam follower members being arranged and constructed that movement of said sleeve from its closed position to its open position moves said radially outer tapered cam surface into engagement with said follower surfaces of said plurality of collet sections and thereby cams said second ends of said plurality of collet sections radially outward away from engagement with the longitudinally inward facing surface of said shoulder of said cylindrical member.

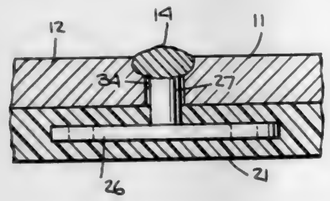
4,522,431
SELF-ALIGNING CONNECTOR ASSEMBLY
Larry E. Reimert, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.
Continuation of Ser. No. 295,679, Aug. 24, 1981, Pat. No. 4,407,527. This application Oct. 3, 1983, Ser. No. 538,672
The portion of the term of this patent subsequent to Oct. 4, 2000, has been disclaimed.
Int. Cl.³ F16L *15/00*
U.S. Cl. 285—27 **1 Claim**



1. Apparatus for connecting tubular members of any size diameters, while preventing cross-threading, comprising:
a. a first tubular member having tapered, external threads toward a first end thereof;
b. a generally cylindrical external surface, as part of said first tubular member, axially displaced relative to said external threads and on the opposite side thereof from said first end;
c. a second tubular member having generally circular guide means toward a first end thereof;
d. said second tubular member further having tapered, internal threads generally complementary to said external threads, and axially displaced relative to said guide means;
e. wherein:

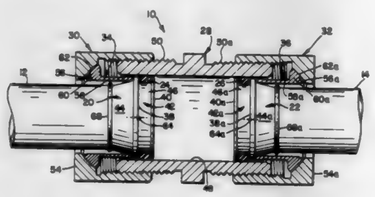
i. W is the distance between said guide means and the end of said external threads farther therefrom when said external threads are positioned to just avoid cross-threading with said internal threads;
ii. θ is the minimum misalignment angle between said first and second members for cross-threading;
iii. X_1 is the maximum radial gap between said first and second members when said members are mutually aligned;
iv. X_3 is the radial gap between the first member and said guide means when said misalignment angle is θ;
v. k is the thread taper;
vi. Z_6 is the minimum overlap of said internal and external threads necessary to initiate cross-threading; and
vii. $W=(X_1+(\frac{1}{2})X_3+kZ_6)/\tan\theta$.

4,522,432
COMPONENTS FOR LINED PIPING SYSTEM WITH ANCHORED LINERS AND METHOD OF MANUFACTURE
Irving D. Press, West Orange, N.J., assignor to UMC Industries, Inc., Stamford, Conn.
Continuation-in-part of Ser. No. 370,481, Apr. 21, 1982, abandoned. This application Nov. 23, 1983, Ser. No. 554,531
Int. Cl.³ F16L 9/14
U.S. Cl. 285—55 **17 Claims**



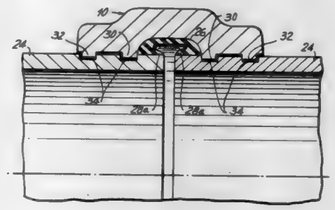
1. A component for a lined piping system comprising a metal housing lined with a non-metallic liner of molded material, and at least one structural anchor having a first part embedded and anchored in said liner and having a second part projecting from said liner and secured to said housing, said first part having a portion that extends laterally within said liner relative to said second part with the material of said liner surrounding at least said portion and thereby preventing said first part and liner from separating.

4,522,433
SPHERICAL SEAT FLEXIBLE O-RING COUPLING
Gordon A. Valentine, Denver, and Edwin J. Gale, Aurora, both of Colo., assignors to Stanley Aviation Corporation, Denver, Colo.
Filed May 14, 1982, Ser. No. 378,410
Int. Cl.³ F16L 35/00
U.S. Cl. 285—93 **9 Claims**



1. A flexible, fluid-conveying coupling for coupling a tubular fluid-conveying part to a further fluid-conveying part in a fluid-conveying system, comprising a sleeve, a tubular flange adapted to be fixed to said tubular fluid-conveying part and extending into said sleeve such that said sleeve circumferentially surrounds a portion of said flange with sufficient clearance to allow radial displacement of said flange relative to said sleeve, an elastically deformable seal ring carried by said flange and deformed between the inner periphery of said sleeve and said flange to establish a seal between said flange and said sleeve, said flange being formed with means for confining said seal ring against axial displacement relative to said flange, and means defining first and second bearing seats lying in seating engagement with one another and located axially beyond said sleeve, said first bearing seat having a diameter larger than the inner diameter of said sleeve thereby preventing said first bearing seat from entering said sleeve, said first bearing seat being operatively connected to said flange and said second bearing seat being operatively connected to said sleeve, said bearing seats providing for universal articulation of said flange relative to said sleeve about a center that lies at least in close proximity to a plane normally intersecting the longitudinal axis of said flange and passing through a pre-selected region of said flange, said pre-selected region lying within said sleeve and having an outer diameter that is at least approximately equal to the outside diameter of any other portion of said flange lying within said sleeve.

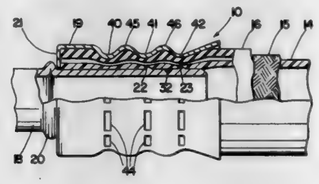
4,522,434
MULTIPLE KEY SEGMENTED PIPE COUPLING
Maurice J. Webb, Mountain Lakes, N.J., assignor to Victaulic Company of America, South Plainfield, N.J.
Filed Apr. 23, 1982, Ser. No. 371,438
Int. Cl.³ F16L 17/04
U.S. Cl. 285—112 **14 Claims**



1. A coupling segment specifically for use in a piping system of high-pressure relative to the pipe strength in conjunction with at least one additional coupling segment comprising:
a substantially unfinished high strength metal casting of iron having substantial ductility and providing an arcuate member having an internal recess for the reception of a gasket;
a pad at each circumferential end of said arcuate member and cast integrally with said arcuate member, each said pad being adapted to receive securing means for securing said pad to the pad of an adjacent arcuate member with said arcuate members encircling a pipe;
at least one portion of said arcuate member extending axially to one side of said internal recess; and,
plural axially spaced continuous arcuate keys integral with and extending inwardly of the inner periphery of said axially extending portion, said keys respectively being for engagement within correspondingly axially spaced grooves in the periphery of said pipe for resisting relative axial movement between said coupling segment and said pipe under axial loading, each said key having an unfinished engagement face having an inversely pebbled surface produced in the casting thereof and which faces towards said internal recess, said engagement faces at all positions along the circumferential extent of said keys being substantially radial and perpendicular to the axis of generation of said arcuate member, said inversely pebbled surface of each said key being capable of crushing down and cold working the material of said pipe to provide

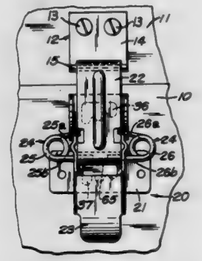
equalization of the stresses imposed on said keys when under axial loading.

4,522,435
HOSE COUPLING JOINT
William P. Miller, Willowick, and Atul Shah, Mentor, both of Ohio, assignors to Parker Hannifin Corporation, Cleveland, Ohio
Filed Dec. 27, 1982, Ser. No. 453,857
Int. Cl.³ F16L 9/14, 33/20
U.S. Cl. 285—256 **9 Claims**



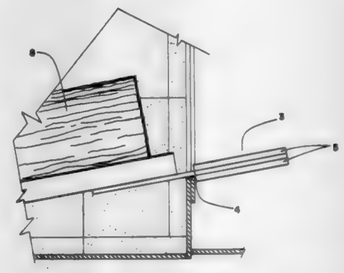
1. A hose coupling joint, comprising a hose having a thermoplastic liner, an inner tubular member, a seal on said tubular member, and a sleeve deformed into engagement with said hose for establishing a fluid-tight connection between said hose and said seal, said inner tubular member having annular barbs thereon and a groove intermediate adjacent ones of said barbs, said seal being disposed in said groove, said hose being in engagement with said seal, said barbs and said tubular member intermediate said barbs, said tubular member having outer cylindrical surfaces between said barbs and on inner and outer axial sides of said barbs, each said barb having a sharp inner edge, a conical outer surface and a generally cylindrical rib surface therebetween, said seal being elastomeric and having a volume substantially equal to the volume of said groove so as to substantially completely fill said groove when compressed and project substantially no further radially outwardly than said tubular member cylindrical surfaces between said barbs, said seal projecting no further radially outwardly than said cylindrical rib surfaces prior to assembly, said cylindrical rib surfaces being disposed radially outwardly substantially one half the thickness of said hose liner, and said sleeve being a metal collar having a pair of axially spaced, ring-like crimps straddling said seal for compressing said hose into engagement with said barbs and said seal.

4,522,436
SPRING-LOADED TOGGLE LATCH
Cuyler Hoen, Rennsselaer, and Frederick J. Pufpaff, Loudonville, both of N.Y., assignors to Simmons Fastener Corporation, Albany, N.Y.
Filed Apr. 6, 1983, Ser. No. 482,576
Int. Cl.³ E05C 19/14
U.S. Cl. 292—113 **11 Claims**



1. A fastener to removably join first and second panels, including a fixed keeper member adapted to be connected to the first panel and a toggle latch adapted to be connected to the second panel, said toggle latch including:
a bracket member having a base plate and opposed upraised side portions, each side position having a through bearing hole;
a lever member pivotally mounted on said bracket member between its side portions and having a pivot means near one of its ends;
a pivotable hasp member having grasp means near one end to removably grasp said keeper member and having pivot means near its opposite end;
a left spring member and a right spring member each having a first inwardly extended spring arm captured in the pivot means of said pivotable hasp member, and a second inwardly extended spring arm through the bearing hole of said bracket member and the pivot means of said lever member;
wherein the spring members perform three functions; they are the only means connecting the lever member and the pivotable hasp member to the bracket member, they pivotally mount the lever member and the pivotable hasp member on the bracket member, and they spring-load the pivotable hasp member.

4,522,437
LOG LOADING TOOL
Jon F. Gleman, 6470 SW. 83rd St., Miami, Fla. 33143
Filed Sep. 4, 1979, Ser. No. 72,410
Int. Cl.³ A47J 49/00
U.S. Cl. 294—9 **1 Claim**



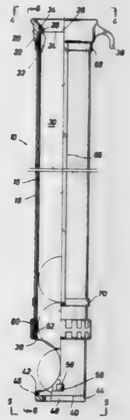
1. A method for loading a log or the like into the firebox of an end-loading stove comprising:
inserting a log loading tool into the stove;
placing the log onto said log loading device;
sliding the log into the firebox;
removing said log loading tool from the stove.

4,522,438
RETRIEVER AND DISPENSER FOR DEFORMABLE BALLS
DeWitt M. Logue, P. O. Box 988, Longview, Tex. 75606
Filed Jan. 6, 1984, Ser. No. 568,702
Int. Cl.³ A63B 47/02
U.S. Cl. 294—19.2 **15 Claims**

1. A retriever and dispenser for compressible balls such as tennis balls and the like comprising:
(a) an elongated tubular member having an internal passage of slightly greater dimension than the diameter of the balls to be contained therein, said tubular member defining first and second extemities, said second extremity forming a first dispensing opening;
(b) retrieving means at said first extremity of said tubular member forming a ball retrieving opening through which balls enter said internal passage, said retrieving means forming restriction means at said ball retrieving opening requiring balls to be slightly deformed as the balls are

forced past said restriction means and into said internal passage, said restriction means restraining balls from inadvertently falling from said retrieving opening when said tubular member is positioned vertically with said retrieving opening at the lower end thereof;

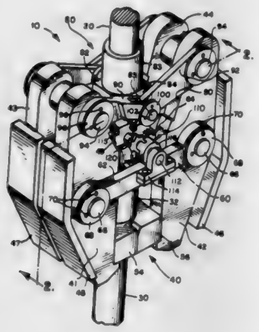
(c) a dispensing cap being rotatably connected at said second extremity of said tubular member and forming a transverse bottom wall supporting the lower ball when said tubular member is positioned vertically with said dispensing cap



at the lower end thereof, said dispensing cap further defining a wall portion forming a second dispensing opening through which balls are moved transversely of the centerline of said tubular member for dispensing of the same, said first and second dispensing openings being in registry for dispensing of said balls and out of registry to prevent dispensing of said balls; and

(d) means restraining free transverse dispensing movement of said balls from said internal passage and permitting manually induced dispensing of said balls.

4,522,439
AUTOMATIC PIPE ELEVATOR
Keith M. Haney, Wichita Falls, Tex., assignor to Walker-Neer Manufacturing Co., Inc., Wichita Falls, Tex.
Filed Aug. 12, 1983, Ser. No. 522,490
Int. Cl.[3] B25J *15/00*
U.S. Cl. 294—110.1 **24 Claims**



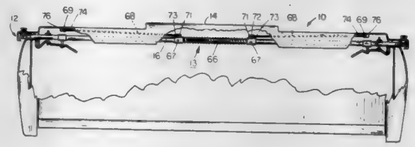
1. An elevator for drill pipe, comprising:

(a) at least two jaws, each jaw having a clamping surface shaped to support a length of pipe;

(b) a central linkage assembly, serving as a pivot means for urging the clamping surfaces of the jaws into contact with a length of pipe to be elevated, when the ends of the jaws distant from the clamping surfaces are urged away from the pipe; and

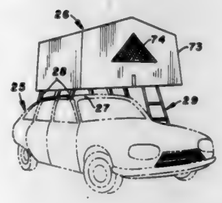
(c) an upper linkage assembly, serving as an elevator suspension and jaw activating means for suspending the elevator, for urging the ends of the jaws distant from the clamping surfaces away from the pipe, and in conjunction with the pivot means, for urging the clamping surfaces into contact with the pipe, when the elevator suspension and jaw activating means and a pipe are urged away from each other; and as a release means for urging the clamping surfaces away from the pipe when the elevator suspension and jaw activating means and the pipe are urged toward each other.

4,522,440
RAISABLE COVER
Richard B. Gostomski, 636 6th St., Owen, Wis. 54460
Filed Jul. 11, 1983, Ser. No. 512,839
Int. Cl.[3] B60P *7/02*
U.S. Cl. 296—100 **13 Claims**



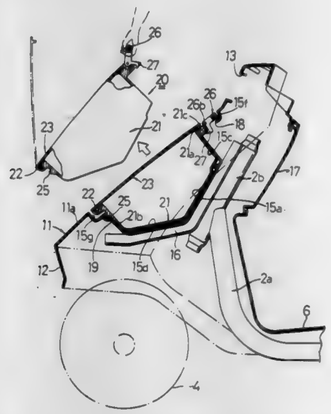
1. In a raisable cover for a container, the container having at least a first and second sidewall disposed substantially opposite from one another and forming at least in part a storage area therebetween, the raisable cover including a cover that spans said storage area and having first and second sides disposed substantially opposite from one another, first hinge means operably connectable between the first side of said cover and the first sidewall of said container, second hinge means operably connectable between the second side of said cover and the second sidewall of said container, and prop means operably connected to said cover to assist in holding said cover in a raised position when so desired, an improvement comprising hinge and lock means for providing said first and second hinge means, said hinge and lock means including two rods movably mounted proximal to the first side of said cover and two rods movably mounted proximal to the second side of said cover, four container brackets mounted in a fixed position with respect to said container, each container bracket operably interacting with and disposed to receive one of said rods, and four cover brackets affixed to said cover, each cover bracket operably interacting with and disposed to receive one of said rods.

4,522,441
COLLAPSIBLE SHELTER
Dallas K. Allison, 316 - 41st St., Western Springs, Ill. 60558
Filed Sep. 6, 1983, Ser. No. 529,283
Int. Cl.[3] B60P *3/34*
U.S. Cl. 296—160 **33 Claims**



1. A shelter mounted on a vehicle comprising: a vehicle having a roof, a collapsible shelter having a flexible cover, support means mounting the shelter on the roof, said shelter having a first platform attached to the support means, a second platform, hinge means pivotally connecting the second platform to the first platform for movement from a folded position adjacent one side of the first platform to an open position generally in the plane of the first platform, frame means for supporting the flexible cover above the first and second platforms to provide an enclosed space when the second platform is in its open position, said frame means including upright end posts, a ridge pole connected to the end posts, generally U-shaped side arms and saddle means slidably mounted on the end posts and connected to the side arms, means locating the frame means in a position between the folded first and second platforms and erecting the frame means above the platform when the second platform is in the open position, said means locating the frame means in a position between the folded first and second platforms and erecting the frame means above the platforms when the second platform is in the open position being connected to the saddle means and including cord means connected to the end posts and saddle means operable to erect the frame means when the second platform is moved to its open position, and means to support the second platform in its open position.

4,522,442
TRUNK STORAGE SYSTEM FOR SMALL VEHICLES
Masahiko Takenaka, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 20, 1983, Ser. No. 459,483
Claims priority, application Japan, Jan. 20, 1982, 57-7093
Int. Cl.[3] B62J *7/00*
U.S. Cl. 296—37.1 **13 Claims**



1. A trunk storage system for use in vehicles having a front leg shield, comprising:

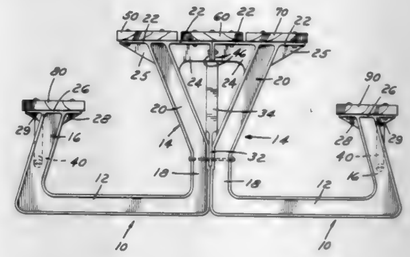
a cavity within the front leg shield;

a removable trunk adapted to fit within said cavity;

wherein said trunk includes a lid member which forms a continuous surface with an exterior surface of the front leg shield;

means for maintaining said trunk in said cavity for selective removal thereof.

4,522,443
PICNIC TABLE
Karl Van Blankenburg, 32131 Claeys Dr., Warren, Mich. 48093
Filed Aug. 11, 1983, Ser. No. 521,995
Int. Cl.[3] A47B *39/00*
U.S. Cl. 297—157 **2 Claims**

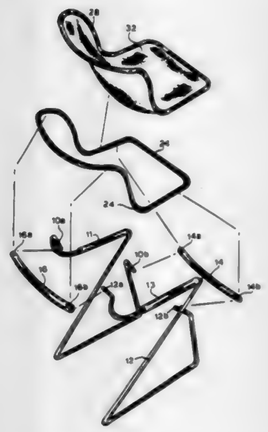


1. A table assembly which comprises:

(a) end supports comprising back-to-back identical leg units each having back uprights joined together to support one or more bridging top elements, and shorter front uprights to support bridging bench elements, the back uprights being parallel to each other in a lower section and diverging from each other in an upper section,

(b) a recess being formed on the contiguous areas of the lower sections to receive a flange of an angle support, and means transfixing the said lower sections and said flange, the other end of said angle support being fastened to the bottom of a bridging table element.

4,522,444
STACKING CHAIR
Charles Pollock, 34-24 86th St., Jackson Heights, N.Y. 11372
Filed Sep. 15, 1982, Ser. No. 418,510
Int. Cl.[3] A47C *3/04*
U.S. Cl. 297—239 **7 Claims**



1. A chair comprising:

first and second side members each of said side members having a z-shaped main body with upwardly directed terminating portions, first and second ends of said first side member projecting perpendicularly thereto, third and fourth ends of said second side member projecting perpendicularly thereto, said first and third ends lying on the same axis and projecting towards each other, said second and fourth ends lying on the same axis and projecting

towards each other, a first cross member lying on the axis of said first and second ends and interconnecting said first and second ends, a second cross member lying on the axis of said third and fourth ends and interconnecting said third and fourth ends, said first and second cross members being parallel with said first cross member lying in a plane above said second cross member, a contoured seat, a continuous peripheral rim of said contoured seat, and said seat supported by engagement of said rim with said first and second cross members on upper surfaces thereof.

4,522,445

VEHICLE SEAT, PARTICULARLY A MOTOR VEHICLE SEAT

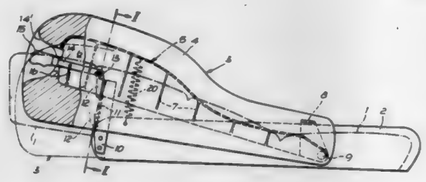
Walther Göldner, Denkendorf, and Wolfgang Gassmann, Lorch, both of Fed. Rep. of Germany, assignors to Keiper Recaro GmbH & Co., Fed. Rep. of Germany

Filed Dec. 22, 1982, Ser. No. 452,118

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151018; Apr. 30, 1982, 3216060

Int. Cl.³ A47C *3/00*

U.S. Cl. 297—284 **19 Claims**



1. Vehicle seat, particularly a motor vehicle seat, comprising:

a seat covered with upholstery;

an upholstery support for the seat;

at least one upholstered side member arranged at the side adjacent the seat upholstery for laterally supporting a user of the seat and connected with the upholstery support for the seat so as to be pivotable about a pivot axis running in the lateral direction of the seat;

an upholstery support for the side member;

a locking device arranged so that the side member can be fixed in at least two different pivot positions, the cooperating elements of the locking device being connected with the upholstery support for the seat and the upholstery support for the side member respectively;

said locking device being self-locking in only one pivot direction and being releasable by a release member for pivoting movement of said side member in said pivot direction and including two associated locking members arranged at a distance from the pivot axis, one of which locking members passes by the other member during a pivoting movement of the side member and cooperates therewith in selected positions when the locking device is closed.

4,522,446

ARTICLE OF FURNITURE

Denise Sheridan, Bankstown, Australia, assignor to Sebel Operations Pty. Ltd., Bankstown, Australia

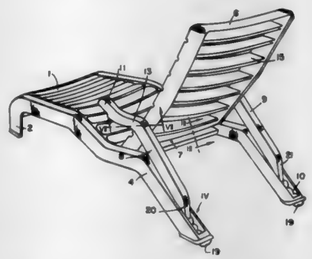
Filed Mar. 4, 1983, Ser. No. 472,346

Claims priority, application Australia, Mar. 15, 1982, PF3096

Int. Cl.³ A47C *1/024*

U.S. Cl. 297—377 **12 Claims**

1. A reclining chair assembled from only four major moulded plastic component parts which comprise a seat portion, a back portion and two struts with each of said parts being substantially integrally formed, wherein said seat portion is generally horizontal and includes a pair of front legs and a pair of rear legs; said back portion is pivotally connected at its lower end to said seat portion and movable between a substantially upright position and at least one inclined position; and said two struts are spaced apart by, and pivotally connected to, said back portion at a location spaced from the pivotal connection between said back and seat portions; the point of contact of each of said struts with the corresponding rear leg being adjustable to determine the degree of inclination of said back portion, and each said strut extending forwardly beyond said back portion to form a corresponding arm rest having an attitude adjustable simultaneously with the inclination of said back portion; wherein each rear leg has an upwardly opening channel of substantially C-shaped transverse cross-section; each channel having a transverse slot therein the length of



which is greater than the width of the remainder of said channel, and having a plurality of grooved steps located interior of the channel, and wherein the rear end of each said strut is provided with a transverse projection having a length less than both the length of said slot and the internal width of said channel but greater than the width of the opening of said remainder of said channel whereby each said strut is engageable with, said disengageable from, the corresponding channel only by passing the corresponding projection through the corresponding slot and the adjustable point of contact of each said strut with the corresponding rear leg comprises the point of engagement between each said strut rear end and one of the grooved steps in the corresponding channel.

4,522,447

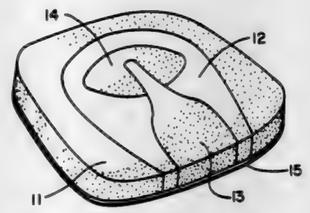
FOAM SEAT AND BACK CUSHIONS

William F. Snyder, 2174 Temple Rd., and Nelson P. Snyder, 702 West Charles St., both of Bucyrus, Ohio 44820

Continuation-in-part of Ser. No. 123,573, Feb. 2, 1980,. This application Sep. 17, 1981, Ser. No. 303,052

Int. Cl.³ A47C *7/02*

U.S. Cl. 297—452 **16 Claims**



1. A seat cushion comprising cellular elastic material, said material being divided into segments having different moduli of elasticity, the modulus of elasticity of each segment being inversely proportional to the pressure exerted on such segment by the anatomical portion to a person seated against said cushion to more uniformly distribute the supportive forces exerted by the cushion over a larger area of said anatomical portions, said segments comprising pre-formed blocks of said cellular elastic material assembled together to form said cushion,

a first, substantially horseshoe-shaped segment forming both side edges and the rear edge of said seat cushion;

a second, substantially horseshoe-shaped segment disposed within said first segment, said second segment being open at the front edge of said cushion;

a third, substantially wedge-shaped segment disposed within said second segment and extending rearwardly from said front edge of said cushion, said third segment tapering from said front edge toward said rear edge of said cushion and extending more than halfway from said front edge toward said rear edge of said cushion; and

a fourth, substantially elliptical prismatic segment having its major axis extending substantially across the width of said cushion, said fourth segment lying within said second segment and surrounding the rear end of said third segment, said third segment extending into the indentation defined by the forward wall of said fourth segment,

said first and third segments being relatively firm and said second and fourth segments being relatively soft.

4,522,448

METHOD AND APPARATUS FOR RECLAMATION BY REDUCING HIGHWALLS TO GRADABLE RUBBLE AT AUGERED OR LONGWALLED MINING SITES

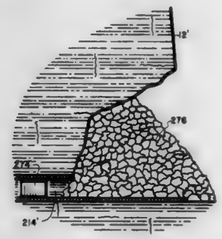
Leonard R. Nitzberg, 1413 Buckeye La., Knoxville, Tenn. 37919

Continuation-in-part of Ser. No. 64,558, Aug. 8, 1979, Pat. No. 4,244,624. This application Jan. 12, 1981, Ser. No. 224,294

The portion of the term of this patent subsequent to Jan. 13, 1999, has been disclaimed.

Int. Cl.³ E21C *41/00*

U.S. Cl. 299—13 **15 Claims**



12. A method for reclaiming a highwall at a surface mining site having at least one cavity extending into the face of said highwall, said cavity extending substantially horizontally into a preselected mineral deposit or seam of ore, said seam being disposed below overburden and above underpinning, said method comprising the steps of:

placing a plurality of charges at preselected locations within said cavity;

sealing said cavity with stemming produced by explosively presplitting a portion of said highwall proximate an opening to said cavity thereby eliminating the need for extraneous material for use as stemming; and

detonating each of said charges within said cavity thereby creating rubble from said highwall, overburden and underpinning.

4,522,449

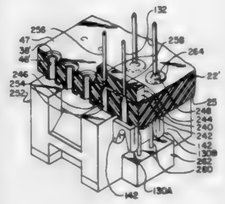
MATRIX BOARD

C. Michael Hayward, 23 Jacob Gates Rd., Harvard, Mass. 01451

Division of Ser. No. 314,578, Oct. 26, 1981, Pat. No. 4,455,749, which is a division of Ser. No. 64,372, Aug. 7, 1979, Pat. No. 4,330,684, which is a continuation-in-part of Ser. No. 864,457, Dec. 27, 1977, abandoned. This application Nov. 14, 1983, Ser. No. 551,337

Int. Cl.³ H05K *1/18*

U.S. Cl. 361—407 **1 Claim**



1. In a combination with an electronic assembly for connecting a bypass capacitor to a different electronic component with dependent leads, said component being mounted on a matrix board formed of an electrically insulating material provided with a plurality of apertures arranged in a rectangular grid with centers spaced apart by distances selected from the values which are integral multiples of about 0.1 inch, said matrix board further being provided on a first surface thereof with an electrically conductive ground plane path disposed so as to clear each of the majority of said apertures over a circular area, centered on each aperture, not exceeding about 0.1 inch in diameter; the improvement including:

first electrically conductive pin means for electrically connecting leads of said electronic component to a selected plurality of adjacent ones of said apertures so that said component is mounted adjacent the opposite surface of said board, said first conductive pin means extending through said selected plurality of apertures and beyond said first surface;

second electrically conductive pin means for electrically connecting leads of said capacitor to a selected pair of said apertures adjacent said selected plurality of apertures so that said capacitor is disposed adjacent said opposite surface with said second conductive pin means extending through said selected pair of apertures and beyond said first surface;

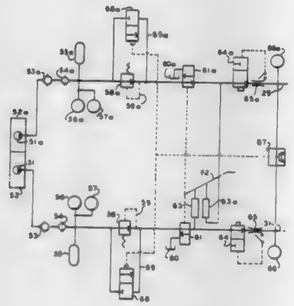
a discrete connector comprising:

(A) an elongated electrically insulating wafer having a length greater than about 0.1 inch and no longer than about 0.2 inch and having a width less than about 0.1 inch, said wafer having a pair of small circular holes penetrating therethrough and spaced about 0.1 inch center to center, and

(B) an electrically conductive bus disposed on one surface of said wafer and extending at least between said pair of circular holes; said connector being assembled adjacent said first surface so that said insulating wafer is positioned between said first surface and said electrically conductive bus, and so aligned that a selected pin of said first conductive pin means and a selected pin of said second conductive pin means respectively penetrate through said pair of circular holes so as to make electrical contact with said electrically conductive bus; and

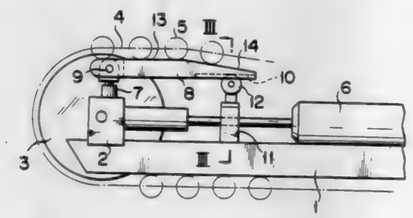
a discrete pair of electrically conductive, centrally apertured discs, each having an nominal outside diameter no greater than about 0.1 inch but greater than that of said circular area; said discs being assembled in electrical contact with said ground plane and aligned respectively in contact with a selected pin of said first conductive pin means and another pin of said second conductive pin means.

4,522,450
BRAKE SYSTEM
Joseph K. Heilhecker, Houston, and James E. Byrne, Spring, both of Tex., assignors to GH TTE, Wichita Falls, Tex.
Filed Apr. 27, 1983, Ser. No. 489,116
Int. Cl.³ B60T *7/12, 11/26*
U.S. Cl. 303—9 **9 Claims**



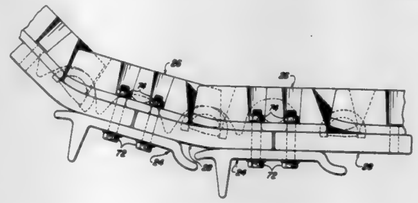
1. A brake system comprising:
a plurality of hydraulic brake means arranged in groups;
a separate hydraulic manifold for each group;
a separate control system for each manifold comprising:
a source of hydraulic fluid under high pressure,
a reducing valve reducing said high pressure fluid to a lower pressure fluid,
a fluid bypass around said reducing valve,
bypass valve means controlling said fluid bypass,
means connecting said reducing valve and said fluid bypass to a manifold and including means controlling application of at least said lower pressure fluid to said manifold to control application of said brake means;
said control means of each separate system ganged together for simultaneous operation; and
a differential pressure switch sensing the pressure in each manifold and when said pressures reach a selected differential opening said bypass valve to expose each separate system to said high pressure fluid.

4,522,451
TRACK-TYPE VEHICLE UNDERCARRIAGE
Yukio Tamura; Masashi Kaminishi, both of Hiratsuka, and Yutaka Kato, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Jul. 13, 1983, Ser. No. 513,243
Int. Cl.³ B62D *55/10, 55/12, 55/30*
U.S. Cl. 305—18 **3 Claims**



1. A track-type vehicle under carriage, comprising:
a track frame;
recoil means mounted on said track frame, said recoil means having a piston slidably mounted therein and means for biasing said piston forwardly;
mount means fixedly connected to said piston, said mount means being adapted to be slidable in the longitudinal direction of the vehicle relative to said track frame;
an idler rotatably mounted on said mount means;
a sprocket;
an endless track of linked together track shoes mounted around said idler and said sprocket, said endless track having a plurality of rollers mounted thereon;
a support member mounted on said mount means;
a bracket mounted on said track frame with a longitudinally spaced apart relation from said mount means;
roller means mounted for rotation on said bracket; and
a support rail pivotally mounted at one end thereof to said support member, the other end of said support rail being supported by said roller means, said support rail having a flat top surface and a downwardly inclined top surface formed thereon to permit a smooth travel of said endless track.

4,522,452
ENDLESS TRACK EMBODYING TRACK SECTIONS INCLUDING FLEXORS
William P. Wohlford, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Jan. 24, 1983, Ser. No. 460,214
Int. Cl.³ B62D *55/20, 55/24*
U.S. Cl. 305—43 **3 Claims**

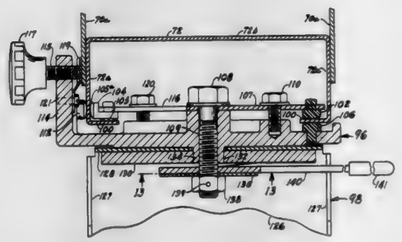


1. In an endless track composed of a plurality of interconnected track sections which each include a pair of flexors arranged in side-by-side relationship to each other, a grouser, a link and a plurality of bolts extending through and holding the grouser and link together with first ends of the flexors positioned therebetween, the improvement comprising: said flexors being generally rectangular in plan view; said plurality of fasteners including some which pass through one and others which pass through the other of the pair of flexors; and the pair of flexors and the grouser and link all being configured such that upon removal of the screw fasteners associated with one of said pair of flexors, said one of the pair of flexors may be moved sideways from between the grouser and link while the other of the pair of flexors remains in place.

4,522,453
TRIBOLOGICAL COATINGS FOR THE PROTECTION OF MOVING MACHINE PARTS FROM WEAR AND CORROSION
Johann Lammer, Cormondreche; Hans R. Kocher, Pesseux, and Hans-Erich Hintermann, Ins, all of Switzerland, assignors to Laboratoire Suisse de Recherches Horlogeres, Neuchatel, Switzerland
Continuation of Ser. No. 180,578, Aug. 25, 1980, abandoned, which is a continuation of Ser. No. 24,421, Mar. 27, 1979, abandoned. This application Sep. 17, 1982, Ser. No. 419,185
Claims priority, application Switzerland, Jul. 21, 1978, 7872/78
Int. Cl.³ F16C *17/00*
U.S. Cl. 308—3 R **1 Claim**

1. A tribological system, comprising:
a first machine element and a second machine element, in rolling or sliding contact with one another, coated with hard, wear-resistant layers of different compositions and having low static and dynamic coefficients of friction between each other, wherein said first machine element is coated with a hard, wear-resistant layer of TiC, and said second machine element is coated with a hard, wear-resilient layer of TiN, said hard, wear-resilient layers covering said first and second machine elements with a protective and smooth tribologically coupled layer.

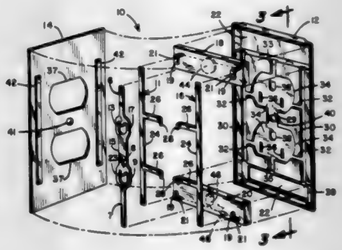
4,522,454
LINEAR SLIDE
Brian R. Hochstatter, Kankakee County, Ill., assignor to Emerson Electric Co., St. Louis, Mo.
Division of Ser. No. 261,258, May 6, 1981, Pat. No. 4,453,691. This application Feb. 2, 1983, Ser. No. 462,837
Int. Cl.³ F16C *29/02*
U.S. Cl. 308—3 R **2 Claims**



1. A radial arm saw having a hollow horizontally extending radial arm comprising a top wall and spaced vertical sidewalls having the lower edge portions thereof formed horizontally inward to form coextending ledges, a carriage having opposite sides supported for longitudinal sliding movement on said ledges, a plurality of low friction elements mounted in aligned pairs on and along one side of said carriage with the elements of each pair bearing against opposite sides of one of said vertical sidewalls thereby to guide said carriage along said one vertical sidewall, and means to support said carriage on said ledges comprising two low friction elements mounted in longitudinal spaced relationship on and along one side of said carriage and resting on one of said ledges and a single low friction element mounted on the other side of said carriage and resting on the other of said ledges and said single element being positioned longitudinally substantially between said two low friction elements.

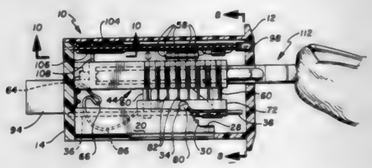
4,522,455
MODULAR ELECTRIFIED COVER PLATE
Richard H. Johnson, 3401 White Diamond, Prior Lake, Minn. 55372
Filed Oct. 11, 1983, Ser. No. 540,679
Int. Cl.³ H01R *19/46*
U.S. Cl. 339—14 R **6 Claims**

1. A cover plate for an electrical wall outlet having at least one raised receptacle portion comprising:
(a) a front cover member having a generally planar outer surface, a formed inner surface having at least two recessed channels and integrally joined edge walls extending out of the plane of said outer surface, said formed inner surface and said edge walls defining at least one compartment, said front cover member further having at least one pair of apertures extending through said outer surface centrally of a recess in said inner surface and spaced from one another to receive the prongs of an electrical plug when said plug is inserted through said front cover member and into said at least one raised receptacle portion of said wall outlet;
(b) an electrical circuit containing module having electrical contacts thereon, said module dimensioned to fit within said compartment;
(c) at least two conductive buses mounting in said recessed channels, each having a conductive finger thereon individually leading to one of said pair of apertures and mounting in resilient overlapped relation to said apertures so as to be displaced by and make electrical contact with the prongs of said plug when inserted therein, said buses further contacting said electrical contacts on said circuit module and completing an electrical current path to said circuit module when said plug is inserted into said receptacle portion of said wall outlet;



(d) a generally planar rear cover member having at least one opening formed therethrough for receiving said raised receptacle portion of said wall outlet, said rear cover member mounting in abutting relation to said edge walls of said front cover member and holding said module and said conductive buses therebetween and said receptacle portions in alignment with said front cover member and apertures; and
means for securing said cover plate to said wall outlet.

4,522,456
ELECTRONIC TAG RECEPTACLE AND READER
William H. Wehrmacher, Prior Lake, Minn., assignor to Datakey, Inc., Burnsville, Minn.
Filed Jan. 25, 1984, Ser. No. 573,649
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—17 R **29 Claims**



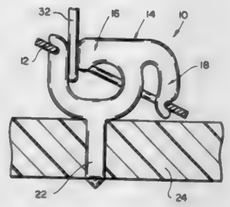
1. An electrical receptacle, actuated by insertion of a device carrying electrical contacts, which comprises:
a housing;
article support means in the housing for receiving and holding the inserted device;
actuator means including abutment means positioned in the housing so as to be contacted by the inserted device;
a receptacle contact carrier assembly including electrical contacts, the assembly being swingably and reciprocably mounted in the housing;
means actuably connecting the carrier assembly to the actuator means such that a device inserted into the device support means and urged against the actuator abutment means causes reciprocable movement of the carrier assembly and swinging movement of the electrical contacts thereon into engagement with the electrical contacts on the inserted device, and
means for establishing electrical connection to the receptacle electrical contacts.

4,522,457

COMPLIANT CONNECTING DEVICE WITH HEAT-RECOVERABLE DRIVER

Thomas H. McGaffigan, Redwood City, and Harold B. Kent, San Carlos, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Oct. 7, 1983, Ser. No. 539,870
Int. Cl.³ H01R *13/20*
U.S. Cl. 339—30 **9 Claims**



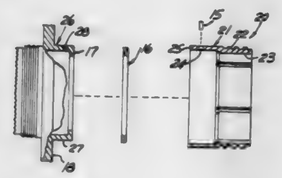
1. A reusable connecting device comprising:
a resilient socket to receive and to provide high contact force with an object to be connected, said socket having a biasing portion and a sequentially operating overload portion, said portions capable of being moved inwardly and when so moved to exert an outward force, the biasing portion including two opposed legs for gripping the object to be connected about its axis and the overload portion comprising a resilient arm extending from one of said legs transversely away from the axis of the object to be gripped; and
a heat-recoverable metallic driver connected to the socket, the metal of said driver having a martensitic state and an austenitic state, said driver capable of being expanded dimensionally by an outward force exerted by the biasing and overload portions of the socket when said driver is in its martensitic state, a change from its martensitic state to its austenitic state recovering said driver to its non-expanded dimension, initially moving the biasing portion inwardly until it contacts an object to be inserted within the socket, providing a high contact force with such an object, the overload portion subsequently moving inwardly after the biasing portion is unable to move, further providing a large range of dimensional compliance and acting as an overload mechanism when movement of the biasing portion is limited.

4,522,458

ELECTRICAL CONNECTOR ASSEMBLY HAVING A FORCE ACTUATED RELEASING ARRANGEMENT

Dee A. Werth, Bainbridge, and Vincent A. Luca, Jr., Sidney, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Filed May 11, 1983, Ser. No. 493,486
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—45 M **2 Claims**



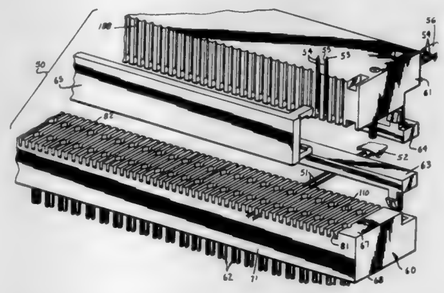
1. An electrical connector assembly including a force actuated releasing arrangement, said electrical connector assembly comprising interconnected plug and receptacle components and said force actuated releasing arrangement releasably connecting said components together and comprising coaxial sleeves carried about said plug component with one of said sleeves being connected to the receptacle component and adapted to move radially and disconnect therefrom upon application of a first external axial force and another of said sleeves being adapted to move longitudinally of said one sleeve upon application of said first external axial force, said force actuated releasing arrangement further characterized by:
one of said components comprising a pair of generally cylindrical shell portions interfitted with one another and a pin extending between the shell portions and having its opposite ends received, respectively, in the two shell portions, said pin having a cross-sectional area adapted to shear upon application of a second external axial force, said second external axial force being greater than said first external axial force.

4,522,459

SYSTEMS FOR AND METHODS OF MAKING ELECTRICAL CONNECTIONS

Edwin C. Hardesty, Perry Hall, and Erle M. Hutchins, Bel Air, both of Md., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Continuation of Ser. No. 331,731, Dec. 17, 1981, abandoned. This application Jun. 1, 1984, Ser. No. 615,690
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—98 **18 Claims**



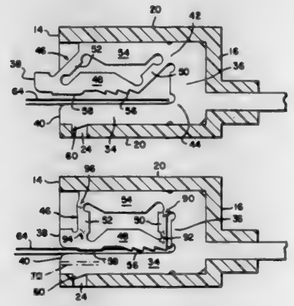
1. A system for connecting electrically conductors of a first group with corresponding conductors of a second group, said system comprising:
a base which is made of a dielectric material and which includes a plurality of parallel grooves formed across one surface thereof for receiving individually the conductors of the first group, said base having a plurality of rows of apertures transverse of said grooves with adjacent apertures between said rows being staggered with respect to each other and with each of said apertures communicating with an associated groove;
a plurality of contact elements which are made of an electrically conductive material with each being positioned in an associated one of said apertures for establishing an electrical connection between conductors of the two groups, each contact element capable of being moved slidably in its associated aperture and comprising a tubular member having surfaces that define a conductor-receiving slot opening to and being aligned with the groove of said base that communicates with the aperture in which said each contact element is positioned, the slot being configured and the tubular member having sufficient stiffness to cause at least portions of the surfaces that define the slot to nick each conductor that is caused to be moved into and along the slot with any accompanying deflection of said surfaces being substantially negligible, and one end of each said contact element including a peripheral edge which has at least a portion thereof diametrically opposite to the conductor-receiving slot provided with a cutting edge that is effective to sever conductors that extend past the peripheral edge and that are moved into the slot; and
means capable of being assembled to said base and of cooperating with said contact elements as said contact elements are moved within said associated apertures in said base for causing each conductor of the first group and a corresponding conductor of the second group which is aligned with each of said grooves to be moved into the slot of the contact element which is positioned in the associated aperture.

4,522,460

CONNECTING MEANS FOR CLOSELY SPACED CONDUCTORS

Hoy S. Beck, Jr., Lexington, and John R. Shoemaker, Reidsville, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 15, 1983, Ser. No. 561,858
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—99 R **6 Claims**



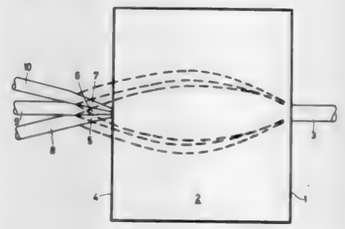
1. A preloaded electrical connecting device for use with elongated conductors is comprised of an insulating housing having one or more electrical contact terminals therein, the housing having an elongated conductor receiving face, an oppositely facing conductor entry face, oppositely facing parallel sidewalls, and oppositely facing parallel endwalls extending between the faces, and an elongated carrier receiving slot, the slot being essentially parallel to the endwalls and extending rearwardly onto the housing from the elongated conductor receiving face, a plurality of terminal receiving cavities extending through the housing from the elongated conductor receiving face to the conductor entry face essentially parallel to the sidewalls with at least one of the cavities having an electrical contact terminal therein, the device being characterized in that:
each contact terminal is a flat one piece stamped sheet metal member having an elongated conductor connecting means at one end,
the connecting means has first and second jaw members and a throat portion, the jaw members having free ends and fixed ends, the fixed ends being spaced from each other and attached to the throat portion, the free ends being spaced from each other, and movable toward each other,
the free end of the first jaw member further having a portion that extends outwardly from the elongated conductor receiving face of the housing whereby,
upon placing the elongated conductor between the first and second jaw members and applying a deforming force to the free end of the first jaw member, the outwardly extending portion of the first jaw member is moved into the housing until the portion is flush with the front face and the first jaw member is moved into clamping engagement with the conductor and second jaw member, thus establishing electrical contact with the conductor.

4,522,461

OPTICAL MULTIPLEXER

Lothar Mannschke, Eckenhaid-Eckental, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 6, 1983, Ser. No. 492,105
Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3218023
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.18 **8 Claims**



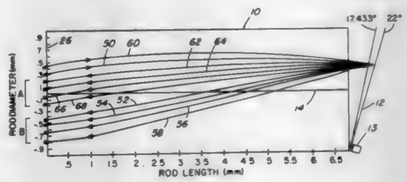
1. An optical multiplexer comprising:
a graded-index rod lens having a first end face and a second opposed end face;
an output lightwave conductor positioned at said second end face;
a plurality of input lightwave conductors merging onto said first end face of said graded-index rod lens, each said input lightwave conductor having a tapered portion at the end thereof, the tips of the tapered end portions centrally abutting said first end face of said graded-index rod lens, light transmitted from said tips passing through said graded-index rod lens to said output lightwave conductor.

4,522,462

FIBER OPTIC BIDIRECTIONAL WAVELENGTH DIVISION MULTIPLEXER/DEMULTIPLEXER WITH TOTAL AND/OR PARTIAL REDUNDANCY

Scott F. Large, Billerica, and Bruce D. Metcalf, Burlington, both of Mass., assignors to The Mitre Corporation, Bedford, Mass.

Filed May 27, 1983, Ser. No. 498,660
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.19 **6 Claims**



1. Wavelength division multiplexer/demultiplexer with path and terminal equipment redundancy comprising:
a gradient index of refraction (GRIN) lens having an optical axis;
a diffraction grating located adjacent to one end of said GRIN lens, said diffraction grating adapted for switching from a first angle to a second angle with respect to said GRIN lens optical axis;
first and second input optical fibers located at first and second input locations on the other end of said GRIN rod lens; and

a first and a second plurality of output optical fibers located on said other end of said GRIN lens;

wherein optical energy will travel from said first input optical fiber to said first plurality of output optical fibers when said diffraction grating is oriented at said first angle and optical energy will travel from said second input optical fiber to said second plurality of output optical fibers when said diffraction grating is oriented at said second angle.

4,522,463

DEVICE FOR RELEASABLY CONNECTING OPTICAL WAVEGUIDE FIBERS

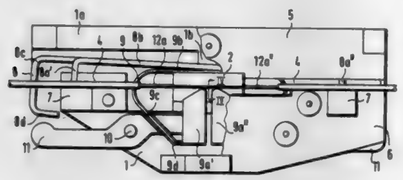
Gerhard Schwenda, Grosshabersdorf, and Alfred Orendt, Nuremberg, both of Fed. Rep. of Germany, assignors to Schieder-werk Gunter Schmidt KG Fabrik für Apparate der Fernmelde- und Elektrotechnik, Nuremberg, Fed. Rep. of Germany

Filed Jan. 4, 1983, Ser. No. 455,543

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1982, 3201240

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21 **9 Claims**



1. In a connector device for releasably connecting the ends of optical waveguide fibers having an alignment means into which the ends of the fibers are inserted including a V-shaped groove in the connector and clamping means which clamps said ends in place by continuously pressing the ends of the fibers into the groove, the improvement comprising:

an opening for the V-shaped groove through which the fibers are inserted for entry into the groove extending the full length of the groove so that the path of entry for the ends of the fibers during insertion into the groove is perpendicular to the longitudinal direction in which the fibers and groove are orientated;

the vertex angle of the groove is orientated laterally so that its bisector extends approximately perpendicular to said path of entry of the ends of the fiber;

the depth of said groove is less than the diameter of the fiber ends, so that when the fiber ends are in place they extend out of the groove in the direction of said bisector and can be observed;

two clamping elements for each fiber end operatively mounted on the connector device for releasably clamping a respective fiber end, one of said clamping elements being located adjacent the end face of the respective fiber and the other clamping element being spaced at a distance remote from the fiber end; and

at least one actuating member operatively associated with said two clamping elements for each fiber end for actuating said two clamping elements between clamping and non-clamping positions.

4,522,464

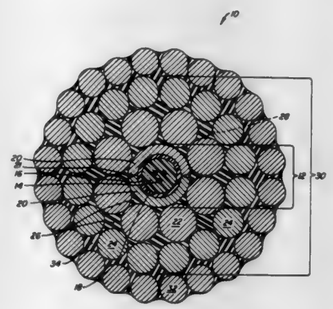
ARMORED CABLE CONTAINING A HERMETICALLY SEALED TUBE INCORPORATING AN OPTICAL FIBER

Robert E. Thompson, Ronoake; Gordon Gould, Great Falls, both of Va., and Charles I. Soodak, Silver Spring, Md., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 17, 1982, Ser. No. 408,972

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.23 **44 Claims**



1. An armored optical cable suitable for use in an environment which subjects said cable to repeated longitudinal elongation and relaxation forces, said cable comprising:

a central hermetically sealed tube core, said core comprising at least two metal sections fitting together around one or a plurality of buffered optical fibers and forming a cylindrical tube, said metal sections hermetically joined into said tube, wherein said metal sections were preshaped by rolling from an anealed wire, and wherein said metal sections and the tube formed therefrom are fabricated from metals which exhibit a yield strain greater than about 0.85;

at least six substantially solid elements wound helically around said core in a given handedness;

at least twice the number of said at least six elements of inner armor wires wound around and contacting said at least six elements of the same handedness in a unilay helical configuration, said at least six elements and said inner armor wires being fabricated around said core at the same time wherein the elements and the wires of the same handedness and the core form a central bundle; and

a plurality of outer armor wires contacting said inner armor wires, said out armor wires wound in an opposite helical handedness to the handedness of said inner armor wires such that the torques exerted by said inner armor wires and said outer armor wires substantially balanced.

4,522,465

OPTICAL FIBER COATED WITH AN ULTRAVIOLET CURED TOPCOATING

Timothy E. Bishop, Arlington Heights, and George Pasternack, Lincolnshire, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Nov. 10, 1983, Ser. No. 550,443

Int. Cl.³ G02B 5/16

U.S. Cl. 350—96.30 **12 Claims**

1. A resin buffer-coated and topcoated optical glass fiber in which the topcoat is an ultraviolet cured coating of an ultraviolet curable coating composition which, when formed into a 3 mil cured test film, has a tensile modulus measured at room temperature of at least 150,000 psi. and an elongation at least about 15%, said composition comprising, based on total reactive components, from 30% up to about 80% of diethylenic polyester polyurethane having one of the following formulas:

$$X-Q\left(-O-R-O-\overset{O}{\overset{\|}{C}}-R'-\overset{O}{\overset{\|}{C}}-O-R-O-Q\right)_n X \quad (1)$$

in which X is the residue of a monoethylenically unsaturated monohydric alcohol, Q is the residue of an organic diisocyanate, R is an alkylene group containing from 2–4 carbon atoms, R′ is an alkylene group containing from 2–8 carbon atoms, and n is a number from about 1.8 to about 4; and

$$Z-O-R-O\left(-Q-O-R-O-\overset{O}{\overset{\|}{C}}-R'-\overset{O}{\overset{\|}{C}}-O-R-O\right)_n Z \quad (2)$$

in which the symbols have the above assigned meanings and Z is a monoisocyanate-functional monoethylenically unsaturated compound; at least 5% of total reactive components of liquid diethylenically unsaturated ester of a diglycidyl ether of a bisphenol, and at least 5% of total reactive components of liquid monoethylenically unsaturated monomer having a glass transition temperature above about 55° C.

10. A method of topcoating resin buffer-coated optical glass fiber to provide a topcoat having the high strength and modulus combined with good elongation and solvent resistance associated with extruded jacket coatings, but which is applied by ordinary coating procedures and cured by exposure to ultraviolet radiation comprising, applying to resin buffer-coated optical glass fiber an ultraviolet-curable coating composition comprising, based on total reactive components, from 30% up to about 80% of diethylenic polyester polyurethane having one of the following formulas:

$$X-Q\left(-O-R-O-\overset{O}{\overset{\|}{C}}-R'-\overset{O}{\overset{\|}{C}}-O-R-O-Q\right)_n X \quad (1)$$

in which X is the residue of a monoethylenically unsaturated monohydric alcohol, Q is the residue of an organic diisocyanate, R is an alkylene group containing from 2–4 carbon atoms, R′ is an alkylene group containing from 2–8 carbon atoms, and n is a number from about 1.8 to about 4; and

$$Z-O-R-O\left(-Q-O-R-O-\overset{O}{\overset{\|}{C}}-R'-\overset{O}{\overset{\|}{C}}-R-O\right)_n Z \quad (2)$$

in which the symbols have the above assigned meaning and Z is a monoisocyanate-functional monoethylenically unsaturated compound; at least 5% of total reactive components of liquid diethylenically unsaturated ester of a diglycidyl ether of a bisphenol, and at least 5% of total reactive components of liquid monoethylenically unsaturated monomer having a glass transition temperature above about 55° C., and then exposing the wet-coated fiber to ultraviolet light to cure the coating.

4,522,466

RECURSIVE OPTICAL FILTER SYSTEM

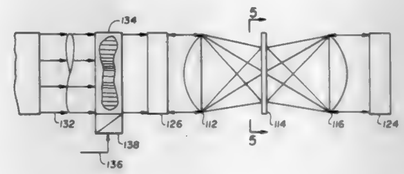
Charles E. Lindig, Huntington Bay; Robert W. Brandstetter, Levittown, and Adrian R. Doucette, Garden City, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed May 26, 1983, Ser. No. 498,462

Int. Cl.³ G02B 5/22; G06G 9/00

U.S. Cl. 350—162.12 **27 Claims**

1. A recursive optical filter system comprising: a source which produces a substantially coherent, collimated beam of optical radiation; optical filtering means including means for producing an optical Fourier transform, an optical filter, and means for producing an optical inverse Fourier transform; recursive means for directing said beam in a manner to traverse said optical filtering means a plurality of times, and means for extracting said beam for utilization, the recursive passage of



said beam through said filtering means resulting in an efficient attenuation of unwanted spectral components of said beam.

4,522,467

WINDOW HAVING SUNSHADE PRISMATIC BARS

Christian Bartenbach, Rinnerstrasse 39, A-6020 Innsbruck-Aldrans, Austria

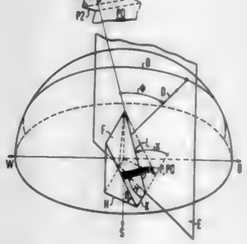
PCT No. PCT/DE82/00203, § 371 Date May 20, 1983, § 102(e) Date May 20, 1983, PCT Pub. No. WO83/01085, PCT Pub. Date Mar. 31, 1983

PCT Filed Sep. 20, 1982, Ser. No. 504,059

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1981, 3138270; Jul. 20, 1982, 3227118

Int. Cl.³ G02B 27/00

U.S. Cl. 350—263 **5 Claims**

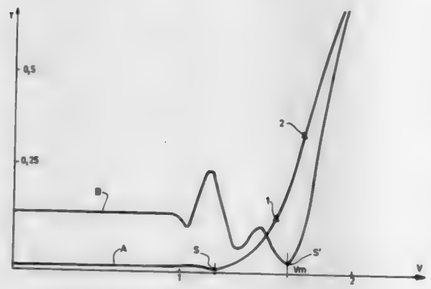


1. A window, comprising: a plane of the window being provided at a prescribed angle of inclination (β) with the horizontal; a prismatic plate disposed parallel to the window plane and which exhibits a planar base surface toward an outside of the window and solid prismatic rods next to and parallel to one another as an integral part of the plate at an inside of the window, said prismatic rods extending over an entire opening of the window; an unmirrored face of each prismatic rod enclosing an acute base angle (α) with the base surface; a mirrored face of each prismatic rod being provided and being perpendicular to the unmirrored face; the prismatic rods being disposed such that a point of an angle of elevation (ψ) of solar rays measured relative to the window plane in a reference plane perpendicular thereto points to the mirrored face given a highest solar altitude to be blocked out; and the base angle (α) between the unmirrored face and the base surface of each prismatic rod being selected of such magnitude that the window transmits substantially no sunbeams in an exclusion time interval on a prescribed reference day.

4,522,468
INFORMATION DISPLAY DEVICE HAVING A LIQUID CRYSTAL CELL

Michel Goscianski, Limeil-Brevannes, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 812,717, Jul. 5, 1977, abandoned. This application Jun. 11, 1979, Ser. No. 47,393
Claims priority, application France, Jul. 13, 1976, 76 21497
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—332 **20 Claims**



1. An information display device comprising a display cell including a nematic liquid crystal and electrodes at opposite sides of said nematic liquid crystal, means for applying at least a minimum voltage Vm between said electrodes, said minimum voltage Vm being greater than the threshold voltage at which polarization of light begins to be influenced in said cell, and means including polarization means for obtaining minimum optical transmission of said cell at said minimum voltage Vm.

4,522,469
LIQUID CRYSTAL LIGHT VALVE STRUCTURES

N. John Koda, Vista, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 9, 1984, Ser. No. 569,372
Int. Cl.³ C23C *15/00*
U.S. Cl. 350—342 **12 Claims**

1. In a process for the production of a photosensor film to be incorporated into a liquid crystal light valve, said film and light valve characterized by improved low negative memory, and wherein the photosensor film is prepared by radio frequency sputter depositing CdS onto a suitable substrate in a plasma vapor of argon containing minor amounts of H_2S, the improvement comprising introducing, during the sputtering process, nitrogen in the amount of not more than about 1% of the plasma vapor while maintaining the substrate ambient temperature in the range of from about 130° C. to about 200° C. and annealing the resultant photosensor film in an inert atmosphere at temperatures in the range of from about 300° C. to about 425° C.

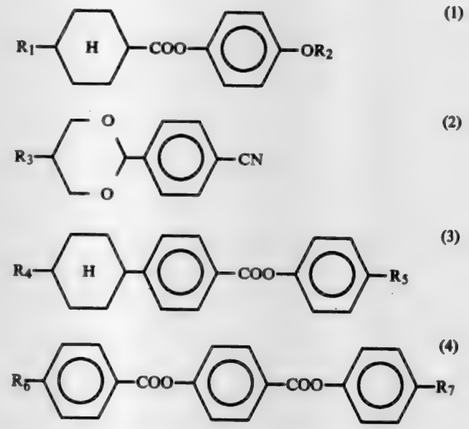
10. A liquid crystal light valve having a layered structure with the layers comprising, in sequence, glass, an ITO layer, a CdS photosensor layer, an opaque light blocking layer, a multilayered dielectric film, a liquid crystal layer, an ITO layer and glass, wherein the CdS photosensor layer is produced by the process of claim **1**.

4,522,470
LIQUID CRYSTAL COMPOSITION AND DISPLAY DEVICE

Chiyoaki Iijima, Shiojiri, Japan, assignor to Epson Corporation, Nagano, Japan

Filed Jul. 5, 1983, Ser. No. 510,850
Claims priority, application Japan, Jul. 5, 1982, 57-116492
Int. Cl.³ C09K *3/34*; G02F *1/13*
U.S. Cl. 350—350 R **26 Claims**

1. A liquid crystal composition comprising at least one of each of compounds represented by the formulas (1), (2), (3), and (4):

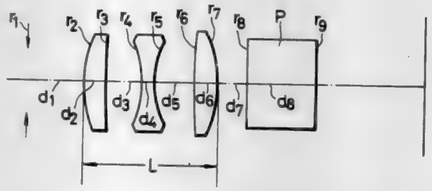


wherein, R_1 is a straight-chain alkyl group having 3 to 6 carbon atoms; R_2 is a straight-chain alkyl group having 1 to 6 carbon atoms; R_3 is a straight-chain alkyl group having 2 to 5 carbon atoms; R_4 is a straight-chain alkyl group having 3 to 5 carbon atoms; R_5 is a straight-chain alkyl group having 1 to 7 carbon atoms; R_6 is a straight-chain alkyl group having 3 to 5 carbon atoms; and R_7 is a straight-chain alkyl group having 1 to 5 carbon atoms, and wherein compound (1) is present between about 40 to 70% by weight, compound (2) is present between about 25 to 45% by weight, compound (3) is present between about 3 to 15% by weight, and compound (4) is present between about 3 to 15% by weight of the composition.

4,522,471
ADAPTER LENS SYSTEM FOR USE WITH PHOTOGRAPHIC CAMERAS

Kimihiko Nishioka, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 15, 1983, Ser. No. 523,053
Claims priority, application Japan, Aug. 20, 1982, 57-143343
Int. Cl.³ G02B *9/16*
U.S. Cl. 350—449 **6 Claims**



1. An adapter lens system for use with photographic cameras comprising a first positive lens element, a second biconcave lens element, and a third positive lens element and a stop arranged on the front side of said lens elements, said lens system satisfying the following condition:

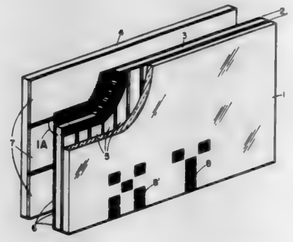
(1) $f_B > 0.85f$
(2) $L < 0.35f$
(3) $f_1 > 0.5f$
(4) $0.06f \leqq d_3$
(5) $\nu_1 < 45$
(6) $d_5 \geqq 0.05f$

wherein the reference symbol L represents total length of said lens system as a whole, the reference symbol f_B designates back focal length of said lens system, the reference symbol f_1 denotes focal length of said first lens element, the reference symbol f represents focal length of said lens system as a whole, the reference symbol d_3 designates airspace reserved between said first and second lens elements, the reference symbol d_5 denotes airspace reserved between said second and third lens elements and the reference symbol ν_1 represents Abbe's number of said first lens element.

4,522,472
ELECTROPHORETIC IMAGE DISPLAY WITH REDUCED DRIVES AND LEADS

Richard B. Liebert, Ridgefield, Conn., and Roger P. White, Yonkers, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,466
Int. Cl.³ G02F *1/01*
U.S. Cl. 350—362 **14 Claims**



1. An electrophoretic display device comprising first and second oppositely disposed substrates with at least one of said substrates being transparent,

a plurality of first electrodes disposed at a facing surface of said first substrate,

a plurality of second electrodes disposed on a dielectric structure adjacent to said first electrodes,

means for connecting equal numbers of at least said first electrodes in parallel,

an electrophoretic fluid containing a plurality of charged pigment particles disposed between said first and second substrates,

a plurality of third electrodes disposed on a facing surface of said second substrate, each of said plurality of third electrodes being opposite to a number of said plurality of first and second electrodes, and

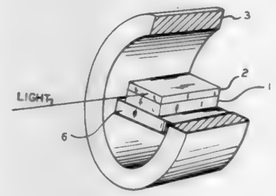
means for alternatively applying an enabling voltage bias value on one of said third electrodes and means for maintaining a lower voltage bias value on remaining ones of said third electrodes.

4,522,473
FARADAY ROTATOR FOR AN OPTICAL DEVICE

Taketoshi Hibiya; Yoshinori Ohta, and Koichi Matsumi, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,230
Claims priority, application Japan, Mar. 27, 1981, 56-45195; Sep. 28, 1981, 56-153253; Sep. 28, 1981, 56-153254; Sep. 28, 1981, 56-153255
Int. Cl.³ G01B *9/02*; G01P *9/00*
U.S. Cl. 350—377 **11 Claims**

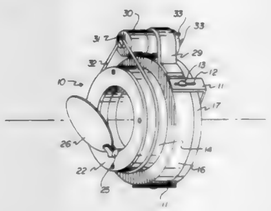
1. A Faraday rotator comprising: a non-magnetic garnet substrate; a ferrimagnetic garnet film epitaxially grown on the substrate; a light beam impinging upon a surface at an end of said film; and a magnet for inducing a magnetic field parallel to the top surface of said film for rotating a plane of polarization within said film of said light-beam impinging upon said film, said substrate and said film being made of a material having a predetermined absolute value of the difference $\Delta a = a_s - a_f$ between the lattice constant a_s of said substrate and the lattice constant a_f of said film, said predetermined absolute value being no greater than 0.001 Å (angstrom).



4,522,474
SPINNING OPTICS DEVICE

Sidney H. Slavin, 9505 Carterwood Rd., Richmond, Va. 23229

Filed May 20, 1980, Ser. No. 151,585
Int. Cl.³ G02C *1/00*; A61B *3/00*
U.S. Cl. 351—203 **11 Claims**



1. A system for conditioning the eye comprising in combination:

spinning sight altering means placed adjacent a person and in registry with a person's field of vision,

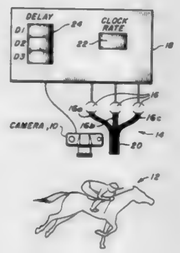
means for altering the direction, rate and duration of said spinning sight altering means, and a trail lens clip placed in registry with the person's field of vision and placed adjacent said spinning sight altering means whereby further conditioning and influencing of the vision field of the person so treated can be afforded wherein said spinning sight altering means includes a drive means controlled by a control circuit including a memory, a program in said memory corresponding to a sequence of operations to direct said drive means, said means for altering the direction, rate and duration having an output for providing a series of pulses corresponding to said program, means for feeding said pulses to said drive means to rotate said spinning sight altering means wherein said spinning sight altering means, said means for altering direction, rate and duration, and said trial lens clip are placed before each eye of the person in registry with the person's field of vision, and said drive means and control circuit are adapted to alter and influence the field of vision and perception of each person's eye independently one of the other, including means for detecting the position of a person's eye for which said system is to be used, and operatively connected to said means for altering direction, rate and duration to initiate the training as a function of eye movement.

4,522,475

APPARATUS AND METHOD FOR SHOWING MOTION IN A SINGLE PHOTOGRAPH

John P. Ganson, 14 Lincoln Rd., Wayland, Mass. 01778

Filed Dec. 27, 1983, Ser. No. 565,343
Int. Cl.[3] G03B *19/18, 21/32*
U.S. Cl. 352—39 14 Claims



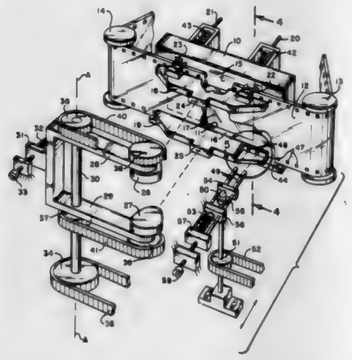
1. Apparatus for color photography of a scene including a moving subject comprising, in combination,
a camera having film capable of differentiating between components of a spectrum,
a light source for illuminating the subject comprising a plurality of individual light units each adapted to emit a light flash primarily in a distinct portion of said spectrum, and
a flash interval control connected to each of said individual light units and adapted to actuate said individual light units successively after predetermined time intervals.

4,522,476

MOTION PICTURE FILM GATE AND REGISTRATION SYSTEM

Walter Renold, 7044 Mary Ellen Ave., North Hollywood, Calif. 91603

Filed Jun. 25, 1984, Ser. No. 624,462
Int. Cl.[3] G03B *1/48*
U.S. Cl. 352—225 17 Claims



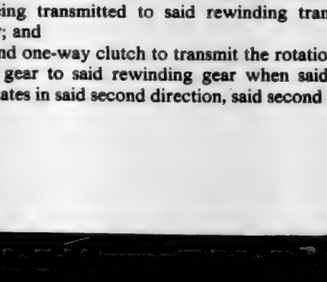
1. A motion picture film gate and registration system for motion picture film that is intermittently transported through the gate from one frame to the next, including, in combination:
(a) a gate having an aperture with solid marginal edge areas;
(b) pressure pad means;
(c) means for moving said pressure pad means towards said gate to press marginal edges of said film against said solid marginal edge areas so as to hold the film firmly during the dwell time of the film in said aperture and moving said pressure pad means away from said marginal edges of said film to permit transport of the film to the next frame, said film including perforations along its marginal edges and a part of said pressure pad means including at least one opening for registration with a perforation during the dwell time of said film;
(d) registration pin means movable into and out of said opening and registering film perforation so that successive film frames are indexed to consistent positons in said gate after coming to rest at the end of the transport period, said pressure pad means stripping the film perforation from said registration pin means when said registration pin means is withdrawn; and
(e) means for lifting away said film from the plane of said aperture prior to transport of the film, to prevent scratching of the film during transport.

4,522,477

ELECTRIC MOTOR DRIVE DEVICE FOR CAMERA

Tomonori Iwashita, Tokyo, and Hidehiko Fukahori, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 322,226, Nov. 17, 1981, abandoned. This application Aug. 31, 1983, Ser. No. 528,237
Claims priority, application Japan, Nov. 25, 1980, 55-168661
Int. Cl.[3] G03B *1/12*
U.S. Cl. 354—173.1 2 Claims



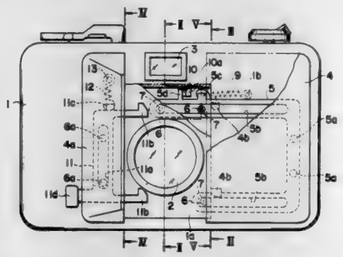
1. An electric motor drive device for a camera, comprising:
(a) a motor having an output shaft;
(b) a driving gear supported in a freely rotatable manner on a support shaft different from said output shaft, said driving gear being rotated in a first direction by rotation of said motor in a first normal direction and being rotated in a second direction by rotation of said motor in a reverse direction;
(c) a winding transmission member supported in a freely rotatable manner at said support shaft, said winding transmission member enabling said camera to effect a winding operation by rotation of said motor;
(d) a charge cam supported at said support shaft so as to rotate integrally with said winding transmission member, with rotation of said charge cam operating to effect charging of a mechanism provided at said electric drive device by rotation;
(e) a first one-way clutch to transmit the rotation of said driving gear to said winding transmission member when said driving gear rotates in said first direction, said first one-way clutch being supported at said support shaft in such a manner as to intervene between said driving gear and said winding transmission member;
(f) a rewinding transmission member to enable said camera to effect a rewinding operation upon rotation of said motor;
(g) a rewinding gear supported at said support shaft in a freely rotatable manner, with rotation of said rewinding gear being transmitted to said rewinding transmission member; and
(h) a second one-way clutch to transmit the rotation of said driving gear to said rewinding gear when said driving gear rotates in said second direction, said second one-way clutch being supported at said support shaft in such a manner as to intervene between said driving gear and said rewinding gear.

4,522,478

COVER-EQUIPPED CAMERA

Toru Kando, and Keisuke Haraguchi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1983, Ser. No. 462,238
Claims priority, application Japan, Apr. 23, 1982, 57-53430[U]
Int. Cl.[3] G03B *17/04, 17/02*
U.S. Cl. 354—288 6 Claims



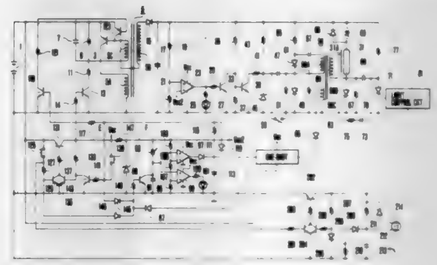
1. A cover-equipped camera comprising:
a camera body including a view finder and a photographic lens;
a cover consisting of a fixed cover fixed to the camera body and a movable cover adapted to move laterally between a closed position where the view finder and photographic lens is covered by said fixed and movable covers and an opened position where the view finder and the lens are exposed between the fixed and movable covers;
slider guide member support means projecting from the camera body and a sliding member provided on the movable cover and engaged with said support means to allow said lateral sliding movement of the movable cover, and wherein the sliding guide member is of a flattened U-shaped form and the straight portions of which are laterally run outside the lens, and the slider member support means comprises a collar adapted to be fitted into the flattened portions of the sliding guide member;
means for constantly urging the movable cover towards the opened position;
an engaging mechanism adapted to hold the movable cover at the closed position and comprising engaging projection means provided on the movable cover;
a lock lever arranged on said fixed cover and adapted to engage with the engaging projection means when the movable cover is at the closed position;
means to constantly bias said lock lever to the engaged position;
an operating lever adapted to release the engagement between the engaging projection means and the lock lever when shifted against the biasing force; and
means for stopping the movable cover at the opened position.

4,522,479

FLASH APPARATUS WITH POWER SUPPLY CONTROL DEVICE

Masanori Yamada, and Ryoichi Yoshikawa, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1983, Ser. No. 565,616
Claims priority, application Japan, Dec. 27, 1982, 57-196728; Jan. 19, 1983, 58-6119; Jan. 19, 1983, 58-6120
Int. Cl.[3] G03B *15/05;* H05B *41/26*
U.S. Cl. 354—413 20 Claims



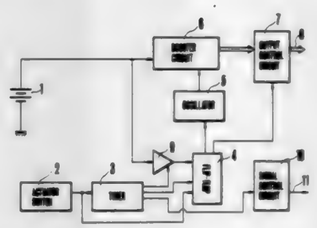
1. A flash apparatus comprising:
(a) a timer circuit having an initial state and arranged to begin to operate when a power switch is closed;
(b) means for stopping at least the operation of a DC-DC converter in response to expiration of the timer time of said timer circuit;
(c) manually operable reset means for resetting the operation of said timer circuit into the initial state; and
(d) advance notice giving means connected to the output terminal of said timer circuit to give a notice of the approaching end of said timer time.

4,522,480

BATTERY VOLTAGE CHECKING DEVICE FOR CAMERAS

Takashi Kawabata, Kanagawa; Nobuhiko Shinoda, and Shinji Sakai, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

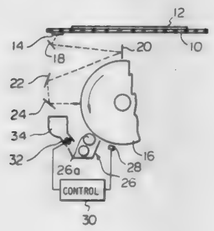
Continuation of Ser. No. 374,527, May 3, 1982, abandoned, which is a continuation of Ser. No. 241,390, Mar. 6, 1981, abandoned. This application Apr. 12, 1984, Ser. No. 599,210
Claims priority, application Japan, Mar. 10, 1980, 55-30071
Int. Cl.[3] G03B *17/18*
U.S. Cl. 354—468 15 Claims



1. A battery voltage checking device for a camera including:
(a) a booster circuit having an input and an output for increasing a voltage applied to the input when said booster circuit is actuated;
(b) connect means for transmitting an output voltage of a battery to the input of said booster circuit;
(c) a load circuit arranged to be supplied with electrical power by the voltage at the output of said booster circuit;

(d) a sensing circuit for sensing the voltage level of the battery and for providing a sensed output; and
(e) a control circuit for allowing the sensed output of said sensing circuit to be processed after a predetermined time from the actuation of said booster circuit.

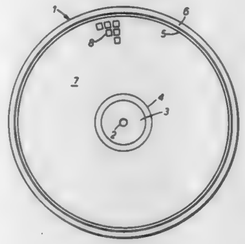
4,522,481
TONER SUPPLY CONTROL METHOD FOR ELECTROPHOTOGRAPHIC COPIER
Chikara Imai, Tokyo, and Yasushi Koichi, Yamato, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Nov. 3, 1983, Ser. No. 548,592
Claims priority, application Japan, Nov. 9, 1982, 57-196601
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—3 DD **10 Claims**

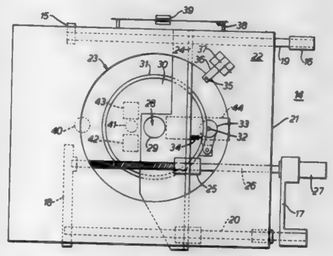


1. A method of controlling supply of a toner in an electrophotographic copying machine including a photoconductive element and a developing unit which is applied with a bias voltage for development, said method comprising the steps of:
(a) providing a reference pattern having a predetermined reflectively;
(b) forming a latent image associated with said reference pattern electrostatically on a surface of the photoconductive element;
(c) setting a fatigue standard which is based on a fatigue characteristic of the photoconductive element;
(d) varying the bias voltage applied to the developing unit in response to the fatigue standard;
(e) developing the latent image on the photoconductive element into a toner image;
(f) detecting a degree of deposition of the toner on the toner image; and
(g) controlling the supply of the toner to the developing unit in response to the detected degree of toner deposition.

4,522,482
INFORMATION STORAGE AND RETRIEVAL
Robert M. Pettigrew, Foxton; John D. Bradbrook; Alan M. Smith, both of Royston, and John H. Fisher, Whaddon, all of England, assignors to Comtech Research, United Kingdom
PCT No. PCT/GB82/00179, § 371 Date Feb. 14, 1983, § 102(e) Date Feb. 14, 1983, PCT Pub. No. WO82/04489, PCT Pub. Date Dec. 23, 1982
PCT Filed Jun. 15, 1982, Ser. No. 467,479
Claims priority, application United Kingdom, Jun. 15, 1981, 8118329; Jul. 23, 1981, 8122737; Jun. 1, 1982, 8215982
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **60 Claims**

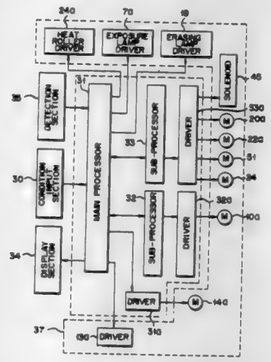
1. A recording apparatus for recording optically readable images on a storage member comprising recording material by means of which such images can be recorded on the member, the apparatus comprising processing means for recording said images on the storage member, the processing means having imaging means for imaging data to be recorded onto the storage member, and the apparatus also comprising drive means for producing relative motion between the imaging means and the storage member so that an image can be directed at a desired location of the storage member, and control means for controlling the drive means to enable an image to be recorded at any desired one of a plurality of areas of a two-dimensional array of areas in a first zone of the storage member, the control means comprises means for reading co-ordinate defining positional information conveyed by the storage member in a second zone to ascertain a datum position for a first co-ordinate





and for a second co-ordinate of a two-dimensional co-ordinate system in which each of said areas has its own two-dimensional co-ordinate address; and said control means comprising measuring means for measuring relative displacements in the two co-ordinate directions to establish co-ordinate addresses relative to the datum positions of the co-ordinates.

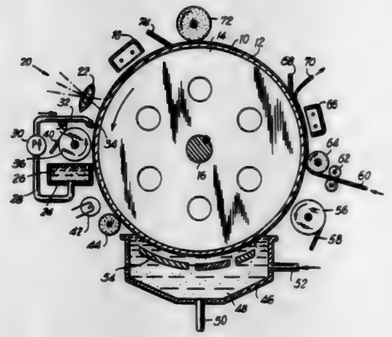
4,522,483
IMAGE FORMING APPARATUS
Hiroshi Matsumoto, and Junji Watanabe, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Aug. 5, 1983, Ser. No. 520,645
Claims priority, application Japan, Aug. 10, 1982, 57-138035
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **8 Claims**



1. An image forming apparatus comprising:
photoconductive means disposed to be movable;

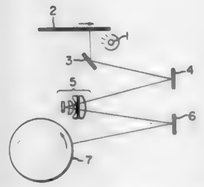
driving means for driving said photoconductive means;
charging means, disposed near said photoconductive means, for charging said photoconductive means;
exposure means for exposing said photoconductive means to form a latent image corresponding to a document pattern on said photoconductive means;
developing means for developing the latent image on said photoconductive means into a visible image;
transfer means for transferring the visible image onto a paper sheet;
cleaning means, disposed in contact with said photoconductive means, for removing residual toner material left on said photoconductive means; and
drive signal supplying means for supplying drive signals to said driving means so as to set said photoconductive means in different driving conditions for an image forming mode and an image forming standby mode, respectively.

4,522,484
ELECTROPHOTOGRAPHIC APPARATUS FOR INCREASING THE APPARENT SENSITIVITY OF PHOTOCONDUCTORS
Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Stamford, Conn.
Continuation of Ser. No. 97,519, Nov. 26, 1979, abandoned, which is a division of Ser. No. 908,355, May 22, 1978, Pat. No. 4,256,820. This application Apr. 11, 1983, Ser. No. 482,275
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 DD **7 Claims**



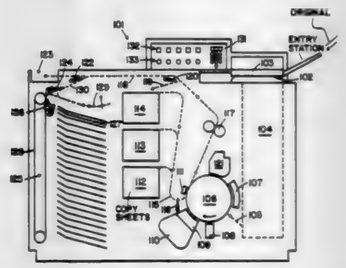
5. Apparatus for making an electrophotocopy of an original document including in combination a photoconductor, means for charging the photoconductor to a predetermined potential, means for exposing the charged photoconductor to an optical image of the document to produce a first latent electrostatic image, the exposure being sufficiently brief that background areas of the latent image are discharged to a first potential appreciably exceeding half said predetermined potential, first means for developing the first latent image with a masking material comprising optically opaque charged particles, the first developing means including an electrode biased to a first voltage, means for uniformly illuminating the first developed image to discharge said background areas to a second potential which is less than said first potential and produce a second latent image, means for removing masking material from the second latent image, second means for developing the unmasked second latent image with a developer comprising charged toning particles, the second developing means including an electrode biased to a second voltage which is less than said first voltage.

4,522,485
COPYING MACHINE INCLUDING A DIELECTRIC COVERED METAL REFLECTIVE DEVICE
Osamu Kamiya, and Nobuyuki Sekimura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 195,491, Oct. 9, 1980, abandoned, which is a continuation of Ser. No. 30,855, Apr. 17, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 429,145
Claims priority, application Japan, Apr. 24, 1978, 53-48510; Nov. 6, 1978, 53-136408
Int. Cl.³ G03G *15/04*
U.S. Cl. 355—11 **14 Claims**



1. A copying machine comprising an original table on which an original to be copied is laid; a lens system; a photosensitive medium which has characteristics of high sensitivity to light in a certain wavelength range; a light source for illuminating an object to be copied; and reflective means for reflecting light from the object to said photosensitive medium, said reflective means comprising a metal surface having a dielectric film provided thereon, wherein said dielectric film decreases the reflection factor of said metal surface for light of a wavelength to which said photosensitive member is highly sensitive, while retaining a relatively higher reflection factor for other light, and wherein said metal absorbs non-reflected light, so that the spectral wavelength characteristics of light coming from the light source match with the spectral sensitivity characteristics of said photosensitive medium.

4,522,486
METHOD AND APPARATUS FOR ADAPTIVE COLLATION
Gary A. Clark, Longmont; Frederick W. Johnson, Boulder, and Carl A. Queener, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 10, 1977, Ser. No. 850,175
Int. Cl.³ G03G *15/00*; B65H *39/11*
U.S. Cl. 355—14 SH **14 Claims**



1. A method of operating a sheet collator to collate into actual bins sheet sets, comprising the steps of:
entering into a register the number of sheets contained in each sheet set,
indicating the sheet capacity of each actual bin,
inspecting said number entered in said register to produce a signal if it exceeds the indicated actual bin capacity,
grouping a plurality of adjacent actual bins together into a

virtual bin, upon the occurrence of said signal, such that the capacity of said virtual bin at least equals said entered number, and

collating a complete sheet set into said virtual bin.

8. Apparatus for assembling collated sets of copies made from a supplied set of originals, including:

a fixed number of copy-receiving bins each capable of storing no more than a fixed number of copies;

a selectable variable number of copy-receiving bin-groups, each bin-group being constituted of a number of adjacent bins, each bin-group capable of storing a collated set of copies;

a first source for supplying first signals representing the number of originals in the supplied set;

control means associated with said bins and first source, operative to select the number of bin-groups as a function of the first signals from the first source.

4,522,487

SEALING DEVICE FOR ELECTROSTATIC COPYING MACHINE

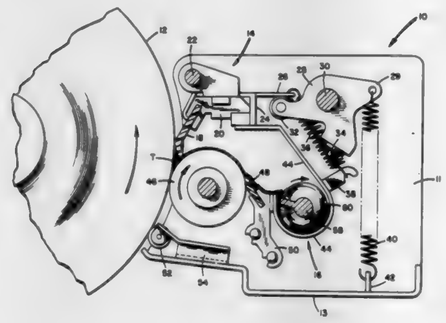
Norio Misawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 154,382, May 29, 1980, abandoned. This application Jun. 30, 1982, Ser. No. 393,535

Claims priority, application Japan, Jun. 8, 1979, 54-78040

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **1 Claim**



1. In a cleaning device for removing residual toner particles from a photoconductive surface of an electrostatic copying machine, said cleaning device including a base plate, a toner particle removing device adjacent the base plate to remove residual particles from the photoconductive surface, a collecting roller rotatably supported in rolling contact with the photoconductive surface adjacent said toner particle removing device to transport toner particles removed from the photoconductive surface, and an enclosure, the improvement comprising:

a sealing roller separate from said collecting roller rotatably provided on the front end of the base plate in rolling contact with the photoconductive surface to prevent the residual toner particles from escaping from said enclosure.

4,522,488

CLEANING APPARATUS FOR A MAGNETOGRAPHIC PRINTING DEVICE

Almon P. Fisher, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1983, Ser. No. 563,854

Int. Cl.³ G03G *15/08*

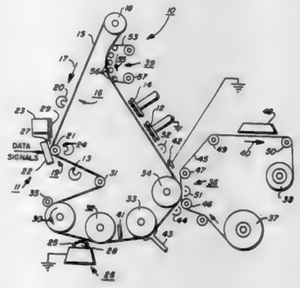
U.S. Cl. 355—15 **10 Claims**

1. An apparatus for cleaning residual toner particles from the recording surface of a flexible, image retentive member used in a printing device, the cleaning apparatus comprising:

a fixed base having a flat surface with an elongated nozzle opening therein, the base having opposing edges which are substantially perpendicular to the longer direction of the nozzle opening and opposing ends which are substantially parallel with the longer direction of the nozzle opening;

a vacuum source connected to the nozzle opening;

a layer of uniformly thick, non-conductive, woven material having interstices therein, the layer having parallel edges and being attached to the base flat surface, so that it covers the flat surface and the nozzle opening therein with the layer edges being perpendicular to said longer direction of the nozzle opening;



the recording surface of the image retentive member being moved in full sliding contact with the layer and in a direction parallel to the layer edges and perpendicular to the nozzle opening; and

seals being placed along the opposing edges of the layer and adjacent the base edges to form air seals between the moving image retentive member and the base surface, so that the flow of air through the layer interstices produced by the vacuum source is directed from each of the oposing ends of the base to the nozzle opening to remove residual toner particles dislodged by the image retentive member moving relative to and in contact with the layer.

4,522,489

DEVICE FOR PHOTOLITHOGRAPHICALLY TREATING A THIN SUBSTRATE

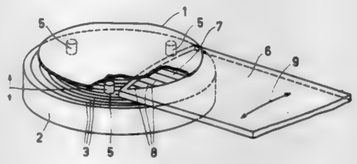
Adrianus G. Bouwer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 3, 1984, Ser. No. 567,823

Claims priority, application Netherlands, Jan. 21, 1983, 8300220

Int. Cl.³ G03B *27/60*

U.S. Cl. 355—73 **6 Claims**



1. A device for photolithographically treating a thin substrate which is provided with a photosensitive layer on a major surface at the upper side of the substrate, which device comprises a pre-alignment station, a substrate table for holding the substrate during the photolithographic treatment and a transport arm which is provided with a vacuum connection for holding the substrate by suction at the lower side of the substrate during transport of the substrate from the pre-alignment station to the substrate table, characterized in that the substrate table is provided with supporting means for the substrate which are adjustable in the direction of height and which have a supporting surface which is adjustable to a distance above the substrate table exceeding the thickness of the part of the transport arm which serves to hold the substrate, the supporting means being adjustable in a downward direction at least through a distance such that said supporting surface is level with the upper surface of the substrate table, and the supporting means being so positioned in the substrate table as to leave a space free for the movement of the transport arm above a part of the substrate table.

4,522,490

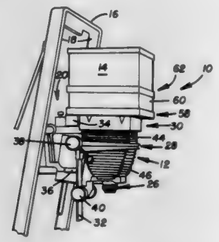
METHOD AND APPARATUS FOR ADAPTING PHOTOGRAPHIC ENLARGERS FOR USE WITH LARGE FORMAT NEGATIVES

Alan B. Ross, 206 Caledonia St., #17, Sausalito, Calif. 94965

Filed Nov. 16, 1983, Ser. No. 552,483

Int. Cl.³ G03B *27/58*

U.S. Cl. 355—75 **16 Claims**



1. An adapter assembly for use with enlargers of a type including a longitudinal frame means carrying relatively movable lens, negative and condenser stages arranged along an optical axis for focusing images of smaller format negatives upon photographic paper or the like, the lens stage being adapted for use with various lenses, the adapter permitting use of large format negatives with the original lens stage for similarly focusing images of large format negatives upon the photographic material or the like and comprising a first large format negative stage mounted on the condenser stage at a sufficient distance from the lens stage so that a larger format negative arranged in the large format negative stage is within a light cone established by the lens, a light source suitable for illuminating the large format negative being mounted on the first large format negative stage opposite the lens stage.

4,522,491

METHOD FOR REPRODUCING ONE OR MORE TARGET COLORS ON PHOTOGRAPHIC PAPER OR THE LIKE

Marjorie D. Ingalls, and Richard D. Ingalls, both of E. 1104 57th, Spokane, Wash. 99203

Division of Ser. No. 353,399, Mar. 1, 1982, Pat. No. 4,425,417, which is a continuation-in-part of Ser. No. 76,499, Sep. 17, 1979, abandoned, Continuation of Ser. No. 7,702, Jan. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 794,987, May 9, 1977, abandoned. This application Feb. 7, 1983, Ser. No. 464,637

Int. Cl.³ G03B *27/32, 27/52*

U.S. Cl. 355—77 **27 Claims**

1. The method of obtaining a target color on color photosensitive photographic media, utilizing an illuminant source and color filters, said method comprising:

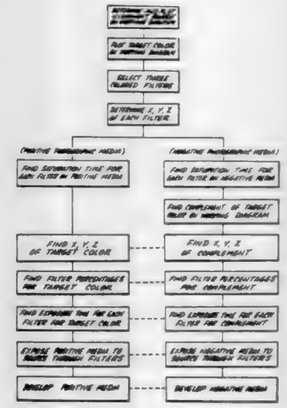
(a) preparing a color reference data base relating a given illuminant source at a given Kelvin temperature and a given spectral distribution with various color filters and various undeveloped color photosensitive photographic media, and providing information as to which filters and respective filter exposure times are appropriate, when used with such an illuminant source and given photographic media, to substantially reproduce a given target color on the developed photographic media,

(b) determining the constituent primary color component makeup of the target color in relation to the illuminant source,

(c) from the target color component makeup, determining from the data base a group of color filters and the associated color filter exposure times appropriate to substantially reproduce the target color on a given photographic media when developed,

(d) exposing the undeveloped color sensitive photographic media to the illuminant source through each color filter for each respective filter exposure time thus determined, to substantially reproduce the target color on the photographic media when developed, and

(e) developing the exposed photographic media.



4,522,492

DISTANCE MEASURING DEVICE

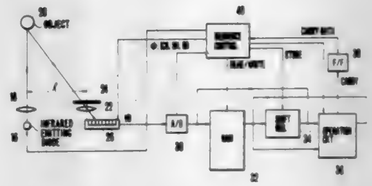
Makoto Masunaga, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1982, Ser. No. 393,320

Claims priority, application Japan, Jul. 10, 1981, 56-108718

Int. Cl.³ G01C *3/10*

U.S. Cl. 356—1 **5 Claims**



1. A device for detecting the range of an object, comprising:

(a) projecting means for projecting a beam of radiation toward the object,

(b) an accumulation type linear sensor array having a plurality of sensing elements each of which produces electrical data in response to received radiation;

(c) a shift register having the same number of registers as that of said sensing elements, said register being connected to said linear array to parallel transfer datum of said sensing elements;

(d) first memory means for memorizing the datum trans-

ferred to said shift register as it is serially read out from said shift register;

(e) second memory means for memorizing the datum transferred to said shift register as it is serially read out from said shift register;

(f) control means for controlling said shift register such that said first memory means is allowed to memorize that datum which occurs when said projecting means is not driven, and said second memory means is allowed to memorize that datum which occurs when said projecting means is driven;

(g) computing means for subtracting the datum memorized in said first memory means from the datum memorized in said second memory means; and

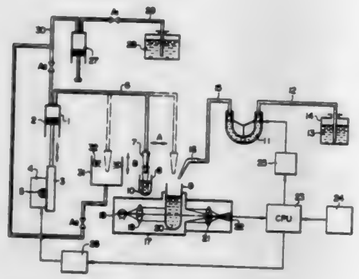
(h) means for detecting a maximum value of the computation values of said computing means and using said maximum value as a distance measuring information.

4,522,493

PARTIAL INJECTION APPARATUS

Akira Tamagawa, Hino, and Tokio Kano, Kunitachi, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Oct. 26, 1982, Ser. No. 436,662
Claims priority, application Japan, Nov. 19, 1981, 56-184371
Int. Cl.³ G01N *1/14, 33/48*
U.S. Cl. 356—36 **8 Claims**



1. A partial injection apparatus, comprising:

(A) sample injection means for injecting approximately a predetermined amount of sample into a container, said sample injection means including:

(1) a sample tube containing a sample to be diluted;

(2) a nozzle;

(3) a cleaning tank for applying a cleaning fluid to said nozzle when said nozzle is located in said cleaning tank; and

(4) operating means for moving said nozzle into said sample tube, aspirating a predetermined amount of said sample into said nozzle, moving said nozzle into said container and injecting substantially all of said sample into said container, and thereafter moving said nozzle into said cleaning tank;

(B) diluent injecting means for injecting, under the control of a control means, a diluent into said container so as to form a test fluid in said container, said test fluid including said sample and said diluent;

(C) detecting means for detecting the concentration of said test fluid; and

(D) said control means causing said diluent injecting means to:

(1) inject a first predetermined amount of diluent into said container, while amount is independent of the actual amount of fluid in said container, so that after said sample and said predetermined amount of diluent has been injected into said container the concentration of test fluid in said container will be at a level less than a desired level; and thereafter

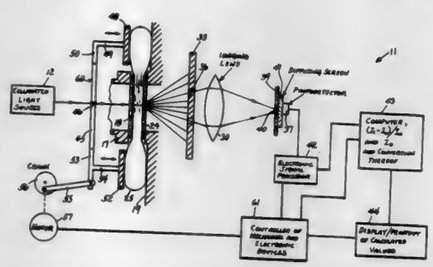
(2) injecting an additional amount of diluent into said container as a function of said detected concentration so as to bring the concentration of said test fluid to said desired level.

4,522,494

NON-INVASIVE OPTICAL ASSESSMENT OF PLATELET VIABILITY

Robert F. Bonner, Washington, D.C., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jul. 7, 1982, Ser. No. 396,057
Int. Cl.³ G01N *33/48, 21/53*
U.S. Cl. 356—39 **17 Claims**



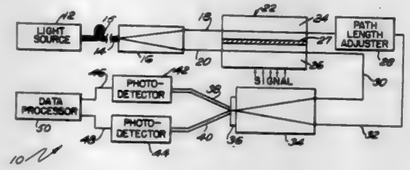
1. An apparatus for assessing the viability of platelets in a transparent flexible blood storage bag comprising a support, a collimated light source providing a beam defining an optical axis, means on said support for clampingly receiving a blood storage bag in a position substantially transverse to said axis such as to allow said beam to traverse the bag and to be scattered by platelets in the bag, means for aligning platelets within said bag substantially face-on with respect to said beam, light gate means in the path of scattered light and limiting transmission thereof to a predetermined scatter angle relative to said optical axis, photoelectric sensing means, means to direct the transmitted scattered light to said photoelectric sensing means, whereby to generate an electrical signal in accordance with the state of the platelets in the bag, and means to measure said signal.

4,522,495

OPTICAL SENSING DEVICES

Peter Shajenko, Storrs, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 13, 1983, Ser. No. 503,913
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—345 **11 Claims**



1. An optical fiber sensing system, for very accurate measurement of the effects of a physical phenomena, comprising:

a light source means for producing a light beam;

a first multimode optical fiber, connected to said light source means, for receiving and transmitting said light beam;

beam splitting means, connected to said first fiber, for receiving said light beam and dividing said light beam into a signal light beam and a reference light beam, each of said signal and reference beams being of equal phase and amplitude;

sensing means for receiving said signal beam and said reference beam from said beam splitting means, said sensing means being divided into a signal chamber and a reference chamber such that said signal beam and said reference beam experience all environmental effects equally, said signal chamber being further arranged so as to further expose only said signal beam to said physical effect to be measured thereby modulating said signal beam in proportion thereto;

path length adjusting means, for receiving said reference beam from the reference chamber of said sensing means and changing the pathlength of said reference light beam to equal the path length of said signal light beam, thus assuring temporal coherence therebetween;

beam recombining means for receiving said signal beam from the signal chamber of said sensing means and said reference beam from said path length adjusting means, said recombining means combining said signal beam and said reference beam in such a way as to form a fringe pattern having at least a center fringe and a fringe in quadrature relationship with the center fringe;

non-transparent plate means, fixedly attached to said recombining means for receiving center fringe and the fringe in quadrature relationship therewith and separating all the light energy of said center fringe from all the light energy of the fringe in quadrature relationship with said center fringe in such a way that 90° phase quadrature is maintained between said signal and reference light beams;

a zero order, multimode optical fiber, attached to said plate means, for receiving and transmitting therethrough said center fringe light energy from said plate means;

a first order, multimode optical fiber, attached to said plate means, for receiving and transmitting therethrough the fringe in quadrature relationship with said center fringe light energy from said plate means;

a first photodetector means, connected to said zero order fiber, for receiving said center fringe light energy and converting said light energy to a proportional zero order electrical signal;

a second photodetector means, connected to said first order fiber, for receiving the fringe in quadrature relationship with said center fringe light energy and converting said light energy to a proportional first order electrical signal; and

data processor means, connected to said first and said second photodetectors for receiving said zero order and said first order electrical signals, and processing said signals in such a way as to extract said physical effect measurement therefrom.

4,522,496

LASER GYRO MODE LOCKING REDUCTION SCHEME

Virgil E. Sanders, Newbury Park, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

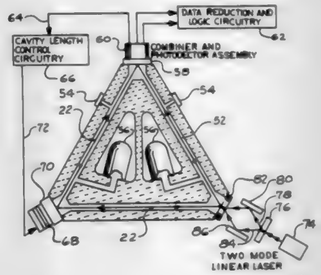
Continuation-in-part of Ser. No. 068,244, Aug. 17, 1979, abandoned, which is a continuation of Ser. No. 909,919, May 26, 1978, abandoned. This application Mar. 23, 1981, Ser. No. 246,457
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **16 Claims**

1. A ring laser gyroscope comprising:

a ring laser body including reflective surfaces which define a closed loop optical path;

means including electrically charged gas plasma, gain medium means and means for controlling and tuning the length of said optical path for generating, amplifying, and maintaining at least two stronger counter propagating primary resonant traveling modes and for generating, amplifying and maintaining at least two weaker counter propagating secondary modes propagating in said optical path;

means for processing the frequency beat signal between said primary modes to generate signals representative of angular velocity of said ring laser body about its sensing axis; and



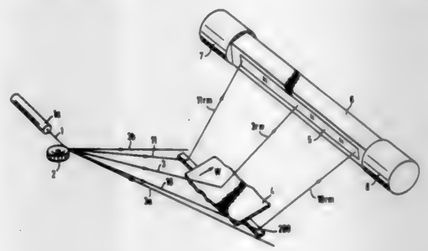
said means for controlling and tuning the length of said optical path being adjusted such that the amplitude of at least said two weaker counterpropagating secondary modes within said gain medium means to diminish lock-in between said primary modes.

4,522,497

WEB SCANNING APPARATUS

John B. Ikin, Leigh-on-Sea, England, assignor to Ciba Geigy AG, Basel, Switzerland

Filed Jun. 7, 1982, Ser. No. 385,593
Claims priority, application United Kingdom, Jun. 17, 1981, 8118575; Jun. 17, 1981, 8118576; Sep. 30, 1981, 8129538; Nov. 27, 1981, 8135928
Int. Cl.³ G01N *21/17*
U.S. Cl. 356—431 **32 Claims**



1. A method of photoelectrically scanning a moving web material which comprises scanning the web with a narrow light beam sweeping across and beyond the edges of the web, directing light reflected or transmitted by the web to a light receiver of a light measuring unit so generating a corresponding electrical signal, and optically simulating the optical reflexion or transmission property of the web for two auxiliary scanning zones adjacent the lateral edges of the web in such manner that the average strength of said electrical signal remains constant over substantially the whole scanning sweep.

4,522,498

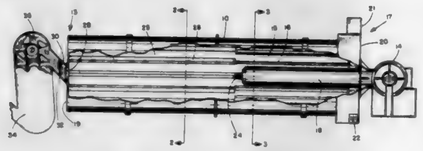
ASPHALTIC CONCRETE RECYCLE APPARATUS AND METHOD

Robert L. Mendehall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 871,351, Jan. 23, 1978, Pat. No. 4,208,131, and Ser. No. 906,734, May 17, 1978, Pat. No. 4,240,754. This application Apr. 14, 1980, Ser. No. 139,708

Int. Cl.³ B28C *5/46*

U.S. Cl. 366—4 **6 Claims**



1. An apparatus for treating asphalt-aggregate composition comprising:

an elongated rotatable drum having a first end and, as the only substantial opening thereat, a first port for introducing composition into said drum and closure means for closing said port except when composition is introduced, and a second end opposite said first end and and having a second port, open to atmosphere, for recovering composition and for venting substantially all hydrocarbon gases in the drum to atmosphere therethrough, and

a burner having a nozzle located in said drum intermediate said first and second ends for directing hot gases of combustion toward said first end, wherein said drum interior comprises a first section between said first end and said nozzle having first means for lifting composition as the drum is rotated to prevent a curtain of particles passing through the hot gases of combustion in said first section, and a second section between said nozzle and said second end having second means for lifting composition as the drum is rotated to form a curtain of particles passing through hot gases in said second section.

4,522,499

CONCRETE MIXER

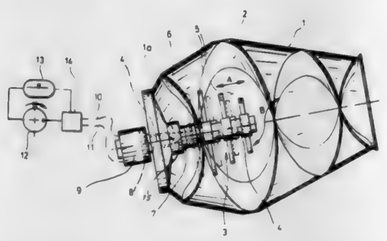
Gerhard Hudelmaier, Ulm, Fed. Rep. of Germany, assignor to Ingrid Hudelmaier, Ulm, Fed. Rep. of Germany

Filed Jul. 27, 1983, Ser. No. 517,763

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228983

Int. Cl.³ B01F *9/08*

U.S. Cl. 366—56 **3 Claims**



1. In combination with a concrete mixing drum having a side wall that tapers coaxially from a medial largest diameter portion to an upper end of the drum that is open for filling and discharge and to a bottom end of the drum that is closed by an end wall, said drum having an axis about which it is rotatable and normally having said axis inclined to the horizontal so that said upper end is higher than said bottom end, and agitating means fixed to said side wall in the interior of the drum and extending along a substantial portion of the length of the drum, for imparting mixing agitation to contents of the drum as it rotates:

A. A mixing tool for cooperation with said agitating means to effect thorough mixing of drum contents, comprising

(1) an elongated shaft which coaxially extends lengthwise slidably and relatively rotatably through said end wall and

(2) substantially radially projecting mixer elements secured to said shaft in the interior of the drum, in axially spaced relation to said end wall;

B. reciprocating actuating means at the exterior of the drum connected with said shaft for lengthwise reciprocating said mixing tool; and

C. cooperating means on said end wall and on said shaft for imparting rotation to said shaft in consequence of lengthwise movement thereof.

4,522,500

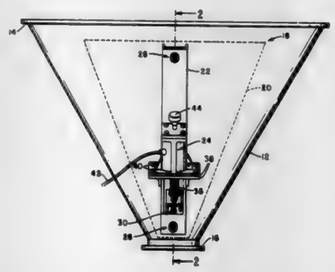
WALL-MOUNTED AGITATOR FOR PARTICULATE MATERIAL

Frank S. Hyer, Duxbury, Mass., assignor to Hyer Industries, Inc., Pembroke, Mass.

Filed Dec. 19, 1983, Ser. No. 563,285

Int. Cl.³ B01F *11/00*

U.S. Cl. 366—113 **12 Claims**



1. A particulate material agitator comprising, in combination,

an agitator panel formed to extend in generally parallel spaced relationship to and within a wall of a conveyor for said material,

an agitator frame external to said wall and having a powered vibrator thereon,

an elongate spacer extending through an aperture in said wall and rigidly securing the panel and frame together in spaced relationship, the agitator being adapted for vibrating the panel and frame predominantly in a direction parallel to said wall, and

a mount including annular flange means adapted for attachment to said wall about said aperture and an elastic annulus of sleeve-like form extending from the flange means in opposite directions along the extent of the spacer to ends of said annulus respectively terminating at opposing surfaces of the frame and panel, said annulus being compliant to movement of the frame and panel in directions both parallel and normal to said wall.

4,522,501

MONITORING MAGNETICALLY PERMEABLE PARTICLES IN ADMIXTURE WITH A FLUID CARRIER

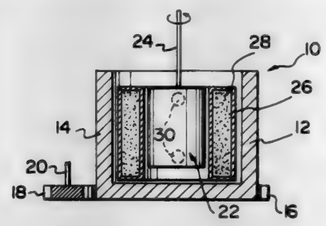
Michael A. Shannon, Glenburnie, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 6, 1984, Ser. No. 597,377

Int. Cl.³ B01F *15/02*; G05D *11/13*; G01N *27/74*; G01R *33/12*

U.S. Cl. 366—142 **12 Claims**

1. A method of monitoring a quantity of magnetically permeable particles in admixture with a fluid carrier comprising providing a magnetic field with flux lines having a direction or position change, placing the mixture within the magnetic field while interposing it between and out of physical contact with a source of the field and with a movable member also disposed within the field, the movable member having a degree of movement caused and influenced by the strength of the field; influencing the effect of the field upon the movable member by



the presence of the particles in the mixture to cause the member to move by a degree which corresponds to the strength of the field in the region of the member as affected by the quantity of particles in the mixture and affected by the field, and monitoring the degree of movement of the movable member, said movement also corresponding to the quantity of magnetically permeable particles in a unit quantity of the mixture.

4,522,502

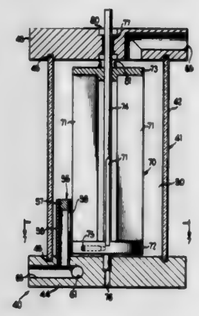
MIXING AND FEEDING APPARATUS

Carl L. Brazelton, Austin, Tex., assignor to Stran Corporation, Bradley, Ill.

Continuation-in-part of Ser. No. 436,023, Oct. 22, 1982, abandoned. This application Oct. 6, 1983, Ser. No. 539,552

Int. Cl.³ G05D *11/00*; B01F *15/02, 7/20*

U.S. Cl. 366—160 **39 Claims**



1. Mixing and feeding apparatus for receiving polymer and water and for activating and diluting the polymer, comprising a frame, a vessel mounted on said frame and defining a substantially cylindrical chamber therein, said chamber having a cylindrical axis and a given cross sectional area through the cylindrical axis, polymer inlet means for carrying the polymer to said chamber, means mounted on said frame for accurately adjusting the delivery rate of the polymer into said chamber, water inlet means for carrying the water to said chamber, means mounted on said frame for controlling the rate of water flow into said chamber, outlet means for carrying the activated and diluted polymer away from said vessel, an impeller mechanism mounted in said chamber for rotation about the cylindrical axis thereof for mixing the polymer and the water, said impeller mechanism including a plurality of fins having a combined surface area at least one-half the cross sectional area of the chamber, and means for rotating said impeller mechanism.

4,522,503

MIXING APPARATUS

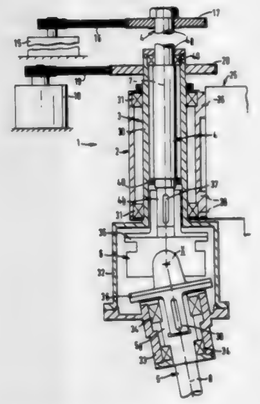
Keith Salter, Ailsworth, England, assignor to Baker Perkins Holdings PLC, England

Filed Aug. 2, 1984, Ser. No. 637,156

Claims priority, application United Kingdom, Aug. 10, 1983, 8321501

Int. Cl.³ B01F *7/00*

U.S. Cl. 366—287 **7 Claims**



1. Mixing apparatus, comprising:

a support member;

a shaft-support structure carried by and rotatable relative to the support member;

a drive shaft and a driven shaft each rotatably mounted on the shaft-support structure;

flexible coupling means connecting one end of the drive shaft with one end of the driven shaft, the shafts being disposed so that their axes of rotation are inclined to each other;

a mixer element carried by the other end of the driven shaft so as to rotate therewith;

means for rotating the drive shaft so that the driven shaft rotates the mixer element; and,

means for rotating the shaft-support structure about an axis common with the axis of rotation of the drive shaft.

4,522,504

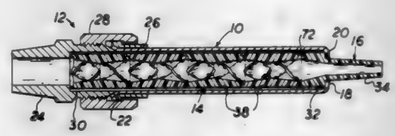
LINEAR IN-LINE MIXING SYSTEM

Peter H. Greverath, Berkley, Mich., assignor to Pyles Division, Wixom, Mich.

Filed Dec. 8, 1983, Ser. No. 559,254

Int. Cl.³ B01F *5/06*

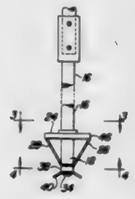
U.S. Cl. 366—339 **6 Claims**



1. In-line mixing apparatus for mixing material flowing through a conduit, comprising, in combination, at least a pair of tubular elements each having a passage, a first end and a second end, orientation means defined upon said elements' first and second ends rotatably orientating engaging elements upon a pair of said elements being oriented in end-to-end abutting relationship with a first end engaging a second end, mixing means within said elements' passages agitating material flowing therethrough to intermix such material comprising helical

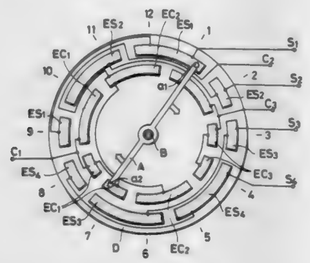
vanes within said elements' passages, said vanes within each element comprising first and second axially spaced vanes, the helix of said first vane being in the opposite direction of said second vane, said elements and vanes being homogeneously molded of a synthetic plastic material.

4,522,505
ROTOR FOR LIQUID MIXING DEVICE
Ronald A. Medd, Bettendorf, Iowa, assignor to C. R. Medd & Sons, Bettendorf, Iowa
Filed Sep. 17, 1984, Ser. No. 650,948
Int. Cl.³ B01F *7/18*
U.S. Cl. 366—343 **7 Claims**



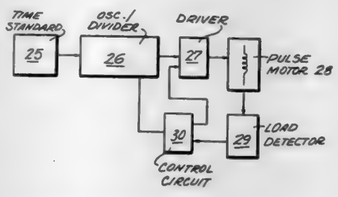
1. In a mixer of the class described, including an upright motor-driven shaft rotatable about a vertical axis and having a lower end portion, and a mixer rotor affixed to said lower end portion, the improvement in which the rotor comprises a blade element substantially in the form of a V having a flat bottom disposed diametrically across the lower end portion of the shaft, said blade element continuing in upward and outward divergent fashion from said flat bottom as blade arms symmetrical to the shaft at diametrically opposite sides thereof, each arm having an upper end and said ends lying in a common plane normal to the shaft axis, and a circular top member, concentric with the shaft and lying essentially in said plane, said member having a diameter on the order of the diametrical spacing between the upper ends of the arms and connected at its periphery to said upper ends and said periphery presenting a smooth annular surface.

4,522,506
TIME SIGNAL CLOCK
Yoshihito Owa, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan
Filed Sep. 20, 1984, Ser. No. 652,822
Claims priority, application Japan, Sep. 21, 1983, 58-175028
Int. Cl.³ G04B *21/02*
U.S. Cl. 368—75 **1 Claim**



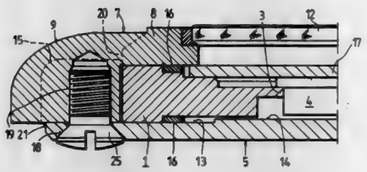
1. A time signal clock comprising: a base plate; two rows of plural electrodes disposed on said base plate; a contact member resiliently held selectively against two of the electrodes in the two rows for conducting the two electrodes; movable means for rotating one of said contact member and said base plate in unison with an hour hand to cause said contact member to slide relatively on said electrodes in the two rows; a pulse generator for supplying pulses which are successively out of phase with each other to the electrodes in one of the two rows; an output circuit responsive to outputs from the electrodes in the other row and said pulses for producing an output indicative of a display position of the hour hand; and time signal means for producing a time signal for an hourly time in response to the output from said output circuit.

4,522,507
STEP MOTOR CONTROL MECHANISM FOR ELECTRONIC TIMEPIECE
Yoshikazu Kawamura; Minoru Hosokawa; Sakiho Okazaki, and Hiroshi Ishii, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Continuation of Ser. No. 133,046, Mar. 24, 1980, Pat. No. 4,370,065, which is a continuation of Ser. No. 839,867, Oct. 6, 1977, Pat. No. 4,212,156. This application Sep. 30, 1982, Ser. No. 430,292
Claims priority, application Japan, Oct. 6, 1976, 51-120146
The portion of the term of this patent subsequent to Jul. 15, 1997, has been disclaimed.
Int. Cl.³ G04F *5/00*; G04C *3/00*
U.S. Cl. 368—157 **4 Claims**



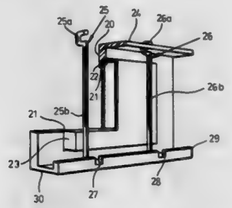
1. An electronic timepiece having a step motor and comprising a quartz crystal vibrator producing a high frequency time standard signal, divider circuit means for producing low frequency time signals in response to said high frequency time standard signal; a gear train driven by said step motor and adapted to place the step motor in one of a first normally loaded condition and a second loaded condition; load detection means for producing a load detection signal in response to detecting said second loaded condition of said step motor; driving and control means intermediate said divider circuit means and said step motor for receiving the low frequency signal from the dividing circuit means, said driving and control means being adapted to apply a first drive signal having a first pulse width to said step motor in response to said low frequency signal, said driving and control means in response to said load detection signal being applied thereto, being adapted to apply to said step motor a second drive signal having a pulse width of longer duration than said first pulse width, said step motor including a drive coil for receiving said first drive signal produced by said driving and control means, said load detecting means being adapted to detect the induced current in said drive coil in response to said first drive signal being applied thereto, said driving and control means including timer means, said timer means being adapted to select a predetermined time interval, said driving and control means being adapted to apply said pulse width of longer duration of said second drive signal to said drive coil during said predetermined time interval selected by said timer means.

4,522,508
WATCH CASE
Leonhard Meister, Selzach, Switzerland, assignor to Montres Universal S.A., Geneva, Switzerland
Filed Aug. 14, 1984, Ser. No. 640,606
Claims priority, application Switzerland, Aug. 22, 1983, 4566/83
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—276 **8 Claims**



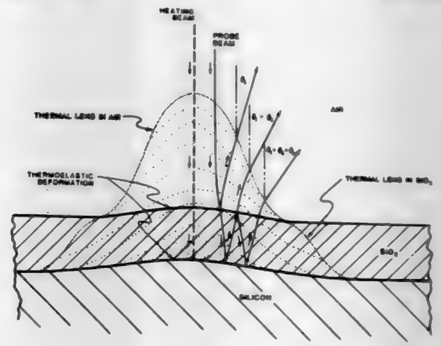
1. A watchcase of the type having an annular main part constituting a caseband and two auxiliary parts constituting a bezel and a back, wherein the improvement comprises:
- a number of indentations distributed along the periphery of said caseband and
- a like number of pillars integral with one of said auxiliary parts,
- said pillars being fitted into said indentations, and the other one of said auxiliary parts being fixed against said pillars.

4,522,509
CLOCKWORK RETAINING ASSEMBLY
Karl W. Schmidt, Idar-Oberstein, Fed. Rep. of Germany, assignor to Gebrüder Schmidt GMBH & Co. KG, Idar-Oberstein, Fed. Rep. of Germany
Filed Jun. 22, 1983, Ser. No. 506,712
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244918
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—300 **10 Claims**



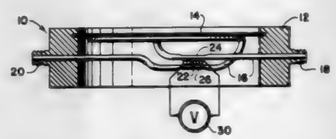
1. A clock having a clockwork carrier formed with an opening, a seat adjacent said opening and a pair of opposite walls flanking said opening, a clockwork received in said opening and braced against said seat, and a pair of generally parallel transversely spaced retaining spring rods having respective opposite ends engaged in said walls and spanned across a back of said clockwork and resiliently braced against said clockwork at least in part by a bend in at least one end of each rod.

4,522,510
THIN FILM THICKNESS MEASUREMENT WITH THERMAL WAVES
Allan Rosencwaig, Danville, and Jon Opsal, Livermore, both of Calif., assignors to Therma-Wave, Inc., Fremont, Calif.
Continuation-in-part of Ser. No. 401,511, Jul. 26, 1982,. This application Apr. 1, 1983, Ser. No. 481,275
Int. Cl.³ G01N *21/41, 25/72*
U.S. Cl. 374—7 **20 Claims**



1. A method for evaluating microscopic thermal features in a sample comprising:
- focusing an intensity modulated heating beam of energy at a microscopic spot on the surface of the sample to produce periodic thermal waves;
- focusing a probe beam of energy on a portion of the surface of the sample which is being periodically heated by the thermal waves, with said probe beam being substantially parallel to and laterally spaced from the heating beam; and
- monitoring the periodic angular displacement of the reflected probe beam, said periodic displacement resulting from the periodic angular changes in the surface conditions of the sample induced by the periodic thermal waves whereby the periodic angular displacement of the reflected probe beam can be used to evaluate microscopic thermal features in a sample.

4,522,511
METHOD AND APPARATUS FOR MEASURING RADIANT ENERGY
Robert W. Zimmerer, Port Angeles, Wash., assignor to Scientech, Inc., Boulder, Colo.
Filed Sep. 13, 1982, Ser. No. 417,283
Int. Cl.³ G01J *5/12*; G01K *17/20*
U.S. Cl. 374—32 **4 Claims**



1. In a fluid cooled radiant energy measuring device having an absorber structure for receiving and absorbing the radiant energy, and a coolant system including a coolant conduit having inlet and outlet legs and adapted to flow a coolant therethrough to carry away the absorbed energy, the improvement comprising:
- the coolant conduit and the absorber structure being in thermal contact; and
- a plurality of Peltier effect junctions with opposite sides of the junctions in thermal contact with the inlet leg and the

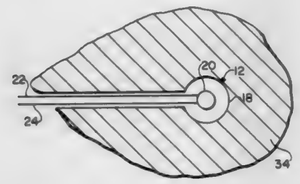
outlet leg respectively of the coolant conduit, whereby the absorber structure will be effectively cooled by thermal contact with the coolant conduit, and the radiant energy measured by the Peltier effect device to determine the radiant energy falling on the absorber structure.

4,522,512

THERMAL CONDUCTIVITY MEASUREMENT METHOD

Ronald T. Atkins, West Lebanon, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 5, 1982, Ser. No. 375,066
Int. Cl.³ G01F *1/68*; G01N *25/18*
U.S. Cl. 374—44 **16 Claims**



1. A method for measuring bulk thermal conductivity (K_m) of a material comprising the steps of:
   a. embedding a small combined sensor and heat source having a heat bead surrounded by an envelope in a substantially large material;
   b. determining the temperature value of said material using said combined sensor and heat source;
   c. determining the thermal energy value (Q in calories per second) generated by said heat bead;
   d. determining the surface temperature value of said heat source envelope;
   e. determining the radius value of said heat source envelope; and
   f. calculating said thermal conductivity (K_m) by utilizing said determined values in the equation

$$K_m = \frac{Q}{4\pi(T_1 - T_2)r_1}$$

where:
Q equals the thermal energy in calories per second generated by said heat source and sensor
T_1 equals the surface temperature of said heat source envelope
T_2 equals the temperature of said material
r_1 equals the radius of said heat source envelope.

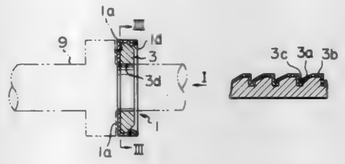
4,522,513

TAPERED-LAND THRUST BEARING DEVICE

Shigehiro Nozue, Toyota, and Tatsuhiko Fukuoka, Aichi, both of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

Filed Mar. 28, 1983, Ser. No. 479,313
Claims priority, application Japan, Mar. 27, 1982, 57-48112
Int. Cl.³ F16C *17/04*
U.S. Cl. 384—368 **6 Claims**

1. A tapered-land thrust bearing device adapted to be disposed between two members rotating relatively to each other and to bear a thrust force exerted by said relative rotation members, said thrust bearing device comprising:
   a disk-shaped bearing member adapted to be engaged with one of said relative rotation members and having a tapered-land face on at least one side, said tapered-land face comprising tapered surfaces and flat-land surfaces successively formed along the peripheral direction thereof; and
   a race member comprising a radially extending wall having a face which is adapted to be engaged with the other relative rotation member and an opposite-side face arranged to contact said tapered-land face of said disk-shaped bearing member by the thrust face to define a sliding surface therebetween, a peripheral wall axially extending from the periphery of said radially extending



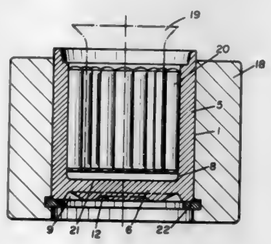
wall to define a retainer for receiving said disk-shaped bearing member, and retaining means integrally formed with said peripheral wall at a free end thereof for preventing said disk-shaped bearing member from falling away from said race member.

4,522,514

THIN-WALLED BEARING BUSHING PRODUCED BY DEEP DRAWING

Armin Olschewski, Schweinfurt; Hermann Hetterich, Heidenfeid; Peter Horling, Mainberg, and Berthold Beyfuss, Kaisten, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 13, 1983, Ser. No. 484,573
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1982, 3215718
Int. Cl.³ F16C *33/58*
U.S. Cl. 384—569 **17 Claims**



1. In a thin-walled deep-drawn bearing bushing for the seating of pins in universal joints, including a cylindrical sleeve section and a bottom section closing the sleeve section at an end thereof, the bottom section having an outer surface wherein at least one axially pressed recess is formed near the periphery of the outer surface forming a relatively sharp peripheral edge, the improvement comprising the outer surface of the bottom section being formed with at least one recess radially displaced inwardly relative to the nearly peripheral recess, thereby reducing the wall thickness of the bottom section of the bearing bushing.

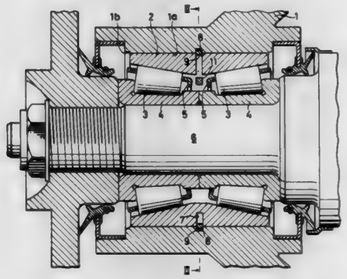
4,522,515

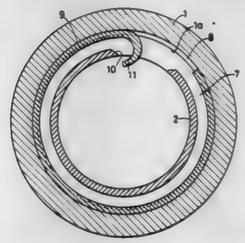
MOUNTING DEVICE FOR ANTIFRICTION BEARING

Toshio Miki, Higashi-yamamoto-shinmachi; Yoshihide Toda, and Kenichi Horii, both of Aichi, all of Japan, assignors to Koyo Seiko Company Limited, Osaka, Japan

Filed Sep. 27, 1983, Ser. No. 536,442
Int. Cl.³ F16C *35/077*
U.S. Cl. 384—571 **7 Claims**

1. A bearing mounting device comprising;
   a first circumferential groove provided in the outer peripheral face off the raceway of the outer race of an antifriction bearing,
   a second circumferential groove provided in the inner periphery of said bore where said bearing is mounted and opposed to said first circumferential groove in the outer periphery of the outer race thereof,





   an opening provided in part of the bottom of said first circumferential groove and communicating with the interior of said outer race,
   an elastic fixing means inserted peripherally into said first and said second circumferential grooves astriding both, and
   an end portion of said fixing means revealed inside said outer race through said opening in said first circumferential groove.

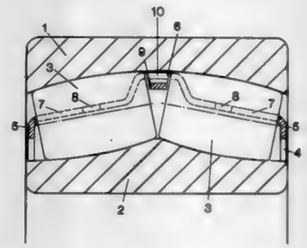
4,522,516

ROLLER BEARING SUPPORT STRUCTURE WITH METAL WINDOW CAGE

Gerhard Neese, Schonungen, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schafer, Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 312,818, Oct. 19, 1981, abandoned. This application Dec. 30, 1983, Ser. No. 567,230
Claims priority, application European Pat. Off., Nov. 3, 1980, 80106739.8
Int. Cl.³ F16C *33/48*
U.S. Cl. 384—572 **4 Claims**

1. A metal window cage for the bearing rollers in a double row shoulderless, spherical roller bearing, wherein
   the bearing includes two annular rows of rollers having axially inwardly facing surfaces which are nearly in contact, an inner ring with a respective radially outwardly facing inner raceway for each of the rows of rollers, and an outer ring with a radially inwardly facing outer raceway facing toward and radially spaced from the inner raceway; the rollers being in rolling contact with the outer and the respective raceways;
   the cage being comprised of an elastically deformable hardened metal; the cage comprising an inboard cage ring disposed between the axially inwardly facing surfaces of the rows of rollers; the inboard cage ring extending around the outer raceway and being positioned to run parallel to the outer raceway; the inboard cage ring having an outwardly facing external surface which is positioned nearly in contact with the outer ring raceway; the external surface of the inboard cage ring being generally scalloped to define a series of depressions extending around the inboard cage ring at spaced intervals, with each depression being at a respective pair of the rollers located at opposite sides of the inboard cage ring, and each depression extending across the whole axial width of the inboard cage ring;



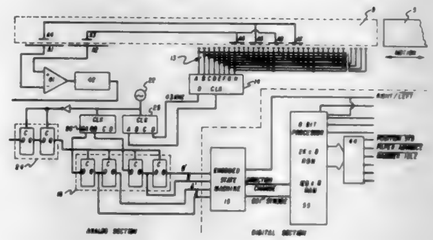
   the cage further comprising two outboard cage rings, each axially outboard of one of the two rows of rollers, and the outboard cage rings extending radially inwardly toward the inner ring;
   the cage further comprising cross pieces which connect the inboard and outboard cage rings; cross pieces being disposed circumferentially around the cage at intervals for spacing rollers apart around the cage.

4,522,517

ENCODER SYSTEM FOR DOT MATRIX LINE PRINTER

Kenneth B. Wade, 804 N. 3rd St., Battle Ground, Wash. 98604, and Phillip R. Luque, 4172 Creswell Way, Boise, Id. 83704

Filed Nov. 10, 1983, Ser. No. 551,662
Int. Cl.³ B41J *19/30*
U.S. Cl. 400—322 **15 Claims**



1. Apparatus for determining the position, with respect to a reference point, of a movable member comprising:
   means for producing a train of successive polyphase pulses and a train of successive reference pulses;
   transmitting means for transmitting said polyphase pulse train;
   receiving means capacitively coupled to said transmitting means for producing a signal from a summation of successive coupled pulses of said polyphase pulse train, said signal embodying information indicative of the position of said movable member with respect to said reference point;
   detector means coupled to said receiving means providing a TTL signal, derived from said signal, representing the phase of said signal;
   first means coupled to said detector means for comparing said TTL signal with said reference pulse train to provide a first signal representing a first incremental position change of said movable member and a second signal repre-

senting a second incremental position change of said movable member; and

second means coupled to said first means for comparing said first incremental position with said second incremental position change and providing an output strobe representing an incremental position change of said movable member when said position changes are occurring in the direction of motion of said movable member and said first position change being one increment away from said second position change, and providing an output signal representing the direction of motion of said movable member, and providing a pulse representing a change of direction of the motion of said movable member whereby the position of said movable member with respect to said reference point may be determined.

4,522,518

CHARACTER DATA INPUT KEYBOARD ARRANGEMENT HAVING CENTRAL MATRIX OF KEYS

John R. Schmidt, 3239 Bishop St., Cincinnati, Ohio 45220

Filed Jul. 7, 1983, Ser. No. 511,741
Int. Cl.³ B41J *5/10*
U.S. Cl. 400—486 **35 Claims**



1. A two-handed, manually actuable, character data input keyboard arrangement having a plurality of letter and accessory keys,

wherein each of said letter keys represents one letter of an alphabet, the complete set of said letter keys arranged to comprise two substantially regular arrays of complementary subsets of said set, said two arrays including all of the letters of said alphabet and other keys, said other keys comprising accessory keys,

each of said arrays having three substantially straight substantially horizontal rows, said rows being substantially evenly spaced and substantially parallel,

and each of said arrays having also five columns, said columns being substantially evenly spaced and substantially parallel;

each of said arrays primarily augmented by at least one row of one or more accessory keys, said last-mentioned row substantially parallel to, and adjacently beneath, the bottommost row of the respective array,

each of said primarily-augmented arrays secondarily augmented by one or more columns of keys, located lateral and adjacent to the lateralmost column of the respective primarily augmented array,

each of said secondarily-augmented arrays thirdly augmented by at least one row of accessory keys, said last-mentioned row substantially parallel to, and adjacently above, the topmost row of the respective secondarily-augmented array,

and each of said thirdly augmented arrays, defining clusters, spaced horizontally apart from each other and separated by a matrix of keys comprising at least one column of keys including at least four keys therein,

wherein the bottommost row of said matrix is readily accessible by the thumbs from their home positions on the bottommost row of said primarily-augmented arrays,

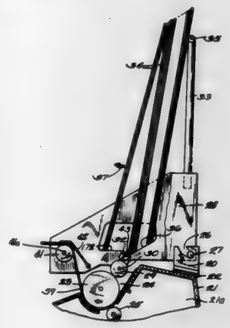
and such that the remaining rows of keys in said matrix are readily accessible by the index fingers from their home positions in the middle rows of said arrays.

4,522,519

APPARATUS AND PROCESS FOR DROP-FEEDING SHEETS TO A TYPING OR PRINTING MACHINE INCLUDING SEPARABLE PAPER CLAMPING TRAYS

R. Clark DuBois, 332 Wakeman Rd., Fairfield, Conn. 06430

Filed Nov. 29, 1982, Ser. No. 445,262
Int. Cl.³ B41J *13/10*
U.S. Cl. 400—624 **13 Claims**



1. In a drop-sheet feeder for a printing machine having a platen,

a frame supported by the printing machine and disposed above the platen,

a plurality of trays at all times supported generally vertically on said frame,

a first support surface for the lower ends of the trays,

a second support surface for the lower ends of the trays, and

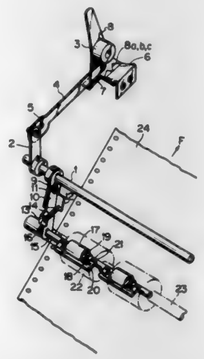
a tray shifter means for moving the lower ends of the trays from the first support surface to the second support surface.

4,522,520

DEVICE FOR ADJUSTING PRINTING PAPER TENSION IN A PRINTER

Hideaki Takenoya, and Fumiyuki Mishima, both of Tokyo, Japan, assignors to Janome Sewing Machine Co. Ltd., Japan

Filed Jun. 7, 1984, Ser. No. 618,213
Claims priority, application Japan, Jun. 17, 1983, 58-92114
Int. Cl.³ B41J *13/02*
U.S. Cl. 400—636.1 **3 Claims**



1. A device for adjusting printing paper tension in a printer, comprising:

a switching member rotatably mountable to a machine frame of the printer;

a connecting structure connected with said switching member and including a pressure plate with a supporting arm, one end of said supporting arm being pivotably mounted to said pressure plate, said supporting arm also being connected to the pressure plate by a tension spring;

a roller shaft connected to another end of the supporting arm;

a plurality of pinch rollers rotatably connected to said roller shaft, one end of each of said pinch rollers having a stepped portion, said stepped portion having a diameter smaller than the diameter of said pinch roller; and

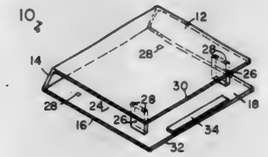
a plurality of pinch roller pressing members secured to the roller shaft, each of said pressing member having a pressing part comprising a spring member that is weaker than the tension spring and makes contact with the small diameter stepped portions of the pinch rollers, whereby the pinch rollers separate from, or contact lightly or strongly a feed roller of a printing paper feed device via said connecting structure by rotation of said switching member.

4,522,521

PRINTER STAND INCLUDING STORAGE AREA FOR FANFOLD PAPER

Douglas Scott, 7081 Great Oaks Rd., Germantown, Tenn. 38138

Filed Aug. 11, 1983, Ser. No. 521,998
Int. Cl.³ B41J *29/02*
U.S. Cl. 400—691 **14 Claims**



1. A printer stand for supporting a printer apparatus and providing a storage area for fanfold paper used by the printer apparatus, which printer stand comprises:

(a) an integral frame element having a general U shape, said frame element having a top sheet element with a back edge and an upper surface on which said printer apparatus is placed, a front sheet element and a bottom sheet element having an upper surface and a back edge, and characterized by an open back end, to define a storage area between said sheet elements for the storage of a stack of fanfold paper used in the printer apparatus placed on the upper surface of the top sheet element, the back edge of the bottom sheet element extending outwardly a defined distance greater than the back edge of the top sheet element, to provide for the free, upward, generally vertical movement of said fanfold paper from the storage area to said printer apparatus;

(b) a paper-restraining means secured to the upper surface of the bottom sheet element and extending across at least a portion of the open back end and positioned generally below the back edge of the top sheet element and having sufficient height to retain said fanfold paper within the storage area, while the paper from the top of said fanfold stack is pulled upwardly in use by said printer apparatus; and

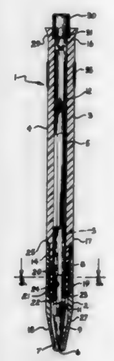
(c) at least two support post means within the storage area and toward the open back end, to support the top sheet element, when the printer apparatus is placed on the upper surface of the top sheet element, said post means being secured to one of said top or bottom sheet element, said post means being spaced slightly apart from an opposite floating surface of the sheet element to which the post means is not secured, when the printer stand is not in use, said post means providing support to the top sheet element when said printer apparatus is placed on said upper surface of said top sheet element.

4,522,522

PENCIL HOLDER

Arthur R. Zeitelhack, 8711 Stark, Kansas City, Mo. 64138

Filed Aug. 6, 1982, Ser. No. 406,002
Int. Cl.³ B43K *23/00*
U.S. Cl. 401—88 **2 Claims**



1. A pencil holder for retaining a wooden pencil and comprising:

(a) first and second holder members coaxially aligned having a through bore, and forming a holder body, said body and said bore being sized to receive a wooden pencil;

(b) said firs t holder member being approximately one third of a length of said body, and having a lower open ended tip formed by a converging conical neck with an aperture so that a conical pencil tip may extend partially therethrough and the remainder firmly abutting against said neck surrounding said aperture; said first holder member haivng an upper end portion with interior threads and an interior annular wall constriction angling sharply toward said bore and positioned between said interior threads and said neck; and

(c) said second holder member having a lower end forming a chuck having external threads and split leaves with a sloping end wall on said leaves selectively engagable with said interior annular wall constriction;

(d) whereby when said first holder member is screwed toward said second holder member said leaves advance and encounter said interior annular wall constriction and flex inwardly into said through bore to firmly engage said leaves end wall with a pencil outer surface received therein for maintaing said pencil in retracted position within said bore and in an extended position, in combination with said converging conical neck, firmly supporting and maintaining said pencil in said extended position in a two position grip.

4,522,523

ENAMEL TOUCH-UP KIT INCLUDING KNIFE BLADE

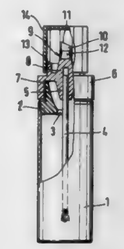
Kurt Vogelsang, Forch, Switzerland, assignor to Kurt Vogelsang GmbH, Hassmersheim, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 512,981
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1982, 3226219
Int. Cl.³ A64B *11/04*; **B65D** *51/24*
U.S. Cl. 401—126 **12 Claims**

1. Paint touch-up kit for repairing paint on automobiles and the like, comprising:

a touch-up paint container;

a screw cap for selectively closing and opening the container;
a touch-up brush;
a base of the brush being attached to the screw cap;
a removable lid covering a hollow space of the screw cap and engageable with a collar of said screw cap;
a rust-removing knife blade accommodated in the hollow



space, which tool is accessible and usable upon removal of the lid;
wherein said knife blade is mounted to a peg-like extension of the screw cap with its base extending in opposition to the brush away from the screw cap; and
wherein the lid is fashioned as a protective cap forming the hollow space, said lid being detachably attached to the screw cap and enclosing the tool on all sides.

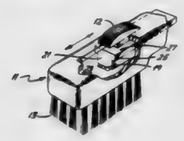
4,522,524

DISPOSABLE TOOTHBRUSH WITH INTEGRAL DENTIFRICE

Arlene Green, 1427 Thornberry Rd., Wyncote, Pa. 19095

Filed Jul. 29, 1983, Ser. No. 518,430
Int. Cl.³ A45D *44/18*; B43M *11/06*
U.S. Cl. 401—183 **2 Claims**





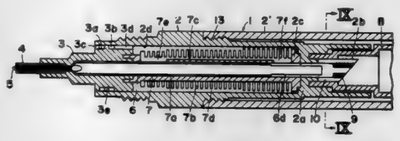
1. A disposable dentifrice dispenser and toothbrush comprising:
(a) a generally cylindrical handle portion forming a dentifrice storage chamber;
(b) a hollow head portion of generally rectangular cross-sectional shape formed integral with said handle portion, said head portion having opposed parallel upper and lower walls;
(c) toothbrushing bristles extending outwardly from the lower wall of the head portion;
(d) an unrestricted internal passage joining the dentifrice storage chamber with the interior of the head portion, permitting unrestricted flow of dentifrice therethrough;
(e) a longitudinally disposed slot formed in the upper wall of the head portion;
(f) means defining a dispensing opening in the lower wall of the head portion for passage of the dentifrice;
(g) a valve member slidably retained within the head portion movable between forward and rearward positions, said valve member having an elongated upper flange portion thereof engaging the inner side of the upper wall of said head portion said valve member having a lower portion of lesser longitudinal and transverse extent than the upper portion engaging the inner surface of the lower wall of the head portion, thereby providing a bypass means around said valve member when in the rearward position; said valve member in the forward position thereof exposing said dispensing opening to permit passage of dentifrice therethrough and in the rearward position thereof engaging over and closing said dispensing opening;
(h) a tab fixedly secured to said movable valve member projecting upwardly through said slot to permit movement of said valve member between said forward and rearward positions;
(i) and the handle portion being fabricated from a manually deformable material which will admit of repeated deformations and recoveries upon being manually squeezed and released, whereby squeezing of the handle portion when said valve member is in its forward position will force dentifrice through the dispensing opening onto said bristles whereas inadvertent squeezing of said handle will not result in movement of said valve member from said rearward to said forward position.

4,522,525

WRITING INSTRUMENT HAVING A NEEDLE SLIDABLY MOUNTED IN A TUBULAR TIP

Sigeru Saito, Kasuga; Takahiko Shimizu, Tokyo, and Takasi Tamura, Soka, all of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1983, Ser. No. 507,226
Claims priority, application Japan, Aug. 3, 1982, 57-118219[U]
Int. Cl.³ B43K *1/06, 5/16, 1/10*
U.S. Cl. 401—258 **11 Claims**



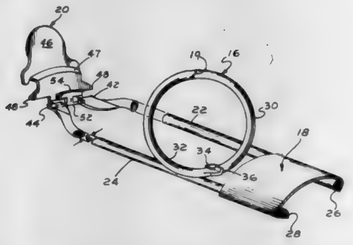
1. In a writing instrument comprising a cylindrical casing having therein an ink reservoir, a tubular writing tip, a cylindrical holder for holding said tip, ink feed means disposed between said cylindrical holder and said ink reservoir for feeding ink in said ink reservoir towards said tip, a needle longitudinally slidably positioned within said tip and normally projecting outwardly from one end of said tip and operable to be depressed when writing force is applied to said tip to forcibly retract said needle within said tip, and a weight element connected to said needle for facilitating the longitudinal movement of said needle within said tip, the improvement comprising:
projection means for limiting the displacement of the weight element rearwardly towards said ink reservoir, said projection means comprising at least one projection formed on and extending inwardly from an inner surface of said casing at a position to be abutted by said weight element, said projection extending longitudinally axially of said casing; and
channel means for feeding ink in said reservoir towards said ink feed means even when said weight element is in abutment with said projection means, said channel means including at least one slit in said casing adjacent said projection means.

4,522,526

RING MECHANISM FOR LOOSE LEAF BINDERS AND METHOD OF MANUFACTURE THEREFOR

Arthur Lozfau, Belchertown, and William H. Lucey, Holyoke, both of Mass., assignors to Dennison National Company, Holyoke, Mass.

Filed Jun. 28, 1982, Ser. No. 392,559
Int. Cl.³ B42F *13/00, 13/22, 3/04, 13/36*
U.S. Cl. 402—37 **5 Claims**



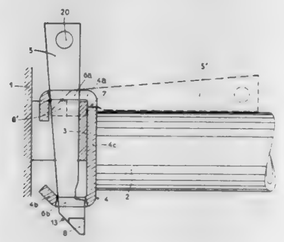
1. Ring mechanism for looseleaf ring binders comprising an arcuate spring metal cover plate having inturned, opposing edge channels, a pair of parallel, spaced metallic rails, oval in cross-section, rotatably disposed within the channels and each having a plurality of mating ring segments affixed on said rails at corresponding spaced locations and forming the rings of said binder, the outer ends of said rails including angularly offset crank arm portions, each having laterally and axially extending tang portion having opposed, generally planar surfaces at its outer end and a pivotable operating lever disposed at each end of the cover plate, said lever having spaced opposed portions coupled with the planar surfaces of said tangs to rotate said rails selectively in opposite directions and thereby carry said ring segments toward and away from each other both to open and close said rings, using said operating lever.

4,522,527

TUBULAR-TYPE SCAFFOLDINGS, METHOD FOR ASSEMBLING THEM AND TO THE HORIZONTAL TRANSOMS INCORPORATED THEREIN

Cyril M. Grandpierre, La Ciotat, France, assignor to Entrepose Travaux Publics, Paris, France

Filed Sep. 14, 1982, Ser. No. 418,191
Claims priority, application France, Sep. 24, 1981, 81 18182
Int. Cl.³ E04G *7/00*
U.S. Cl. 403—49 **12 Claims**



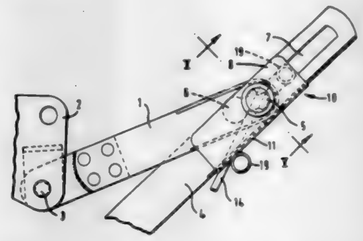
2. Scaffolding of a tubular type composed of vertical elements, hollow sockets fixed thereon and of horizontal transoms comprising, at at least one end of the horizontal transoms, a fork engaged with one of said sockets, comprising a vertical wall which is fixed to said at least one end and two horizontal flanges, the upper horizontal flange comprising an upper slot and the lower horizontal flange comprising a lower slot, said fork bearing a conical pin which is engaged through the slot in said upper flange when in a substantially horizontal rest position, wherein said pin comprises a pivot constituted by at least one projection located on a lateral face of said pin near the narrow end thereof and which abuts against the lower face of said upper horizontal flange, and wherein said pin further comprises means for positioning the pin at rest in a substantially horizontal position so that when said vertical wall of the fork abuts against said socket, the upper edge of said socket comes in abutment against the lower edge of said pin, slightly to the rear of said pivot and causes the pin to pivot to the vertical, to descend by gravity inside said socket and to engage in the slot in the lower flange.

4,522,528

TILT CAB SUPPORT STAY

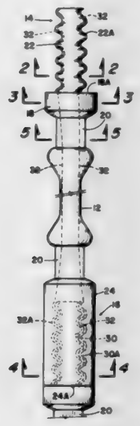
Ronald Bewers, Maldon, England, assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 283,578, Jul. 15, 1981, Pat. No. 4,438,826.
This application May 18, 1983, Ser. No. 495,900
Claims priority, application United Kingdom, Jul. 30, 1980, 8024966
Int. Cl.³ F16C *11/10*
U.S. Cl. 403—61 **9 Claims**



1. A stay having a collapsed position, a first supporting position in which the stay has a second and longer length, the stay comprising first and second arms, a pin, and a channel member having two spaced apart side walls connected by an end wall or web, the two arms having first end regions proximate a first end of each arm to be connected to respective members between which the stay is to extend, and second end regions proximate a second end of each arm formed with longitudinally extending slots, the slotted end regions of the arms overlapping one another and being disposed between the side walls of the channel member, the pin extending between the side walls of the channel member and passing through the slots to thus connect the arms together, the pin being rotatably mounted and having a first axial portion which lies in the slot in the first arm, and a second axial portion which lies in the slot to the second arm, both axial pin portions being of non-circular cross-section, each slot having a wider portion in which the respective axial pin portion is freely rotatable, and a narrower portion comprising surfaces engageable with the axial pin portion through which the respective axial pin portion is not freely rotatable and which narrower portion the respective axial pin portion can enter only when correctly aligned therewith, the wider portion of each slot being at the end thereof remote from the second end of the respective arm, the arrangement being such that in the collapsed position of the stay the pin is carried in the narrower slot portion of the first arm and in the wider slot portion of the second arm, during movement of the stay to the first supporting position of the stay both arms are moved rotatively with respect to the pin and the first arm is moved in translation to permit passage of the first axial pin portion into the wider slot portion of the first arm and the pin is therefore carried in the wider slot portion of both arms, and rotative movement of the second arm with respect to the pin and translational movement of the second arm effects positioning of the second pin axial portion in the narrower slot portion of the second arm such that the pin is carried in a wider slot portion of the first arm and in a narrower slot portion of the second arm.

4,522,529
PRE-STRESSED FIBER-RESIN SUCKER ROD AND METHOD OF MAKING SAME
Edwin E. Conley, P. O. Box 14090, Tulsa, Okla. 74104
Continuation-in-part of Ser. No. 320,463, Nov. 12, 1981,. This application Nov. 26, 1982, Ser. No. 444,684
Int. Cl.³ E21B *17/00*
U.S. Cl. 403—343 **3 Claims**



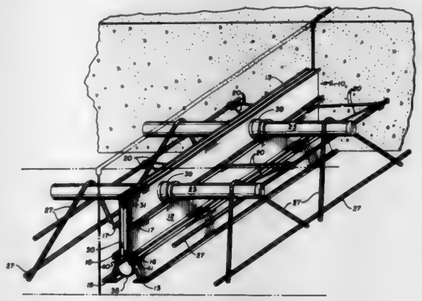
1. An elongated sucker rod having threaded ends and a substantially solid cross-section body therebetween, said rod comprised solely of curable plastic material having formed therein, prior to cure, a plurality of longitudinal fiber strands which have been pre-stressed and, said fiber strands in said solid body portion all lying substantially parallel to the longitudinal axis of said sucker rod, while the portions of said fiber adjacent said threaded ends follow the peaks and valleys of said threads in a longitudinal direction.

4,522,530
SELF-ERECTING ROADWAY MARKING POST
W. Eugene Arthur, 1930 Winton Ave., Bldg. 11, Hayward, Calif. 94545
Filed Dec. 9, 1982, Ser. No. 448,298
Int. Cl.³ E01F *9/01*
U.S. Cl. 404—10 **9 Claims**



1. A self-erecting post adapted for marking a roadway, comprising an elongated flexible and collapsible tube of resilient plastics material and having an annular cross-sectional configuration, said tube having a lower portion adapted to project downwardly into a hole within the ground and an upper portion projecting substantially above the ground, said upper portion of said tube being capable of bending above the ground through an angle of ninety degrees in response to being accidentally impacted by a motor vehicle, a set of spring-like tube retaining members, said lower end portion of said tube having a hole for each said retaining member, said retaining members having lower end portions rigidly secured to the inner surface of said tube and projecting upwardly and outwardly through the corresponding said holes, said retaining members having upper end portions being engagable with the ground in response to inserting said lower portion of said tube into a hole within the ground, an elongated tubular erecting member of resilient flexible material, said erecting member extending within said upper portion of said tube and within said lower portion of said tube between said lower end portions of said retaining members, said erecting member having an intermediate portion disposed for bending with said tube when impacted by the motor vehicle, and said erecting member and the surrounding said tube being cooperatively effective to provide said post with a substantial number of self-erections in response to vehicle impacts on said post.

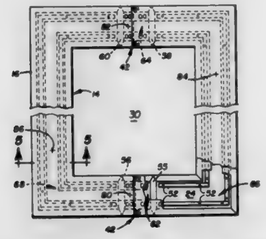
4,522,531
TRANSVERSE JOINT CELL FOR CONCRETE STRUCTURES
Bernard D. Thomsen, 117 S. Mayfair Dr., Mankato, Minn. 56001, and Kenneth L. Thomsen, 11623 Palmer Rd., Minneapolis, Minn. 55437
Filed May 18, 1983, Ser. No. 495,776
Int. Cl.³ E01C *11/02;* **E01F** *5/00*
U.S. Cl. 404—2 **22 Claims**



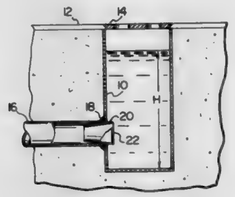
19. A transverse joint cell comprising:
a water-impermeable liner means disposed between adjacent transverse joint edges of concrete pavement, said liner means defining an open cell therebetween;
support means for supporting said liner means;
compressible block means for absorbing compression due to expansion of adjacent concrete panels, and disposed between and throughout the length of said liner means and being constructed and arranged to allow fluids to pass freely downwardly in the joint cell; and
seamless drainage trough means extending transversely through said open cell and in fluid tight relation to said liner means and being constructed and arranged below said compression block means.

4,522,532
BOTTOM-SEATED PORTABLE COFFERDAM AND METHOD OF USE
Ronald M. Fedrick, 416 Clearview Pl., Petaluma, Calif. 94952
Filed Jul. 25, 1983, Ser. No. 516,741
Int. Cl.³ E02D *19/04*
U.S. Cl. 405—11 **27 Claims**

1. A bottom-seated portable cofferdam for providing working access to underwater surfaces which are generally horizontal, comprising
a housing having a bottom opening for permitting access to the underwater surfaces,
skirt means extending generally horizontally about the periphery of the housing, and
first and second seal means each arranged about the periphery of the housing and operatively secured to the skirt means in spaced-apart relation to each other for forming together a differential, pressure chamber open along its bottom and extending about the periphery of the housing, the first and second seal means being generally flexible for mating with the underwater surfaces.



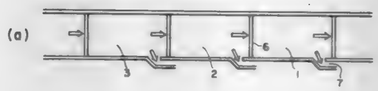
4,522,533
FLOW RESTRICTOR
R. Clark Campbell, Orangeville, and D. Ronald Townsend, Gloucester, both of Canada, assignors to The Corporation of the Town of Vaughan, Ontario and The University of Ottawa, Ottawa, both of, Canada
Filed Jun. 22, 1983, Ser. No. 506,848
Claims priority, application Canada, Jun. 24, 1982, 405883
Int. Cl.³ E03F *3/04, 5/00*
U.S. Cl. 405—36 **14 Claims**



1. A flow restrictor for insertion in the inlet of a substantially horizontally oriented outlet pipe of a catch basin to restrict fluid flow within said pipe to a predetermined maximum, said restrictor being comprised of:
a tapered tubular hollow body portion having a smaller diameter end and a larger diameter end;
a cover plate attached to said larger diameter end;
an aperture having a predetermined cross-sectional area located in said cover plate, said smaller diameter end being open to fluid flow, wherein said predetermined cross-sectional area determines said predetermined maximum fluid flow;
a sleeve member, said tapered tubular hollow body being wedged within said sleeve member, said sleeve member being adapted for insertion into the inlet of said outlet pipe;
wherein said tapered tubular hollow body can be frictionally held within said outlet pipe so that said flow restrictor partly extends from the inlet of said outlet pipe into said catch basin for easy extraction of the flow restrictor from said outlet pipe.

9. The sewer system of claim 8 wherein the aperture of the flow restrictor is in the form of an n sided polygon where n is an integer greater than 2.

4,522,534
CONTROL METHOD FOR OPEN CHANNEL
Fumio Wakamori, Machida; Toshiyuki Noma, Ibaraki; Masao Adachi, Yokohama; Motohisa Funabashi, Sagamihara, and Masayoshi Suzuki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 8, 1984, Ser. No. 577,971
Claims priority, application Japan, Feb. 23, 1983, 58-27561
Int. Cl.³ E02B *13/00*
U.S. Cl. 405—37 **6 Claims**

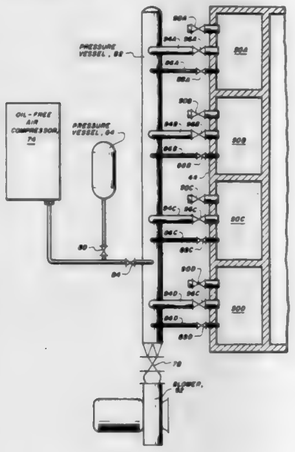


1. A control method for an open channel performed by using an open channel control system comprising gate means for opening and closing the open channel, estimating means for estimating values of parameters of a state in a plurality of reaches into which the open channel is divided by said gate means, and control units for controlling a degree of opening of the gate means on the basis of estimated values of the parameters of a state, such method comprising the steps of:
representing each of the reaches by a three water tank model comprising three imaginary water tanks connected in series with one another and two imaginary conduits connecting the two adjacent imaginary water tanks with each other;
selecting, as the parameters of a state, liquid levels of the imaginary water tanks, flow rates in the imaginary conduits and a flow rate of diverted water from the reach;
providing the three water tank model with equations including the selected parameters of a state;
estimating, in the estimating means, future values of the selected parameters of a state by solving the equations;
determining, in the control unit, the degree of opening of the gate means so as to keep a liquid level of the reach constant on the basis of the estimated future values of the selected parameters of a state.

4,522,535
SURF WAVE GENERATOR
Dirk Bastenhof, Langerak, Netherlands, assignor to Ecopool Design Limited, Channel Islands
Filed Aug. 8, 1983, Ser. No. 521,113
Int. Cl.³ F04D *35/00*
U.S. Cl. 405—79 **10 Claims**

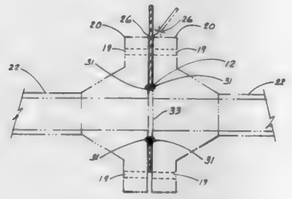
1. For use with a swimming pool, a surf wave generator comprising:
one or more air chamber extending at least partially along one side of said swimming pool, having an opening allowing the lower portion of the chamber to communicate with the lower portion of the swimming pool;
a reservoir of compressed air; and
means to rapidly induce said compressed air from said reser-

voir into said air chamber, displacing water therein into said swimming pool;



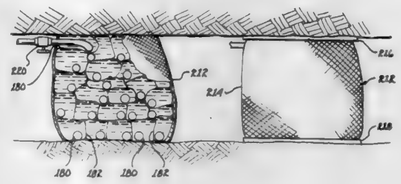
said reservoir having sufficient volume of compresed air to propagate a single travelling wave within said pool.

4,522,536
APPARATUS FOR AND METHOD OF FLUID SEALING CHANNELED FLANGE CONNECTORS OF UNDER-WATER PIPE LINE SECTIONS
Sharon J. Vidrine, Star Rte. Box 279-A, Washington, La. 70589
Filed Aug. 8, 1983, Ser. No. 520,929
Int. Cl.³ F16L *17/06*
U.S. Cl. 405—168 **2 Claims**



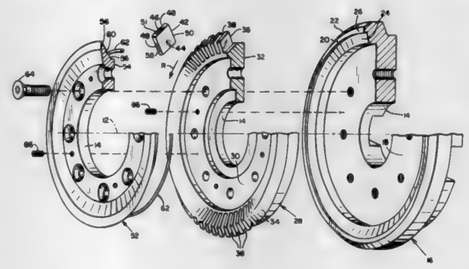
1. Apparatus for fluid sealing channeled flange connectors or underwater pipe line sections, said flange connectors having inner and outer perimeters and opposing annular faces, each defining a circular face channel, and therebeyond a concentric circle of transverse bolt holes for fastening bolts to engage therein, said apparatus comprising:
(a) annular body means defining an inner perimeter, having a greater radius than said flange connectors inner perimeters, for engaging an o-ring sealer adapted to fit in said circular face channels, and defining an outer perimeter adapted to tangentially engage all said bolt holes with said o-ring sealer opposite said flange connectors face channels;
(b) tab means unitary with said annular body and projecting radially outward, normal to and in the place thereof, and scored for breaking flush with outer perimeters of said flange connectors; and
(c) a thumb piece unitary with said tab means and extending transversely and in the plane thereof for manually grasping and inserting said annular body and o-ring sealer between said face channels and in engagement therewith, and for breaking off with a part of said tab means at said score thereafter.

4,522,537
ICE CRIB
David L. Kuck, Oracle, Ariz., assignor to Iceberg Cribs, Inc., Oracle, Ariz.
Filed May 7, 1982, Ser. No. 376,254
Int. Cl.³ E21D *15/00*
U.S. Cl. 405—288 **25 Claims**



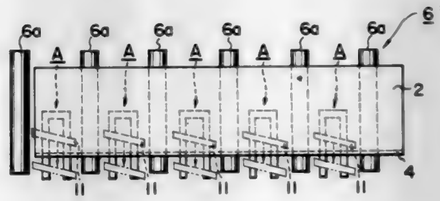
1. An ice crib for filling a space to support an underground roof, said ice crib comprising in combination:
(a) a double walled tubing including a first tube and a second tube, said first tube being an outer tube and said second tube being an inner tube of said double wall tubing;
(b) means for introducing a first fluid into said first tube;
(c) means for conveying through said second tube a second fluid having a lower freezing point than the first fluid and at a temperature below the freezing point of the first fluid; and
(d) means for conforming said ice crib to fill the predetermined space upon introduction of the first fluid and conveyance of the second fluid;
whereby, the second fluid will draw heat from the first fluid to freeze the first fluid and develop said ice crib of solid mass sized commensurate with the predetermined space to be filled.

4,522,538
MILLING CUTTER WITH MULTIPLE INDEXABLE CUTTING INSERTS
Harold W. Lindsay, 2451 NW. 30th, Portland, Oreg. 97210
Filed Nov. 7, 1983, Ser. No. 549,475
Int. Cl.³ B26D *1/12*
U.S. Cl. 407—35 **3 Claims**



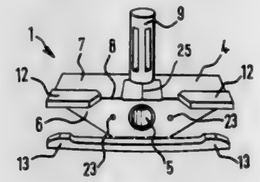
1. A milling cutter comprising,
a body having an annular surface concentric with the axis of the cutter and located inwardly from one end of the body, the body having a rim extending radially outwardly of the annular surface, the rim having an annular seating surface formed thereon, the rim forming a lip around the seating surface;
a spacer ring having a first annular exterior surface and a second annular exterior surface parallel to the first surface and adapted to contact the annular surface of the body, the spacer ring being seated in contact with the body, the spacer ring having a rim, the spacer ring rim having a surface generally congruent to the annular seating surface of the body rim such that said last-named surface is adjacent but not in contact with the annular seating surface of the body rim when the spacer ring is seated in contact with the body, the spacer ring rim having a plurality of generally radial slots extending completely therethrough;
a cutting insert received in each of the slots in the spacer ring rim, the cutting insert having a plurality of sides formed between parallel faces, a first side of the cutting insert being supported by the annular seating surface of the body rim, the lip thereof being adapted to prevent radially outward movement of the insert;
a retaining ring having an exterior surface generally congruent to the first annular surface of the spacer ring, a portion of the exterior of the exterior surface of the retaining ring being adapted to engage a second side of the cutting insert; and
means clamping the retaining ring, the spacer ring and the body together, whereby the insert-engaging portion of the exterior surface of the retaining ring clamps the insert against the annular seating surface of the body rim.

4,522,540
METHOD AND APPARATUS FOR REMOVING CUTTING BURR STICKING TO LOWER SURFACE OF SLAB
Nobuhisa Hasebe; Hiroshi Kawada, both of Yokohama; Naoki Yokoyama, and Shigeki Komori, both of Kawasaki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 16, 1983, Ser. No. 475,889
Claims priority, application Japan, Apr. 9, 1982, 57-58276; Apr. 9, 1982, 57-58277
Int. Cl.³ B23D *1/00, 1/26*
U.S. Cl. 409—293 **4 Claims**



1. A method for removing a cutting burr produced when longitudinally fusion-cutting a slab and sticking to the lower surface of said slab along the fusion-cutting line, which comprises the steps of:
placing at least one slab each having said cutting burr on a roller table extending horizontally with the lower surface having said cutting burr of said at least one slab down; fixing said at least one slab onto said roller table; lifting at least one cutter of at least one burr cutting machine provided below said roller table to bring said at least one cutter into contact with said lower surface having said cutting burr of said at least one slab; and horizontally moving said at least one cutter toward the line of said cutting burr of said at least one slab while keeping said contact with said lower surface to cut off said cutting burr by means of a knife of said at least one cutter;
characterized by:
placing a slab having said cutting burr on said roller table so that the line of said cutting burr agrees with the travelling direction of said roller table;
transferring said slab on said roller table up to the position of said at least one burr cutting machine, and fixing said slab onto said roller table;
horizontally moving said at least one cutter of said at least one burr cutting machine toward the line of said cutting burr of said slab in the direction intersecting the travelling direction of said roller table substantially at right angles until said at least one cutter passes the line of said cutting burr, to cut off a part of said cutting burr of said slab by a length corresponding to the total length of a knife of said at least one cutter by means of said knife of said at least one cutter, and horizontally pulling said at least one cutter back to the original position thereof;
after releasing said fixing of said slab, forwarding said slab on said roller table in the travelling direction of said roller table by a distance substantially equal to said total length of said knife of said at least one cutter; and,
repeating at least once said cut-off of said cutting burr of said slab by means of said at least one cutter, thereby substantially completely removing said cutting burr of said slab.

4,522,539
DOWELLING JIG
Andrew R. Gibbs, Stockton Near Rugby, England, assignor to Stanley Tools Limited, Sheffield, England
Filed Feb. 14, 1983, Ser. No. 466,291
Claims priority, application United Kingdom, Mar. 2, 1982, 8206004
Int. Cl.³ B23B *49/02*
U.S. Cl. 408—72 R **10 Claims**



1. A dowelling jig for use in drilling dowel-holes for dowels, comprising a body member having two mutually perpendicular faces which intersect along a reference-edge line, a through-hole therein to guide a drill extending perpendicularly to and opening onto a first one of said faces, means to locate said body member upon an edge of a piece of boarding so that the through-hole is positioned to guide the drill for drilling a dowel-hole in the edge of the piece of boarding with the boarding edge engaging against said first face, said locating means having abutment means coplanar with the second face to locate one face of the piece of boarding substantially coplanarly with said second face of the body member at said reference-edge line for the drilling of the dowel-hole in the edge of the piece of boarding, and a peg in a fixed position spaced from the reference-edge line and projecting perpendicularly from the second one of said faces of the body member perpendicularly to the axis of the through-hole such that the peg can be located in the dowel-hole drilled in the edge of the piece of boarding with said boarding edge engaged against said second face for locating said through-hole for drilling a corresponding dowel-hole in another member for dowelling the piece of boarding to said other member.

4,522,541

STUD FASTENER RECEPTACLE

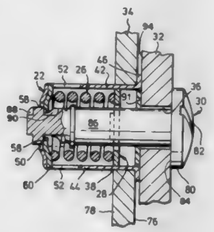
Richard H. Bidwell, Farnham, England, assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed May 5, 1983, Ser. No. 492,148

Claims priority, application United Kingdom, May 10, 1982, 8213497

Int. Cl.³ A44B *17/00*

U.S. Cl. 411—554 **5 Claims**



1. A receptacle for receiving and securing a stud to enable a pair of members to be fastened together, said receptacle being mounted in use in a rectangular aperture in one of said members, and said receptacle comprising a housing for location in said aperture, said housing being substantially U-shaped and comprising a base at one end and a pair of depending opposed substantially flat legs defining an axial direction of said receptacle, each of the legs having an outwardly extending flange at its end remote from the base for engaging the front face of said one member, the sides of said legs preventing rotation of said receptacle in said aperture, and a non-circular element rotatable in said housing between a first position in which it is withdrawn from engagement with the rear face of said one member and a second position in which it is engaged with said rear face of said one member; and means for securing said stud within said receptacle, wherein each of said legs has an inturned flange disposed along each side, said flanges partially closing the sides of said receptacle between said legs, one diametrically opposite pair of said flanges defining a slot transverse to the axis of said receptacle and the pair of opposed ones of said flanges on each side of said receptacle defining therebetween an elongate slot extending between the end of the flanges remote from the base and the respective transverse slot, said non-circular element being rotatable in said housing between a first position in which it is held in said transverse slot and a second position in which it is located in said elongate slots and biased in use against the rear face of said member by said spring to lock said receptacle on said member.

4,522,542

APPARATUS FOR PRODUCING FINISHED BOOKLETS

James C. Minor, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 11, 1983, Ser. No. 484,068

Int. Cl.³ B42C *1/00, 3/00, 19/00*

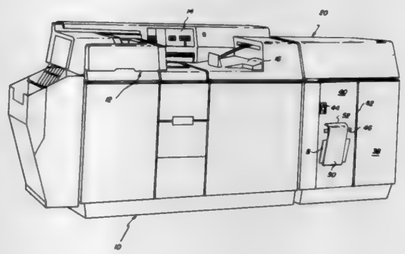
U.S. Cl. 412—25 **15 Claims**

1. In apparatus for receiving a plurality of sheets and producing booklets, the apparatus having (1) an assembly station inside the apparatus where a set of sheets are assembled together to from a booklet, (2) a collection station inside the apparatus for receiving booklets delivered from the assembly station, and (3) a housing substantially enclosing the assembly station and the collection station, the housing having a door movable between (i) a closed position for limiting access by an operator to the collection station and (ii) an open position for permitting an operator to remove booklets in the collection station, the improvement comprising:

means defining a passage for a booklet from inside the housing to a position spaced from the stations and where the booklet is outside the housing and accessible to an operator without opening the door; and

means for engaging a booklet after it is assembled in the assembly station and for delivering the booklet into the passage without moving the door from its closed position to its open position.

6. In apparatus for producing finished booklets from sets of sheets fed seriatim to the apparatus, the apparatus having (1) a housing, (2) an assembly station inside the housing where a set of sheets can be assembled and secured together to form a booklet, (3) a collection station inside the housing for receiving a plurality of finished booklets from the assembly station, and



(4) means for transporting a finished booklet along a path from the assembly station to the collection station, the housing having a door movable between an open position and a closed position, the door when in its closed position being effective to limit access by an operator to the assembly station and the collection station; the improvement comprising:

means on the outside of the housing for holding a booklet;

an opening in the housing defining a passage for a booklet from inside the housing to the holding means; and

means for engaging a booklet after it is produced in the assembly station and for delivering the booklet through the passage into the holding means without moving the door from its closed position.

4,522,543

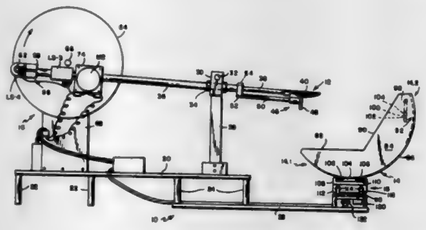
DEVICE FOR FEEDING INVALIDS

Eric Robinson, Manchester, N.H., assignor to Robert Rigoli, Norfolk, Mass.

Filed Jan. 23, 1984, Ser. No. 572,846

Int. Cl.³ A47G *21/08*

U.S. Cl. 414—9 **19 Claims**



1. Apparatus for feeding invalids comprising a spoon for presenting a portion of food to the invalid, a receptacle for containing food, means for supporting and moving the spoon from an at-rest position above the receptacle in a vertical orbit from said at-rest position above the receptacle into the receptacle along an arcuate path such that the spoon is plunged into the receptacle and then raised from the receptacle to a generally horizontal position and moved along a generally rectilinear path to present the portion of food contained by the spoon to the invalid and a scraper located in the path of said rectilinear movement of the spoon to remove excess food carried by the spoon before the spoon leaves the receptacle to return the excess food to the receptacle, said means being operable to retract the spoon following a predetermined interval to said initial at-rest position.

4,522,544

HANDLING SHEETS OF MATERIAL

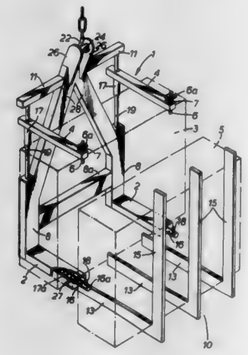
Ramesh C. R. Shah, Greater Manchester; Hugh J. Clare, Merseyside, and Ronald F. Berry, Nr. Wigan, all of England, assignors to Pilkington Brothers p.l.c., St. Helens, England

Filed Nov. 2, 1982, Ser. No. 438,481

Claims priority, application United Kingdom, Nov. 10, 1981, 8133875

Int. Cl.³ B66C *1/24, 1/34*

U.S. Cl. 414—330 **9 Claims**



1. A sheet handling device for moving a batch of sheets relatively to a stack of vertically supported sheets, comprising lower support means for supporting the lower edges of the batch, upper support means for engaging the back sheet of the batch to maintain the batch substantially vertical, and means for moving the lower support means in order to move the batch relatively to the stack, and wherein said lower support means includes slidable extension means for extending the length of the lower support means as a batch is separated horizontally from a stack.

4,522,545

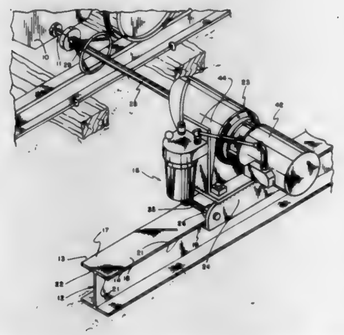
HOPPER CAR GATE OPENER AND METHOD OF OPERATING A HOPPER CAR GATE

George W. Peckham, Derby, Kans. 67037

Filed Oct. 11, 1983, Ser. No. 540,760

Int. Cl.³ B65G *67/24*

U.S. Cl. 414—376 **9 Claims**



1. In a freight hopper car of the type having a plurality of hoppers with rack and pinion operated gates individual to each hopper, the improvement comprising an elongated member having opposed flanges defining a fixed track, a trolley element mounted on the track supported by and movable along a top surface of each flange, a portion of said trolley element underlaying and spaced from a bottom surface of each flange, and a torque producing unit mounted on the trolley element operable to generate a twisting moment in a predetermined rotational direction to drive said pinion, reaction to said twisting moment being effective to rotate the trolley element relative to the track so that said portion of said trolley element underlaying said bottom surface moves into contact with said bottom surface of each flange effective to seize the trolley frictionally and releasably to the track.

4,522,546

CONTAINER-HANDLING SYSTEM WITH RAIL/RAIL AND ROAD/RAIL TRANSFER

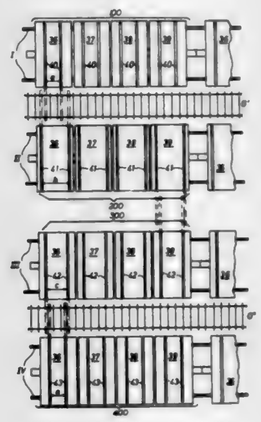
Karl Ringer, Frauenberg 30, 7967 Bad Waldsee, Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 418,294

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136687

Int. Cl.³ B65G *67/00*

U.S. Cl. 414—343 **8 Claims**



1. In a railroad station having at least one main track for freight trains with container-carrying flatcars,

the combination therewith of a pair of ancillary tracks flanking said main track, respective sets of independently movable self-propelled transfer vehicles on said ancillary tracks, and support means on each transfer vehicle extendable transversely to said tracks for enabling the movement of a selected container onto such vehicle from a flatcar aligned therewith and vice versa, said support means being further extendable across at least part of said main track in the absence of a train thereon for facilitating a movement of a container from a transfer vehicle of one set onto an aligned transfer vehicle of the other set, each of said transfer vehicles comprising a wheeled base and a pluality of independently elevatable superstructures adjoining one another in the longitudinal direction of the vehicle for engagement with individual unit-size containers occupying a submultiple of the length of a flatcar, said support means comprising a pair of transversely extending transport arms on each of said superstructures, the separation of the transport arms of each pair in the direction of the tracks being identical for all pairs on all transfer vehicles of one of said sets but differs from the separation of the transport arms of the pairs on the transfer vehicles of the other of said sets for enabling an interleaved position-

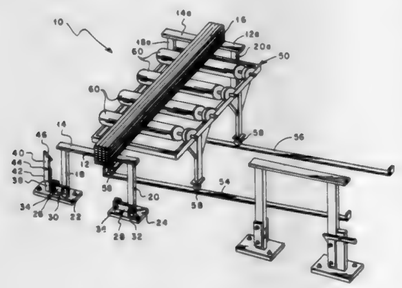
ing of pairs of transport arms of aligned vehicles of said sets extended toward each other across said main track.

4,522,547

HEAVY LOAD CONVEYOR SYSTEM

C. Staton Douthit, and Edward R. Kirby, both of Dallas, Tex., assignors to Associated Truss Company, Dallas, Tex.

Filed May 23, 1983, Ser. No. 496,844
Int. Cl.³ B65G *67/02*
U.S. Cl. 414—391 **8 Claims**



1. A heavy load conveyor system comprising in combination:

substantially horizontal support means having a working surface for supporting a heavy load;

a plurality of substantially vertical legs supporting the support means;

base means;

a plurality of links corresponding to the plurality of legs, each link being pivotally connected at one end to a leg near the bottom of the leg and pivotally connected at the opposite end to the base means, wherein the links are of substantially the same length between pivot points and are pivoted in the same direction whereby the support means can be moved horizontally and vertically by rocking the links; and

a removable link brace including two support surfaces for providing abutting support to two predetermined surfaces of at least one link in a substantially vertical position when said removable link brace is in an abutting support position, at least one of said two support surfaces being disengagable from said at least one link to allow said at least one link to be rocked from said substantially vertical positon.

4,522,548

AERIAL WEAPONS HANDLING TRAILER

Norman D. Oswald; Robert R. Dean, both of Duncanville, and Harry S. Mankey, Dallas, all of Tex., assignors to Standard Manufacturing Co., Inc., Dallas, Tex.

Filed Sep. 28, 1982, Ser. No. 426,220
Int. Cl.³ B60P *3/00*
U.S. Cl. 414—458 **19 Claims**

10. An aerial weapons handling trailer for receiving, transporting and lifting weapons packages characterized by a predetermined width comprising:

a frame including first and second longitudinally extending beams and a cross beam interconnecting the front ends of the longitudinally extending beams;

the longitudinally extending beams having inwardly facing surfaces spaced apart further than the predetermined width of the weapons package;

at least two front wheels and at least two rear wheels for supporting the front and rear ends of the frame, respectively;

means supporting the front and rear wheels for pivotal movement between first orientations wherein the wheels support the frame for movement in a direction extending substantially perpendicular to the longitudinally extending beams of the frame;

a plurality of lift arms;

means pivotally supporting the proximal ends of at least two of the lift arms on the first longitudinally extending beam of the frame with the lift arms extending substantially parallel to each other;

the lift arms being pivotable between a first position, wherein the distal ends thereof are disposed adjacent a plane defined by the bottom surfaces of the trailer wheels, and a second position, wherein the distal ends of said lift arms are disposed above the proximal ends thereof, the lift arms including:

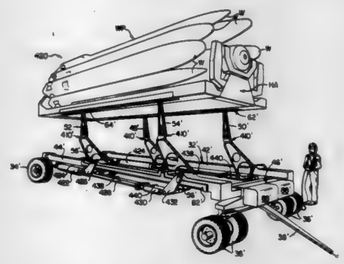
(a) first portions, including the proximal ends thereof;

(b) third portions, including the distal ends thereof; and

(c) offset portions rigidly interconnecting the first and third portions thereof;

the first portions of the lift arms supported on the first longitudinally extending beam being spaced from the first portions of the corresponding lift arms supported on the second longitudinally extending beam a distance greater than the predetermined width of the weapons package, such that clearance is maintained between the first portions of the lift arms and the weapons package as the lift arms pivot between the first and second positions;

a pair of lift beams including a first lift beam supported on the distal ends of the lift arms which are in turn pivotally supported on the first longitudinally extending beam of the frame and a second lift beam supported on the distal



ends of the lift arms which are pivotally supported on the second longitudinally extending beam of the frame;

the lift beams having outside surfaces which are spaced apart less than the inner surfaces of said first portions of said lift arms, thereby allowing said lift beams to be lowered between said first portions of said lift arms;

the outwardly facing surfaces of the third portions of the lift arms supported on the first longitudinally extending beam being spaced from the outwardly facing surfaces of the third portions of the corresponding lift arms supported on the second longitudinally extending beam a distance substantially no greater than the distance between the outermost lateral surfaces of said lift beams, thereby allowing said lift arms to pivot upwardly and insert said lift beams, said third portions of said lift arms and the weapons package upwardly through an opening of minimum clearance with respect to the weapons package, such that the third portions of the lift arms do not extend from within the outermost lateral periphery of the weapons package as the lift arms pivot between the first and second positions;

the first and third portions of each lift arm extending from the offset portion thereof to form an obtuse angle, such that when the lift arms are in the first position, the first portions thereof extend downwardly from the frame and the third portions thereof extend substantially parallel to the plane defined by the bottom surfaces of the trailer wheels;

means connecting the distal ends of the lift arms to the lift beams for pivotal movement with respect thereto; and

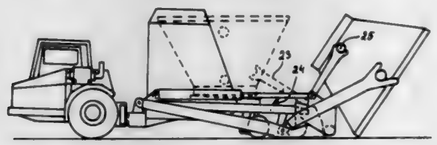
hydraulic cylinder means connected between the frame and lift arms for selective actuation to pivot the lift arms and thereby raise and lower the lift beams.

4,522,549

TRANSPORT VEHICLE FOR A SLAG RECEPTACLE

Karl-Erik Niva, Kiruna, Sweden, assignor to Kiruna Truck AB, Kiruna, Sweden

Filed Apr. 14, 1983, Ser. No. 485,097
Claims priority, application Sweden, Apr. 16, 1982, 8202397
Int. Cl.³ B60P *1/64*
U.S. Cl. 414—474 **14 Claims**



1. A transport vehicle for a slag receptacle, comprising

an essentially rectangular load surface having a forward end for connection to a towing vehicle and a rearward end;

a wheel assembly mounted at the rearward end of said load surface and supporting said load surface on the ground;

a subframe comprising two longitudinally extending side beams, each having a first and a second end and a transversely extending cross-beam interconnecting said first ends of said two side beams, said subframe surrounding said load surface at three sides thereof, so that said cross-beam extends across the rearward end of said load surface, said second ends of said two side beams being connected to a front portion of said load surface;

two lifting arms adapted for engagement with a receptacle positioned behind the transport vehicle for lifting a receptacle upwardly and forwardly to said load surface and for lifting a receptacle upwardly and rearwardly to remove it from said load surface, each of said lifting arms being pivotally connected to said subframe at positions adjacent said first ends of said side beams;

at least two hydraulic lifting cylinders for powering said two lifting arms, said lifting cylinders being pivotally connected to and supported by said side beams and pivotally engaging said lifting arms for moving said lifting arms and thereby lifting a receptacle;

depending ground-engaging means connected to said cross-beam;

means for lowering said depending ground-engaging means to abut the ground for lifting of a receptacle and for raising said ground engaging means off the ground for transporting a receptacle.

4,522,550

DETACHABLE PLATFORM FOR TRUCK BODY OR TRAILER

David N. Whitehouse, 1542 Woodland, Montreal, Quebec, Canada

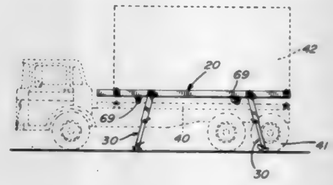
Filed Aug. 2, 1983, Ser. No. 519,726
Claims priority, application Canada, Aug. 3, 1982, 408623
Int. Cl.³ B60P *1/64*
U.S. Cl. 414—498 **5 Claims**

1. A detachable platform for supporting a container or the like, the platform being adapted for detachable mounting in a truck body or trailer, comprising

a substantially flat frame assembly having at least two hollow longitudinal structural beams,

at least four support legs mounted on the frame assembly, each leg having at least one extension member with a support pad at the base thereof, and a horizontal side extension portion at the top of the extension member, to extend the legs outboard of the frame assembly and permit the truck body or trailer to pass between the legs under the frame assembly,

a self-contained jacking means integral with the frame assembly having at least four jacking points for positioning on the truck body or trailer to raise the platform in a single lift off the truck body or trailer and permit the legs to be extended



outward and lowered the jacking means includes at least one double acting hydraulic jack having a piston connected to two connecting means, each connecting means being connected to the piston and to linkage means at each jacking point, such that movement of the connecting means by the jack raises or lowers the platform from the jacking point.

4,522,551

REFUSE STORAGE AND DISCHARGE APPARATUS

James W. Henneberry, 170 Brixton Rd. S., Garden City, N.Y. 11530

Filed Apr. 18, 1983, Ser. No. 485,725
Int. Cl.³ B65F *3/28*
U.S. Cl. 414—517 **7 Claims**

1. Refuse storage and discharge apparatus comprising

a longitudinal container having a rearward end defining an opening and a forward end containing a hydraulically actuated multistage telescopic cylinder device longitudinally relatively movable between a retracted position adjacent the forward end and an extended position generally spanning the distance between the forward and rearward ends,

the device being adapted to be operatively connected to an ejector panel for moving the panel longitudinally rearwardly through the container from the vicinity of the forward end to the vicinity of the rearward end upon actuating the device from its retracted position to its extended position for discharging through the opening refuse store in the container rearwardly of the panel,

a hydraulically actuated compacting piston-cylinder assembly disposed rearwardly of the opening and longitudinally relatively movable reciprocally along a stroke path having an amplitude defined between a rearward initial position generally rearwardly of the opening and a forward final position generally adjacent the opening.

the assembly being adapted to be operatively connected to refuse pushing means for conveying successive refuse portions forwardly into the container and for increasingly compacting each such conveyed refuse portion forwardly against the ejector panel or against the cumulative previously compacted successive refuse portions situated between the pushing means and the ejector panel upon actuating the assembly to move the assembly along the stroke path from its initial position to its final position, and

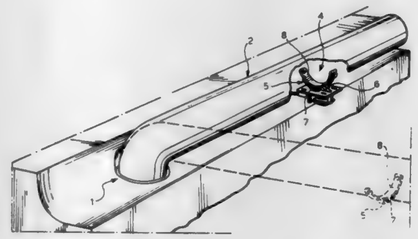
control means for individually controlling the actuation of the device and of the assembly, and including a device hydraulic fluid circuit, a device actuation control valve, a dump valve, an electric circuit, an assembly hydraulic fluid circuit, an assembly actuation control valve, a threshold electrical switch, and amplitude limiting switch means,

the device fluid circuit being adapted to be connected to a pressure source of hydraulic fluid, and containing the device control valve arranged for independent operation to supply hydraulic fluid to the device for moving the device rearwardly to its extended position and to lock hydraulically the device operatively in its extended position under static hydraulic pressure and against discharge of such fluid therefrom and in turn against forward movement of the device toward its retracted position, and also containing the dump valve arranged as a normally closed electrically energizable dump valve in the electrical circuit for intermittent energization to open the dump valve, independently of the operation of the device control valve, for intermittent periods of time to discharge incremental amounts of the static pressure fluid from the device to permit in turn concordant incremental forward movement of the device toward its retracted position,

the assembly fluid circuit being adapted to be connected to a pressure source of hydraulic fluid, and containing the assembly control valve arranged for independent operation to supply hydraulic fluid to the assembly for moving the assembly along its path forwardly from its initial position to its final position under an increasing dynamic fluid pressure up to a predetermined threshold operating fluid pressure and in turn for moving the assembly back to its initial position, and also containing the threshold switch arranged as a normally open and temporarily closable hydraulic pressure responsive threshold electrical switch in the electrical circuit for energizing the dump valve and operatively pressure connected to the assembly fluid circuit for sensing the pressure of the fluid supplied to the assembly and for automatically closing the threshold switch temporarily each time the predetermined threshold fluid pressure is reached during forward movement of the assembly toward its final position so as to energize the dump valve for incremental forward movement of the device automatically toward its retracted position under the dynamic pressure of the fluid supplied to the assembly until such pressure decreases to below the predetermined threshold fluid pressure and thereby permit continued optimum compacting forward movement of the assembly toward its final position, and

the amplitude limiting switch means being arranged as normally closed switch means in the electrical circuit and selectively positioned adjacent the stroke path for operative actuation by the assembly for opening the switch means to limit the electrical energization of the dump valve to the amplitude between the initial position and final position of the assembly independently of the pressure sensed by the threshold switch.

4,522,552
COMBINE HARVESTERS
Giuseppe Raineri, Bassano del Grappa, Italy, assignor to Pietro Laverda S.p.A., Breganze, Italy
Filed May 26, 1983, Ser. No. 498,439
Claims priority, application Italy, Jun. 3, 1982, 67715 A/82
Int. Cl.³ B60P 1/40
U.S. Cl. 414—523 **2 Claims**



1. A combine harvester including a grain storage tank, an orientable discharge tube for discharging grain from the tank, and a hydraulic jack for moving the discharge tube between an extended position in which it projects from the combine harvester, and a retracted position in which it is housed within the space occupied by the combine harvester, wherein the improvement comprises catch means which are snap-engageable by the discharge tube when the latter is brought into its retracted position so as to lock the discharge tube in this retracted position and hydraulically controlled actuator means for releasing the catch means when the hydraulic jack moves the discharge tube towards the extended position,

wherein the said catch means includes a catch member carried by the structure of the combine harvester, a striker member carried by the discharge tube for cooperation with the catch member to lock the discharge tube in its retracted position, and resilient means biassing the catch member towards an active position of restraining the striker member, said striker member and said catch member having respective cam surfaces arranged to cooperate with each other to allow snap-engagement when the discharge tube is brought into its retracted position, and

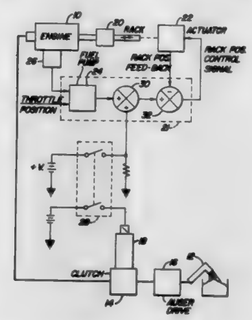
wherein said actuator means includes a single-acting hydraulic cylinder arranged to move the catch member away from its active restraining position against the action of the resilient means, said single-acting hydraulic cylinder having an active chamber which communicates with the chamber of the hydraulic jack which is supplied with pressurized fluid when the hydraulic jack moves the discharge tube towards its extended position.

4,522,553
COMBINE POWER BOOST SYSTEM
Leon F. Nelson, Cedar Falls; Dan T. Montgomery, Waterloo, both of Iowa; Michael K. Wyffels, Geneseo, Ill., and William J. Sikula, Jr., Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Sep. 13, 1982, Ser. No. 417,236
Int. Cl.³ B60P 1/42
U.S. Cl. 414—526 **6 Claims**

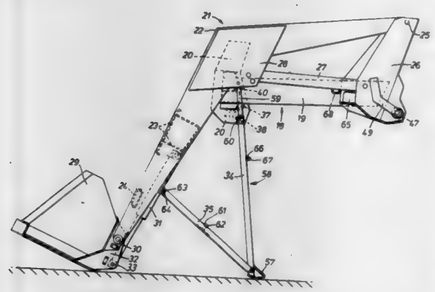
1. In an engine-driven combine having an unloading auger powered by the engine and capable of being operated while the combine is traveling, an engine power control system comprising:

switch means manually operable to activate and de-activate the unloading auger; and

control means coupled to the switch means for momentarily increasing power produced by the engine to prevent reduction of combine travel speed in response to activation of the unloading auger by operation of the switch means.

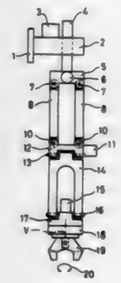


4,522,554
TRACTOR FRONT LOADER
Frederick Williams, Warrington, and Anthony D. Coe, Manchester, both of England, assignors to David Brown Tractors Ltd., Meltham, England
Filed Nov. 18, 1983, Ser. No. 553,261
Claims priority, application United Kingdom, Nov. 24, 1982, 8233529
Int. Cl.³ E02F 3/70
U.S. Cl. 414—686 **3 Claims**



1. A front loader designed for drive-in attachment to a tractor, comprising front and rear bracket means adapted to be permanently secured to the tractor frame and a detachable main portion including a sub-frame adapted to be temporarily secured to the bracket means, a loader boom assembly pivotably mounted on the sub-frame, a loader bucket or the like pivotably mounted on the boom assembly, two hydraulic piston-and-cylinder assemblies disposed at respective sides of the boom assembly and pivotally connected between the sub-frame and points intermediate the length of the boom assembly for pivoting said assembly, and at least one hydraulic piston-and-cylinder assembly for pivoting the bucket, wherein two support struts disposed at respective sides of the boom assembly are pivotable between a stowed position, a first deployed position in which they support the rear end of the detachable main portion at drive-in height when it is not attached to the tractor, and a second deployed position in which they engage with abutments on the sub-frame and are secured to the hydraulic piston-and-cylinder assemblies for pivoting the boom assembly to lock said assembly in its fully raised position whilst the detachable main portion is attached to the tractor.

4,522,555
HANDLING APPARATUS
Toshitsugu Inoue, Kyoto; Akiyoshi Nakada, Suita; Haruo Kaji, Kadoma; Makoto Doi, Sakai, and Kuninori Takezawa, Ikeda, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Sep. 20, 1982, Ser. No. 420,571
Claims priority, application Japan, Sep. 25, 1981, 56-152779
Int. Cl.³ B25J 9/00
U.S. Cl. 414—733 **4 Claims**



1. Handling apparatus comprising:

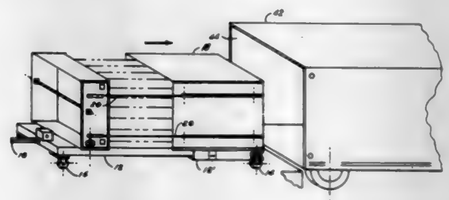
first and second parallelogram linkage mechanisms having a common link, the pivotal axes of the links of said first mechanism being disposed at right angles to those of said second mechanism and the axes of said common link comprising said first mechanism being in a plane substantially parallel to a plane including the axes of said common link comprising said second mechanism;

holding means connected to a link of one of said mechanism opposite said common link;

first power-operated means connected to said first mechanism for angularly moving the connected links thereof relative to each other; and

second power-operated means independent of said first power-operated means connected to said second mechanism for angularly moving the connected links thereof relative to each other.

4,522,556
METHOD AND DEVICE FOR PACKAGING AND SHIPPING HIGH-LOFT BATTING
Sumner Shapiro, Albany, N.Y., assignor to Star Textile Research, Inc., Albany, N.Y.
Filed Sep. 29, 1982, Ser. No. 427,549
Int. Cl.³ B65G 67/00
U.S. Cl. 414—786 **4 Claims**



1. A method of loading long objects into a truck compartment comprising:

placing said objects into a device having plungers and corresponding tubular cells arranged in the cross-sectional shape of said compartment with said plungers being arranged and positioned to move in and out of said cells as

said cells and plungers are moved with respect to each other;

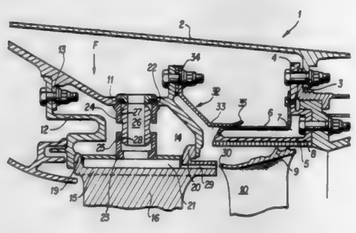
moving said device into said compartment horizontally and removing said objects from said cells without changing their relative spatial relationship by withdrawing said device from said compartment while said objects are maintained in a stacked configuration by said plungers.

4,522,557

COOLING DEVICE FOR MOVABLE TURBINE BLADE COLLARS

Jean G. Bouiller, Brunoy, and Jean-Claude L. Delonge, Corbeil-Essonnes, both of France, assignors to S.N.E.C.M.A., Paris, France

Filed Jan. 5, 1983, Ser. No. 455,732
Claims priority, application France, Jan. 7, 1982, 82 00121
Int. Cl.³ F01D *11/02*
U.S. Cl. 415—115 **5 Claims**



1. A cooling device for the peripheral shroud of movable blades of a turbine which includes a main flow through which gas circulates and including a rotor with a turbine ring forming a stationary part of said rotor, comprising:

a turbine nozzle located adjacent said movable blades and including a plurality of stationary turbine nozzle vanes;

an external chamber in communication with an air supply for providing cooling air to said stationary turbine nozzle vanes of said turbine nozzle and passing said air through a cavity portion formed adjacent said turbine nozzle vanes and to said turbine ring; and

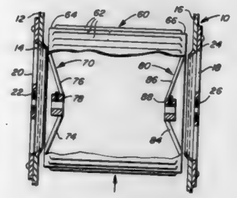
passage means in communication with said chamber for directing the air toward said peripheral shroud of the movable blades of the turbine rotor for ensuring cooling of said shroud from a leading edge portion thereof located on an upstream side thereof in relation to the direction of said gas circulation in the main flow wherein said passage means further comprises a plurality of cooling holes and means for calibrating said cooling holes so as to allow precise control of the rate of cooling air flowing to said shroud, said cooling holes further being circumferentially slanted for directing along an optimum angle jets of air on said leading edge of said shroud of the movable blades and for obtaining jets of air within a range of direction from parallel to the flow to slightly opposed to the flow without a centripetal radial component and wherein said leading edge portion of said shroud further comprises a raised profile downstream of said cooling holes, said profile being raised in relation to the extension of the shroud itself, thereby allowing a more efficient impingement cooling of said leading edge and a more efficient cooling of said shroud by an improved flow on an internal side of said shroud.

4,522,558

BLOWER WHEEL APPARATUS

Edward J. Johnson, Tempe, and Robert L. Koble, Jr., Phoenix, both of Ariz., assignors to Phoenix Manufacturing, Inc., Phoenix, Ariz.

Filed Jan. 3, 1984, Ser. No. 567,678
Int. Cl.³ F04D *29/28*
U.S. Cl. 416—187 **16 Claims**



1. Blower wheel apparatus having a first overall width for installation into a blower housing having a pair of sides spaced apart from each other and a pair of circular openings aligned with each other in the sides and in which are disposed bearing means in which a shaft rotates, and the blower wheel apparatus further having a second width between the pair of sides of the blower housing less than the first overall width of the blower wheel apparatus, the blower wheel apparatus comprising, in combination:

rim means, including a first rim and a second rim spaced apart from each other and a plurality of blades secured to and extending between the first and second rims; and

spider means, including

a first spider secured to the first rim,

a first collar secured to the first spider and adapted to be secured to the shaft for rotating the blower wheel apparatus,

a second spider secured to the second rim,

a second collar secured to the second spider and adapted to be secured to the shaft for rotating the blower wheel apparatus, the overall width of the blower wheel apparatus defined as including the collars, and

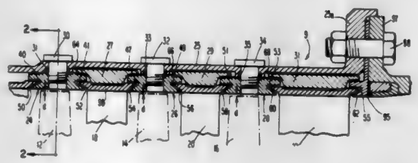
the first and second spiders are adapted to deflect inwardly to decrease the overall width of the blower wheel apparatus to allow the blower wheel apparatus to be inserted into a blower wheel housing, and adapted to deflect outwardly after insertion into the housing and into the openings of the blower housing and disposed against the bearing means for securing to the shaft for rotating the blower wheel apparatus in the blower housing.

4,522,559

COMPRESSOR CASING

Joseph C. Burge, and Julius Bathori, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 350,490, Feb. 19, 1982, abandoned. This application Jul. 23, 1984, Ser. No. 632,691
Int. Cl.³ F01D *11/08*
U.S. Cl. 415—196 **16 Claims**



1. A turbomachine casing surrounding a rotor comprising:

an outer casing wall;

a sectored inner casing wall;

means for insulating said inner wall from said casing; and

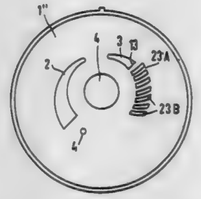
means for removably attaching said inner casing wall to said outer casing wall, such that during transient operation of said turbomachine expansion of said inner casing wall initially occurs in the circumferential direction, after which said outer casing wall and inner casing wall expand radially in a substantially uniform manner, and wherein said rotor in said turbomachine radially expands substantially in concert with said casing.

4,522,560

LIQUID-RING COMPRESSOR FOR GASES

Wilfried Lubke, Ammerndorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 14, 1983, Ser. No. 466,008
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210161
Int. Cl.³ F04C *19/00*
U.S. Cl. 415—210 **11 Claims**



1. In a control disc of a liquid-ring compressor having an impeller with a multiplicity of radially extending blades, said control disc being provided with a sickle-shaped suction slot and a sickle-shaped pressure slot having a substantially radial leading edge, said control disc being further provided with a multiplicity of ancillary pressure openings disposed in an arc-shaped region extending circumferentially in front of said pressure slot, as determined by the direction of rotation of said impeller, said arc-shaped region extending in a radial direction beyond the outer end of said leading edge,

the improvement wherein said pressure openings are substantially radially extending slots spaced from each other in the circumferential direction, the ratio of the widths of the slots to the thickness of the blades of the impeller being less than 1.2 to 1, said control disc having a planar surface on a side facing said impeller, said blades having an arcuate cross-section in a plane parallel to said surface and said radially extending slots having, in the plane of said surface, an arcuate shape substantially identical in curvature to said cross-section.

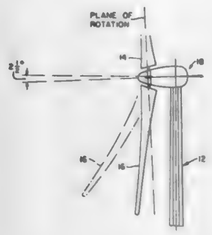
4,522,561

WIND-DRIVEN GENERATOR APPARATUS

J. Warne Carter, Jr., Burkburnett, and J. Warne Carter, Sr., Wichita Falls, both of Tex., assignors to Carter Wind Power, Wichita Falls, Tex.

Division of Ser. No. 173,700, Jul. 30, 1980, Pat. No. 4,431,375, which is a continuation-in-part of Ser. No. 37,774, May 10, 1979, Pat. No. 4,366,387. This application Jun. 6, 1983, Ser. No. 501,369
Int. Cl.³ F03D *7/04*
U.S. Cl. 416—11 **6 Claims**

1. Wind-driven apparatus including a head assembly for supporting a rotor shaft, rotor blade means, hub means for supporting said blade means on said rotor shaft, means for supporting said head assembly for weathervaning rotation about a substantially vertical axis, and damping means responsive to rotational movement of said head assembly about said



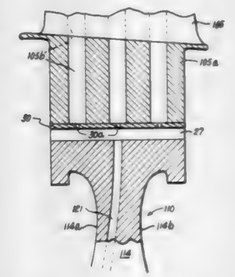
axis for applying shearing forces to a high viscosity liquid to damp said rotational movement.

4,522,562

TURBINE ROTOR COOLING

Pierre A. Glowacki, Melun, and Gérard M. F. Mandet, Epinay sous Senart, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.-M.A., Evry, France

Filed Nov. 21, 1979, Ser. No. 97,741
Claims priority, application France, Nov. 27, 1978, 78 33382
Int. Cl.³ F01D *5/18*
U.S. Cl. 416—95 **7 Claims**



1. A turbine disc having means therein for circulating a cooling fluid for the blades supported by the disc, said cooling fluid circulating means comprising channels non-radially bored therein respectively close to each of the sides of the disc and conforming with their profile, the sides of the disc and the channels having a curved profile, advantageously in the shape of an arc of a circle, and the channels leading to the middle of the length of the cups which support the stem of the blades.

4,522,563

ELASTOMERIC SYSTEM FOR MOUNTING A HELICOPTER ROTOR

Peter A. Reyes, Watauga, and Robert H. Finney, Arlington, both of Tex., assignors to Bell Helicopter Textron, Inc., Fort Worth, Tex.

Filed Jul. 6, 1982, Ser. No. 395,789
Int. Cl.³ B64C *11/12*
U.S. Cl. 416—134 A **2 Claims**

1. A system for mounting a teetering helicopter rotor onto a mast including:

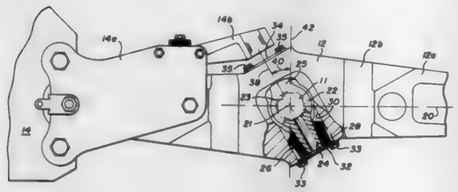
a main body having a central portion having a central bore therethrough for receiving the mast;

a pair of opposed conical shafts extending from said main body on a common axis which perpendicularly intersects the axis of said central bore;

elastomeric bearing rings having conical shims therein of the

same cone angle as the angle of said conical shaft and being circumferentially disposed around said conical shafts;

outer mounting rings having interior and exterior surfaces, said interior surfce having the same cone angle as the



angle of said conical shafts and being circumferentially disposed around said elastomeric bearing rings; and

tail rotor hub structure adapted to receive said exterior surface of said outer mounting rings for rotation with the rotor as it teeters on said common axis.

4,522,564

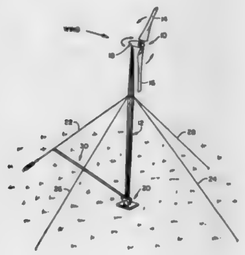
WIND-DRIVEN GENERATOR APPARATUS

J. Warne Carter, Jr., Burkburnett, and J. Warne Carter, Sr., Wichita Falls, both of Tex., assignors to Carter Wind Power, Wichita Falls, Tex.

Division of Ser. No. 173,700, Jul. 30, 1980, Pat. No. 4,431,375, which is a continuation-in-part of Ser. No. 37,774, May 10, 1979, Pat. No. 4,366,387. This application Jun. 6, 1983, Ser. No. 501,370

Int. Cl.³ F03D *7/04*

U.S. Cl. 416—140 **1 Claim**



1. In wind-driven generator apparatus including rotor blade means, a rotor shaft, hub means supporting said blade means on said rotor shaft and electric generator means having a shaft which is to be rotated in a desired direction for effecting the generation of electricity and which is fixedly coupled to said rotor shaft for being driven in rotation by said rotor shaft, the improvement comprising, in combination, blade pitch control means and clutch means, said blade pitch control means including means for maintaining said blade means in a given pitch configuration during normal operating conditions and for permitting said blade means to pitch to a stall configuration to prevent substantial overspeeding of said rotor shaft and damper means for delaying the return of said blade means from said stall configuration to said given configuration, said clutch means being cooperable with said rotor shaft for permitting that shaft to rotate only in a direction corresponding to said desired direction of rotation.

4,522,565

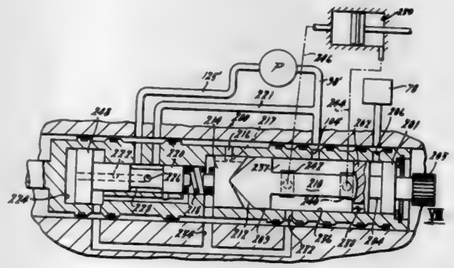
STEERING GEAR CONTROL VALVE FOR VARIABLE DISPLACEMENT PUMP

Thomas R. Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 22, 1983, Ser. No. 487,650

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—220 **10 Claims**



1. A radial piston hydraulic pump comprising:

a housing having an interior chamber; and an inlet port and an outlet port through which fluid is carried to and discharged from the pump;

a rotor mounted within the chamber for rotation about a first axis;

a plurality of cylinders circumferentially spaced around and radially directed from the first axis;

a piston working in each cylinder;

means communicating the inlet and outlet ports with each cylinder;

a pumping ring mounted for arcuate movement about a second axis eccentric of the first axis having a guide surface extending over the outer periphery of the rotor with which the pistons maintain contact thereby causing the pistons to reciprocate in the cylinders as the rotor rotates;

a turn valve adapted for rotation about its axis in either direction from a neutral position adapted to open and close the pump outlet to first and second outlet ports in accordance with the direction of rotation;

a control pressure cylinder;

a control piston working in said control pressure cylinder in response to movement of the turn valve, whereby the volume of the control pressure cylinder is reduced and a control fluid compressed when the turn valve is rotated from its neutral position and whereby the volume of the control pressure cylinder is increased and a control fluid pressure reduced when the turn valve is rotated toward its neutral position; and

means responsive to the magnitude of control pressure for increasing and decreasing the amount of the eccentricity of the pumping ring with respect to the first axis, whereby the flow rate of the pump varies as the position of the turn valve varies from its neutral position.

4,522,566

ADJUSTABLE AXIAL PISTON PUMPS WITH REGLATING UNITS AND REGULATING UNITS FOR THE SAME

Horst Deininger, Horstein-Alzenau, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

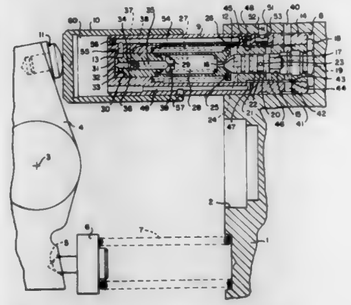
Filed Mar. 23, 1983, Ser. No. 478,066

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 3211307

Int. Cl.³ F04B *1/26*

U.S. Cl. 417—222 **12 Claims**

1. In an axial piston pump having a piston unit, a control bottom adjacent said piston unit, a swivellable final control element spaced from the control bottom, said control element being capable of being swung out in one direction around a swivel axis from the zero-stroke position and on which a first force acting in the direction of the zero-stroke position engages on one side of the swivel axis and a second force acting in the direction to the maximum stroke position engages on the other side of the swivel axis, means producing the said first and second forces arranged at least approximately parallel to the axis of rotation of a cylindrical drum, the improvement com-



prising a section of said piston unit adjustable in the control bottom of the axial piston pump, a regulating unit in said section, an operating cylinder-servo piston unit connected to said final control element producing the force acting in the direction to the zero-stroke position, said regulating unit being built into the servo piston, said piston in turn being connected with the control bottom, wherein the operating cylinder of the piston unit acts together with the final control element and a spring acting in the direction to the maximum stroke position producing a change in position of the final control element.

4,522,567

SWASH PLATE COMPRESSOR

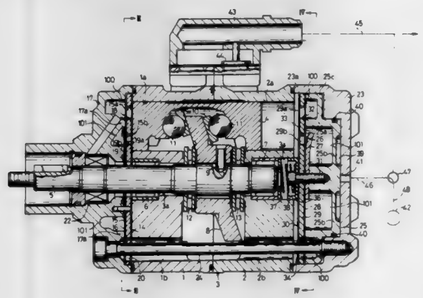
Kimio Kato; Hisao Kobayashi, both of Kariya; Takamitsu Mukai, Anjo; Hiroya Kono, Kariya, and Taku Yamamoto, Obu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation of Ser. No. 359,951, Mar. 19, 1982, Pat. No. 4,413,955. This application Oct. 13, 1983, Ser. No. 522,427

Claims priority, application Japan, Mar. 28, 1981, 56-45864

Int. Cl.³ F04B *1/26, 1/16*

U.S. Cl. 417—270 **7 Claims**



1. A swash plate compressor with two operating stages at front and rear sections, comprising

a cylinder body member with front and rear housings connected thereto, said cylinder body member having a plurality of cylinder bores therein,

a plurality of pistons situated in said cylinder bores to be reciprocally moved therein,

a rotary shaft rotationally disposed in said cylinder body member, said shaft having a swash plate so that when the shaft rotates, the pistons are reciprocally moved by means of said swash plate,

an inner housing situated between said rear housing and said cylinder body member to form a pressure chamber between said inner housing and said rear housing, said pressure chamber, when operated, being pressurized so that said inner housing is moved relative to said cylinder body member, said inner housing having a rear wall at a side adjacent to the rear housing,

a valve assembly connected to said inner housing at a side adjacent to the cylinder body member, a portion of the rear wall of the inner housing being thinner than the thickness of the valve assembly so as to permit the rear wall to flex under the pressure applied to the pressure chamber so that the inner housing is uniformly pressed against the valve assembly to thereby sealing press the valve assembly onto the cylinder body member,

a discharge chamber formed between said inner housing and said valve assembly at the center portion of said inner housing, whereby said discharge chamber, when said pressure chamber is in operating condition, receives pressurized fluid formed by the pistons in the cylinder body member and leads the fluid from the compressor, and

a suction chamber surrounded by at least the inner housing and said valve assembly and located outside said discharge chamber, whereby said suction chamber, when said pressure chamber is in operating condition, receives fluid to be pressurized and supplies the fluid to the pistons.

4,522,568

COMPRESSOR APPARATUS

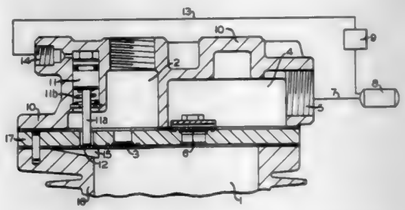
Hans-Dieter Gelse, Wunstrof; Werner Heger, Lehrte, and Manfred Kramer, Barsinghausen, all of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,601

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214713

Int. Cl.³ F04B *49/08*

U.S. Cl. 417—307 **9 Claims**



1. A compressor apparatus, for producing compressed gas, including a compression chamber within a cylinder body through which a piston moves with reciprocal motion, to periodically compress gas in the chamber, and suction and pressure chambers within the cylinder head, and further comprising:

(a) a valve plate connected between said cylinder body and said cylinder head, said valve plate and said cylinder body and said cylinder head forming a single assembly;

(b) at least one compressed gas communication passageway formed through said valve plate for communicating such compressed gas from said compression chamber into said pressure chamber during a compression stroke of said piston;

(c) a pressure valve means openable into said pressure chamber during said piston compression stroke positioned to sealingly engage said valve plate adjacent said compressed gas communication passageway on said pressure chamber side of said valve plate for closing said compressed gas

communication passageway during an intake stroke of said piston and for maintaining said compressed gas communication passageway closed when said compressor apparatus is in an idling condition;

(d) at least one uncompressed gas communication passageway formed through said valve plate for communicating such uncompressed gas from said suction chamber into said compression chamber during such intake stroke of said piston;

(e) a plate-type valve means openable into said compression chamber during said piston intake stroke positioned to sealingly engage said valve plate adjacent said uncompressed gas communication passageway on said compression chamber side of said valve plate for closing said uncompressed gas communication passageway during such compression stroke of said piston;

(f) a compressed gas storage reservoir coupled to receive and store compressed gas from said pressure chamber;

(g) at least one idle phase gas communication passageway formed through said valve plate for communicating uncompressed gas from said suction chamber into said compression chamber and from said compression chamber into said suction chamber during a respective intake stroke and compression stroke of said piston when said compressor apparatus is in such idling condition;

(h) an idle phase valve means positioned to sealingly engage said valve plate adjacent said idle phase gas communication passageway on said compression chamber side of said valve plate for sealably closing said idle phase gas communication passageway at least during such compression stroke of said piston when said compressor apparatus is in an operating condition;

(i) a compressor shifting means for shifting said compressor apparatus from such operating condition to such idling condition;

(j) an idle phase valve opening means connected to said compressor shifting means and positioned within said suction chamber to operatively engage said idle phase valve means through said idle phase gas communication passageway for maintaining said idle phase gas communication passageway continuously open during such idling condition of said compressor apparatus; and

(k) a recess area formed adjacent said idle phase valve means on at least one of said cylinder body and said valve plate and in gas communication with said compression chamber for receiving and preventing said idle valve means from interfering with said piston during a compression stroke thereby allowing minimum clearance between the bottom of said valve plate and the top of said piston while at the same time permitting the use of a plate-type suction valve means.

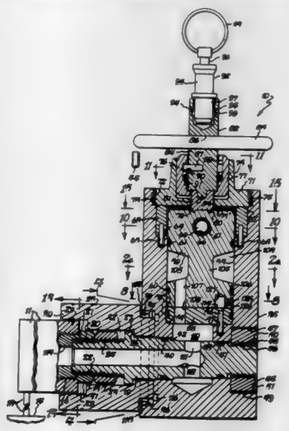
4,522,569

VENTING FUEL VALVE FOR DIESEL ENGINE FUEL SUPPLY SYSTEM

John H. Taylor, Orchard Park, N.Y., assignor to McGard, Inc., Buffalo, N.Y.

Filed Oct. 28, 1982, Ser. No. 437,301
Int. Cl.³ F02M *59/00*
U.S. Cl. 417—434 **8 Claims**

1. In a diesel engine fuel supply system having an injector pump, a fuel tank, a fuel inlet conduit between the fuel tank and the injector pump, and a fuel return conduit between the injector pump and the fuel tank, the improvement comprising a venting fuel valve including a valve body, mounting means for mounting said valve body on said injector pump, a fuel inlet on said valve body for receiving said fuel inlet conduit, a fuel outlet on said valve body for transmitting fuel to said injector pump, venting means in said valve body in communication with the atmosphere, valve means in said valve body movable between first and second positions, first conduit means in said fuel valve operable in said first position for effecting communication between said fuel inlet and said fuel outlet to supply fuel to said injector pump while preventing venting of said fuel outlet to the atmosphere through said venting means, second conduit means in said fuel valve operable in said second position for preventing communication between said fuel inlet and said fuel outlet and for effecting communication between said injector pump and the atmosphere through said fuel outlet and said venting means to thereby vent said injector pump and prevent flow of fuel through said fuel return conduit to said injector pump when said injector pump is caused to operate, a mounting member having a first mounting member portion for mounting on said injector pump, a second mounting member



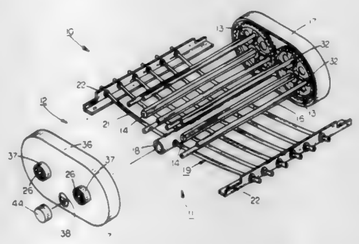
portion for mounting said valve body, means for locking said valve body on said mounting member, said mounting member comprising an elongated nipple-like member, and said first mounting member portion comprising a first threaded portion on one end of said nipple-like member, and said second mounting member portion comprising a central portion on said nipple-like member, and said means for locking said valve body on said mounting member comprising a second threaded portion at the other end of said nipple-like member, and a nut having an endless curvilinear groove mounted on said second threaded portion and received within a recess in said valve body.

4,522,570

PERISTALTIC PUMP APPARATUS

Charles O. Schartz, R.R. 2, Larned, Kans. 67550

Filed Jul. 11, 1983, Ser. No. 512,807
Int. Cl.³ F04B *43/12*
U.S. Cl. 417—475 **4 Claims**



1. In a peristaltic pump for pumping a substantially fluid substance from a source of said fluid substance, said pump including a first pump cell comprising a first set of at least one hose having one end operably connectable to a source of substantially fluid substance and a second end serving as an output for any substantially fluid substance moving therethrough, a rotating drive apparatus, first and second rotating members, said first rotating member being operably connected to said rotating drive apparatus, and a first plurality of rollers operably connected between said first and second rotating members, such that as said first rotating member rotates, said first plurality of rollers operably contact said first set of at least one hose to urge a substantially fluid substance to move therethrough to said output, an improvement comprising a second pump cell, said second pump cell disposed substantially beside said first pump cell, said second pump cell including:

a second set of at least one hose having one end operably connectable to a source of a substantially fluid substance and a second end serving as an output for any substantially fluid substance moving therethrough;

a third rotating member being operably connected to said first rotating member such that when said first rotating member rotates, said third rotating member also rotates, and a fourth rotating member; and

a second plurality of rollers operably connected between said third and fourth rotating members; such that as said first rotating member rotates, said third rotating member rotates and thereby causes said second plurality of rollers to operably contact said second set of at least one hose to urge a substantially fluid substance to move therethrough to said output;

wherein said first and second plurality of rollers are comprised of rollers being substantially circular in cross section, and

wherein said first and third rotating members are substantially circular in shape and have gear teeth disposed about the peripheries thereof,

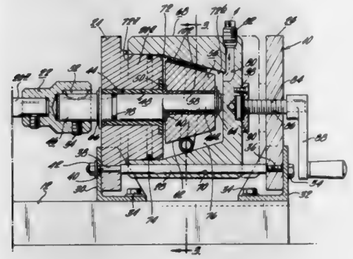
wherein said first and third rotating members physically contact one another such that the gear teeth disposed about the peripheries thereof are enmeshed, such that rotation of said first rotating member will cause said third rotating member to rotate.

4,522,571

PERISTALTIC PUMP

Robert K. Little, 519 Jacksonville Rd., Mt. Holly, N.J. 08060

Filed Mar. 5, 1984, Ser. No. 586,195
Int. Cl.³ F04B *43/12*
U.S. Cl. 417—476 **11 Claims**



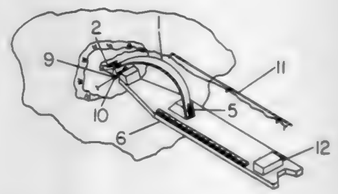
1. A peristaltic pump comprising a base member, said base member including a cylindrical portion extending therefrom, a shaft rotatably mounted in said base member concentric with said cylindrical portion, an eccentric portion of said shaft extending beyond said base member cylindrical portion, a roller rotatably mounted on said shaft eccentric portion, the peripheral surface of said roller having a frusto-conical configuration, an elastomeric tube disposed around said roller peripheral surface to form at least one full revolution therearound, a tube compressor, said tube compressor having a bore therein coaxial with said base member cylindrical portion, a portion of said tube compressor bore being cylindrical and overlying said base member cylindrical portion in slidable relation therewith, means for selectively controlling the axial position of said tube compressor with respect to said base member, said tube compressor bore continuing inwardly from said cylindrical portion in a frusto-conical portion parallel to and spaced from the frusto-conical peripheral surface of said roller, said tube compressor being selectively axially positionable to effect a deformation of said tube between the frusto-conical surfaces of said roller and said tube compressor, the rotation of said shaft causing an eccentric path of movement of said roller to effect a peristaltic pumping action on the contents of said tube, the output pressure of the pump being selectively variable and dependent upon the axial positioning of said tube compressor.

4,522,572

STRIKE INDICATOR AND HOOK SETTER, COMBINED

Paul L. Hahn, 150 Iris St., Broomfield, Colo. 80020

Filed Oct. 18, 1982, Ser. No. 417,631
Int. Cl.³ A01K *91/06*
U.S. Cl. 43—16 **1 Claim**



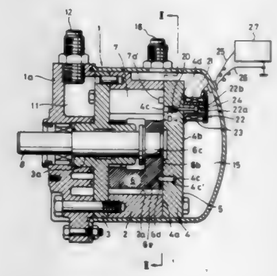
1. A combined strike indicator and hook setter adaptable to a fishing line and independent from a fishing pole comprising, a base, a removable spring arm attached to said base movable between a set and a released position, a releasable line holding means attached to a free end of said removable spring arm, a sear pivotably attached to said free end of said removable spring arm, a sear bar mounted on one end of said base, and a roll pin attached to an opposite end of said sear for holding said fishing line, said fishing line running from said fishing pole through said releasable line holding means around said roll pin and into the water such that a strike by a fish will pivot said sear away from said sear bar releasing said spring from said set position to said release position thereby setting the hook and simultaneously signalling the fisherman of the strike.

4,522,573

VARIABLE DELIVERY VANE COMPRESSOR

Tsunenori Shibuya, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 556,024
Claims priority, application Japan, Dec. 6, 1982, 57-213710
Int. Cl.³ F04C *18/00, 29/10*
U.S. Cl. 418—23 **6 Claims**



1. A variable delivery vane compressor comprising:

a cam ring having an endless camming inner peripheral surface and opposite open ends;

a pair of front and rear side blocks secured to said opposite open ends of said cam ring and cooperating with said cam

ring to define a pump housing, said pump housing having at least two pump inlets and at least two pump outlets;

a rotor rotatably received within said pump housing and having an outer peripheral surface formed with a plurality of axial slits, said rotor cooperating with said pump housing to define at least two spaces for forming pump working chambers, one of said pump outlets and one of said pump inlets opening in each of said spaces;

a plurality of vanes radially slidably fitted, respectively, in said axial slits in said rotor for sliding contact with said camming inner peripheral surface of said cam ring, adjacent ones of said vanes cooperating with said pump housing and said rotor to define said pump working chambers within each of said spaces during rotation of said rotor, said pump working chambers communicating with a corresponding one of said pump inlets or a corresponding one of said pump outlets, each of said vanes having an axial end edge;

engaging means formed on said axial end edge of each of said vanes;

arresting means disposed for selective engagement and disengagement with and from said engaging means, said arresting means being adapted to selectively assume a first position engaging with said engaging means in which it arrests each of said vanes in a retracted position in a corresponding one of said axial slits while said each vane is moving circumferentially in at least one of said spaces from a corresponding one of said pump inlets opening therein to a corresponding one of said pump outlets opening therein, and a second position disengaged from said engaging means in which said arresting means allows each of said vanes to slide on said camming inner peripheral surface of said cam ring while said each vane moves circumferentially in said at least one of said spaces;

control means for causing said arresting means to assume selectively said first position and said second position;

a drive shaft disposed in part within said pump housing for concentrically supporting said rotor, said rotor having one end face in which each of said axial slits opens at the axial end edge of a corresponding one of said vanes on which edge said engaging means is formed, one of said front and rear side blocks having one end face facing said one end face of said rotor,

said arresting means comprising a first annular groove formed in said one end face of said rotor concentrically of said rotor, a second annular groove formed in said one end face of said one of said front and rear side blocks and aligned with said first annular groove, and a holder arranged in said second annular groove for axial displacement into and out of said first annular groove, said holder circumferentially extending at least in said at least one of said spaces between a corresponding one of said pump inlets and a corresponding one of said pump outlets, so that when said first position is selected, said holder is displaced into said first annular groove and into engagement with said engaging means of each of said vanes to arrest said each vane in said retracted position in the corresponding one of said axial slits, and

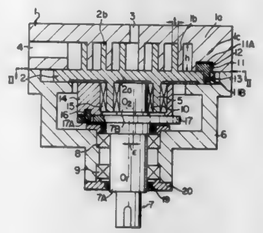
wherein said holder has one end closer to said corresponding one of said pump inlets, another end closer to said corresponding one of said pump outlets, and a lateral side edge closer to said rotor, said holder being tapered in a manner such that said holder has a width gradually decreasing from said one end to said another end thereof and is projected from said second annular groove by an amount gradually increasing toward said one end thereof when said first position is selected.

4,522,574

BALANCING WEIGHT DEVICE FOR SCROLL-TYPE FLUID MACHINE

Nobukatsu Arai, and Naoki Maeda, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 21, 1983, Ser. No. 544,225
Claims priority, application Japan, Oct. 27, 1982, 57-187409
Int. Cl.³ F01C *1/04, 17/06, 21/02*
U.S. Cl. 418—55 **13 Claims**



1. A scroll-type fluid machine comprising a stationary scroll member provided with a spiral wrap of predetermined thickness and height, an orbital scroll member provided with a spiral wrap of predetermined thickness and height and a boss having a bore therein, said scroll members being assembled together with the spiral wraps thereof meshing with each other, a crankshaft having an eccentric shaft portion, bearing means for enabling an engagement between the eccentric shaft portion and said orbital scroll member, rotation prevention means for preventing rotation of said orbital scroll member around its own axis so that said orbital scroll member performs an orbital movement with rotating around its own axis while being driven by said crankshaft, balancing weight means for producing a centrifugal force acting in a direction opposite to a direction of the centrifugal force produced in said orbital scroll member, a bearing means for rotatably securing the balance weight to said orbital scroll member, whereby the balancing weight means is rotatably mounted on an outer periphery of the boss of the orbital scroll member so that the balancing weight is rotated synchronously with the crankshaft, and a torque transmitting means for transmitting with no radial motion only the torque of said crankshaft to said balancing weight means such that said balancing weight means rotates in the same direction and at the same speed as the rotation of said crankshaft.

4,522,575

SCROLL MACHINE USING DISCHARGE PRESSURE FOR AXIAL SEALING

James C. Tischer, La Crescent, Minn., and Robert E. Utter, Genoa, Wis., assignors to American Standard Inc., New York, N.Y.

Filed Feb. 21, 1984, Ser. No. 581,849
Int. Cl.³ F04C *18/04, 29/00*
U.S. Cl. 418—55 **12 Claims**

1. A scroll compressor comprising

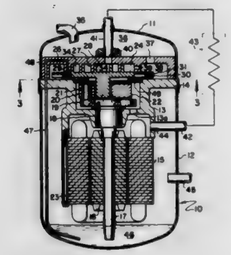
a. two generally parallel scroll plates, one stationary, the other driven in an orbital motion, the facing surface of each having an involute wrap element attached thereon in intermeshed relationship with the wrap element of the other, said wrap elements each defining a radially inner and a radially outer flank surface of similar spiral shape about an axis, contacting flank surfaces of the intermeshed wrap elements defining one or more pockets of fluid compressed by the relative orbital motion of the plates;

b. driving means applied to the orbiting scroll plate, for causing it to move in fixed angular orbital relationship relative to the stationary scroll plate;

c. a hermetic shell sealingly enclosing the two scroll plates, and including an inlet for admitting suction fluid and an outlet for discharging compressed fluid;

d. a framework extending around the inner surface of the hermetic shell in sealing relationship therewith, said framework being operative to divide the total volume enclosed by the hermetic shell into a suction volume at suction pressure and a discharge volume at discharge pressure, the outwardly facing surface of the orbiting scroll plate being directly exposed to fluid at both suction and discharge pressure; and

e. an annular thrust balancing seal that extends from the framework to the outwardly facing surface of the orbiting scroll plate, in sealing contact therewith, whereby the relative area of the orbiting scroll plate exposed to fluid at discharge pressure compared to the area exposed to fluid at suction pressure is controlled by the diameter of the thrust balancing seal where it contacts the orbiting scroll plate, to achieve a desired net axial thrust on the orbiting scroll plate toward the stationary scroll plate by balancing the resulting applied forces on the orbiting scroll plate.

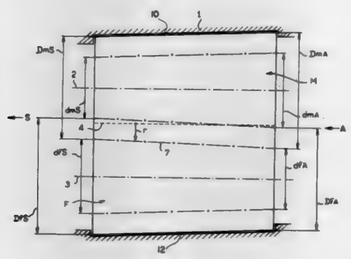


4,522,576

VOLUMETRIC MACHINE WITH CONICAL SCREWS

Jean-Jacques Carré, Le Raincy, and Pierre Courbot, Villiers le Bel, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Dec. 19, 1983, Ser. No. 562,653
Claims priority, application France, Dec. 23, 1982, 82 21686
Int. Cl.³ F04C *18/107*
U.S. Cl. 418—194 **8 Claims**



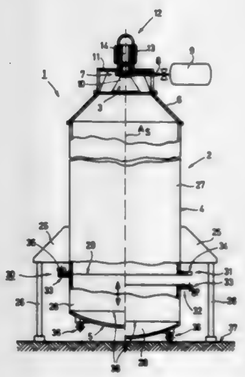
1. A volumetric machine with screws, including at least two rotors with intermeshing helical threads, the rotors being located with their axes parallel in intercommunicating chambers of a housing having inlet and outlet sides adjacent respective opposite axial ends of the rotors, each rotor having a conical outer profile and a pitch diameter which is constant over the axial length of the rotor, the rotors being mounted complementarily in the housing with an axial end of largest outer diameter of one rotor adjacent an axial end of smallest outer diameter of the other rotor, the rotors having their respective pitch diameters tangent along a tangential line parallel to the axes of the rotors.

4,522,577

DEVICE FOR MANUFACTURING POWDER BY DIVIDING A MELT

Rolf Ruthardt, Hanau am Main, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,283
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1982, 3225868
Int. Cl.³ B28B *1/54*
U.S. Cl. 425—6 **7 Claims**



1. Device for manufacturing powder by dividing a melt into particles and then cooling the particles until they harden, comprising: means for dividing the melt; a container below said means for dividing the melt and comprising substantially a stationary vertical shaft with a vertical axis for cooling the particles; powder outtake means communicating with the shaft; said powder outtake means comprising a lower section of the shaft and having substantially the same cross-section as an upper section, both sections being connected with releasable connecting means and being separatable from each other in a direction perpendicular to the axis of the shaft; said upper section and said lower section when connected together forming vertical falling paths for said particles, all falling paths having substantially identical lengths parallel to said vertical axis, solidified particles collecting at the bottom of said lower section, said lower section being dropped downward and separating from said upper section upon release of said connecting means, said lower section after having dropped downward being movable perpendicular to said vertical axis and away from beneath said upper section for removal of the collected solidified particles.

4,522,578

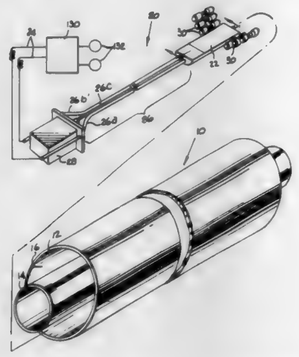
APPARATUS FOR INTRODUCING A FOAMABLE PLASTIC INSULATION INTO THE SPACE DEFINED BY AN INNER CORE PIPE AND AN OUTER CASING PIPE WHILE MAINTAINING THE SPACING OF THE PIPES

William W. Martin, Jr., Denver, and David W. French, Littleton, both of Colo., assignors to J-M Manufacturing Co., Inc., Stockton, Calif.

Filed Dec. 8, 1980, Ser. No. 214,154
Int. Cl.³ B29D *27/04*
U.S. Cl. 425—110 **1 Claim**

1. An apparatus for placing a foamable, curable material in a space defined between a core pipe and an axially aligned casing pipe comprising a reservoir remote from said space for providing the constituents of said material, means for separately conducting said constituents of said material to said space from

said reservoir, and means for disseminating said material within said space; said last mentioned means further including means for intimately mixing said constituents separately conducted thereto substantially simultaneously with said disseminating said material within said space, said means for disseminating

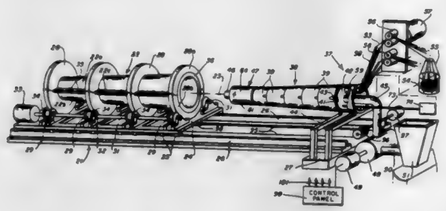


further includes means for supporting said core pipe relative to said casing pipe whereby to maintain a fixed relationship between said core pipe and said casing pipe, said means for supporting being pivotally attached to said means for disseminating.

4,522,579
APPARATUS FOR MAKING REINFORCED CONCRETE PRODUCTS

Philip L. Rotondo, 8 Watson Dr., Simsbury, Conn. 06070, and Thomas J. Rotondo, 173 Old Farms Rd., Avon, Conn. 06001

Division of Ser. No. 111,168, Jan. 10, 1980, Pat. No. 4,404,786. This application Apr. 4, 1983, Ser. No. 481,930
Int. Cl.³ B28B *21/32, 21/68;* B21F *11/00*
U.S. Cl. 425—126 R **9 Claims**



9. Apparatus for making a hollow reinforced concrete pole comprising

a concrete and wire placement mechanism,

a hollow elongated substantially cylindrical form,

means for rotating said form about its longitudinal axis,

means for moving said form in an axial direction to and fro relative to said concrete and wire placement mechanism,

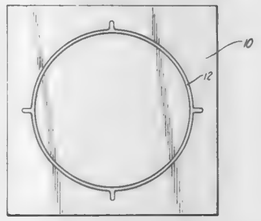
said concrete and wire placement mechanism including means for introducing concrete into said rotating form during axial movement thereof whereby layers of concrete are laid down along the length of said rotating form and held against the interior wall of the form by centrifugal force,

and said concrete and wire placement mechanism including means for feeding cutting and ejecting discrete cut lengths of reinforcing wire at least 10 inches in length for embedment in said layers in axially aligned annular arrays during rotation and axial movement of said cylindrical form.

4,522,580
DOUGH ROLLER AND SHAPER DEVICE FOR PIE CRUSTS AND THE LIKE

Clarence E. Poister, 1000 S. Woodlawn, Wichita, Kans. 67218

Filed May 25, 1984, Ser. No. 614,154
Int. Cl.³ A21C *3/02, 5/00, 11/10*
U.S. Cl. 425—193 **9 Claims**

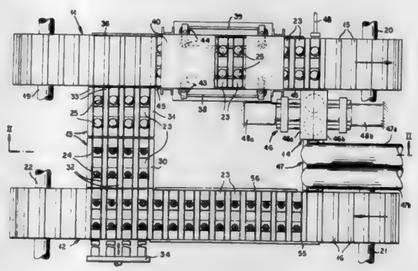


1. A dough roller and shaper device for making pie crust and the like, the device comprising: a roller a dough board having a molded ring therein; and first and second removable dough support discs received within the molded ring, said second disc having a molded ring therein.

4,522,581
SYSTEM FOR HANDLING PARTLY FINISHED WORKPIECES

Robert D. Schad, Toronto, and Herbert Rees, Willowdale, both of Canada, assignors to Husky Injection Molding Systems Ltd., Bolton, Canada

Filed Sep. 7, 1984, Ser. No. 648,793
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—534 **20 Claims**



1. A system for handling partly finished workpieces periodically arriving at a receiving station for transportation to a finishing station, comprising:

presentation means at said receiving station for making the arriving workpieces available;

conveyor means moving from said receiving station to said finishing station;

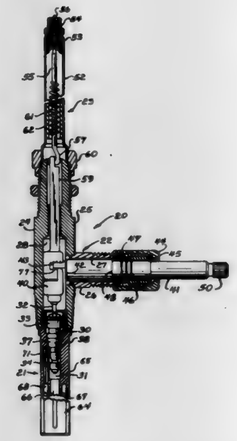
a multiplicity of pallets successively entrainable by said conveyor means between said receiving and finishing stations, each of said pallets being provided with holding means for releasably retaining a workpiece available at said presentation means and being further provided with locating means for temporarily consolidating the respective pallet with an operative part of said finishing station to ensure the proper positioning of said workpiece with reference thereto; and

unloading means disposed along the path of said conveyor means for removing the finished workpieces from said pallets.

4,522,582
FUEL CONTROL SYSTEM FOR BURNERS

Richard D. Curtis, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Jun. 22, 1984, Ser. No. 623,833
Int. Cl.³ F23D *11/38*
U.S. Cl. 431—123 **12 Claims**



1. In a fuel burning apparatus having a fuel tank, fuel burning means for burning fuel supplied by the tank, fuel conduit means for supplying fuel from the tank to the fuel burning means, the fuel conduit means having a first end provided with a fuel inlet opening positioned within the tank and a second end provided with a fuel outlet orifice for supplying fuel to the fuel burning means, a cleaning rod movable within the fuel conduit means and having an end which is movable within the fuel outlet orifice of the fuel conduit means, and a valve in the fuel conduit means movable between a closed position in which fuel flow through the fuel conduit means is prevented and an open position in which fuel flow through the conduit means is permitted, the improvement comprising:

(a) a control shaft rotatably mounted on the fuel conduit means and extending generally perpendicularly to the cleaning rod,

(b) an eccentric pin mounted on the control shaft eccentrically with respect to the axis of rotation of the control shaft,

(c) an eccentric follower member connected to the cleaning rod and having a shoulder which is engageable with the eccentric pin and a curved surface opposite said shoulder,

(d) a valve block movably mounted within the fuel conduit means and being engageable with the eccentric pin as the eccentric pin rotates with the control shaft, the valve block being engageable with the valve for moving the valve from the closed position to the open position, the eccentric pin being rotatable between:

(i) a first position in which the eccentric pin engages the curved surface but does not engage said shoulder of the eccentric follower and said end of the cleaning rod is positioned within the fuel outlet orifice and the valve is closed,

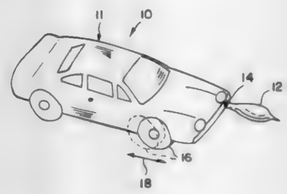
(ii) a second position in which the eccentric pin engages the curved surface but does not engage said shoulder of the eccentric follower and said end of the cleaning rod is positioned within the fuel outlet orifice and in which the eccentric pin engages the valve block and maintains the valve block in position to open the valve, and

(iii) a third position in which the eccentric pin engages said shoulder of the eccentric follower and said end of the cleaning rod is at least partially withdrawn from the fuel outlet orifice and in which the eccentric pin engages the valve block and maintains the valve block in position to open the valve.

4,522,583
CIGARETTE LIGHTER

Gary S. Kraser, 44 Narwood Rd., Massapequa, N.Y. 11758

Filed May 31, 1984, Ser. No. 615,941
Int. Cl.³ F23Q *2/32*
U.S. Cl. 431—125 **12 Claims**



1. A gas fueled pocket cigarette lighter in the form of a miniature automobile, comprising:

(a) a hollow miniature automobile body having an opening therein for the cigarette lighter flame to issue therefrom;

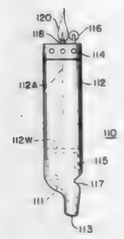
(b) a cigarette lighter mechanism housed entirely within said hollow miniature automobile body including a fuel tank, a gas nozzle connected to said fuel tank and positioned at the flame opening of the miniature automobile body, a gas valve for admitting gas to said nozzle from said fuel tank and for throttling the same and an ignition system for generating a spark at the nozzle to ignite the fuel exiting therefrom; and

(c) means forming part of said miniature automobile body for activating said ignition system for generating a spark and for operating said gas valve to permit fuel to exit from said nozzle.

4,522,584
LIGHTER COMBINED WITH INSTRUMENT

Serge Crespy, P.O. Box 383, Collingwood, Ontario, Canada L9Y 3Z7

Division of Ser. No. 372,694, Apr. 28, 1982, abandoned. This application Jun. 30, 1983, Ser. No. 509,606
Int. Cl.³ F23Q *2/32*
U.S. Cl. 431—253 **2 Claims**



1. An article comprising:

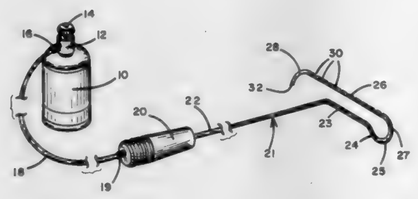
(a) a pocket-sized plastic housing, having upper and lower parts

(b) a cigarette lighter included in the upper part of said housing and operable by lighter fluid from a reservoir in said cigarette lighter, and

(c) an instrument included in said lower part of said housing, said instrument separated from said cigarette lighter by a wall and having an input hole for receiving an input, walls defining a transforming cavity for transforming said input received by way of said input hole, and output hole for allowing an output to pass out said transforming cavity,

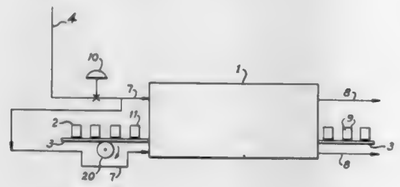
and wherein said instrument is a breath operated whistle, said input hole is adapted to receive a breath input, said transforming cavity transforms a breath input into a sound output, and said output hole outputs the sound output, and wherein said housing forms said walls.

4,522,585
FIREPLACE STARTER
Steven J. Martin, 7221 Clinton Ave. South, Richfield, Minn. 55423
Filed May 11, 1984, Ser. No. 609,351
Int. Cl.³ F23D *13/04*
U.S. Cl. 431—344 **7 Claims**



7. Portable apparatus for igniting a fire in a fireplace or the like, the feature consisting essentially of a single length of shape-retaining tubing, the single length of tubing being characterized by being contoured so as to form a first portion of elongated character equipped with a heat insulating handle, a second portion forming a leg means, a third portion forming a burner length which is oriented substantially transversely to the first portion and has a series of openings therein for escape of combustible gas therefrom, and a fourth portion forming a leg portion at the terminal end of the tubing, the distal end of the tubing most remote from its connection to the hose being closed to form a gas tight seal.

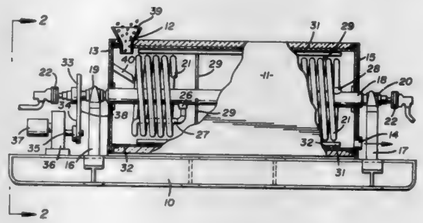
4,522,586
THERMAL CONDITIONING OF MATERIAL IN CONTAINERS
Frank C. Price, 13812 Sandhurst Pl., Santa Ana, Calif. 92705
Filed Nov. 29, 1983, Ser. No. 556,141
Int. Cl.³ F27B *9/28*
U.S. Cl. 432—11 **1 Claim**



1. A method of thawing frozen blood plasma within the plasma containers, the object being to thaw the plasma rapidly without a given maximum temperature in any portion of the thawed plasma during the process being exceeded, the containers of plasma being given cyclic motion rotated or shaken while in contact with a heat delivering medium comprising:

continuously flowing of containers through a contacting chamber, continuously flowing concurrently with the containers the heating medium, contacting within the chamber the medium with the outer surfaces of the containers, setting the inlet temperature of the medium, setting the rate of flow of containers, setting the mass flow rate of medium, gradually dropping the heat exchange along the length of the chamber between the material and the medium gradually thawing the plasma and gradually reducing the temperature level of the medium along the chamber length, maintaining throughout the chamber the container innerwall temperatures below ten degrees centigrade.

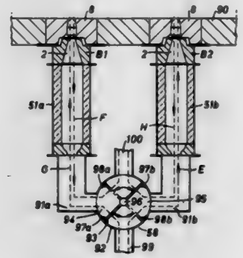
4,522,587
ROTATING MELTER
John H. Miller, Youngstown, Ohio, assignor to Hy-Way Heat Systems, Inc., Youngstown, Ohio
Filed Jan. 23, 1984, Ser. No. 573,287
Int. Cl.³ F27B *7/10, 14/00;* E01C *19/45*
U.S. Cl. 432—114 **6 Claims**



1. In an apparatus for simultaneously conveying, agitating and melting pieces of solidified coal tar or like material of a known size, an elongated material receiving tank, a hollow rotatable shaft extending horizontally in said tank, a helical coil within said tank forming a heat exchanger and spiral conveyor and connected with said rotatable shaft for rotation of said coil with said shaft in coaxial relation thereto, said helical coil having the convolutions thereof spaced slightly with respect to one another a distance less than the known size of said pieces of material, means in said tank adjacent an inlet opening therein for directing said pieces of material into one end of said helical coil, said tank having an outlet in said tank adjacent the other end of said helical coil and continuously extending means positioned horizontally in said tank and connected with said shaft for rotation with said shaft, said means being spaced radially of said helical coil and adjacent at least one surface of said tank whereby pices of said material smaller than the space between the convolutions of said coil are moved in an annular path in said tank, means for introducing hot oil into said hollow rotatable shaft and receiving the same therefrom and means in said hollow rotatable shaft for directing said hot oil into, through and out of said helical coil and means for rotating said hollow, rotatable shaft on its longitudinal axis.

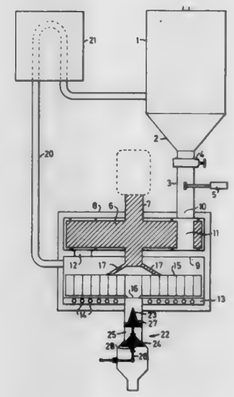
4,522,588
HEAT REGENERATOR
Julian B. Todd, 72 Trafalgar Rd., Moseley, Birmingham, and Roger J. Webb, 108 Purnells Way, Knowle. Solihull, West Midlands, both of England
Filed Oct. 12, 1983, Ser. No. 541,173
Claims priority, application United Kingdom, Oct. 12, 1982, 8229066
Int. Cl.³ F27D *17/00;* F24H *1/00;* F23D *11/44*
U.S. Cl. 432—181 **10 Claims**

1. Regenerative heating apparatus for heating an enclosure defined by a wall which has two ports arranged so that while one port is receiving heating gas to heat the enclosure, the other port is discharging the gas as waste gas after heating the enclosure, the apparatus comprising a pair of regenerators arranged so that in use while one is being heated by waste gas the other is preheating air for the combustion of fuel and so that one regenerator communicates with one port while the other regenerator communicates with the other port, each regenerator being provided at one end with a burner for communicating with the one end of the regenerator and with the respective port, each burner having an outlet communicating with a respective port and an inlet to receive fuel for combustion with preheated air supplied by the regenerator to provide heating gas for the enclosure and each burner serving in one mode as a means for supplying the heating gas to the enclosure and in a reverse mode as a flue for discharging waste gas to the regenerator, means for detachably securing the burner to the wall of the enclosure in a position enabling the burner to communicate with its respective port, each regenerator having the other end connected to a single reversing valve operable to



connect one of the pair of the regenerators to an outlet for the discharge of the waste gas while simultaneously connecting the other regenerator to an inlet for receiving air for preheating in the other regenerator, the reversing valve being reversible to connect the one regenerator to the inlet and to connect the other regenerator to the outlet, and means for detachably securing the reversing valve to both of the regenerators.

4,522,589
APPARATUS FOR DISCHARGING LIQUID-COVERED PARTICLES FROM A REACTION CHAMBER AND SUBSEQUENT DRYING OF SAID PARTICLES
Ulf R. Larson, Harabergsgatan 14, S-341 00 Ljungby, and Max-Günther Schmidt, Nygårdsvägen 9, S-260 91 Förslöv, both of Sweden
Filed Dec. 8, 1983, Ser. No. 559,352
Claims priority, application Sweden, Aug. 31, 1983, 8304713
Int. Cl.³ F27D *3/00*
U.S. Cl. 432—239 **9 Claims**

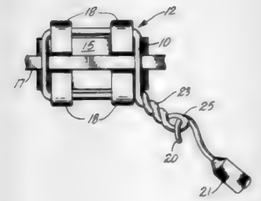


1. Apparatus for discharging moistened, sedimented particles from a reaction chamber and subsequent drying of said discharged particles, preferably metal particles which are produced in the upper portion of a reaction chamber partially filled with a liquid medium, by means of liquid-atomization or gas atomization of a stream of molten metal, whereby the produced metal particles are collected at the bottom of the lower portion of said reaction chamber, comprising

a discharge means arranged at the bottom of said reaction chamber, said discharge means being arranged for an automatic operation and being connected to a sensing member at the bottom of said reaction chamber to sense the absence or presence of sedimented particles in said bottom in such a way that the discharging operation is automatically discontinued at a predeterminable minimum quantity of collected particles and

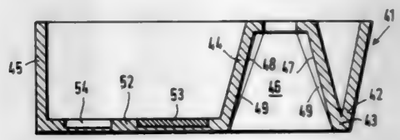
an outlet means closed to the atmosphere and connected to said discharge means, said outlet means being provided with a heated surface and a movable motor-driven means arranged to transport said liquid-coated particles from said discharge means over said heated surface, said discharge means and outlet means being arranged to prevent said particles from coming into contact with ambient air.

4,522,590
RING FOR ORTHODONTIC BRACKET
Erwin C. Pletcher, P.O. Box 3054, Rancho Sante Fe, Calif. 92067
Filed Feb. 17, 1984, Ser. No. 581,302
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—15 **13 Claims**



1. A ring for use with an orthodontic bracket with tie wings, comprising an endless loop of stainless-steel wire dimensioned to fit over the bracket tie wings, the wire being sufficiently soft to enable permanent-deformation twisting of a portion of the loop to reduce the length of the ring and thereby to tighten the ring against the bracket behind the tie wings, and to provide a twisted tail as an anchor for an auxiliary appliance.

4,522,591
ARTICULATOR FOR HOLDING DENTAL MODELS
Frank D. Braun, Düsseldorf; Walter Witt, Cologne, and Stanislav Putra, Solingen, all of Fed. Rep. of Germany, assignors to IPCO Corporation, White Plains, N.Y.
PCT No. PCT/EP82/00168, § 371 Date Apr. 11, 1983, § 102(e) Date Apr. 11, 1983, PCT Pub. No. WO83/00431, PCT Pub. Date Feb. 17, 1983
PCT Filed Aug. 7, 1982, Ser. No. 483,556
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1981, 3131689
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—60 **6 Claims**



1. In a base mold for the manufacture of a dental working model for working on dentures, the base mold having a hollow chamber adapted to receive the dental models, the chamber having a pair of internal walls and ribs on both internal walls, these ribs serving to form retention marks, with the hollow chamber becoming wider from the bottom to the top, and the base mold having a back wall spaced apart from the hollow chamber, the improvement comprising:

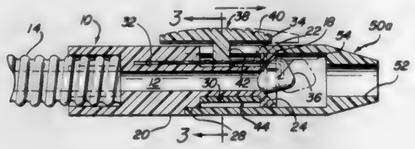
a substantially parabolic horizontal plate affixed to the base mold between the back wall thereof and the internal wall next adjacent to said back wall;

the base mold having a lower edge, and said horizontal plate being displaced upward relative to the lower edge of the base mold, and having a lower surface, thereby defining a receptacle bounded in part by said back wall, said internal wall next adjacent to the back wall, and the lower surface of the horizontal plate; and

a permanent magnet inserted in the lower surface of said horizontal plate,

so as to attract and retain the base mold to a magnetic plate mounted in a mounting shoe or the like, when the mounting shoe is disposed in said receptacle.

4,522,592
VALVE STRUCTURE FOR AN ORAL EVACUATOR SYSTEM
W. Grant Johnson, 1642 Mockingbird Pl., Orange, Calif. 92667
Filed Aug. 1, 1983, Ser. No. 518,925
Int. Cl.³ A61C *17/04*
U.S. Cl. 433—95 **11 Claims**



1. In an oral evacuator system, a valve structure to be coupled to a vacuum source/waste disposal device of the system by way of a flexible conduit, said valve structure comprising:

an elongated body unit having a central passageway extending therethrough, said body unit having an upstream end with a valve seat around said passageway, a downstream end and a centrally-located mechanism area essentially isolated from said upstream end;

coupling means at said downstream end of said body unit for coupling said central passageway to the flexible conduit;

valve means disposed adjacent said valve face for opening and closing said central passageway;

actuating means isolated from the upstream end, including means slidably and sealably seated in a valve actuating passageway located between the central and upstream portions, said slidable means connected to said valve means for actuating said valve means; and

said actuating means further comprising means for positively placing said valve means in either an open or a closed position.

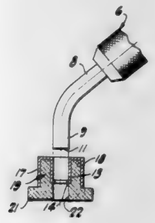
4,522,593
KNITTED GINGIVAL RETRACTION CORD
Dan E. Fischer, 10444 Dimple Dale Rd., Sandy, Utah 84092
Filed Jul. 7, 1983, Ser. No. 511,779
Int. Cl.³ A61C *5/14*
U.S. Cl. 433—136 **23 Claims**

1. A gingival retraction cord comprising at least one strand formed into a plurality of interlocking loops so as to form a knitted retraction cord for use in retracting gingival tissue preparatory to making an impression of a tooth that has been prepared for fitting of an artificial crown, said cord being knitted sufficiently loosely such that it is elastic in its longitudinal dimension so as to be able to be stretched, and resilient in its transverse dimension so as to be able to be compressed and



conformed to the contour and shape of a gingival sulcus when being packed therein.

4,522,594
LIGHT SHIELD FOR A DENTAL HANDPIECE
Marvin M. Stark, Los Altos Hills; Kenneth B. Soelberg, Menlo Park, and Roger B. Pelzner, San Mateo, all of Calif., assignors to Marvin M. Stark Research Foundation, San Jose, Calif.
Filed Jan. 21, 1983, Ser. No. 459,818
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—141 **1 Claim**



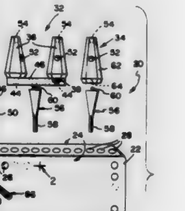
1. A light shield for a dental handpiece having a tubular end terminating in a squared-off tip and having means for conducting light through said handpiece and to said end to discharge therefrom, comprising an annular shield collar having an inner cylindrical wall adapted to slip over said handpiece end, an annular end flange on said inner cylindrical wall adapted to abut said tubular end and defining a central opening in line with said light conducting means, an outer cylindrical wall connected to said inner cylindrical wall flange to define an annular space between said cylindrical walls, and an annular shield of spongy opaque material mounted in said annular space, said annular shield having a disc portion extending radially and axially beyond said tubular end and having a central opening therethrough in position to conduct said light coming fom said tubular end through the center of said annular shield.

4,522,595
DENTAL TOOL FOR CLEANING TEETH INTERPROXIMALLY
Leroy Selvidge, 1108 Mimosa Dr., Oxford, Miss.
Filed May 27, 1983, Ser. No. 498,702
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—142 **9 Claims**

1. A dental tool for the cleaning of the subgingival interproximal concave surfaces of teeth comprising:

an elongate cylindrical shank having a longitudinal axis and a narrow end; and

a resilient and deformable tip located at the narrow end of said shank and larger than said shank, said tip being integrally formed and sized to be deformably insertable and rotatable interproximally, said tip also having a pear-shaped cross section when viewed in a plane containing the axis of said shank with the larger end outermost and

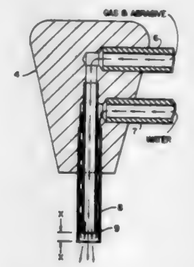


having a maximum diameter of between 0.5 mm and 2.0 mm whereby after deformably inserting said pear-shaped tip interproximally said tip is rubbed along the concave surfaces to clean these surfaces of plaque and to polish these surfaces.

4,522,596
MODULAR IMPLANT ASSEMBLY
Larry R. Ashkinazy, 200 Central Park South, New York, N.Y. 10019
Filed Jan. 20, 1984, Ser. No. 572,435
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **22 Claims**

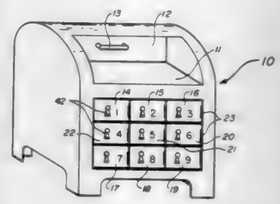
1. An implant assembly using a combination of modular components comprising a base module adapted for endosteal and subperiosteal implantation to a bone structure at selected sites, said module having a pair of opposed side faces defining a matrix of apertures extending transversely through the module and peripheral edge surfaces including a plurality of sockets extending normally along at least one of said edge surfaces, said apertures and said sockets having attachments means for engaging a component means, said component means being randomly registrable with either of said apertures or sockets and adapted to stabilize the module with respect to the bone structure and to support a prosthesis.

4,522,597
EQUIPMENT AND METHOD FOR DELIVERING AN ABRASIVE-LADEN GAS STREAM
Ben J. Gallant, Portland, Tex., assignor to Cooper LaserSonics, Inc., Santa Clara, Calif.
Continuation of Ser. No. 197,886, Oct. 17, 1980, Pat. No. 4,412,402, which is a continuation of Ser. No. 65,228, Aug. 9, 1979, Pat. No. 4,316,472, which is a continuation-in-part of Ser. No. 14,435, Feb. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 928,907, Jul. 28, 1978, Pat. No. 4,174,571. This application Sep. 6, 1983, Ser. No. 529,739
The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.
Int. Cl.³ A61C *3/06*; B24C *5/04*
U.S. Cl. 433—216 **21 Claims**



1. A method for cleaning teeth comprising directing a stream of particle-laden gas toward the surface of a tooth to be cleaned, concurrently directing a stream of liquid toward said surface, the particles comprising a material soluble in said liquid, and the liquid and gas streams being directed to provide for the presence of both liquid and particles within the same target area of the tooth surface to be cleaned.

4,522,598
EDUCATIONAL TOY MAILBOX
Daniel P. Coyne, and Alberta P. Coyne, both of P.O. Box 258, Anderson, Calif. 96007
Filed May 18, 1984, Ser. No. 612,064
Int. Cl.³ G09B *19/00*
U.S. Cl. 434—259 **3 Claims**



1. An educational toy for developing understanding of the relationship of larger and smaller numbers to physical size and to one another, comprising:

a body having individual numbered compartments therein, each said individual numbered compartment having an access door bearing a number assigned to said individual numbered compartment and a deposit hole identified with said number assigned to said individual numbered compartment with which it communicates, each said deposit hole being of an unique shape and size so that an object of correct shape and size fits into one said deposit hole but not into any other said deposit hole, the size of each said deposit hole corresponding to said number assigned to said individual numbered compartment with which it

communicates so that said deposit holes associated with successively lower-numbered said individual numbered compartments are successively smaller, while said deposit holes associated with successively higher-numbered said individual numbered compartments are successively larger, and

a set of deposit objects, each having a number and an unique shape and size corresponding to said number and said unique shape and size of one of said deposit holes so that each said deposit object fits into only one said deposit hole identified with a matching number,

thereby developing children's understanding of the relationship of larger and smaller numbers to physical size and to one another.

4,522,599

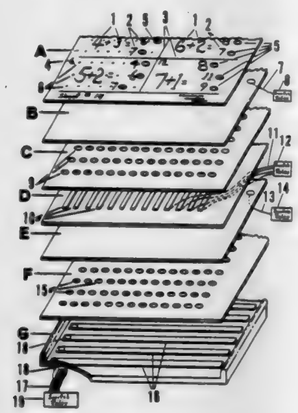
COMPUTER ASSISTED INSTRUCTIONAL AND TESTING APPARATUS WITH SWITCH CLOSURE AT TWO DIFFERENT DEPTHS

J. Richard Harte, 10 W. Concord, Kansas City, Mo. 64112

Filed Oct. 11, 1983, Ser. No. 540,636

Int. Cl.³ G09B *7/06*

U.S. Cl. 434—339 **6 Claims**



1. An instructional apparatus that gives feedback to the user as to his or her correct or incorrect responses by the use of: a computer that is programmable and is linked to input and output sources; an instructional sheet that contains response areas that represent possible correct answer choices to multiple choice, true-false, or cross matching questions, said response areas being located at some of the coordinates of a grid pattern, said instructional sheet overlying a number of electroconductive and nonconductive components that are held in a holding frame and are organized so that when downward pressure is exerted at any response area, which may be at any of the coordinates of the grid pattern, that two electric circuits are closed by this downward pressure, one of the closed circuits indicating which of the longitudinal coordinates in the grid was energized, and the other circuit that was closed indicating which perpendicular coordinate of the grid was energized; said information as to the two circuits that are closed being sent to the computer by wires, relays, and other appropriate means, said computer having been previously programmed with said grid coordinates to identify some of the coordinates of where the longitudinal and perpendicular coordinates intersect as being correct response areas, and designating the remaining grid coordinates as incorrect response areas, said computer receiving and evaluating this input from the teaching apparatus, and having means sending information immediately back to the user as to correct and incorrect responses.

4,522,600

WIND PROPULSION FOR ALL TYPES OF VEHICLES AND STATIONARY MACHINES

Bernhard Jöst, Traminerweg 4, D-6800 Mannheim 31, Fed. Rep. of Germany

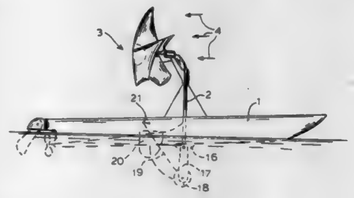
Continuation of Ser. No. 395,050, filed as PCT DE 81/00175 Oct. 10, 1981, published as WO 82/01398, Apr. 29, 1982, § 102(e), dated Jun. 15, 1982, abandoned.

This application Jul. 26, 1984, Ser. No. 634,656

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1980, 3039387

Int. Cl.³ B63H *13/00*

U.S. Cl. 440—8 **11 Claims**



1. A wind propulsion device for driving a transmission shaft connected through intermediate members with devices for force transmission, comprising:

(a) a wind impeller including a plurality of wind wings which are concavely curved against the air stream;

(b) a semisphere convexly curved against the air stream and axially disposed with respect to said impeller to which said wind wings are connected, said semisphere guides the air stream at the center of the impeller to the tips of the wings for efficient wind utilization and is formed of sheet metal; and

(c) an axle having mounted thereon for rotation a tube to which said semisphere and wings are connected, said tube driving said transmission shaft.

4,522,601

BOAT

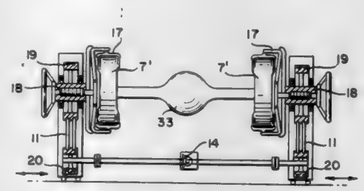
Byung E. Yoo, #616-5, Daemyung-dong, Nam-ku, Daegu-si, Rep. of Korea

Filed Sep. 24, 1982, Ser. No. 423,155

Claims priority, application Rep. of Korea, Jun. 30, 1982, 82-2909[U]

Int. Cl.³ B63H *19/00*

U.S. Cl. 440—11 **4 Claims**



1. An automobile ferry comprising:

a zone for accommodating an automobile having two driven wheels and two sterrable wheels;

each of said driven wheels being at least partially surrounded by and operatively engaged with a clamp; said clamp being provided with a control handle and key means for tightening of said clamp about said driven wheels;

said clamp being operatively connected to a first pulley, said first pulley being operatively connected to a second pulley by means of an endless belt means, and said second pulley being operationally connected to a first shaft means;

a bevel gear assembly means being operatively connected to said first shaft means and to a propeller shaft which is provided with a propeller for propelling said ferry through the water;

a cradle means for embracing said steerable wheels, including a pivotal link means operatively associated therewith;

a bell crank operatively associated with said pivotal link said bell crank being further operatively associated with a second link means for selectively moving a lever means associated therewith, said lever means being further operatively associated with and capable of pivoting a rudder means for steering said ferry.

4,522,602

INTAKE SYSTEM FOR OUTBOARD MOTORS

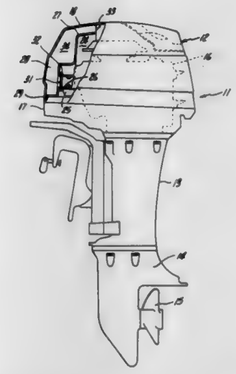
Masaki Okazaki, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

Filed Apr. 20, 1983, Ser. No. 486,668

Claims priority, application Japan, May 7, 1982, 57-76154

Int. Cl.³ B63H *21/26*

U.S. Cl. 440—77 **8 Claims**



1. In an induction system for an outboard motor or the like comprising an engine having an induction system air intake and a protective outer cowling substantially enclosing said engine and consisting of a main cowling portion covering and surrounding the engine and a lower tray, said main cowling portion having a front face, a pair of side faces and a top face all integrally connected, the improvement comprising a partition of substantially U shape having a portion extending substantially across the rear side of the front face of said main cowling portion of said protective outer cowling and having the legs of said substantially U-shaped partition extending along the forwardmost portion of the side faces of said outer cowling and having a peripheral flange formed around at least a portion of the periphery of said partition and engaged with said main cowling portion to define an air chamber between said engine and an operator of said outboard motor or the like and to reinforce said main cowling portion, air inlet means into said air chamber comprising a pair of inlets defined each by a respective side of said partition in areas where said partition has no flange engaged with said main cowling portion and wherein said partition is spaced from the adjacent portions of said outer cowling portion, and an air outlet communicating said air chamber with said induction system air intake.

4,522,603

WATER SKI BINDINGS

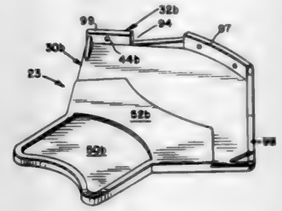
Keith H. Doyle, 10758 133rd Ave., East, Puyallup, Wash. 98371

Filed Oct. 14, 1983, Ser. No. 542,202

Int. Cl.³ A63C *5/00*

U.S. Cl. 441—70 **18 Claims**

1. As an article of manufacture, a one piece, integral water ski binding for receiving a portion of a skier's foot and comprising a flexible binding rubber portion integrally joined to framework portion, said binding rubber portion being flattenable to an unflexed condition when unattached to a ski or other part, said framework portion being harder than said binding rubber portion, said framework portion comprising one or more segments each having a quadrilateral cross section which extends transversely of said binding rubber portion when said binding rubber portion is flattened to said unflexed condition, said framework portion having fastener receiving holes formed only through said framework portion and not through said binding rubber portion, said holes being arranged for receiving fasteners for fastening said water ski binding to a water ski or a part mounted on a water ski, said framework portion extending outwardly from said binding rubber portion to overlie said ski when said binding rubber portion is flexed to form the foot receiving cavity.



4,522,604

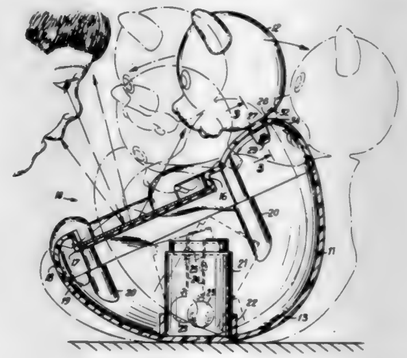
ROCKABLE TOY WITH A REFLECTING MIRROR

Albert Stubbmann, Franklin Lakes, N.J., assignor to Shelcore, Inc., S. Plainfield, N.J.

Filed Aug. 29, 1983, Ser. No. 526,957

Int. Cl.³ A63H *33/22*

U.S. Cl. 446—219 **16 Claims**



1. A rockable toy, comprising a main body having a bottom surface that is curved in all directions, the toy having a center of gravity situated substantially on a central axis of said body and within the confines of said curved bottom surface so that, when the toy is displaced in any direction from its stable position in which said central axis is substantially vertical, it will oscillate about its stable position until such oscillatory motion is damped sufficiently for the toy to remain in its stable position; and at least one mirror mounted on said main body for displacement therewith to present to the observer of the toy different and constantly changing reflected images during the oscillatory motion of the toy, said main body has substantially the configuration of a body of a figure in a sitting position; and further comprising a head mounted on said body outside the periphery of said mirror and in the line of sight of the observer via its reflection in said mirror in the intended position of use

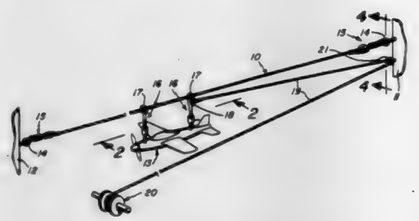
of the toy relative to the observer, so that the reflection of the head in the mirror will appear in front of an ever-changing background during the oscillatory motion of the toy.

4,522,605

GRAVITY-OPERATED TOY

Lawrence A. Guay, Jr., 29 Walter St., Portland, Me. 04103

Filed Aug. 1, 1983, Ser. No. 519,024
Int. Cl.³ A63H *21/02*
U.S. Cl. 446—228 **1 Claim**



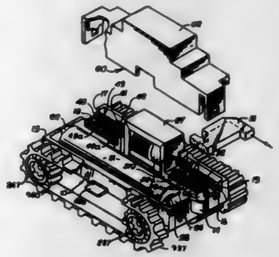
1. A gravity-operated toy comprising spaced first and second guide line supports having respectively fastener elements, the fastener on the first support being higher than the fastener upon the second support, a guide line respectively having fasteners on the respective opposite ends thereof and respectively engageable with the respective support fastener elements whereby the guide line will be supported in an inclined manner, a toy-like object and means for slidably connecting the same to the inclined guide line to slide rapidly downwardly thereover when unrestrained, said toy-like object connecting means including longitudinally-spaced forward and rear connectors each having a closed eye piece with a threaded shank for traversing the guide line, a threaded stud anchored in the toy-like object with its threads exposed and an oppositely internally threaded sleeve for detachably and adjustably securing the threaded anchored stud and toy-like object to the eye piece shank whereby the toy-like object can be detached for replacement by another object and adjusted to level the object with respect to the line for best operation thereupon, a control line guide connected to the first support just below the toy-like object guide line support and a freely holdable reel assembly, a control line slidable over said control line guide support and connected at one end to the toy-like object and at the other end connected to and wound in quantity upon said freely holdable reel, said reel having end walls of large diameter beyond the wound line on the reel so that the control line cannot readily escape thereover and axially-aligned dowel handle ends rigidly fixed to said reel and respectively extending from the respective opposite sides thereof, said reel assembly when held by the hands of the operator by the dowel handle ends extending through yoked thumb and fore-fingers enable the reel to unwind freely in response to the gravity pull of the toy-like object down the inclined guide line between its supports but upon thumbs and fingers upon the dowel ends may be restrained in its downward movement and when the handle ends be fully grasped being operable to rewind the pulled out control line from the reel and return the toy-like object to the desired elevated position upon its guide line.

4,522,606

SELF-POWERED MINIATURE TOY VEHICLE WITH TREADS AND WITH UNUSUAL FOUR-WHEEL-DRIVE CLIMBING CAPABILITY

Adolph E. Goldfarb, Westlake Village, Calif.; Delmar K. Everitt, 4310 Tosca Rd., Woodland Hills, Calif. 91356, and Norman J. Burger, 10164 Leu Ave., Pacoima, Calif. 91331, assignors to Delmar K. Everitt, Woodland Hills and Norman J. Burger, Pacoima, both of, Calif.

Continuation-in-part of Ser. No. 438,510, Nov. 2, 1982, , and Ser. No. 417,554, Sep. 13, 1982, , which is a continuation-in-part of Ser. No. 233,495, Feb. 11, 1981, abandoned, which is a continuation-in-part of Ser. No. 121,645, Feb. 14, 1980, Pat. No. 4,306,375. This application Feb. 4, 1983, Ser. No. 463,986
Int. Cl.³ A63H *17/14*
U.S. Cl. 446—433 **16 Claims**



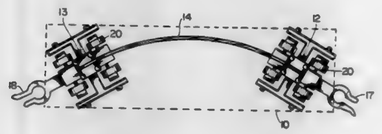
1. A plural-speed miniature treaded toy vehicle for use with electrical battery means that comprise a dry-cell battery, and for both generally conventional-toy operation at at least one speed on a generally flat surface and climbing-toy operation at at least one reduced speed with greater torque on a steep and/or irregular surface; said vehicle having, when such battery means are in use therewith, major weight components positioned to provide a generally symmetrical, compact, balanced and relatively low arrangement that enhances such climbing-toy operation; said vehicle comprising:
- a chassis that has a front end and a rear end;
- rotary driving means mounted to the chassis for rolling rotation about at least one laterally extending front axis and at least one laterally extending rear axis;
- endless-belt tread means supported from and driven by the rotary driving means, and disposed to engage such surfaces to propel the vehicle relative such surfaces;
- means mounted to the chassis to releasably support such electrical battery means;
- an electric motor mounted to the chassis, and having a driveshaft;
- means on the chassis for electrically connecting such battery means, when supported in the supporting means, to the motor, so that such battery means power the motor driveshaft;
- a speed-reduction mechanism mounted to the chassis and connecting the motor driveshaft to said wheel means to transmit rotation from the driveshaft to the rotary driving means with a mechanical advantage, said speed-reduction mechanism comprising, rotatably mounted to each of said front and rear ends of the chassis,
  - a worm adapted to be powered by the motor shaft,
  - a worm gear adapted to engage and be driven by the worm, and
  - an axle positioned at a corresponding one of the front and rear axes; and
- means associated with the speed-reduction mechanism for selecting among a plurality of values of the mechanical advantage, including at least one value providing such generally conventional-toy operation for generally flat surfaces and at least one other value providing such climbing-toy operation with greater torque for steep and/or irregular surfaces;
- the rotary driving means comprising front rotary driving means mounted to the axle that is mounted to the front end of the chassis, and rear rotary driving means mounted to the axle that is mounted to the rear end of the chassis;
- the front and rear rotary driving means being adapted to be powered respectively by the worm gears that are mounted to the front and rear ends of the chassis; and
- the tread means comprising an endless-belt tread that is looped over, suspended between, and driven by both of the front and rear rotary driving means;
- at least major portions of the motor and of such battery means, when such battery means are supported in the supporting means, being at approximately the same height as the rotary driving means, to particularly enhance such climbing-toy operation at said other value on such steep and/or irregular surfaces; and
- the speed-reduction mechanism comprises, rotatably mounted to the housing at each of said front and rear ends,
  - a driver gear adapted and disposed to be powered from the motor shaft, and
  - two spur-gear-and-worm clusters adapted and disposed to be powered by the driver gear, the said worm that is adapted to be powered by the motor shaft being provided selectably by either one of the two spur-gear-and-worm clusters;
- the worm gear is shiftable relative to the spur-gear-and-worm clusters, to engage and be driven by either of the two spur-gear-and-worm clusters;
- the axle is adapted and disposed to be driven by the worm gear; and
- the rotary driving means are adapted and disposed to be driven by the axle.

4,522,607

TOY RAILROAD VEHICLE WITH ALIGNMENT BIAS

Eugene J. Kilroy, Palos Verdes Estates; James E. Morse, Lawndale; Thomas H. Grimm, Manhattan Beach, and Nicholas DeAnda, Redondo Beach, all of Calif., assignors to Mattel, Inc., Racine, Wis.

Filed Jan. 12, 1984, Ser. No. 570,132
Int. Cl.³ A63H *19/28*
U.S. Cl. 446—447 **5 Claims**



5. A toy railroad vehicle comprising:
- a substantially flat elongated chassis defining a greater length in the intended direction of travel and a pair of apertures adjacent each end along said greater length;
- a first truck assembly having a first center support, a first pair of spaced apart axles coupled to said first center support, and a first quartet of wheels arranged in opposed pairs upon said first pair of axels;
- a second truck assembly having a second center support, a second pair of spaced apart axels coupled to said second center support, and a second quartet of wheels arranged in opposed pairs upon said second pair of axels;
- a first spring platform defining a first plurality of raised members extending away from said platform and forming therebetween a first center space;

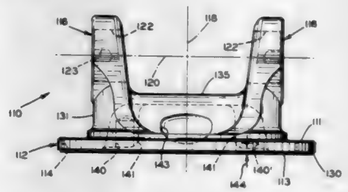
- a second spring platform defining a second plurality of raised members extending away from said platform and forming therebetween a second center space;
- a first shaft member extending through said first aperture having a first end coupled to said first spring platform and a second end coupled to said first center support of said first truck assembly;
- a second shaft member extending through said second aperture having a first end coupled to said second spring platform and a second end coupled to said second center support of said second truck assembly; and
- an elongated beam spring having a substantially flat cross section and having a first end passing through said first center space of said first spring platform and a second end passing through said second center space of said second spring platform,
- said elongated beam spring exerting a resisting force which opposes rotation of said first and second truck assemblies away from common alignment in the intended direction of travel.

4,522,608

FLANGE YOKE

Robert G. Joyner, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

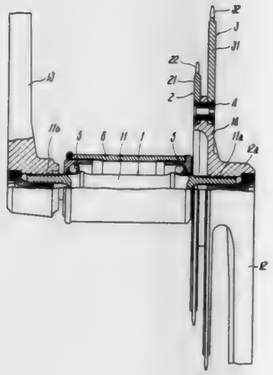
Filed Aug. 9, 1982, Ser. No. 405,978
Int. Cl.³ F16D *3/26*
U.S. Cl. 464—134 **6 Claims**



1. A flange yoke comprising:
- an annular flange having front and back faces, an axis of rotation, and a bolt circle about said axis of rotation on which is spaced a plurality of bolt holes;
- two lugs extending axially from said front face and symmetrically positioned about said axis, each of said lugs having radially inner and outer surfaces, and each of said lugs defining a bearing cross hole extending therethrough transversely to said axis between the respective radially inner and outer surfaces of each of said lugs, said bearing cross holes being aligned;
- said back face having a centrally located relief for receiving a mounting nut, said back face further having a pilot ring about said axis and surrounding said relief for positioning a companion flange;
- a balance pad positioned within said relief and generally underneath one of said lugs, the axially outermost surface of said balance pad being recessed axially inwardly into said relief with respect to the surface of said back face adjacent said relief;
- a balance hole positioned in said balance pad generally underneath one of said lugs, entirely radially inwardly of said radially outer surface of said one lug, at least partially radially inwardly of said radially inner surface of said one lug, and radially inwardly from said pilot ring.

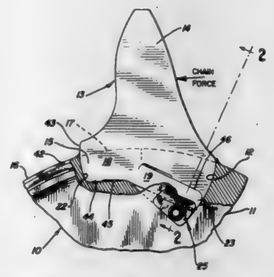
4,522,609
Patent Not Issued For This Number

4,522,610
GEAR CRANK APPARATUS FOR A BICYCLE
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed May 23, 1983, Ser. No. 497,051
Claims priority, application Japan, Jun. 1, 1982, 57-94396; Jul. 2, 1982, 57-115837; Oct. 9, 1982, 57-177828
Int. Cl.³ F16H *55/30*
U.S. Cl. 474—141 **7 Claims**



1. A gear crank apparatus for a bicycle comprising a crank shaft, a pair of crank arms, and at least one chain gear, said chain gear being provided with a gear body and a number of teeth provided circumferentially at the outer periphery of said gear body and having a not-round ellipse-like shape so that pitch diameters of a number of said teeth are different circumferentially of said gear body, said crank arms being operated in rotation to rotate said chain gear, so that the gear diameter is adapted to change at a rate to correspond to a change of torque produced by a cyclist's leg and transmitted to said driving chain during rotary operation of said crank arms, said chain gear being arranged with respect to said crank arms so that said crank arms are disposed rearwardly relative to a drive-rotation direction with respect to a maximum gear diameter portion of said chain gear, such that when the torque produced by the cyclist's leg is maximum during the rotatable operation of said crank arms, the gear diameter of said chain gear becomes substantially minimum and when the torque produced by the cyclist's leg is minimum, the gear diameter of said chain gear becomes substantially maximum.

4,522,611
SPROCKET ASSEMBLY WITH REPLACEABLE TEETH
David M. Hiatt, Portland, Oreg., assignor to Esco Corporation, Portland, Oreg.
Filed Dec. 27, 1982, Ser. No. 453,799
Int. Cl.³ F16H *55/12*
U.S. Cl. 474—162 **17 Claims**



1. A sprocket assembly with replaceable teeth for engaging a chain comprising a generally cylindrical sprocket body having a cylindrical periphery and adapted to be axially mounted on a rotatable shaft and having a plurality of equally spaced tooth receiving pockets in the cylindrical periphery thereof,

each of said pockets extending generally circumferentially of said body and having a toe portion open to said cylindrical periphery and heel portion communicating with said toe portion and spaced rearwardly thereof relative to the direction of chain force applied to said sprocket assembly, said heel portion being partially defined by an outer wall separating said heel portion from said cylindrical periphery, said body being equipped with axially extending passages, one on each side of said heel portion,

a tooth removably mounted in each pocket having a toe part and a heel part for mounting respectively in each of said pocket toe and heel portions and having a chain engaging contour radially outward of said parts, and

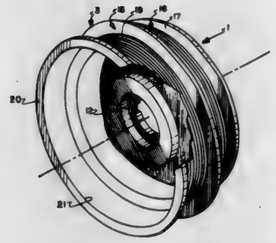
wedge lock means in said passages for engagement with said tooth heel part to urge said tooth toe part into engagement with said socket toe portion whereby the chain force tends to seat said tooth in said pocket.

4,522,612
BALANCED PULLEY CONSTRUCTION
Benjamin F. Frazer, Dothan, Ala., assignor to Dyneer Corporation, West Port, Conn.
Filed Apr. 20, 1983, Ser. No. 486,673
Int. Cl.³ F16H *55/49*
U.S. Cl. 474—168 **8 Claims**

1. An improved balanced pulley construction including:

(a) a pulley cup having a planar end wall formed with a central opening and an annular wall formed with belt receiving grooves therein extending axially outwardly from said end wall;

(b) a one-piece stamped steel balancing washer having a generally flat annular configuration formed with a central hole and having an integrally formed projection extending radially outwardly therefrom, said central hole having a diameter equal to or greater than the diameter of the central opening of the planar end wall; and



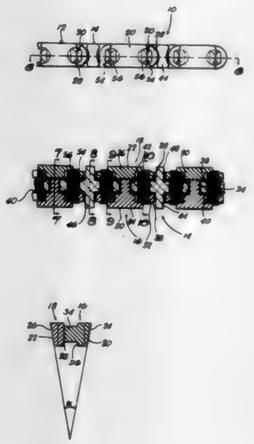
(c) means for permanently bonding the balancing washer on and flush against the end wall of the pulley cup without the use of additional fasteners and spaced radially inwardly from the annular wall with the central hole of the washer being concentric with the central opening of the end wall, and with the washer projection being positioned to counterbalance an unbalanced condition in the annular wall of the pulley cup, and with said washer being adapted to be engaged by a fastening nut which mounts the pulley cup on a shaft which projects through the central opening of the cup wall and central hole of the washer.

4,522,613
V-BELT
Torao Hattori, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 24, 1983, Ser. No. 497,653
Claims priority, application Japan, Jun. 2, 1982, 57-94579
Int. Cl.³ F16G *5/18*
U.S. Cl. 474—245 **12 Claims**

1. A V-belt comprising

first links each including a right link member, a left link member, a transverse spacer therebetween and rigidly fixed, inclined transmission faces on two opposite sides thereof, each said link member having two first ends with a first connecting hole through each said first end;

second links each including two second ends with a second connecting hole through each said second end and a block between said two second ends having rigidly fixed, inclined transmission faces on two opposite sides thereof, said inclined transmission faces of said first and second links having equal transverse spacing and equal angles of inclination; and



pins extending through said first and second connecting holes and alternately connecting said first and second links.

4,522,614
AUTOMATIC TENSION MAINTAINING TRANSMISSION BELT
Hiroshi Matsuoka, Iszume, and Yutaka Furukawa, Sennan, both of Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan
Continuation of Ser. No. 242,928, Mar. 12, 1981, abandoned, which is a continuation-in-part of Ser. No. 958,410, Nov. 7, 1978, abandoned. This application Aug. 23, 1984, Ser. No. 621,439
Int. Cl.³ F16G *1/00, 5/00, 9/00*; B29D *3/00*
U.S. Cl. 474—260 **10 Claims**

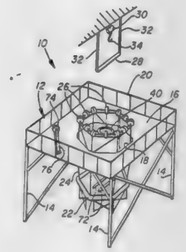


1. An automatic tension transmission belt having polyester fiber cords embedded therein which shrink at a temperature greater than 80° C., when the belt is operating between two pulleys for the transmission of force therebetween, the frictional heat generated by any slippage during said operation of the belt causes the fiber cords to shrink at operating temperature, thereby increasing the belt tension and eliminating said slippage.

4,522,615
METHOD AND APPARATUS FOR MANUFACTURING AN AGRICULTURAL BAG

Eddie H. Bailen, Omaha; David H. Rasmussen, Arlington, and William C. Johnson, Omaha, all of Nebr., assignors to AG-Bag Corporation, Astoria, Oreg.

Continuation of Ser. No. 342,842, Jan. 26, 1982, Pat. No. 4,424,051. This application Oct. 24, 1983, Ser. No. 544,496
Int. Cl.³ B31B *23/02*
U.S. Cl. 493—37 12 Claims

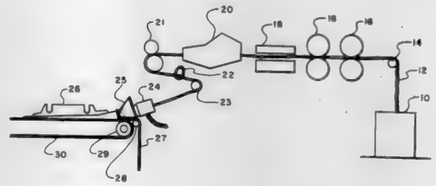


1. A method of manufacturing a two-ply agricultural storage bag, comprising the steps of:
providing a relatively small diameter tubular plastic guide ring;
providing a relatively large diameter tubular plastic material advancing ring, including tubular plastic material advancing means;
positioning the guide ring coaxially and in a predetermined spaced apart relationship with respect to the advancing ring;
rotatably supporting a first roll of tubular plastic material on the side of the guide ring opposite from the advancing ring;
extending the leading end of the tubular plastic material from the first roll through the guide ring and around the advancing ring so that the tubular plastic material from the first roll is turned inside out at its point of engagement with the advancing ring;
rotatably supporting a second roll of tubular plastic material on the side of the advancing ring opposite from the guide ring;
extending the leading end of the tubular plastic material from the second roll around the outside of the advancing ring and around the outside of the tubular plastic material from the first roll positioned therearound;
thereafter actuating the advancing means of the advancing ring to simultaneously advance both the tubular plastic material from the first roll and the tubular plastic material from the second roll thereby forming a two-ply tubular plastic structure;
measuring the length of the two-ply tubular plastic structure as it is formed by the foregoing steps;
gathering the advancing two-ply structure into a series of folds;
interrupting the advance of the two-ply plastic structure after a predetermined length thereof has been measured; and
cutting the two-ply plastic structure in a plane extending substantially perpendicularly to the axis thereof and thereby forming a two-ply agricultural storage bag having the predetermined length.

4,522,616
METHOD AND APPARATUS FOR FORMING CIGARETTE FILTER RODS

Rebecca A. Hyde, Charlotte; Kenneth R. Krimminger, Oakboro, and Robert E. Swander, Charlotte, all of N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 10, 1982, Ser. No. 356,708
Int. Cl.³ A24C *5/50*
U.S. Cl. 493—44 9 Claims

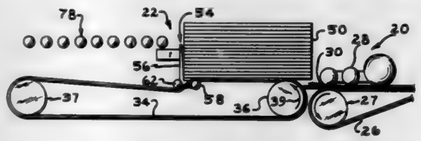


1. In an apparatus suitable for a range extension process of manufacturing filter elements from opened and deregistered crimped continuous filament tow, wherein said tow is conducted from a mechanical forwarding means through an aspirating jet into a compacting means immediately adjacent said jet and wherein means are provided for dissipating aspirating fluid, the improvement comprising: (a) a tow controlling means positioned intermediate said mechanical filament forwarding means and said aspirating jet, said tow controlling means controlling width and direction and imparting at least some drag to said opened and deregistered tow and; and (b) a perforated funnel member positioned intermediate said aspirating jet and said compacting means, said perforated funnel member having sufficient volume to allow said tow to accumulate in a substantially tension free condition prior to being drawn into said compacting means whereby pressure drop and weight variations in resultant cigarette filter elements are reduced at extended points in range.

4,522,617
CONVERSION BELT AND STOP PLATE ASSEMBLY FOR UPSTACKING CORRUGATED BOX MACHINERY

Donald E. Mowry, Norwalk, Ohio, assignor to Don Mowry Flexo Parts, Inc., Norwalk, Ohio

Filed Aug. 12, 1983, Ser. No. 522,387
Int. Cl.³ B31B *1/98;* B65H *31/08*
U.S. Cl. 493—126 3 Claims

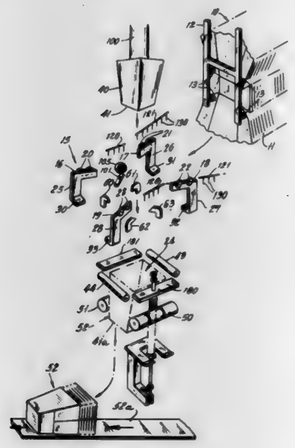


1. In a corrugated box machine having an inking apparatus, a gluing apparatus, and a folding apparatus, including delivery belts, the invention comprising an improved delivery and stacking apparatus, a plurality of drive belts for receiving boxes as they are discharged from the folding apparatus, said drive belts being mounted for movement around leading rollers adjacent the folding apparatus and rearward rollers spaced from said leading rollers, said drive belts having a horizontal upper surface which is raised above said delivery belts whereby the boxes contact said drive belts on the upper halves of said leading rollers, said leading rollers moving the boxes upwardly to a stacked relationship atop said horizontal upper surface of said drive belts and a stop plate positioned contiguous said horizontal upper surface at a location between said leading rollers and said rearward rollers, said stop plate extending across said horizontal upper surface to stop and align the leading edge of an entering box with the stacked boxes, said stop plate having a front face which slants rearwardly relative to said horizontal upper surface thereby forming an obtuse angle with said horizontal upper surface of said drive belts to cause the leading edges of the stacked boxes to lose contact with said front surface of said stop plate as the stacked boxes move upwardly.

4,522,618
MECHANISM FOR ASSEMBLING TAPERED, NESTED CONTAINERS

Charles G. Stannard, E. Granby, Conn., assignor to Sprinter Systems Incorporated, East Windsor, Conn.

Filed Apr. 8, 1982, Ser. No. 366,569
Int. Cl.³ B31B *1/44, 1/62, 1/98*
U.S. Cl. 493—143 2 Claims

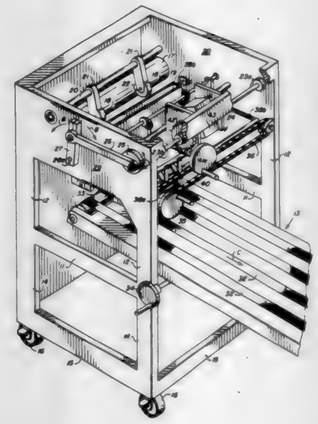


1. A machine for making a tapered nestable container from a blank, said container having front and back walls and side walls with side panels extending from each side of the front and back walls;
said machine comprising a tapered mandrel male member, the inner dimension of which matches the inner dimension of the container to be formed from the blank, and having a bottom section matching the bottom wall of the blank;
a die; support and guide arranged above the die in horizontal position with respect thereto; said mandrel having a vertical movement into the die and said die having a horizontal position;
said blank being positioned on said support and guide members prior to movement of said mandrel into said die;
means being provided for applying adhesive to outer portions of sections of the blank, said mandrel moving downwardly into the die driving the blank through the die after said adhesive has been applied; and
said means for applying adhesive comprising movable carrier members having a plurality of pins extending therefrom; said pins being arranged along the contour of the blank adjacent the edge of the blank and adjacent the inner surfaces of the outer edges of the panels which are to be bolded on the outside of the additional panels of the blank;
said pins extending on each side of the carton blank and a glue pot adjacent said pins; said pins being movable from a position where their ends are inserted into said glue pot to a position where their ends extend adjacent the surface of the blank, and being moveable from the glue pot to the blank when the blank is in position to receive glue from the pins and being movable back before the next blank is placed in position.

4,522,619
TIMING ADJUSTMENT MECHANISM FOR CONTINUOUS FORM STATIONERY FOLDING MACHINE

Earnest B. Bunch, Jr., 7016 W. Astor Rd., Peoria, Ariz. 85345

Filed Jan. 28, 1980, Ser. No. 115,705
Int. Cl.³ B65H *45/20*
U.S. Cl. 493—415 1 Claim



1. In combination with apparatus for producing continuous form stationery by folding a strip of paper along transverse lines of weakening formed therein, said apparatus including,
a frame,
an oscillating chute mounted on said frame for alternately distributing said successive lines of weakening in said paper in substantially opposite directions,
rollers carried on said frame for dispensing said continuous strip of paper into said oscillating chute,
folding means carried on said frame and operatively associated with said oscillating chute for urging said paper distributed by said chute into a folded condition, said folding means including,
spirals shaped and dimensioned to receive and carry away from said oscillating chute creased edges of paper distributed by said chute, said spirals being independently adjustable prior to the operation of said apparatus,
beaters for periodically tamping said paper distributed by said chute, said beaters assisting in the folding and positioning of said paper and being independently adjustable prior to the operation of said apparatus,
said spirals and beaters moving in synchronous relationship with said chute during the operation of said apparatus,
a support surface for receiving paper dispensed by said spirals and beaters,
paper stops positioned above said support surface, each of said paper stops having at least one upstanding face for stopping the lateral travel of creased edges of paper distributed by said chute,
gear train means for transmitting motive power to said rollers, oscillating chute, and folding means such that generally synchronized movement thereinbetween is maintained, a portion of said gear train means actuating said chute and said folding means, said portion actuating said chute and folding means without actuating said rollers,
power means to drive said gear train means,
means for simultaneously adjusting said oscillating chute and said folding means in relation to said rollers while maintaining said generally synchronous movement between said chute and folding means, said adjustment means including,
(a) at least one drive shaft positioned along said gear train means and transmitting motive power to said portion of

said gear train means actuating said oscillating chute and said folding means, said drive shaft having a first segment and a second segment, and

(b) a differential unit positioned along and interconnecting said first shaft segment and said second shaft segment for rotating said first shaft with respect to said second shaft so that said synchronous movement of said oscillating chute and said folding means may be adjusted in relation to said rollers when

(i) said oscillating chute and said folding means are in motion during operation of said continuous form stationery folding apparatus, and

(ii) said oscillating chute and folding means are idle prior to said power means being actuated to provide motive power to operate said continuous form stationery folding apparatus,

said first and second shafts each carrying at least one component of said differential unit.

4,522,620

METHOD AND APPARATUS FOR MEASURING THE QUANTITY OF SOLID MATERIAL IN A CENTRIFUGE CYLINDER

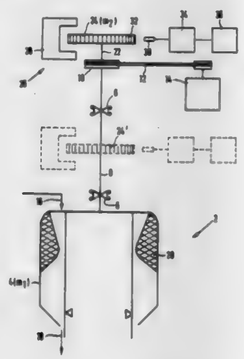
Peter Leister, Waldbronn, Fed. Rep. of Germany, assignor to Deutsche Gesellschaft, Fed. Rep. of Germany

Filed Nov. 8, 1983, Ser. No. 549,999

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1982, 3241624

Int. Cl.³ B04B *13/00*

U.S. Cl. 494—10 **13 Claims**



1. A method for measuring the quantity of a solid material load in the cylinder of a centrifuge, particularly for use in reprocessing nuclear fuel solutions, said centrifuge having a drive shaft which comprises

(a) providing a mass supplementing the mass of said centrifuge and connecting to the drive shaft of said centrifuge,

(b) temporarily imparting natural torsional vibrations to said centrifuge, drive shaft, and supplemental mass,

said torsional vibrations being produced by an electromagnetic field surrounding a cage armature rotation with said drive shaft, the frequency of said vibrations depending upon the quantity of the load,

(c) measuring the frequency of said natural vibrations, and

(d) converting the frequency into quantity units.

4,522,621

ARTIFICIAL INSEMINATION APPARATUS

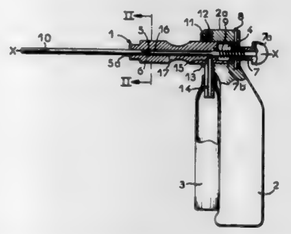
Bertrand Cassou, Saint Symphorien des Bruyeres, 61300 l'Aigle, France, assignor to Bertrand Cassou; Robert Cassou and Maurice Cassou, all of l'Aigle, France

Filed Jan. 14, 1983, Ser. No. 457,923

Claims priority, application France, Jan. 26, 1982, 82 01173

Int. Cl.³ A61M *37/02;* **A61D** *7/02*

U.S. Cl. 604—140 **17 Claims**



1. Artificial insemination apparatus comprising a body defining a conduit having a front end adapted to receive an end of a tube containing a dose of semen, an ejection rod mounted slidingly in said conduit and manually displaceable from a rear portion thereof remote from said front end of said conduit, and air supply means communicating with said conduit for supplying air under pressure to expel the semen from said tube, said conduit being generally circular in cross-section; and said ejection rod being formed with a non-circulator cross-section; thereby defining at least one air flow passage extending longitudinally in said conduit adjacent said ejection rod from said front end of said conduit to said communication with said air supply means so as to conduct air from said air supply means to said tube.

4,522,622

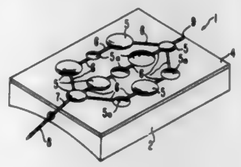
MULTIPLE FLUID PULSE DISPENSER

John R. Peery, Palo Alto, and James B. Eckenhoff, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Dec. 23, 1982, Ser. No. 452,522

Int. Cl.³ B65D *35/22*

U.S. Cl. 604—191 **10 Claims**





1. A multiple fluid pulse dispenser for introducing predetermined amounts of a biologically active agent into an animal comprising, in combination:

(a) a first member having a plurality of spaced apart concavities formed on one surface,

(b) a second member comprising a plurality of spaced apart permanently invertible blisters, said first and second members being sealed together with the blisters overlaying the concavities so as to provide a plurality of fluid receiving reservoirs, the blister configuration being selected such that, on inversion, the inverted blister will displace substantially all of the fluid contents of its reservoir, and

(c) fluid communication means connecting said reservoirs to a common outlet means through which the fluid contents of said reservoirs may be dispensed upon inversion of a blister into its associated concavity.

4,522,623

SUCTION BOTTLE FOR MEDICINAL PURPOSES

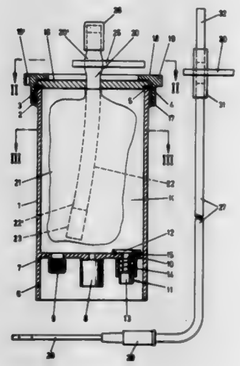
Friedrich G. Laüterjüng, Schallstr. 6, 5000 Köln 41, Fed. Rep. of Germany

Filed Dec. 7, 1982, Ser. No. 447,558

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150500

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—319 **23 Claims**



1. In a suction bottle for medical purposes having a cover, with a valve connection nipple for evacuating an inner chamber of the bottle surrounding a disposable bag arranged within the inner chamber, the volume of the bag being increasable by vacuum in the inner chamber outside of the bag adapted to suck material into the bag, a drainage tube connected with the interior of the bag adapted for receiving the sucked material, and an upper edge of the bag suspended at the cover of the suction bottle, the improvement wherein

said bottle having a bottom wall portion and wall means for supporting the bottle via a part of said wall means such that said bottom wall portion is spaced higher than said part

the valve connection nipple is arranged at a said bottom wall portion of the bottle,

means comprising a closure member for air-tight clamping of the drainage tube, and

a drainage tube connection nipple is provided with said closure member, said drainage tube connection nipple with said drainage tube constitutes sole means of communication into said bag,

said edge of the bag plus cover plus said drainage tube connection nipple are integrally combined into a disposable unit non-releasably connected air-tightly to each other.

4,522,624

INCONTINENT PAD

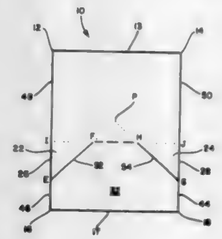
Martha E. Bolick, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 1, 1983, Ser. No. 518,981

Int. Cl.³ A61F *13/16*

U.S. Cl. 604—385 R **23 Claims**

1. An incontinent pad adapted to be worn about the hips and to cover the perineal area of a wearer, said pad comprising a layer of absorbent material overlaying a moisture impermeable layer, having a generally rectangular shape, and having two symmetrical generally straight cuts through both layers, each cut extending from a beginning at an opposite edge toward a generally centrally located point and terminating at a fold line generally perpendicular to the edges from which the cuts originate and located within the central third of the pad between the end points of the cuts, measured along the edges from which the cuts originate; with the angle of intersection of the cut line with the fold line extension ranging from 15° to 75°.



4,522,625

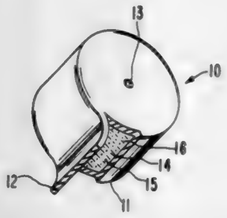
DRUG DISPENSER COMPRISING WALL FORMED OF SEMIPERMEABLE MEMBER AND ENTERIC MEMBER

David Edgren, El Granada, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Sep. 29, 1982, Ser. No. 427,870

Int. Cl.³ A61K *9/22, 9/32*

U.S. Cl. 604—892 **2 Claims**



1. An oral osmotic therapeutic dispenser for the controlled dispensing of a drug formulation in the gastrointestinal tract, which dispenser comprises:

(a) a shaped osmotically functioning wall formed of a composition consisting essentially of (i) a selectively semipermeable material permeable to the passage of fluid, substantially impermeable to the passage of drug, which maintains its physical and chemical integrity in the presence of gastric fluid and intestinal fluid, and is a member selected from the group consisting of cellulose acylate, cellulose diacylate, cellulose triacylate, cellulose acetate, cellulose diacetate, and cellulose triacetate, blended with (ii) from 0.5 wt. % to 40 wt.% of an enteric material that is substantially insoluble in gastric fluid, leaves the shaped wall in response to intestinal fluid, thereby increasing the passage of fluid through the shaped wall in the intestine while maintaining the osmotic functionality of said shaped wall wherein the wall remains substantially impermeable to the passage of the drug, the wall surrounding and forming:

(b) a compartment containing from 0.05 mg to 3 g of a drug formulation that is soluble in external fluid that enters the compartment and exhibits an osmotic pressure gradient across the wall against an external fluid when the dispenser is in the gastrointestinal tract;

(c) an osmotic passageway in the wall communicating with the compartment and the exterior of the osmotic dispenser for dispensing drug formulation from the dispenser; and,

(d) wherein, when the osmotic dispenser is in the gastrointestinal tract, fluid passes through the wall of the osmotic dispenser into the compartment to continuously dissolve the drug formulation to create an osmotic pressure within the device whereby the formulation is osmotically delivered through the passageway at a controlled rate over a prolonged period of time to the gastrointestinal tract.

4,522,626

PROCESS FOR TREATING HIGH-SULFUR CAKING COALS TO INACTIVATE THE SULFUR AND ELIMINATE CAKING TENDENCIES THEREOF

Wilton F. Espenscheid, DeSoto, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 163,081, Jun. 26, 1980, abandoned, which is a continuation of Ser. No. 001,665, Jan. 8, 1979, abandoned. This application Jul. 21, 1981, Ser. No. 265,291

Int. Cl.[3] **C10L** *9/02, 9/12*

U.S. Cl. 44—1 R **21 Claims**

1. A process of treating high-sulfur, caking coals for deactivation of the sulfur, substantial elimination of the caking tendencies and incorporation of a catalyst therewith which comprises reducing the particle size of the high-sulfur, caking coal, and (a) subjecting the resultant coal to a slurry of lime at a lime/coal ratio between about 0.2 and 20%, (b) then subjecting the resulting mixture to air or oxygen treatment, at a temperature between about 100° and 300° C., at a pressure between about 100 and 1000 psig, and for a period of time between about 15 minutes and 2 hours, said catalyst being the resultant reaction product or products produced by steps (a) and (b).

10. A process of treating high-sulfur, caking coals for deactivation of the sulfur, substantial elimination of the caking tendencies and incorporation of a gasification or hydrogasification catalyst therewith which comprises the steps of:

(1) grinding or crushing the high-sulfur, caking coal to less than about ¼", (a) mixing the resultant coal in a mixer with about 0.2 to 3.0 molar sodium hydroxide (aqueous) up to about 50% by volume of coal in the mixture, transferring the resultant mixture under pressure to a stirred reactor in the presence of air or oxygen at a temperature between about 100° and 300° C., at a pressure between about 100 and 1000 psig for a period of time between about 15 minutes and 2 hours, and

(2) filtering and washing of the coal obtained by step (1), mixing the resultant washed coal with a slurry of lime in water in a second reactor at a temperature between about 150° and 300° C. at a lime/coal ratio between about 0.02 and 0.20 wt/wt, and drying the end product, said catalyst being the resultant reaction product or products produced by steps 1(a) and 2.

11. A process according to claim **10** wherein the resultant wash of step (2) is recycled to said mixer of step (1) and a slip-stream of same is causticized with lime to remove sulfates and restore pH of said wash.

18. The low-sulfur, non-caking coal produced by the process of claim **10**.

4,522,627

PROCESS FOR PRODUCING OIL-CONTAINING, MICROSPHERICAL CARBONACEOUS PARTICLES

Shimpei Gomi, Tokyo; Tomomitsu Takeuchi, Yokohama; Itaru Matsuo, Matsudo; Toshio Tsutsui; Takao Nakagawa, both of Ichikawa, and Shigeru Miwa, Ichihara, all of Japan, assignors to Fuji Standard Research Kabushiki Kaisha, Tokyo, Japan

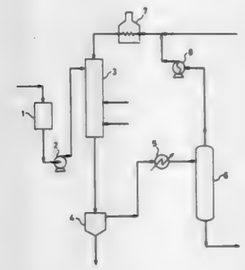
Filed Dec. 6, 1982, Ser. No. 447,289

Claims priority, application Japan, Dec. 28, 1981, 56-209986

Int. Cl.[3] **C10L** *9/00, 9/10, 5/00, 5/16*

U.S. Cl. 44—1 R **7 Claims**

1. A process for producing pitch spheres substantially free of moisture having a softening point of at least 80° C., solid flow rate of at least 200 sec/15 μg, and an average particle diameter from 30–200 μm, which comprises heating and melting at 120°–430° C. a material pitch selected from the group consisting of petroleum and coal pitches having fixed carbon contents of 40–75 wt % and softening points of 80°–220° C., mixing and atomizing the molten pitch in a stream of an inert gas at a pressure from atomospheric to 10 kg/cm^2 and at a temperature lower than that of the molten pitch, cooling and solidifying said atomized pitch by further lowering the temperature of said mixture of said atomized pitch and inert gas by spraying a cooling medium into the mixture in a quantity such that it evaporates and its latent heat of vaporization is used to obtain said spheres substantially free of moisture, and adding a fine powder having a fluidity-improving effect on said pitch



spheres in a quantity of from 0.05 to 1% based on the weight of the pitch spheres in at least one of said pitch sphere forming steps and separating step.

4,522,628

METHOD FOR REMOVING ASH MINERAL MATTER OF COAL WITH LIQUID CARBON DIOXIDE AND WATER

Joseph G. Savins, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 331,054, Dec. 16, 1981, abandoned. This application Jul. 19, 1983, Ser. No. 515,098

Int. Cl.[3] **C10L** *9/02*

U.S. Cl. 44—1 SR **10 Claims**

1. A method for removing the ash mineral matter content of run-of-mine coal comprising:

(a) grinding the run-of-mine coal to a particle size to form a suitable slurry;

(b) mixing the coal particles with water and liquid carbon dioxide in a vessel;

(c) determining the solubility parameter of said coal and maintaining the mixture of coal particles, liquid carbon dioxide, and water in the mixing vessel in a swirling, fluidized state at a pressure, temperature, and for a residence time sufficient to separate ash mineral matter from the coal particles and form an ash free coal/mineral matter slurry; and

(d) separating the ash free coal particles from the ash free coal/mineral matter slurry by froth floatation and recovering the coal particles substantially free of ash mineral matter.

5. A method for removing the ash mineral matter content of run-of-mine coal and transporting the low ash content coal from the ash demineralizing point to a coal use point comprising:

(a) grinding the run-of-mine coal to a particle size to form a suitable slurry;

(b) mixing the coal particles with water and liquid carbon dioxide in a vessel;

(c) determining the solubility parameter of said coal and maintaining the mixture of coal particles, liquid carbon dioxide, and water in the mixing vessel in a swirling, fluidized state at a pressure, temperature, and for a residence time sufficient to separate ash mineral matter from the coal particles and form an ash free coal/mineral matter slurry;

(d) separating the low ash coal particles from the coal/mineral slurry by froth floatation and recovering the coal particles substantially free of ash mineral matter;

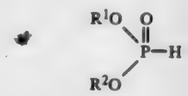
(e) drying said recovered ash free coal particles;

(f) slurrying said dried ash free coal particles with liquid carbon dioxide to form an ash free coal/carbon dioxide slurry;

(g) pumping said slurry through a pipeline to said coal use point;
(h) deslurrying said ash free coal/carbon dioxide slurry at said coal use point to separate said ash free coal and said liquid carbon dioxide; and
(i) recovering said coal-free liquid carbon dioxide and passing said liquid carbon dioxide through a pipeline for admixture with said coal being treated in step (b).

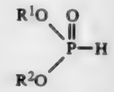
4,522,629
BORATED PHOSPHONATES AS LUBRICANT AND FUEL ADDITIVES
Andrew G. Horodysky, Cherry Hill, and Phillip S. Landis, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Sep. 23, 1983, Ser. No. 535,131
Int. Cl.³ C10L *1/30*
U.S. Cl. 44—53 **26 Claims**

1. A product of reaction made by reacting a hydrocarbyl vicinal diol containing 10 to 30 carbon atoms, a dihydrocarbyl phosphite of the formula



wherein R is a hydrocarbyl group containing 1 to 30 carbon atoms and R^2 is a hydrocarbyl group containing 1 to 6 carbon atoms and a boron compound, the reaction being run at from about 70° C. to about 260° C. using amounts of reactants such that in the final product at least about 5% of the hydroxy groups originally available are borated.

13. A liquid fuel composition comprising a major proportion of a liquid fuel and from about 5 to about 250 pounds per 1000 barrels of said liquid fuel of a reaction product made by reacting a hydrocarbyl vicinal diol containing 10 to 30 carbon atoms, a dihydrocarbyl phosphite of the formula



wherein R is a hydrocarbyl group containing 1 to 30 carbon atoms and R^2 is a hydrocarbyl group containing 1 to 6 carbon atoms and a boron compound, the reaction being run at from about 70° C. to about 260° C. using amounts of reactants such that in the final product at least about 5% of the hydroxy groups originally available are borated.

4,522,630
DIESEL FUEL COMPOSITION
Paul D. Seemuth, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Mar. 29, 1984, Ser. No. 594,924
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—53 **5 Claims**

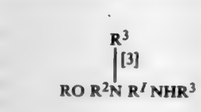
1. Liquid fuel adapted for use in a diesel engine, said fuel being selected from the group consisting of liquid hydrocarbons of the diesel boiling range, alcohols and mixtures thereof, and said fuel containing a cetane number increasing amount of a fuel soluble tetrahydro-2,5-furandimethanol dinitrate.

4,522,631
DIESEL FUEL CONTAINING RARE EARTH METAL AND OXYGENATED COMPOUNDS
Antonio M. Mourao, Wappingers Falls, and Clifford H. Faist, Monsey, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.
Filed Nov. 18, 1983, Ser. No. 553,019
Int. Cl.³ C10L *1/08*
U.S. Cl. 44—57 **6 Claims**

1. A diesel fuel comprising a hydrocarbon based diesel fuel composition boiling in the range of about 350° F. (175° C.) to 750° F. (400° C.) and containing a particulate suppressing mixture of between about 0.001 and about 0.1% by weight of a cerium salt of an acid selected from the group consisting of carboxylic acids and cycloalkyl carboxylic acids having from 3 to 25 carbon atoms, and an alkylcarbitol having from about 5 to 16 carbon atoms providing from about 0.0025 to 1.5 wt. % of oxygen in said diesel fuel.

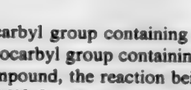
4,522,632
ETHERDIAMINE BORATES AND LUBRICANTS CONTAINING SAME
Andrew G. Horodysky, Cherry Hill, and Richard S. Herd, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Sep. 23, 1983, Ser. No. 535,133
Int. Cl.³ C10L *1/30*
U.S. Cl. 44—72 **16 Claims**

1. A product of reaction made by reacting a N-hydrocarbyloxyhydrocarbylenediamine of the formula



wherein R is a hydrocarbyl group containing 6 to 30 carbon atoms, R^1 and R^2 are hydrocarbylene groups containing 2 to 3 carbon atoms and R^3 is hydrogen or a C_1 to C_5 hydrcarbyl group with a boron compound, the reaction being carried at from about 90° C. to about 260° C., using a molar ratio of etherdiamine to boron compound of from about 4:1 to about 1:2.

8. A liquid fuel composition comprising a major proportion of a liquid fuel and a minor antioxidant or antifriction amount of a product of reaction made by reacting a N-hydrocarbyloxyhydrocarbylenediamine of the formula

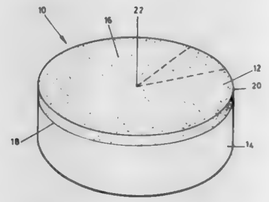


wherein R is a hydrocarbyl group containing 6 to 30 carbon atoms, R^1 and R^2 are hydrocarbylene groups containing 2 to 3 carbon atoms and R^3 is hydrogen or a C_1 to C_5 hydrocarbyl group with a boron compound, the reaction being carried out at from about 90° C. to about 260° C., using a molar ratio of etherdiamine to boron compound of from about 4:1 to about 1:2.

4,522,633
ABRASIVE BODIES
Henry B. Dyer, P.O. Box 67276, Bryanston, Transvaal, South Africa
Filed Aug. 3, 1983, Ser. No. 519,800
Claims priority, application South Africa, Aug. 5, 1982, 82/5661
Int. Cl.³ C23C *11/14*; C04B *35/58*
U.S. Cl. 51—307 **10 Claims**

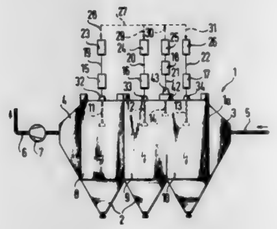
1. An abrasive body comprising a cubic boron nitride compact having major surfaces on each of opposite sides thereof,

the one surface being bonded to a substrate, and the other surface presenting a cutting edge, the compact comprising a first phase of a polycrystalline mass of intergrown cubic boron



nitride particles and a second bonding phase and the substrate having a coefficient of thermal conductivity at least four times lower than that of the compact.

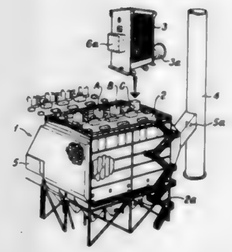
4,522,634
METHOD AND APPARATUS FOR AUTOMATIC REGULATION OF THE OPERATION OF AN ELECTROSTATIC FILTER
Werner Frank, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Walther & Cie Aktiengesellschaft, Cologne, Fed. Rep. of Germany
Filed Jan. 20, 1984, Ser. No. 572,663
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1983, 3301772
Int. Cl.³ B03C *3/68*
U.S. Cl. 55—2 **15 Claims**



1. A method of regulating the application of electrical potential to a first high-tension electrostatic filter, particularly a filter which is used for the separation of solid particles from a gaseous carrier medium and wherein a first electrode is spaced apart from a second electrode of opposite polarity, comprising the steps of placing into the carrier medium a miniature second electrostatic filter; applying to one electrode of the second filter a potential which at least closely approximates the breakdown potential at which the electric field between the electrodes of the second filter collapses; monitoring the potential which is applied to the second filter; and utilizing the monitored potential as a reference value for the application of potential to one electrode of the first filter so that the potential which is applied to the one electrode of the first filter closely approximates but is below the breakdown potential.

3. Apparatus for separating solid particles from a gaseous carrier medium which is conveyed along a predetermined path, comprising at least one first high-tension electrostatic filter having at least one pair of spaced-apart first and second electrodes of opposite polarity, said electrodes being in contact with the medium in said path; a miniature second electrostatic filter having spaced-apart first and second electrodes whose mutual distance is a fraction of the mutual distance of the electrodes of said first filter and which are located in said path; means for applying to one electrode of said second filter a potential at least closely approximating the breakdown potential at which the electric field of the second filter collapses; and control means for applying to one electrode of said first filter a potential at least closely approximating but remaining below the breakdown potential for the first filter, including means for monitoring the potential which is applied to the one electrode of said second filter.

4,522,635
METHOD AND DEVICE FOR VARYING A D.C. VOLTAGE CONNECTED TO AN ELECTROSTATIC DUST SEPARATOR
Sigvard Matts, Växjö , Sweden, assignor to Flakt Aktiebolag, Nacka, Sweden
Filed Oct. 18, 1983, Ser. No. 543,023
Claims priority, application Sweden, Oct. 19, 1982, 8205941; Dec. 16, 1982, 8207201
Int. Cl.³ B03C *3/68*
U.S. Cl. 55—2 **26 Claims**

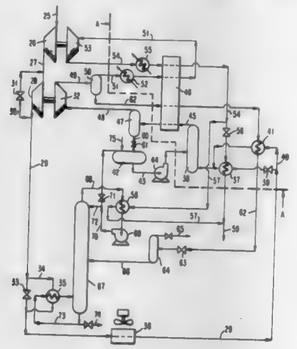


1. A method for varying a d.c. voltage connected to electrodes in an electrostatic dust separator to render it more effective in return for a low consumption of energy and high collection of dust on one of said electrodes incorporated in the dust separator, wherein the d.c. voltage has a first basic d.c. level, superimposing on said d.c. level a plurality of voltage pulses forming a pulse group, with the consecutive pulses being separated from each other by a time interval, supplying said voltage to the electrodes in the dust separator, wherein said superimposing of pulses is accomplished by generating a plurality of pulses making up a pulse group, and selecting the configuration of the first pulse in said pulse group so as to have an amplitude and a duration and a form such that, when the pulse is supplied to the dust separator, it will not cause flash-over but will produce an increase in the tendency to flash-over of the dust separator, and selecting the configuration of each succeeding pulse in said pulse group so as to have an amplitude and a duration and a form such that, when each of said succeeding pulses is supplied to the dust separator, it will not cause flash-over in spite of the temporary increased tendency to flash-over which is caused by the preceding pulse.

4,522,636
PIPELINE GAS PRESSURE REDUCTION WITH REFRIGERATION GENERATION
Stephen J. Markbreiter, Edison, N.J., and Hans P. Schorr, Douglaston, N.Y., assignors to Kryos Energy Inc., New York and The Brooklyn Union Gas Company, Brooklyn, both of, N.Y.
Filed Feb. 8, 1984, Ser. No. 578,074
Int. Cl.³ B01D *53/14*
U.S. Cl. 55—23 **12 Claims**

1. A process for reducing the high pressure of pipeline gas to a predetermined low pressure of a distribution system while generating refrigeration solely with energy derived from the reduction of pressure which comprises compressing said gas in two successive stages to increase the pressure thereof at least about 150 psi, injecting methanol into the thus compressed gas, cooling said compressed gas containing methanol by heat exchange with said gas after expansion as hereinafter set forth, expanding the cooled gas with the performance of work sub-

stantially without liquefaction of said gas, said work being utilized in one of said two stages of compression, separating an aqueous methanol condensate from the expanded gas and subjecting said condensate to distillation for the recovery and reuse of said methanol, said distillation receiving reboiler heat from said compressed gas prior to said cooling thereof, recovering low level refrigeration from the thus dehydrated expanded gas and then further expanding said dehydrated expanded gas with the performance of further work substantially



without liquefaction of said gas, said further work being utilized in the other of said two stages of compression, recovering low level refrigeration from the further expanded gas and then passing said further expanded gas in countercurrent heat exchange relation with said compressed gas to effect cooling thereof as hereinbefore set forth, utilizing said further expanded gas to provide reflux cooling to said distillation, and thereafter discharging said further expanded gas at said predetermined low pressure into said distribution system.

4,522,637

INTEGRATED ADSORPTION SYSTEM FOR THE PURIFICATION OF SEPARATE CRUDE GASES

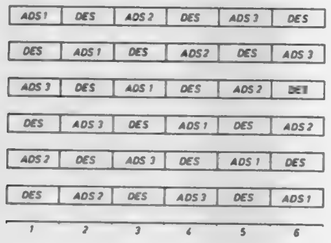
Hans Becker, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,476

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244304

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—25 **12 Claims**



1. In a gas adsorption process for the purification of contaminated crude gas streams in an adsorption facility containing a plurality of cyclically reversible adsorbers wherein each cycle of an adsorber comprises at least one adsorption phase and one desorption phase, the improvement comprising conducting said adsorption of several crude gas streams separately from one another in a single adsorption facility having a number of adsorbers larger by at least one than the number of crude gas streams; and passing the crude gas streams in cyclic alternation through the adsorbers with the provision that each adsorber is passed through a number of adsorption phases equal to the total number of said several crude gas streams wherein each adsorber is cyclically charged with all of said crude gas streams.

4,522,638

METHOD AND APPARATUS FOR REGULATING THE NH_3 CONTENT IN SCRUBBING LIQUID USED IN A GAS SCRUBBING PROCESS

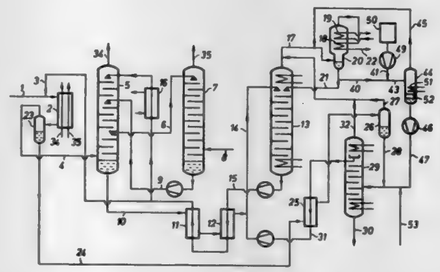
Heinz Karwat, Pullach, Fed. Rep. of Germany, assignor to Linde AG, Hollriegelskreuth, Fed. Rep. of Germany

Continuation of Ser. No. 434,288, Oct. 14, 1984, abandoned. This application May 22, 1984, Ser. No. 612,885

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1981, 3141772

Int. Cl.³ C02F *1/72*

U.S. Cl. 55—37 **9 Claims**



1. A process for regulating the NH_3 content of an organic liquid which acts as a physical scrubbing agent and is used in a procedure for removing sour gases from gaseous mixtures, said liquid being freed from the absorbed gaseous components after the scrubbing procedure and being reused in the circuit, comprising adding an acid precipitant to the scrubbing agent to precipitate ammonia salts thereform and separating the resultant precipitant from the scrubbing agent, further comprising cooling the scrubbing agent after precipitation to a temperature in the range of about 0° to −95° C., preferably 0° to −40°, said scrubbing agent containing reaction products, ammonia being removed from the scrubbing agent to the extent of leaving a residue of 300–2000 mg/kg, preferably 500–1000 mg/kg, which combines with the scrubbing agent to enchance scrubbing effectiveness.

4,522,639

UNIFIED FILTER AND CONNECTOR HOUSING ASSEMBLY INCORPORATING A DIVERSION VALVE

William K. Ansite, Glendale, and James H. Ryder, Sierra Madre, both of Calif., assignors to Figgie International Inc., Willoughby, Ohio

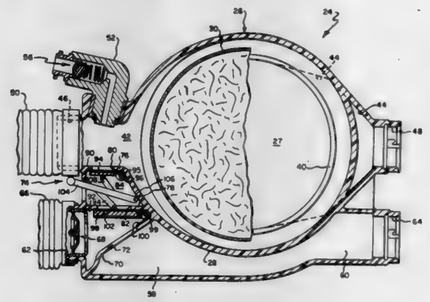
Filed Apr. 15, 1983, Ser. No. 485,179

Int. Cl.³ B01D *46/42*

U.S. Cl. 55—314 **9 Claims**

1. A unified filter and connector housing assembly for use with a protective breathing mask assembly of the type utilizing ventilating air for defogging, said filter and connector housing assembly comprising:

first and second housing members secured to each other and capable of receiving a filter canister therebetween in an airtight manner, the first housing member being provided with inlet and outlet breathing gas connector port means and passageway means and so designed that in normal operation breathing gases will flow from a breathing gas supply through the inlet breathing gas connector port means and to the outlet breathing gas connector port means through said breathing gas passageway means and through said filter canister, and said first housing member further being provided with inlet and outlet ventilating gas connector port means and passageway means and so designed that in normal operation ventilating gases will flow from a ventilating gas supply through the inlet ventilating gas connector port means and to the outlet ventilating gas connector port means through said ventilating gas passageway means and not through said filter canister, said first housing member further being characterized by



the provision of diversion valve means movable from normal to emergency positions and capable upon the failure of either the breathing gas supply or the ventilating gas supply and when placed in an emergency position of insuring that most of the gas received at one of said inlets passes through the breathing gas passageway means and the filter canister while diverting a small portion of the gas available to the ventilating gas passageway means.

4,522,640

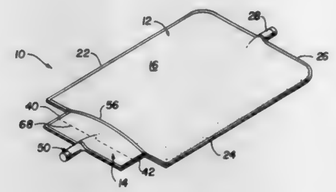
MEANS FOR CHILLING CARDIOPLEGIC SOLUTIONS

A. Louis Jagoe, III, 9519 E. Stanhope Rd., Kensington, Md. 20895

Filed Apr. 10, 1984, Ser. No. 598,916

Int. Cl.³ F25D *5/00*

U.S. Cl. 62—4 **7 Claims**



1. An integral multi-compartment disposable packaging unit comprising in combination

means designed for transfer of heat between a thermic material and a sterile solution used in surgical procedures including

a first compartment means made from flexible sheet material defining a first compartment adapted to contain a predetermined quantity of such sterile solution,

a second compartment means made from flexible sheet material defining a second compartment encasing a major portion of said first compartment so as to define a sealed space therebetween providing for indirect heat exchange between said compartments,

such sealed space holding a reactive material capable of providing a thermic reaction when combined with an activating reagent, and

means for selectively adding an activating reagent from externally of such packaging into said sealed space for combining with and reacting with such reactive material, such reaction taking place independently of such sterile solution in said first compartment,

said first compartment having a discharge portion accessible for opening and discharge of such sterile solution without discharging contents of said sealed space defined by said second compartment.

4,522,641

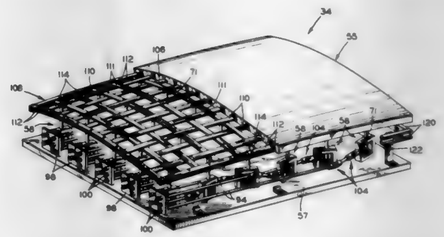
APPARATUS FOR BENDING GLASS SHEETS

Floyd T. Hagedorn, Oregon, and Merwyn L. Koontz, Maumee, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Apr. 27, 1984, Ser. No. 604,461

Int. Cl.³ C03B *23/023*

U.S. Cl. 65—291 **12 Claims**



11. An adjustable form for use in bending a heat-softened glass sheet, comprising a rigid mounting plate, a flexible shaping element in spaced relation to said rigid mounting plate, said shaping element having a resilient body portion which is simultaneously flexible in more than one direction and including a substantially continuous shaping surface, and spaced, flexible stiffening means associated with said resilient body portion, said stiffening means being encapsulated in said resilient body portion, and means for mounting said flexible shaping element on said rigid mounting plate including adjustment means for selectively adjusting the disposition of portions of said flexible shaping element relative to said rigid mounting plate for altering the shape of said flexible shaping element and thus the contour of said shaping surface.

4,522,642

SOIL TREATING METHOD AND COMPOSITION FOR CONSERVING NITROGEN IN SOIL

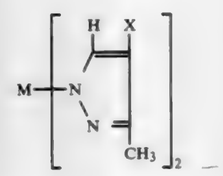
Kim E. Arndt, Pittsburg; Richard B. Rogers, and Ronald W. McCormick, both of Concord, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 25, 1984, Ser. No. 624,428

Int. Cl.³ C05C *13/00*

U.S. Cl. 71—11 **21 Claims**

1. A composition which comprises a reduced nitrogen fertilizer in admixture with from about 0.05 to about 98 percent by weight of a pyrazole compound-metal salt which corresponds to the formula



wherein M represents cobalt, copper, or zinc and X represents hydrogen, bromo, chloro or methyl.

4,522,643

USE OF QUATERNIZED DERIVATIVES OF POLYMERIZED PYRIDINES AND QUINOLINES AS MICROBIOCIDES

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 32,044, Apr. 23, 1979, Pat. No. 4,297,484. This application Mar. 12, 1981, Ser. No. 242,858

Int. Cl.³ A01N *43/40, 43/42*

U.S. Cl. 71—67 **9 Claims**

1. A process of inhibiting microbiological growth which comprises treating a system with a quaternized derivative of polymerized pyridine or quinoline compounds, which compounds prior to polymerization are selected from the group consisting of pyridine, 2-methyl pyridine, 4-methyl puridine, 4-phenyl pyridine, 4-ethyl pyridine, 2-hydroxypyridine, 2,4-lutidine, quinoline, 2-methyl quinoline and 4-methyl quinoline, the nitrogen atoms of which are quaternized by treating said polymerized compounds with a quaternizing agent selected from the group consisting of methyl iodide, ethyl iodide, propyl iodide, ethyl bromide, benzyl bromide, butyl bromide, dodecyl bromide, benzyl chloride, dodecyl benzyl chloride, ethyl bromoacetate, dimethyl sulfate, tetradecyl bromide, and octyl bromide, at a temperature of at least 100° C.

4,522,644

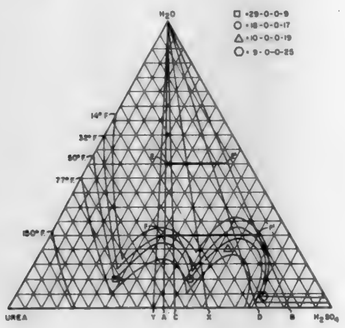
METHOD FOR SELECTIVELY CONTROLLING PLANT SUCKERS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 444,667, Nov. 26, 1982, , Continuation-in-part of Ser. No. 442,296, Nov. 17, 1982,. This application Dec. 27, 1982, Ser. No. 453,282

Int. Cl.³ A01N *59/00*

U.S. Cl. 71—78 **14 Claims**



1. A method for selectively controlling plant suckers growing from a desired plant without damaging the remainder of said desired plant, which method comprises the steps of: contacting said plant sucker with an aqueous solution comprising a herbicidally effective amount of urea and sulfuric acid, in which solution the molar ratio of said urea to said sulfuric acid is within the range of about ¼ to about 7/4, and avoiding the contact of said aqueous solution with the foliage of said desired plant which is not associated with said plant sucker.

4,522,645

AGRICULTURAL PYRIDINESULFONAMIDES

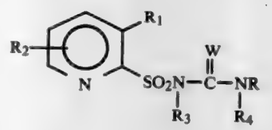
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 227,242, Jan. 22, 1981, Pat. No. 4,435,206, which is a continuation-in-part of Ser. No. 083,753, Oct. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 966,258, Dec. 4, 1978, abandoned. This application Jan. 6, 1984, Ser. No. 568,889

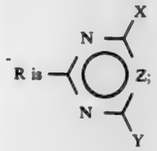
Int. Cl.³ C07D *401/12;* **A01N** *43/66, 43/68, 43/70*

U.S. Cl. 71—93 **12 Claims**

1. A compound of the formula



wherein



Z is N;

R_1 is H, Cl, Br, F, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, NO_2, CF_3, $COOR_5$ or $SO_2NR_6R_7$;

R_2 is H, Cl, Br or CH_3;

R_3 and R_4 are independently H or CH_3;

R_5 is C_1–C_6 alkyl, C_3–C_6 alkenyl, $CH_2CH_2OCH_3$, $CH_2CH_2OCH_2CH_3$, $CH_2CH_2CH_2OCH_3$ or CH_2CH_2Cl;

R_6 and R_7 are independently CH_3 or CH_2CH_3;

W is oxygen or sulfur;

X is CH_3, —OCH_3 or —OCH_2CH_3;

Y is H, Cl, CH_3, CF_3, —$NHCH_3$, —$N(CH_3)_2$, —CH_2OR_8, —$CH_2CH_2OR_8$, —OCH_2CF_3 or VR_9; and

V is oxygen or sulfur;

R_8 is CH_3 or CH_3CH_2;

R_9 is CH_3, CH_3CH_2—, $CH_2CO_2R_8$, —$CH_2CH_2OR_8$, $C(CH_3)HCO_2R_8$ or $CH_2CH_2CO_2R_8$; and agricultural salts thereof.

4. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,522,646

3,7-DICHLOROQUINOLINE DERIVATIVES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Jürgen Markert, Mutterstadt; Helmut Hagen, Frankenthal, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

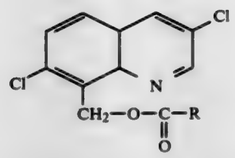
Filed Jun. 23, 1983, Ser. No. 507,109

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1982, 3223884

Int. Cl.³ A01N *9/22;* **C07D** *215/14, 401/12, 405/12*

U.S. Cl. 71—94 **9 Claims**

1. A 3,7-dichloroquinoline derivative of the formula



(I)

where R is hydrogen, C_1–C_8-alkyl, C_2–C_6-alkenyl, C_1–C_6-hydroxyalkyl, cyclohexyl, or phenyl which is unsubstituted or monosubstituted by nitro, cyano, benzoyl, hydroxyl, methyl, methoxy, halogen, trihalomethyl, amino or dialkylamino where each alkyl is of 1–4 carbons, or is pyridyl, piperazinyl, pyrazinyl, trihalomethyl, unsubstituted benzyl or benzyl substituted by C_1–C_4 alkyl, benzophenonyl, phenoxymethyl or anilinomethyl.

8. A process for combating the growth of unwanted plants, wherein the plants or their location are treated with a herbicidally effective amount of a 3,7-dichloroquinoline derivative of the formula I as claimed in claim 1.

4,522,647

SUBSTITUTED PHENOXYALKANEDIONES AND THEIR HERBICIDAL METHOD OF USE

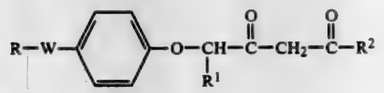
Richard J. Anderson, Palo Alto, and Shy-Fuh Lee, Sunnyvale, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 403,836, Jul. 30, 1982, abandoned. This application Jun. 29, 1983, Ser. No. 508,971

Int. Cl.³ C07D *213/26, 213/64;* **A01N** *43/40*

U.S. Cl. 71—94 **9 Claims**

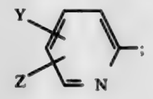
1. A compound of the following formula (A):



(A)

wherein,

R is



R^1 is hydrogen or lower alkyl;

R^2 is lower alkyl;

W is oxygen, sulfur or amino; and

each of Y and Z is independently hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, halogen or nitro.

9. A method for the control of weeds which comprises treating the weed or its locus with a herbicidally effective amount of a compound of formula (A) as disclosed in claim 1.

4,522,648

PROCESS FOR DESULFURIZATION OF GASES WITH MOLTEN MINERAL BATHS DURING GASIFICATION OF CARBON PRODUCTS

Maryan Kunicki, 26, rue Paul Eluard, Corbeil-Essonnes, and Michel Roussel, 97, avenue Victor Hugo, Paris, both of France

Filed May 14, 1984, Ser. No. 610,251

Claims priority, application France, May 20, 1983, 83 08361

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—24 **6 Claims**

1. A process for desulfurization of gases with molten baths obtained from ashes coming from the process of gasification of carbon products and addition of basic products, comprising:

adding to said ashes a metallurgical slag comprising blast-furnace or steel-furnace slag or a mixture thereof, said metallurgical slag having a high basicity index corresponding to a CaO/SiO_2 ratio greater than 1.3 for the molten bath.

4,522,649

METHOD OF FURNACE OPERATION WITH HIGH PELLET BURDENS

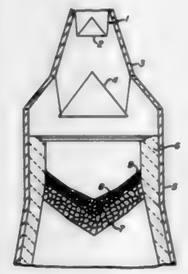
Melvin C. Chang, Johns Island, S.C., and John L. Howell, North Huntingdon Township, Westmoreland County, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 406,422, Aug. 9, 1982, Pat. No. 4,436,552. This application Nov. 25, 1983, Ser. No. 555,252

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Int. Cl.³ C21B *5/00*

U.S. Cl. 75—41 **23 Claims**



1. In the method of producing metal in a shaft furnace containing one or more substantially horizontal layers of coke and one or more separate substantially horiaontal layers of ore above and/or below the coke layers, said layers being positioned across the furnace cross section, and wherein greater than about 80 percent of the ore therein is present in the form of spherical pellets having a size of between about 5 and about 20 mm, the improvement comprising adding between about 1 and about 20 weight percent fine ore material having a screen size of less than about 7 mm, and wherein the size of said fine ore material is less than that of said pellets, on a controlled basis to said furnace adjacent said walls and thereby protect the furnace lining, and wherein prior to adding said fine ore material to said furnace, the ultrafine fraction of said ore material which would present material handling problems when wet or be blown out of the furnace by the hot furnace gases is either (1) separated from said fine material which is added to said furnace, or (2) micropelletized prior to addition to said furnace in order to provide a material having suitable properties for flowing into said furnace.

4,522,650

PROCESS FOR PRODUCTION OF LOW PHOSPHORUS ALLOY

Hidemasa Nakajima; Shozo Okamura; Masanobu Sueyasu; Sakae Furujho; Kohji Okane, all of Tokyo, and Shoji Anezaki, Ibaragi, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Sep. 29, 1983, Ser. No. 537,025

Claims priority, application Japan, Sep. 29, 1982, 57-172319

Int. Cl.³ C21C *7/00*

U.S. Cl. 75—48 **33 Claims**

1. Process for producing an alloy of low phosphorus content by means of a furnace equipped with a lance for injection, said process comprising the steps of:

forming a bath of molten metal by pouring a molten metal in

the furnace, said molten metal containing not more than 0.040% of phosphorus;

injecting by means of said lance into said bath of molten metal a carbonaceous material together with a gasifying agent to gasify the carbonaceous material with the heat of the bath of molten metal and to control the carbon content of the bath of molten metal, said carbonaceous material containing not more than 0.035% of phosphorus;

adding to said bath of molten metal an oxidizable alloying element which is in the form of at least one of the group consisting of metal, metal oxide and metal ore to react with the molten metal thereby forming an alloy; and

recovering the formed gas and, at the same time, obtaining the alloy of low phosphorus content.

4,522,651

FOUNDRY MOLD AND CORE COMPOSITION

Charles E. Seeney, Brazil, and John F. Kraemer, Terre Haute, both of Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Jan. 25, 1982, Ser. No. 342,313
Int. Cl.³ B28B *7/34*
U.S. Cl. 106—38.3 **10 Claims**

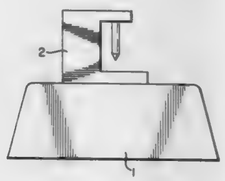
1. A composition adapted for preparing foundry cores and molds consisting of a foundry aggregate 1 to 10% by weight of the aggregate, a binder therefor and 1 to 10% by weight of the aggregate of a hardener, wherein the aggregate is selected from the group consisting of silica sand, olivine, zircon sand, alumino-silica sand and chromite sand, the binder is a linear zinc, potassium or ammonium polyphosphate and the hardner is selected from the group consisting of orthophosphoric acid or a polyvalent metal compound selected from the group consisting of calcium oxide, magnesium oxide, calcium silicate, magnesium silicate and magnesium aluminate or mixtures thereof.

4,522,652

MACHINE BASE AND PROCESS FOR MANUFACTURE THEREOF

Karl-Heinz Neuschäffer, Leichlingen; Hans-Werner Engels, Troisdorf-Sieglar; Hans-Jürgen Gebert, St. Augustin; Robert W. Laube, Siegburg, and Günter Zoche, Bonn, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Aug. 5, 1983, Ser. No. 520,682
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1982, 3229339; Feb. 2, 1983, 3303409
Int. Cl.³ C09D *1/02*
U.S. Cl. 106—84 **13 Claims**



1. A molded support structure for low-vibration mounting of machines or the like devices which exhibits a compressive strength of at least 60 N/mm² and a hardness according to the Mohs scale of 6 to 9 and which comprises a molded structure made by hardening a molding material in a mold to provide a hardened inorganic molding material with a density of 2.2 to 3.0 g/cm³, said molding material containing 15 to 30 weight % of an aqueous 30–65% potassium hydroxide-potassium silicate solution with an SiO_2:K_2O molar ratio of 1.0–2.0:1, 15–35 weight % of an oxide mixture containing amorphous SiO_2 and aluminum oxide and/or of hydrated amorphous silicic acid in the dispersed powder form and/or metakaolin; and 45 to 65 weight % inorganic particulate filler.

4,522,653

SALT CEMENT DISPERSANT AND METHOD OF USING SAME IN CEMENTING SUBTERRANEAN WELLBORE

S. Prabhakara Rao, Duncan; Lance E. Brothers, Lawton, and Bobby G. Brake, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 3, 1984, Ser. No. 596,229
Int. Cl.³ C04B *7/02*
U.S. Cl. 106—90 **28 Claims**

1. In a method for cementing a subterranean wellbore wherein a salt cement slurry is pumped into the wellbore for cementing therein, the improvement which comprises including in said salt cement slurry an additive comprising:

copolymers having a molecular weight average in the range of 10,000 to 100,000 and comprised of repeating monomer units in the range of 85 to 99 mole percent sodium vinylsulfonate and in the range of 1 to 15 mole percent of at least a selected one of the group consisting of acrylamide and acrylic acid.

20. A reduced viscosity salt cement slurry for cementing wellbores penetrating subterranean formations comprising:

water;

an inorganic salt dissolved in said water in the range of from 5 percent by weight of said water to a saturated amount;

an additive for reducing the viscosity of said salt cement slurry comprised of a copolymer or mixture of copolymers having a molecular weight average in the range of 10,000 to 100,000 and comprised of repeating monomer units in the range of 85 to 99 mole percent sodium vinylsulfonate and in the range of 1 to 15 mole percent of at least a selected one of the group consisting of acrylamide and acrylic acid, the copolymers having been obtained by polymerization of the monomers; and

cement mixed with said water, salt and additive in an amount such that said cement slurry is suitable for cementing wellbores penetrating subterranean well formations.

4,522,654

CONTINUOUS METHOD OF PRODUCING PHTHALOCYANINE PIGMENT DISPERSIONS IN ORGANIC SOLVENT

Dominick Chisvette, Colonia; James Lattimore, Paterson, and Stanley G. Sova, Clifton, all of N.J., assignors to Inmont Corporation, Clifton, N.J.

Filed Dec. 23, 1983, Ser. No. 564,666
Int. Cl.³ C08K *5/34;* **C09D** *11/00;* **C07D** *207/00*
U.S. Cl. 106—288 Q **10 Claims**

1. The method of converting a phthalocyanine crude wherein at least 80% of the crude particles have a size greater than 1 micrometer to a dispersed form which is useful in inks and coatings, said method comprising

(A) premixing phthalo crude at about 10 to 50% by weight with from about 5 to 20% by weight of surfactant based on pigment in a binder containing an organic solvent, said premixing being accomplished by agitation to break down loose crude agglomerates and obtain a uniform blend of the crude without appreciably reducing the particle size of the crude, and

(B) continuously pumping the blend of (A) through at least one but preferably two shot mills containing between 50 and 90% by volume of a grinding media that has a size of from about 0.1 to 2.5 mm. diameter and then grinding at such rate that the particle size has been reduced to pigment particle size.

4,522,655

METAL PIGMENT OF IMPROVED STORAGE RESISTANCE

Pamela L. Claassen, Lower Burrell, and A. David Booz, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 5, 1983, Ser. No. 510,983
Int. Cl.³ C04B *31/18;* **C08K** *3/08;* **C09C** *1/62;* **C09D** *5/10*
U.S. Cl. 106—290 **16 Claims**

1. In a composition of matter comprising a pretreated metallic pigment having a leafing character, and an additive inhibiting reaction of the pigment to form hydrogen gas, the improvement comprising an effective amount, based on the metallic pigment content, of a liquid fatty acid to reverse, negate, or reduce loss of optical properties which would occur in the absence of such fatty acid.

4,522,656

METHOD OF MAKING REFERENCE SURFACE MARKINGS ON SEMICONDUCTOR WAFERS BY LASER BEAM

Franz Kuhn-Kuhnenfeld, Emmerting; Josef Kramler, Burgkirchen, and Hans-Adolf Gerber, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft Für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Apr. 26, 1984, Ser. No. 604,301
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1983, 3324511
Int. Cl.³ H01L *21/265;* **B23K** *27/00*
U.S. Cl. 148—1.5 **5 Claims**



1. In a method for the characterization of semiconductor surfaces by means of surface patterns, which are each generated by melting and partial vaporization of a surface segment by means of a laser pulse, the improvement comprising the steps of:

irradiating by means of a laser pulse a surface segment of the semiconductor surface whose surface area corresponds to 1.5 to 6.5 times the surface area of the desired surface pattern; and

adjusting the energy of the laser pulse so that melting and partial vaporization of the semiconductor material takes place only in the center of said surface segment on a surface of the semiconductor material corresponding to the desired surface pattern.

4,522,657

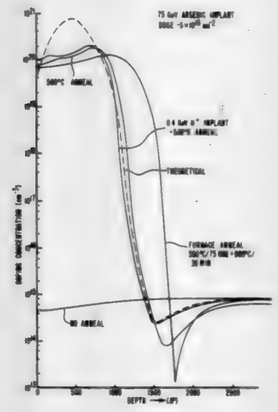
LOW TEMPERATURE PROCESS FOR ANNEALING SHALLOW IMPLANTED N+/P JUNCTIONS

Ajeet Rohatgi, Murrysville; Prosenjit Rai-Choudhury, Export, both of Pa.; Joseph R. Gigante, Beltsville, Md.; Ranbir Singh, and Stephen J. Fonash, both of State College, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 20, 1983, Ser. No. 543,745
Int. Cl.³ H01L *21/263*
U.S. Cl. 148—1.5 **11 Claims**

1. A method of low temperature annealing of a silicon semiconductor that has been doped by ion implantation with an element selected from the group consisting of arsenic and phosphorous, said method comprising:

ion beam implantation of hydrogen ions subsequent to and in the same area as the element selected from the above group that has been implanted, and



annealing the semiconductor at a temperature between about 500° C. and about 600° C. for a time of about one hour in an inert atmosphere.

4,522,658

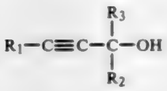
METHOD AND COMPOSITION FOR PROTECTING METAL SURFACES FROM OXIDATIVE ENVIRONMENTS

Michael L. Walker, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 21, 1984, Ser. No. 623,276
The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.
Int. Cl.³ B05D *5/00*
U.S. Cl. 148—6.14 R **18 Claims**

1. A method of inhibiting the oxidative effect of an oxidative environment in contact with a metal which comprises:

contacting a metal surface with a composition comprising an aqueous fluid, an effective amount of at least one acetylenic alcohol having the general formula



wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen, alkyl, phenyl, substituted phenyl and hydroxy-alkyl radicals; a quaternary ammonium compound selected from the group consisting of N-methyl, N-benzyl and chloromethyl naphthalene quaternaries of alkyl pyridines and quinoline, isoquinoline compounds, benzoquinoline compounds and mixtures thereof,

a hydrocarbon compound which exhibits high oil-wetting characteristics, and

an antimony compound capable of activation by the other constituents of said composition whereby the oxidative effect of an oxidative environment in contact with said metal is reduced; and,

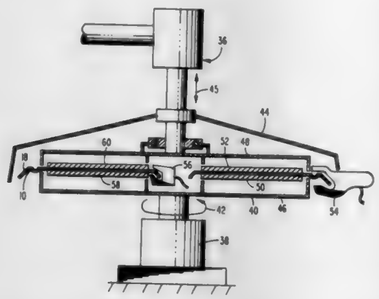
forming a surface coating comprising at least a portion of the constituents of said composition on said metal surface which is capable of inhibiting the oxidative effects of an oxidative environment upon said metal surface.

4,522,659

METHOD AND APPARATUS FOR THE MANUFACTURE OF RECORD STAMPERS

John J. Prusak, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 29, 1984, Ser. No. 594,822
Int. Cl.[3] C22F *1/00, 1/10*
U.S. Cl. 148—11.5 R 10 Claims



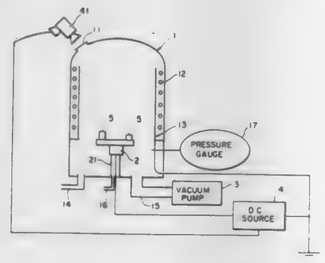
1. In the method for the manufacture of a record stamper wherein a flat stamper blank having an inner edge, a recorded section and an outer edge is electroformed from a metal of a first hardness and then the inner edge and the outer edge are shaped to a predetermined configuration, the improvement which comprises: selectively annealing at least one of the edges to reduce the hardness of the metal of the edge to less than that of the first hardness whereby a stamper is obtained having a recorded section of the first hardness and at least one edge of reduced hardness and increased ductility.

4,522,660

PROCESS FOR ION NITRIDING OF ALUMINUM OR AN ALUMINUM ALLOY AND APPARATUS THEREFOR

Takatoshi Suzuki, Anjo; Hideo Tachikawa, and Shigeo Moriyama, both of Aichi, all of Japan, assignors to Kubushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Jun. 3, 1983, Ser. No. 501,001
Claims priority, application Japan, Jun. 4, 1982, 57-96836
Int. Cl.[3] C21D *1/48*
U.S. Cl. 148—20.3 7 Claims



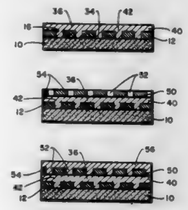
1. A process for ion nitriding of aluminum or an aluminum alloy comprising the steps of:
disposing aluminum or an aluminum alloy as an article to be treated on a substrate holder provided in a sealed container and disposing an oxygen getter metal having an intensive affinity for oxygen in such proximity to said article that said oxygen getter metal may react with oxygen around said article to prevent said oxygen from being caught on the surface of said article, said oxygen getter metal being at least one metal selected from the group consisting of a group IIa element, a group IIIa element, a group IIIb element, a group IVa element, a group Va element and a group VIa element of the Periodic table, or an alloy of at least one such metal;
replacing gas in said sealed container by a nitriding gas, oxygen and oxidizing gas remaining in said nitriding gas being caught by said oxygen getter metal; and
creating a glow discharge between an electrode provided in said sealed container, which is used as an anode, and the substrate holder, which is used as a cathode, thereby forming an aluminum nitride layer on the surface of said article without the effect of oxygen or oxidizing gas in the nitriding gas.

4,522,661

LOW DEFECT, HIGH PURITY CRYSTALLINE LAYERS GROWN BY SELECTIVE DEPOSITION

Andrew D. Morrison, Altadena, and Taher Daud, LaCrescenta, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 24, 1983, Ser. No. 507,624
Int. Cl.[3] H01L *21/20, 21/76*
U.S. Cl. 148—33.2 6 Claims



1. A semiconductor article comprising:
a blank of semiconductor having a first level of impurities;
a film of a first mask having a pattern of openings applied to a surface of the blank and said film being impervious to diffusion of said impurities from said semiconductor surface;
a first continuous layer of grown semiconductor on said mask extending from said openings over the bridges of mask between the openings to form a first continuous layer of semiconductor having a lesser level of impurities and defects than said blank, and having less defects and impurities in areas overlying said bridges than areas overlying said openings;
a second film of mask impervious to diffusion of said impurities having a pattern of openings in registration with the bridges of the first mask and a pattern of bridges overlying the openings in the first mask; and
a second continuous layer of semiconductor grown on said second mask having a lower impurity and defect level than the first layer, said second layer extending from said openings and over the bridges of the second mask to form said second continuous layer.

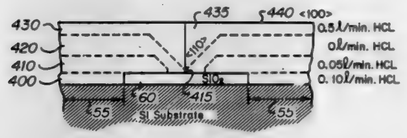
4,522,662

CVD LATERAL EPITAXIAL GROWTH OF SILICON OVER INSULATORS

Donald R. Bradbury, Palo Alto; Chi-Wing Tsao, Piedmont, and Theodore I. Kamins, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 12, 1983, Ser. No. 522,804
Int. Cl.[3] H01L *21/205, 21/76*
U.S. Cl. 148—175 24 Claims

1. A method for producing a semiconductor structure comprising the steps of:
forming a non-nucleating insulating layer over a semiconductor substrate;
removing a portion of said insulating layer to form an insulating region, said insulating region being surrounded by an exposed surface region of the semiconductor substrate;
forming a first epitaxial semiconductor layer over said exposed surface region to form an essentially flat surface with said insulating layer, said first semiconductor layer being formed in an environment having a first concentration of reactant; and



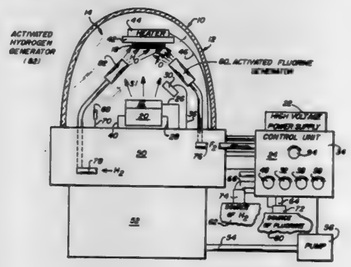
forming a second epitaxial semiconductor layer over said first semiconductor layer and laterally covering a portion of said insulating region substantially without voids therebetween, said second semiconductor layer being formed in an environment having a second concentration of reactant, said second concentration being different than the first concentration of reactant.

4,522,663

METHOD FOR OPTIMIZING PHOTORESPONSIVE AMORPHOUS ALLOYS AND DEVICES

Stanford R. Ovshinsky, Bloomfield Hills, and Masatsugu Izu, Birmingham, both of Mich., assignors to Sovonics Solar Systems, Solon, Ohio

Division of Ser. No. 185,520, Sep. 9, 1980, Pat. No. 4,342,044, which is a continuation-in-part of Ser. No. 884,664, Mar. 8, 1978, Pat. No. 4,217,374, and a continuation-in-part of Ser. No. 104,285, Dec. 17, 1979, abandoned, which is a division of Ser. No. 884,664. This application Apr. 14, 1982, Ser. No. 368,221
The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.
Int. Cl.[3] C22C *28/00;* H01L *31/18*
U.S. Cl. 148—403 25 Claims



1. A method of making an improved photoresponsive amorphous alloy, said method comprising depositing on a substrate a material including at least silicon and incorporating in said material at least one density of states reducing element, said element being fluorine, and introducing at least one band gap adjusting element into said material without substantially increasing the states in the band gap to produce an alloy having a band gap adjusted for a specified photoresponse wavelength threshold.

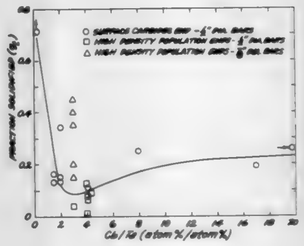
22. An amorphous alloy made by the process of claim 1 wherein said adjusting element is germanium.

4,522,664

PHASE STABLE CARBIDE REINFORCED NICKEL-BASE SUPERALLOY EUTECTICS HAVING IMPROVED HIGH TEMPERATURE STRESS-RUPTURE STRENGTH AND IMPROVED RESISTANCE TO SURFACE CARBIDE FORMATION

Michael F. X. Gigliotti, Jr., Scotia; Swe-Wong Yang, Clifton Park; Melvin R. Jackson, Schenectady, all of N.Y.; Charles A. Bruch, Cincinnati, Ohio, and Xuan Nguyen-Dinh, Chandler, Ariz., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 4, 1983, Ser. No. 481,617
Int. Cl.[3] C22C *19/03*
U.S. Cl. 148—404 6 Claims



1. A unidirectionally solidified anisotropic composite article of manufacturing having improved high temperature stress-rupture strength with improved resistance to the formation of surface nucleated carbides comprising:
(a) a nickel-base superalloys matrix and
(b) an aligned fibrous monocarbide eutectic reinforcing phase embedded in said matrix,
said article being of a substantially phase stable alloy consisting essentially of tantalum, columbium and carbon; one or more elements selected from the group consisting of chromium, aluminum, cobalt, tungsten, molybdenum, rhenium, vanadium, hafnium, and zirconium; boron in an amount greater than an impurity amount up to about 0.05%, the balance being essentially nickel and incidental impurities, subject to the provisos that, by weight percent,

$$3.4 \leqq (Mo+W) \leqq 10.4 \quad \text{(i)}$$

and

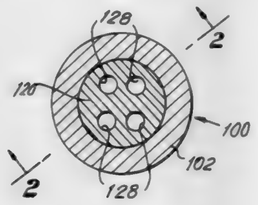
$$1 \leqq (Cb/Ta) \leqq 4.5. \quad \text{(ii)}$$

4,522,665

PRIMER MIX, PERCUSSION PRIMER AND METHOD FOR INITIATING COMBUSTION

Donald N. Yates, Jr., and Michael Oestrich, both of Katy, Tex., assignors to GEO Vann, Inc., Houston, Tex.

Filed Mar. 8, 1984, Ser. No. 587,344
Int. Cl.³ C06B 45/02
U.S. Cl. 149—21 **19 Claims**



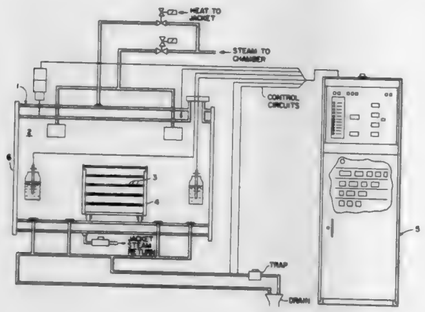
1. As an article of manufacture a primer mix, which consists essentially of from 26 to 66 weight percent titanium and from 74 to 44 weight percent potassium perchlorate having a density of from 2.1 to 2.5 g/cc.

4,522,666

APPARATUS AND METHOD FOR SEALING CAPSULES BY APPLICATION OF VACUUM AND STEAM THERETO

Fritz Wittwer, Lupsingen, Switzerland, assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 9, 1982, Ser. No. 440,371
Int. Cl.³ B29C 27/02
U.S. Cl. 156—69 **16 Claims**



1. A method for sealing capsules made from hydrophilic polymer, having hard shell coaxial cap and body parts which overlap when telescopically joined, comprising the steps of:

A. placing the capsules within a process vessel having a heated-jacketed chamber;

B. evacuating air from the chamber so as to cause a vacuum therein;

C. exposing the capsules within the chamber for a time period so as to also cause a vacuum within the capsules;

D. injecting steam into the chamber so as to break the vacuum therein and to increase the temperature, relative humidity and pressure within the chamber and within the capsules;

E. melting the hydrophilic polymer by the entry of steam within the overlap of the cap and body parts;

F. evacuating excess steam from the chamber so that the capsules do not swell, melt or deform;

G. exposing the capsules to vacuum within the chamber so as to evaporate water from the melted hydrophilic polymer within the overlap of the cap and body parts;

H. cooling the capsules so as to gel the hydrophilic polymer within the overlap between the cap and body parts thereby sealing the tamper-proof capsules; and

I. drying the capsules to a stable water content for shipment and use.

16. Apparatus for sealing capsules made from hydrophilic polymer, having hard shell coaxial cap and body parts which overlap when telescopically joined, comprising

a process vessel having a chamber therein for receiving the capsules;

means for evacuating air from the chamber so as to cause a vacuum within said chamber and within the capsules;

means for injecting steam into the chamber so as to increase the temperature, relative humidity and pressure within said chamber and within the capsules, thereby melting the hydrophilic polymer within the overlap of the cap and body parts by the entry of steam within said overlap;

means for evacuating excess steam from the chamber and causing a vacuum within said chamber so that the capsules do not swell, melt or deform, and water is evaporated from the melted hydrophilic polymer within the overlap of the cap and body parts; and

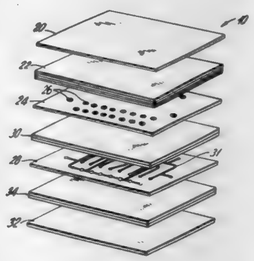
means for cooling the capsules so as to gel the hydrophilic polymer within the overlap between the cap and body parts, thereby sealing the capsules.

4,522,667

METHOD FOR MAKING MULTI-LAYER METAL CORE CIRCUIT BOARD LAMINATE WITH A CONTROLLED THERMAL COEFFICIENT OF EXPANSION

John R. Hanson, Richmond; James L. Hauser, Lenox; James F. Kilfeather, Jr., Pittsfield, and Hendrik B. Hendriks, Becket, all of Mass., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 162,827, Jun. 25, 1980, abandoned. This application Nov. 22, 1982, Ser. No. 443,275
Int. Cl.³ B32B 31/16, 31/06, 31/12; H05K 1/00
U.S. Cl. 156—87 **5 Claims**



1. A method of making a multi-layer metal core circuit board laminate having a thermal coefficient of expansion less than that of a non-metal core laminate and conductive layers for use with leadless components, said method comprising the steps of:

a. providing an uppermost planar copper foil conductive layer and a stabilizing layer formed of a metal having a thermal coefficient of expansion less than that of the non-metal portions of the laminate and copper conductive layer;

b. providing a bonding layer interposed between said copper conductive layer and said stabilizing layer, said bonding layer being formed of resin impregnated glass cloth;

c. laminating said layers to form a partial composite laminate structure;

d. providing a printed circuit board layer and a lowermost planar copper foil layer;

e. providing a second bonding layer between said printed circuit board layer and said lowermost copper foil layer;

f. providing a third bonding layer between the lower surface of said stabilizing layer and the upper surface of said printed circuit board layer, said second and third bonding layers being formed of resin impregnated glass cloth; and

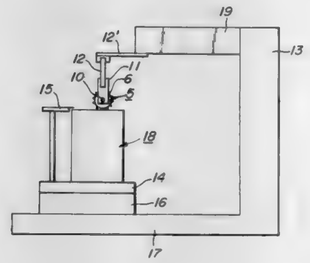
g. laminating said layers to provide a complete composite laminate structure having a thermal coefficient of expansion less than that of the bonding layers and the copper conductive layers.

4,522,668

METHOD OF PRODUCING CERAMIC FILTER

Yutaka Ogawa, Nagoya; Tsunezo Takeuchi, Chita, and Masashi Otaka, Mie, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Apr. 21, 1983, Ser. No. 487,266
Claims priority, application Japan, Sep. 30, 1982, 57-169619
Int. Cl.³ C03B 29/00; C04B 33/34, 37/00
U.S. Cl. 156—89 **21 Claims**



1. A method of producing a ceramic honeycomb filter, comprising the steps of:

attaching a film to at least one open end surface of a ceramic honeycomb body which is to be selectively sealed, said ceramic honeycomb body having throughholes extending therethrough in a longitudinal and lateral direction at a certain

placing said ceramic honeycomb body on a support board to position said film immediately below a heated gear rotatably mounted on a resilient holding means, wherein said heated gear has heated pointed teeth attached thereto, said heated teeth being positioned complementary with tooth positions defined on a root cylinder of the heated gear at a tooth root pitch which is less than said pitch of the throughholes, said heated pointed teeth having such a tooth depth that adjacent heated teeth can simultaneously thrust into adjacent throughholes or every other throughhole, while tips of said pointed teeth can roll along a locus passing inside of said throughholes;

actuating relative movement between said holder and said support board;

swaying the heated gear in response to rotation of the heated gear so as to make up for a difference between the tooth root pitch of the gear and the throughhole pitch of the ceramic honeycomb body, for perforating said film at positions corresponding to desired open ends of the ceramic honeycomb body throughholes to be sealed; and

pressing a sealant into said ceramic honeycomb body through the thus perforated holes of the film, whereby the ceramic honeycomb body becomes a ceramic honeycomb filter having the throughholes thereof selectively sealed at the desired open ends thereof, to provide a checkered flag pattern.

13. A method of producing a ceramic honeycomb filter, comprising the steps of:

attaching a film to at least one open end surface of a ceramic honeycomb body which is to be selectively sealed, said ceramic honeycomb body having throughholes extending therethrough in a longitudinal and lateral direction at a certain pitch;

placing said ceramic honeycomb body on a support board to position said film immediately below a heated gear rotatably mounted on a holding means, wherein said heated gear has heated pointed teeth attached thereto, wherein said heated teeth being positioned complementary with tooth positions defined on a root cylinder of the heated gear at a tooth root pitch which is less than said pitch of the throughholes, said heated pointed teeth having such a tooth depth that adjacent heated teeth can simultaneously thrust into adjacent throughholes or every other throughhole, while tips of said pointed teeth can roll along a locus passing inside of said throughholes;

actuating relative movement between said holder and said support board;

swaying the heated gear in response to rotation of the heated gear so as to make up for a difference between the tooth root pitch of the gear and the throughhole pitch of the ceramic honeycomb body, for perforating said film at positions corresponding to desired open ends of the ceramic honeycomb body throughholes to be sealed, wherein said swaying is effected by providing a gap between a central hole of the heated gear and a shaft which is connected to said holding means and by supporting said heated gear by a resilient supporting means; and

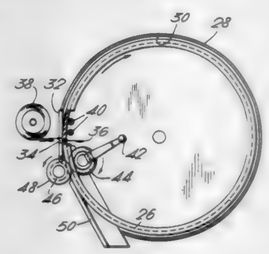
pressing a sealant into said ceramic honeycomb body through the thus perforated holes of the film, whereby the ceramic honeycomb body becomes a ceramic honeycomb filter having the throughholes thereof selectively sealed at the desired open ends thereof, to provide a checkered flag pattern.

4,522,669

COMBINATION MOULD PORTION AND PROTECTIVE ELEMENT FOR PIPE

Olof Nordin, and Sören Forsberg, both of Värnamo, Sweden, assignors to Forsheda AB, Forsheda, Sweden

Filed Sep. 1, 1982, Ser. No. 413,823
Claims priority, application Sweden, Sep. 4, 1981, 8105254
Int. Cl.³ B29D 27/00; B65H 69/02; B29C 17/02; B28B 7/20
U.S. Cl. 156—157 **26 Claims**



1. A method of manufacturing a combination mould portion and protective element from a flat cut blank of thermoplastic material having first and second opposite surfaces to protect therewith surfaces of an article adapted to be connected to another article, comprising the steps of:

(a) positioning the flat cut blank on a guide bar between a pair of drive and driven rollers;

(b) positioning an end of an adhesive coated tape strip so that it extends across the feed path of said blank;

(c) driving the blank with the drive roller so that an end of said blank adhesively contacts the tape strip, the end of said tape strip projecting outwardly from the first surface of the blank while a remaining part of the tape strip is located facing the second surface;

(d) guiding the blank along an arcuate guide surface with the drive roller so that the blank is progressively formed into an annular element with the first surface being an outer peripheral surface thereof and said second surface being an inner peripheral surface thereof with opposite ends of said blank located facing and adjacent each other to define

a joint or slit through which said end of said tape strip passes; and

(e) progressively supplying the remaining portion of said tape strip into overlapping adhesive contact with the outer peripheral surface including the joint.

4,522,670

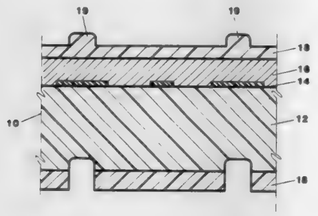
PROCESS FOR MANUFACTURE OF TAMPER-RESISTANT POLYESTER CREDIT CARDS

R. Scott Caines, Greer, S.C., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Apr. 4, 1983, Ser. No. 482,089

Int. Cl.³ B29C *17/04;* **B32B** *32/00;* **C09J** *5/00;* **B41M** *3/14*

U.S. Cl. 156—220 **15 Claims**



1. A method of preparing a credit or identification card comprising:

(a) providing a supply of substantially amorphous polyester sheet material;

(b) embossing a surface of said sheet material under pressure with numerical and/or letter characters;

(c) holding said sheet material under restraint while heating said sheet material to a temperature and for a time sufficient to substantially crystallize at least the embossed portion of said amorphous polyester sheet; and

(d) cooling said sheet material.

4,522,671

METHOD OF APPLYING AN ELECTRICAL CONDUCTOR PATTERN ON AN APERTURED SUBSTRATE

Werner Grünwald, Gerlingen; Heinz Pfizenmaier, Leonberg; Claudio de la Prieta, Stuttgart; Kurt Schmid, Ditzingen, and Ewald Schmidt, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 441,033

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1981, 3145585

Int. Cl.³ B44C *1/14;* **B32B** *31/00;* **B29C** *19/00;* **H01F** *7/06*

U.S. Cl. 156—235 **7 Claims**

1. Method of making an electrical inductance, comprising the steps of

providing a carrier of insulating material (**30**);

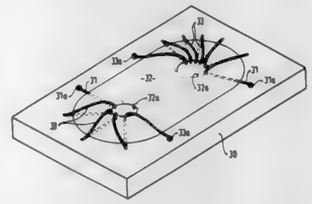
applying a pattern of conductive tracks (**31**) forming partial windings, or portions of windings, on a surface of said carrier;

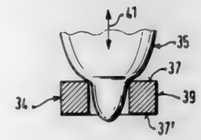
applying a core body (**32**) of ferrite material on the surface of said carrier, said core body having a core surface and a through-opening through the body extending to the carrier surface;

providing an elastically deformable printing stamp having a penetrating portion which is dimensioned to enter into the through-opening (**32***a*) of the core body;

applying to a surface of said deformable printing stamp, including a surface of said penetrating portion, a pattern of an electrically conductive paste in the form of conductive tracks, positioned to connect with the conductive tracks (**31**) applied on the carrier surface (**30**), when the conductive paste is transferred to the core body (**32**);

pressing said printing stamp, with the paste applied thereto, against a surface of the core body including the region of the aperture, with sufficient pressure to deform the printing stamp to the extent that the penetrating portion thereof penetrates within the aperture, and said surface of





the stamp engages the surface defining the aperture of the core body to transfer at least a portion of the conductive paste on the surface of the core body, including the surface of said aperture, the conductive tracks (**31**) being applied on the carrier and the transferred paste forming closed conductive loops extending on both sides of the ferrite core body.

4,522,672

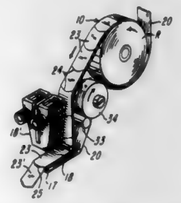
COMPOSITE LABEL WEB AND METHOD OF MAKING AND METHOD OF APPLYING LABELS

Eneas E. Brister, Fairborn, and Frederick P. Williams, Kettering, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 238,505, Feb. 26, 1981, Pat. No. 4,390,577. This application Feb. 24, 1983, Ser. No. 469,185

Int. Cl.³ B44C *1/16;* **B32B** *31/00;* **B65C** *9/18;* **B41F** *1/08*

U.S. Cl. 156—238 **7 Claims**



1. Method of applying labels from a composite label web using a labeler having a label applicator and a label delaminator, comprising the steps of: providing a longitudinally extending carrier web having an outer free end and label material releasably adhered by pressure sensitive adhesive to the carrier web, the composite label web having been wound into a roll, non-rectilinear cuts across the label material at longitudinally spaced locations defining leading and trailing edges of labels with each label having at least three projecting portions including at least one forwarded projecting portion and at least one rearwardly projecting portion with the leading edge of each label being closer to the outer free end of the carrier web than the respective trailing edge, advancing the composite label

web stepwise from the roll toward the delaminator to a position in which only a part of the forwardly projecting portion of a label is delaminated from the carrier web, thereafter advancing the carrier web stepwise again to dispense the label into label applying relationship with respect to the label applicator to a position in which only a part of the rearwardly projecting portion of the label is adhered to the carrier web, and thereafter applying the label using the label applicator.

4,522,673

HEAT INSULATING BLANKET

Barry M. Fell, Dublin, Calif., and Peter R. Ciriscioli, Reno, Nev., assignors to Hexcel Corporation, San Francisco, Calif.

Filed Apr. 30, 1982, Ser. No. 373,757

Int. Cl.³ B29C *25/00;* **B32B** *7/08;* **F04B** *1/78;* **F16L** *59/00*

U.S. Cl. 156—307.3 **30 Claims**

1. A heat insulating blanket comprising: a layer of woven fibrous material having a curable thermosetting resin impregnated therein and capable of withstanding temperatures up to a predetermined value; a layer of high temperatures thermal insulating material comprising a loose mat of particles; a layer of heat and fire resistant fabric between the fibrous material layer and the insulating material layer; and means coupling the layers together to form a composite insulating blanket adapted to be placed adjacent to a structural part to be protected.

11. A heat insulating blanket comprising: a layer of fibrous material having a curable thermosetting resin impregnated therein and capable of withstanding temperatures up to a predetermined value; a layer of high temperature thermal insulating material, there being a pair of opposed layers of heat and fire resistant fabric on opposite sides of the layer of insulating material, one of the fabric layers being coupled to the layer of fibrous material; and a thread stitched through said fibrous material layer, the insulating material layer, and the fabric layer for coupling the layers together to form a composite insulating blanket adapted to be placed adjacent to a structural part to be protected.

23. A method of making a fireshield for separating a pair of adjacent structural parts comprising: providing a heat insulating blanket formed from a layer of woven fibrous material impregnated with a curable thermosetting resin and separated from and coupled to a layer of high temperature thermal insulating material by a heat and fire resistant layer of fabric material; arranging the heat insulating blanket in a predetermined shape; and curing the resin when the same has said shape to cause the layer of fibrous material to become relatively rigid and to support the insulating material.

27. A method of making a fireshield for separating a pair of adjacent structural parts of adjacent structural parts comprising: providing a heat insulating blanket formed from a layer of fibrous material impregnated with a curable thermosetting resin and coupled to a layer of high temperature thermal insulating material; placing the heat insulating blanket in a predetermined shape adjacent to a structural part with said layer of fibrous material in engagement with one surface of the structural part; and curing the resin when the same has said shape to cause the layer of fibrous material to become relatively rigid and to support the insulating material, said curing step being performed when said layer of fibrous material is in engagement with said surface, whereby the layer of fibrous material is bonded to said structural part when the resin is cured.

30. A method of making a fireshield for separating a pair of adjacent structural parts comprising: providing a layer of high temperature thermal insulating material coupled to layer of woven ceramic cloth made from continuous ceramic fiber impregnated with a curable thermosetting resin; forming the layers into a predetermined shape; and curing the resin to cause the impregnated layer to become rigid and self-supporting.

4,522,674

SURFACE TREATMENT APPARATUS

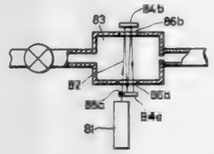
Ken Ninomiya, Nakano; Keizo Suzuki, Hachioji, and Shigeru Nishimatsu, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,325

Claims priority, application Japan, Jan. 24, 1983, 58-8731

Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06;* **C23C** *13/08*

U.S. Cl. 156—345 **10 Claims**



1. A surface treatment apparatus wherein a material gas is introduced into a surface treatment chamber and activated therein, and wherein the surface of a specimen placed in said surface treatment chamber is treated by reactive species of said material gas generated by said activation, said surface treatment apparatus further comprising a preliminary chamber for receiving a material gas, means for supplying controllable energy through a wall of said preliminary chamber to said material gas to activate said material gas in a stage preceding said surface treatment chamber, and means for introducing the material gas containing particles thus activated into said surface treatment chamber wherein said initially activated material gas is further activated to treat the surface of said specimen.

4,522,675

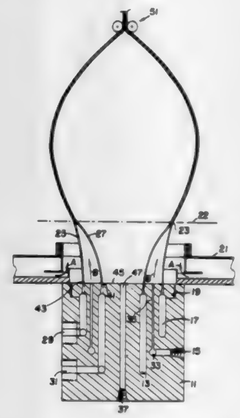
METHOD FOR FORMING A LAMINATED FILM CONTAINING DIFFERENT POLYMER LAYERS

Gordon V. Sharps, Jr., Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 14, 1983, Ser. No. 531,881

Int. Cl.³ B29C *19/00*

U.S. Cl. 156—244.11 **14 Claims**



1. A method for coextruding a laminated film containing at least two dissimilar polymer layers comprising the steps of:

providing a die having at least first and second flow paths through which at least two polymer melts can be extruded as individual polymer layers, said flow paths terminating at respective die gaps;

feeding a non-foamed polymer melt through a first flow path of said die;

feeding a foamed polymer melt through a second flow path of said die;

drawing said non-foamed and said foamed polymer melts away from said die as separate non-contacting layers, while expanding them to different degrees; and,

contacting said non-foamed and said foamed polymer melt layers so they adhere together to form a film at a weld point spaced from said die which is at or near a frost line of said polymer melts.

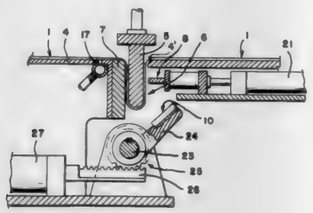
7. The method of claim 1 wherein said non-foamed polymer melt is a non-foamed polyethylene and said foamed polymer is a foamed polyethylene.

4,522,676

APPARATUS FOR MANUFACTURING A ROOF LINING FOR AUTOMOBILES

Mikami Masao, 9-19, 1-chome Kogo-minami, Nishi-Ku, Hiroshima, Japan

Filed Aug. 24, 1983, Ser. No. 526,148
Claims priority, application Japan, Sep. 7, 1982, 57-156454
Int. Cl.³ B31F *1/00*
U.S. Cl. 156—443 **8 Claims**



1. An apparatus for manufacturing a roof lining for automobiles comprising:

a sheet feeding section comprising a means for feeding forward a sheet of a predetermined length required for a single roof lining made of thermoplastic material on a table and for causinng the feeding of the sheet to temporarily stop where a wire pocket is formed through which a resting wire is inserted later and a means for firmly holding a leading edge of said sheet after said sheet is fed forward;

a loop forming section comprising a vertically movable depressing tool which is disposed above the table and has substantially the same width as the table, said loop forming section lowering said depressing tool through a slip formed on the table onto the sheet to form a U-shaped loop;

a welding section disposed below the table, said welding section comprising a welding bar and an anvil plate located opposite to said welding bar, said welding section forming a cylindrical wire pocket extending across the width of the sheet by thrusting the upper part of the U-shaped loop against said anvil plate by said welding bar to weld it together using thermal energy generated by high frequency current or the like; and

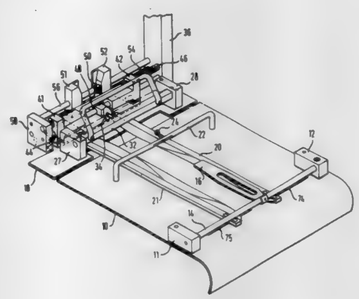
a cutting section including cutting edges for forming cutouts at both the end parts of the wire pocket and at the central part of the wire pocket as required, said cutting section practicing cutting operation by crashing the wire pocket against the anvil plate by means of said cutting edges.

4,522,677

FELLER ATTACHMENT FOR A HEAT-SEALING MACHINE FOR BELTS

Elmar Kuhn, Wuppertal, Fed. Rep. of Germany, assignor to Astor-Werk, Otto Berning & Co., Fed. Rep. of Germany

Filed Apr. 6, 1984, Ser. No. 597,723
Int. Cl.³ B31F *1/00*
U.S. Cl. 156—467 **7 Claims**



1. Feller attachment for a heat-sealing machine for belts, with a feller plate, with feller gibs on the feller plate, these feller gibs being arranged at a certain distance from each other and extending in the direction of feed and serving to fell a cover material around the interlining of a belt, with a feeding device for feeding a belt cover band, and a comb for stretching and smoothing the cover material over the interlining prior to applying the belt cover band, characterized by

an adjusting device for adjusting the distance of the ends (**60, 61**) of the feller gibs (**20, 21**) to each other, this adjusting device meshing with the ends (**60, 61**) of the feller gibs (**20, 21**), with these ends pointing toward the heat-sealing machine for belts, and consisting of a sliding bar (**44**) with sliding bearings (**41, 42**) arranged thereon and a threaded spindle (**46**) which meshes with tapped holes (**62, 63**) in the sliding bearings (**41, 42**), with the threads (**64, 65**) on both ends of the threaded spindle (**46**) as well as the tapped holes (**64, 63**) in the sliding bearings (**41, 42**) exhibiting opposite thread pitches, and guides (**37, 38**) which are arranged on the lower end (**66, 67**) of each sliding bearing (**41, 42**), this guide having recesses (**68, 69**) which hold the projections (**70, 71**) on each end (**60, 61**) of the feller gibs (**20, 21**), with the ends (**72, 73**) of the feller gibs (**20, 21**) being guided in slotted holes (**74, 75**) which extend at right angles to the direction of feed,

an adjusting device for the guide pieces (**51, 52**) for the belt cover band, and

an adjusting device for the comb (**40**).

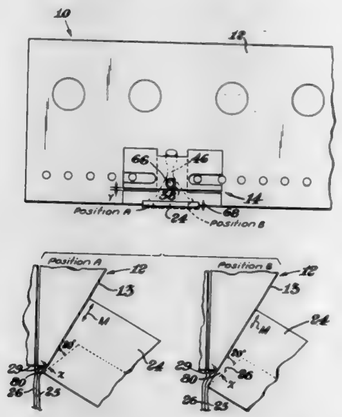
4,522,678

TRANSVERSELY ADJUSTABLE PROFILE DIE BLOCK

Larry M. Zieke, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 21, 1982, Ser. No. 435,849
Int. Cl.³ B29B *7/14;* B29C *19/00;* B29D *3/00;* B29G *2/00*
U.S. Cl. 156—501 **3 Claims**

1. Apparatus for extruding a protrusion on a film or sheet, said apparatus comprising a film or sheet die with an elongated extrusion slot for extruding said film or sheet, a die block for extruding said protrusion onto said film or sheet, the die block mounted on said die adjacent the extrusion slot of the die, said die block presenting a profile extrusion orifice closely adjacent said extrusion slot and in open communication therewith, said die block comprised of a stationary mounting block, a plate holder, an eccentric pin, and an extrusion plate defining apertures for said protrusion, the die block movable transversely along the surface of said die to enlarge or diminish the extrusion orifice to affect the size and configuration of the base of the protrusion as it engages and joins said film or sheet and the



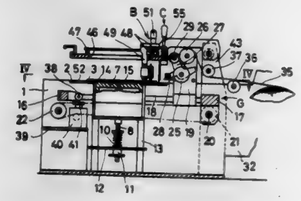
longitudinal location of where the profile joins the film or sheet.

4,522,679

APPARATUS FOR STICKING ADHESIVE FILM ON A RING AND A THIN ARTICLE

Keigo Funakoshi, Ibaraki, and Minoru Ametani, Takatsuki, both of Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 11, 1984, Ser. No. 629,877
Claims priority, application Japan, Sep. 13, 1983, 58-170393
Int. Cl.³ B26D *1/26;* B32B *31/18*
U.S. Cl. 156—510 **3 Claims**



1. An apparatus for sticking an adhesive film on a ring as a carrier and a thin article such as a silicon wafer comprising:

a frame;

a table mounted on said frame for holding the ring thereon;

a table mounted on said frame for holding the thin article thereon;

sticking means adapted to move along the top surface of said tables for pressing the adhesive film against the ring and the thin article to stick it thereon;

a cutter supporting frame pivotally mounted on said frame at one end thereof;

cutting-out means mounted on said cutter supporting frame for cutting out the web of adhesive film along the outer periphery of said ring; and

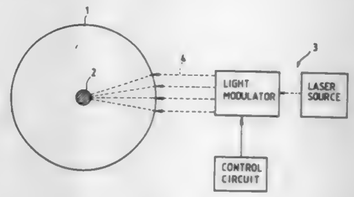
cutting means mounted on said cutter supporting frame for cutting the web of adhesive film transversely.

4,522,680

METHOD FOR PRODUCING CRYSTALS

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 15, 1983, Ser. No. 485,506
Claims priority, application Japan, Apr. 15, 1982, 57-63744; Oct. 19, 1982, 57-183959
Int. Cl.³ B01J *3/06*
U.S. Cl. 156—624 **11 Claims**



1. A method for producing crystals of a material which comprises the steps of:

(a) providing a starting solid material capable of absorbing a laser beam energy;

(b) completely surrounding said solid material with a substantially spherical body transparent to the energy such that said starting solid material is placed approximately at the center of said substantially spherical body as a nucleus;

(c) applying the laser beam energy from outside of said substantially spherical body until said starting solid material is heated and melted whereby a high internal pressure is produced by thermal expansion of said starting solid material being melted and is imposed on the melt, said laser beam energy, when applied to a surface of said substantially spherical body in parallel beams, being focused on said starting solid material by said substantially spherical body to cause said starting solid material to be heated and melted; and

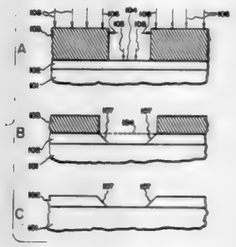
(d) cooling the melt, thereby forming crystals different from the crystals of said starting solid material.

4,522,681

METHOD FOR TAPERED DRY ETCHING

Bernard Gorowitz, Clifton Park, and Richard J. Saia, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 23, 1984, Ser. No. 602,873
Int. Cl.³ B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—643 **11 Claims**



1. A dry etching method which comprises the steps of:

(A) forming on a substrate a positive mask having substantially vertical edges from a polymeric photoresist material capable of being isotropically eroded by plasma action;

(B) contacting the masked substrate with a plasma under conditions producing both anisotropic etching of said substrate and controlled isotropic erosion of said mask, and continuing plasma contact until the desired end point

has been reached, thereby producing at least one tapered hole in said substrate.

4,522,682

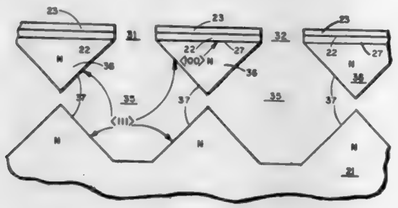
METHOD FOR PRODUCING PNP TYPE LATERAL TRANSISTOR SEPARATED FROM SUBSTRATE BY O.D.E. FOR MINIMAL INTERFERENCE THEREFROM

Sidney I. Soclof, San Gabriel, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 21, 1982, Ser. No. 390,496

Int. Cl.³ H01L *21/306, 29/72;* **B44C** *1/22;* **C03C** *15/00*

U.S. Cl. 156—647 **4 Claims**



1. A method for forming an array of sub-micron dimensioned PNP-type lateral transistors on a substrate doped N-type, wherein each transistor is formed comprising the following steps:

masking the substrate to outline a pair of boundary regions for each semi-array of active regions to become transistors;

slotting the substrate in said boundary regions to a given depth;

etching away the substrate via said slots sufficiently to separate the semi-arrays of active regions from the substrate except at spaced apart supporting locations therealong;

oxidizing the substrate and semi-arrays to at least substantially completely oxidize the peripheries of the semi-arrays;

slotting the substrate orthogonally to the first mentioned slots to provide second slots with orthogonal pairs of slots defining individual transistor active regions for the respective transistors;

doping the regions defined by orthogonal pairs of slots P+ via corresponding edges of the second slots and driving in the P+ doping; and,

establishing electrical connections to the outer P+ regions, and inner N region of the original substrate.

4,522,683

DISSOLUTION OF METALS UTILIZING TUNGSTEN-DIOL COMBINATIONS

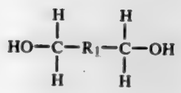
Moenes L. Elias, Canfield, and Walter L. Burger, Salem, both of Ohio, assignors to Plastic Specialties and Technologies, Inc., Barrington, Ill.

Filed Jan. 12, 1984, Ser. No. 570,056

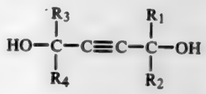
Int. Cl.³ C23F *1/00;* **B44C** *1/22*

U.S. Cl. 156—666 **21 Claims**

1. In a process for the dissolution of metal in which a metal is contacted with an aqueous solution containing from about 0.2 to about 4.5 gram moles per liter of sulfuric acid and from about 0.25 to about 8 gram moles per liter of hydrogen peroxide, the method of increasing the metal dissolution rate of the solution, which method comprises adding an effective amount of a promoter composition comprising from about 5 to about 5000 parts per million of tungsten and from about 0.1 to 10% by weight of a diol selected from the group consisting of a primary diol having the general formula:

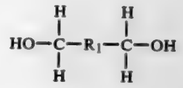


wherein R_1 is selected from: (a)—$(CR_2R_3)_n$—, where each R_2 and R_3 independently from each other is either hydrogen or an alkyl group of 1 to 4 carbon atoms, and n is at least 2, (b) a cycloparaffinic group or an alkyl-substituted cycloparaffinic group having from 5 to 7 carbon atoms in the ring structure and from 1 to 4 carbon atoms in any of the alkyl substitutions, (c) monohydroxy or dihydroxy-substituted cycloparaffins containing from 5 to 7 carbon atoms in the ring structure, and (d) monohydroxy or dihydroxy-substituted alkylcycloparaffins containing from 5 to 7 carbon atoms in the ring structure, where each of the alkyl groups contains from 1 to 4 carbon atoms and is attached to an unsubstituted carbon atom in the ring structure, and (e) a diol of the general formula:

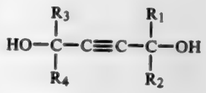


wherein R_1, R_2, R_3 and R_4 can be either H, CH_3, OC_2H_5 or OC_3H_8.

12. In a composition for metal dissolution comprising an aqueous solution of from about 0.2 to about 4.5 gram moles per liter of sulfuric acid and from about 0.25 to about 8 gram moles per liter of hydrogen peroxide, the presence of an effective amount of a promoter composition comprising from about 5 to about 5000 parts per million of tungsten and from about 0.1 to 10% by weight of a diol selected from the group consisting of a primary diol having the general formula:



wherein R_1 is selected from: (a)—$(CR_2R_3)_n$—, where each R_2 and R_3 independently from each other is either hydrogen or an alkyl group of 1 to 4 carbon atoms, and n is at least 2, (b) a cycloparaffinic group or an alkyl-substituted cycloparaffinic group having from 5 to 7 carbon atoms in the ring structure and from 1 to 4 carbon atoms in any of the alkyl substitutions, (c) monohydroxy or dihydroxy-substituted cycloparaffins containing from 5 to 7 carbon atoms in the ring structure, and (d) monohydroxy or dihydroxy-substituted alkylcycloparaffins containing from 5 to 7 carbon atoms in the ring structure, where each of the alkyl groups contains from 1 to 4 carbon atoms and is attached to an unsubstituted carbon atom in the ring structure, and a diol of the general formula:



wherein R_1, R_2, R_3 and R_4 can be either H, CH_3, OC_2H_5 or OC_3H_8.

4,522,684

ELEVATIONAL OPERATING DEVICE FOR A ROTARY EVAPORATOR

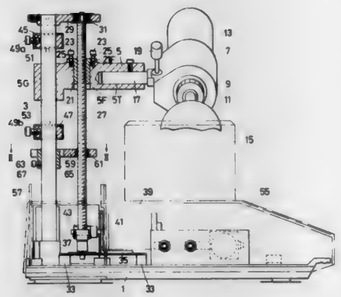
Tatsuhiko Saito, Machida, Japan, assignor to Yamato Scientific Co., Ltd., Japan

Filed Aug. 1, 1983, Ser. No. 519,039

Claims priority, application Japan, Oct. 15, 1982, 57-155089[U]; Oct. 15, 1982, 57-155091[U]; Oct. 15, 1982, 57-155092[U]; Feb. 10, 1983, 58-17465[U]; Feb. 10, 1983, 58-17466[U]

Int. Cl.³ B01D *1/30*

U.S. Cl. 159—11.2 **8 Claims**



1. Apparatus for elevatably supporting the unbalanced load of a rotary evaporator sample vessel in vertically elevatable relation alongside the supporting apparatus, comprising:

a pole substantially vertically mounted on a base;

a elevating member mounted for free vertical movement on said pole;

a rotatable operating rod substantially vertically mounted on said base in parallel relation to said pole;

a nut member mounted on said elevating member and operatively engaging said operating rod so as to impart vertical movement to the elevating member in response to rotation of the operating rod;

said elevating member including means to support a sample vessel in horizontal spaced relation to said operating rod, whereat the weight of the sample vessel acts as an unbalanced load on the operating rod; and

means designed for substantially precluding vibration and squeaking of said elevatable support apparatus while supporting an unbalanced load, including means operatively associated with said nut member and said elevating member to allow the nut member to undergo a limited amount of vertical motion reltive to the elevating member as the operating rod rotates.

4,522,685

METHOD OF OPERATING A SPENT PULPING LIQUOR COMBUSTION APPARATUS

Herman F. Feldmann, Worthington, Ohio, assignor to International Paper Company, New York, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,237

Int. Cl.³ D21C *11/12*

U.S. Cl. 162—30.11 **7 Claims**

1. An integrated process for the recovery of energy and chemical values from spent pulping liquor which comprises an initial stage of subjecting spent pulping liquor concentrated to at least about 50% by weight solids content to combustion with air at temperatures from about 1100 deg. F. to about 1300 deg. F. in a fluidized-bed reaction chamber, said chamber providing:

(a) an entrained fluidized-bed in a first space region containing a first relatively fine solid bed particle consisting substantially of combustion residue salts of spent pulping liquor combustion in air;

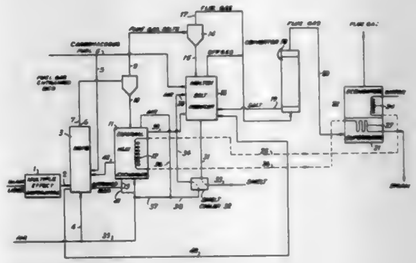
(b) in a second more limited space region within the first space region, a second relatively dense fluidized bed containing a relatively coarse solid bed particle component consisting substantially of combustion residue salts of spent pulping liquor combustion in air;

(c) a recirculation path for the first particle component from the first space region through the dense fluidized-bed in the more limited space region, wherein a portion of the fine particle solid is separated and removed from the upper portion of the reaction chamber, conveyed to and passed through a fluidized-bed containing heat-exchanger means for removing heat values from said separated and removed fine particle size solid, and said separated and removed fine particle size solid is subsequently reintroduced into the fluidized-bed reaction chamber below the surface of the relatively dense fluidized-bed;

(d) said first and second fluidized-beds containing a minimal quantity of particle sizes intermediate between the average particle size of said first fluidized-bed and the average particle size of said second fluidized-bed; and

(e) fluidizing air provided to fluidize said first and second fluidized-beds at a superficial velocity of from about 15 to about 30 feet per second.

6. An improved multiple solids fluidized-bed combustor adapted for subjecting spent pulping liquor to combustion with air in a fluidized bed reaction chamber provided with a plurality of solid particulate materials, said chamber providing:



(a) an entrained fluidized-bed in a first space region containing a first relatively fine solid bed particle;

(b) a second relatively dense fluidized-bed in a second more limited space region containing relatively coarse solid bed particles;

(c) a recirculation path for the first particle component from the first space region through the dense fluidizied-bed in the more limited space region wherein means are provided for removing a portion of the fine particle solids from the upper portion of the reaction chamber, conveying said removed solids to and passing said removed solids through a fluidized-bed containing heat-exchanger means for removing heat values from said removed solids and means for reintroducing said removed solids into the fluidized-bed reaction chamber below the surface of said second relatively dense fluidized-bed; and

(d) said first and second fluidized-beds containing a minimal quantity of particle sizes intermediate between the average particle size of said first fluidized-bed and the average particle size of said second fluidized-bed;

wherein the improvement comprises the particles of both the first and second fluidized-beds consisting substantially of combustion residue salts of the combustion of spent pulping liquor in air.

4,522,686

AQUEOUS SIZING COMPOSITIONS

David H. Dumas, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 302,010, Sep. 15, 1981, abandoned. This application Jul. 7, 1983, Ser. No. 511,445

Int. Cl.³ D21H *3/34*

U.S. Cl. 162—158 **10 Claims**

1. As a composition of matter, a cationic aqueous dispersion having as the continuous phase an aqueous solution containing at least one water-soluble nitrogen-containing cationic dispersing agent and as the dispersed phase (a) finely divided particles of fortified rosin and (b) finely divided particles of a hydrophobic, cellulose-reactive ketene dimer sizing agent, the weight ratio of (a):(b) in said dispersed phase being within the range of 0.1:1 to 10:1, and the amount of dispersing agent being within the range of about 5 to about 140% based on the weight of the dispersed phase.

4,522,687

FLOW BOX WITH TWO DEFLECTORS

David L. Eynon; Stanley W. Kingsnorth, both of Cumbria, and Mani K. Varma, Essex, all of England, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

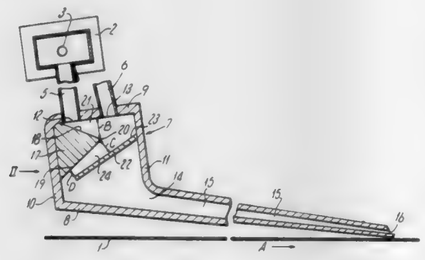
PCT No. PCT/GB82/00195, § 371 Date Jan. 20, 1983, § 102(e) Date Jan. 20, 1983, PCT Pub. No. WO83/00173, PCT Pub. Date Jan. 20, 1983

PCT Filed Jul. 2, 1982, Ser. No. 463,868

Claims priority, application United Kingdom, Jul. 2, 1981, 8120468

Int. Cl.³ D21F *1/02, 1/04*

U.S. Cl. 162—336 **11 Claims**



1. A flow box for a paper making machine comprising an explosion chamber having a base wall, a top wall and two side walls; an outlet at the bottom of one of the side walls adjacent the base wall communicating with a slice chamber extending parallel to the base wall; and a plurality of inlet pipes connecting the explosion chamber to a distribution chamber, the inlet pipes communicating with two rows of openings in the top wall of the explosion chamber and having an axial direction directed towards the base wall; a first deflector extending from one of said side walls, having an upper surface and a lower surface, the upper surface extending across the axial direction of the pipes of a first row of openings to form a divergent passage with the top wall in the direction of the second row of openings, and terminating at a distal edge outside of the axial direction of the pipes of the second row of openings; and wherein said upper surface of said first deflector does not extend across the axial direction of the pipes of the second row of openings; a second deflector extending from the other of said side walls across the axial direction of the pipes of the second row of openings, the second deflector having an upper surface forming a convergent flow passage with at least a part of the lower surface of the first deflector.

4,522,688

PROCESS FOR RECOVERY OF CYCLOPENTADIENES

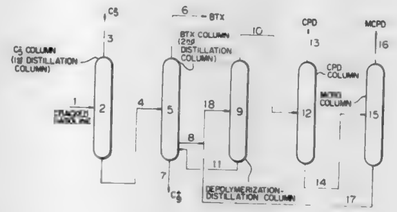
Akira Yokogawa, Kasukabe; Asao Takahashi, Omiya; Isao Maruyama, Chihara, and Takao Hosaka, Chiba, all of Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1983, Ser. No. 545,661

Claims priority, application Japan, Oct. 29, 1982, 57-190968

Int. Cl.³ B01D *3/14*

U.S. Cl. 203—28 **6 Claims**



1. A process for recovering cyclopentadiene from a cracked gasoline fraction which comprises:

feeding a cracked gasoline fraction which is formed as a by-product in the thermal or steam cracking of a liquid hydrocarbon to a benzene-toluene-xylene distillation column which provides benzene, toluene, and xylene as the overhead stream;

withdrawing the internal reflux stream from the stripping section of said distillation column and feeding said withdrawn internal reflux stream to a depolymerization-distillation column in which said stream is depolymerized by heating at 160°–230° C. for 10–200 minutes;

withdrawing the bottom stream from the depolymerization-distillation column and feeding it into said benzene-toluene-xylene distillation column at a position which is situated below the position from which said internal reflux stream is withdrawn;

withdrawing an overhead stream from said depolymerization-distillation column and feeding it to a cyclopentadiene distillation column which is operated at a bottom temperature of 160°–230° C. with a residence time of 0.25–6 hours, and at an overhead pressure of 0–2 $Kg/cm^2 \cdot G$, and at an overhead temperature of 35°–80° C. wherein said cyclopentadiene is distilled as the overhead; and

withdrawing said distilled cyclopentadiene from the overhead of said cyclopentadiene column.

4. A process for recovering cyclopentadiene and methylcyclopentadiene from a cracked gasoline fraction which comprises:

feeding a cracked gasoline fraction which is formed as a by-product in the thermal or steam cracking of a liquid hydrocarbon to a benzene-toluene-xylene distillation column which provides benzene, toluene, and xylene as the overhead stream;

withdrawing the internal reflux stream from stripping section of said distillation column and feeding said withdrawn internal reflux stream to a depolymerization-distillation column in which said stream is depolymerized by heating at 170°–230° C. for 10–200 minutes;

withdrawing the bottom stream from the depolymerization-distillation column and feeding it into said benzene-toluene-xylene distillation column at a position which is situated below the position from which said internal reflux stream is withdrawn;

withdrawing an overhead stream from said depolymerization-distillation column and feeding it to a cyclopentadiene distillation column which is operated at a bottom temperature of 160°–230° C. with a residence time of 0.25–6 hours, and at an overhead pressure of 0–2 $Kg/cm^2 \cdot G$, and at an overhead temperature of 35°–80° C.

wherein said cyclopentadiene is distilled as the overhead; and

withdrawing said distilled cyclopentadiene from the overhead of said cyclopentadiene column;

withdrawing the bottom stream from the cyclopentadiene distillation column and feeding it to a methylcyclopentadiene distillation column which is operated at a bottom temperature of 170°–210° C. with a residence time of 0.5–5 hours, and at an overhead pressure of 0–2 $Kg/cm^2 \cdot G$ and at an overhead temperature of 65°–115° C. wherein methylcyclopentadiene is distilled as the overhead; and

withdrawing said distilled methylcyclopentadiene from the overhead of said methylcyclopentadiene distillation column.

4,522,689

PROCESS FOR PURIFYING PHOSPHONITRILE CHLORIDES

Hiroshi Tanino, Hasuda; Tetsuhiko Okamoto, Tokyo; Shinichiro Ueyama, Tokyo; Kazuhiko Fujikawa, Tokyo, and Takatoshi Tsumiyama, Toyonaka, all of Japan, assignors to Shin Nisso Kako Co., Ltd., Japan

Continuation of Ser. No. 460,261, Jan. 24, 1983,. This application Oct. 9, 1984, Ser. No. 658,543

Claims priority, application Japan, Jan. 29, 1982, 57-11765

Int. Cl.³ B01D *3/34;* **C01B** *25/10*

U.S. Cl. 203—52 **1 Claim**

1. A process for completely separating tri(phosphonitrile chloride) from tetra(phosphonitrile chloride) and/or phosphonitrile chloride oligomer $(NPCl_2)_m$, wherein a mixture of tri(-phosphonitrile chloride) of the formula:

$(NPCl_2)_3$

and tetra(phosphonitrile chloride) of the formula:

$(NPCl_2)_4$

and/or phosphonitrile chloride oligomer of the formula:

$(NPCl_2)_m$

(wherein m represents an integer of 5 or greater), together with an inert organic solvent selected from the group consisting of mixtures of normal- or iso-paraffinic hydrocarbons, mixtures of monocyclic aromatic hydrocarbons, mixtures of polycyclic aromatic hydrocarbons; and combinations of mixtures of mono- and poly-cyclic aromatic hydrocarbons, said mixtures having a boiling point from 200° to 400° C., wherein the mixture is subjected to distillation under reduced pressure at a temperature below the boiling point of tetra(phosphonitrile chloride) at said reduced pressure, thereby to distill out in the distillate a mixture of only tri(phosphonitrile chloride) and the solvent.

4,522,690

ELECTROCHEMICAL SENSING OF CARBON MONOXIDE

Hanumanthaiya V. Venkatasetty, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 1, 1983, Ser. No. 557,072

Int. Cl.³ G01N *27/46*

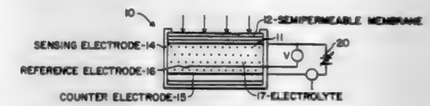
U.S. Cl. 204—1 T **17 Claims**

1. A method for detecting the presence of a plurality of toxic agents comprising the steps of:

providing electrochemical cell means having an electrode configuration comprising a plurality of electrodes including a platinum working electrode, a platinum counter electrode and an Ag/Ag^+ reference electrode;

providing a nonaqueous gelled aprotic electrolyte solution in the electrochemical cell means, said solution comprising an aprotic organic solvent selected from the group consisting of γ-butyrolactone and propylene carbonate, an amount of lithium perchlorate electrolyte and polyethylene oxide gelling agent;

exposing the electrochemical cell means to an atmosphere suspected of containing the gas of interest;



providing electrical source means and connecting the source means to the electrode configuration to energize the cell means; and

providing means for measuring the current flowing between said sensing electrode and said counter electrode.

4,522,691

METHOD FOR MANUFACTURING A MULTICOLOR FILTER AND A MULTICOLOR DISPLAY DEVICE

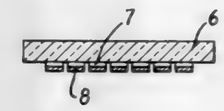
Mitsuru Suginoya; Koji Iwasa; Hitoshi Kamamori; Yutaka Sano, and Yumiko Terada, all of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Dec. 21, 1983, Ser. No. 563,947

Claims priority, application Japan, Dec. 22, 1982, 57-233933; Dec. 22, 1982, 57-233934; Apr. 12, 1983, 58-64117

Int. Cl.³ C25D *13/02, 13/06*

U.S. Cl. 204—18.1 **50 Claims**



1. A method for manufacturing a color filter comprising the steps of: forming a conductive thin film layer having a given pattern on an electrically insulative substrate; and forming a colored layer on said conductive thin film layer by co-electrodepositing a coloring material and polymer on said conductive thin film layer.

4,522,692

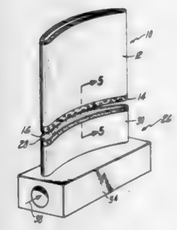
ELECTROCHEMICAL MACHINING A WORKPIECE UNIFORMLY USING A POROUS ELECTRODE

Frederick R. Joslin, Lebanon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 26, 1983, Ser. No. 517,315

Int. Cl.³ B23P *1/14, 1/00;* **C25F** *7/00*

U.S. Cl. 204—129.5 **7 Claims**



6. The process of electrochemically machining a workpiece to remove material uniformly therefrom, wherein an electrode has a working face spaced apart by a gap from the workpiece surface and wherein electrolyte is flowed under pressure

through the electrode working face and then through the gap, characterized by an electrode working face made of a porous powder metal filter element material having a filtration rating in the range of $20–100\times10^{-6}$ m and by flowing the electrolyte through said working face, the pressure drop of the electrolyte through the portion of the electrode which comprises the working face being greater than the pressure drop of the electrolyte within the gap.

4,522,693

PHOTOPOLYMERIZABLE COMPOSITION WITH ACYLPHOSPHINE SULFIDE PHOTOINITIATOR AND METHOD

Andreas Henne, Ludwigshafen; Anton Hesse, Luetzelsachsen; Guenter Heil, Ludwigshafen, and Gunnar Schornick, Neuleiningen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

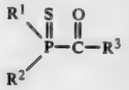
Continuation of Ser. No. 296,895, Aug. 27, 1981, abandoned. This application Jun. 2, 1983, Ser. No. 500,429

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1980, 3034697

Int. Cl.³ C08F *2/50*

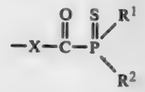
U.S. Cl. 204—159.15 **13 Claims**

12. A photopolymerizable composition comprising monomers having polymerizable C—C double bonds and as a photoinitiator an acylphosphine sulfide of the formula



(I)

where R^1 is straight-chain or branched alkyl of 1 to 6 carbon atoms, cyclohexyl or cyclopentyl, or a phenyl, naphthyl or O—, S— or N—containing 5- or 6-membered heterocyclic radical which is unsubstituted or substituted by fluorine, chlorine, bromine, C_1–C_4—alkyl or C_1–C_4—alkoxy; R^2 has the meanings of R^1 and can be identical to or different from R^1, or is alkoxy of 1 to 6 carbon atoms, phenoxy which is unsubstituted or substituted by chlorine, C_1–C_6—alkyl or C_1–C_6—alkoxy, or phenoxyalkyl, where alkyl is of 1 to 4 carbon atoms, or R^1 and R^2 are linked together to form a ring of 4 to 10 carbon atoms which is unsubstituted or can contain 1 to 6 further alkyl substituents, each of 1 to 4 carbon atoms, as well as 1 or 2 fused-on benzene rings; R^3 is straight-chain or branched alkyl of 2 to 18 carbon atoms, a cycloaliphatic radical of 3 to 12 carbon atoms, mono-, di-, tri- or tetra-substituted phenyl or an unsubstituted or mono-, di-, tri- or tetra-substituted naphthyl, where the substituents can be identical or different and can be alkyl, alkylthio or alkoxy of 1 to 6 carbon atoms or chlorine, bromine or fluorine, or the group



where R^1 and R^2 have the above meanings and X is unsubstituted or mono-, di-, tri- or tetra-substituted phenylene, where the substituents can be identical or different and can be alkyl, alkylthio or alkoxy of 1 to 6 carbon atoms or halogen of atomic weight of not more than 80, or X is an aliphatic or cycloaliphatic divalent radical of 2 to 6 carbon atoms; and where one or more of R^1, R^2 and R^3 may be olefinically unsaturated, where R^3 can also be methyl or phenyl.

4,522,694

PROCESS FOR THE PHOTOPOLYMERIZATION OF VINYL COMPOUNDS AND PHOTOPOLYMERIZABLE MATERIALS USED IN SAID PROCESS

Roland Schaefer, Friedrichsdorf, Fed. Rep. of Germany, assignor to Kulzer & Co. GmbH, Wehrheim, Fed. Rep. of Germany

Filed Jan. 5, 1984, Ser. No. 568,371

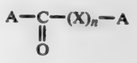
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1983, 3301011

Int. Cl.³ C08F *2/46, 4/00*

U.S. Cl. 204—159.24 **29 Claims**

1. In a method for the production of a polymer composition comprising photopolymerizing at least one vinyl compound in the presence of a photoinitiator, the improvement comprising polymerizing said at least one vinyl compound in the presence of a photoinitiator comprising:

(a) at least one photosensitizer of the formula



wherein

X is selected from the group consisting of CO, $C(R^1)$ (R^2) and $C(R^3)(OR^4)$, wherein R^1, R^2, R^3, R^4 are each selected from the group consisting of hydrogen and a hydrocarbon radical;

n is 0 or 1; and

A are hydrocarbon radicals which may be substituted and which may be bonded together with the proviso that when n is 1 and X is $C(R^1)(R^2)$, and when n is 0, A is an aromatic radical; and

(b) at least one reducing agent selected from the group consisting of N-alkyl-pyrazole, N-alkyl-triazole, N-alkyl-tetrazole, N-aryl-benzotriazole, N-aryl-pyrazole, N-aryl-tetrazole, and N-aryl-triazole.

4,522,695

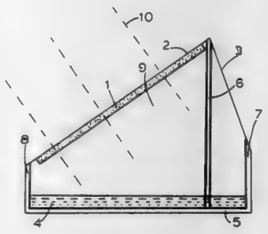
VAPOR PHASE HYDROGEN GENERATOR

Charles W. Neefe, 811 Scurry St., Box 429, Big Spring, Tex. 79720

Continuation-in-part of Ser. No. 440,080, Dec. 23, 1982, Pat. No. 4,472,260. This application Apr. 30, 1984, Ser. No. 605,398

Int. Cl.³ C25B *1/10, 9/00;* **H01M** *6/34*

U.S. Cl. 204—266 **3 Claims**



3. A hydrogen and oxygen generator having a plurality of light absorbing semiconductor receptors supported in a hydrophilic foam, a liquid to solid junction is formed between the light absorbing semiconductors and water supplied by water vapor contained in the hydrogen and oxygen generator said light receptors being capable of producing an electrical current when activated by light, and providing hydrogen and oxygen by the decomposition of water by electrolysis, the generated hydrogen and oxygen are removed from the generator by passing through a gas permeable membrane.

4,522,696

CARRIER FOR MATERIAL DURING ELECTROLYTIC FINISHING

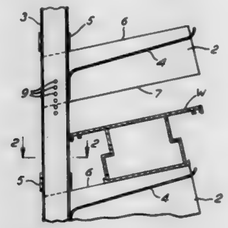
Edward P. Short, Addisbury, and Gerald Bernardo, Banbury, both of England, assignors to Alcan International Limited, Montreal, Canada

Filed Apr. 8, 1983, Ser. No. 483,121

Claims priority, application United Kingdom, Apr. 14, 1982, 8210858

Int. Cl.³ C25D *17/04*

U.S. Cl. 204—297 W **5 Claims**



1. A carrier for supporting extended lengths of metal during electrolytic finishing treatments comprising a flight bar supporting at least two dependent spline members, each spline member carrying at least one series of vertically spaced support arms in electrical connection with it and having an associated vertically slideable clamp bar, carrying a series of vertically spaced spring clamp members arranged at substantially the same interval as the support arms on the spline and each arranged for clamping a workpiece in electrical contact with a surface on an adjacent support arm.

4,522,697

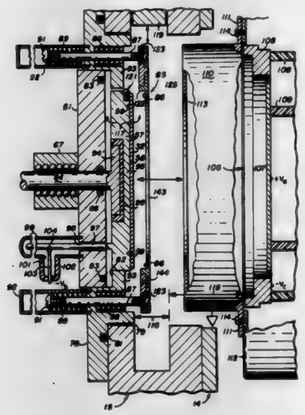
WAFER PROCESSING MACHINE

Jack A. Dimock, and Peter J. Clarke, both of Santa Barbara, Calif., assignors to Sputtered Films, Inc., Santa Barbara, Calif.

Filed Dec. 22, 1983, Ser. No. 564,740

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **12 Claims**



1. In a method for precisely locating the position of wafers within their respective carrying slots of a wafer carrier cassette of the type having slotted side walls for retaining an array of wafers in axially aligned an axially spaced relation and having an opening in the bottom and top of said wafer carrier for passage of a wafer pickup blade therethrough for moving wafers into and out of said wafer carrier, the step of:

inserting and indexing means with a precisely determined pitch through the open bottom of said wafer carrier to pick up and position the bottom edge of said wafers within respective ones of said slots within said wafer carrier, whereby movement of said wafers by said blade is facilitated in use.

4,522,698

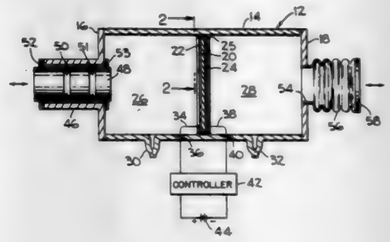
ELECTROCHEMICAL PRIME MOVER

Henri J. R. Maget, 80 Arbuelo Way, Los Altos, Calif. 94022

Continuation-in-part of Ser. No. 320,552, Nov. 12, 1981, Pat. No. 4,402,817. This application Aug. 30, 1983, Ser. No. 527,698

Int. Cl.³ B01D *13/02*

U.S. Cl. 204—301 **4 Claims**



1. A prime mover comprising means defining a gas-tight chamber, an electrolytic membrane disposed in said chamber, said membrane having a first membrane surface and a second membrane surface spaced from said first membrane surface in substantial parallelism thereto, said membrane being fixed within said chamber so as to form at least a first compartment bounded in part by said first membrane surface, a first material-pervious electrode disposed on said first membrane surface and a second material-pervious electrode disposed on said second membrane surface, said first compartment containing an electrochemically active material capable of existing in a gaseous phase and being electrochemically reversibly active so as to enter into a reduction/oxidation reaction at said first and second material-pervious electrodes and produce ions that are transportable through said electrolytic membrane, means connected to said first and second material-pervious electrodes for inducing unidirectional current flow therebetween through said electrolytic membrane so as to ionize said electrochemically active material at one said material-pervious electrode and transport ions through said electrolytic membrane from said second membrane surface to said first compartment thereby effecting a pressure increase in said first compartment, and converting means operatively associated with said first compartment for converting the pressure change therein to mechanical motion.

4,522,699

INDICATOR TERMINAL FOR COULOMETRIC MEASURING DEVICES

Václav Novák; Jaroslav Prusek, and Václav Trojan, all of Prague, Czechoslovakia, assignors to Statni Vyzkumny Ustav Ochrany Materialu G.V., Prague, Czechoslovakia

Filed Jun. 21, 1982, Ser. No. 390,696

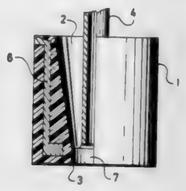
Claims priority, application Czechoslovakia, Jun. 29, 1981, 4956-81

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—434 **7 Claims**

1. An indicator terminal for a coulometric measuring device comprising, a rigid tubular terminal body having opposite end portions, a tubular nozzle entering one end portion of said terminal body and defining therewith an annular chamber, said nozzle having a terminus within said body ending a predeter-

mined distance before the opposite end portion of said body, said terminal body having a distortion free contact mouth opening formed at said opposite end portion for sealing and engaging a surface to be measured, said mouth opening extending inwardly from the opposite end portion toward the terminus of said nozzle to receive an electrolytic solution from said nozzle, said mouth opening having a diameter greater than the outside diameter of said terminus, and means located in said annular chamber for centering and supporting the terminus of said tubular nozzle in said body and promoting laminar fluid flow in said mouth portion and said annular chamber.



4,522,700

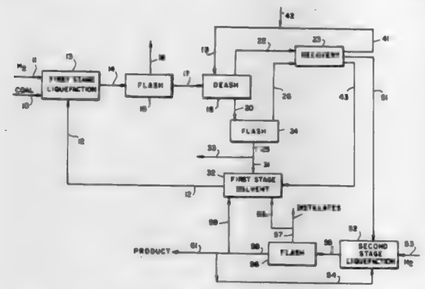
COAL LIQUEFACTION

Harvey D. Schindler, Fairlawn, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Continuation of Ser. No. 531,952, Sep. 14, 1983, abandoned, which is a continuation of Ser. No. 290,246, Aug. 5, 1981, abandoned. This application Aug. 13, 1984, Ser. No. 640,235

Int. Cl.³ C10G *1/06*

U.S. Cl. 208—8 LE **13 Claims**



1. In a process for the two-stage liquefaction of coal wherein coal is liquefied in a first stage thermal liquefaction zone with a first stage liquefaction solvent to produce a first effluent; first effluent is deashed to recover an essentially ash free liquid and a pumpable stream consisting essentially of insoluble material and 850° F.+ liquid; essentially ash free 850° F.+ liquid is recovered from the first effluent and contacted with hydrogen in a second stage to upgrade the essentially ash free liquid and produce a second effluent, 850° F.+ liquid is recovered from the second effluent; and 850° F.− liquid having an initial boiling point of at least 500° F. is recovered from the first and second effluent, the improvement comprising:

said first stage liquefaction solvent consisting essentially of a portion of the pumpable stream recovered from the first effluent, a portion of 850° F.+ liquid which is recovered from the second stage effluent and directly utilized in the liquefaction solvent (without additional hydrogenation) and 850° F.− liquid having an initial boiling point of at least 500° F. recovered from both the first and second effluents and directly utilized in the liquefaction solvent (without additional hydrogenation), said first stage liquefaction solvent consisting essentially of 15% to 50% of 850° F.+ liquid, 5% to 20% of insoluble material and at least 45% of 850° F.− liquid having an initial boiling point of at least 500° F., with at least 10% of said first stage liquefaction solvent being obtained from said pumpable stream and at least 25% of the first stage liquefaction solvent being 850° F.+ liquid obtained from the second stage liquid effluent, said first stage liquefaction solvent providing the solvent requirements for the first stage liquefaction.

4,522,701

PROCESS FOR PREPARING AN ANISOTROPIC AROMATIC PITCH

Ghazi B. Dickakian, Greenville, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 11, 1982, Ser. No. 348,029

Int. Cl.³ C10C *3/00*

U.S. Cl. 208—40 **14 Claims**

1. A process of preparing an aromatic pitch which produces a carbon product with an anisotropic structure comprising: heat-treating a pitch containing 1–15% toluene insolubles produced from a catalytic cracking residue, at 410° to 500° C. for a period of time less than about 120 minutes at atmospheric or reduced pressure effective to obtain a toluene insoluble level of at least 30% by weight of the pitch while minimizing the quinoline insolubles to less than 3% by weight of the pitch; and then stripping the distillable oil from the pitch.

4,522,702

DEMETALLIZATION OF HEAVY OILS WITH PHOSPHOROUS ACID

Simon G. Kukes, and David R. Battiste, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 27, 1984, Ser. No. 655,113

Int. Cl.³ C10G *45/00, 17/00*

U.S. Cl. 208—89 **24 Claims**

1. A process for treating a feed stream which contains hydrocarbons and metals comprising contacting said feed stream under suitable conditions with an amount of phosphorous acid sufficient to convert at least a portion of said metals to compounds which are substantially insoluble in said hydrocarbon feed stream.

4,522,703

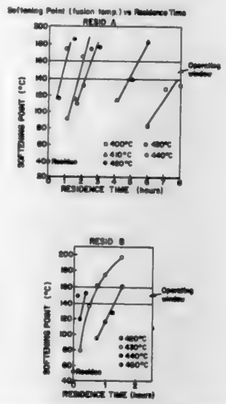
THERMAL TREATMENT OF HEAVY HYDROCARBON OIL

Tsoung Y. Yan, Philadelphia, Pa., and Nai Y. Chen, Titusville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 281,159, Jul. 8, 1981, abandoned. This application Nov. 21, 1983, Ser. No. 554,013

Int. Cl.³ C10C *3/00*; C10G *9/14*

U.S. Cl. 208—106 **13 Claims**



1. A process for upgrading heavy hydrocarbon oil by thermal treatment which comprises (1) heating heavy hydrocarbon oil at a temperature between about 425°–550° C. and a pressure between about 100–2000 psi for a soak period between about 0.05–2 hours at the highest Severity in the range between about 700–2000 seconds, as expressed in equivalent reaction time at 800° F., sufficient to convert at least about 50 weight percent of the heavy hydrocarbon oil to gasoline and gas oil range hydrocarbons, substantially without the formation of solid coke; and (2) recovering separate fractions of gasoline and gas oil, and residual tar which has a fusion temperature below about 160° C. and a quinoline-insoluble content between about 20–50 weight percent; wherein the highest Severity in step(1) is determined by a functional relationship between the asphaltene content of the heavy hydrocarbon oil and the residual tar yield and residual tar quinoline-insoluble content in accordance with the following equation:

$$\text{wt \% asphaltenes} \cdot \frac{\text{wt \% tar quinoline} - \text{insolubles}}{\text{wt \% tar yield}} = 6\text{–}12$$

4,522,704

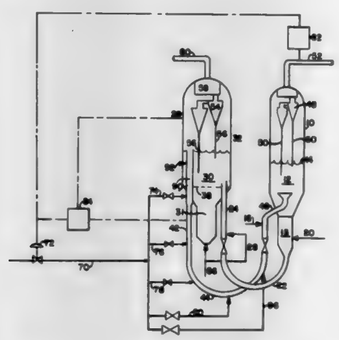
PASSIVATION OF CRACKING CATALYSTS

Carl F. Bertsch, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 9, 1983, Ser. No. 559,891

Int. Cl.³ C10G *11/00*

U.S. Cl. 208—113 **17 Claims**



1. A method for passivating cracking catalyst in a cracking system comprising a reaction zone, a regeneration zone, and a passivation zone, said method comprising:

(a) passing feedstock containing a metal contaminant selected from the group consisting of nickel, vanadium, iron and mixtures thereof into the reaction zone maintained under reaction conditions having cracking catalyst therein, coke and metal contaminant becoming deposited on the cracking catalyst;

(b) passing cracking catalyst from the reaction zone to the regeneration zone maintained under regeneration conditions wherein at least a portion of the coke is removed from the catalyst;

(c) passing metal contaminated cracking catalyst from the regeneration zone through the passivation zone maintained under reducing conditions prior to returning the cracking catalyst to the reaction zone; and,

(d) adding a passivation promoter to the cracking system, the passivation promoter selected from the group of metals consisting of cadmium, germanium, indium, tellurium, zinc, compounds thereof and mixtures thereof.

4,522,705

OCTANE ENHANCEMENT AND TOTAL LIQUID PRODUCT YIELD IMPROVEMENTS IN CATALYTIC CRACKING USING IN-SITU CRYSTALLIZED ZSM-5 CLAY AGGREGATES

Pochen Chu, West Deptford, and Gary M. Pasquale, Sewell, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 13, 1984, Ser. No. 620,283

Int. Cl.³ C10G *11/05*

U.S. Cl. 208—120 **13 Claims**

1. In a process for catalytic cracking of a petroleum fraction under cracking conditions in the presence of a conventional cracking catalyst comprising a large pore crystalline zeolite and a matrix and an additive catalyst comprising a zeolite characterized by a Constraint Index of about 1–12 and a silica to alumina mole ratio greater than about 5 in an amount which provides the zeolite component of said additive catalyst at from about 1 to about 50 wt. percent of the conventional cracking catalyst, said catalysts coming into contact with steam at elevated temperatures, the improvement wherein said additive catalyst is prepared by in-situ crystallization of a clay aggregate.

4,522,706

HYDROCARBON TREATING PROCESSES USING PEROVSKITE-CONTAINING CATALYTIC COMPOSITIONS

Kenneth S. Wheelock, and Robert C. Schucker, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 388,900, Jun. 16, 1982, abandoned. This application Dec. 23, 1983, Ser. No. 564,843

Int. Cl.³ C10G *11/04, 11/18*

U.S. Cl. 208—121 **10 Claims**

1. A fluid coking process which comprises contacting a hydrocarbonaceous feed having a Conradson carbon ranging from about 5 to about 50 weight percent at fluid coking conditions with a catalyst comprising a composition comprising at least about 60 weight percent perovskite and less than about 99 weight percent of a perovskite ABO_3, and a non-perovskite reaction residue, wherein A is a cation of at least one metal, wherein B is a cation different from said cation A of at least one metal, said perovskite comprising at least one transition metal cation selected from the group consisting of elements having atomic numbers ranging from 21 through 30, through 39 through 48, from 57 through 80, and from 89 through 90, said composition having been prepared by reacting a component A comprising said cation A and a component B comprising said cation B at a temperature ranging from about 600° to about 2000° C. and for a time sufficient to form said perovskite ABO_3 and interrupting said reaction after formation of at least about 60 weight percent perovskite and before the formation of more than about 99 weight percent of said perovskite ABO_3, based on the weight of said component A plus component B whereby the remainder of said composition is a non-perovskite residue resulting from said reaction.

4,522,707

METHOD FOR PROCESSING USED OIL

Ernst Kriegel, and Hubert Coenen, both of Essen, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 95,100, Nov. 16, 1979, abandoned. This application Jan. 20, 1984, Ser. No. 572,543

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850540

Int. Cl.³ C10M *11/00*

U.S. Cl. 208—180 **10 Claims**

1. A method for processing a used oil which comprises about 70 percent by weight spindle and neutral oils, about 5 percent by weight lower and higher boiling point oils, about 10 percent

by weight useful additives and oxidation products, about 10 percent by weight water, about 5 percent by weight difficultly volatile and nonvolatile hydrocarbons, and solid impurities, wherein substantially all oils and useful additives are recovered in almost quantitative amounts without cracking or polymerization, comprising:

(a) dewatering the used oil;

(b) contacting the dewatered used oil with gas in a supercritical state said gas having a critical temperature between about 10° C. and 300° C., at a temperature above the critical temperature and at a pressure from its critical pressure up to about 350 bar, to form (1) a gaseous extraction phase containing the spindle and neutral oils and the additives, the spindle and neutral oils and substantially all the useful additives being extracted into the gaseous extraction phase during the contact with the supercritical gas and (2) an extraction residue;

(c) separating the gaseous extraction phase from the extraction residue; and

(d) separating the extracted spindle and neutral oils and the extracted additives from the gaseous extraction phase obtained in step (c) by changing the thermodynamic state of the gaseous extraction phase.

4,522,708

CATALYTIC REFORMING PROCESS EMPLOYING REFORMING CATALYSTS WHICH ARE BASED ON TUNGSTEN AND MOLYBDENUM CARBIDES

Lucien Leclercq, Villeneuve D'Asq, and Marcelle Provost, Poitiers, both of France, assignors to Eruotungstene-Poudres, Grenoble, France

Filed Mar. 15, 1984, Ser. No. 589,683

Claims priority, application France, Mar. 25, 1983, 83 05480

Int. Cl.³ C01G *35/06*

U.S. Cl. 208—136 **6 Claims**

1. In a process for reforming petroleum products by the catalysis of dehydrocyclization, isomerization, hydrogenolysis and dehydrogenation reactions, the improvement wherein the catalysts employed comprise a carbide corresponding to the formula:

$(Mo_xW_{1-x})_yC_Z$ wherein $o<x<1$, $1\leqq y\leqq 2$ and $0.8\leqq z\leqq 1$, and said catalysts are initially nitrided at about 1,023 K. in a mixture of N_2 and H_2 before use.

4,522,709

CATALYTIC HYDRODESULFURIZATION OR HYDRODENITROGENATION

Arthur W. Aldag, Jr., and Lloyd E. Gardner, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 27, 1984, Ser. No. 644,883

Int. Cl.³ C10G *45/08*

U.S. Cl. 208—216 R **13 Claims**

1. A process for the catalytic hydrodesulfurization of an organic sulfur compound or the catalytic hydrodenitrogenation of an organic nitrogen compound comprising the step of contacting a fluid feed stream containing an organic sulfur compound or an organic nitrogen compound under suitable conditions with a hydrogel derived catalyst comprising zinc titanate and alumina promoted with cobalt and molybdenum.

4,522,710

METHOD FOR INCREASING DEASPHALTED OIL PRODUCTION

Biddanda U. Achia, Sarnia, Canada; David H. Shaw, Baton Rouge, La., and James D. Bushnell, Berkeley Heights, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 9, 1983, Ser. No. 559,736

Int. Cl.³ C10C *3/06, 3/08*

U.S. Cl. 208—349 **15 Claims**

1. A method for increasing the production of deasphalted oil from a hydrocarbon feedstock, said method comprising:

A. passing the feedstock into a first distillation column wherein the feedstock is separated into a first distillate and a first residuum;

B. passing between about 20 and about 60 weight percent of the total first residuum produced into a second, separate distillation column wherein the first residuum is separated into a second distillate and a second residuum; and

C. passing at least a fraction of the remaining first residuum and second distillate into a deasphalting zone wherein the residuum and second distillate are contacted with solvent to produce a deasphalted oil extract and an asphaltenic raffinate.

4,522,711

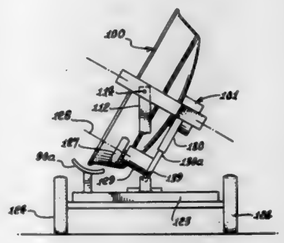
ORE SEPARATOR APPARATUS

Keith B. Cleland, 3189 Industrial Dr., Yuba City, Calif. 95991

Filed Oct. 6, 1983, Ser. No. 539,717

Int. Cl.³ B03B *5/74*

U.S. Cl. 209—298 **17 Claims**



1. In apparatus of the character described, the combination comprising

(a) a rotary bowl having rotary surfaces for separating particles of flowable solid material received into the bowl, the bowl having a first axis of rotation,

(b) first support means mounting the bowl for selective tilting about a second axis, there being a discharge ring at the rear of the bowl and connected therewith, the bowl having an axial opening associated with said ring for discharging said material, said first support means including a shaft extending through said opening and centered axially in the ring, the ring connected to the shaft, and

(c) drive means including a drive rotor suspended by said support means to be tilted with the bowl and engaging a bowl outer surface facing away from said axis for rotating the bowl, and a prime mover operatively connected with said drive rotor.

4,522,712

DOUBLE-ENDED, SPIN-ON FUEL WATER SEPARATOR

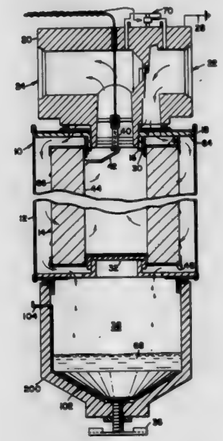
Paul M. Fischer, Menomonie, Wis., and Carl E. Schwarz, Burnsville, Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Oct. 18, 1983, Ser. No. 543,118

The portion of the term of this patent subsequent to Apr. 23, 2002, has been disclaimed.

Int. Cl.³ B01D *35/18*

U.S. Cl. 210—86 **8 Claims**



1. A fuel-water separator having a spin-on filter cartridge, said cartridge having a filter element attached at a first and a second surface within an electrically grounded housing, said housing including a separated water reservoir, said separator comprising:

means supplying an electrical potential from a power source to said filter element;

means for insulating said filter element from said housing, said insulating means located at said first and said second surfaces of attachment of said filter element to said housing;

means indicating a current flow through separated water within said reservoir between said filter and said housing; and means for warning the contents of said separated water reservoir, said warming means located at said reservoir;

a head, including means for supplying a mixture of fuel and water into said separator, upstream from said filter element;

means for discharging separated fuel from said separator downstream from said filter element, said head threadably engaging said spin-on filter cartridge, said discharging means including a passageway having an electrical contact affixedly suspended within said passageway, said contact insulated from said head and electrically connected to said power source; and

means for electrically connecting said filter element and said electrical contact when said filter cartridge is threadably engage to said head, said electrically connecting means including a spring arm having a contact point, said arm affixed to said filter element near said first surface of attachment of said filter element to said housing, said spring arm extending into said passageway and contacting said electrical contact.

4,522,713

APPARATUS FOR STATIC MEMBRANE FILTRATION

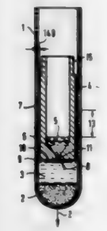
Dietmar Nussbaumer; Horst Perl, and Khuong T. Vinh, all of Göttingen, Fed. Rep. of Germany, assignors to Sartorius GmbH, Gottingen, Fed. Rep. of Germany

Filed Nov. 25, 1983, Ser. No. 555,636

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 3243864

Int. Cl.³ B01D *33/00, 35/02*

U.S. Cl. 210—136 **17 Claims**



1. In a filtration apparatus for static membrane filtration of liquids, including an outer vessel comprising a centrifuge tube containing a liquid medium to be filtered, and having an open top and a closed bottom, and a filter unit provided with a filter element disposed in the liquid medium within said tube, the medium to be filtered being under excess pressure and in contact with said filter element of the filter unit, the improvement which comprises the filter unit having means defining an open upper end and a portion thereof at said upper end is reduced in wall thickness for storing rising liquid medium, means defining an unsealed gap or clearance situated between the filter unit and said centrifuge tube, and a filter membrane being disposed on the outside of the filter unit facing the bottom of said tube, the membrane having an edge and being sealed around said edge, and having a filtration active layer pointing outwardly thereof for filtering the medium so as to allow a filtrate thereof to collect in the filter unit.

4,522,714

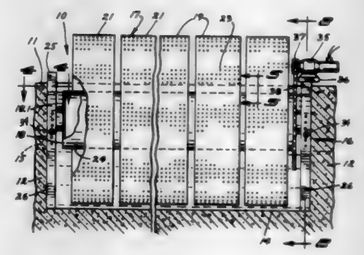
WATER TREATMENT APPARATUS

Christopher P. Thissen, Austin, Minn., assignor to Walker Process Corporation, Aurora, Ill.

Filed Nov. 16, 1983, Ser. No. 552,264

Int. Cl.³ C02F *3/06*

U.S. Cl. 210—150 **12 Claims**



1. Waste water treating apparatus comprising

a tank having an inlet and an outlet and having end and side walls confining the waste water to a predetermined depth in the tank,

a rotary biological contactor in the tank and having a rigid and hollow shaft extending horizontally and also having a water treating plastic media on the shaft to rotate thereon, the media peripherally embracing the shaft and having a

multiplicity of gas and water passages alternately filled and purged of gas and water as the media revolves,

the hollow shaft having closed ends in the tank and confronting the tank end walls and also having buoyancy for floating the entire rotary biological contactor in the waste water and with the shaft submerged,

means for rotating the biological contactor in the tank

and mechanical supports in fixed relation to the tank end walls and having connections to and engaging the ends of the shaft in the tank and at a submerged location therein, the mechanical supports adding upward vertical support to the buoyancy of the shaft to locate the top of the shaft periphery adjacent the surface of the water, whereby to maximize the treating function of the media as substantially all of the passages are filled and purged of water and gas in each revolution, and to neutralize a maximum portion of the weight of the media while minimizing the tendency of the shaft to flex.

4,522,715

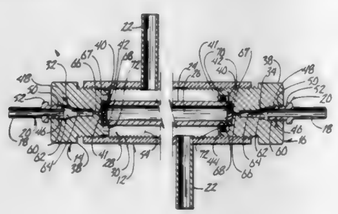
HIGH PERFORMANCE CHROMATOGRAPHY COLUMN

Rodney R. Walters, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation of Ser. No. 495,646, May 18, 1983, abandoned. This application Aug. 14, 1984, Ser. No. 640,925

Int. Cl.³ B01B *15/08*

U.S. Cl. 210—198.2 **13 Claims**



1. A chromatography column adapted to be used in high performance liquid chromatography comprising:

(a) an elongated hollow tubular column of rigid material having opposite ends, said column being of generally uniform cylindrical shape free of any permanently affixed threads or fittings;

(b) a pair of oppositely disposed end fittings each having inner and outer ends and each having elongated longitudinal passageways;

(c) the longitudinal passageways of said fittings each terminating in an enlarged bore at the respective inner ends thereof;

(d) a first ring means in said enlarged bores;

(e) the opposite ends of said column being positioned within said bores in abutting relation to said first ring means;

(f) an outer tubular sleeve positioned longitudinally around said column; and

(g) means for securing said end fittings to opposite ends of said sleeve so that said column and first ring means are axially compressed between said pair of secured end fittings with said first ring means being kept in a sealing compressed relationship between said end fittings and said opposite ends of said column.

4,522,716

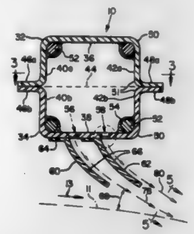
SHOWER PIPES FOR ROTARY DRUM FILTER

Richard W. LaValley, 15512 NE. 28th Ave., Vancouver, Wash. 98665

Filed Feb. 4, 1983, Ser. No. 464,023

Int. Cl.³ B01D *33/38*

U.S. Cl. 210—210 **19 Claims**



1. A shower pipe for a rotary drum filter comprising:

a rigid elongate pipe for spanning the length of a filter drum, said pipe being of rectangular cross section;

means defining a first row of spray holes extending in spaced apart relationship axially along said pipe, the holes extending through an outer wall of the pipe for discharging a first liquid spray line along the length of the pipe when said pipe is filled with a liquid under pressure;

means defining a second row of said spray holes extending in spaced apart relationship parallel to said first row, the second row being in the same quadrant of said pipe as the first row, for discharging a second liquid spray line along the length of the pipe and close to said first line; and

a pair of diffusion flange means depending from the pipe, one flange means extending lengthwise of the pipe along each row of holes and joining the pipe adjacent to each said row, the pair of flange means being circumferentially closely spaced apart to diffuse said first and second liquid spray lines lengthwise of the pipe into two separate, circumferentially-spaced, but closely positioned, axially-diffused sprays of liquid which extend in the same direction from the pipe;

the spray holes in said second row being axially spaced between the holes of the first row so that the axially diffused sprays of liquid in the first spray line are axially spaced apart from one another but axially overlap the diffused sprays in the second spray line.

4,522,717

FILTER APPARATUS

John E. Brust, 2600 NE. Loop 410, No. 816, San Antonio, Tex. 78217

Filed Jun. 24, 1983, Ser. No. 507,331

Int. Cl.³ B01D *27/06*

U.S. Cl. 210—238 **24 Claims**

1. An apparatus for filtering a liquid-gas mixture using replaceable filter elements, comprising:

a tank having an open upper end and a closed lower end;

a cover secureable across the upper end of the tank for alternatively closing the tank and providing access to the tank interior;

a partition sealed to the tank wall near the upper end of the tank to extend across the tank interior and divide the tank interior into an upper chamber above the partition and a lower chamber below the partition, wherein the upper surface of the partition is formed into an upper tier and a lower tier disposed a distance below the upper tier, and wherein a filter aperture having a circular wall is formed through the partition to intersect said upper tier; and

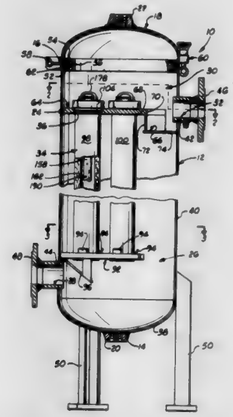
filter means, comprising a replaceable filter element, detachably mounted on said partition for filtering fluid passing through said filter aperture, the filter means comprising:

a header having a first end, a second end and a longitudinal header bore formed therethrough to intersect the ends of the header, portions of the header near the second end thereof having a circular periphery to be matingly received in the filter aperture form the upper side of said partition, wherein a laterally extending wing having a longitudinal channel parallelling the header bore in one side thereof is formed on portions of the header disposed above said partition;

means mounted in the header for releaseably securing a shank placed in said channel within the channel; and

means, including said replaceable filter element, mounted on the header for filtering fluid passing through said header bore;

wherein a stud is mounted on the partition adjacent the filter aperture to extend from the upper side thereof, the stud having a shank sized and positioned on the partition to be received in



said channel at such times that the circular portions of the header are received in the filter aperture, and the stud having an enlarged head at the upper end thereof to overlay portions of said wing; and wherein the tank has an inlet port opening into the lower chamber of the tank and an outlet port opening into the upper chamber of the tank above the lower tier of the partition and on a level wherein the outlet port is bisected by the upper tier of the partition.

10. A filter cartridge, comprising:

a header having a longitudinal header bore formed therethrough and a laterally extending wing having a longitudinal channel, parallelling the header bore, formed in one side of said wing;

means mounted in the header for releasably securing a shank placed in said channel within said channel; and

means mounted on the header for filtering fluid passing through said header bore.

4,522,718

MECHANISM FOR LATCHING AN AXIALLY DISPLACEABLE ROTARY PART TO A CONCENTRIC ROTARY PART

Donald J. Henkel, Loveland, and Donald L. Hurley, Hamilton, both of Ohio, assignors to The Western States Machine Company, Hamilton, Ohio

Filed Jun. 17, 1982, Ser. No. 389,409

Int. Cl.³ B01D *33/06*

U.S. Cl. 210—371 **23 Claims**

1. A latching mechanism for securing in a certain axial position a rotary part that is displaceable axially relative to a concentric rotary part, comprising:

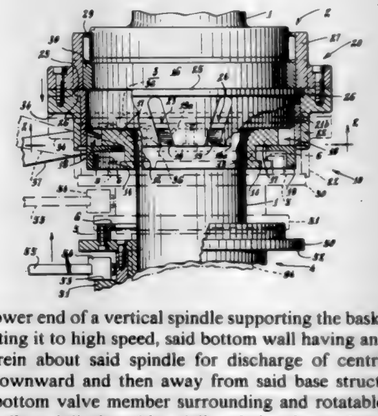
latch means rotated with the concentric part and displaceable radially relative thereto between a latching position and an unlatching position;

a latchable member secured to the axially displaceable part and disposable in the path of said latch means by axial movement of said displaceable part to said certain position;

said latch means and said latchable member respectively comprising elements which, with said displaceable part in said certain position, are interengageable to prevent axial displacement of said displaceable part and are disengageable to release the same, respectively, by radial movements of said latch means between its said positions; and

displacing means on and movable relative to said concentric part for moving said latch means between the latching and unlatching positions.

13. In centrifugal apparatus including a centrifugal basket having a base structure spaced below its bottom wall and fixed



to the lower end of a vertical spindle supporting the basket and for rotating it to high speed, said bottom wall having an opening therein about said spindle for discharge of centrifuged solids downward and then away from said base structure, a basket bottom valve member surrounding and rotatable with said spindle and displaceable axially relative thereto between a position closing said opening and an open position spaced below said opening, and means for positioning said valve member including a spacer member fixed to it and extending upwardly from it about said spindle and a valve operating mechanism engageable with means on said spacer member for moving said valve axially between said positions; a latching mechanism according to claim 1 or claim 2 for securing said valve member in said closing position, said concentric part being said spindle, said displaceable part being said valve member with said spacer member fixed thereto, said certain position being said closing position, and said latchable member being secured to said spacer member.

4,522,719

FILTER WITH A TUBULAR FILTER ELEMENT

Soichi Kuwajima, Yono, and Naojiro Sakamoto, Yokohama, both of Japan, assignors to Nihon Schumacher K.K., Tokyo and Toyo Element Kogyo Kabushiki Kaisha, Kanagawa, both of, Japan

Filed Dec. 22, 1983, Ser. No. 564,498

Claims priority, application Japan, Dec. 24, 1982, 57-230880; Aug. 30, 1983, 58-157205

Int. Cl.³ B01D *27/06*

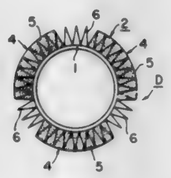
U.S. Cl. 210—457 **6 Claims**

1. A filter comprising:

(a) a perforated support tube;

(b) a tubular filter element wrapped around the support tube, said element having a plurality of corrugations in cross-section and being divided into a plurality of filtering portions in the form of corrugations in its circumferential direction so as to form a plurality of flexible portions which are also in the form of corrugations and which are

capable of expanding and contracting between the two adjoining filtering portions, the opposite ends of each filtering portion being solidified by filling the spaces between the adjoining corrugations with solidifying material in the form of an arc corresponding to the peripheral surface of the support tube so that a specific pitch of the corrugations of the filtering portions can be maintained in a state wherein the adjoining ridges and the adjoining bottom valleys of the corrugations are respectively spaced apart from each other;



(c) two end plates having flange portions and fitted to the opposite ends of the support tube so that the flange portions of the end plates face the end faces of the filter element, respectively;

(d) a plurality of filling members inserted into the opposite ends of each flexible portion, respectively; and

(e) means for fastening the solidified opposite ends of each filtering portion together with the filling members inserted into the opposite ends of each flexible portion to the opposite ends of the support tube.

4,522,720

LIQUID MIXING DEVICE

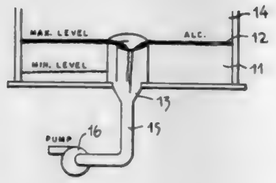
Isaih Vardi, Rehovoth; Joseph Bourne, Raanana; Jonathan Ben-Dror, Hadar Am, and Yigal Kimchi, Ramat Gan, all of Israel, assignors to Eshel Residual for Cooling and Heating Ltd., Azor, Israel

Continuation of Ser. No. 246,186, Mar. 23, 1981, abandoned. This application Apr. 18, 1983, Ser. No. 484,011

Claims priority, application Israel, Mar. 25, 1980, 59707

Int. Cl.³ B01D *21/26*

U.S. Cl. 210—512.1 **5 Claims**



1. A vortex-inducing structure for use in an aqueous system, said vortex-inducing structure comprising:

a compartment defining a single drain at the bottom of the compartment for draining a first liquid floating on top of another liquid,

at least one helical vane fixed to the bottom of the container at its bottom edge and being located above and surrounding the drain of the compartment for intimately mixing the liquids with each other, the center defined by said at least one helical vane being free so as avoid obstructing the formation of a vortex, and

a lateral inlet defined by said at least one helical vane located along substantially the entire height of the at least one helical vane so that both liquids enter into the interior of the vane structure, are intimately mixed, and exit through the drain.

4,522,721

TREATING PROCESS OF ORGANIC WASTES

Masahiko Ishida, and Ryoichi Haga, both of Hitachi, Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan

Filed Feb. 10, 1984, Ser. No. 579,009

Claims priority, application Japan, Feb. 15, 1983, 58-22119

Int. Cl.³ C02F *3/28*

U.S. Cl. 210—603 **4 Claims**

1. A process of anaerobically digesting organic wastes under an anaerobic condition in a digestion tank for recovering methane from said organic wastes by the fermentation effect of said anaerobic bacteria, said process comprising: charging organic wastes having a water content of 50–70% and seed digestives alternatively in a strata formation to said digestion tank said organic wastes formed as a layer between alternating layers of said seed digestives and maintaining the interior of said digestion tank under anaerobic conditions without stirring.

4,522,722

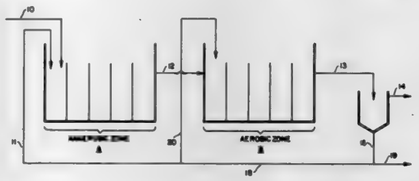
NITROGEN AND PHOSPHORUS REMOVAL FROM WASTEWATER

David M. Nicholas, New Tripoli, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 7, 1983, Ser. No. 472,451

Int. Cl.³ C02F *3/30*

U.S. Cl. 210—605 **4 Claims**



1. The method of purifying wastewater by treatment with activated biomass which comprises passing the influent wastewater through a plurality of treating zones comprising at least an initial anaerobic treating zone and a last oxic treating zone; passing the effluent from said last oxic treating zone to a separation zone to cause settling therefrom of a dense sludge layer containing activated biomass; recycling at least part of said sludge layer to provide the activated biomass employed for treatment of the wastewater; splitting the recycled part of said recycled sludge into a major portion and a minor portion; introducing said minor portion into the initial anaerobic treating zone wherein it is admixed with wastewater influent, and introducing the major portion of said recycled sludge into an oxic treating zone, wherein the contents of said oxic zone are subjected to oxygenation by contact with oxygen-containing gas admitted to said zone.

4,522,723

PROCESS FOR THE REMOVAL AND RECOVERY OF HEAVY METALS FROM AQUEOUS SOLUTIONS

Jim W. Kauffman, and William C. Laughlin, both of Edmond, Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Jun. 1, 1984, Ser. No. 616,415

Int. Cl.³ C02F *3/34*

U.S. Cl. 210—611 **18 Claims**

1. A process for reducing the concentration of water soluble ionic heavy metal species in an aqueous solution containing the same comprising:

providing an aqueous solution containing sulfate ions and water soluble ionic heavy metal species, said aqueous solution having a pH of at least about 6.0;

providing a porous matrix containing a population of bacteria capable of reducing said sulfate ions to hydrogen sulfide wherein said population of bacteria comprises at least one anaerobic bacteria selected from the group consisting of bacteria of the genera, Desulfovibrio and Desulfotomaculum said matrix being under anaerobic conditions; and

passing said aqueous solution through said porous matrix in the presence of nutrients and at predetermined temperatures, said nutrients and said temperatures providing for the growth and steady state population density of said bacteria, to contact the sulfate ions in said aqueous solution with the bacteria contained in the porous matrix whereby said bacteria metabolically reduce at least a portion of the sulfate ions to hydrogen sulfide which reacts with at least a portion of the water soluble ionic heavy metal species to form water insoluble heavy metal species which substantially are retained on the porous matrix, and to produce an aqueous effluent having a reduced concentration of said water soluble ionic heavy metal species.

4,522,724

DIAZONIUM AFFINITY MATRIXES

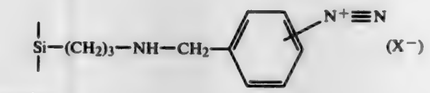
Hugh E. Ramsden, Scotch Plains, N.J., assignor to J. T. Baker Chemical Company, Phillipsburg, N.J.

Filed Mar. 2, 1984, Ser. No. 585,783

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—635 **20 Claims**

2. A diazobenzylaminopropyl silica gel of the formula



wherein



is a silica gel and X^- is an anion.

4,522,725

PROCESS FOR SEPARATING PLASMA ALBUMIN

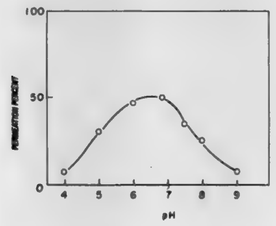
Kenji Koyama; Syotaro Ohno, both of Tokuyama, and Mitsutoshi Fukuda, Shin-nanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Filed Nov. 6, 1980, Ser. No. 204,717

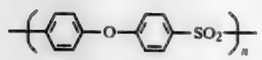
Claims priority, application Japan, Jan. 10, 1980, 55-855

Int. Cl.³ B01D *13/00*

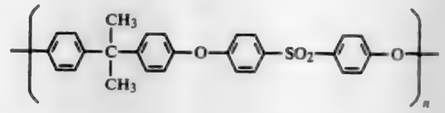
U.S. Cl. 210—639 **4 Claims**



1. A process for purification of plasma albumin from crude fraction thereof which comprises separating a crude albumin fraction from blood plasma by a rough fractionation method and then separating plasma albumin in a purified fraction through an ultrafiltration membrane of a polysulfone resin having the formula:



or



(n=50 to 250)

4,522,726

ADVANCED SEPARATION DEVICE AND METHOD

W. Wess Berry, Brandon, Fla.; Rae A. Schmeda, Littleton, and Holly S. Kibler, Boulder, both of Colo., assignors to Progress Equities Incorporated, St. Petersburg, Fla.

Filed Jul. 30, 1984, Ser. No. 635,837

Int. Cl.³ B01D *15/02*

U.S. Cl. 210—660 **3 Claims**



1. An advanced separation device for the treatment of a fluid stream, said device comprising: a feed box defining a plurality of feed box sections and including means for introducing a fluid stream into each one of said feed box sections; an upper timing crown fixed to said feed box downstream of said means for introducing and comprising a plurality of feed slots formed therethrough, each one of said feed slots being in fluid communicating relation to a corresponding one of said feed box sections; an upper distribution crown movably disposed in substantially congruent relation to said upper timing crown and downstream thereof, said upper distribution crown comprising a plurality of upper distribution slots formed therethrough, at least one of said plurality of feed slots being disposable into fluid communicating relation with at least one of said upper distribution slots; a distribution box defining a plurality of distribution compartments fixed to said upper distribution crown downstream thereof whereby each one of said distribution compartments is in fluid communicating relation to a corresponding one of said upper distribution slots, said distribution box further comprising an outlet means for each of said distribution compartments downstream of said upper distribution crown; a separator body defining a plurality of working compartments and including means for receiving a fluid stream into each one of said working compartments, said separator body being disposed downstream of said distribution box and each one of said means for receiving being connected in fluid communicating relation to a corresponding one of said outlet

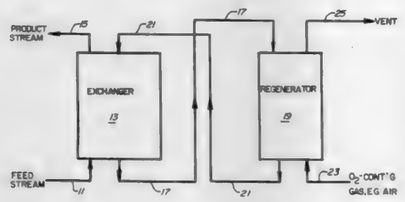
means, said separator body further comprising a discharge means for each of said working compartments downstream of said means for receiving; a collection box defining a plurality of collection compartments and including means for collecting a fluid stream into each one of said collection compartments, said collection box being disposed downstream of said separator body and each of said means for collecting being disposed in fluid communicating relation to a corresponding one of said discharge means; a lower distribution crown fixed to said collection box downstream of said means for collecting and comprising a plurality of lower distribution slots formed therethrough, each one of said lower distribution slots being in fluid communicating relation to a corresponding one of said collection compartments; a lower timing crown disposed downstream of said lower distribution crown in substantially congruent, immobile relation thereto and comprising a plurality of discharge slots formed therethrough, at least one of said plurality of discharge slots being in fluid communicating relation to at least one of said lower distribution slots; a discharge box defining a plurality of discharge sections fixed to said lower timing crown downstream of said lower distribution crown whereby each one of said discharge sections is in fluid communicating relation to a corresponding one of said discharge slots, said discharge box further comprising means for withdrawing a treated fluid stream from each one of said discharge sections; and drive means operatively connected to said device whereby said upper distribution crown, said distribution box, said separator body, said collection box and said lower distribution crown may be rotated with respect to said feed box and said upper timing crown and with respect to said lower timing crown and said discharge box.

4,522,727

PROCESS FOR CONTINUOUS REMOVAL OF AMMONIACAL NITROGEN FROM AQUEOUS STREAMS

Willis W. Weber, Riverton, Wyo., assignor to ATEC Inc., Riverton, Wyo.

Filed Oct. 22, 1984, Ser. No. 663,233
Int. Cl.³ C02F *1/42*; B01J *29/38*
U.S. Cl. 210—673 **41 Claims**



1. A continuous process for removal of ammoniacal nitrogen from water which comprises

passing a stream of liquid water containing ammoniacal nitrogen in an ion exchange zone in continuous counter current liquid-solid contact with a stream of particulate, ammoniacal nitrogen-sorbing zeolitic ion exchange material having a substantially uniform particle size for a time period sufficient to produce a treated liquid water stream having a reduced ammoniacal nitrogen content and a stream of ammoniacal nitrogen-enriched particulate zeolitic material;

recovering the stream of ammoniacal nitrogen-enriched particulate zeolitic ion exchange material and passing an oxygen-containing gas stream in continuous counter current contact with the stream of ammoniacal nitrogen-enriched particulate zeolitic ion exchange material in a heating zone while said material is maintained at a temperature of about 350° C. to about 650° C. for a time period sufficient to provide a stream of regenerated, particulate ammoniacal nitrogen sorbing zeolitic ion exchange material having a reduced ammoniacal nitrogen content;

cooling the stream of regenerated particulate zeolitic ion exchange material in a cooling zone to a temperature of less than about 350° C.; and

recycling the cooled particulate zeolitic ion exchange material stream to contact said stream of liquid water containing ammoniacal nitrogen.

38. A process for continuous regeneration of a particulate, zeolitic ion exchange material bearing ammoniacal nitrogen which comprises the steps of

forming a moving stream of said particulate material defining a preheating zone and a heating zone;

passing a stream of an oxygen-containing gas through said heating zone in a direction counter current to the direction of movement of said moving stream;

maintaining said particulate material in said heating zone at a temperature of about 350° C. to about 650° C. while said oxygen-containing gas is passed therethrough; and

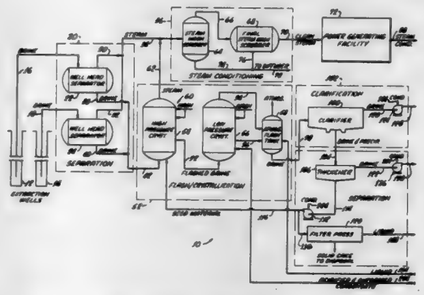
passing gases emanating from said heating zone through said preheating zone in a direction counter current to the direction of movement of said moving stream.

4,522,728

ACIDIFICTION OF STEAM CONDENSATE FOR INCOMPATIBILITY CONTROL DURING MIXING WITH GEOTHERMAL BRINE

Darrell L. Gallup, Ontario, and John L. Featherstone, El Centro, both of Calif., assignors to Union Oil Company of California, Los Angeles; Mono Power Company, Rosemead and Southern Pacific Land Company, San Francisco, all of, Calif.

Filed Dec. 30, 1983, Ser. No. 567,254
Int. Cl.³ C02F *1/52*
U.S. Cl. 210—714 **22 Claims**



1. A method of combining condensate of geothermally derived steam with a flow of geothermal liquid containing water and impurities, said geothermal liquid having an acidic pH, said condensate having a basic pH and containing water and volatile impurities, the impurities in said geothermal liquid and said condensate being such that, if the liquid and condensate are combined without treatment, suspended particulate matter would form in the mixture as a result of reaction between said geothermal liquid impurities and said condensate volatile impurities, said method comprising the reducing of the formation of said suspended particulate matter by the steps of:

(a) treating the steam condensate to reduce the pH thereof to no more than about 7;

(b) outgassing the condensate of reduced pH to reduce the concentration of volatile impurities which, when the condensate and geothermal liquid are combined react with the impurities in the geothermal liquid to cause the formation of said suspended particulate matter, the amount of said particulate matter being thereby reduced; and

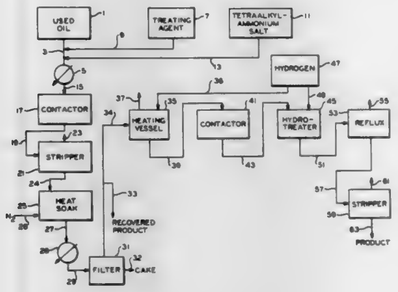
(c) combining the outgassed condensate with the flow of geothermal liquid.

4,522,729

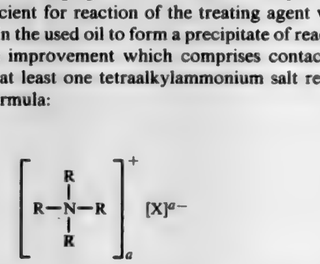
FILTRATION OF OIL

Donald C. Tabler, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 30, 1984, Ser. No. 635,855
Int. Cl.³ B01D *37/00*; C10M *11/00*
U.S. Cl. 210—727 **17 Claims**

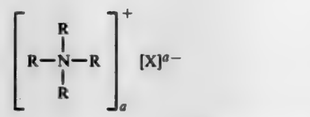


1. In a process for removing ash-forming contaminants from a used oil by mixing said used oil with an aqueous solution of an ammonium salt treating agent at conditions of temperature and pressure sufficient for reaction of the treating agent with the contaminants in the used oil to form a precipitate of reacted contaminants, the improvement which comprises contacting the mixture with at least one tetraalkylammonium salt representable by the formula:



wherein the R groups may be the same or different from each other, each R being an alkyl group having from 1 to 6 carbon atoms, and X is an organic or inorganic anion, and a is the valence of X, the amount of said at least one tetraalkylammonium salt being suitable to improve the filtration of solid materials from the thus treated used oil, and subjecting the resulting mixture to filtration to remove solid materials from the used oil.

12. A process for improving the filtration rate of an oil containing very fine solid materials which comprises admixing the oil with at least one tetraalkylammonium salt representable by the formula:



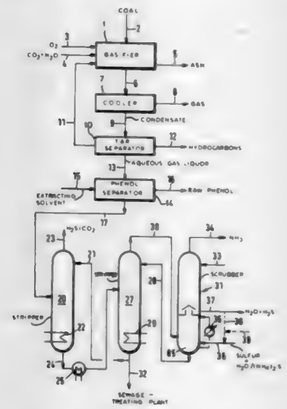
wherein the R groups may be the same or different from each other, each R being an alkyl group having from 1 to 6 carbon atoms, X is a monovalent or multivalent organic or inorganic anion, and a is the valence of X, the amount of said at least one tetraalkylammonium salt being suitable to improve the filtration of the solid materials from the thus treated oil, and subjecting the resulting mixture to filtration to remove solid materials from the oil.

4,522,730

PROCESS FOR THE TREATMENT OF AN AQUEOUS CONDENSATE

Gerhard Hochgesand, Heusenstamm, Fed. Rep. of Germany; Heinz Kahles, Johannesburg-Meredale, South Africa; Paül Wiesner, Friedrichsdorf, and Hans-Martin Stönner, Schwalbach, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 21, 1984, Ser. No. 591,851
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310712
Int. Cl.³ C02F *1/20, 1/58*
U.S. Cl. 210—750 **7 Claims**



1. A process for treating an aqueous condensate containing cyanide ions, hydrogen sulfide and ammonia which comprises the steps of:

(a) stripping said aqueous condensate by heating a portion thereof to produce water vapor and contacting the water vapor with said condensate to remove hydrogen sulfide from said condensate;

(b) recovering from step (a) an overhead product and scrubbing same with water under a pressure of 1 to 30 bar to remove residual hydrogen sulfide therefrom while discharging ammonia in a gaseous form from said overhead product to produce an aqueous laden absorbent containing 50 to 300 grams ammonia and 10 to 100 grams of hydrogen sulfide per liter at a temperature of 50° to 150° C. and a pH value of at least 9;

(c) passing said laden absorbent to at least one stripping column in which the stripping of hydrogen sulfide from said condensate is effected as recited in step (a); and

(d) introducing sulfur to the laden absorbent or to said condensate in an amount at least 0.8 times the quantity stoichiometrically required to convert the cyanide ions therein to thiocyanate ions.

4,522,731

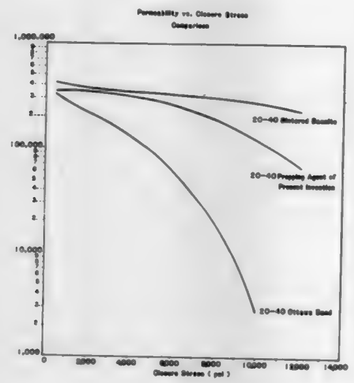
HYDRAULIC FRACTURING PROPPING AGENT

Eugene P. Lunghofer, Youngstown, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 28, 1982, Ser. No. 437,206
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—8.55 R **3 Claims**

1. In a hydraulic fracturing method in which a fluid is injected into a subterranean formation to open a fracture therein, the improvement wherein said fracture is propped open with a high strength propping agent comprising solid, spherical parti-

cles, said particles having an alumina content of between 40 and 60%, a density of less than 3.0 gm/cc, and an ambient



temperature permeability of 100,000 or more millidarcies at 10,000 psi.

4,522,732

PROCESS FOR RECOVERING PETROLEUM FROM A GEOLOGICAL FORMATION

Robert F. Purcell, Roselle, Ill., and Robert B. Kayser, Evergreen, Colo., assignors to Angus Chemical Company, Northbrook, Ill.

Continuation-in-part of Ser. No. 284,438, Jul. 20, 1981, abandoned. This application May 14, 1984, Ser. No. 609,637

Int. Cl.³ E21B *43/24, 43/22*

U.S. Cl. 252—8.55 D **9 Claims**

1. An improved process for recovering petroleum from a geological formation containing it comprising injecting steam at elevated temperature and pressure into the formation mixed with an amine which is 2-amino-2-methylpropanol or N-N-dimethylaminomethylpropanol or mixture thereof, in an amount equivalent to about 1–5 g per unit of pore volume and recovering petroleum from said formation.

4,522,733

SUBSTANTIALLY NEUTRAL AQUEOUS LUBRICANT

Nelson Jonnes, Stillwater, Minn., assignor to American Polywater Corporation, Stillwater, Minn.

Continuation-in-part of Ser. No. 462,362, Jan. 31, 1983, Pat. No. 4,461,712. This application Jul. 23, 1984, Ser. No. 633,247

Int. Cl.³ C10M *3/04*

U.S. Cl. 252—49.3 **21 Claims**

1. An aqueous lubricant which comprises:
(a) a major proportion of water;
(b) an effective gelling amount of a polymeric polyelectrolyte acrylate compound having a molecular weight of at least about 1,000;
(c) an effective lubricating amount of a fatty acid salt compound; and
(d) an effective lubricating amount of polyacrylamide having a molecular weight of at least about 300,000;
wherein the pH of the aqueous gel lubricant is about neutral.

4,522,734

BORATED FRICTION REDUCING ADDITIVES AND COMPOSITIONS THEREOF

Andrew G. Horodysky, Cherry Hill; Henry Ashjian, East Brunswick, and Henry A. Gawel, Clark, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 25, 1982, Ser. No. 436,752

Int. Cl.³ C10M *1/54*

U.S. Cl. 252—49.6 **21 Claims**

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or a grease prepared therefrom and minor effective proportion of from about 0.1 to about 10 wt. % of a multi-functional additive having friction modifying characteristics selected from the group consisting of borate esters of hydrolyzed, hydrocarbyl alkoxides, or mixtures thereof, where the hydrocarbyl moiety contains from 14 to about 36 carbon atoms.

4,522,735

POLYPHOSPHORAMIDITE OLIGOMERS AND STABILIZER COMPOSITIONS THEREOF

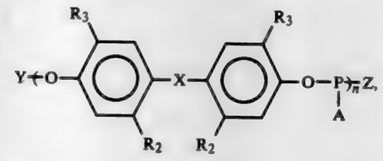
Dwight W. Chasar, Northfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 17, 1983, Ser. No. 505,516

Int. Cl.³ C07D *203/06, 205/04, 211/06, 265/30*

U.S. Cl. 252—49.9 **18 Claims**

1. Polyphosphoramidite oligomers having the formula



wherein: A is



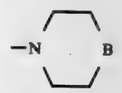
(1)

wherein R_1 is an alkyl radical containing 1 to 4 carbon atoms,



(2)

wherein a is 3 to 6, or

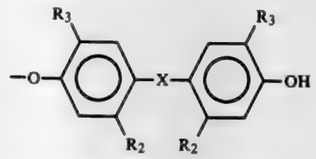


(3)

wherein B is —O—; R_2 and R_3 are hydrogen, primary, secondary or tertiary alkyl radicals containing 1 to 4 carbon atoms; X is $>CH_2$, $>CHCH_3$, $>CHCH_2CH_3$, $>CHCH_2CH_2CH_3$, $>C(CH_3)_2$,; Y is H or



wherein Q is Cl or OH; Z is Cl, OH, or



wherein R_2, R_3 and X have the meanings given above; and n is 2 to 10.

4,522,736

PRODUCTS OF REACTION INVOLVING ALKENYLSUCCINIC ANHYDRIDES WITH AMINOALCOHOLS AND AROMATIC SECONDARY AMINES AND LUBRICANTS CONTAINING SAME

Harry J. Andress, Wenonah, and Henry Ashjian, E. Brunswick, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 443,500, Nov. 22, 1982, abandoned. This application Apr. 24, 1984, Ser. No. 603,274

Int. Cl.³ C10M *1/32*

U.S. Cl. 252—51.5 A **23 Claims**

1. A product of reaction made by (a) reacting an alkenylsuccinic compound selected from the group consisting of an alkenylsuccinic acid and the anhydride thereof with a diaromatic secondary amine of the formula

$$ArNHAr^1$$

wherein Ar and Ar^1 may be the same or different aromatic group having 6 to 50 carbon atoms or the C_1 to C_{44} aliphatic group substituted member thereof, the reaction being carried out at from about 50° C. to about 250° C. using from about 0.1 to about 1.0 mole of said secondary amine per mole of acid or anhydride, followed by (b) reacting the product of (a) with a compound selected from the group consisting of an alkanolamine of the formula

$$(HOR^3)_xN(H)_y$$

wherein R^3 is an alkylene group having 1 to 6 carbon atoms, x is 1 to 3 and y is 0 to 2, their sum being 3, and an aminomethane of the formula

$$(HOR^4)_{x'}C(H)_{y'}NH_2$$

wherein R^4 is the same as R^3 and x' and y' have the same meaning as x and y, the reaction in (b) being carried out at from about 100° C. to about 300° C. using from about 0.1 mole to about 1.2 moles of amine reactant per mole of acid or anhydride used in (a).

10. A lubricant composition comprising a major proportion of a lubricating oil or grease therefrom and from about 0.05 to about 15% by weight of the composition of a product of reaction made by (a) reacting an alkenylsuccinic compound selected from the group consisting of an alkenylsuccinic acid and the anhydride with a diaromatic secondary amine of the formula

$$ArNHAr^1$$

wherein Ar and Ar^1 may be the same or different aromatic group having 6 to 50 carbon atoms or the C_1 to C_{44} aliphatic group substituted member thereof, the reaction being carried out at from about 50° C. to about 250° C. using from about 0.1 to about 1.0 mole of said secondary amine per mole of acid or anhydride, followed by (b) reacting the product of (a) with a compound selected from the group consisting of an alkanolamine of the formula

$$(HOR^3)_xN(H)_y$$

wherein R^3 is an alkylene group having 1 to 6 carbon atoms, x is 1 to 3 and y is 0 to 2, their sum being 3, and an aminomethane of the formula

$$(HOR^4)_{x'}C(H)_{y'}NH_2$$

wherein R^4 is the same as R^3 and x' and y' have the same meaning as x and y, the reaction in (b) being carried out at from about 100° C. to about 300° C. using from about 0.1 mole to about 1.2 moles of amine reactant per mole of acid or anhydride used in (a).

4,522,737

ELECTROLYTES FOR ELECTROLYTIC CAPACITORS

Richard W. MacNamee, Pickens, S.C., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed Aug. 8, 1983, Ser. No. 521,305

Int. Cl.³ H01G *9/00*

U.S. Cl. 252—62.2 **11 Claims**

1. An electrolyte for an electrolytic capacitor, comprising:
about 2 to 20 weight percent of ammonium formate;
about 1 to 12 weight percent of a dicarboxylic acid of 2 to 8 carbons or its diammonium salt, wherein the ammonium ion is of the formula $NH—(R)_3$ in which R is H, alkyl of 1 to 7 carbons or alkanol of 1 to 7 carbons;
the balance being an alkyl glycol of 2 to 4 carbons.

4,522,738

TOILET BOWL CLEANER

David J. Magid, 40 Woodview Dr., Doylestown, Pa. 18901, and W. Thomas Ruckle, 706 Deerbrook Rd., Bel Air, Md. 21014

Filed Apr. 26, 1983, Ser. No. 488,770

Int. Cl.³ C11D *17/04*

U.S. Cl. 252—90 **18 Claims**

1. A double envelope toilet bowl cleaner comprising an outer, polymeric water-soluble envelope having therein an acidic material and an inner, polymeric water-soluble envelope having therein a basic material wherein the envelope containing the basic material is insoluble in the environment of the acidic material and wherein when said toilet bowl cleaner is placed in a toilet bowl the basic material is released into the bowl water subsequent to the release of and cleaning of the toilet bowl by the acidic material, and said acidic material interacts with said basic material in said bowl to release carbon dioxide gas and wherein the number of neutralization equivalents of said basic material are equal to or greater than the number of neutralization equivalents of said acidic material.

4,522,739

ACTIVATED PEROXY COMPOUND BLEACHING COMPOSITIONS AND BLEACHING DETERGENT COMPOSITIONS AND PROCESS OF USING SAME

Frederick W. Gray, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 929,845, Jul. 31, 1978, Pat. No. 4,292,191, which is a continuation-in-part of Ser. No. 629,117, Nov. 5, 1975, Pat. No. 4,107,065. This application Aug. 17, 1981, Ser. No. 293,573

Int. Cl.³ C11D *7/18, 7/38;* **D06L** *3/02*

U.S. Cl. 252—95 **14 Claims**

1. A process for the low temperature bleaching of stained and/or soiled fabrics which comprises treating them with an aqueous peroxygen bleaching solution having a pH of about 6 to about 12 and containing as a peroxygen activator therefor, an effective amount of an aromatic sulfonyl fluoride of the formula $ArSO_2F$ wherein Ar is an aromatic ring system selected from the class consisting of a phenyl group, a naphthyl group, and a heterocyclic group having 5 to 6 members of which 1 to 2 are heteratoms selected from the class consisting of nitrogen, oxygen and sulfur, said groups optionally bearing substituents selected from the class consisting of nitro, carboxyl, hydroxy, sulfo alkyl of 1 to 16 carbon atoms, alkoxy of 1 to 16 carbon atoms, aliphatic carboxamido of 1 to 16 carbon atoms, aliphatic acyl of 1 to 16 carbon atoms, chlorine and bromine.

4,522,740

POLYGLYCOL ETHERS AS FOAM-INHIBITING ADDITIVES IN LOW-FOAM CLEANING AGENTS

Karl Schmid, Mettmann; Horst Baumann, Leichlingen; Jürgen Geke, Düsseldorf; Hans-Günther Germscheid, Hösel; Werner Lüdecke, Erkrath; Robert Piorr, Ratingen; Christian Rossmann, Langenfeld; Rolf Scharf, Monheim, and Hans-Joachim Schlüssler, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Apr. 18, 1984, Ser. No. 601,477

Claims priority, application Fed. Rep. of Germany, May 2, 1983, 3315952

Int. Cl.³ C11D *1/72*

U.S. Cl. 252—174.21 **4 Claims**

1. In the process of controlling undesirable foam development when subjecting surfaces of metal, glass ceramic or plastic to an aqueous washing process by addition of a foam-inhibiting substance thereto, the improvement consisting of using a foam-inhibiting amount of a polyglycerol polyethylene glycol alkyl ether of 1 part by weight of polyglycerol having a hydroxyl number in the range of from 900 to 1200 adducted with from 4 to 20 parts by weight of ethylene oxide and etherified at the free hydroxyl groups with alkyls having from 4 to 8 carbon atoms, as said foam-inhibiting substance.

4,522,741

TRANS-4-ALKYLOXYMETHYL-1-(4'-SUBSTITUTED BIPHENYLYL-4)CYCLOHEXANES

Hiromichi Inoue; Takashi Inukai; Yasuyuki Goto; Hideo Sato, and Masahiro Fukui, all of Kanagawaken, Japan, assignors to Chisso Corporation, Osaka, Japan

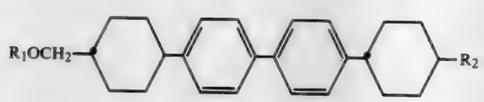
Filed Jun. 8, 1983, Ser. No. 502,233

Claims priority, application Japan, Jun. 12, 1982, 57-101172

Int. Cl.³ C09K *3/34;* **C07C** *43/168;* **G02F** *1/13*

U.S. Cl. 252—299.63 **3 Claims**

1. A compound, expressed by the formula



wherein R_1 and R_2 each represents an alkyl group of 1 to 8 carbon atoms.

4,522,742

WATER SOLUBLE FLUOR COMPOSITIONS

Duk H. Lee, Wellesley; Susan Feierberg, Watertown, and Robert E. O'Brien, Belmont, all of Mass., assignors to E. I. Du Pont de Nemours and Company Inc., Wilmington, Del.

Filed Feb. 25, 1982, Ser. No. 352,209

Int. Cl.³ B01D *13/02;* **B01J** *31/02;* **C09K** *11/06;* **G21H** *5/02*

U.S. Cl. 252—301.16 **5 Claims**

2. A composition of matter, comprising at least two water soluble fluors, each fluor having a structure in accordance with the formula:

$$[F]_x[B]_y[S]_z$$

wherein F is a component which absorbs energy and emits electromagnetic energy, S is a component which makes the fluor water soluble, and B is a chemical bond or other component which bonds a component F with a component S, and x,y and z are from 1 to 10, said composition wherein each water soluble fluor is selected from the group consisting of: 4-[5-(2-phenyloxazolyl)]benzene sulfonic acid or water soluble salt thereof, naphthalene-2-sulfonic acid or water soluble salt thereof, methoxypolyethyleneglycol 4-(2,5-diphenyloxolyl) methylether, polyethyleneglycol di-1-naphthylmethyl ether, 2,5-diphenyl-3-methyloxazolium toluene sulfonate, N-[4-(2,5-diphenyloxazolyl) methyl] acrylamide, N-[1-naphthylmethyl] acrylamide, N-[4(2,5-diphenyloxazolyl)methyl]-trimethyl ammonium chloride, N-[4-(2,5-diphenyloxazolyl) methyl]-N-benzyl-N,N-dimethyl ammonium chloride,

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4,522,743

PREPARATION OF FINELY DIVIDED PULVERULENT CAROTINOID AND RETINOID COMPOSITIONS

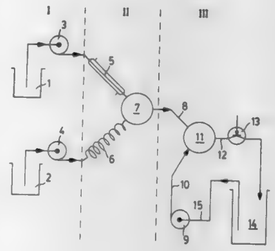
Dieter Horn, Heidelberg; Hans W. Schmidt, Mannheim; Walter Ditter, Heidelberg; Horst Hartmann, Boehl-Iggelheim; Erik Lueddecke, Mutterstadt, and Klaus Schmieder, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,585

Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119383

Int. Cl.³ B01J *13/00*

U.S. Cl. 252—311 **5 Claims**



1. A process for the preparation of finely divided, pulverulent carotinoid or retinoid compositions, in which the carotinoid or retinoid essentially has a particle size of less than 0.5 micron, wherein a carotinoid or retinoid is dissolved in a volatile, water-miscible, organic solvent at from 100° C. to 200° C., if necessary under superatmospheric pressure, within the space of less than 10 seconds, the carotinoid or the retinoid is immediately precipitated, in a colloidally disperse form, from the molecularly disperse solution by rapidly mixing the latter with an aqueous solution of a swellable colloid at from 0° C. to 50° C., and the resulting dispersion is freed from the solvent and the dispersing medium in a conventional manner.

4,522,744

BURNABLE NEUTRON ABSORBERS

Bruce M. Argall; Peter J. Kuchirka, both of Penn Hills, and Kenneth C. Radford, Churchill Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 10, 1982, Ser. No. 416,767

Int. Cl.³ G21C *7/24;* **G21F** *1/10*

U.S. Cl. 252—478 **5 Claims**

1. The method of making a burnable neutron absorber body for a nuclear reactor which comprises:

(a) coating boron-compound particles with a pore former;

(b) separately producing a slurry of matrix powder in a liquid;

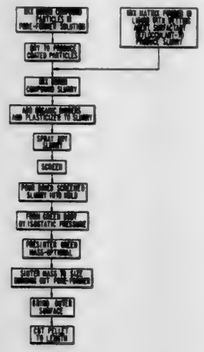
(c) mixing the boron-compound particles coated with pore former in said slurry to produce a slurry of the boron-compound particles coated with pore former and the matrix powder;

(d) adding a binder to said last-named slurry to produce a resulting slurry, said pore former being insoluble in the binder system formed of the resulting slurry;

(e) spray drying the resulting slurry thus produced to obtain a free-flowing mixture of coated boron-compound particles and matrix powder;

(f) forming a green body of said mixture; and

(g) sintering said green body and burning out the pore former to form a sintered body of the boron compound in a matrix with substantially all boron-compound particles in



a void so as to accommodate expansion of the boron-compound particles during subsequent irradiation.

4,522,745

FUSED 5,6,5-MEMBERED HETEROCYCLIC ELECTROACTIVE POLYMERS

Victor P. Kurkov, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 17, 1982, Ser. No. 442,394

Int. Cl.³ H01B *1/00*

U.S. Cl. 252—500 **26 Claims**

1. An electroactive polymer which comprises a charged polymer backbone of recurring units of a fused 5,6,5-membered aromatic heterocyclic ring system wherein the 5-membered rings contain at least one nitrogen and a second heteroatom selected from the group consisting of O, S, Se, Te, and substituted N, wherein the substituent is selected from the group consisting of lower alkyl C_1–C_6, aryl, cycloalkyl, and alkoxy, and a sufficient concentration of a charge-compensating ionic dopant associated therewith, wherein the polymer backbone is capable of undergoing reversible oxidation or reversible reduction or both to form the charged polymer backbone.

4,522,746

ELECTRICALLY CONDUCTIVE POLY(β-DIKETONE) AND PROCESS THEREFOR

Yoshiyuki Okamoto, Fort Lee, N.J., and Edward F. Hwang, Brooklyn, N.Y., assignors to W. R. Grace & Co., New York, N.Y.

Filed Feb. 13, 1984, Ser. No. 579,406

Int. Cl.³ H01B *1/00*

U.S. Cl. 252—500 **6 Claims**

1. The process of forming an electrically conductive poly(β-diketone) having a conductivity of at least $10^5 ohm^{-1}cm^{-1}$ which comprises doping at room temperature said poly(β-diketone) with 0.2–0.5 moles of an electron acceptor dopant per molecule of diketene monomer unit in the poly(β-diketone), said dopant being present in the vapor phase or in solution in an organic solvent.

4,522,747

CAPACITANCE ELECTRONIC DISC MOLDING COMPOSITIONS

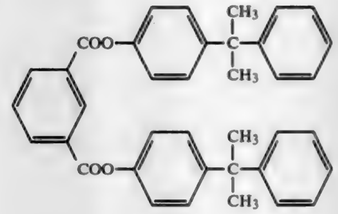
Mohamed E. Labib, Princeton; Robert F. Poll, Somerset, and Chih-Chun Wang, Hightstown, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 26, 1984, Ser. No. 624,821

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—511 **9 Claims**

1. In a conductive molding composition for a capacitive electronic disc comprising from about 70 to about 80 percent by weight of a thermoplastic resin selected from the group consisting of: a homopolymer or copolymer of vinyl chloride, or a mixture thereof; and a homopolymer of styrene or an acrylic monomer, or their copolymers; from about 12 to about 20 percent by weight of finely divided conductive carbon black; from about 1 to about 5 percent by weight of a compatible stabilizer, from about 0.5 to about 3 percent of a compatible lubricant, from about 3 to about 10 percent by weight of a compatible plasticizer, and from 0 to about 3 percent by weight of a compatible modifier, the improvement wherein all ingredients of said composition are solids and the plasticizer is cumylphenyl isophthalate, represented by the formula



4,522,748

BICYCLIC ALDEHYDE AND ITS USE AS PERFUMING AGENT

Bruno Maurer, Collonges-Bellerive, and Arnold Hauser, Aire-la-Ville, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

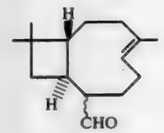
Filed Aug. 19, 1983, Ser. No. 524,574

Claims priority, application Switzerland, Sep. 6, 1982, 5280/82

Int. Cl.³ C07C *47/115;* **A61K** *7/46*

U.S. Cl. 252—522 R **2 Claims**

1. A substantially pure bicyclic aldehyde of formula



(I)

wherein indicates a C—C single bond of cis or trans configuration with respect to the neighbouring C H bond.

2. Perfuming composition containing as fragrance active ingredient a bicyclic aldehyde of formula (I) as set forth in claim 1.

4,522,749

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF A FRAGRANCE BY ADDING A VINYLCYCLOPROPANE COMPOUND

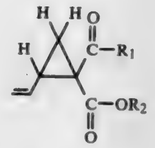
Richard G. Fayter, Jr., Fairfield, and Eugene G. Harris, West Chester, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 333,212, Dec. 21, 1981,. This application Oct. 31, 1983, Ser. No. 547,159

Int. Cl.³ A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 R **4 Claims**

1. A process for augmenting or enhancing the aroma of a fragrance formulation comprising the step of adding to said formulation an aroma augmenting or enhancing quantity of a vinylcyclopropane compound of the structure



where R_1 is an alkyl or alkenyl group having 4 to 8 carbon atoms and R_2 is a C_{1-4} alkyl group.

4,522,750

CYTOTOXIC COMPOSITIONS OF TRANSFERRIN COUPLED TO VINCA ALKALOIDS

Edwin W. Ades, Indianapolis, and George J. Cullinan, Trafalgar, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 21, 1984, Ser. No. 581,925
Int. Cl.³ C07G *7/00, 7/04*
U.S. Cl. 260—112 R **10 Claims**

1. A cell-targeting composition comprising transferrin covalently coupled to vinca alkaloid.

4,522,751

METHOD FOR PRODUCING A PREPARATION CONTAINING FACTOR VIII (AHF)

Yendra Linnau, and Otto Schwarz, both of Vienna, Austria, assignors to Immuno Aktiengesellschaft für Chemisch-Medizinische Produkte, Vienna, Austria

Filed May 18, 1984, Ser. No. 611,638
Claims priority, application Austria, May 20, 1983, 1858/83
Int. Cl.³ C07G *7/00;* A61K *35/14*
U.S. Cl. 260—112 B **10 Claims**

1. A method of producing a preparation containing Factor VIII (AHF) from a Factor-VIII-containing plasma fraction, said preparation containing Factor VIII (AHF) having a specific activity of at least 1.5 units of Factor VIII/mg protein, immunoglobulin G (IgG) of from 15 to 30 mg/1000 units of Factor VIII and fibrinogen of from 20 to 40 mg/100 units of Factor VIII, said method comprising the steps of:
   (a) dissolving said Factor-VIII-containing plasma fraction in a buffer solution containing a sulfated polysaccharide at a pH value approximately in the neutral range;
   (b) lowering the pH to a value ranging from 6.0 to 6.4 and adjusting the temperature to between about 0° C. to about 25° C. to precipitate undesired proteins and obtain a Factor-VIII-containing supernatant;
   (c) adding at least one member of the group consisting of glycine, sodium chloride and sodium citrate, to said Factor-VIII-containing supernatant to maintain the major part of the immunoglobulins contained in said supernatant in solution;
   (d) adding a protein precipitating agent to obtain a Factor-VIII-containing precipitate; and
   (e) dissolving said Factor-VIII-containing precipatate in a solvent to obtain the final product.

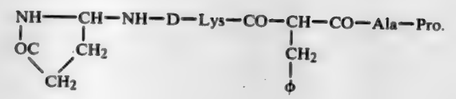
4,522,752

RETRO-INVERSO ANALOGUES OF THE BRADYKININ POTENTIATING PEPTIDE BPP_{5a} AND METHODS FOR THEIR PREPARATION

Alessandro Sisto, Rome; Antonio S. Verdini, Monterotondo, and Antonino Virdia, Rome, all of Italy, assignors to E.N.I. Ente Nazionale Idrocarburi, Rome, Italy

Filed May 10, 1984, Ser. No. 608,985
Claims priority, application Italy, May 13, 1983, 21083 A/83
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **5 Claims**

1. The product



4,522,753

METHOD FOR PRESERVING POROSITY IN POROUS MATERIALS

Ioannis V. Yannas, Newton Center; John F. Burke, Belmont, both of Mass., and Peter J. Stasikelis, Houston, Tex., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 169,897, Jul. 17, 1980, abandoned. This application Jul. 29, 1981, Ser. No. 287,930
Int. Cl.³ B29D *27/00*
U.S. Cl. 260—123.7 **8 Claims**

1. A method of producing dimensionally-stable, non-collapsible highly porous foams based upon insoluble protein-based material, comprising:
   a. forming a liquid dispersion of said insoluble protein-based material;
   b. quickly freezing said dispersion to form frozen liquid particles;
   c. subliming said frozen liquid particles to produce a highly porous foam;
   d. subjecting said highly porous foam to an elevated temperature of from about 80° C. to about 180° C. and vacuum of from about 1 mtorr to just below atmospheric pressure, said temperature and vacuum conditions being sufficient to stabilize said highly porous foam so that its porosity is preserved when it is contacted with a liquid solution of a chemical crosslinking agent, and,
   e. subjecting said stabilized highly porous foam to a liquid solution of a chemical crosslinking agent so as to produce a dimensionally-stable, non-collapsible highly porous foam material.

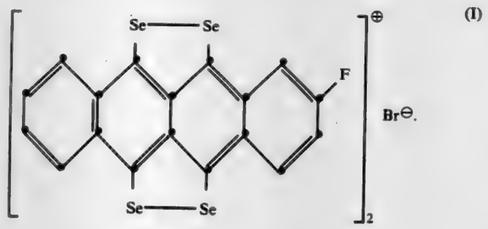
4,522,754

METALLICALLY CONDUCTING (2-FLUORO-5,6,11,12-TETRASELENOTETRACENE)$_2$-BROMIDE

Bruno Hilti, Basel; Carl W. Mayer, Riehen, and Grety Rihs, Muttenz, all of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Nov. 2, 1983, Ser. No. 548,048
Claims priority, application Switzerland, Dec. 11, 1982, 6611/82
Int. Cl.³ C07D *517/06;* H01B *1/00;* B32B *9/04*
U.S. Cl. 260—239 R **2 Claims**

1. A complex of the formula I



(I)

4,522,755

METAL PHTHALOCYANINE INTERMEDIATES FOR THE PREPARATION OF POLYMERS

Bappalige N. Achar, Mysore, India; George M. Fohlen, Millbrae, and John A. Parker, Los Altos, both of Calif., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 415,880, Sep. 8, 1982, Pat. No. 4,456,268. This application Sep. 15, 1983, Ser. No. 514,117
Int. Cl.³ C07D *487/22*
U.S. Cl. 260—245.75 **5 Claims**

1. A method of preparing an isolated metal 4,4',4'',4'''-tetracarboxylic phthalocyanine which comprises
   a. heating at about 185° C. for about four hours a reaction mixture comprising an anhydride consisting essentially of trimellitic anhydride, a source of metal selected from finely divided powders and salts of said metal, and urea in the presence of a catalyst comprising ammonium chloride and ammonium molybdate in a nitrobenzene reaction medium, and
   b. recovering the desired metal 4,4',4'',4'''-tetracarboxylic phthalocyanine from the reaction mixture by,
      b.1. washing the reaction mixture with methanol to give a washed product,
      b.2. boiling the washed product in aqueous mineral acid to give an acid-wash product,
      b.3. treating the acid wash product with inorganic hydroxide at elevated temperature until ammonia evolution ceases and a soluble product results,
      b.4. precipitating the desired metal 4,4',4'',4'''-tetracarboxylic phthalocyanine as a solid from the soluble product, and
      b.5. isolating and washing the solid metal 4,4',4'',4'''-tetracarboxylic phthalocyanine with methanol and drying.

4,522,756

ALKYL, AZIDO, NITRO ETHERS AND METHOD OF PREPARATION

Carl J. Schack, Chatsworth, and Joseph E. Flanagan, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 28, 1983, Ser. No. 479,423
Int. Cl.³ C07C *117/00, 77/02*
U.S. Cl. 260—349 **6 Claims**

1. A family of compounds having the general chemical formula



wherein R is an alkyl group having from 1 to 10 carbon atoms and wherein X is selected from the group consisting of $-ONO_2$ and $-N_3$.

4,522,757

PROCESS FOR OXIDIZING A PHENOL TO A P-BENZOQUINONE

Chao-Yang Hsu, Media, and James E. Lyons, Wallingford, both of Pa., assignors to Sun Tech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 436,492, Oct. 25, 1982, abandoned. This application Aug. 30, 1983, Ser. No. 527,892
Int. Cl.³ C07C *45/16, 49/64*
U.S. Cl. 260—396 R **17 Claims**

1. In the process of oxidizing phenol or a substituted phenol to benzoquinone or a substituted benzoquinone with a copper salt catalyst selected from the group of halides and nitrates, the improvement which comprises promoting the catalyst with an oxide or hydroxide of a Group II A metal.

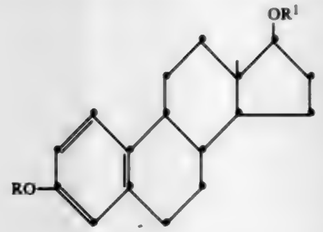
4,522,758

METHOD OF PREPARING 2-FLUORO-17β-ESTRADIOL

John S. Ward, and C. David Jones, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 22, 1983, Ser. No. 564,595
Int. Cl.³ C07J *1/00*
U.S. Cl. 260—397.5 **7 Claims**

1. The method of preparing 2-fluoro-17β-estradiol which comprises (1) mercurating at C-2 with a mercurating agent in a mutual inert solvent, said mercurating agent and solvent being free from other halogens exchangeable with fluorine under the reaction conditions, a steroid of the structure



wherein R and R^1 are acid-stable hydroxyl protecting groups;
   (2) reacting said 2-mercurated derivative with acetyl hypofluorite in a mutual inert solvent, thereby replacing said mercury containing group at C-2 with fluorine to yield a 2-fluoro-17β-estradiol having acid-stable hydroxy-protecting group at the 3 and 17β-hydroxyls; and
   (3) then removing said hydroxyl protecting groups.

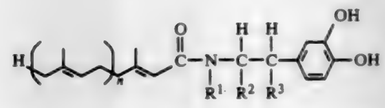
4,522,759

POLYPRENYLCARBOXYLIC ACID AMIDES

Isao Yamatsu; Takeshi Suzuki, both of Ushikumachi; Shinya Abe, Kukisaki; Akiharu Kajiwara, Ibaragi, and Kiichiro Ota, Wakayama, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1983, Ser. No. 484,111
Claims priority, application Japan, Apr. 13, 1982, 57-60310
Int. Cl.³ C11C *3/00;* A61K *31/165*
U.S. Cl. 260—404 **6 Claims**

1. Polyprenylcarboxylic acid amides of the general formula:



wherein R^1 represents a hydrogen atom or a lower alkyl group, R^2 represents a hydrogen atom or a group of the formula: $-COOR^4$ in which R^4 represents a lower alkyl group, R^3 represents a hydrogen atom or an OH group and n represents an integer of 1 to 6.

4,522,760

RECOVERY OF PALLADIUM VALUES FROM CARBONYLATION REACTION MEDIUM

Jean Jenck, Villeurbanne, France, assignor to Rhone-Poulenc Chimie de Base, Courbevoie, France

Filed Jul. 23, 1982, Ser. No. 401,394
Claims priority, application France, Sep. 16, 1981, 81 17463
Int. Cl.³ C11C *3/02*
U.S. Cl. 260—410.9 R **23 Claims**

1. A process for the separation of palladium values from the products of reaction resulting from the alkoxycarbonylation of a conjugated diene with carbon monoxide in the presence of an alcohol, hydrochloric acid or a compound capable of releasing

hydrochloric acid and a palladium catalyst to prepare esters of β,γ-unsaturated carboxylic acid, comprising (i) contacting the carbonylation reaction medium with a nitrogen, phosphorus or arsenic quaternary onium salt, a polar alcohol and an apolar, aliphatic or cycloaliphatic hydrocarbon solvent, and permitting the resulting admixture to phase separate into an alcohol phase and an organic phase; (ii) decanting/separating said alcohol phase from said organic phase; (iii) recovering the palladium values and the quaternary onium salt from said alcohol phase; and (iv) recovering the products of carbonylation from said organic phase.

4,522,761
PROCESS FOR SEPARATING FATTY ACIDS FROM ROSIN ACIDS

Michael T. Cleary, Elmhurst; Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 407,672, Aug. 12, 1982, Pat. No. 4,404,145, which is a continuation-in-part of Ser. No. 333,250, Dec. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 297,453, Aug. 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 252,745, Apr. 10, 1981, Pat. No. 4,329,280. This application Mar. 14, 1983, Ser. No. 474,999

The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.

Int. Cl.³ C11C *1/08*

U.S. Cl. 260—419 **11 Claims**

1. A process for separating a fatty acid from a feed mixture comprising a fatty acid and a rosin acid, said process comprising contacting said feed mixture at separation conditions with a molecular sieve comprising silicalite, thereby selectively retaining said fatty acid, and removing rosin acid from the fatty acid containing molecular sieve, said fatty acid being recovered from said molecular sieve by displacement at displacement conditions with a displacement fluid comprising an aqueous solution of a ketone from the group comprising acetone, methyl-ethyl ketone, or di-ethylketone.

4,522,762
DIISOCYANATE

Richard W. Oertel, III, Guilford; Reinhard H. Richter, North Haven, and Benjamin W. Tucker, Bethany, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 10, 1982, Ser. No. 440,565

Int. Cl.³ C07C *69/00*; C08G *18/10*

U.S. Cl. 260—453 A **1 Claim**

1. 1,4-bis-(2-isocyanatoethyl)cyclohexane.

4,522,763
N-ALKOXYCARBONYL- AND N-ALKOXYTHIOCARBONYL-AMIDINES AND THEIR PREPARATION

Gerhard Hamprecht, Weinheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

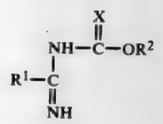
Filed Jul. 14, 1982, Ser. No. 398,421

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134144

Int. Cl.³ C07C *155/02, 125/06, 125/04*

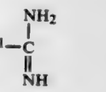
U.S. Cl. 260—455 A **28 Claims**

1. A process for the preparation of an N-alkoxycarbonyl- or N-alkoxythiocarbonyl-amidine of the formula



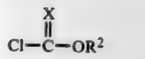
I

where R^1 is hydrogen or an aliphatic, cycloaliphatic or araliphatic radical, R^2 is an aliphatic radical and X is oxygen or sulfur, wherein an amidine of the formula



II

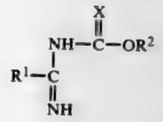
where R^1 has the above meanings, or an amidine salt thereof, is reacted with an ester of chlorocarbonic acid or chlorothiocarbonic acid of the formula



III

where R^2 and X have the above meanings, in the presence of an inorganic acid acceptor and a 2-phase mixture of water and organic solvent at from 0° to 60° C.

2. An N-alkoxycarbonyl- or N-alkoxythiocarbonylamidine of the formula



I

where R^1 is hydrogen or a C_1-to-C_{16} aliphatic, cycloaliphatic or araliphatic radical, R^2 is a C_1-to-C_5 aliphatic radical and X is oxygen or sulfur.

4,522,764
PROCESS FOR THE PRODUCTION OF α, β-UNSATURATED CARBOXYLIC ACID ALKYL ESTERS SULFONATED IN THE α-POSITION AND COMPOUNDS OBTAINABLE BY THIS PROCESS

Theo Neukam, Dormagen; Wolfgang Bräuer, and Siegfried Korte, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

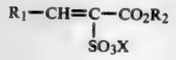
Division of Ser. No. 396,567, Jul. 9, 1982, abandoned. This application Jul. 26, 1983, Ser. No. 517,483

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129980

Int. Cl.³ C07C *143/68*

U.S. Cl. 260—456 R **7 Claims**

1. A process for the production of compounds corresponding to the following formula:



in which

R_1 represents a hydrogen atom,

R_2 represents a primary or secondary alkyl group containing from 1 to 4 carbon atoms and

X represents a hydrogen atom, a primary or secondary alkyl group containing from 1 to 4 carbon atoms, comprising

reacting α,β-unsaturated carboxylic acid esters corresponding to the following general formula:

in which R_1 and R_2 are as defined above, with from 0.6 to 1.6 mol. equivalents of sulfur trioxide and, optionally, with from 0.1 to 10 mol. equivalents of an alkylating agent, based in each case on the unsaturated ester, at temperatures in the range from −10° C. to +25° C., heating the reaction mixture to temperatures in the range from 70° to 200° C. then working up by distillation, and optionally separating the components of the distillate.

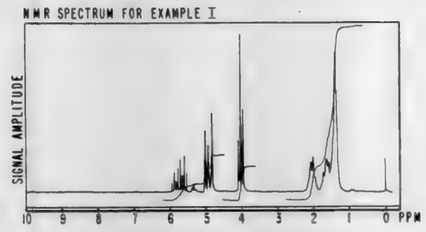
4,522,765
DI(7-OCTENYL) CARBONATE

Wilhelmus J. Wiegers, Red Bank, N.J.; Augustinus G. Van Loveren, Rye, N.Y.; Marie R. Hanna, Hazlet, N.J.; Domenick Luccarelli, Jr., Neptune, N.J.; David R. Bowen, Red Bank, N.J., and Manfred H. Vock, Locust, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

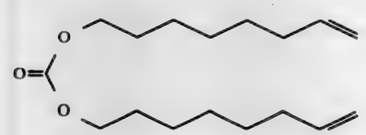
Division of Ser. No. 511,909, Jul. 8, 1983, Pat. No. 4,490,544. This application Jun. 22, 1984, Ser. No. 623,445

Int. Cl.³ C07C *69/96*; A61K *7/46*

U.S. Cl. 260—463 **1 Claim**



1. The compound having the structure:



4,522,766
GAS-LIQUID CONTACTING DEVICE

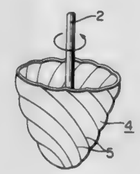
Satoshi Sunada, 11-8, Minami Ohashi 1-chome, Minami-ku, City of Fukuoka, Fukuoka Prefecture, Japan

Filed Nov. 15, 1982, Ser. No. 441,623

Claims priority, application Japan, Nov. 20, 1981, 56-187417

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—91 **4 Claims**



1. A gas liquid contacting device comprising a frame, a driving means mounted to said frame, a vertical rotating shaft rotatably mounted to said frame and adapted to be driven by said driving means, and a rotor adapted to be rotated by said vertical rotating shaft, said rotor being substantially a body of rotation the axis of which coincides with that of said vertical rotating shaft, said rotor being adapted to be partially or entirely immersed into said liquid to splash the liquid in the form of a substantially continuous thin film or fine particles; said rotor having substantially the shape of an inverted cone, and being formed on its outer periphery with a number of equally spaced spiral grooves which spiral backward relative to the direction of rotation from the lower end towards the upper end, of the rotor with a relatively large angle relative to the vertical axis of the rotor whereby a corresponding number of outwardly protruding spiral surfaces are formed between adjoining spiral grooves, said outwardly protruding spiral surfaces having a smoothly curved cross section contour between said grooves to avoid sharp edges on surfaces between said grooves.

4,522,767
ANNULAR FILLING MEMBER FOR GAS-LIQUID CONTACT

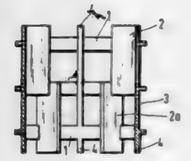
Reinhard Billet, Bochum; Rainer Kober, Steinwiesen; Jerzy Makowiak, Bochum, and Werner Geipel, Steinwiesen, all of Fed. Rep. of Germany, assignors to Paul Rauschert GmbH & Co. KG, Pressig, Fed. Rep. of Germany

Filed May 26, 1983, Ser. No. 498,556

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 32211287

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—94 **19 Claims**



1. An annular filling member for gas-liquid contact comprising at least one annular rib having spaced apart drain plates arranged thereon projecting generally radially into the interior of the annular configuration and terminating in said interior, such that said drain plates extend at least in part as a sharp-edge configured plate portion for from about one-third to about four-fifths of the axial dimension of the filling member and over the remainder of the axial dimension of the filling member in the form of drain web portions, said sharp-edge configured plate portions starting alternately at one end and the other end and terminating alternately respectively before said other end and said one end of the axial dimension of the filling member.

4,522,768
CASTING GASKET ASSEMBLY AND METHOD FOR CASTING LENSES THEREFROM

Harold N. Roscrow, North Adelaide; Ronald W. Ewer, Coromandel Valley, and Philip H. Squires, Reynella, all of Australia, assignors to Sola Products Limited, Kowloon, Hong Kong

Filed Apr. 11, 1980, Ser. No. 139,210

Claims priority, application Canada, May 11, 1979, 327467

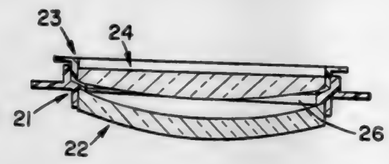
Int. Cl.³ B29D *11/00*

U.S. Cl. 264—2.2 **14 Claims**

1. A method of casting an optical lens with a pair of dies having curved casting surfaces, comprising the steps of placing one of said dies in a first gasket member, locating said first die at the desired angular orientation with respect to said first gasket member, providing a second gasket member adapted to receive the other die, assembling said gasket members so as to be able to orient properly said other die with respect to said

first die, inserting said other die in said second gasket member in a predetermined angular orientation therewith and in confronting relationship with said first die, introducing a non-form-retaining optical casting composition between said confronting die surfaces and curing said casting composition to form a lens.

4. A lens casting gasket assembly for casting lenses between two dies, one having a spherical molding surface and the other having a toroidal molding surface, comprising a first gasket member having a first central passage therein, one end of said passage including first means to receive said one of said dies in



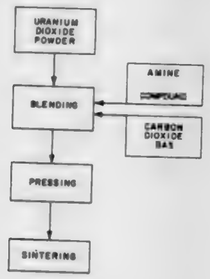
mating relationship, said first means including means for introducing prism into said lens, a second gasket member having a central passage therein, a portion of said central passage including second means to receive said other of said dies in mating relationship, means for joining said gasket members together with said dies disposed in confronting, spaced relationship, said dies and gasket members defining a closed lens casting cavity, means for selectively varying the axis of said toroidal molding surface, including means for joining said gasket members in mating relationship at an angle about the axis of said central passage.

4,522,769

METHOD FOR THE MANUFACTURE OF NUCLEAR FUEL PRODUCTS

John D. Connolly, Jr.; Timothy J. Gallivan, both of Wilmington, and Richard P. Ringle, Scotts Hill, all of N.C., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 24, 1982, Ser. No. 410,977
Int. Cl.³ G21C *21/00*
U.S. Cl. 264—0.5 **13 Claims**



1. A method of producing coherent compacts of particulate ceramic nuclear fuel material whereby the ceramic material is rendered more plastic and amenable to processing, consisting essentially of the sequence of steps of:

(a) adding a fugitive binder consisting essentially of at least one amine selected from the group consisting of ethylene diamine, 3.3 diaminodipropylamine, 1.3 diaminopropane, 1.6 diaminohexane, 1.7 diaminoheptane, diethylenetriamine, and 3-dimethylaminopropylamine to particulate nuclear fuel material of uranium dioxide and blending the binder therethrough;

(b) thereafter introducing carbon dioxide gas into the blend of particulate fuel material and amine binder; and

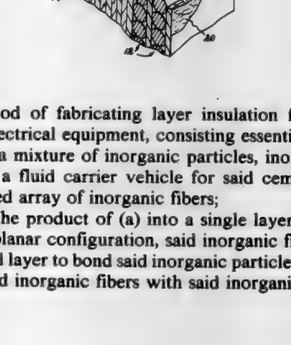
(c) pressing the resultant blend comprising particulate fuel material and amine binder having had the carbon dioxide gas introduced therein into a coherent compact.

4,522,770

METHOD FOR RESTORING DENTED AREAS IN BOTTLE NECK FINISH

Jorn W. Andersen, Nashua, N.H., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Mar. 11, 1982, Ser. No. 357,350
Int. Cl.³ B29C *17/00*
U.S. Cl. 264—36 **7 Claims**



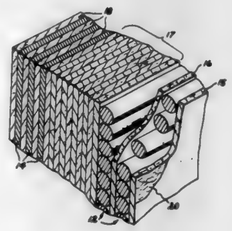
1. A method of removing an indented imperfection from a neck finish sealing surface of a bottle formed of a polyester, said method comprising the steps of heating the neck finish to an elevated temperature up to the glass transition temperature of the polyester and then permitting the sealing surface to reform removing the imperfection due to the memory of the polyester.

4,522,771

METHOD OF FABRICATING LAYER INSULATION FOR USE IN HIGH-VOLTAGE ELECTRICAL EQUIPMENT

Joseph R. McLoughlin, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 435,856, Oct. 21, 1982, Pat. No. 4,410,585, which is a continuation of Ser. No. 239,296, Mar. 2, 1981, abandoned. This application Jul. 5, 1983, Ser. No. 510,534
Int. Cl.³ B32B *7/02*
U.S. Cl. 264—61 **17 Claims**



1. The method of fabricating layer insulation for use in high-voltage electrical equipment, consisting essentially of:

(a) applying a mixture of inorganic particles, inorganic cement, and a fluid carrier vehicle for said cement to an intermingled array of inorganic fibers;

(b) pressing the product of (a) into a single layer having a generally planar configuration, said inorganic fibers reinforcing said layer to bond said inorganic particles together and the said inorganic fibers with said inorganic cement; and

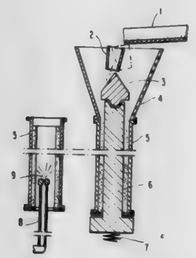
(c) removing said fluid carrier vehicle from said layer.

4,522,772

MOULDING OF ARTICLES

Christopher G. Bevan, London, England, assignor to C. G. Bevan Associates Limited, London, England

PCT No. PCT/GB81/00002, § 371 Date Sep. 4, 1981, § 102(e) Date Sep. 4, 1981, PCT Pub. No. WO81/01979, PCT Pub. Date Jul. 23, 1981
PCT Filed Jan. 5, 1981, Ser. No. 302,472
Claims priority, application United Kingdom, Jan. 7, 1980, 8000421
Int. Cl.³ B28B *1/26*
U.S. Cl. 264—71 **13 Claims**



1. A method of producing molded construction products from a liquid-setting mixture of fine and coarse particulate materials comprising the steps of mixing the dry constituent materials, said materials including a proportion of fine particles sufficient to substantially surround all of the coarse particles but not including fibrous reinforcing materials, introducing said mixture into a mold, vibrating at least a part of said mold to effect compaction of said mixture in said mold to an extent that said fine particles substantially fill the interstices between said coarse particles and that any vertical surface of said product will stand and be self-sustaining upon being exposed without mold support, removing at least a part of the mold from contact with the thus compacted product, thereby exposing at least one vertical surface of the compacted product, spraying the product at a surface unsupported by said mold with a predetermined quantity of a setting liquid, said quantity being sufficient to wet all of the compacted constituents so as to initiate a chemical setting reaction but insufficient to completely saturate the compacted product and to cause the associated effect of structural collapse of the compacted product in the region of said exposed surface, and allowing said product to set.

4,522,773

PROCESS FOR PRODUCING SELF-CRIMPING POLYESTER YARN

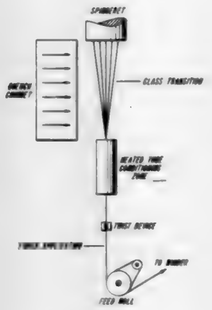
Edgar V. Menezes, Somerville, N.J.; John H. Southern, Pensacola, Fla.; Richard L. Ballman, Gulf Breeze, Fla., and J. M. Chamberlin, Pensacola, Fla., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 24, 1983, Ser. No. 469,326
Int. Cl.³ D02G *1/20*
U.S. Cl. 264—167 **27 Claims**

1. A process for expeditiously forming and structurally modifying a latently self-crimping polyester yarn comprising a plurality of polyester filaments having thick and thin regions along their lengths which are out of phase from filament to filament, which filaments are generated by the steps comprising:

(i) forming a plurality of combined streams of melt spun polyester by combining at least first and second extruded molten streams of fiber forming polyester travelling at different extrusion speeds to form thick and thin regions in the combined streams out of phase from other combined streams:

(ii) quenching the combined streams to thereby transform same into solid filaments having thick and thin regions along their lengths out of phase from filament to filament in a solidification zone provided with a gaseous atmosphere at a temperature below the glass transition temperature of the polyester;



(iii) passing the resulting filaments in the direction of their lengths through a conditioning zone provided with a gaseous atmosphere at a temperature sufficient to decrease the percentage yarn shrinkage of said resulting filaments and to produce polyester filaments which exhibit a percentage yarn shrinkage in the range of from about 10 to about 45 percent; and

(iv) withdrawing the resulting filaments from the conditioning zone at a substantially constant wind-up speed in the range of from about 2200 to about 4400 yards per minute.

4,522,774

INTEGRATED PROCESS FOR THE PRODUCTION OF TEXTURED POLYCAPROLACTAM MULTIFILAMENT YARN

Edward N. Donnelly, Anderson, S.C.; Wilhelm A. Haberkorn, Williamsburg, Va.; Gerry A. Hagen, Anderson, S.C.; Thomas R. McGregor, Anderson, S.C., and William Postman, Anderson, S.C., assignors to Badische Corporation, Williamsburg, Va.

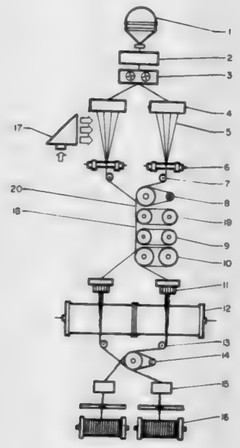
Continuation-in-part of Ser. No. 272,820, Jun. 11, 1981, abandoned. This application Jul. 11, 1983, Ser. No. 512,822
Int. Cl.³ D01D *5/16, 5/22*
U.S. Cl. 264—168 **10 Claims**

1. In the integrated process for the production of textured multifilament yarn from a fiber-forming, thermoplastic, linear, high-molecular-weight polymer of caprolactam by the combination in immediate succession of the procedural steps of melt spinning, drawing, texturing and packaging: the improvement therein which comprises the cooperative combination of the following procedural steps with those of melt spinning, drawing, texturing, and packaging:

(a) Lubricating the filamentary polymeric material from the melt spinning step by applying thereto a lubricating composition comprising (1) a lubricant and (2) solvent in an amount of from 0 to 20 percent by weight of the lubricating composition;

(b) Pre-tensioning the lubricated melt spun filamentary polymeric material beyond its elastic limit between a first godet

at room temperature, viz. between about 15° and 25° C. followed by



(c) Pre-heating the pre-tensioned filamentary polymeric material on a second godet to a temperature between about 40° and 70° C. prior to the drawing thereof.

4,522,775

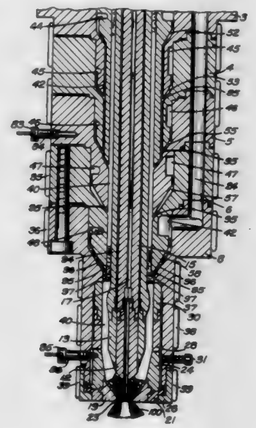
APPARATUS AND METHOD FOR PRODUCING MULTILAYERED LAMINATES

Jerald E. Briggs, St. Charles, Ill., and Henry Pfeutzenreuter, Alta Loma, Calif., assignors to American Can Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 354,636, Mar. 4, 1982, abandoned. This application Nov. 29, 1982, Ser. No. 445,261

Int. Cl.³ B29D *23/04*

U.S. Cl. 264—173 **17 Claims**



1. An apparatus for producing multi-layer parisons of polymeric materials wherein at least two of said layers are relatively thin compared to at least one other layer, said apparatus comprising means including a tubular channel for forming a relatively thick layer of a first polymeric material and laminate means for forming a laminate of at least two thin layers which is thereafter fed completely around the surface of the thick layer of polymeric material, said laminate means including a segmented die block, each segment being formed with a polymeric accumulation reservoir, the die block being formed around said tubular channel having a first annular passageway of lesser diameter than said tubular channel leading from an accumulation reservoir in a first segment to an outlet orifice and adapted to be charged with a second polymeric material from said accumulation reservoir, a second annular passageway leading from an accumulation reservoir in a second segment to an outlet orifice and adapted to be charged with a third polymeric material from said accumulation reservoir, and a third annular passageway which is an elongated annular member having facing and spaced apart parallel side walls in which said laminate is formed leading from the outlet orifices of said first and second passageways and leading to said tubular channel; whereby a laminate can be formed in said third annular passageway composed of said second and third polymeric material, which laminate is thereafter fed around said first polymeric material.

17. A method of forming a multilayer parison of at least three layers of polymeric materials by co-extrusion with an extrusion head wherein at least two of said layers are relatively thin compared to at least one other layer comprising the steps of forming the thick layer of a first liquid state polymeric material within a tubular passageway and forming a liquid state flow laminate composed of thin layers of a second and third polymeric material within a passageway which is an elongated annular passageway having facing and spaced apart parallel side walls and thereafter feeding said liquid state flow laminate completely around said liquid state thick layer prior to extrusion from said head.

4,522,776

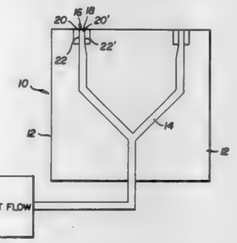
PROCESS FOR SUBSTANTIALLY ELIMINATING SURFACE MELT FRACTURE WHEN EXTRUDING ETHYLENE POLYMERS

Arakalgud V. Ramamurthy, Somerset, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 28, 1983, Ser. No. 508,668

Int. Cl.³ B29F *3/04*

U.S. Cl. 264—176 R **6 Claims**



1. A process for substantially eliminating surface melt fracture during extrusion of an ethylene polymer under adhesion conditions between the material constituting a conventional die land surface and the polymer, which would otherwise produce higher levels of melt fracture which comprises extruding said polymer through a die having a die land surface fabricated from a material other than a conventional die land material which increases adhesion between the die land surface and the polymer to an extent sufficient to substantially eliminate surface melt fracture.

4,522,777

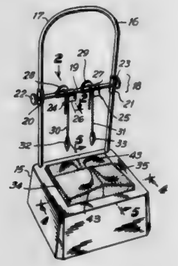
METHOD AND APPARATUS FOR MAKING CORRECTED CUSTOM FOOT MOLDS

William Peterson, Lake Placid, N.Y., assignor to Peterson Laboratories, Lake Placid, N.Y.

Filed Dec. 15, 1982, Ser. No. 449,978

Int. Cl.³ B29C *17/00*; B29D *31/00*

U.S. Cl. 264—223 **12 Claims**



1. In apparatus for producing a corrected mold for a foot having a rear portion and a forefoot portion with a ball portion, said apparatus comprising:

resilient cushion means for substantially immobilizing the ball portion and providing a floating action for the rear portion thereof when said foot is supporting its respective portion of full body weight, said resilient cushion means having a rear section with a first thickness for supporting said rear portion and a front section with a second, smaller thickness for supporting said forefoot portion, said rear section being deformable throughout the entire first thickness thereof to provide the floating action, the second thickness being sufficiently small such that said ball portion completely compresses said front section at the respective position of the ball portion to provide said substantial immobilization, wherein the position of the rear portion of the foot on the resilient cushion means is adjusted so that said resilient cushion means adopts a corrected contour of the foot; and

molding means positioned between said foot and said resilient cushion means for producing said corrected mold once said foot has been so adjusted.

9. A method for producing a corrected mold for a foot having a rear portion and a forefoot portion with a ball portion, said method comprising the steps of:

substantially immobilizing the ball portion of said foot when said foot is supporting its respective portion of full body weight by supporting the foot on resilient cushion means having a rear section with a first thickness for supporting said rear portion and a front section with a second, smaller thickness for supporting said forefoot portion, the second thickness being sufficiently small such that said ball portion completely compresses said front section at the respective position of the ball portion to provide said substantial immobilization;

supporting the rear portion of the foot on said rear section in a floating manner with said rear section being deformable throughout the entire first thickness thereof to provide the support in said floating manner;

adjusting the position of the rear portion of the foot on said resilient cushion means so that said resilient cushion means adopts a corrected contour of the foot; and

making a mold of said adjusted foot from molding means positioned between said foot and said resilient cushion means.

4,522,778

METHOD AND APPARATUS FOR THE INJECTION MOULDING OF PLASTICS ARTICLES

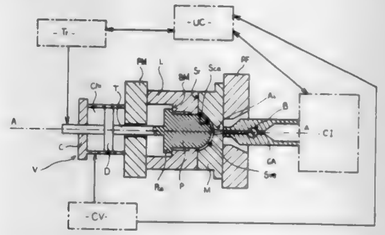
Antoine Baciu, Anbevoye; Jean M. Rius, Romainville, and Bernard Sivry, Paris, all of France, assignors to Cibie Projecteurs, France

Filed Apr. 27, 1984, Ser. No. 604,738

Claims priority, application France, Apr. 28, 1983, 83 07029

Int. Cl.³ B29F *1/06*

U.S. Cl. 264—328,7 **11 Claims**



1. A method of producing a part from a plastics material, using an injection press including a mould member having a cavity, a piston, and an injection inlet leading along an injection axis to said mould cavity, said mould cavity being defined by two principal surfaces facing each other, one of said principal surfaces consisting of a surface of said piston and the opposite said principal surface consisting of a surface of said mould member, said piston being movable relative to said mould member to vary the volume of said mould cavity; said method comprising:

injecting a plastics material into said mould cavity to form a parison in an injection stage,

immobilising said piston during said injecting stage at a short distance from said opposite principal surface thereby forming a rough model of said parison, said model being symmetrical about said injection axis and having identical contact diameters on each of said two principal surfaces,

subsequently retracting said piston, still during said injection stage, thereby distancing said piston from said opposite principal surface, said retraction being effected at such a speed that on the one hand said rough model is not reduced in diameter and on the other hand the contact diameters of said rough model on each of said principal surfaces are constantly equal to each other and have values between a constant value and an increasing linear variation, as a function of the thickness of said rough model,

moving said piston towards said opposite principal surface thereby compressing said parison to shape said part into its final form.

4,522,779

METHOD FOR PRODUCTION OF POLY(ETHYLENE TEREPHTHALATE) ARTICLES

Saleh A. Jabarin, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 28, 1983, Ser. No. 555,759

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—530 **8 Claims**

1. A process for fabricating a partially crystalline, biaxially oriented hollow plastic container article comprising:

(1) enclosing a plastic parison which is at a temperature within its molecular orientation temperature range within a first blow which first blow mold is at a temperature sufficient to induce crystallization into said plastic upon contact of said plastic with said blow mold;

(2) expanding said plastic parison within said first blow mold by internal pressurization while still within the molecular orientation temperature range to induce biaxially orient-

ing in said plastic and force said plastic parison into intimate contact and conformance with said first blow mold to form a biaxially oriented container and by such internal pressurization maintaining contact between said first mold and said biaxially oriented container for a time sufficient to induce partial crystallization into said biaxially oriented container;

(3) transferring said partially crystallized, biaxially oriented container from said first blow mold to a second blow mold, said transfer occurring with sufficient internal pressurization of said partially crystallized biaxially oriented container to prevent significant shrinkage during said transfer;

(4) enclosing said partially crystalline biaxially oriented container in said second blow mold, which said second blow mold is (a) at a temperature which is not sufficient to induce significant crystallization in said plastic of said container and (b) which is larger in internal volume than said first blow mold;

(5) expanding by internal pressurization said partially crystalline biaxially oriented container within said second blow mold into intimate contact and conformance with said second blow mold to form a larger container and again biaxially orient the material of said partially crystallized biaxially oriented container derived from said first blow mold; and

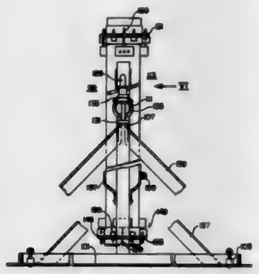
(6) subsequently removing the resultant container from said second blow mold and reducing the internal pressure to ambient pressure.

4,522,780

REMOVAL AND REPLACEMENT OF FUEL RODS IN NUCLEAR FUEL ASSEMBLY

John M. Shallenberger, O'Hara Township, Allegheny County, and Stephen J. Ferlan, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 16, 1982, Ser. No. 349,126
Int. Cl.³ G21C *14/00*
U.S. Cl. 376—260 **39 Claims**



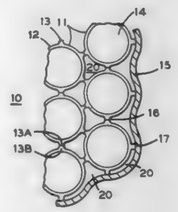
37. The method of removing from a nuclear fuel assembly a nozzle, said nozzle including a nozzle plate, said assembly having control rod thimbles secured to said plate by screw-fasteners having lock-pins welded to the nozzle plate, said method being practiced with apparatus including a bushing plate to be mounted on said nozzle, said bushing plate having a plurality of bushings positioned so that when said bushing plate is mounted on said nozzle each of said bushings encircles a screw fastener and seals the region around said screw fastener, the said apparatus also including an eductor including a suction tube for impressing a suction force; the said method including mounting said bushing plate on said nozzle with each of said bushings encircling a screw-fastener and sealing the region around said each screw fastener, severing the weld of each said screw fastener whereby the chips resulting from said severing of each weld are captured in the region sealed by the associated bushing, injecting said suction tube into each bushing and enabling said eductor to suck said chips out of the associated sealed region of the bushing in which said suction tube is injected; collecting said chips in a region from which the radioactive radiation from said chips is suppressed, after said chips have been removed unscrewing the screw fastener from each said control-rod thimble, thereafter injecting the suction tube in each said bushing and enabling said eductor to capture each said screw fastener in said suction tube, removing said suction tube from each bushing with each screw fastener in its turn attached thereto, with said eductor enabled, removing said screw fasteners to a region from which the radioactive radiation of screw fasteners are suppressed, disabling said eductor to deposit each screw fastener in said last-named region and after all said screw fasteners have been collected removing said nozzle from said bushing plate.

4,522,781

INTEGRAL NUCLEAR FUEL ELEMENT ASSEMBLY

Donald C. Schluderberg, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 816,401, Jul. 18, 1977, abandoned. This application Dec. 4, 1981, Ser. No. 327,537
Int. Cl.³ G21C *3/30, 3/06*
U.S. Cl. 376—427 **9 Claims**



1. In a pressurized water moderated and cooled fast breeder nuclear reactor, a fuel assembly comprising a nuclear fuel and a plurality of fuel pins disposed with parallel longitudinal axes in a closely packed array, each fuel pin consisting essentially of a generally tubular cladding bearing said nuclear fuel and a longitudinally extending fin extending from said cladding to each juxtaposed fuel pin and bonded metallurgically thereto to form an integral fuel assembly having coolant passages which are defined by said cladding surface and said fins and which are unobstructed by spacer grids, and said fuel pins including said fins are sized such that the fuel assembly has a structural volume fraction less than about 0.166 and a fuel to coolant volume fraction ratio in the range between about 2.43 and about 3.20.

4,522,782

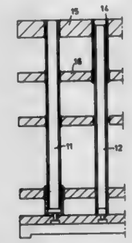
FUEL ASSEMBLY FOR A NUCLEAR REACTOR

Joseph Leclercq, Saint-Didier, France, assignor to Framatome & Cie., Courbevoie, France

Filed Sep. 27, 1982, Ser. No. 424,772
Claims priority, application France, Oct. 5, 1981, 81 18670
Int. Cl.³ G21C *3/32*
U.S. Cl. 376—438 **7 Claims**

1. Fuel assembly for a nuclear reactor constituted by a bundle of parallel fuel rods whose spacing is maintained by spacer grids which are transverse with respect to said rods, two transverse end plates and supporting guide tubes which replace some fuel rods and which are longer than said fuel rods, rigidly fixed to said end plates and to said spacer grids for assuring retention of said spacer grids, rigidity of the assembly and taking up of axial forces as well as guiding control rods of said reactor, said end plates being made of stainless steel, wherein at least two supporting guide tubes made of material which is metallurgically compatible with the material of said spacer grids are welded to the latter, while other guide tubes which also guide control rods of said reactor constituting the majority of the guide tubes of said assembly are made of zirconium alloy

and are secured to only one of said end plates and slip-fitted on the cells of said spacer grids so as to be movable with respect



thereto under the effect of expansion and assuring only the guidance of said control rods.

4,522,783

METALLIC ALLOYS TO BE USED IN DENTISTRY

Gian F. Menicucci, Via Maggi, 110, Leghorn, Italy

Filed May 11, 1983, Ser. No. 493,751
Claims priority, application Italy, May 14, 1982, 48429 A/82
Int. Cl.³ C22C *5/02, 5/08*
U.S. Cl. 420—503 **15 Claims**

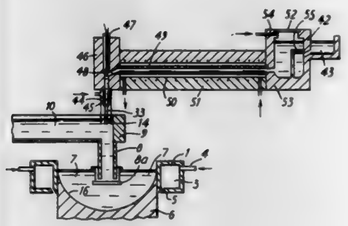
1. A metallic dental alloy containing at least one crystal face-centered cubic lattice wherein each lattice contains 14 atoms of metal and herein each lattice has 1 atom of copper, 1 or 2 atoms of palladium, 9, 10 or 11 atoms of silver and 1 or 2 atoms of gold.

4,522,784

CASTING METALS

Philip G. Enright, Hook Norton; Ian R. Hughes, Banbury, and Richard M. Jordan, Hook Norton, all of England, assignors to Alcan International Limited, Montreal, Canada

Filed Apr. 27, 1983, Ser. No. 489,094
Claims priority, application United Kingdom, May 4, 1982, 8212837
Int. Cl.³ C22C *1/00, 32/00*
U.S. Cl. 420—590 **18 Claims**



1. A method of producing metal alloys which comprises mixing a minor proportion of a relatively hot molten alloy with a major proportion of a relatively cool molten metal which is at a temperature below the liquidus temperature of the relatively hot molten alloy to precipitate precipitatable intermetallic particles or selected phases from the relatively hot molten alloy by contact with said relatively cool metal, dispersing the hot alloy through the relatively cool metal and chilling the mixture to solidify the same in a selected time period such that total re-solution of precipitated particles or phases is avoided.

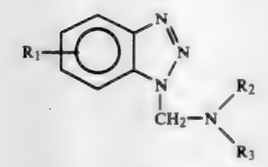
4,522,785

DIALKYLAMINOMETHYL AROMATIC TRIAZOLES AS CORROSION INHIBITORS

Michael J. D'Errico, Flossmoor, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Nov. 4, 1982, Ser. No. 439,110
Int. Cl.³ C23F *11/04*
U.S. Cl. 422—12 **16 Claims**

10. A process for minimizing the corrosion of steel in contact with an aqueous acid solution which process comprises adding to the aqueous acid solution about 1 to about 50,000 parts by weight per 1 million parts of the aqueous acid solution, a dialkylaminomethyl aromatic triazole having the structure:



wherein R_1 is from 1 to 4 substituents and is hydrogen, aliphatic of 1 to about 12 carbons, alkoxy of 2 to about 10 carbons, aroxy of 2 to about 10 carbons, or —$COOR_4$ wherein R_4 is aliphatic of 1 to about 12 carbons; and R_2 and R_3 are the same or different and are alkyl of 1 to about 4 carbons.

4,522,786

MULTILAYERED TEST DEVICE FOR DETECTING ANALYTES IN LIQUID TEST SAMPLES

Richard C. Ebersole, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 10, 1983, Ser. No. 521,687
Int. Cl.³ G01N *21/78, 33/52*
U.S. Cl. 422—56 **12 Claims**

1. In a multilayered test device for the assay of analytes in test liquids, said device comprising at least two liquid permeable functional layers superposed upon one another, said layers being in liquid communication, the improvement comprising:

a barrier layer separating said layers, said barrier layer comprising a chemically inert, liquid insoluble, foraminous septum, the foramina of which are filled with a thermally sensitive material which is liquid impermeable at assay temperature, but capable of melting when heated, thereby providing rapid liquid communication between said functional layers.

4,522,787

ASH FUSION SYSTEM

Larry S. O'Brien, St. Joseph, and Ward S. Kaler, Benton Harbor, both of Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed Mar. 5, 1982, Ser. No. 355,171
Int. Cl.³ G01N *31/12*
U.S. Cl. 422—78 **28 Claims**

1. An analyzer furnace comprising:

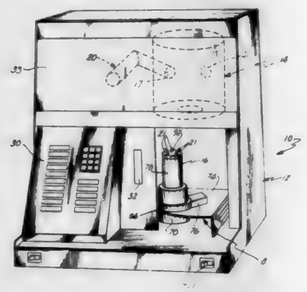
a furnace defining a chamber;

radiation responsive detection means for detecting radiation along a line oriented in a first direction and producing signals responsive to an image focused thereon;

means for projecting the image of a portion of said furnace chamber onto said detection means;

means for supporting a plurality of samples within said furnace chamber and for repeatedly conveying said samples individually through said chamber portion in such manner to cause the individual images of said samples to be repeatedy projected across said detection means in a

second direction generally perpendicular to said first direction; and



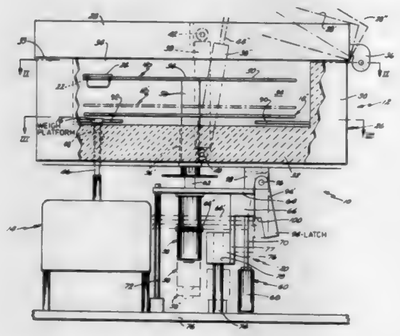
circuit means coupled to and responsive to said detection means for determining shape information of each sample.

4,522,788

PROXIMATE ANALYZER

George J. Sitek, and Sherman L. Walker, both of Stevensville, Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed Mar. 5, 1982, Ser. No. 355,221
Int. Cl.[3] G01N *31/12*
U.S. Cl. 422—78 8 Claims



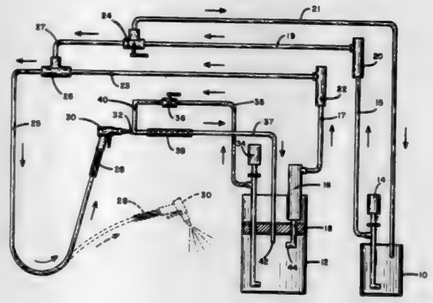
1. A fossil fuel proximate analyzer comprising:
a furnace;
a balance having a weigh platform positioned in said furnace;
support means for supporting a plurality of crucibles in a generally horizontal, circular configuration, each of the crucibles holding a sample of a material to be analyzed;
oxygen line means for selectively flooding said furnace with oxygen to facilitate oxidation of the samples during analysis, said oxygen line means including a first end to be coupled to an oxygen source, a second end communicating with said furnace, and a valve means between said first and second ends for controlling the flow of oxygen through said line means;
rotation means for rotating said support means to sequentially vertically align the crucibles with said weigh platform;
elevator means for vertically shifting said support means to deposit and remove the aligned crucible on and from said weigh platform;
control means for controlling said rotation means and said elevator means to repeatedly weigh the crucibles sequentially;
circuit means connected to said balance for monitoring the weights of the crucibles to monitor the weights of the samples, said circuit means including means for determining when the weights of the samples have reached a generally constant value indicating that a proximate analysis step is complete.

4,522,789

PLURAL COMPONENT MIXING AND DISPENSING SYSTEM

Lawrence S. Kelly, Bolingbrook; McCormick Marty P., Palatine, and William A. Weikel, Hanover Park, all of Ill., assignors to Graco Inc., Minneapolis, Minn.

Filed Sep. 6, 1983, Ser. No. 529,346
Int. Cl.[3] B01F *5/05;* B08B *9/02*
U.S. Cl. 422—133 8 Claims



1. An apparatus for mixing and dispensing chemically reactive liquid components and for purging such mixed components from the apparatus, wherein such components become chemically reactive at predetermined volume ratios and remain substantially chemically inert at volume ratios substantially different from said predetermined ratios, comprising
(a) a first container for storing a quantity of a first liquid component and first means for delivering said first liquid from said container to a first mixing means;
(b) a second container for storing a quantity of a second liquid component and second means for delivering said second liquid from said container to said first mixing means;
(c) a first mixing means for receiving said first and second liquid components
(d) a dispensing means connected to said first mixing means, said dispensing means having a nozzle for emitting mixed first and second liquids;
(e) third means for selectively delivering said second liquid component from said second container to a second mixing means;
(f) a second mixing means comprising a mixing manifold and including return coupling means to deliver mixed components back to said second liquid container; and
(g) means for selectively connecting said dispensing means nozzle to said mixing manifold for selectively permitting emitted mixed first and second liquid components to enter said manifold.

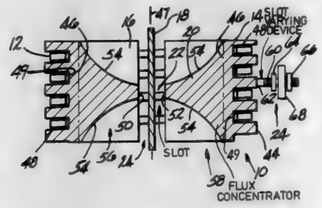
4,522,790

FLUX CONCENTRATOR

Jonathan A. Dantzig, Hamden, and John V. Patton, New Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 25, 1982, Ser. No. 361,940
Int. Cl.[3] C30B *13/30, 21/02*
U.S. Cl. 422—246 13 Claims

1. A flux concentrator for generating a relatively strong magentic field, comprising:
inductor means for generating a primary magnetic field being weaker than said strong magnetic field; concentrator body means having a hollow interior for receiving material to be acted upon by said strong magnetic field, said concentrator body means being located within said primary magnetic field for shielding said primary field from said hollow interior;



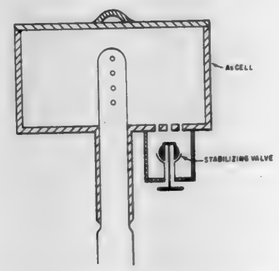
flux concentrator means within said hollow interior of said concentrator body means having a slot extending therethrough, said flux concentrator means being coupled to said primary magnetic field for generating said strong mangetic field within said slot; and
movable means for varying the size of said slot while said strong magnetic field is being generated in said slot.

4,522,791

ARSENIC CELL STABILIZATION VALVE FOR GALLIUM ARSENIDE IN-SITU COMPOUNDING

Glenn H. Westphal, Dallas, and Jimmie B. Sherer, Greenville, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 2, 1982, Ser. No. 446,298
Int. Cl.[3] C30B *15/00*
U.S. Cl. 422—249 3 Claims



1. A system for compounding gallium arsenide, comprising:
crucible means for holding a melt of gallium and gallium arsenide;
an arsenic sublimation cell, said sublimation cell comprising an arsenic vapor injection tube downwardly extending from an upper portion of said arsenic cell;
means for positioning said arsenic cell, so that said arsenic vapor injection tube extends into the interior of said crucible;
wherein said arsenic cell further comprises a stabilizing valve, said stabilizing valve comprising a ball check valve to prevent low relative pressure inside said arsenic cell.

4,522,792

PROCESS FOR OXIDIZING A GAS COMPRISING CARBON MONOXIDE OR AN HYDROCARBON

John F. Brennan, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 555,227, Nov. 25, 1983, Pat. No. 4,480,050, which is a continuation-in-part of Ser. No. 404,160, Aug. 2, 1982, abandoned. This application May 30, 1984, Ser. No. 615,429
Int. Cl.[3] B01J *8/02;* B01D *53/36;* C01B *31/20*
U.S. Cl. 423—213.5 4 Claims

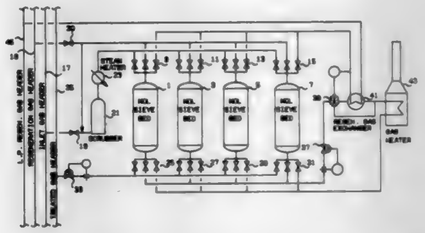
1. A process for the oxidation of a gas comprising carbon monoxide or a hydrocarbon which comprises contacting said gas at a temperature above 200° C. with a catalytic composite prepared by a method which includes the step of impregnating a refractory inorganic oxide porous carrier material with a catalytically active metallic component selected from the group consisting of platinum, palladium and rhodium whereby said component is dispersed on the peripheral surface of said carrier material the improvement which comprises, prior to said impregnation of said catalytically active netallic component
(a) impregnating said refractory inorganic oxide porous carrier material with an aqueous solution of a lithium salt of an organic acid such that said carrier material contains from 0.1 to 0.8 wt. % Li on an elemental basis,
(b) drying said carrier material, and
(c) calcining said carrier material.

4,522,793

REMOVING H_2S FROM NATURAL GAS USING TWO-STAGE MOLECULAR SIEVES

Harold A. Larson; Manfred F. Boehme, and Jeffrey W. Sheets, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 28, 1983, Ser. No. 508,710
Int. Cl.[3] C01B *17/00;* B01J *1/00*
U.S. Cl. 423—230 6 Claims



1. An integrated process for removal of hydrogen sulfide and water from natural gas comprising passing an inlet natural gas stream containing hydrogen sulfide, CO_2, and water into contact with molecular sieves which act both as (1) an adsorbant for hydrogen sulfide and water and (2) catalyst in the reaction for conversion of hydrogen sulfide and carbon dioxide to carbonyl sulfide with,
(a) treating of about 92 to about 95 volume percent of said natural gas stream by passing a first portion of said natural gas stream into contact with molecular sieves in a first phase contactors to produce, by adsorption and conversion of H_2S to COS, a first treated gas stream of sufficiently low H_2S and H_2O content to be salable;
(b) passing a portion of this treated gas stream back through said molecular sieve beds of said first phase as regeneration gas to desorb the adsorbed H_2S thereby producing a first low pressure regeneration gas stream;
(c) passing a second portion of said about 92 to about 95 volume percent of the natural gas inlet stream into contact with molecular sieves in a second phase of contactors to produce a second treated gas stream by adsorption and the reaction to form COS;

(d) passing said second treated gas stream through the molecular sieves of said second phase as regeneration gas thereby producing a second low pressure regeneration gas;

(e) uniting the low pressure regeneration gas streams of (b) and (d) and condensing heavy liquid hydrocarbons from the united low pressure regeneration gas streams; p1 (f) combining the united low pressure regeneration gas stream with the remaining about 5 to about 8 percent by volume of the inlet gas and subjecting this combined stream to scrubbing;

(g) contacting this combined stream with molecular sieves in the second phase of contactors thereby producing by adsorption and reaction of H_2S to COS, a second treated gas stream of sufficiently low H_2S and H_2O content to be mixed with the first treated gas stream of (a) and retain salable quality; and

(h) combining the effulent streams of (a) and (g)

4,522,794

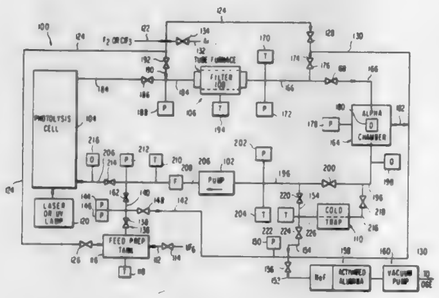
FLUORINATION PROCESS USING CATALYST

Robert C. Hochel, and Kathy A. Saturday, both of Aiken, S.C., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Aug. 25, 1983, Ser. No. 526,249

Int. Cl.³ C01G *56/00*

U.S. Cl. 423—251 **9 Claims**



1. In the process of converting an actinide compound selected from the group consisting of a plutonium oxide, a plutonium tetrafluoride, and a mixture of said plutonium oxides and tetrafluorides, to the corresponsing volatile actinide hexafluoride by fluorination with a stoichiometric excess of fluorine gas, the improvement which comprises conducting said fluorination in the presence of a fluoride catalyst powder selected from the group consisting of CoF_3, AgF_2 and NiF_2, whereby said fluorination is significantly enhanced.

4,522,795

PHOSPHONITRILIC CHLORIDE POLYMERS

Hsueh M. Li, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 447,720, Dec. 7, 1982, Pat. No. 4,447,408, which is a continuation-in-part of Ser. No. 314,522, Oct. 26, 1981, Pat. No. 4,374,815. This application Apr. 22, 1983, Ser. No. 487,804

The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.

Int. Cl.³ C01B *25/10*

U.S. Cl. 423—300 **25 Claims**

1. In a process for producing linear phosphonitrilic chloride polymers from phosphonitrilic chloride oligomers of lower molecular weight the improvement pursuant to which a mixture of phosphonitrilic chloride oligomers enriched in linear phosphonitrilic chloride oligomer and comprising predominantly oligomer represented by the formula:

$$[Cl—(PCl_2{=}N)_n—PCl_3]^+PCl_6^-$$

wherein n is a numeral which averages at least 3 and at least a stoichiometric amount of ammonium chloride or ammonia, or both, is heated in a first stage to a reaction temperature in the range of from about 120° to about 200° C. for from about 0.5 to about 15 hours while concurrently removing hydrogen chloride to produce an intermediate reaction product, and then in a second stage the reaction product is heated to a higher temperature in the range of from about 150° to about 280° C. for from about 1 to about 36 hours to increase the molecular weight of the polymer.

4,522,796

PHOSPHONITRILIC CHLORIDE POLYMERS

Hsueh M. Li, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 447,720, Dec. 7, 1982, Pat. No. 4,447,408, which is a continuation-in-part of Ser. No. 314,522, Oct. 26, 1981, Pat. No. 4,374,815. This application Apr. 22, 1983, Ser. No. 487,805

The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.

Int. Cl.³ C01B *25/10*

U.S. Cl. 423—300 **25 Claims**

1. In a process for producing linear phosphonitrilic chloride polymers from phosphonitrilic chloride oligomers of lower molecular weight the improvement pursuant to which a mixture of phosphonitrilic chloride oligomers enriched in linear phosphonitrilic chloride oligomer and comprising mainly oligomers represented by the formula:

$$[Cl—(PCl_2{=}N)_n—PCl_3]^+PCl_6^-$$

wherein n is a numeral which averages at least 3 and at least a stoichiometric amount of ammonium chloride or ammonia, or both, is heated to a polymerization reaction temperature in the range of from about 120° to about 280° C. from about 0.5 to about 36 hours while concurrently removing hydrogen chloride from the polymerization reaction mixture so that a substantially linear phosphonitrilic chloride polymer is formed.

4,522,797

HALOPHOSPHAZENE POLYMERS

F. Alexander Pettigrew; Hsueh M. Li, and Genevieve S. Lum, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Sep. 8, 1983, Ser. No. 530,761

The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.

Int. Cl.³ C01B *25/10*

U.S. Cl. 423—300 **21 Claims**

1. A process for the preparation of halophosphazene polymer which comprises heating a substance of the formula

$$X—(PX_2{=}N)_n—POX_2$$

wherein X is a halogen atom and n is an integer below about 15, with a phosphorus pentahalide so that halophosphazene having a $—PX_3^+$ end group is formed, and then heating at least a portion of the resultant reaction product with at least a stoichiometric amount of a nitrogen source so that hydrogen halide is evolved and halophosphazene polymer of higher molecular weight is formed.

4,522,798

HALOPHOSPHAZENE POLYMERS

Genevieve S. Lum; Hsueh M. Li, and F. Alexander Pettigrew, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Sep. 8, 1983, Ser. No. 530,776

The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.

Int. Cl.³ C01B *25/10*

U.S. Cl. 423—300 **18 Claims**

1. In a process wherein halophosphazene polymer is produced by heating halophosphazene composed at least predominantly of linear halophosphazene of lower molecular weight with at least a stoichiometric amount of a nitrogen source so that hydrogen halide is evolved and halophosphazene polymer of higher molecular weight is formed, the improvement in which the halophosphazene of lower molecular weight is substantially freed of $—POX_2$ end groups (X being a halogen atom) before forming the halophosphazene polymer of higher molecular weight.

4,522,799

PROCESS FOR PREPARING OLIVINE SAND CORES AND MOLDS

Charles E. Seeney, Brazil; John F. Kraemer, and Janis Ingebrigtsen, both of Terre Haute, all of Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Division of Ser. No. 342,312, Jan. 25, 1982, Pat. No. 4,383,861. This application Nov. 12, 1982, Ser. No. 440,919

The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.

Int. Cl.³ C01B *25/36*

U.S. Cl. 423—306 **5 Claims**

1. A method for preparing zinc olivine phosphate by heating zinc dihydrogen phosphate and olivine in a ratio of 0.5–10:1 to a temperature of about 1000° C. or more until the reaction mixture fuses, then cooling to ambient temperatures.

2. The product obtained by the method of claim 1.

3. A process for the preparation of KOP by the steps of mixing potassium dihydrogen phosphate with olivine in a ratio of 0.5–10:1 respectively and heating to over 805° C. until the mixture fuses, then cooling to ambient temperatures.

5. The product obtained by the process of claim 3.

4,522,800

PROCESS FOR THE PRODUCTION OF A CRYSTALLINE ALUMINOSILICATE ZEOLITE

Herbert Baltes, Frankfurt am Main; Heinz Litterer, Wiesbaden; Ernst I. Leupold, Neu-Anspach, and Friedrich Wunder, Flörsheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,860

Claims priority, application Fed. Rep. of Germany, May 8, 1982, 3217322

Int. Cl.³ C01B *33/20*

U.S. Cl. 423—329 **3 Claims**

1. A method for making a crystalline aluminosilicate zeolite which

(a) contains silicon, aluminum, sodium, and potassium in the following ratio, expressed as a molar ratio of oxides,

$$SiO_2{:}(0.02\text{–}0.30)Al_2O_3{:}(0.05\text{–}0.30)[Na_2O+K_2O],$$

(b) exhibits the following characteristic signals in its X-ray diffraction diagram as synthesized

TABLE 1

Interplanar spacings d[Å]	Relative intensity I/I_0
11.5 ± 0.3	strong to very strong
9.2 ± 0.2	weak
7.6 ± 0.2	weak to medium
6.6 ± 0.1	medium to strong

TABLE 1-continued

Interplanar spacings d[Å]	Relative intensity I/I_0
6.3 ± 0.1	weak
5.7 ± 0.1	weak
5.35 ± 0.1	weak
4.56 ± 0.1	weak to medium
4.32 ± 0.1	strong
4.16 ± 0.1	weak
3.81 ± 0.1	medium to strong
3.75 ± 0.1	strong to very strong
3.59 ± 0.1	strong to very strong
3.30 ± 0.1	medium
3.15 ± 0.1	medium
2.86 ± 0.1	strong to very strong
2.80 ± 0.1	weak to medium
2.67 ± 0.1	weak to medium
2.49 ± 0.1	weak to medium

where I_O denotes the intensity of the strongest signal, which method comprises heating, in a sealed vessel, at a temperature from 80° C. to 200° C., for a time between 18 hours and 1000 hours, a reaction mixture of water and compounds of silicon, aluminum, sodium, potassium, and of an organic template agent having the following initial composition expressed as a molar ratio,

$$SiO_2{:}(0.02\text{–}0.30)Al_2O_3{:}(0.02\text{–}0.40)Na_2O{:}(0.02\text{–}0.30)\text{-}K_2O{:}$$

(0.04–1.00) of the organic template agent (10–90)H_2O, and then calcining the crystalline zeolite so made to destroy said organic template agent said organic template agent being provided as

(i) an ammonium compound of the formula RX wherein R is an ammonium cation of the formula $(HOCH_2CH_2)_4N^+$, $(HOCH_2CH_2)_3R^1N^+$, or $(HOCH_2CH_2)_2R^1R^2N^+$ and R^1 and R^2, which are the same or different, are hydrogen or alkyl having up to 5 carbon atoms, and X is hydroxy, chloride, bromide, iodide, sulfate, phosphate, sulfonate, carboxylate, carbonate, or sulfite, or as

(ii) a mixture of one molar part of at least one of diethanolamine and triethanolamine with from one to 10 molar parts of methanol, ethanol, propanol, butanol, ethylene glycol, 1,2-propylene glycol, dimethyl sulfate, diethyl sulfate, methyl iodide, ethyl iodide, propyl iodide, methyl p-toluenesulfonate, ethyl p-toluenesulfonate, or propyl p-toluenesulfonate.

4,522,801

PROCESS FOR PRODUCING CARBON FIBER OR GRAPHITE FIBER

Osamu Yoshinari; Yoshifumi Kawakatsu, and Hideaki Fukuizumi, all of Shizuoka, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,735

Claims priority, application Japan, Oct. 8, 1982, 57-176335

Int. Cl.³ D01F *9/22*

U.S. Cl. 423—447.4 **28 Claims**

1. A process for producing acrylic carbon fiber with minimized fluffing and coalescence, comprising:

treating a preoxidized fiber strand derived from an acrylonitrile fiber strand with an aqueous solution containing a compound selected from the group consisting of polyethylene oxide having a molecular weight greater than 100,000, methyl cellulose, ethyl cellulose, and hydroxyethyl cellulose;

drying the treated fiber strand at a temperature lower than 250° C.; and

continuously feeding the dried treated fiber strand into a carbonizing oven, wherein said acrylonitrile fiber comprises a polyacrylonitrile or a copolymer of a vinyl compound and more than 90 wt.% of acrylontrile.

4,522,802

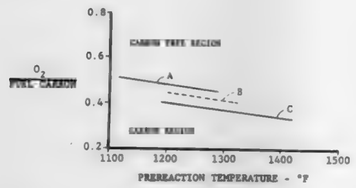
STEAM REFORMING UTILIZING IRON OXIDE CATALYST

Herbert J. Setzer, Ellington; John A. S. Bett, Hamden, and Roger R. Lesieur, Enfield, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 372,252, Apr. 26, 1982, Pat. No. 4,451,578. This application Nov. 25, 1983, Ser. No. 555,269

Int. Cl.³ C01B *1/02*

U.S. Cl. 423—652 **5 Claims**



1. In an autothermal steam reforming process including passing a mixture of hydrocarbon fuel, steam and preheated air over a catalyst bed to form hydrogen, wherein the improvement comprises using as the catalyst material iron oxide deposited on a lanthanum stabilized alumina substrate, the iron oxied comprising about 20% to about 30% by weight, to substantially eliminate carbon plugging in such reforming systems and allow operation of the reforming process at reduced oxygen to carbon ratios with heavier distillate hydrocarbons such as No. 2 fuel oil.

4,522,803

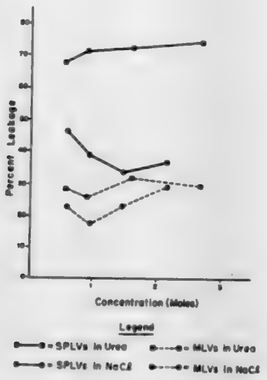
STABLE PLURILAMELLAR VESICLES, THEIR PREPARATION AND USE

Robert P. Lenk, Lambertville; Michael W. Fountain, Plainsboro; Andrew S. Janoff, Lawrenceville; Marc J. Ostro, North Brunswick, and Micrea C. Popescu, Plainsboro, all of N.J., assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 463,900, Feb. 4, 1983, abandoned, Ser. No. 447,247, Dec. 6, 1982, abandoned, Ser. No. 411,466, Aug. 25, 1982, abandoned, Ser. No. 362,995, Mar. 29, 1982, abandoned, Ser. No. 362,994, Mar. 29, 1982, abandoned. This application Mar. 24, 1983, Ser. No. 476,496

Int. Cl.³ A61J *3/07;* **A61K** *9/52, 43/00;* **B01J** *13/02*

U.S. Cl. 424—1.1 **44 Claims**



1. A method for preparing stable plurilamellar vesicles, comprising:

(a) forming a dispersion of at least one amphipathic lipid in an organic solvent;

(b) combining the dispersion with a sufficient amount of an aqueous phase to form a biphasic mixture in which the aqueous phase can be completely emulsified; and

(c) concurrently emulsifying the aqueous phase while evaporating the organic solvent of the biphasic mixtures,

wherein the stable plurilamellar vesicles produced are substantially free of MLVs, SUVs, and REVs.

11. Stable plurilamellar vesicles comprising lipid vesicles ranging from about 100 nm to about 10,000 nm in size, characterized by a few to over 100 lipid bilayers enclosing aqueous compartments containing at least one entrapped solute in which the lipid bilayers have an ordered molecular architecture creating a supramolecular structure which differs from that of other multilamellar vesicles so that when compared to other multilamellar vesicles composed of the identical lipid and aqueous ingredients, stable plurilamellar vesicles have the following properties:

(a) a higher percent entrapment of solute;

(b) a lower buoyant density;

(c) a volume about one-third larger;

(d) greater stability to auto-oxidation during storage in buffer;

(e) greater stability in body fluids;

(f) a larger percent leakage of entrapped solute when exposed to urea, guanidine, or ammonium acetate;

(g) a smaller percent leakage of entrapped solute when exposed to hydrochloric acid or serum; and

(h) distribution of entrapped contents throughout the cytosol of cells when administered to the cells in culture.

23. Stable plurilamellar vesicles according to claim **11**, wherein a compound selected from the group consisting of: dyes, fluorescent compounds, radioactive compounds, and radio-opaque compounds is entrapped within the vesicle.

4,522,804

CONSTANT RELEASE RATE SOLID ORAL DOSAGE FORMULATIONS OF PROPRANOLOL

James M. Dunn, Littleton, Colo., assignor to Verex Laboratories, Inc., Englewood, Colo.

Division of Ser. No. 455,192, Jan. 3, 1983,. This application Feb. 16, 1984, Ser. No. 580,823

Int. Cl.³ A61K *9/22, 9/26*

U.S. Cl. 424—19 **5 Claims**

1. A constant order release rate solid oral dosage formulation of propranolol or a pharmaceutically acceptable salt thereof, said formulation comprising: a therapeutically effective amount of propranolol or pharmaceutically acceptable salt thereof, from about 0.5 to 6.0 weight percent of microcrystalline cellulose alone or with one or more acid-retardant hydrophobic cellulose derivatives; from about 2.5 to 35 weight percent of a hydrogenated vegetable oil; from about 1 to 20 weight percent of pharmaceutically acceptable acrylic acid polymer; from about 0.5 to 4.0 weight percent of fumed silicon dioxide and from about 0.4 to 3.0 weight percent of a tableting lubricant.

4,522,805

TOOTH AND GUM DENTIFRICE

Norman Gordon, 114 Sussex Rd., New Rochelle, N.Y. 10804

Filed Jun. 8, 1983, Ser. No. 502,142

Int. Cl.³ A61K *7/16, 7/20, 7/18*

U.S. Cl. 424—52 **4 Claims**

1. A tooth and gum dentifrice composition in the form of a stable paste, for controlling and minimizing incipient periodontal disease and for aiding in the reduction of dental plaque comprising from about 15% to 25% by weight of sodium bicarbonate, from about 7.5% to 15% by weight of calcium carbonate, from about 6% to 11% by weight of carbonide peroxide in anhydrous glycerin, from about 0.5% to 1.5% by weight of acidulated sodium flouride of a low ph, and from about 47.5% to 72% by weight of a paste including a synthetic detergent containing water, a humectant, sorbitol, a binder, and a flavoring agent.

4,522,806

ORAL COMPOSITIONS FOR HEXETIDINE AND ZINC SALTS FOR THE SYNERGISTIC INHIBITION OF DENTAL PLAQUE

Hans R. Muhlemann, and Ulrich P. Saxer, both of Zurich, Switzerland, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 309,050, Oct. 6, 1981, abandoned. This application Dec. 19, 1983, Ser. No. 563,011

Claims priority, application United Kingdom, Oct. 10, 1980, 8032743

Int. Cl.³ A61K *7/18, 7/22*

U.S. Cl. 424—52 **8 Claims**

1. An oral composition for inhibiting the formation of dental plaque comprising about 0.08 to about 3000 ppm w/w of hexetidine and zinc in cationic and cationizable form in a total quantity of about 4.0 to about 1265 ppm w/w.

4,522,807

SUBSTANTIVE TOPICAL COMPOSITIONS

Carl Kaplan, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 342,304, Jan. 25, 1982, abandoned. This application May 19, 1983, Ser. No. 496,032

Int. Cl.³ A61K *7/42, 7/44*

U.S. Cl. 424—59 **14 Claims**

1. A dermatologically compatible, highly substantive sunscreening oil-in-water emulsion composition comprising 0.1 to 5% octadecene-1/maleic anhydride copolymer having a molecular weight of 4,000 to 100,000, an effective sunscreening amount of a sunscreening agent, an oil, from 40 to 95% water and having a pH of 6 to 10.

4,522,808

ANTI-SUNBURN COMPOSITIONS CONTAINING 2-PHENYL-INDOLE DERIVATIVES

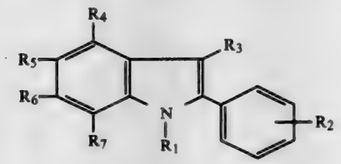
Bernard Jacquet, Antony; Gérard Lang, Epinay-sur-Seine, and Alain Malaval, Aulnay-sous-Bois, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation of Ser. No. 178,582, Aug. 15, 1980, abandoned, which is a continuation-in-part of Ser. No. 716,650, Aug. 23, 1976, abandoned. This application Sep. 30, 1982, Ser. No. 428,755

Int. Cl.³ A61K *7/06, 7/021, 7/42, 9/12*

U.S. Cl. 424—59 **4 Claims**

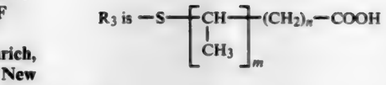
1. A cosmetic composition comprising a cosmetic vehicle and at least about 0.05 percent by weight based on the total weight of said composition of a compound of the formula



wherein

R_1 is selected from the group consisting of hydrogen, alkyl containing 1 to about 12 carbon atoms and optionally branched carboxyalkyl radical containing 1 to 4 carbon atoms,

R_2 is selected from the group consisting of hydrogen, alkoxy containing 1 to 4 carbon atoms, at least one alkyl and carboxyalkyl radical containing 1 to 4 carbon atoms and halogen,



wherein

m is 0 or 1 and n is 0, 1 or 2, and

each of R_4, R_5, R_6 and R_7 is independently selected from the group consisting of hydrogen, alkyl containing 1–4 carbon atoms, carboxyalkyl containing 1–4 carbon atoms and alkoxy containing 1–4 carbon atoms.

4,522,809

PROCESS FOR OBTAINING LIPID ENVELOPE VIRUS SUB-UNITS, NOTABLY ANTIGENS FOR USE AS VACCINES, THE PRODUCTS OBTAINED AND THEIR APPLICATIONS

Philippe Adamowicz, Garches, and Ludwig Muller, Plessis Robinson, both of France, assignors to Institut Pasteur, Paris, France

Filed Aug. 1, 1984, Ser. No. 636,791

Claims priority, application France, Feb. 11, 1980, 80 02978

Int. Cl.³ A61K *39/145*

U.S. Cl. 424—89 **9 Claims**

1. A process for the production of immunogenic heavy subunits of influenza virus, comprising the following steps, carried out at a neutral or basic pH:

(1) dissolving an amount of chloroform in an aqueous influenza virus suspension to obtain a concentration of chloroform equivalent to or approximating its solubility limit in said suspension, thereafter,

(2) adding, with stirring, to the preparation so obtained a nonionic detergent while maintaining a single phase system, said detergent being added at the minimal concentration necessary to effect disruption of the virus into heavy immunogenic subunits, and stirring this mixture for a sufficient length of time to obtain said disruption, said heavy subunits comprising neuraminidase and hemagglutinin antigens in their original arrangement attached to fragments of the lipid envelopes of said virus, and

(3) separating the heavy subunits so obtained from lighter components by applying gradient fractionation methods to the reaction mixture, said lighter components comprising said chloroform, said detergent and other products originating from the disruption of said virus, and said heavy subunits being in the dense fraction of the gradient, wherein an inactivation agent is added to the reaction medium at any time during the process.

4,522,810

FELINE CALICIVIRUS VACCINE

Niels C. Pedersen, Winters, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 9, 1982, Ser. No. 448,098

Int. Cl.³ A61K *39/12;* **C12N** *7/00*

U.S. Cl. 424—89 **10 Claims**

1. A vaccine for protection against viremia caused by feline calicivirus, said vaccine comprising the strain FCV-2280, in an effective amount to produce an immune response, and a physiologically acceptable carrier.

4,522,811

SERIAL INJECTION OF MURAMYLDIPEPTIDES AND LIPOSOMES ENHANCES THE ANTI-INFECTIVE ACTIVITY OF MURAMYLDIPEPTIDES

Deborah A. Eppstein; Elizabeth B. Fraser-Smith, both of Los Altos, and Thomas R. Matthews, Los Gatos, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jul. 8, 1982, Ser. No. 396,213
Int. Cl.³ A61K *37/02*
U.S. Cl. 514—2 **9 Claims**

1. A method for enhancing the anti-infective activity of a muramyldipeptide (MDP) compound which method comprises serial intravenous injection to an animal in need thereof an anti-infective enhancing amount of unencapsulated MDP compound and liposomes within three hours of each other wherein said MDP compound.

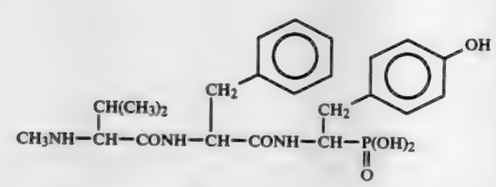
4,522,812

NOVEL PHYSIOLOGICALLY ACTIVE SUBSTANCE K-4, A PROCESS FOR PREPARATION THEREOF AND A PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Toshiro Koguchi, Yokohama; Hiroshi Kase, Koganei; Isao Kawamoto, Hiratsuka, all of Japan; Masaji Kasai, Rockville, Md.; Kunikatsu Shirahata, Komae, Japan; Ryo Okachi, Shizuoka, Japan, and Kiyoshi Nakayama, Sagamihara, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1982, Ser. No. 407,082
Claims priority, application Japan, Aug. 18, 1981, 56-128740
Int. Cl.³ C07C *103/52;* A61K *37/02*
U.S. Cl. 514—7 **2 Claims**

1. The compound, K-4, represented by the formula



wherein the configuration of the phenylalanine and N-methylvaline parts is L-form and the 1-amino-2-(4-hydroxyphenyl) ethylphosphonic acid part has negative specific rotation.

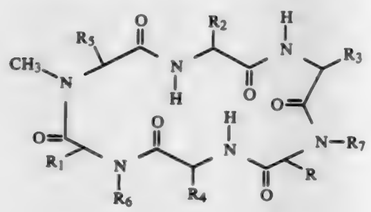
4,522,813

CYCLIC HEXAPEPTIDE SOMATOSTATIN ANALOGS

Ruth F. Nutt, Green Lane, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 27, 1983, Ser. No. 545,982
Int. Cl.³ C07C *103/52;* A61K *37/02*
U.S. Cl. 514/11 **11 Claims**

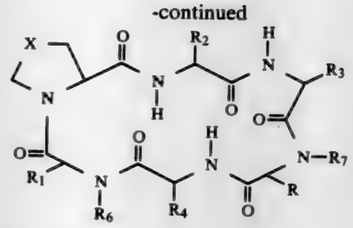
1. A compound having the formula:



I

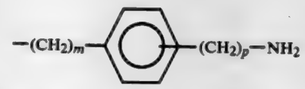
and

-continued



II

wherein R is



such that the broken line indicates that the ring may be either cyclohexyl or phenyl;

m is 0 or 1; and p is 0 when the ring is cyclohexyl and 1 when the ring is phenyl;

X is $(CH_2)_n$ wherein n is 0, 1 or 2, sulfur;

R_1 and R_2 are independently lower alkyl, benzyl, substituted benzyl wherein the substitutent may be one or two of loweralkyl, halogen, hydroxy, amino, nitro or loweralkoxy; and loweralkyl substituted with hydroxy, 3-indolylmethyl, carboxy, amino, guanidino, or a 5- or 6-membered heterocyclic ring;

R_3 is 3-indolylmethyl or substituted 3-indolylmethyl wherein the substituent may be loweralkyl, loweralkoxy or halogen;

R_4 is loweralkyl, hydroxyloweralkyl, benzyl, carboxyloweralkyl, aminoloweralkyl, 3-indolylmethyl or substituted hydroxy benzyl wherein the substituent may be loweralkyl, loweralkoxy, hydroxy, halogen, amino or nitro, or a 5- or 6-membered heterocyclic ring;

R_5 is loweralkyl, benzyl, or substituted benzyl wherein the substituent is loweralkyl, loweralkoxy, hydroxy, halogen, amino or nitro; and

R_6 and R_7 are independently hydrogen or methyl.

4,522,814

COMPOSITION OF MATTER FROM *CRYPTOSIPHONIA WOODII* USEFUL FOR THE TREATMENT OF HERPES SIMPLEX VIRUS

Arthur M. Nonomura, San Francisco, Calif., and Raphael Pappo, 913 Cambridge Ave., Redwood City, Calif. 94061, assignors to Raphael Pappo, Redwood City, Calif.

Filed Nov. 5, 1982, Ser. No. 439,369
Int. Cl.³ A61K *31/715;* C08B *37/00*
U.S. Cl. 514—54 **14 Claims**

6. A method of treating a herpes simplex virus infection in a subject comprising administering to said subject an effective antiviral amount of an unbuffered aqueous extract of homogenized *Cryptosiphonia woodii* wherein the extract contains a polysaccharide comprising glucose and galactose units and more than about 5.0% sulfur by weight based on the weight of the extract.

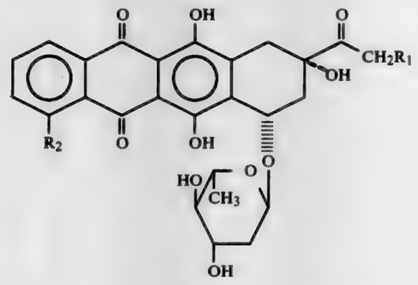
4,522,815

ANTHRACYCLINE GLYCOSIDES

Alberto Bargiotti; Sergio Penco, and Anna M. Casazza, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Italy

Filed May 31, 1983, Ser. No. 499,308
Claims priority, application United Kingdom, May 24, 1982, 8215083
Int. Cl.³ A61K *31/71;* C07H *15/24*
U.S. Cl. 514—34 **14 Claims**

1. An anthracycline glycosidic compound of the formula I:



(I)

wherein R_1 is hydrogen or hydroxy and R_2 is hydrogen.

10. A method of inhibiting the growth of P388 leukemia or transplanted gross leukemia comprising administering to a mammal afflicted therewith, a therapeutically effective amount of an anthracycline glycoside according to claim 1.

4,522,816

ANALGESIC TREATMENT AND COMPOSITIONS

Francoise Delevallee , Vincennes, and Roger Deraedt, Pavillons-sous-Bois, both of France, assignors to Roussel Uclaf, Paris, France

Filed Oct. 19, 1983, Ser. No. 543,270
Claims priority, application France, Oct. 26, 1982, 82 17892
Int. Cl.³ A61K *27/00, 31/46, 31/68, 31/445, 31/485*
U.S. Cl. 514—52 **14 Claims**

1. An analgesic composition comprising a central analgesic selected from the group consisting of morphine, pethidine, dextromoramide and pentazocine and an amount of a vitamin B_{12} component selected from the group consisting of vitamin B_{12}, hydroxocobalamine, nitrocobalamine, methylcobalamine, dibenzozide and coenzyme of vitamin B_{12} sufficient to potentialize the central analgesic.

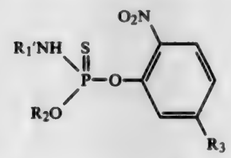
4,522,817

PHOSPHORAMIDOTHIONATES AND FUNGICIDAL USE

Hideo Kohsaka, Takarazuka; Mitsuru Sasaki, Toyonaka, and Yukio Ishiguri, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

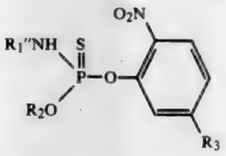
Filed Mar. 14, 1983, Ser. No. 475,166
Claims priority, application Japan, Mar. 15, 1982, 57-41210; Mar. 16, 1982, 57-42280; Oct. 5, 1982, 57-175567
Int. Cl.³ A01N *57/30, 57/32;* C07F *9/24*
U.S. Cl. 514—95 **10 Claims**

1. A phosphoramidothionate of the formula:



wherein R_1' is a lower alkoxy(lower)alkyl group, a di(lower-)alkoxy(lower)alkyl group, a halogen atom-substituted lower alkyl group, a cyano group-substituted lower alkyl group, a lower alkylthio(lower)alkyl group, a lower dioxothiacycloalkyl group, a lower thiacycloalky group, a lower oxacycloalkyl group, a furanyl(lower)alkyl group of a thiophenyl(lower)alkyl group, R_2 is a lower alkyl group and R_3 is a lower alkyl group or a lower alkoxy group.

3. A fungicidal composition which comprises as an active ingredient a fungicidally effective amount of a phosphoramidothionate of the formula:



wherein R_1'' is a lower alkenyl group, a lower alkynyl group, a lower cycloalkyl group, a lower cycloalkyl(lower)alkyl group, a halogen atom-substituted lower alkyl group, a lower alkoxy(lower)alkyl group, a di(lower)alkoxy(lower)alkyl group, a cyano group-substituted lower alkyl group, a lower alkythio(lower)alkyl group, a lower dioxothiacycloalkyl group, a lower thiacycloalkyl group, a lower oxacycloalkyl group, a furanyl(lower)alkyl group or a thiophenyl(lower)alkyl group, R_2 is a lower alkyl group and R_3 is a lower alkyl group or a lower alkoxy group, and an inert carrier or diluent.

4,522,818

DIURETIC/ANTIHYPERTENSIVE COMPOSITIONS

Yegnaswami Raghunathan, Fairport, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 14, 1982, Ser. No. 434,302
Int. Cl.³ A61K *31/635*
U.S. Cl. 514—155 **7 Claims**

7. A method of treating hypertension, comprising orally administering to a person an effective dosage of a mixture of metolazone, triamterene and excipients, said mixture containing from about 0.025 to 2.5 percent by weight of metolazone, from about 2.5 to 25 percent by weight of triamterene, and from about 72.5 to 97.0 percent by weight of excipients consisting essentially of dibasic calcium phosphate, starch, microcrystalline cellulose and a lubricant.

4,522,819

1-ETHYL-6-FLUORO-1,4-DIHYDRO-4-OXO-7-(1-PIPERAZINYL)-3-QUINOLINE CARBOXYLIC ACID AND METAL SALTS THEREOF USEFUL IN BURN THERAPY

Charles L. Fox, Jr., Sherman, Conn., and Shanta M. Modak, River Edge, N.J., assignors to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Continuation of Ser. No. 193,307, Oct. 2, 1980, abandoned. This application Jun. 23, 1982, Ser. No. 391,452
Int. Cl.³ C07D *401/10;* A61K *31/495, 31/555, 31/47*
U.S. Cl. 514—187 **23 Claims**

1. A metal salt of 1-ethyl-6-fluoro-1,4-dihydro-4-oxo-7-(1-piperazinyl)-3-quinoline carboxylic acid wherein the metal moiety is selected from the group consisting of silver, zinc, cerium, and cobalt.

6. A method of treating burns in animal or man which comprises topically applying an effective antibacterial amount of the metal salt of claim 1 to the affected surface.

4,522,820

TRANS-DIHYDROLISURIDE ANTIPSYCHOTIC

Rainer Dorow; Reinhard Horowski; Wolfgang Kehr, and Helmut Wachtel, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Jul. 23, 1982, Ser. No. 401,427

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3129714

Int. Cl.³ A61K *31/48, 31/475*

U.S. Cl. 424—288 **9 Claims**

1. A method of treating psychosis in a patient suffering from psychosis comprising administering an antipsychotically effective amount of N-(D-6-methyl-8-isoergolinyl)-N'N-diethylurea or a physiologically acceptable salt thereof to the patient.

4,522,821

ANTI-EMETIC ESTERS OF CYPROHEPTADINE-3-CARBOXYLIC ACID AND STRUCTURALLY RELATED COMPOUNDS

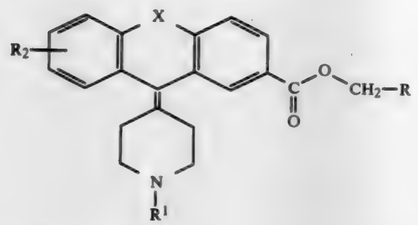
David C. Remy, North Wales, and Bradley V. Clineschmidt, Norristown, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 368,257, Apr. 14, 1982, Pat. No. 4,412,999. This application Aug. 8, 1983, Ser. No. 520,939

Int. Cl.³ A61K *31/445;* **C07D** *401/04, 401/12*

U.S. Cl. 514—320 **8 Claims**

7. A method of treating emesis, gastro-oesophageal reflux and/or dyspepsia comprising the prophylactic or therapeutic administration to a patient in need of such treatment of an effective dopamine antagonist amount of a compound of structural formula:

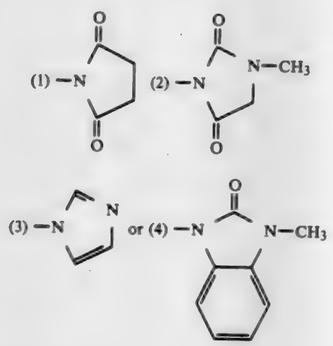


I

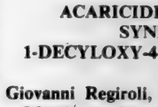
or a pharmaceutically acceptable salt thereof, wherein X is

(1) $-CH_2-O-$,	(2) $-O-CH_2-$,
(3) $-CH_2-S-$,	(4) $-S-CH_2-$,
(5) $-S-$, or	(6) $-O-$;

R is



R^1 is (1) C_{1-3}alkyl, or (2)



and

R^2 is (1) hydrogen, (2) C_{1-3}alkyl, or (3) fluoro.

4,522,822

PHENYLETHANE DERIVATIVES AND ACID ADDITION SALTS THEREOF FOR INCREASING LEAN MEAT DEPOSITION AND/OR IMPROVING LEAN MEAT TO FAT RATIO IN WARM BLOODED ANIMALS

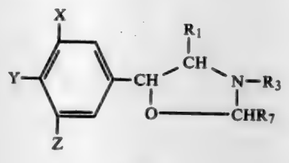
Jane A. Kiernan, Kendall Park, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 219,055, Dec. 22, 1980, Pat. No. 4,407,819, which is a continuation-in-part of Ser. No. 181,255, Aug. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 143,070, Apr. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 66,909, Aug. 16, 1979, abandoned. This application Sep. 9, 1983, Ser. No. 530,848

Int. Cl.³ A61K *31/42*

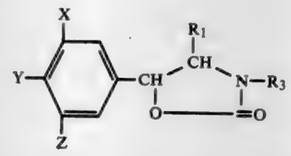
U.S. Cl. 514—376 **18 Claims**

1. A method for increasing lean meat, improving the lean meat to fat ratio, reduction of body fat and improving the efficiency of feed utilization, or increasing the growth rate in warm-blooded animals comprising: orally or parenterally administering to said animals, a pharmacologically effective amount of a compound having the general formula selected from the group consisting of;



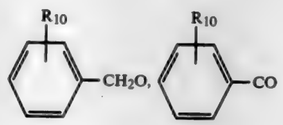
(Ia)

and



(Ib)

wherein X is hydrogen, halogen, or —CN; Y is hydrogen, NR_8R_9 or $NHCOR_5$; Z is halogen, OH, CF_3, CN, $COOR_1$, $CONH_2$, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro or C_1–C_4 dialkylaminomethyl; R_1 is hydrogen or C_1–C_4 alkyl; R_3 is C_1–C_5 alkyl, C_3–C_4 alkenyl, C_3–C_5 cycloalkyl, 2-hydroxyethyl, α,α-dimethylphenethyl, benzyl, 3-phenylpropyl or 3-(4-carbomethoxyphenyl)propyl; R_5 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy,



or $N(R_1)_2$; R_7 is hydrogen, C_1–C_4 alkyl or phenyl; R_8 is hydrogen, C_1–C_4 alkyl or C_3–C_4 alkenyl; R_9 is hydrogen, C_1–C_6 alkyl, C_4–C_6 cycloalkyl, C_3–C_4 alkenyl or benzyl; R_{10} is hydrogen, chloro, dichloro, methyl, dimethyl, methoxy, dimethoxy or nitro; and when R_8 and R_9 are taken together with the nitrogen to which they are attached, they may represent pyrrolidino; with the provisos that when Z is OH, X and Y are hydrogen; when X is —CN, Z is —CN; and when R_8 is C_1–C_4 alkyl or C_3–C_4 alkenyl, R_9 is C_1–C_4 alkyl or C_3–C_4 alkenyl; or racemic mixtures of the above-identified compounds, the optically active isomers, or nontoxic, pharmacologically acceptable acid addition salts thereof.

4,522,823

OREXIGENIC USE OF α-FLUOROMETHYL-HISTIDINE

Harley M. Hanson, Norristown, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 5, 1984, Ser. No. 568,451

Int. Cl.³ A61K *31/415*

U.S. Cl. 514—400 **3 Claims**

1. A method of stimulating appetite comprising administering orally or by sterile injection to man or animal in need of such treatment an effective appetite stimulating amount of α-fluoromethylhistidine or a pharmaceutically acceptable salt thereof.

4,522,824

INDOLE DERIVATIVES OF TRYPTAMINE AND CARDIOVASCULAR COMPOSITIONS THEREOF

Jean Wagnon, Montpellier; Patrick Gautier, Courmonterral, and Jean-Pierre Gagnol, St. Martin de Londres, all of France, assignors to Sanofi, Paris, France

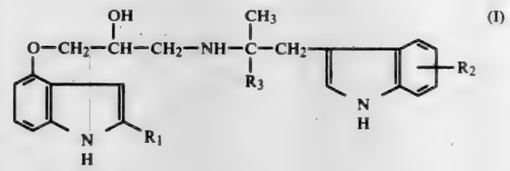
Filed Mar. 21, 1983, Ser. No. 477,494

Claims priority, application France, Mar. 23, 1982, 82 04921

Int. Cl.³ A61K *31/40;* **C07D** *403/12*

U.S. Cl. 514—414 **7 Claims**

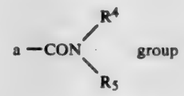
1. Compounds derived from tryptamine of formula:



(I)

in which:

R_1 represents a CH_2OH group, a —C≡N group,



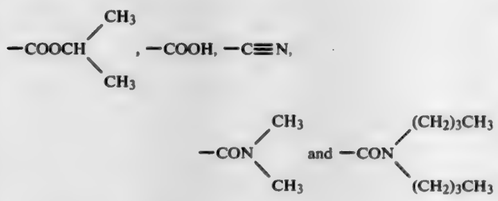
group

or a $-COOR_6$ group in which R_4, R_5 and R_6 denote a lower alkyl group or hydrogen;

R_2 represents hydrogen or a C≡N group;

R_3 denotes hydrogen, a CH_3 group or a CH_2OH group, and the addition salts of the products of formula I with pharmaceutically acceptable, mineral or organic acids.

2. Compounds of claim 1, where R_1 is hydrogen, R_3 is CH_3 and R_1 is selected from the group consisting of $-CONH_2$, $-CH_2OH$,



4,522,825

ACARICIDE COMPOSITIONS EMPLOYING SYNERGISTIC MIXTURES OF 1-DECYLOXY-4-(7-OXA-4-OCTINYL)-OXY-BENZENE AND PROPARGITE

Giovanni Regiroli, Novate Milanese; Vincenzo Caprioli, San Martino, and Angelo Longoni, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Mar. 31, 1983, Ser. No. 480,760

Claims priority, application Italy, Apr. 1, 1982, 20526 A/82

Int. Cl.³ A01N *37/52, 41/02, 55/04, 57/00*

U.S. Cl. 514—517 **6 Claims**

1. An acaricide mixture with synergistic effect consisting of a mixture of the compound 1-decyloxy-4-(7-oxa-4-octinyl)-oxy-benzene with 2-(4-tert.butyl-phenoxy)-cyclohexyl-(2-propinyl-sulphite, in a ratio of 2.5:1 and 1:1.

4,522,826

ANALGESIC AND ANTI-INFLAMMATORY COMPOSITIONS COMPRISING DIPHENHYDRAMINE AND METHODS OF USING SAME

Abraham Sunshine, New York; Eugene M. Laska, Larchmont, and Carole E. Siegel, Mamaroneck, all of N.Y., assignors to Richardson-Vicks Inc., Wilton, Conn.

Filed Feb. 8, 1984, Ser. No. 578,288

Int. Cl.³ A61K *31/19, 31/40, 31/131*

U.S. Cl. 514—569 **44 Claims**

1. A method for eliciting an enhanced analgesic and anti-inflammatory response in a mammalian organism in need of such treatment, comprising administering to such organism

(i) an analgesically and anti-inflammatorily effective amount of ibuprofen, naproxen, benoxaprofen, flurbiprofen, fenoprofen, fenbufen, ketoprofen, indoprofen, pirprofen, carprofen, oxaprozin, pranoprofen, miroprofen, tioxaprofen, suprofen, alminoprofen, tiaprofenic acid, fluprofen or bucloxic acid or a pharmaceutically acceptable salt thereof, and

(ii) an analgesically and anti-inflammatorily potentiating amount of diphenhydramine.

4,522,827

METHOD OF TREATING ACUTE PANCREATITIS WITH ISOMETHEPTENE

Maria G. Marlettini; Michelangelo DeNovellis; Ernesto Labriola; Teresa Salomone, and Paola Tomassetti, all of Bologna, Italy, assignors to Knoll AG, Fed. Rep. of Germany

Filed Jul. 2, 1982, Ser. No. 394,797

Int. Cl.³ A61K *31/13*

U.S. Cl. 514—671 **3 Claims**

1. A method for treating acute pancreatitis which comprises administering by infusion to a person afflicted with that condition an effective amount of Isometheptene contained in an injectable solution to relieve the attendant pancreatitis symptoms followed by orally administered dosages of a composition containing an effective amount of Isometheptene and a pharmaceutically acceptable excipient.

4,522,828

THERAPEUTIC AGENTS

James E. Jeffery; Antonin Kozlik, and Eric C. Wilmshurst, all of Nottingham, England, assignors to The Boots Company plc, Nottingham, England

Filed Apr. 5, 1982, Ser. No. 365,285

Claims priority, application United Kingdom, Apr. 6, 1981, 8110709

Int. Cl.³ A01N *33/02*

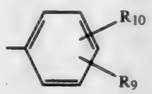
U.S. Cl. 514—646 **29 Claims**

1. A method of treating depression which comprises administering to a depressed patient a therapeutically active amount of a compound of formula I



I

in which R_1 is selected from the group consisting of straight or branched chain alkyl groups containing 1 to 6 carbon atoms, cycloalkyl groups containing 3 to 7 carbon atoms, cycloalkylalkyl groups in which the cycloalkyl group contains 3 to 6 carbon atoms and the alkyl group contains 1 to 3 carbon atoms, alkenyl groups containing 2 to 6 carbon atoms, alkynyl groups containing 2 to 6 carbon atoms and groups of formula II



II

in which R_9 and R_{10}, which are the same or different are selected from the group consisting of H, halo and alkoxy groups containing 1 to 3 carbon atoms;

in which R_2 is selected from the group consisting of H and alkyl groups containing 1 to 3 carbon atoms;

in which R_3 ad R_4, which are the same or different are selected from the group consisting of H, straight or branched chain alkyl groups containing 1 to 4 carbon atoms, alkenyl groups having 3 to 6 carbon atoms, alkynyl groups having 3 to 6 carbons atoms, cycloalkyl groups in which the ring contains 3 to 7 carbon atoms, and a group of formula CHO or R_3 and R_4 together with the nitrogen atom form an optionally substituted heterocyclic ring having 5 or 6 atoms in the ring optionally containing further hetero atoms in addition to the nitrogen atom;

in which R_5 and R_6, which are the same or different are selected from the group consisting of H, halo, trifluoromethyl, alkyl groups containing 1 to 3 carbon atoms, alkoxy groups containing 1 to 3 carbon atoms, alkylthio groups containing 1 to 3 carbon atoms and phenyl or R_5 and R_6, together with the carbon atoms to which they are attached, form a second benzene ring optionally substituted by at least one halo, alkyl or alkoxy group containing 1 to 4 carbon atoms or the substituents of the second benzene ring together with the two carbon atoms to which they are attached form a further benzene ring;

or a pharmaceutically acceptable salt thereof.

4,522,829

1-(P-2-ISOPROPOXYETHOXYMETHYL-PHENOXY)-3-ISOPROPYLAMINO-PROPAN-2-OL FOR DECREASING THE INTRA-OCULAR PRESSURE AND AN OPHTHALMIC PREPARATION THEREOF

Jürgen Harting, and Andreas Fuchs, both of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,914

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125636

Int. Cl.³ A61K *31/135*

U.S. Cl. 514—652 **10 Claims**

1. An ophthalmic composition comprising intraocular pressure lowering amount of 1-(p-2-isopropoxyethoxymethyl-phenoxy)-3-isopropylamino-propan-2-ol or a physiologically acceptable salt thereof and an ophthalmically acceptable carrier, in the form of an eye drop solution, an eye ointment, or an ocular film insert.

4,522,830

PHARMACEUTICAL METHODS USING PARABENZOQUINONE TO TREAT MUSCLE SPASMS

Channing B. Ewing, P.O. Box 47, East Lake Weir, Fla. 32632

Division of Ser. No. 466,141, Feb. 14, 1983, Pat. No. 4,443,479, which is a division of Ser. No. 370,066, Apr. 20, 1982, Pat. No. 4,382,095. This application Feb. 24, 1984, Ser. No. 582,393

Int. Cl.³ A61K *31/12*

U.S. Cl. 514—690 **2 Claims**

1. A method for treating smooth muscle spasms, said method comprising administering to a person suffering therefrom an effective amount of parabenzoquinone and continuing said administration, as required, until the smooth muscle spasms have been alleviated.

4,522,831

METHOD OF TOTALLY SUPPRESSING OVARIAN FOLLICULAR DEVELOPMENT

Robert T. Chatterton, Jr., River Forest, Ill., assignor to Northwestern University, Evanston, Ill.

Filed May 2, 1983, Ser. No. 490,797

Int. Cl.³ A01N *31/00*

U.S. Cl. 514—169 **6 Claims**

1. The method of totally suppressing ovarian follicular development and related hormonal secretions, comprising administering to a woman having menstrual cycles during a period of menstruation a first dose of from 2 to 10 milligrams (mg) per kilogram (kg) of body weight of 2α,17α-diethynyl-A-nor-5α-androstane-2β,17β-diol dipropionate, said administration being by intramuscular injection and being given on the first day of menstrual bleeding or within two days thereafter while menstruation is continuing, the injected amount of anordrin being effective to produce said total suppression for over 56 days without administration of additional anordrin by any route.

4,522,832

LACTASE-CONTAINING BAKING FORMULATIONS

Bradley W. Morrison, Chateauguay, Canada, assignor to Ogilvie Mills Ltd., Montreal, Canada

Filed Apr. 21, 1982, Ser. No. 370,182

Int. Cl.³ A21D *8/04*; G12P *19/14*

U.S. Cl. 426—20 **15 Claims**

1. In a formulation for producing baked yeast goods comprising flour, water and an added amount of discrete yeast fermentable sugar sufficient to produce a desired degree of leavening in said baked yeast goods, a fat-source material and a lactose-containing dairy product, the improvement comprising:

an added lactase enzyme in an enzymatic amount selected so as to be sufficient to produce, in situ, during the preparation of said yeast goods, a quantity of yeast-fermentable glucose and galactose by enzymatic hydrolysis of the lactose contained in said dairy product;

whereby the amounts of said glucose and galactose so produced are sufficient to permit a corresponding reduction in said added amount of discrete yeast fermentable sugar to thereby provide a sufficient total amount of yeast-fermentable sugars in said formulation, to produce said desired degree of leavening.

4,522,833

ROASTED COATED NUT PRODUCT AND PROCESS THEREFOR

Shri C. Sharma, Mendham, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 13, 1984, Ser. No. 570,476

Int. Cl.³ A23L *1/36*

U.S. Cl. 426—93 **18 Claims**

1. A process for producing a flavor enhanced edible nut which comprises:

(a) partially roasting raw nuts at a temperature of about 137° C. to about 188° C. for about 2.5 minutes to about 6 minutes until the onset of flavor development;

(b) then coating the partially roasted nuts at a temperature of about 98° C. to about 150° C. with a coating slurry comprising about 2½% to about 10% by weight of a sugar syrup, about 6% to about 25% by weight of sugar and about 2½% to about 4½% by weight of an oil, said coating slurry having a water content of about 15% to about 30% by weight based on the slurry, during which coating time the nuts and slurry are at substantially the same temperature;

(c) subjecting the coated nuts to a final roasting cycle at a temperature of about 137° C. to about 188° C. for about 4 minutes to about 11 minutes until full flavor development occurs;

(d) cooling the coated nuts to about room temperature; and

(e) recovering the nut product.

4,522,834

METHOD OF AND APPARATUS FOR PRODUCING ELECTRICALLY PROCESSED FOODSTUFFS

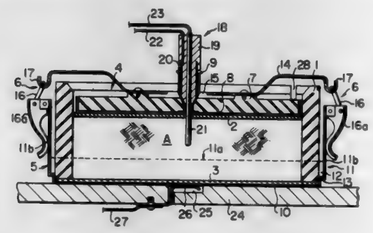
Kingo Miyahara, Tokyo, Japan, assignor to Dowa Co., Ltd., Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,508

Claims priority, application Japan, May 25, 1983, 58-90804

Int. Cl.³ A23L *3/32*; G01N *33/02*; H05B *6/46*

U.S. Cl. 426—231 **6 Claims**



1. A method of producing a processed foodstuff by passing a current to a raw food material comprising the steps of:

holding the raw food material placed in an insulating container open on upper and lower sides between an upper electrode member and a lower electrode member serving concurrently as a receiver of juices given off by the raw food material located on opposite sides of the raw food material through respective salt water containing contact members, said upper electrode member and lower electrode member being resiliently connected together in an insulated condition; and

passing a current between the upper electrode member and lower electrode member to heat the raw food material to sterilize it while allowing juices given off by the raw food material to be received by the lower electrode member and collect in a juice trap provided between the lower electrode member and the insulating container.

4,522,835

PROCESS AND COMPOSITION FOR PRODUCING AND MAINTAINING GOOD COLOR IN FRESH MEAT, FRESH POULTRY AND FRESH FISH

Richard E. Woodruff, Salinas, and John H. Silliker, Rolling Hills, both of Calif., assignors to TransFRESH Corporation, Salinas, Calif.

Continuation of Ser. No. 24,730, Mar. 28, 1979, abandoned, which is a continuation of Ser. No. 817,184, Jul. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 722,870, Sep. 13, 1976, abandoned. This application May 1, 1984, Ser. No. 605,784

Int. Cl.³ A23L *1/272*

U.S. Cl. 426—264 **26 Claims**

1. A process comprising subjecting fresh meat, fresh poultry or both to reduction for a time sufficient to change the red oxymyoglobin on and below the surface of said fresh meat, fresh poultry, or both, to visually-perceptible purple myoglobin, then subjecting said fresh meat, fresh poultry, or both, to a modified atmosphere including a concentration of carbon monoxide in the range of about 0.10% to about 3% by volume to convert said visually-perceptible purple myoglobin to visually-perceptible red carboxymyoglobin to a depth of not more than about 0.375 inch below the surface of said fresh meat, fresh poultry, or both.

12. A process comprising subjecting fresh fish to reduction for a time sufficient to change the visually-perceptible red oxymyoglobin and visually-perceptible red oxyhemoglobin on and below the surface of said fresh fish to visually-perceptible purple myoglobin and visually-perceptible purple hemoglobin, and then subjecting said fresh fish to a modified atmosphere including a concentration of carbon monoxide in the range of about 0.25% to about 1.5% by volume to convert said visually-perceptible purple myoglobin and visually-perceptible purple hemoglobin to visually-perceptible red carboxymyoglobin and visually-perceptible red carboxyhemoglobin to a depth of not more than about 0.375 inch below the surface of said fresh fish.

4,522,836

UPFLOW ION EXCHANGE TREATMENT OF NATURAL EDIBLE JUICES CONTAINING HIGH ACIDITY AND SUSPENDED SOLIDS

Fred J. Dechow, Midland, Mich.; Donald H. Mitchell; Richard M. Pearce, both of Winter Haven, Fla.; C. Byron Smith, Lake County, Fla., and Sand T. Brown, Lakeland, Fla., assignors to Mitco Water Laboratories, Inc., Winter Haven, Fla.

Filed May 19, 1983, Ser. No. 496,346

Int. Cl.³ A23L *2/36*

U.S. Cl. 426—271 **6 Claims**

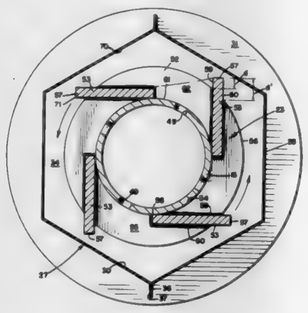
1. In a method of treating with an ion exchange exchange resin an acidic edible natural juice containing a significant concentration of pulp solids suspended therein to reduce the acidity of such juice without significantly impairing its natural sweetness or reducing its pulp solids content, the improvement which comprises passing the juice to be treated through a laterally confined vertically unconfined supported particulate bed of a weakly basic anionic exchange resin of sufficient volume relative to the throughput of juice being treated to substantially reduce the acid content of such juice by an ion exchange reaction, said juice being passed upwardly through said resin bed at a generally uniform rate throughout the bed cross-sectional area which is sufficient to produce a vertical expansion of said bed of at least about 20–25% and sufficient to pass substantially said pulp solids but insufficient to cause substantial entrainment of resin particles with the treated juice effluent.

4,522,837

METHOD OF REMOVING BRAN FROM CEREAL GRAINS

Elmond F. Meinardus, Houston, Tex., assignor to Riviana Foods Inc., Houston, Tex.

Division of Ser. No. 227,744, Jan. 23, 1981, Pat. No. 4,426,921.
This application Jan. 18, 1983, Ser. No. 458,779
Int. Cl.³ B02B *3/00, 3/04*
U.S. Cl. 426—482 **7 Claims**



1. A method of processing cereal grains for efficiently removing bran with a minimum of individual grain breakage comprising:

continuously supplying dehusked grains into an end of a longitudinally extending milling chamber having an outer apertured screen to retain said grains and having within said chamber a rotationally driven rotor assembly with longitudinally extending, inwardly closed pockets facing in the direction of rotation of said rotor, said pockets being between blades extending into said chamber,

forcing said grains longitudinally from said end of the chamber into said chamber with a portion thereof passing into the longitudinally extending pockets of the rotor assembly,

rotating said rotor assembly to convey grains carried within said pockets around the chamber during rotation of the rotor assembly with a portion of the grains in said pockets continually engaging grains surrounding the rotor assembly whereby all of the grains in passing through the chamber move in a dynamic pattern for bran removing contact with other grains, and

discharging the separated bran and processed grains from said chamber.

4,522,838

2-ACETYL-1-PYRROLINE AND ITS USE FOR FLAVORING FOODS

Ronald G. Buttery; Louisa C. Ling, both of El Cerrito, Calif., and Bienvenido O. Juliano, Los Banos Laguna, Philippines, assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C. and International Rice Research Institute, Republic of the Philippines, Los Banos, Philippines

Filed Jun. 1, 1983, Ser. No. 500,049
Int. Cl.³ C07D *207/00;* **A23L** *1/226*
U.S. Cl. 426—537 **8 Claims**

1. The compound 2-acetyl-1-pyrroline or salt thereof which is at least 95% pure.

2. A process for preparing a food composition which comprises adding to a food the substantially pure compound 2-acetyl-1-pyrroline or salt thereof in an amount sufficient to impart Basmati rice flavor to the composition.

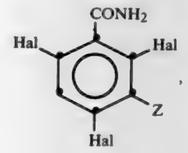
4,522,839

3-SUBSTITUTED 2,4,6-TRIHALOGENATED BENZAMIDES AS SWEETENING AGENTS

Heinz Gries, and Wolfgang Mützel, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Division of Ser. No. 333,364, Dec. 22, 1981, Pat. No. 4,429,152.
This application Nov. 23, 1983, Ser. No. 554,654
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048918; Nov. 11, 1981, 3145395
Int. Cl.³ A23L *1/236*
U.S. Cl. 426—548 **21 Claims**

1. A sweetener, comprising an effective sweetening amount of a compound having the formula I

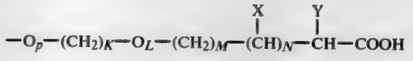


(I)

wherein

Hal is chlorine or bromine; and

Z is a carboxyl group or the group



wherein

P is 1 and L is 0 or 1, with the proviso that L is 0 when K is 0;

K is 0, 2, 3 or 4;

M is 0, 1, 2 or 3;

N is 0 or 1;

X is a hydrogen atom;

Y is a hydrogen atom or a lower alkyl group of 1–4 carbon atoms, or when either M or N is other than 0, a hydroxy group, a C_{1-6} alkoxy group or a C_{1-4} acyloxy group, or when N is 1 and M is other than 0, X and Y together represent an additional carbon-carbon bond; or

P and L are each 0;

K is 0, 2, 3 or 4;

M is 0, 1, 2 or 3;

N is 0 or 1;

X is a hydrogen atom;

Y is a hydrogen atom, a lower alkyl group of 1–4 carbon atoms, a hydroxy group, a C_{1-6} alkoxy group, a C_{1-4} acyloxy group or, when N is 1, X and Y together represents an additional carbon-carbon bond; or a salt thereof with an inorganic base;

and a non-toxic vehicle.

4,522,840

MANUFACTURE OF HIGHLIGHTED INTAGLIATED ARTICLES

Brian L. Corfield, Macclesfield, and Raymond C. Rowe, Congleton, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed May 31, 1983, Ser. No. 499,400
Claims priority, application United Kingdom, Jun. 10, 1982, 8216815
Int. Cl.³ A61K *9/00*
U.S. Cl. 427—3 **10 Claims**

1. In a process for the manufacture of coloured solid articles bearing at least one highlighted intagliation, which comprises:

either (A) applying to coloured intagliated articles, which themselves may be uncoated or film coated, a film coating suspension comprising at least one optically anisotropic substance having a minimum refractive index not greater than 2.00 and at least one film coating agent, the application being carried out in a conventional film coating apparatus in such a way that a rubbing action takes place between the articles being coated;

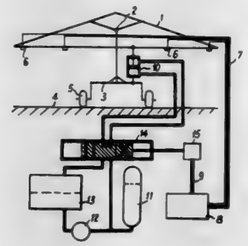
or (B) applying to coloured intagliated articles, which themselves may be uncoated or film coated, a suspension comprising at least one optically anisotropic substance having a minimum refractive index not greater than 2.00, but no film coating agent, and the application being carried out in a conventional film coating apparatus in such a way that a rubbing action takes place between the articles being coated; the improvement whereby better contrast is obtained between the highlighted intagliation and the rest of the surface of the article, said improvement comprising spraying the coloured solid articles bearing at least one highlighted intagliation obtained per (A) or (B) with a solvent in a conventional film coating apparatus in such a way that a rubbing action takes place between the said articles, whereby the contrast between the highlighted intagliation and the rest of the article surface is improved.

4,522,841

PROCESS FOR THE STABILIZATION WITH RESPECT TO A DESIRED PATH OF A MEMBER WHICH IS MOVABLY MOUNTED ACCORDING TO AT LEAST ONE COMPONENT OF MOVEMENT AND ITS APPLICATION TO THE STABILIZATION OF A SPRAY MANIFOLD

Etienne Gille; Jean Lucas; Didier Méchineau, and Marie-Odile Monod, all of Antony, France, assignors to Centre National Du Machinisme Agricole, Du Genie Rural, Des Eaux et des Forets (Cemagref), Antony, France

Filed Oct. 12, 1982, Ser. No. 433,695
Claims priority, application France, Oct. 9, 1981, 81 19099
Int. Cl.³ B05D *1/02*
U.S. Cl. 427—4 **7 Claims**



1. A process for the stabilization with respect to a desired path of a movably mounted member according to at least one component of a movement along the actual path, on at least one support point, along a path enabling the movable member to follow the desired path, in which there is exerted, between the movable member and said at least one support point and as a function of the position of the movable member with respect to the desired path, at least one force tending to return the movable member to the desired path, characterized in that the movable member has freedom of movement relative to said support point along at least one component of movement of the desired path, the forces whose magnitudes are independent of the position of the movable member with respect to said support point being applied as a function of the development of the position of the movable member with respect to the desired path and independently of the position of the movable member relative to said support point, the center of gravity of the movable member coinciding with said support point.

4,522,842

BORON NITRIDE X-RAY MASKS WITH CONTROLLED STRESS

Hyman J. Levinstein, Berkeley Heights; Shyam P. Murarka, New Providence, and David S. Williams, Morristown, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 9, 1982, Ser. No. 416,290
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—8 **20 Claims**



1. A process for fabricating a mask structure for X-ray lithography, comprising the steps of

depositing on a support member a layer of an X-ray transparent material,

determining the stress of the layer,

annealing said layer subsequent to said deposition to obtain therein a stress in a desired range, said annealing step

controlling the stress subsequent to said deposition, whereby the film is made more tensile or more compressive depending on what is desired.

4,522,843

DEACIDIFICATION OF LIBRARY MATERIALS

Robert A. Kundrot, 3801 D Logans Ferry Rd., Pittsburgh, Pa. 15239

Filed Jan. 25, 1984, Ser. No. 573,739
Int. Cl.³ B05D *1/04, 1/06*
U.S. Cl. 427—27 **24 Claims**

1. A method of deacidifiying books, imaged paper and other imaged material having a cellulose base comprising treating said material with suitable alkaline particles of a basic metal selected from the group consisting of oxides, hydroxides and salts having a predominant particle size between 0.01 and 0.9 micron and a surface area between 50 and 200 m^2/g BET, dispersed in a gas with deposition enhancement by aerosol impingement, filtering through the paper or electrostatic attraction or dispersed in a liquid, in an amount and for a time sufficient to pass into the interstices of said imaged material and increase the PH of the material and provide an alkaline buffer without impairing the image thereon, said liquid consisting essentially of an inert halogenated hydrocarbon and a surfactant.

4,522,844

CORROSION RESISTANT COATING

Satish K. Khanna; Anilkumar P. Thakoor, both of Pasadena, and Roger M. Williams, Azusa, all of Calif., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 30, 1983, Ser. No. 537,616
Int. Cl.³ C23C *15/00*
U.S. Cl. 427—38 **13 Claims**

1. A method of providing a substrate with a thin, corrosion-resistant coating comprising the steps of:

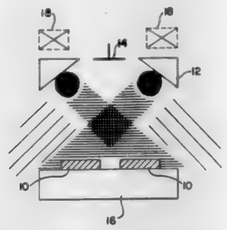
(a) selecting one or more transition metals;

(b) selecting one or more metalloids;

(c) thoroughly mixing said metals and metalloids to form a solid material in the shape of a target suitable for deposition sputtering;

(d) bombarding the target with ions of an inert gas in the presence of a magnetic field to provide a vapor of the target material and deposit the vaporous target material onto the substrate; and

(e) maintaining the pressure of the gas sufficiently low to cause the target material to deposit onto the substrate in a



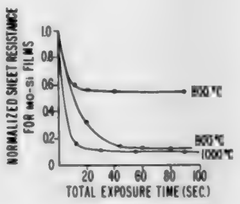
thin, uniformly thick, essentially pinhole-free amorphous metallic alloy film.

4,522,845

PROCESS FOR PRODUCING A LAYER OF A METAL SILICIDE BY APPLYING MULTICHROMATIC RADIATION

Ronald A. Powell, Redwood City, and Ronald T. Fulks, Mountain View, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jun. 20, 1983, Ser. No. 505,678
Int. Cl.³ H01L *21/285, 21/324*
U.S. Cl. 427—53.1 **19 Claims**



1. A process for forming a layer of a metal silicide, comprising:

providing a source of multichromatic radiation;

forming a contact region between silicon and a silicide-forming metal; and

directing an intense beam of multichromatic radiation from said source to said silicon and said silicide-forming metal in an evacuated chamber at a power level and for a time sufficient to cause formation of a relatively large grain metal silicide and a reduction in sheet resistivity relative to the untreated contact region by a factor of about three or greater, said contact region being raised to a temperature greater than 800° C. for a time on the order of 60 seconds or less.

4,522,846

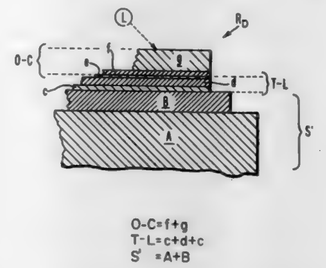
SPIRAL-COATED MEDIA FOR OPTICAL RECORDING

Thomas Mayer; Norman L. Boling, and James D. Rancourt, all of Santa Rosa, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 450,771, Dec. 17, 1982,. This application Mar. 12, 1984, Ser. No. 588,178
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 **22 Claims**

1. A method of providing a protective outer-seal coating over a disk having at least one recording area including an isolation surface coating wherein information is to be recorded with prescribed radiation, the method including the steps of:

preparing a formulation including at least one acrylate prepolymer, applying this formulation to the isolation coating on the recording area as to provide a mechanical/chemical barrier, while also being relatively transparent to said radiation, and curing it there.

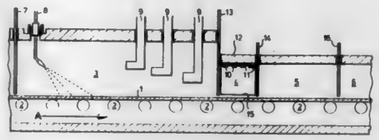


4,522,847

COATING VITREOUS SUBSTRATES

Julien Cornet, Temploux, and Robert Van Laethem, Loverval, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed Apr. 29, 1983, Ser. No. 490,164
Claims priority, application United Kingdom, Apr. 30, 1982, 8212670
Int. Cl.³ B05D *3/06;* **B05C** *11/00*
U.S. Cl. 427—55 **25 Claims**



1. A process for forming a metal or metal compound coating on a face of a hot vitreous substrate in sheet or ribbon form by continously advancing the substrate in a given direction along a path through a coating station, discharging droplets of liquid coating precursor material in the given direction so that such material contacts the substrate at the coating station, continuously withdrawing vapours from the coating station in the given direction, and thereafter annealing the substrate in an annealing lehr, said process further comprising, before said step of annealing, passing the hot coated substrate (1) from the coating station (3) to the annealing lehr (6) via a re-heating station located ahead of the lehr (4), supplying, in the re-heating station, sufficient radiant heat energy to the hot coated substrate (1) to raise the temperature or the mean temperature of its coated surface, while the substrate is within said station, through a certain temperature range, at least the upper end of such range being not lower than a temperature 100° C. below the corresponding temperature of such surface immediately before its contact by said coating precursor material, and advancing the substrate through said re-heating station at a rate such that each increment of length of the substrate remains in said re-heating station for at least 5 seconds.

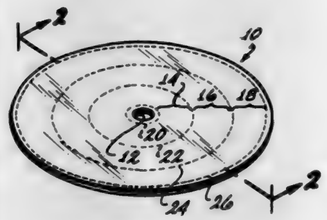
19. Apparatus for forming a metal or metal compound coating on a face of a hot vitreous substrate in sheet or ribbon form, such apparatus comprising a coating station, means for continuously advancing the substrate in a given direction along a path through the coating station, delivery means for discharging droplets of liquid coating precursor material in the given direction so as to contact a substrate at said coating station, and means for continuously withdrawing vapours from the coating station in the given direction, and an annealing lehr disposed for annealing the substrate as the substrate is being advanced along the path by said means for advancing and after the substrate has left said coating station, characterized in that at a position between said coating station (3) and said annealing lehr (6) there is a re-heating compartment (4) which is separated from said coating station (3) by at least one boundary wall (13), which re-heating compartment is provided with radiant heating means (10) for heating the substrate (1) as it advances through said re-heating compartment (4) in order to raise the temperature or the mean temperature of the coated surface of the substrate, while the substrate is within said re-heating compartment, through a certain temperature range, at least the upper end of such range being not lower than a temperature 100° C. below the corresponding temperature of such surface immediately before its contact by the coating precursor material, and said means for advancing are operative for advancing the substrate through said re-heating compartment at a rate such that each increment of length of the substrate remains in said re-heating compartment for at least 5 seconds.

4,522,848

PROCESS OF PREPARING A RECORDING MEMBER HAVING A VARIABLE THICKNESS RECORDING LAYER

Pravin K. Patel, 7206 W. 78th St., Los Angeles, Calif. 90045

Filed Apr. 28, 1983, Ser. No. 489,370
Int. Cl.³ H01F *10/02*
U.S. Cl. 427—131 **6 Claims**



1. A process of preparing a magnetic recording disk which comprises:

electrolessly depositing upon a disk shaped substrate a metal containing non-recording support layer;

contacting said support layer with an anodic metal, said anodic metal comprising a metal which is more electropositive than cobalt, said support layer contacted at an area proximal to that area which will underlay the inner track zone of said recording disk, said contact with said anodic material producing an area of positive charge at said area of said support layer which will underlay said inner track zone;

electrolessly depositing upon said support layer a cobalt containing recording layer, the thickness of said cobalt containing recording layer at said area of positive charge being less than the thickness of said cobalt containing recording layer overlaying the remainder of said support layer.

4,522,849

METHOD FOR COATING QUARTZ WITH BORON NITRIDE

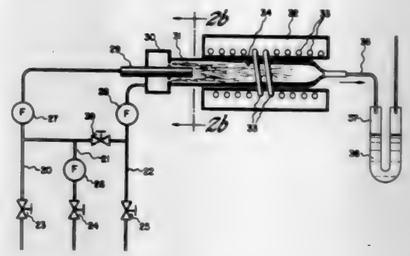
Robert S. Lewandowski, Amsterdam, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 282,328, Jul. 10, 1981, abandoned. This application Oct. 18, 1983, Ser. No. 542,917
Int. Cl.³ B05D *7/22;* **C23C** *11/00*
U.S. Cl. 427—237 **6 Claims**

4. A method of applying a protective boron nitride film to the interior of a quartz tube, said method comprising the steps of:

heating said quartz tube to between about 900° C. and 1000° C., and purging the interior of said tube with inert gas;

mixing at a temperature of between about 200° C. and 400° C. ammonia gas and diborane gas and initiating flow of the mixed ammonia and diborane gases through the interior of said quartz tube when the temperature of said quartz tube has reached said temperature of between about 900° C. and 1000° C. and after discontinuing flow of said inert gas; and



allowing said mixed ammonia and diborane gases to flow through said quartz tube for a time sufficient to coat the interior of said quartz tube with a boron nitride film of desired thickness, said boron nitride being the product of a chemical reaction between said ammonia and diborane gases.

4,522,850

POLYMERIC SUBSTRATES FOR ELECTROLESS METAL DEPOSITION

Edward J. Leech, Oyster Bay, N.Y., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation of Ser. No. 800,939, May 26, 1977, abandoned, which is a division of Ser. No. 598,770, Jul. 25, 1975, abandoned. This application Apr. 5, 1982, Ser. No. 365,476
Int. Cl.³ B05D *3/10;* **C23C** *3/02*
U.S. Cl. 427—304 **14 Claims**

1. A process for electrolessly metal plating an article comprising the steps:

(a) providing on the surface or portions of the surface of an article to be plated an polymeric layer which is a diphase polymerization product of a liquid mixture comprising (i) from about 45 to about 65 weight percent of a liquid precursor of a solid polymer having ethylenic unsaturation which upon polymerization yields an unsaturated substituted acrylonitrile butadiene rubber susceptible to oxidative degradation and (ii) from about 20 to about 40 weight percent of a highly functional aromatic liquid epoxy resin having substantially no ethylenic unsaturation which upon polymerization yields a thermosetting resin which is relatively impervious to oxidation, said diphase polymerization product having a dispersed phase rich in the polymer having ethylenic unsaturation and a continuous phase rich in the polymer having substantially no ethylenic unsaturation;

(b) oxidizing said polymeric layer to render said layer microporous; and

(c) contacting said microporous layer with an electroless metal deposition bath to form a layer of metal thereon.

4,522,851

PROCESS FOR COATING AQUEOUS DISPERSION OF EPOXY RESIN AND BLOCKED POLYISOCYANATE CONTAINING CHEMICALLY INCORPORATED ANIONIC HYDROPHILIC GROUPS

James W. Rosthauser, Imperial, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 429,708
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—386 **22 Claims**

1. An aqueously dispersed, heat-curable coating composition comprising

(a) a water-dispersible epoxy resin component containing external and/or chemically incorporated non-ionic emulsifiers and

(b) a water-dispersible, blocked polyisocyanate component containing chemically incorporated anionic hydrophilic groups in a weight ratio of component (a) to component (b) of about 1:10 to 10:1.

20. An aqueously dispersed, heat-curable coating composition comprising

(a) a water-dispersible epoxy resin component having an average molecular weight of about 500 to 20,000 and is the addition product of reactants comprising

(i) from about 50 to 90 parts by weight of the diglycidyl ether of a dihydric phenol,

(ii) from about 8 to 35 parts by weight of a dihydric phenol and

(iii) from about 2 to 15 parts of a chemically incorporated emulsifier; and

(b) a water-dispersible, blocked polyisocyanate component comprising the reaction product of

(i) a polyisocyanate containing 2 to 4 isocyanate groups,

(ii) a blocking agent for isocyanate groups in an amount sufficient to block about 30 to 95% of the isocyanate groups of component (i) and

(iii) a compound containing at least one potential anionic groups and at least one isocyanate-reactive group in an amount sufficient to react with the remaining isocyanate groups of component (i), the potential ionic groups being treated with a neutralizing agent in an amount sufficient to render component (b) water-dispersible.

21. A process for forming a coating which comprises

(a) coating a substrate with the coating composition of claim **1** or **20** and

(b) heating said coated substrate to a temperature between about 100° C. and 250° C. for a time sufficient to cure said coating composition.

4,522,852

BONDED ELASTOMERIC HOSE ASSEMBLY

John R. Dunn, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Division of Ser. No. 467,341, Feb. 17, 1983, Pat. No. 4,457,799, which is a continuation-in-part of Ser. No. 357,748, Mar. 12, 1982, abandoned. This application Apr. 10, 1984, Ser. No. 598,904

Int. Cl.³ F16L *11/00*

U.S. Cl. 428—36 **5 Claims**

1. A hose assembly comprising two layers, the inner layer being a fluoroelastomer compound and the outer layer being a butadiene-acrylonitrile polymer compound, said fluoroelastomer compound containing a fluoroelastomer based on vinylidene fluoride and hexafluoropropylene optionally also containing tetrafluoroethylene, perfluoromethylvinyl ether or ethylenically unsaturated olefins and containing one or more inorganic acid acceptors selected from magnesium oxide, cadmium oxide, calcium oxide, calcium hydroxide and zinc oxide, containing in either layer from about 1 to about 5 parts by weight per 100 parts by weight of fluoroelastomer or of butadiene-acrylonitrile polymer of a polysulphidic silane compound, the hose assembly having been vulcanized by heating at a temperature of from about 150° C. to about 180° C. for a time of from about 10 to about 60 minutes.

4,522,853

ELASTIC DIAPER-PANTS FASTENING

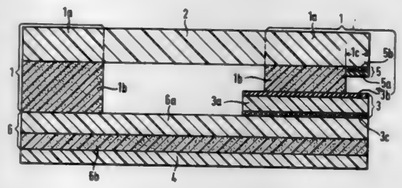
Bodo Szonn, Kisdorf; Karl Schäfer, and Alfred Malskeit, both of Hamburg, all of Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Apr. 21, 1983, Ser. No. 487,428

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 8212480[U]

Int. Cl.³ G61F *13/16*

U.S. Cl. 428—40 **2 Claims**



1. Self-adhesive elastic diaper-pants fastening with an adhesive-free intermediate elastic piece and non-elastic adhesion ends, characterized by

(a) adhesion ends (**1**) with an intermediate elastic piece (**2**),

(b) a base (**1***a*), on which is mounted a pressure-sensitive adhesive (**1***b*), in the vicinity of each adhesion end (**1**),

(c) a strip that is free of pressure-sensitive adhesive and functions as a grip (**1***c*) and (**5**) at the edge of one of the two bases (**1***a*),

(d) a reinforcing strip (**6**) consisting of a base (**6***a*) and a pressure-sensitive adhesive (**6***b*),

(e) an adhesive-resistant layer (**3***b*) that is mounted either directly on the reinforcing strip (**6**) or by means of a transition strip (**3**) that consists of a base (**3***a*) and pressure-sensitive adhesive (**3***c*),

(f) the adhesive-resistant layer (**3***b*) extending 2–5 mm on each side of the pressure-sensitive adhesive (**1***b*) in the vicinity of the adhesion end (**1**) next to the grip (**5**), and

(g) a cover (**4**) that extends over the whole width of the fastening.

4,522,854

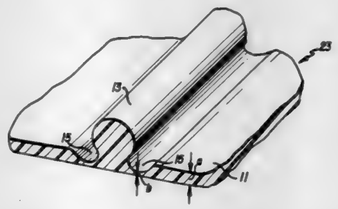
INTEGRAL FILM TEAR STRIP

Gordon V. Sharps, Jr., Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 28, 1983, Ser. No. 469,859

Int. Cl.³ B32B *3/30*

U.S. Cl. 428—43 **2 Claims**



1. A plastic film comprising a layer of thermoplastic material and a thermoplastic bead extending along and integrally connected with said layer of thermoplastic material, said thermoplastic material having areas of reduced thickness extending along opposite sides of said bead to form lines of weakness for severing said plastic film.

4,522,855

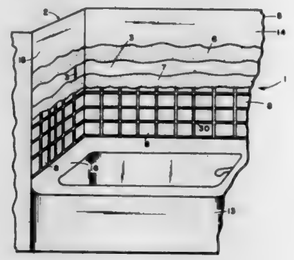
TILING ARRANGEMENT

James R. Bethea, Denham Springs, La., assignor to Noble Manufacturing Company, Baton Rouge, La.

Division of Ser. No. 336,918, Jan. 4, 1982, abandoned, which is a division of Ser. No. 203,985, Nov. 4, 1980, Pat. No. 4,324,605. This application Jul. 11, 1983, Ser. No. 512,568

Int. Cl.³ B32B *3/14*

U.S. Cl. 428—49 **7 Claims**



1. A water resistant, tiled panel arrangement, comprising:

a rigid substrate constructed of a material susceptible to moisture damage, and including an exterior surface with a portion thereof to be tiled;

a sheet of imperforate, substantially waterproof material overlying and adhered to the exterior surface of said substrate, and having a solvent-based film adhesive on an exterior side of said sheet; said sheet being substantially coextensive with the portion of said exterior surface to be tiled;

a thin set layer of tile adhesive overlying and bonded to said film adhesive; and

ceramic tile embedded in said tile adhesive, and securely attached thereto in a cured adhesive state, whereby said sheet forms a substantially waterproof barrier between said tile and said substrate.

4,522,856

SYNTHETIC ARTICLES HAVING A CORK-LIKE APPEARANCE

Gary V. Paisley, Lilburn, and Alex Malaspina, Atlanta, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 389,509, Jun. 16, 1982,. This application Jan. 18, 1983, Ser. No. 458,775

Int. Cl.³ B65D *53/00;* **B32B** *3/02, 5/14, 5/20*

U.S. Cl. 428—64 **3 Claims**



1. A molded closure possessing good flexibility and resiliency and having the appearance of natural cork which comprises

an expanded thermoplastic resinous material having the shape of the desired closure, and caramel as colorant therefor,

said expanded thermoplastic resinous closure containing a dense liquid-impervious outer skin and a porous inner core and being substantially free of large void spaces between said outer skin and inner core, whereby resistance to wrinkling during compression of the closure is effectively eliminated, and

said caramel colorant is present in an amount sufficient to give the closure the appearance of natural cork.

4,522,857

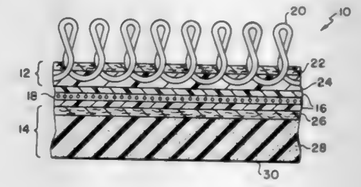
CARPET TILE WITH STABILIZING MATERIAL EMBEDDED IN ADHESIVE LAYER

Kenneth B. Higgins, LaGrange, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Sep. 24, 1984, Ser. No. 653,281

Int. Cl.³ D03D *27/00;* **D04H** *11/00;* **D05C** *17/00*

U.S. Cl. 428—95 **8 Claims**



1. A carpet tile comprising: a primary carpet base having pile yarns projecting upwardly therefrom, a foam base layer below said primary carpet base and a thermoplastic material securing said primary carpet base to said foam layer base and having a layer of stabilizing material embedded therein, said foam layer base having a carrier material adjacent said thermoplastic material and a high density foam material on the side of said carrier material away from said carrier material.

4,522,858

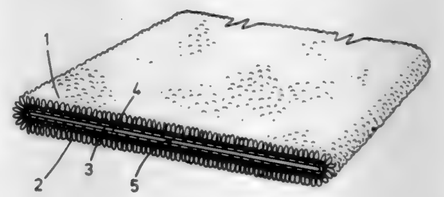
BIG BLOTTER TOWEL

Carmen F. Desson, Box 822, Blind River, Ontario, P0R 1B0, Canada

Filed Dec. 14, 1981, Ser. No. 330,237

Int. Cl.³ A47K *10/02*

U.S. Cl. 428—96 **5 Claims**



1. A towel formed from a length of material connected along opposite transverse edges to define an endless loop having a pair of external drying surfaces each defined between a pair of opposite longitudinal edges, said surfaces overlying one another with said longitudinal edges in register and unconnected to allow relative movement between said surfaces, said surfaces facing in opposite directions, said material having a backing to present a pair of opposed inner surfaces separating said external surfaces on the interior of said loop the coefficient of friction between said inner surfaces being less than the coefficient of friction between the external surface and a body against which it is applied to facilitate relative movement between said inner surfaces said backing constituting means to permit relative movement between said external drying surfaces and thereby cause a rolling movement of said external drying surfaces of said towel along a body surface upon application of a force to the other drying surface in a direction parallel to the one drying surface.

4,522,859

METHOD OF MANUFACTURE OF HONEYCOMB NOISE ATTENUATION STRUCTURE FOR HIGH TEMPERATURE APPLICATIONS

Winford Blair, La Mesa, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Continuation-in-part of Ser. No. 089,177, Oct. 29, 1979,. This application Nov. 18, 1980, Ser. No. 208,015

Int. Cl.³ B23K *1/04*

U.S. Cl. 428—116 **12 Claims**



1. A method for manufacturing a honeycomb noise attenuation structure for a high temperature application, the structural components of said structure comprise a central honeycomb cellular core sandwiched between an imperforate and a perforate sheet with the outer surface of the perforated sheet having an overlay comprising a single layer of a porous metal, said method comprising the steps of:

(a) sizing the structural components;

(b) cleaning the structural components;

(c) diffusion bonding the single layer of porous metal to one surface of the perforated sheet;

(d) wetting only the central core cell walls with a binder;

(e) applying a selected amount of a powdered braze alloy evenly over the binder coated surfaces the core edges being left free from said powdered braze alloy;

(f) stacking the imperforate sheet, honeycomb cellular core and combined perforate sheet and single layer of porous metal in assembly order;

(g) placing the stacked structural components in a vacuum furnace;

(h) applying a positive pressure to the stacked structural components;

(i) evacuating the vacuum furnace;

(j) elevating the internal temperature of the evacuated furnace to a level causing the braze alloy to melt and flow; and

(k) returning the stacked components to ambient temperature.

4,522,860

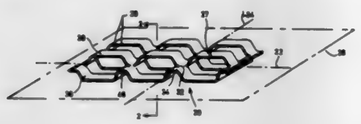
MATERIAL FOR REINFORCING CORE IN A STRUCTURE

John T. Scott, Hornings Mills, and Charles King, Mississauga, both of Canada, assignors to Metalcore Limited, Etobicoke, Canada

Filed Jan. 10, 1983, Ser. No. 456,914

Int. Cl.³ B32B *3/30*

U.S. Cl. 428—132 **15 Claims**



1. A sheet of material having a longitudinal axis and a transverse axis lying in a common plane, said material comprising alternating first and second strips extending along one of said axes and interconnected at spaced intervals along said one axis by lands lying in said common plane, each strip including portions between adjacent lands displaced from said common plane with all such portions of each of said first strips being formed to lie to one side of said common plane and all such portions of each of said second strips being formed to lie to the other side of said common plane.

4,522,861

PHOSPHORESCENT TREAD PLATE AND COMPOSITION

Charles L. Dunsworth, Midwest City, Okla., assignor to Metalines, Inc., Oklahoma City, Okla.

Filed Aug. 22, 1983, Ser. No. 524,978

Int. Cl.³ B32B *23/02*

U.S. Cl. 428—192 **4 Claims**

1. A phosphorescent, highly wear resistant composition comprising:

a mixture of approximtely one part zinc sulfide mixed with copper phosphorescent pigment, four parts bleached aluminum oxide, and a minimal amount of silicon carbide placed in deposition in combination with an epoxy resin hardened by a catalyst.

4,522,862

HIGH RESOLUTION RECORDING MEDIUM AND METHOD FOR PRODUCING SAME

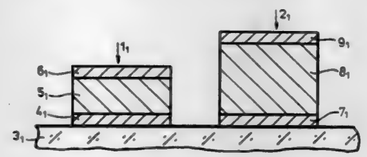
Erich Bayer, Trosberg; Anton Beckerbauer, Nussdorf; Georg Flatscher, Schneizlreuth, and Martin Ullrich, Ruhpolding, all of Fed. Rep. of Germany, assignors to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Nov. 30, 1982, Ser. No. 445,557

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1981, 3147985

Int. Cl.³ B32B *3/00;* **G03C** *5/00*

U.S. Cl. 428—195 **18 Claims**



1. In a recording medium for a multicolor high resolution pattern, said medium having a substrate which supports at least two pattern-forming layer packs, each comprising a filter such that each layer pack defines a respective color, the improvement comprising:

at least one of said layer packs comprising at least an interference filter having a pattern forming interference layer patterned in the pattern of the interference filter of the respective one of the layer packs, said pattern forming interference layer extending over only a part of the substrate, only in a region defined by the pattern of the interference filter;

at least the pattern forming layers of a first filter included in a first one of the layer packs being applied to the substrate locally separated from and prior in time to the pattern forming layers of a second filter included in a second one of the layer packs.

4,522,863

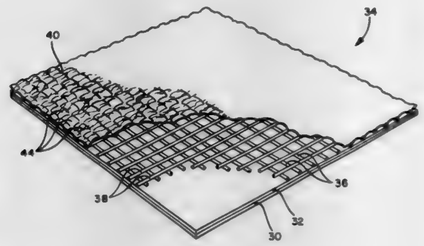
SOFT NONWOVEN LAMINATE BONDED BY ADHESIVE ON REINFORCING SCRIM

Daniel H. Keck, Woodstock; Ralph V. Braun, Roswell, and Mark B. Majors, Duluth, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 21, 1984, Ser. No. 105,273

Int. Cl.³ B32B *5/26, 7/14*

U.S. Cl. 428—196 **12 Claims**



1. An improved nonwoven fabric laminate comprising, in combination:

(a) a tissue layer having a basis weight in the range of from about 30 to 37 gsm including at least one tissue ply and said layer having a Frazier porosity in the range of from about 12 to about 30 CFM;

(b) a primary strength bearing layer comprising a scrim including crossed filaments having applied thereto a heat reactable plastisol adhesive; and

(c) a layer of microfibers having an average diameter of less than about 10 microns and a basis weight in the range generally from about 13.6 g/m^2 to 25.4 g/m^2;

said combination including the scrim layer between the tissue and the microfiber layers and being bonded by means of said heat reactable plastisol adhesive applied to the scrim so that windows of substantially unbonded fibers are formed between the scrim filaments.

4,522,864

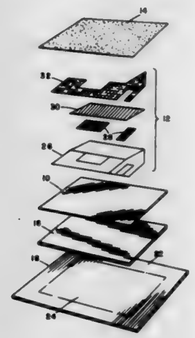
DECALS AND PROCESS FOR MAKING SAME

Dan C. Humason, 1973 La Corta St., Lemon Grove, Calif. 92045; Mayleta Buchwitz, 124 Southern Rd., El Cajon, Calif. 92020, and Theodore E. Higgins, El Cajon, Calif., assignors to Dan C. Humason, Lemon Grove and Mayleta Buchwitz, El Cajon, both of, Calif.

Continuation-in-part of Ser. No. 72,907, Sep. 6, 1979, abandoned. This application Sep. 2, 1980, Ser. No. 183,217

Int. Cl.³ B32B *3/00;* **B44C** *1/16;* **C09J** *7/02*

U.S. Cl. 428—201 **6 Claims**



1. A multi-color decal comprising a porous paper backing, a water soluble slip layer on one surface of said paper, a mircroscopically thin, flexible, extensible, water resistant film covering said slip layer, a very thin translucent multi-color design offset printed on said water resistant film and a uniform layer of transparent or translucent pressure sensitive adhesive covering said design.

6. A process for producing a multi-color decal suitable for application to the skin comprising the steps of:

(a) coating one side of a porous decal paper backing with a water-soluble slip layer;

(b) coating the water-soluble slip layer with a very thin, flexible, extensible, water-resistant film;

(c) offset printing a multi-color design on the water-resistant film; and

(d) coating the design with a transparent, pressure sensitive adhesive;

the slip layer being limited to the general area to be covered by the design and the water-resistant film covering substantially the entire area of one surface of the decal paper.

4,522,865

HOT PRESS-FORGING OF AN OPTICAL BODY WITH DYNAMIC CONSTRAINT BY CRYSTAL POWDER

Herbert Packer, Cleveland Heights, Ohio, assignor to Harshaw/Filtrol Partnership, Cleveland, Ohio

Division of Ser. No. 280,923, Jul. 6, 1981, Pat. No. 4,410,468. This application Aug. 18, 1983, Ser. No. 524,258

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—212 **2 Claims**

1. A polycrystalline press-forged composite, comprising

(a) a central zone of an optically integral fully dense and homogeneous polycrystalline body being transparent in at least a portion of the wave length range from about 0.2 to about 30 microns, said body composed of a normally frangible material selected from the group consisting of an alkali metal halide, an alkaline earth metal halide, and an optical oxide, said body derived from an ingot or an extrudate and prepared by pressing the ingot or extrudate to obtain a deformation ratio greater than 1.0, and

(b) an outer zone surrounding said central zone and consisting of a cluster of compacted hot-pressed crystals having a density in excess of 98% of the fully dense central zone, said crystals having a particle size in the range of 20 microns to 250 microns and having essentially the same thermal coefficient of expansion as said material in the central zone.

4,522,866

ELASTOMER MEMBER WITH NON-TACKY SURFACE TREATING LAYER AND METHOD OF MANUFACTURING SAME

Masaji Nishikawa, Hachioji; Takeji Takagi, Machida, and Masao Ueki, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Mar. 3, 1982, Ser. No. 354,359

Claims priority, application Japan, Apr. 23, 1981, 56-61584

Int. Cl.³ B32B *7/12, 27/40;* **G03G** *15/20;* **B21B** *31/08*

U.S. Cl. 428—216 **9 Claims**



1. An elastomer member with non-tacky surface treating

layer which may be used in a developing station, a transfer station or a conveying station of an electrophotographic copying system where deposition of toner is likely, consisting essentially of:

a base of a material which resists deformation having on its surface a base elastomer member which exhibits rubber-like elasticity at room temperature;

an elastic adhesive layer applied to the surface of the base elastomer member, the elastic adhesive layer having a thickness of from 3 to 15 microns and formed of a polyurethane rubber which bonds to the base elastomer member and exhibits a uniform rubber-like elasticity;

and a non-tacky surface treating layer comprising a dispersion of fine powder of fluorocarbon polymer in a binder resin which exhibits resistance to an organic solvent and applied to the surface of the adhesive layer.

4,522,867

BIAXIALLY ORIENTED POLYAMIDE FILM

H. Wayne Hill, Jr., and Jerry O. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 23, 1983, Ser. No. 525,752
Int. Cl.³ B32B *27/34, 3/20;* B28C *17/02*
U.S. Cl. 428—220 **19 Claims**

1. An amorphous biaxially-stretched film having a thickness in the range of about 0.02 mm to about 0.3 mm formed from an essentially amorphous polyamide which is the product of the condensation polymerization of 2,2-bis(4-aminocyclohexyl)-propane with a mixture of adipic acid and azelaic acid.

14. A process for preparing an amorphous film having a glass transition temperature of from about 174° C. to about 185° C., a haze value of below about 1.5 percent and a tensile strength of at least about 100 MPa, the process comprising

extruding an amorphous polyamide which is the product of the condensation polymerization of adipic acid, azelaic acid and 2,2-bis(4-aminocyclohexyl)propane into a sheet; and

biaxially orienting the extruded sheet at a temperature in the range of about 5° C. to about 20° C. above the sheet glass transition temperature of the polyamide and at a draw ratio of at least about 1.5 in each direction.

4,522,868

NEUTRON-SHIELDING FABRIC AND COMPOSITE FIBER AND METHOD OF MANUFACTURE THEREOF

Shigehiro Ohuchi, Otsu, and Masao Kataoka, Kusatsu, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,450
Claims priority, application Japan, Feb. 1, 1980, 55-9944; Aug. 14, 1981, 56-126694
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—224 **9 Claims**

1. A neutron shielding composite fiber comprising

(a) a core component of fiber-forming polymer (A) containing at least 5 weight percent of an isotope compound in particles with maximum diameters of 25 microns, capable of shielding against thermal neutrons, and

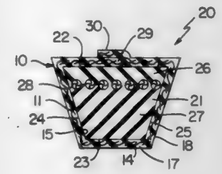
(b) a sheath component of a fiber-forming polymer (B) which is capable of bonding to said fiber-forming polymer (A).

4,522,869

POLYMERIC-COATED FABRIC LAYER, PRODUCT UTILIZING THE LAYER AND METHOD OF MAKING THE SAME

John F. Anderson, Jr., Springfield, Mo., and Delmar D. Long, Rock Hill, S.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 5, 1983, Ser. No. 482,363
The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—245 **20 Claims**



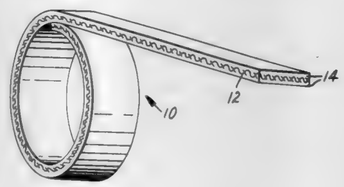
1. In a polymeric belt construction comprising a polymeric belt body and a polymeric-coated fabric layer means secured to a surface of said polymeric belt body, said fabric layer means comprising a fabric layer having opposed sides, and a layer of polymeric material secured to one of said sides of said fabric layer and having an outer surface facing away from said fabric layer and being secured to said surface of said polymeric part of belt body by a heat curing operation on said belt body and said layer in the assembled relation thereof, the improvement wherein said polymeric layer comprises a foamed polymeric layer whereby said outer surface thereof readily conforms to said surface of said belt body to improve the bond therebetween during said heat curing operation thereof.

4,522,870

LINERLESS DOUBLE-COATED PRESSURE-SENSITIVE ADHESIVE TAPE

Donald L. Esmay, Coon Rapids, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 439,047, Nov. 3, 1982,. This application Apr. 4, 1983, Ser. No. 481,813
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—252 **12 Claims**



1. A linerless double-coated pressure-sensitive adhesive tape comprising a flexible support, at each face of which is a pressure-sensitive adhesive, which tape can be wound directly upon itself into a roll that can later be unwound without delamination or offsetting of adhesive, wherein the improvement comprises: each pressure-sensitive adhesive layer

(a) is a polymerized product of a predominantly alkyl acrylate composition, the alkyl groups of which have an average of 4–12 carbon atoms, each said composition being physically compatible with the other,

(b) is substantially solvent-free,

(c) contains a photoinitiator,

(d) is crosslinked, and

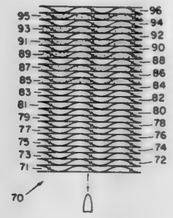
(e) affords at each face a 180° Peelback Value of at least 10 N/dm.

4,522,871

BALLISTIC MATERIAL FOR FLEXIBLE BODY ARMOR AND THE LIKE

Richard A. Armellino, Jr., 30 Barkers La., Huntington Station, N.Y. 11746, and Stephen E. Armellino, 27 Florence Point Dr., Fernandina Beach, Fla. 32034

Continuation of Ser. No. 260,329, May 4, 1981, abandoned. This application Apr. 6, 1983, Ser. No. 482,414
Int. Cl.³ B32B *5/00, 27/00;* F41H *5/08*
U.S. Cl. 428—252 **12 Claims**



1. A ballistic material suitable for use in flexible body armor, wall coverings and liners, curtains and draperies, said material comprising, from the outer protective side to the inner side of said material, at least three plies of ballistic cloth woven of aramid fibers and each individually impregnated with resorcinol formaldehyde latex means, at least nine plies of non-impregnated ballistic cloth woven of aramid fibers, and a ply of ballistic cloth woven of aramid fibers and impregnated with resorcinol formaldehyde latex means.

4,522,872

INDUSTRIAL FABRICS

Charles N. Berczi, Ormskirk, and Karen Hall, Bury, both of England, assignors to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 367,413, Apr. 12, 1982,. This application Apr. 25, 1983, Ser. No. 488,346
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—257 **2 Claims**

1. An industrial fabric comprising warp and weft yarns of textured, continuous man-made filaments in a plain woven construction, said fabric having applied to it a flame-retardant finish provided on said fabric in an amount sufficient to provide flame-retardant properties to said finish, said finish comprising per 100 parts of dry solids the following components: forty to 55 parts of decabromodiphenyl oxide; 15 to 30 parts of zinc borate and from 15 to 30 parts of a binder selected from a group consisting of a self-cross-linkable acrylic/vinylidene chloride copolymer and an acrylic polymer cross-linked with melamine- or urea-formaldehyde and 0.25 to 20 parts of conductive carbon.

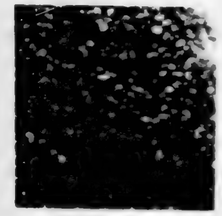
4,522,873

FIBROUS STRUCTURE HAVING ROUGHENED SURFACE

Takao Akagi; Shinji Yamaguchi, both of Kurashiki, and Akira Kubotsu, Soja, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Feb. 28, 1984, Ser. No. 584,331
Claims priority, application Japan, Feb. 28, 1983, 58-33301; Apr. 15, 1983, 58-67511; May 16, 1983, 58-86250
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—283 **2 Claims**

1. A fibrous structure having a roughened surface formed by projections containing fine particles and concave portions therebetween, wherein at least the surface layer of the fibers has irregularities therein whose structure is such that the distance between the adjacent projections is 0.01 to 0.7 micrometer and the total area of the concave portions is 0.1 to 0.8 square micrometer in 1 square micrometer of the irregularities.

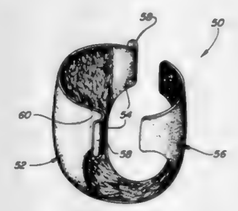


4,522,874

ABSORBENT ARTICLE STRUCTURE AND ABSORBENT ARTICLE

Philippe J. Pommez, Cassio da Costa Vidigal St. - 27 - 4th Floor, Sao Paulo, Brazil

Filed May 24, 1984, Ser. No. 613,492
Claims priority, application Brazil, Jun. 29, 1983, 8303466
Int. Cl.³ C08K *5/01*
U.S. Cl. 428—284 **6 Claims**



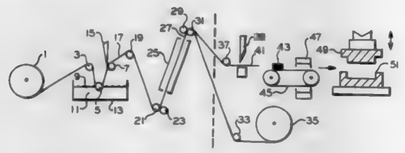
1. An absorbent article structure, comprising a liquid-permeable, internal layer (**10**), an absorbent, intermediate layer (**20**) and a liquid-impervious, outer layer (**30**), wherein the liquid-impervious layer (**30**) comprises an inherently-porous paper length (**32**) the outer surface of which is impregnated with a coat (**34**) of a selective adhesive which only adheres to itself, the adhesive coat (**34**) being comprised of an aqueous ammoniacal emulsion having about 60 percent solids and about 0.003 percent ammonia, the solids content in the emulsion comprising about 85 percent poly-cis-isoprene and about 15 percent of a mixture of polymers of vinyl acetate and n-butyl acrylate.

4,522,875

STAMPABLE SHEETS OF BONDED LAMINATE OF METAL SHEET AND FIBER MAT REINFORCED POLY(ARYLENE SULFIDE) AND METHOD OF PREPARATION USING RADIO FREQUENCY ENERGY

Robert D. Still, Jr., and Paul J. Boeke, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 30, 1983, Ser. No. 538,069
Int. Cl.³ B32B *15/00, 17/00, 27/06*
U.S. Cl. 428—285 **41 Claims**



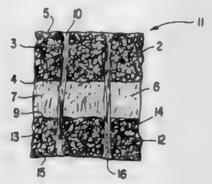
1. A porous composite of fibrous reinforcing mat surrounded by a discontinuous matrix forming a fused coating of the fibrous mat said matrix comprising poly(arylene sulfide) and a radio frequency energy sensitizer.

4,522,876

INTEGRAL TEXTILE COMPOSITE FABRIC

John J. Hiers, Elkin, N.C., assignor to Lydall, Inc., Manchester, Conn.

Filed Jul. 5, 1984, Ser. No. 627,688
Int. Cl.³ B32B *15/00*
U.S. Cl. 428—285 **26 Claims**



1. An integral textile composite fabric of non-woven, needled textile fibers comprising:

(a) at least one organic textile fiber layer of laid and needled textile organic fibers, said layer having an inner and an outer surface;

(b) at least one glass fiber layer of laid and needled glass fibers, said layer having an inner and outer surface;

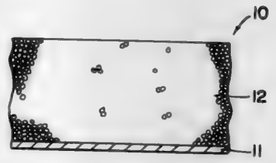
(c) a plurality of first needled stitches composed essentially of said organic fibers from said one organic fiber layer needled in and disposed substantially through said one glass fiber layer while the fibers of the said glass fiber layer are substantially undisturbed, whereby the said stitches bind the said layers together at their inner surfaces, the said layers are substantially non-detachable from each other and form an integral textile composite fabric having substantially uniform and high physical properties, and wherein there are at least 700 stitches per square inch of said binding stitches passing through said one glass fiber layer and wherein said one organic fiber layer is essentially free, at least on the outer surface thereof, of glass fibers displaced from said one glass fiber layer.

4,522,877

EXTRACTION OF POLYOXYALKYLENE SURFACTANTS FOR PHENOLIC FOAM STABILIZATION

Richard L. Frentzel, and Ernest K. Moss, both of Clearwater, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 542,803, Oct. 17, 1983, which is a division of Ser. No. 278,139, Jun. 29, 1981, Pat. No. 4,412,014, which is a continuation of Ser. No. 113,909, Jan. 21, 1980, abandoned. This application Nov. 13, 1984, Ser. No. 670,785
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—304.4 **17 Claims**



1. A laminated structural panel having at least one facing sheet and having a foam material adhering to the facing sheet wherein the foam material comprises the reaction product of:

A. phenol-aldehyde resin foam forming reactants,

B. a blowing agent, and

C. a surfactant which is the major component of a free radical polymerization, said major component being obtained by the steps of:

(1) reacting together a cyclic nitrogenous vinyl monomer and an esterified unsaturated dibasic acid by free radical polymerization in the presence of a polyoxyalkylene adduct having the formula

H—polyoxyalkylene chain)$_t$R,

wherein R is an organic or inorganic radical and t is the number of polyoxyalkylene chains reacted onto R, said polyoxyalkylene adduct optionally being treated either before or after said polymerization with a capping agent capable of reacting with the hydroxyl groups of said adduct to reduce the hydroxyl number of said adduct to less than 50,

whereby a reaction product is obtained which can be used as a surfactant in the formation of phenolic foams, said step (1) reaction product comprising said major component and a minor component, the capacity of said major component for stabilizing phenolic foams being greater than that of said total step (1) reaction product; and

(2) separating from said step (1) reaction product by any conventional method said major and minor components thereof.

4,522,878

MATERIAL HAVING HIGH MECHANICAL STRENGTH AND DENSITY CLOSE TO UNITY, THE MANUFACTURE AND USES THEREOF

Madeleine Martin, Chatou; Jean Lesage, Maurepas Elancourt; Gérard Courbin, Grigny, and Alain Rivereau, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 28, 1984, Ser. No. 594,047
Claims priority, application France, Mar. 28, 1983, 83 05186
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—313.7 **14 Claims**

1. A material with high mechanical strength and a density of about 0.70 to 1.15 g/cm^3, characterized in that it is obtained by a process which consists essentially of:

a step (a), in which a composition consisting essentially of melamine-formaldehyde resin, hollow microspheres having an apparent density of about 200 to 450 kg/m^3 and being other than clay or schist and light aggregates having

an apparent density of about 0.75 to 1.1 g/cm^3 and being selected from the group consisting of expanded clay and expanded schist is dispersed in water, the proportions of the constituents used range from 10 to 50% by weight, for the melamine-formaldehyde resin, from 10 to 50% by weight for the hollow microspheres and less than 60% by weight for the light aggregates,

a step (b), in which the dispersion thus formed is mixed, in the presence of a cross-linking catalyst for the melamine-formaldehyde resin, until a fluid paste is obtained;

a step (c), in which said fluid paste is allowed to harden at a temperature from 5° C. to 60° C. into the desired material.

4,522,879

TWO-PACKAGE URETHANE MAINTENANCE PRIMER

Achim R. Krueger, Cherry Hill, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 314,972, Oct. 26, 1981, abandoned. This application Jan. 26, 1984, Ser. No. 574,250
Int. Cl.³ B32B *5/16;* **C08K** *5/04;* **C09D** *3/72*
U.S. Cl. 428—323 **34 Claims**

1. A stable dispersion comprising at least one inert anhydrous organic solvent containing at least 55% by weight of solids of:

a binder formed from at least one polymeric polyol having 1–10% by weight of hydroxyl, a number average molecular weight of about 500–10,000 and a solubility of at least 30% by weight in the solvent; and

a pigment mixture containing (1) at least 20% by weight of a pigment in the form of platelets, (2) about 1–5% by weight of carbon black, and (3) about 1–5% by weight of barium lanolate,.

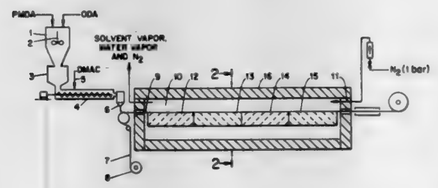
the pigment/binder weight ratio of said solids being in the range 60/100–600/100.

4,522,880

THICK POLYIMIDE-METAL LAMINATES WITH HIGH PEEL STRENGTH

Werner Klostermeier, Klingenberg, Fed. Rep. of Germany; Jeffery D. Lasher, Tolland, Conn.; Gerhard Meyer, Obernburg, and Hans Zengel, Kleinwallstadt, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Enka, N.C.

Filed Sep. 21, 1983, Ser. No. 534,223
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1983, 3301197
Int. Cl.³ B32B *15/08, 27/08;* **B28B** *3/20;* **B05D** *3/02*
U.S. Cl. 428—332 **18 Claims**



1. A planar, flexible laminate comprising a plenol-insoluble, intractable fully aromatic polyimide mono-layer and a supporting substrate; said substrate being either metallic foil, wire or cable, sheet metal or a formed polymeric fiber, film or sheet; wherein said polyimide layer is directly adhered to said substrate with a peel strength greater than 4.0 N/cm, said polyimide being insoluble in phenolic solvents, the polyimide layer having a tensile strength of at least about 100 N/mm^2 and a tensile elongation of 15 to 100 percent and a dissipation factor of from 1.5×10^{-3} to 5×10^{-3}, at 1 Khz.

2. The laminate of claim **1** wherein the thickness of said polyimide layer is from 10 μm to 1 mm.

4,522,881

COVER FILM FOR COLOR HARD COPY PRINTING PAPER

Naotake Kobayashi; Tetsuya Abe, and Yoshio Fujiwara, all of Utsunomiya, Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP83/00064, § 371 Date Oct. 31, 1983, § 102(e) Date Oct. 31, 1983, PCT Pub. No. WO83/03080, PCT Pub. Date Sep. 15, 1983
PCT Filed Mar. 1, 1983, Ser. No. 552,037
Claims priority, application Japan, Mar. 2, 1982, 57-32612
Int. Cl.³ B41M *5/26*
U.S. Cl. 428—336 **6 Claims**



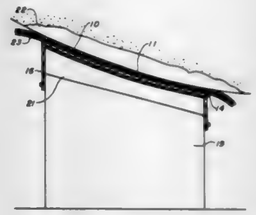
1. A cover film for a color hard copy printing paper comprising a heat-resistant base and a cover material layer including a colorless and transparent ultraviolet ray shielding layer which is formed on said heat-resistant base and has no adhesive property upon heating for said heat-resistant base and is capable of being melted and bonded to a surface of a printing paper by heating.

4,522,882

METHOD AND APPARATUS FOR COATING SUBMERGED PORTIONS OF FLOATING STRUCTURES

Herman S. Preiser, Severna Park; Arthur Ticker, Bowie, both of Md., and Kenneth J. Hatley, Madison, N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 314,330, Oct. 23, 1981, Pat. No. 4,420,533. This application Sep. 19, 1983, Ser. No. 533,702
Int. Cl.³ C09J *7/02*
U.S. Cl. 428—351 **5 Claims**



1. A multilayered expanded compressible structure for use in coating the surface areas of a ship hull which are rendered inaccessible by docking blocks when the ship hull is directly supported thereon in dry dock, comprising:

a compressible first tape layer for attachment to a ship hull, adhesive means on one face of the tape structure for attaching the first tape layer to the ship hull;

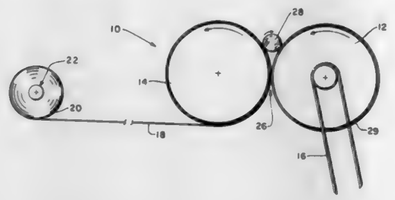
a second tape layer for attachment to supporting surfaces of the docking blocks, compressible means interspersed between the first and second tape layers for providing ease of separation between the tape layers and to accomodate sliding movements therebetween as the ship hull settles onto the docking blocks, and means for attaching the second tape layer to the docking blocks, and said first tape layer comprises an elastomeric matrix containing a two component system of resin-filled and activator-filled microspheres which fracture and mix together as the ship hull settles onto the docking blocks, said elastomeric matrix material, resin, and activator thereby combine to produce a coating layer which cures on the hull surface.

4,522,883

CIRCUMFERENTIALLY WRAPPED CARBON-CARBON STRUCTURE

Gary A. Wallace, and James E. Zimmer, San Jose, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 9, 1984, Ser. No. 578,335
Int. Cl.³ B64G *1/58*
U.S. Cl. 428—365 **10 Claims**



1. A method for fabricating a carbon-carbon nosetip preform for a re-entry vehicle which comprises the steps of:
a. providing a woven carbon fabric;
b. providing at least two uniaxial rods, each rod consisting essentially of a plurality of uniaxial carbon yarns and a resin binder;
c. gripping the leading edge of said fabric between said rods;
d. circumferentially winding said fabric around said rods under a desired tension to a desired diameter to form a roll;
e. securing the trailing edge of said fabric to prevent unwinding of said fabric;
f. impregnating said roll with pitch;
g. carbonizing the thus-impregnated roll;
h. graphitizing and thus-carbonized roll;
i. repeating said impregnating, carbonizing and graphitizing steps as necessary to achieve a desired material density.

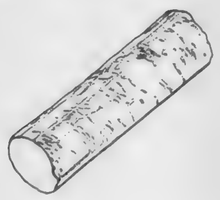
6. A carbon-carbon composite structure consisting essentially of a central core, a plurality of layers of circumferentially wrapped woven carbon fabric, and a carbon binder, wherein said central core consists essentially of a plurality of longitudinally oriented carbon fibers.

4,522,884

PROCESS OF MELT SPINNING POLYPROPYLENE AND NOVEL ROUGH SURFACED FIBRES PRODUCED THEREBY

Harry Brody, Harrogate, England, assignor to Imperial Chemical Industries PLC, Hertfordshire, England

Continuation-in-part of Ser. No. 268,252, May 29, 1981, Pat. No. 4,442,266. This application Apr. 2, 1982, Ser. No. 365,024
Claims priority, application United Kingdom, May 13, 1981, 8114626; European Pat. Off., Mar. 19, 1982, 82301422.0
The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—400 **4 Claims**



1. Fibres of polypropylene having a rough surface containing a small proportion of a polymer capable of forming an anisotropic melt in the temperature range at which polypropylene may be melt spun.

4,522,885

MAGNETIC RECORDING MEDIUM

Masaya Funahashi, Osaka; Kenichi Inoue, Muko, and Kunio Mizushima, Toride, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Feb. 10, 1984, Ser. No. 579,169
Claims priority, application Japan, Feb. 12, 1983, 58-21935; Feb. 19, 1983, 58-26693; Feb. 19, 1983, 58-26694
Int. Cl.³ G11B *5/70, 5/82*
U.S. Cl. 428—422 **12 Claims**

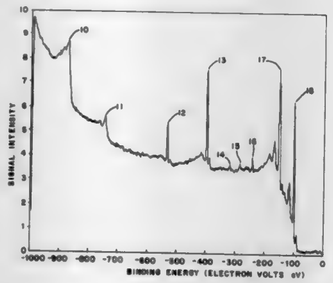
1. A magnetic recording disc which comprises a disc substrate and a magnetic layer comprising magnetic powder and a resinous binder formed on the substrate, characterized in that the magnetic layer further comprises at least one lubricant chosen from hydrocarbons, fluorinated compounds and silicone compounds and at least one unsaturated fatty acid ester chosen from oleyl oleate and n-butyl oleate, the combined amount of the lubricant and the unsaturated fatty acid ester being from 0.1 to 40% by weight to the amount of the magnetic powder.

4,522,886

METHOD OF ION BEAM SYNTHESIS OF THIN SILICON NITRIDE FILMS AND RESULTING ARTICLES

Roland L. Chin, Williamsville, and Susan A. Ferguson, W. Seneca, both of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 9, 1984, Ser. No. 659,147
Int. Cl.³ B32B *9/04*
U.S. Cl. 428—446 **14 Claims**



1. A method of synthesizing a thin insulating film on a silicon substrate which comprises:
(a) cooling the substrate
(b) selectively absorbing ammonia on the cooled substrate; and
(c) while still in the cooled condition, directing a fine ion beam of a noble gas on the ammonia treated substrate of step (b) to produce thereon the desired pattern of silicon nitride.

4,522,887

LAMINATED FILM OF BIAXIALLY ORIENTED POLYPROPYLENE AND AN OLEFIN POLYMER FILM

Mamoru Koebisu, Moriyama; Masayuki Shinzawa, Ohtsu, and Masatsugi Murakami, Moriyama, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 19, 1984, Ser. No. 590,611
Claims priority, application Japan, Apr. 18, 1983, 58-66945; Jul. 11, 1983, 58-124842
Int. Cl.³ B32B *15/08, 27/08;* B65D *65/00*
U.S. Cl. 428—461 **14 Claims**

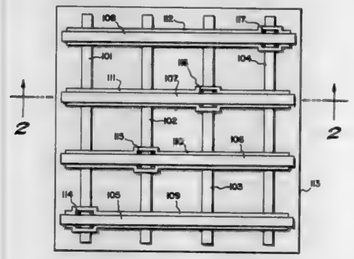
1. A laminated film comprising a biaxially oriented polypropylene film (A) having an olefin polymer film (B) laminated on at least one surface thereof, said olefin polymer film (B) comprising 10 to 50% by weight of an ethylene component, the balance mainly comprising a propylene component, and having at least three peaks in the melting curve within the range of from 120° to 165° C. and a surface roughness Ra of from 0.2 to 1.5 μ.

4,522,888

ELECTRICAL CONDUCTORS ARRANGED IN MULTIPLE LAYERS

Charles W. Eichelberger, Schenectady, and Robert J. Wojnarowski, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 220,341, Dec. 29, 1980, Pat. No. 4,416,914. This application May 25, 1983, Ser. No. 497,977
Int. Cl.³ C23C *3/02;* H05K *3/00*
U.S. Cl. 428—546 **19 Claims**



1. A multi-layer electrical conductor pattern adhered to an insulative substrate surface, comprising: a first conductor pattern fabricated upon said substrate surface; a layer of dielectric material covering at least part of said first conductor pattern; and a second conductor pattern comprising; a first polymer adhering to at least a portion of said dielectric layer and at least a portion of said first conductor pattern; a finely divided first metallic composition having a particle size greater than about 3 microns and less than about 50 microns and a second metal, both contained within said first polymer; and a contiguous layer of said second metal on said first polymer, wherein said second metal is more noble than the metal of said first metallic composition.

4,522,889

LIGHTNING PROTECTION COMPOSITE MATERIAL

Harold Ebneth, Leverkusen; Gerhard D. Wolf, Dormagen, and Henning Giesecke, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 12, 1984, Ser. No. 570,127
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1983, 3301669
Int. Cl.³ H05F *1/02*
U.S. Cl. 428—614 **12 Claims**

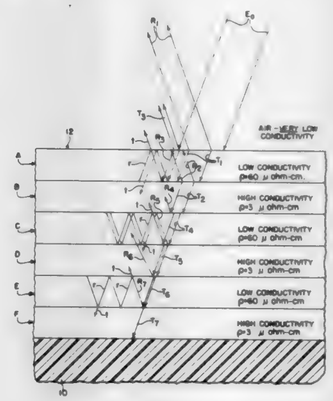
1. A lightning protection composite material comprising a metallised textile sheetlike structure embedded in a plastics matrix, the sheetlike structure comprising C-containing fibre material to which have been applied in succession at least two, metal layers having a total surface resistance of less than 1 Ohm at least one metal layer is nickel and at least on metal layer is cooper.

4,522,890

MULTILAYER HIGH ATTENUATION SHIELDING STRUCTURE

Jack C. Volkers, and William R. Conley, both of Elgin, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 328,987, Dec. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 89,435, Oct. 31, 1979, abandoned. This application Oct. 11, 1983, Ser. No. 540,106
Int. Cl.³ B21D *39/00;* H01Q *17/00*
U.S. Cl. 428—624 **7 Claims**



1. The combination of an electrically nonconductive substrate and a composite electro-magnetic shield structure, said shield structure disposed on one side of said substrate for shielding the opposite side of said substrate from electro-magnetic interference, said structure comprising a plurality of thin layers of conductive material, wherein each successive layer alternates from one having a relatively low skin depth and low electrical conductive resistivity to one having a relatively high skin depth and high electrical conductive resistivity and wherein the layers having a relatively low skin depth have a thickness of no less than the thickness of that particular material at its point of opacity in the radio frequency range.

4,522,891

SUPPORT FOR LITHOGRAPHIC PRINTING PLATE

Akio Iwaki; Norihito Suzuki; Takeshi Yamamoto, and Toru Aoki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1983, Ser. No. 501,156
Claims priority, application Japan, Jun. 18, 1982, 57-105726
Int. Cl.³ B41K *1/50;* B41N *1/14*
U.S. Cl. 428—626 **17 Claims**

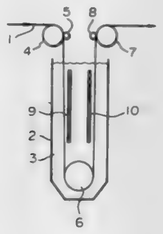
1. A support for a lithographic printing plate having provided on an iron material (i) a layer substantially consisting of at least one material selected from the group consisting of chromium and chromium oxide and (ii) a layer on said layer (i) consisting essentially of (i') a water soluble polymeric compound and (ii') at least one salt selected from the group consisting of the water soluble salts of calcium, magnesium, zinc, barium, strontium, cobalt, manganese, nickel and silicon.

4,522,892

METHOD FOR PRODUCING A STEEL STRIP HAVING AN EXCELLENT PHOSPHATE-COATING PROPERTY

Yoshio Shindow; Masaya Tsutsumi; Wataru Hotta, and Yujiro Miyauchi, all of Kimitsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 8, 1983, Ser. No. 482,969
Claims priority, application Japan, Apr. 17, 1982, 57-64586
Int. Cl.³ C25D *11/36*
U.S. Cl. 428—628 **9 Claims**



1. A method for producing a steel strip having one steel surface thereof exhibiting an excellent phosphate-coating property and the other surface thereof electroplated with a zinc-containing metallic material, comprising subjecting a steel strip having one steel surface and the other surface thereof electroplated with a zinc-containing metallic material to an electrolytic treatment in which said steel surface of said steel strip is brought into contact with an aqueous solution containing at least one phosphate selected from the group consisting of alkali metal phosphates and ammonium phosphate and having a concentration of phosphoric anions of 0.05 mole/l or more and a pH of from 4 to 7, the steel surface portion of said steel strip serves as an anode, the electrical potential of said anode is adjusted to a level at which the iron in the steel strip enters an overpassive state and the anode current density is adjusted to 2 A/dm^2 or more, to an extent that the steel surface of said steel strip is made clean and a phosphate surface layer is formed in an amount of from 0.0001 to 0.05 g/m^2 on the steel surface of said steel strip.

9. A steel strip produced by the method as claimed in any one of claims **1** to **8**, which steel strip has one steel surface thereof exhibiting an excellent phosphate-coating property and the other surface thereof electroplated with a zinc-containing metallic material.

4,522,893

CONTACT DEVICE FOR RELEASABLY CONNECTING ELECTRICAL COMPONENTS

Harald Bohlen, Boeblingen; Gerhard Kaüs, Moetzingen; Johann Greschner, Pliezhausen; Joachim H. Keyser, Wildberg, and Werner Külcke, Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

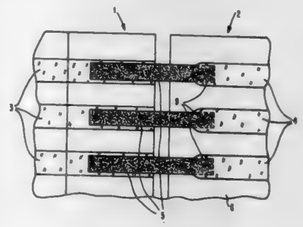
Filed Oct. 12, 1982, Ser. No. 433,611
Claims priority, application European Pat. Off., Oct. 30, 1981, 81109371.5
Int. Cl.³ H01J *17/00*
U.S. Cl. 428—641 **8 Claims**

1. A pressure contact connection structure for electrically connecting electrical components where each component has a series of closely spaced terminals along the edges of the top surface thereof comprising,

a series of parallel, protruding, spaced fingers extending outwardly from the top surface of the first of said components, said fingers formed of low resistively monocrystalline silicon and being integral with said first component, said fingers electrically connected to said terminals on said first component

an abutment surface on the second of said components that is depressed from said top surface,

a plurality of closely spaced terminals on the surface of said second component above said abutment surface, which terminal spacing corresponds to the spacing of said fingers,



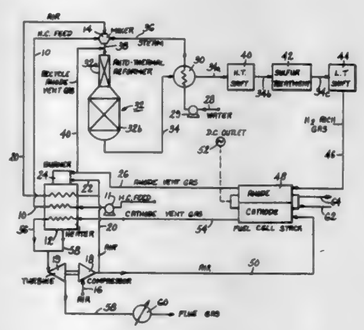
said first and second components assembled with a bottom surface of said first component in engagement with said abutment surface on said second component and said plurality of fingers in flexed engagement with said terminals on said second component.

4,522,894

FUEL CELL ELECTRIC POWER PRODUCTION

Herng-Shinn Hwang, Livingston; Ronald M. Heck, Frenchtown, and Robert M. Yarrington, Westfield, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 430,455, Sep. 30, 1982, abandoned. This application Apr. 13, 1984, Ser. No. 599,865
Int. Cl.³ H01M *8/04*
U.S. Cl. 429—17 **23 Claims**



1. A process for generating electricity from a fuel cell means, said fuel cell means comprising a stack of anodes and cathodes and having an anode side and a cathode side, each side dimensioned and configured for the passage of respective gas streams therethrough, said fuel cell means being fueled by a hydrogen-rich gas derived by treating a hydrocarbon feed in a reformer having first and second catalyst zones as defined below, the process comprising:

(a) preheating an inlet stream comprising a hydrocarbon feed, H_2O and air to a preheat temperature sufficiently high to initiate catalytic oxidation of said hydrocarbon feed as defined below;

(b) introducing the preheated inlet stream into the first catalyst zone comprising a monolithic body having a plurality of gas flow passages extending therethrough and containing a catalytically effective amount of palladium and platinum catalytic components dispersed therein, the amount of hydrocarbon feed, H_2O and air introduced into said first catalyst zone being controlled to maintain an H_2 O to C ratio of from at least about 0.5 to about 5 and an O_2 to C ratio of from about 0.3 to 0.4 in said inlet stream;

(c) contacting the preheated inlet stream within said first catalyst zone with said palladium and platinum catalytic components to initiate and sustain therein catalytic oxidation of said hydrocarbon feed to produce hydrogen and carbon oxides therefrom, the temperature of at least a portion of said monolithic body being at least about 250° F. (139° C.) greater than the temperature of said inlet stream, and oxidizing in said first catalyst zone a quantity, less than all, of said hydrocarbon feed, which quantity is sufficient (i) to attain a temperature within said first catalyst zone sufficiently high to crack substantially all unoxidized C_5 or heavier hydrocarbons, if any, therein to C_1 to C_4 hydrocarbons, and (ii) to heat such first zone effluent to a elevated temperature high enough to catalytcally steam reform, within a second catalyst zone defined below, the hydrocarbon remaining in such first zone effluent without supplying external heat thereto;

(d) passing the first zone effluent, while still at an elevated temperature, from said first catalyst zone to the second catalyst zone containing a platinum group metal steam reforming catalyst therein, and contacting the first zone effluent in said second catalyst zone with said steam reforming catalyst to react hydrocarbons therein with H_2O to produce hydrogen and carbon oxides therefrom;

(e) withdrawing the effluent of said secon catalyst zone as a hydogen-rich gas and passing said hydrogen-rich gas to the anode side of said fuel cell means;

(f) introducing an air stream to the cathode side side of said fuel cell means; and

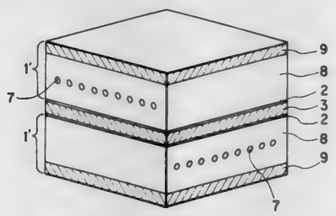
(g) operating said fuel cell means to generate therefrom output electricity, a hydrogen-containing anode vent gas, and a cathode vent gas.

4,522,895

MULTILAYER FUEL CELL ELECTRODE SUBSTRATE HAVING ELONGATED HOLES FOR FEEDING REACTANT GASES

Masatomo Shigeta; Hiroyuki Fukuda; Kuniyuki Saitoh, and Hisatsugu Kaji, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 535,913
Claims priority, application Japan, Oct. 5, 1982, 57-174960; Oct. 12, 1982, 57-178770; Nov. 24, 1982, 57-205628
Int. Cl.³ H01M *4/96*
U.S. Cl. 429—44 **14 Claims**



1. A carbonaceous electrode substrate for a fuel cell, comprising:

a dense layer having an average bulk density of not less than 1.0 g/cm^3 and a specific gas permeability of not more than 0.2 ml/cm. hr. mmAq;

a porous layer of a uniformly porous carbonaceous material having an average bulk density of not less than 1.0 g/cm^3 and a specific gas permeability; of 0.3–1.0 g/cm^3 and a specific gas permeability of not less than 20 ml/cm. hr. mmAq;

the thickness of said dense layer being not more than half of the thickness of said electrode substrate;

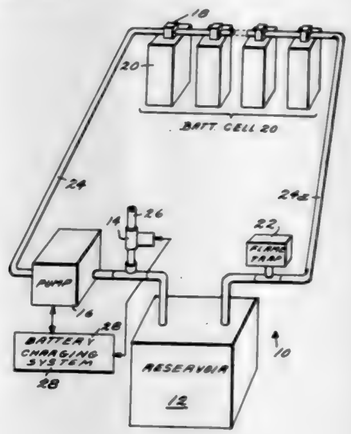
a plurality of holes extending between two parallel sides of said porous layer and parallel to the surface of said electrode substrate, said holes being provided near the center of the thickness direction of said porous layer and having a circular cross section.

4,522,896

AUTOMATIC WATERING SYSTEM FOR BATTERIES AND FUEL CELLS

Barry S. Iseard, Freeport, The Bahamas, assignor to Anglo-American Research Ltd., Freeport, The Bahamas

Filed Mar. 23, 1983, Ser. No. 478,091
Int. Cl.³ H01M *2/36*
U.S. Cl. 429—63 **3 Claims**



1. A watering system for a battery having at least one cell said system comprising:

an electrolyte reservoir;

at least one pump;

a respective watering cap associated with the watering aperture of each said cell;

a flame trap;

interconnecting means for selectively interconnecting said reservoir, said pump, each said respective watering cap, and said flame trap to form an essentially closed system;

said interconnecting means including gas purging means for selectively opening said closed system to the atmosphere, displacing electrolyte in said system outside of said cells with air and venting gases in said system through said flame trap;

each respective watering cap comprising:

a body, adapted for cooperation with said cell and including a hollow chamber,

an inlet and an outlet, communicating with said chamber and adapted for cooperation with said interconnecting means, said inlet and outlet having relatively large diameter;

an air displacement conduit having an upper portion extending into said chamber and a lower portion disposed to extend a predetermined distance into said cell, and

a watering conduit, communicating between said chamber and said cell, having a relatively small cross-sectional area.

4,522,897

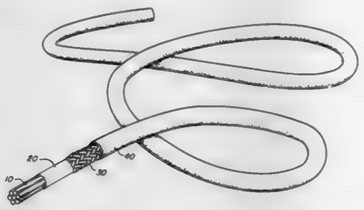
ROPE BATTERIES

Myles A. Walsh, Falmouth, Mass., assignor to Cape Cod Research, Inc., Buzzards Bay, Mass.

Filed Oct. 14, 1983, Ser. No. 541,902
Int. Cl.³ H01M *6/34*
U.S. Cl. 429—119 **15 Claims**

1. A structure for a rope battery employing sea water as the electrolyte comprising a flexible rope which is relatively long

compared to its diameter and which consists essentially of a flexible inner core, wherein said inner core comprises at least one continuous, flexible, solid wire, wherein said inner core is surrounded by a thin, porous, flexible insulating separator



sleeve which is in turn surrounded by a thin outer flexible layer consisting essentially of twisted, felted or braided strands of metal or graphite, and wherein said inner core consists essentially of corrodible material selected from the group comprising magnesium, aluminum, zinc, and alloys thereof.

4,522,898

HIGH-TEMPERATURE STORAGE BATTERY

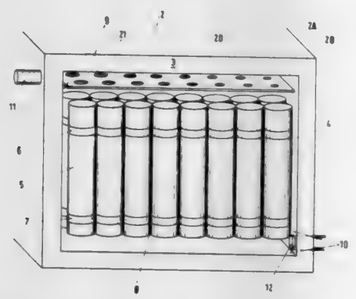
Hilmar Esrom, Bammental, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 563,023

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3247969

Int. Cl.³ H01M *2/00*

U.S. Cl. 429—120 **13 Claims**



1. High-temperature storage battery comprising a double-walled housing with insulating material between the two walls of the housing, at least one module disposed in the interior of the housing containing a plurality of storage cells with empty spaces between the storage cells, at least one distributor in the module for distributing a fluid cooling medium to the storage cells in the module, a feedline connected to the fluid cooling medium for the introduction of the cooling medium to the storage cells, said distributor arranged between the feedline of the cooling medium in the module and the upper ends of the storage cells, formed of a continuous plate provided with openings arranged above the empty spaces between the storage cells.

4,522,899

GAS AND LIQUID TIGHT POLE SEAL FOR ELECTRIC STORAGE BATTERIES, PARTICULARLY LEAD STORAGE BATTERIES

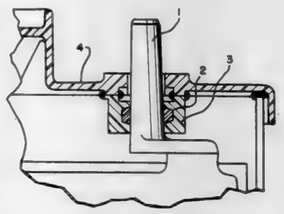
Joachim Illmann, and Klaus Gummelt, both of Garbsen, Fed. Rep. of Germany, assignors to Varta Batterei A.G., Hanover, Fed. Rep. of Germany

Filed Sep. 16, 1983, Ser. No. 532,704

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1982, 3236370

Int. Cl.³ H01M *2/08*

U.S. Cl. 429—181 **7 Claims**



1. For an electric storage battery having a pole shaft extending therefrom, particularly a lead storage battery having a case formed of plastic, a gas and liquid tight pole seal wherein a first, ring-shaped molding formed of an elastic thermoplastic synthetic surrounds the pole shaft, and a second molding formed of a less elastic plastic material completely surrounds the first molding.

4,522,900

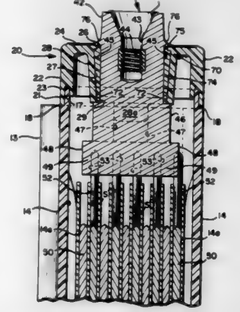
BATTERY CELL

Santiago Mejia, 525 N. Ocean Blvd., Apt. 1024, Pompano Beach, Fla. 33062

Filed Nov. 1, 1983, Ser. No. 547,626

Int. Cl.³ H01M *2/02*

U.S. Cl. 429—181 **10 Claims**



1. A battery cell, comprising:

(a) a battery case containing a plurality of battery plates and having a positive terminal and a negative terminal which extend through terminal receiving openings and are integral with the battery plates,

(b) the battery case having a terminal receiving assembly for each terminal at the terminal receiving opening which includes and a depending flange which is concentrically disposed with respect to the terminal receiving openings with a compressible seal which is pressed into tight sealing engagement with the battery terminal at the time the terminal is mounted into the receiving assembly,

(c) each terminal having an internal engaging element disposed along its central axis and accessible from the top of the terminal, and

(d) the upper outer external surface of the terminals being pliable and forming a locking fillet which extends radially outwardly over the casing upper surface adjacent the opening such that the terminal is held in firm locking engagement with respect to the terminal receiving assembly when the terminal is pulled upwardly into final locking position by means of the grasping element.

4,522,901

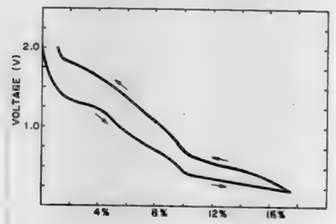
SECONDARY BATTERY CONTAINING ORGANOBORATE ELECTROLYTE

Lawrence W. Shacklette, Maplewood, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 475,995, Mar. 16, 1983, abandoned. This application Nov. 30, 1983, Ser. No. 556,721

Int. Cl.³ H01M *10/40*

U.S. Cl. 429—194 **30 Claims**



1. A secondary battery comprising:

(a) an electrolyte comprising a solution of a salt of the formula

$$MBR_{4-w-y-z}R'_wR''_yX_z$$

wherein M is an alkali metal, B is boron R is alkyl, R′ is aryl or alkyl-substituted aryl, R″ is a heterocycle, X is F, Cl, Br, I, CN, OCN, SCN, perfluoroalkyl, fluoroaryl or perfluoroalkyl-substituted aryl and w and y are integers of 0 to 4, and z is an integer of 0 to 4, provided that when X is solely F, Cl, I, Br, CN, OCN, SCN or perfluoroalkyl, z is not 4; with the sum w+y+z being equal to or less than 4;

(b) an anode containing a conjugated backbone polymer which, in a reduced state, has a potential of between about 0.1 V and about 0.5 V (relative to M/M^+) and

(c) a cathode which is separated from the anode.

4,522,902

POLYMERIC BATTERY SEPARATORS

Robert J. Minchak, Parma Heights, and William N. Schenk, Peninsula, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed May 14, 1984, Ser. No. 609,941

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—252 **19 Claims**

1. Battery separators comprising cross-linked block copolymers of haloalkyl epoxides and hydroxyl terminated alkadiene polymers, said block copolymers having the formula H-O-A_b-O-B-O-A_b-O-H wherein A represents residues of the haloalkyl epoxides, b is an integer of at least 3, B represents residues of the hydroxyl terminated alkadiene polymers, and at least 25 weight percent of the halogen atoms on the haloalkyl epoxide residues are in the form of alkylammonium halides of the formula $-N^+R_3X^-$ wherein X is the halogen atom and R is hydrogen or radicals containing 1 to 30 carbon atoms.

4,522,903

SEQUENTIAL AUTOMATIC REGISTRATION AND IMAGEWISE EXPOSURE OF A SHEET SUBSTRATE

Robert B. Heiart, Middletown, and Abraham B. Cohen, Springfield, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 11, 1982, Ser. No. 387,536

Int. Cl.³ G03F *9/00*

U.S. Cl. 430—22 **27 Claims**

1. A process of registering and imagewise exposing a sheet substrate containing a photosensitive layer with the use of a sequence of related photomasks comprising the steps of:

(1) advancing the substrate containing a photosensitive layer to a position in a device to undertake in either order or concurrently the steps of:

(a) aligning the substrate and a photomask of the sequence in a predetermined relationship to one another through a hinged relationship of the photomask and the substrate to permit substantially identical alignment of the substrate and each photomask of the sequence;

(b) applying a liquid between the photosensitive layer and the photomask;

(2) contacting through the liquid the substrate containing the photosensitive layer and the photomask wherein liquid between the photosensitive layer and the photomask is displaced when the substrate and photomask are brought into more intimate contact by an advancing pressure line whereby during said contacting substantially no movement of the photosensitive layer relative to the photomask occurs other than a more intimate contact due to displacement of the liquid in a liquid layer whereby at least one of interfacial or viscous force due to the liquid layer aids in holding the photosensitive layer and photomask in a fixed position relative to one another;

(3) exposing the photosensitive layer to actinic radiation through said photomask, causing an image to be formed thereon;

(4) removing the photomask from the exposed photosensitive layer;

(5) modifying the surface of the exposed photosensitive layer;

(6) repeating steps 1 to 5 for each of the remaining photomasks of said sequence.

4,522,904

ELECTROPHOTOGRAPHIC PROCESS

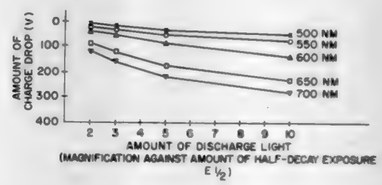
Hideki Kina; Toshiyuji Iijima, both of Nagano; Eizo Tanabe, Kanagawa; Toyoki Kazama, Kanagawa, and Masaharu Namba, Kanagawa, all of Japan, assignors to Fuji Electric Company, Ltd. and Fuji Electric Corporate Research & Development, Ltd., both of Kanagawa, Japan

Filed Sep. 23, 1982, Ser. No. 421,852

Claims priority, application Japan, Oct. 8, 1981, 56-160802; Oct. 8, 1981, 56-160803

Int. Cl.³ G03G *13/00*

U.S. Cl. 430—54 **10 Claims**



1. An electrophotographic process employing a photosensitive member having a layer of hydrogen-containing amorphous silicon comprising the steps of:

exposing the surface of the photosensitive member to a substantially uniform charge stabilization light composed

primarily of light having a wavelength above 600 nm at least once for charge stabilization treatment; and

thereafter effecting a series of image-producing operations without charge stabilization treatment.

4,522,905

AMORPHOUS SILICON PHOTOCONDUCTIVE MEMBER WITH INTERFACE AND RECTIFYING LAYERS

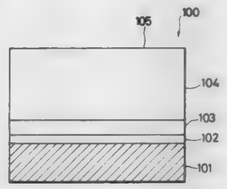
Kyosuke Ogawa; Shigeru Shirai; Junichiro Kanbe; Keishi Saitoh; Yoichi Osato, and Teruo Misumi, all of c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, Japan

Filed Feb. 1, 1983, Ser. No. 462,895

Claims priority, application Japan, Feb. 5, 1982, 57-17210; Feb. 5, 1982, 57-17211; Feb. 5, 1982, 57-17212; Feb. 9, 1982, 57-16583; Feb. 24, 1982, 57-28376; Feb. 24, 1982, 57-28377; Feb. 24, 1982, 57-28378; Feb. 24, 1982, 57-28379

Int. Cl.³ G03G *5/082, 5/14, 5/09*

U.S. Cl. 430—60 **19 Claims**



1. A photoconductive member which comprises a support for the photoconductive member, an interface layer constituted of an amorphous material containing at least silicon atoms and nitrogen atoms as constituent atoms, a rectifying layer comprising an amorphous material containing atoms (A) belonging to Group III or Group V excepting nitrogen of the Periodic Table as constituent atoms in a matrix of silicon atoms and an amorphous layer exhibiting photoconductivity constituted of an amorphous material containing at least one of hydrogen atoms or halogen atoms as constituent atoms in a matrix of silicon atoms, said rectifying layer having a layer thickness t which is from 30 Å up to, but not reaching, 0.3μ and the content C(A) of said aforesaid atoms contained in the rectifying layer being 30 atomic ppm or more, or said t being 30 Å or more and said C(A) being from 30 atomic ppm, up to, but not reaching, 100 atomic ppm.

4,522,906

ELECTROPHOTOGRAPHIC PLATE-MAKING MATERIAL

Yasuzi Asao, Shizuoka, and Ichiro Yamamoto, Chiba, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 11, 1984, Ser. No. 599,050

Claims priority, application Japan, Apr. 11, 1983, 58-63407

Int. Cl.³ G03G *13/28, 5/08, 5/00*

U.S. Cl. 430—60 **22 Claims**

1. An electrophotographic plate-making material comprising a paper support and a photoconductive layer, said support being prepared by providing a polyolefin resin layer on both surfaces of a paper substrate by molten extrusion lamination, wherein the volume resistance of the support is not more than 10^{10} Ω, and the polyolefin resin layer contains electrically conductive carbon black having a loss on drying, as determined under the conditions of 110° C. and 2 hours, of not more than 1.0%.

4,522,907

METHOD FOR DEVELOPING LATENT IMAGES USING RESIN DONOR MEMBER

Yasuo Mitsuhashi, Yokohama, and Ichiro Ohsaki, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 398,543, Jul. 15, 1982, abandoned, which is a continuation of Ser. No. 204,874, Nov. 7, 1980, abandoned. This application Sep. 2, 1983, Ser. No. 529,125

Claims priority, application Japan, Nov. 14, 1979, 54-147520; Nov. 14, 1979, 54-147521; Nov. 28, 1979, 54-154856; Dec. 26, 1979, 54-169572; Feb. 15, 1980, 55-17402; Aug. 6, 1980, 55-108741; Oct. 13, 1980, 55-143250; Oct. 13, 1980, 55-143255

Int. Cl.³ G03G *13/08, 15/08*

U.S. Cl. 430—102 **12 Claims**

1. A method for developing electrostatic latent images with a triboelectrified insulating toner without the use of carrier particles therefor which comprises:

forming a toner layer by applying a toner, having a conductivity on the order of 10^{-14} mhos/cm or lower, thinly to a toner-holding member;

imparting triboelectric charges to said toner by the friction between the toner-holding member surface and said toner; and

bringing the toner layer into facing proximity with the electrostatic latent image;

at least the surface of the toner-holding member containing 10% by weight or more of at least one member selected from the group consisting of polyphenylene oxide, polycarbonate, styrene type resin, silicone resin having a three-dimensional structure, polymer of vinyl ester type monomer, silane compound, and polyethersulfone.

4,522,908

LIQUID ELECTROPHORETIC DEVELOPER

Walter F. de Winter, 's-Gravenwezel; Herman J. Uytterhoeven, Bonheiden; Yvan K. Gilliams, Hever, and Noël J. De Volder, Edegem, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Jun. 6, 1984, Ser. No. 617,708

Claims priority, application European Pat. Off., Jun. 10, 1983, 83200852.8

Int. Cl.³ G03G *9/12*

U.S. Cl. 430—114 **12 Claims**

1. A liquid electrophoretic developer composition suitable for rendering visible electrostatically charged areas, which composition contains in an electrically insulating non-polar organic carrier liquid having a volume resistivity of at least 10^9 ohm.cm and a dielectric constant less than 3, pigment particles carrying at least one substance conferring electric charges on said particles, dispersed with the aid of a block copolymer containing one adsorbent group A and at least one solvatable group B, characterized in that said group A is a polystyrene chain having a number average molecular weight of at least 2,000 and group B is a polymethacrylate fatty alcohol ester group having a number average molecular weight of at least 7,000.

4,522,909

PROCESS FOR PREPARING ELECTROSTATIC DEVELOPER

Toshiaki Narusawa, Sagamihara; Seiji Okada, Kawasaki; Kiyohide Muramatsu, Tokyo; Teruo Yagishita, Yokohama, and Hirofumi Okuyama, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 232,805, Feb. 9, 1981, abandoned, which is a continuation of Ser. No. 62,311, Jul. 20, 1979, abandoned. This application Jun. 7, 1983, Ser. No. 501,800

Claims priority, application Japan, Aug. 1, 1978, 53-93110; Mar. 26, 1979, 54-34221

Int. Cl.³ G03G *11/00, 9/10*

U.S. Cl. 430—137 **41 Claims**

1. A process for preparing a developer for electrostatic images comprising the steps of:

(1) immersing carrier beads in an organic solution of a resin coating material comprising a butadiene homopolymer which is 1,2-polybutadiene or cyclized cis-1,4-polybutadiene or a mixture thereof, or a mixture of at least one of said homopolymers and a styrene butadiene copolymer, each said homopolymer having a molecular weight of from 10,000 to 100,000, said mixture containing from 7.5% to 100%, based on the wieght of said mixture, of butadiene in polymerized form and from 0.1 to 10 parts by weight of an organic peroxide based on 100 parts by weight of said resin coating material, and, then evaporating the organic solvent of said solution, drying said immersed beads, and curing said resin coating material by a rotary drying method, comprising steps wherein said immersed beads are put in a vessel and heated while the vessel rotates so as to avoid the aggregation of the coated carrier particles with each other, to form a resin coating on said carrier beads;

(2) blending toner materials at a temperature sufficient to form a toner mass, said toner materials comprising:

(a) from 85% to 95% of a binder resin, based on the weight of said toner materials, comprising, based on the weight of said binder resin, from 50% to 100% by weight of an epoxy resin of a molecular weight of from 900 to 8,000 and up to 50% of a styrene alkylmethacrylate copolymer, said alkyl group having from 1 to 4 carbon atoms, and being of a molecular weight of from 10,000 to 100,000,

(b) a colorant comprising, based on the weight of said toner materials, up to 10% of fine carbon and from about 0.5% to 8% of nigrosine dye, and

(c) up to 8% of a charge controlling agent, based on the weight of said toner materials, wherein said charge controlling agency comprises a control material which is quaternary ammonium alkylsulfonate, said alkyl group having from 4 to 20 carbon atoms, di-(polyhydroxy ethoxy ethyl) octadecyl amine, or a polyamine; and

(d) up to 1% of montan wax based on the weight of said toner materials;

(3) pulverizing said blended toner mass to form toner particles and mixing the obtained toner particles with said coated carrier, the ratio of the total surface area of said carrier to the total projection area of said toner particles being in the range of from 1:0.5 to 1:2.0.

4,522,910

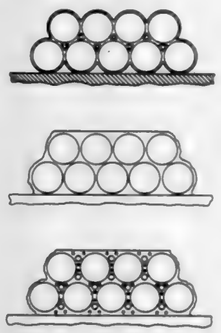
PHOTOSENSITIVE GRAPHIC ARTS ARTICLE

Robert W. Hallman, San Diego, Calif., assignor to Napp Systems (USA), Inc., San Marcos, Calif.

Continuation of Ser. No. 51,652, Jun. 25, 1979, abandoned, which is a continuation of Ser. No. 815,899, Jul. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 588,334, Jun. 19, 1975, abandoned. This application Nov. 18, 1982, Ser. No. 442,515

Int. Cl.³ G03C *1/54, 1/60, 1/76*

U.S. Cl. 430—157 **7 Claims**



1. A graphic arts article comprising a plastic substrate having applied on at least one side thereof a unilayer photosensitive film structure cast from an emulsion-dispersion and comprising a generally continuous phase and a generally discontinuous phase uniformly dispersed throughout the entire film structure, said continuous phase being a minor constituent by weight of said film structure and including a photosensitive diazo compound whose solubility with respect to a given aqueous developer is changed upon exposure to electro-magnetic radiation, said discontinuous phase comprising a polymeric particulate material which is substantially insoluble in said aqueous developer, said film structure having a maximum thickness not greater than ten microns, and said film structure being selectively developable to produce an image after exposure by dissolution and removal of the soluble portion of said continuous phase by said aqueous developer.

4,522,911

DEEP ULTRA-VIOLET LITHOGRAPHIC RESISTS WITH DIAZOHOMOTETRAMIC ACID COMPOUNDS

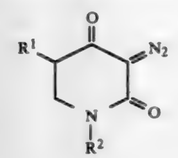
Nicholas J. Clecak; Dennis R. McKean; Robert D. Miller, all of San Jose; Terry C. Tompkins, Los Altos, and Carlton G. Willson, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1983, Ser. No. 508,642

Int. Cl.³ G03C *1/54, 1/60;* **C07C** *113/00*

U.S. Cl. 430—192 **7 Claims**

1. A lithographic resist composition for use with ultra-violet light of less than 300 nm wavelength, said composition comprising an acidic resin and in admixture therewith as a deep ultra-violet sensitizer a sufficient quantity of a diazohomotetramic acid compound having the formula



wherein R^1 is hydrogen or an alkyl group and R^2 is an arylalkyl

group, an aryl group, or a bifunctional group linking two of the rings together,

whereby upon exposure to deep ultra-violet radiation, the composition becomes more soluble in alkaline developer.

4,522,912

PHOTOPOLYMER COATED LITHOGRAPHIC PRINTING PLATE

Frank L. Sharkozy, Racine, and James A. Kiesler, Somers, both of Wis., assignors to Printing Developments, Inc., Racine, Wis.

Filed Jan. 28, 1983, Ser. No. 462,104
Int. Cl.³ G03C *1/94*
U.S. Cl. 430—278 **5 Claims**

1. A lithographic printing plate comprising

a sheet metal base substrate selected from the group consisting of aluminum alloy and steel,

a layer of chromium directly electrodeposited thereon of rough craglike character having numerous closely packed projections and adjacent surface recesses therein,

a thin, glasslike, transparent and water insoluble film disposed in bridging relation at least in the nether portions of said surface recesses in said chromium layer comprising the cured residue of an applied water solution of ammonium-zirconium carbonate and

a coating of photopolymer material disposed in over-lying interfacial relation with said film coated chromium surface.

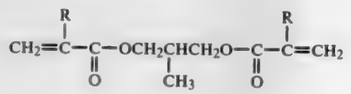
4,522,913

MONOACRYLATE OR DIACRYLATE OF 2-METHYL-PROPYLENE GLYCOL AND PHOTOSENSITIVE COMPOSITION CONTAINING THE DIACRYLATE

Tatsuya Kanno, and Yuzo Toga, both of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 418,119, Sep. 14, 1982, abandoned. This application Jun. 21, 1984, Ser. No. 623,613
Claims priority, application Japan, Sep. 17, 1981, 56-147099; Sep. 28, 1981, 56-153449; Sep. 28, 1981, 56-153450
Int. Cl.³ C08F *2/50*
U.S. Cl. 430—285 **3 Claims**

1. A photosensitive composition which comprises, as the active photopolymerizable substance, one or a mixture of two or more compounds having the formula



wherein R is hydrogen or methyl, or low molecular weight polymers thereof having a degree of polymerization of up to 5, said composition also containing polymeric filler and a sensitizer.

4,522,914

IMAGING METHOD OF MAKING A RAISED LINE FACSIMILE OF A PHOTOGRAPHIC IMAGE

Austin E. Brooks, Jr., Crawfordsville, Ind., assignor to Wabash College, Crawfordsville, Ind.

Filed Oct. 22, 1982, Ser. No. 435,931
Int. Cl.³ G03C *7/00, 7/12*
U.S. Cl. 430—320 **10 Claims**

1. A method for making a raised line facsimile of a photographic image, said facsimile being suitable for use by visually handicapped individuals in lieu of said photographic image to enable said individuals to acquire an understanding of the subject matter of said photographic image, said method comprising:

(a) providing a positive copy of said photographic image on a transparent substrate, said copy being of sufficient size, detail, contrast and quality to yield a raised line facsimile, said facsimile having tactilely distinguishable raised and lowered portions, and being capable of conveying accurate information about the subject matter of said photographic image to said individuals;

(b) preparing a faithful negative reproduction of said image from said positive copy on a silkscreen;

(c) printing a positive facsimile of said image using said screen and a polymerizable printing ink; and

(d) treating said positive facsimile under conditions sufficient to polymerize said ink, and create said raised line facsimile.

4,522,915

COLOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIALS CONTAINING NOVEL MAGENTA COLOR-FORMING COUPLERS

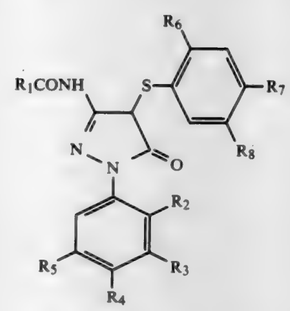
Seiji Ichijima, and Toshiyuki Watanabe, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 24, 1983, Ser. No. 497,636
Claims priority, application Japan, May 24, 1982, 57-87798
Int. Cl.³ G03C *1/46*
U.S. Cl. 430—505 **7 Claims**

1. A color photographic silver halide light-sensitive material, comprising:

a support base having positioned thereon;

a silver halide emulsion layer, containing a silver halide dispersed within a binder and further containing a 5-pyrazolone magenta coupler represented by the general formula (I):



wherein R_1 is an ethyl group, a methyl group, a n-propyl group, a n-butyl group, a cyclopropyl group, a cyclobutyl group, an isopropyl group, an isobutyl group, or a 1-methylpropyl group, or an ethyl group, a methyl group, a n-propyl group, a n-butyl group, a cyclopropyl group, a cyclobutyl group, an isopropyl group, an isobutyl group, or a 1-methylpropyl group, which are substituted by an alkoxyl group containing from 1 to 4 carbon atoms, an alkylthio group containing from 1 to 4 carbon atoms, a hydroxyl group, an amino group, or a halogen atom; R_2 R_3, R_4, and R_5 are each a hydrogen atom, a halogen atom, an alkyl group containing from 1 to 4 carbon atoms, an alkoxy group, an alkylthio group, an acylamino group, an alkoxycarbonyl group, an alkylaminocarbonyl group, or a dialkylaminocarbonyl group; and R_6, R_7, and R_8 are each a substituent selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group containing from 1 to 32 carbon atoms, an alkoxy group, an alkylthio group, an acylamino group, an alkoxycarbonyl group, a dialkylaminocarbonyl group, an aryl group containing from 6 to 10 carbon atoms, and an amino group so that the total number of carbon atoms contained in R_6, R_7, and R_8 is from 8 to 32.

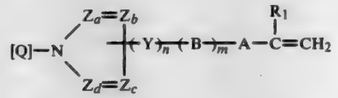
4,522,916

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tsumoru Hirano, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 24, 1984, Ser. No. 643,928
Claims priority, application Japan, Aug. 24, 1983, 58-154484
Int. Cl.³ G03C *7/26*
U.S. Cl. 430—548 **19 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a magenta color image forming polymer coupler latex which is capable of forming a dye upon coupling with an oxidation product of an aromatic primary amine developing agent and which is a homopolymer or copolymer having a repeating unit derived from a monomer represented by formula (I)



(I)

wherein [Q] represents a magenta color image forming coupler residue wherein the coupling active position is substituted for the remainder of the monomer molecule of formula (I); Za, Zb, Zc and Zd, which are the same or different, each represents a methine group, a substituted methine group, or —N═; R_1 represents a hydrogen atom, a lower alkyl group having from 1 to 4 carbon atoms or a chlorine atom; A represents —NHCO—, —OCO—, or a phenylene group; Y represents —O—, —NH—, —S—, —SO—, —SO_2—, —CONH—, —COO—, —NHCO—, or —NHCONH—; B represents an unsubstituted or substituted straight or branched chain alkylene group, an unsubstituted or substituted aralkylene group or an unsubstituted or substituted phenylene group; m represents 0 or 1; and n represents 0 or 1, provided that when n represents 1, m represents 1 and when n represents 0, m represents 0 or 1.

4,522,917

PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Seiji Ichijima; Keiji Mihayashi, and Isamu Itoh, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 18, 1983, Ser. No. 553,262
Claims priority, application Japan, Nov. 19, 1982, 57-203446
Int. Cl.³ G03C *1/46, 1/02*
U.S. Cl. 430—564 **16 Claims**

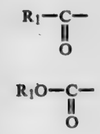
1. A photographic silver halide light-sensitive material, comprising:

a support base having thereon:

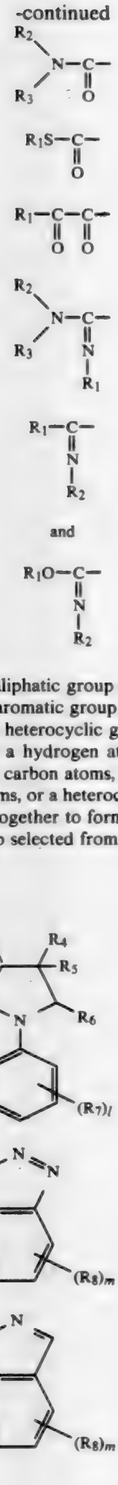
a silver halide emulsion layer and another layer; wherein at least one of said layers contains a compound represented by the general formula (I):

(I)

wherein A represents a group capable of undergoing cleavage on application of alkali hydrolysis and represents a group selected from the following:



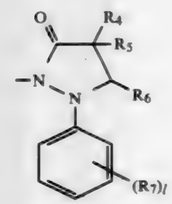
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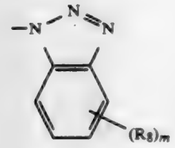
wherein R_1 is an aliphatic group containing from 1 to 22 carbon atoms, an aromatic group containing from 6 to 10 carbon atoms or a heterocyclic group; and

R_2 and R_3 are each a hydrogen atom, an aliphatic group containing 1 to 22 carbon atoms, an aromatic group containing 6 to 10 atoms, or a heterocyclic group, and R_2 and R_3 may combine together to form a ring; and

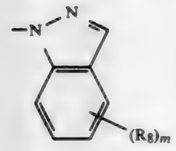
wherein Z is a group selected from the following:



(II)

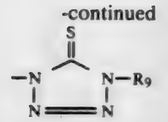


(III)



(IV)

-continued



(V)

wherein R_4, R_5 and R_6 independently represent a hydrogen atom, an aliphatic group, or an aromatic group;

R_7 represents an amino group, an alkoxyl group, an aryloxy group, a hydroxyl group, an alkyl group, an aryl group, a halogen atom, a carbonamide group, a sulfonamide group, an alkanoyloxy group, a benzoyloxy group, a ureido group, a carbamate group, a carbamoyloxy group, a carbonate group, or a carboxyl group;

R_8 may represent the same groups as R_7 and, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, a sulfamoyl group, an alkanoyl group, a benzoyl group, an alkylsulfonyl group, an arylsulfonyl group, a cyano group, a sulfo group or a nitro group;

R_9 represents an aliphatic group or an aromatic group;

l represents 0 or an integer of from 1 to 5; and

m is 0 or an integer of from 1 to 4.

4,522,918

PROCESS FOR PRODUCING MONOCLONAL ANTIBODIES REACTIVE WITH HUMAN BREAST CANCER

Jeffery Schlom, 404 Victoria Ct., NW.; David Colcher, 2587 Rambling Rd., both of Vienna, Va. 22180; Marianna Nuti, 9010 Lindale Dr., Bethesda, Md. 20034; Patricia H. Hand, 1113 E. Capital St., SE., Washington, D.C. 20003, and Faye Austin, 8204 Toll House Rd., Annandale, Va. 22003

Filed Dec. 15, 1981, Ser. No. 330,959

Int. Cl.[3] C12P *21/00;* **C12N** *5/00, 15/00;* **G01N** *33/54;* **A61K** *49/00, 39/00;* **C12R** *1/91*

U.S. Cl. 435—68 **7 Claims**

1. A process for producing antibodies from hyridoma cultures comprising the steps of

(1) taking splenic lymphocytes of mice previously immunized with membrane-enriched fractions of immunoglobulin-depleted cancer cells;

(2) fusing the lymphocytes with murine myeloma cell line, and

(3) culturing the cell line in an in vitro culture medium or in vivo therefor to produce antibodies, which antibody:

(a) reacts and binds with extracts from human metastatic mammary carcinoma cells from involved livers but not with liver cell extracts;

(b) reacts and binds with at least one of the mammary carcinoma cell lines, BT-20, MCF-7, ZR-75-1, but not with lung, vulva epidermoid or oral epidermoid and not with rhabdomyosarcoma, fibrosarcoma and melanoma; and

(c) does not react with normal cells derived from breast, skin, lung, bone marrow, kidney, spleen and uterus.

4,522,919

METHOD OF PRODUCING ANTIBACTERIAL AGENTS AND BIOCONVERTING MICROORGANISM THEREFOR

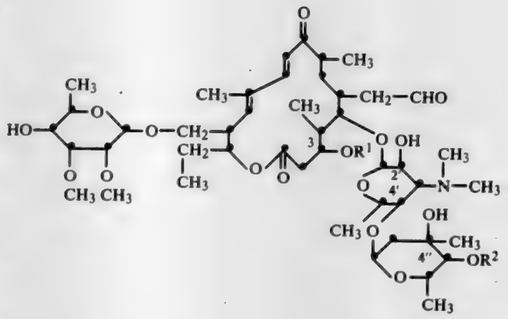
Barbara B. Shreve, Indianapolis, and Jan R. Turner, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 3, 1983, Ser. No. 471,928

Int. Cl.[3] C12P *17/18;* **C12R** *1/465*

U.S. Cl. 435—119 **4 Claims**

3. A method of producing a compound of the formula



wherein

R^1 is hydrogen, acetyl or propionyl;

R^2 is hydrogen, n-butyryl or isovaleryl;

provided that one of R^1 or R^2 must be other than hydrogen, which comprises contacting tolysin with an acyl donor in the presence of an acylating enazyme system from that produced by *Streptomyces thermotolerans* NRRL 15270 in an aqueous medium until a substantial amount of the compound is produced.

4,522,920

PRODUCTION OF ETHANOL

Conny R. Thorsson, Jarfalla, and Indrek J. Viira, Danderyd, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

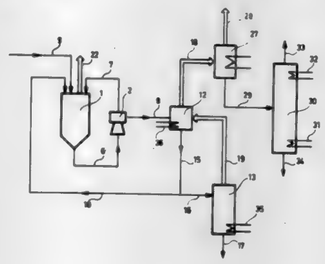
Continuation of Ser. No. 123,716, Feb. 22, 1980, Pat. No. 4,358,536. This application Aug. 16, 1982, Ser. No. 408,607

Claims priority, application Sweden, Feb. 27, 1979, 7901738

The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.

Int. Cl.[3] B01D *3/16;* **C07C** *29/80;* **C12P** *7/06*

U.S. Cl. 435—161 **14 Claims**



1. In the production of ethanol from a substrate containing carbohydrate, the method which comprises the continuous steps of delivering the substrate to a fermentor to provide a fermenting liquor, feeding a flow of said liquor from the fermentor to a separating unit and there separating the liquor into a yeast concentrate flow and a yeast-free flow, recirculating said yeast concentrate flow to the fermentor, feeding said yeast-free flow to a short distillation column and there separating it into a first ethanol-enriched vapor flow and a first liquid bottom flow, treating said first vapor flow to produce ethanol of a desired quality, recirculating a major part of said first liquid bottom flow to the fermentor, feeding a minor residual part of said first liquid bottom flow to a stripping unit, and separating said residual part in the stripping unit into a second ethanol-enriched vapor flow and a second liquid bottom flow, exhausted of ethanol.

4,522,921

SAMPLE DELIVERING METHOD FOR USE IN AUTOMATIC CHEMICAL ANALYSIS

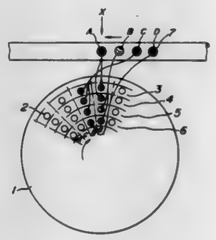
Yuji Ogawa, Kamifukuoka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,077

Claims priority, application Japan, Dec. 11, 1981, 56-198357

Int. Cl.[3] G01N *35/06*

U.S. Cl. 436—47 **8 Claims**



1. A sample delivering method for use in a multi-channel multi-item automatic chemical analyzer having a plurality of reaction lines comprised of reaction tubes, each line being previously set to perform given test-items, at least one sample supplying line carrying sample tubes containing successive samples to be analyzed, and a sample delivery means for delivering successive samples fed along the sample supplying line into at least one reaction tube in at least one reaction line, comprising the consecutive steps of:

setting a sample delivering region in said reaction lines and sample supplying line by selecting portions thereof to which and from which samples will be delivered;

delivering a portion of a sample into at least one reaction tube selected from the reaction tubes in said sample delivering region, which reaction tube corresponds to a test-item required for the sample;

detecting whether any vacant reaction tubes are present among the reaction tubes situated in said sample delivering region after said delivery;

moving the samples along the sample supplying line by one step to bring a new sample into said sample delivering region;

if vacant reaction tubes are detected, determining if any of them correspond to test-items required for said new sample; and,

if any do so correspond, delivering a portion of the new sample into at least one said vacant reaction tube which so corresponds.

4,522,922

SOLUBLE ASSAY

José Carro, 2850 SW. 122 Ave., Miami, Fla. 33175, and Frank de Velasco, 10945 SW. 75 Ct., Miami, Fla. 33156

Filed Apr. 16, 1982, Ser. No. 368,961

Int. Cl.[3] G01N *33/50, 33/54, 33/60*

U.S. Cl. 436—500 **26 Claims**

1. A process for the assay of a ligand having at least two determinant sites, comprising:

contacting in solution a sample containing said ligand with a first unsupported binder, in labeled form, which is specific for the ligand, said first binder being a member selected from the group consisting of a first antibody and a first naturally occurring binder, a second unsupported binder, which is unlabeled, and which is specific for the ligand, said second binder being a member selected from the group consisting of a second antibody and a second naturally occurring binder, said first and second antibody being raised in different animal species, and said first and second naturally occurring binders being different substances, and an unsupported soluble precipitating binder specific for said second binder, said contacting binding a portion of the first binder and at least a portion of the second binder to the ligand and precipitating a complex comprising the precipitating binder and ligand bound to both the first binder and second binder; and determining the amount of first binder in at least one of the solution and the complex as a measure of the ligand in the sample.

4,522,923

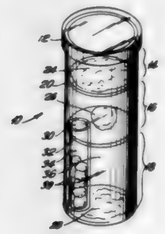
SELF-CONTAINED ASSAY METHOD AND KIT

Alice Deutsch, New York, and Herbert Platt, Great Neck, both of N.Y., assignors to Genetic Diagnostics Corporation, Great Neck, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,692

Int. Cl.[3] G01N *33/52, 33/54;* **B65D** *71/00*

U.S. Cl. 436—536 **13 Claims**



1. A test device comprising a container, at least two water-soluble barriers subdividing said container into at least three superposed chambers, and different biologically active substances in each chamber, whereby upon introduction of an aqueous biological sample to be tested into the topmost chamber the sample will successively mix with the contents of the chambers, the contact time in each chamber being a function of the water solubility of the barriers.

10. A method of testing an aqueous biological sample for the presence therein of a particular material which comprises providing a test device according to claim 1, the biologically active substances in each chamber being so chosen that the color or absence of color in the final chamber indicates the presence or absence of the particular material in the initial sample, adding the sample to the topmost chamber, and allowing the device to stand in vertical position for a time sufficient for the color change to take place if it will.

4,522,924

IMMOBILIZED ENZYME COMPOSITE/PROCESS USING A MICA CARRIER

David L. Tennent, Lindley, N.Y., and Bhavender P. Sharma, San Mateo, Calif., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 29, 1984, Ser. No. 594,855

Int. Cl.[3] C12N *11/14*

U.S. Cl. 501—2 **4 Claims**

1. An immobilized enzyme composite comprising:

(a) an insoluble carrier comprised of:

(i) an alkali metal, water-swelling mica selected from fluorohectorite [$XMg_2LiSi_4O_{10}F_2$], hydroxyl hectorite [$XMg_2LiSi_4O_{10}(OH)_2$], boron fluorophlogopite [$XMg_3BSi_3O_{10}F_2$], hydroxyl boron phlogopite [$XMg_3BSi_3O_{10}(OH)_2$]; and

(ii) solid solutions among and between the above micas and structurally compatible species selected from talc [$Mg_3Si_4O_{10}(OH)_2$], fluorotalc [$Mg_3Si_4O_{10}F_2$], polylithonite [$XLi_2AlSi_4O_{10}(OH)_2$], fluoropolylithonite [$XLi_2AlSi_4O_{10}F_2$], phlogopite [$XMg_3AlSi_3O_{10}(OH)_2$], and fluorophlogopite [$XMg_3AlSi_3O_{10}F_2$];

wherein X represents an alkali metal interlayer cation;

(b) an enzyme which is bound in the insoluble carrier.

4. The process of immobilizing an enzyme comprising:
(a) selecting an insoluble carrier material comprised of:
(i) an alkali metal, water-swelling mica selected from fluorohectorite [$XMg_2LiSi_4O_{10}F_2$], hydroxyl hectorite [$XMg_2LiSi_4O_{10}(OH)_2$], boron fluorophlogopite [$XMg_3BSi_3O_{10}F_2$], hydroxyl boron phlogopite [$XMg_3BSi_3O_{10}(OH)_2$]; and
(ii) solid solutions among and between the above micas and structurally compatible species selected from talc [$Mg_3Si_4O_{10}(OH)_2$], fluorotalc [$Mg_3Si_4O_{10}F_2$], polylithonite [$XLi_2AlSi_4O_{10}(OH)_2$], fluoropolylithonite [$XLi_2AlSi_4O_{10}F_2$], phlogopite [$XMg_3AlSi_3O_{10}(OH)_2$], and fluorophlogopite [$XMg_3AlSi_3O_{10}F_2$];
wherein X represents an alkali metal interlayer cation;
(b) forming an aqueous slurry of the carrier material;
(c) dewatering the slurry sufficient to form a pliable mass of carrier material;
(d) contacting an enzyme with the carrier; and
(e) molding the pliable mass into a desired shape;
(f) drying the molded, pliable mass so as to fix the shape, thereby immobilizing the enzyme on an insoluble carrier.

4,522,925
SEALING GLASS AND METHOD OF MAKING A WILLEMITE FILLER THEREFOR
Perry P. Pirooz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sep. 1, 1983, Ser. No. 528,385
Int. Cl.³ C03C *3/08, 3/10*
U.S. Cl. 501—15 **1 Claim**

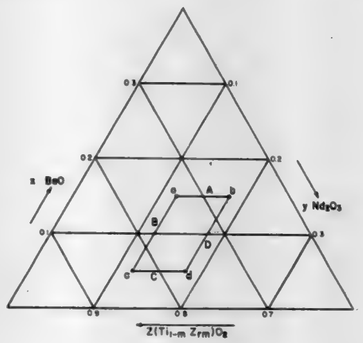
1. A sealing glass composition consisting essentially of about 65 parts by weight of a lead borate glass matrix and 35 parts by weight of a Willemite (zinc orthosilicate) filler, the Willemite (zinc orthosilicate) being made by mixing about 73 parts by weight of ZnO and about 27 parts by weight of SiO_2 and firing the mixture at about 1350° C. for about 24 hours and milling the product to provide finely divided Willemite (zinc orthosilicate) with a particle size comprising about 85% finer than 38 microns, the lead borate glass having the following ingredients in approximate weight percents:

Ingredients	Wt. %
PbO	83
B_2O_3	12.5
Bi_2O_3	3
SiO_2	0.5
ZnO	0.5
BaO	0.5

4,522,926
ALUMINUM RESISTANT REFRACTORY COMPOSITION
Frank T. Felice, Norristown, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Mar. 10, 1983, Ser. No. 474,083
Int. Cl.³ C04C *35/10, 35/04, 35/12, 35/14*
U.S. Cl. 501—127 **6 Claims**

1. A refractory composition resistant to attack by molten aluminum alloys consisting essentially of:
a. 45 to 90 weight percent refractory aggregate particles compatible with the selected refractory binder,
b. 3 to 40 weight percent refractory binder selected from the group consisting of calcium aluminate cement, aluminum phosphate, phosphoric acid, alkali silicates and clay, and
c. an additive consisting essentially of crystalline $9Al_2O_3.2B_2O_3$ such that the refractory composition contains 1 to 12 percent $9Al_2O_3.2B_2O_3$ by weight.

4,522,927
DIELECTRIC CERAMIC COMPOSITION
Masao Kashima, and Noboru Tomuro, both of Yokoze, Japan, assignors to Mitsubishi Mining and Cement Company Ltd., both of Tokyo, Japan
Continuation-in-part of Ser. No. 451,929, Dec. 21, 1982, abandoned. This application Oct. 26, 1983, Ser. No. 545,523
Claims priority, application Japan, Aug. 13, 1982, 57-139696
Int. Cl.³ C04B *35/49*
U.S. Cl. 501—139 **2 Claims**



1. A dielectric ceramic composition having a composition represented by the formula

$$xBaO-yNd_2O_3-z(Ti_{1-m}Zr_m)O_2$$

wherein $x+y+z=1.00$, m is between 0.05 and 0.25, and x, y, and z are in the molar ratio region surrounded by the points a, b, c, and d which are represented by the following x-y-z coordinates:

	x	y	z
a	0.15	0.12	0.73
b	0.15	0.18	0.67
c	0.05	0.18	0.77
d	0.05	0.12	0.83

said composition being free of bismuth.

4,522,928
REMOVAL OF METAL COMTAMINANTS FROM CATALYSTS USING BUFFERED OXALIC ACID
Gary B. McVicker; James L. Carter, both of Westfield; Lawrence L. Murrell, S. Plainfield, and John J. Ziemiak, Annandale, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 434,730, Oct. 18, 1982, abandoned. This application May 14, 1984, Ser. No. 610,096
Int. Cl.³ B01J *23/96, 23/94, 23/92*
U.S. Cl. 502—26 **19 Claims**

1. A process for removing metal contaminants from a hydroconversion catalyst containing at least one metal from Groups VIB, VIIB or VIII supported on a refractory inorganic oxide which is susceptible to acid attack which process comprises contacting the contaminated catalyst at a temperature from about 0° C. to 100° C. with a buffered oxalic acid solution having a pH from about 3 to about 10, wherein the oxalic acid concentration is from about 0.0001M to 5M.

11. The process of claim 1 wherein the buffered oxalic acid solution is a mixture of oxalic acid in an aqueous/non-aqueous solvent system.

13. The process of claim 1 wherein the metal contaminant is one or more metals selected from the group consisting of iron, vanadium, nickel, sodium, magnesium, chromium, copper, strontium, lithium, and lead.

4,522,929
ACTIVE ZEOLITE CATALYSTS OF IMPROVED STABILITY
Arthur W. Chester, and Yung F. Chu, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Continuation of Ser. No. 346,440, Feb. 8, 1982, Pat. No. 4,429,176. This application Oct. 6, 1983, Ser. No. 539,497
Int. Cl.³ B01J *29/28, 37/10*
U.S. Cl. 502—77 **16 Claims**

1. A method of producing a zeolite catalyst of improved stability wherein said zeolite catalyst comprises a zeolite having a silica/alumina ratio greater than 12 and a constraint index of 1 to 12, comprising steaming said zeolite catalyst in its fresh state under controlled conditions of temperature, time and steam partial pressure so as to initially increase the α-activity of said catalyst and produce a steamed catalyst having a peak α-activity, and subsequently reduce the α-activity from said peak α-activity to an α-activity substantially the same as the α-activity of said fresh catalyst and no more than 25% below the initial α-activity of said fresh catalyst, said steamed catalyst having enhanced stability over said fresh catalyst.

2. A method according to claim 1 wherein said zeolite is ZSM-5.

3. A method according to claim 1 wherein said catalyst further comprises metal promoters.

4,522,930
COMPONENTS AND CATALYSTS FOR THE POLYMERIZATION OF OLEFINS
Enrico Albizzati, Arona; Sandro Parodi, Oleggio, and Pier C. Barbe, Ferrara, all of Italy, assignors to Montedison S.p.A., Milan, Italy and Mitsui Petrochemical Ind., Tokyo, Japan
Filed Feb. 10, 1983, Ser. No. 465,594
Claims priority, application Italy, Feb. 12, 1982, 19624 A/82
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—124 **3 Claims**

1. Catalysts for the polymerization of alpha-olefins comprising the product of the reaction of:
(a) an organometallic Al compound;
(b) an electron-donor compound reactive, under standard conditions, with $MgCl_2$ but not completely complexed with Al-triethyl; and
(c) a solid component comprising a titanium compound having at least a Ti-halogen bond and an electron-donor compound both supported on an anhydrous Mg dihalide, the electron-donor compound being selected from the group consisting of electron-donor compounds containing N, P and/or S atoms, ethers, ketones, lactones and the following classes of esters:
(1) hydrocarbyl esters of linear saturated dicarboxylic acids having from 2 to 5 carbon atoms;
(2) esters of unsaturated polycarboxylic acids in which two carboxyl groups are linked to vicinal, double bond-forming carbon atoms and in which the hydrocarbyl radical or radicals of the COOR groups are linear saturated or unsaturated radicals or cycloaliphatic radicals with 1–20 carbon atoms or hydrocarbyl esters of unsaturated linear or branched polycarboxylic acids with 1–20 carbon atoms in which the carboxy groups are not linked to vicinal double bond-forming carbon atoms;
(3) hydrocarbyl esters of aromatic meta- and para-dicarboxylic acids and hydrocarbyl esters of polycarboxylic aromatic acids containing more than two carboxyl groups;
(4) hydrocarbyl esters of aromatic hydroxy compounds containing the OH groups in meta- or para-position, and esters of aromatic hydroxy acids the OH groups of which are in meta- or para-position with respect to the carboxyl group;
(5) esters RCOOR′ in which the hydrocarbyl groups R and R′, which can be the same or different, are linear saturated or unsaturated radicals or cycloaliphatic radicals having from 1 to 20 carbon atoms, or R is an aryl, alkylaryl or cycloalkyl with 5–20 carbon atoms and R′ is a hydrocarbyl radical or a heterocyclic ring with 5–7 atoms in the ring;
(6) hydrocarbyl esters of polycarboxylic acids in which at least one carboxyl group is linked to an aromatic ring and at least one other is linked to a carbon atom of an aliphatic chain or to a cycloaliphatic ring or at least two carbonyl groups are linked to an aromatic ring through an alkylene group;
(7) esters of aromatic polycarboxylic acids containing at least two non-condensed aromatic rings, each bearing a carboxyl group;
(8) esters of carbonic acid with glycols, and carbonic acid derivatives of formula RO—CO—OR′ wherein R and R′ are the same or different acyl group with 1–20 carbon atoms;
(9) esters of polyols and of monohydroxy-phenols; and
(10) hydrocarbyl esters of acetylenic acids; the electron-donor compound being extractable from the solid for at least 70% by mols with Al-triethyl in standard measurement conditions, and the surface area of the solid subjected to extraction being higher than 20 m^2/g.

3. Catalysts according to claim 1, in which component (b) is selected from the group consisting of silicon compounds containing at least one Si—OR or Si—OCOR or Si—NR_2 bond in which R is an alkyl, alkenyl, aryl, arylalkyl or cycloalkyl radical containing from 1 to 20 carbon atoms.

4,522,931
METHOD FOR THE PREPARATION OF SUPPORTED CATALYSTS AND SUPPORTED CATALYSTS THUS OBTAINED
Giuseppe Gubitosa; Antonio Berton; Nicola Pernicone, all of Novara, and Graziano Vidotto, Padua, all of Italy, assignors to Montepolimeri S.p.A, Milan, Italy
Filed Sep. 9, 1983, Ser. No. 530,755
Claims priority, application Italy, Sep. 10, 1982, 23197 A/82
Int. Cl.³ B01J *21/18, 31/02*
U.S. Cl. 502—150 **7 Claims**

5. A method of preparing a supported catalyst for the hydrogenation of nitro-aromatic compounds, according to which method Pd is deposited on the outer surface of a carrier consisting of an adsorbent carbon, wherein:
(a) said carbon, containing an amount of ash lower than 0.6% b.w., is suspended in water;
(b) a liquid hydrocarbon, immiscible with water and selected from the group consisting of n-hexane, n-heptane, benzene and toluene, is added to the suspension obtained according to (a), the volume of said hydrocarbon being substantially equal to or lower than the volume of the pores of the carrier;
(c) the pH of the suspension obtained according to (b) is brought to a level between 7 and 8.5;
(d) an aqueous solution, containing a soluble compound of Pd, is brought into contact with the suspension obtained according to (c), while keeping the pH constant within said 7–8.5 range, and the pH is then raised to a level equal to or higher than 12, according to known techniques; and
(e) the thus obtained solid catalyst is recovered from the mother liquor by a conventional procedure.

6. A supported catalyst, prepared according to claim 5, containing from 0.1 to 5% b.w. of Pd, wherein Pd is distributed on the outer surface of a granule of low-ash carbon, the inner core of the granule being substantially void of Pd.

7. A catalyst according to claim 6, containing a liquid phase, consisting substantially of water and of said immiscible liquid hydrocarbon, the amount of liquid phase being at least 20% of the whole weight of the supported catalyst.

4,522,932

PHOSPHINE AND PHOSPHONIUM COMPOUNDS AND CATALYSTS

Howard L. Mitchell, III, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 423,652, Sep. 27, 1982, abandoned. This application Apr. 23, 1984, Ser. No. 603,141

Int. Cl.[3] B01J *31/12, 31/24*

U.S. Cl. 502—153 2 Claims

1. A reaction product catalyst mixture comprising cobalt metal, ligand, in the presence of H_2 and CO at a temperature and pressure sufficient to obtain a catalyst capable of catalyzing a hydrocarbonylation reaction, wherein said ligand comprises a compound of the formula $R_{3-b}L\$_b$ wherein L is selected from the group consisting of trivalent P and As; each R is independently selected from the group consisting of alkyl, alkynyl, aryl, alkoxyalkyl, aryloxyalkyl, alkoxyaryl, aryloxyaryl, and ferrocenyl and fluoro groups, wherein the aryl portions thereof can be substituted with a halogen and the alkyl portions thereof can be substituted with a member selected from halogen and hydroxy groups, with the proviso that said halogens on said alkyl groups are not in an alpha-position with respect to said L atom unless they are fluoro atoms and with the further proviso that at least one R group on said L atom is a fluoro group; each \$ group is $-C{\equiv}CR^1$, wherein R^1 is selected from the group consisting of R, L^+R_3, wherein R is defined as above and b is an integer of from 1 to 3.

4,522,933

HYDROFORMYLATION CATALYST CONTAINING BISPHOSPHINE MONOOXIDE LIGANDS

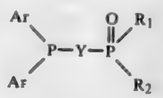
Anthony G. Abatjoglou, and Ernst Billig, both of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 293,190, Aug. 17, 1981, Pat. No. 4,400,548. This application Mar. 17, 1983, Ser. No. 476,314

Int. Cl.[3] B01J *31/24*

U.S. Cl. 502—161 7 Claims

1. A rhodium complex hydroformylation catalytic precursor composition consisting essentially of a solubilized rhodium carbonyl bisphosphine monooxide acetylacetonate complex, an organic solvent and free bisphosphine monooxide ligand; wherein the bisphosphine monooxide of said complex and said free bisphosphine monooxide ligand is an organic tertiary bisphosphine monooxide ligand having the general formula



wherein each Ar group represents an identical or different substituted or unsubstituted aryl radical, each R_1 and R_2 group represents an identical or different substituted or unsubstituted monovalent hydrocarbon radical and Y represents a divalent bridging group.

4,522,934

VANADOTUNGSTOMOLYBDOPHOSPHORIC ACID OXIDATION CATALYST

Wilfred P. Shum, East Windsor; John F. White, Princeton, both of N.J., and Eva M. Beals, Washington Crossing, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 258,102, Apr. 27, 1981, abandoned. This application Feb. 22, 1983, Ser. No. 468,810

Int. Cl.[3] B01J *27/14;* C07B *3/00*

U.S. Cl. 502—209 4 Claims

1. A method of preparing a three transition metal, Keggin structure heteropoly acid catalyst comprising the steps of:

(a) providing a heteropolyacid Keggin defect structure of the formula: $Na_3H_6PMo_9O_{34}$ and

(b) introducing into said defect structure transition metal oxides of vanadium and tungsten to produce a heteropolyacid product containing molybdenum, vanadium and tungsten metals in a Keggin structure.

4,522,935

PLATINUM AND INDIUM-CONTAINING CATALYST FOR REFORMING HYDROCARBONS

Delmar W. Robinson, Palatine; Russell W. Johnson, Villa Park, and Mark D. Moser, Hoffman Estates, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 500,520, Jun. 2, 1983, Pat. No. 4,487,848. This application Oct. 7, 1983, Ser. No. 539,880

The portion of the term of this patent subsequent to Dec. 11, 2001, has been disclaimed.

Int. Cl.[3] B01J *27/04, 27/08, 27/10*

U.S. Cl. 502—223 12 Claims

1. A catalyst composition comprising a platinum group component, a tin component, an indium component and a halogen component with a porous support material, wherein the atomic ratio of indium to platinum group component is more than about 1.35.

6. The catalyst of claim 1 which also comprises, on an elemental basis, about 0.01 to 10 wt. % sulfur.

4,522,936

METATHESIS CATALYST

Simon G. Kukes, and Robert L. Banks, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 477,466, Mar. 21, 1983, Pat. No. 4,465,890. This application May 18, 1984, Ser. No. 611,785

Int. Cl.[3] B01J *23/24, 23/18*

U.S. Cl. 502—249 36 Claims

1. A composition comprising:

(a) an oxide selected from the group consisting of tungsten oxide, molybdenum oxide and a mixture thereof,

(b) a support, and

(c) an element selected from the group consisting of tungsten, silicon, antimony and any mixture of 2 or more thereof when (a) is tungsten oxide or a mixture of tungsten oxide and molybdenum oxide or an element selected from the group consisting of tungsten, silicon, a mixture of tungsten and silicon, a mixture of antimony and tungsten, a mixture of antimony and silicon and a mixture of antimony, tungsten and silicon when (a) is molybdenum oxide;

wherein (a) is supported by (b).

3. A composition according to claim 1 wherein said support comprises alumina.

4. A composition according to claim 1 wherein said support comprises silica.

27. The composition produced in accordance with a method comprising

(i) mulling together anhydrous tungstic acid and silica gel to produce a mixture,

(ii) heating said mixture to drive off water,

(iii) treating said mixture with an element selected from the group consisting of tungsten, silicon, antimony, and mixtures of any two or more thereof, and

(iv) activating said treated mixture by heating in an inert gas at a temperature of at least about 400° C.

4,522,937

PREPARATIVE PROCESS FOR ALKALINE EARTH METAL, ALUMINUM-CONTAINING SPINELS

Jin S. Yoo, Flossmoor; John A. Karch, Homewood; Richard F. Poss, Flossmoor, all of Ill., and Emmett H. Burk, Jr., Mountain Home, Ark., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 445,305, Nov. 29, 1982, abandoned. This application Sep. 10, 1984, Ser. No. 649,238

Int. Cl.[3] B01J *21/04, 23/02, 23/10*

U.S. Cl. 502—302 21 Claims

1. A process for the production of an alkaline earth metal, aluminum-containing spinel composition comprising:

(a) combining (a) an acidic aqueous solution containing at least one alkaline earth metal component and (b) a basic aqueous solution containing at least one aluminum component in which the aluminum is present as an anion into an aqueous medium to form a combined mass including a liquid phase and an alkaline earth metal, aluminum-containing precipitate, provided that at least one of the acidic solution and the basic solution includes at least one additional metal component in an amount sufficient so that said alkaline earth metal, aluminum-containing spinel composition includes at least one additional metal component in an amount effective to promote the oxidation of SO_2 to SO_3 at SO_2 oxidation conditions, and further provided that the pH of said liquid phase during said combining is maintained in the range of about 7.0 to about 10.5;

and

(b) calcining said precipitate to form said alkaline earth metal, aluminum-containing spinel composition.

4,522,938

PROCESS FOR PREPARING A CATALYST

Arend Hoek; Johannes K. Minderhoud, and Martin F. M. Post, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 22, 1983, Ser. No. 554,482

Claims priority, application Netherlands, Nov. 22, 1982, 8204527

Int. Cl.[3] B01J *21/04, 23/06, 23/26, 23/72*

U.S. Cl. 502—307 8 Claims

1. A process for the preparation of a catalyst, which comprises dispersing in water a co-precipitate A comprising zinc as well as chromium and/or aluminum in such quantities that the Zn/(Cr+Al) atomic ratio is 0.25–4 and a co-precipitate B comprising copper as well as zinc and, if desired, chromium and/or aluminum in such quantities that the Cu/Zn atomic ratio is lower than 10 and the (Cr+Al)/(Cu+Zn) atomic ratio is lower than 2, and in such quantities that in the water dispersion the atomic ratio of the sum of the metals coming from co-precipitate A to the sum of the metals coming from co-precipitate B is 0.25–3 and the Cu/(Cu+Zn+Cr+Al) atomic ratio is more than 0.1, followed by spray drying the dispersion thus obtained, and then calcining the spray dried material.

4,522,939

PREPARATION OF CATALYST FOR PRODUCING MIDDLE DISTILLATES FROM SYNGAS

Johannes K. Minderhoud, and Martin F. M. Post, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 29, 1984, Ser. No. 594,618

Claims priority, application Netherlands, May 31, 1983, 8301922

Int. Cl.[3] B01J *21/04, 21/06, 21/08, 23/86*

U.S. Cl. 502—242 17 Claims

1. A process for the preparation of a catalyst by kneading and/or impregnation, which catalyst comprises 3–60 pbw cobalt and 0.1–100 pbw of at least one other metal chosen from zirconium, titanium or chromium per 100 pbw of a carrier chosen from silica, alumina or silica-alumina, characterized in that said catalyst has such L and S as to satisfy the relation $(3+4R)>(L/S)>(0.3+0.4R)$, wherein

L = the total quantity of cobalt present on the catalyst, expressed as mg Co/ml catalyst;

S = the surface area of the catalyst, expressed as m^2/ml catalyst; and

R = the weight ratio of the quantity of cobalt deposited on the catalyst by kneading to the total quantity of cobalt present on the catalyst or R = 0 when catalyst prepared by impregnation.

4,522,940

METHOD OF PREPARING A CATALYST AND CATALYST PREPARED BY THE METHOD

Rodney M. Sambrook, Sheffield, and Julian R. H. Ross, Cleckheaton, both of England, assignors to Dyson Refractories Limited, United Kingdom

Filed Jul. 16, 1981, Ser. No. 283,792

Claims priority, application United Kingdom, Jul. 16, 1980, 8023225

Int. Cl.[3] B01J *21/04, 23/78*

U.S. Cl. 502—328 19 Claims

1. A method of making a catalyst having a catalytically active component located within the pores of a preformed low surface area ceramic matrix, comprising the steps of:

impregnating the pores of the matrix with a catalyst precursor solution including salts of at least one catalytically active metal component and a hydrolysable material;

removing excess solution from the matrix while maintaining solution within the pores;

heating the matrix to a temperature suitable for controlled hydrolysis of the hydrolysable material, said controlled hydrolysis serving to increase the pH of the solution within the pores so as to precipitate said at least one catalytically active component substantially exclusively within the pores of the matrix; and

calcining the matrix to produce the catalyst.

4,522,941

METHOD OF CONTROLLING THE DISTRIBUTION OF A COATING MATERIAL UPON THE SURFACE OF A SUPPORT

Michael S. Heise, Bath, N.Y.; Christopher S. Tucker, Strafford, Pa., and James A. Schwarz, Fayetteville, N.Y., assignors to Syracuse University, Syracuse, N.Y.

Filed Jul. 18, 1983, Ser. No. 514,927

Int. Cl.[3] B01J *21/04, 23/42, 23/44*

U.S. Cl. 502—333 2 Claims

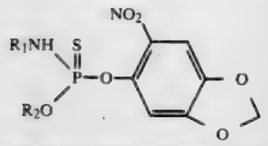
1. A method of controlling the distributing of a coating material upon the surface of a support that comprises the steps of providing an alumina support that assumes a surface charge by means of protonation-deprotonation processes when placed in an aqueous solution, placing said support in an aqueous solution containing primary adsorbable coating ions of platinum having a charge opposite the charge assumed by the support whereby the platinum ions are adsorbed onto the alumina support surface, the concentration of said platinum ions in the solution being able to satisfy the adsoprtion sites on the surface of the support, said solution further containing two soluble, non-adsorbable, control ingredients for regulating the coating process that includes sodium nitrate for adjusting the resistence of the double layer existing at the support surface to the adsorption of platinum ions onto the surface and hydrochloric acid for adjusting the charge on the support surface, and adjusting the concentration of the sodium nitrate and hydrochloric acid in the solution to generate a coating having a desired distribution of platinum upon the surface of the support.

4,522,942
PHOSPHORAMIDOTHIONATES

Hideo Kohsaka, Hyogo; Sasaki Mitsuru, Osaka, and Yukio Ishiguri, Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

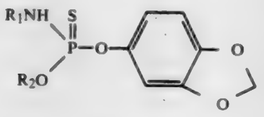
Filed Jun. 2, 1983, Ser. No. 500,435
Claims priority, application Japan, Jun. 3, 1982, 57-95764; Nov. 2, 1982, 57-192841; Nov. 5, 1982, 57-195035
Int. Cl.³ A01N *57/32;* C07F *9/24*
U.S. Cl. 514—95 24 Claims

1. A phosphoramidothionate of the formula:



wherein R_1 is a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, a lower cycloalkyl group, a lower cycloalkyl(lower)alkyl group, a halo(lower)alkyl group, a lower alkoxy(lower)alkyl group, a di(lower)alkoxy(lower)alkyl group, a cyano(lower)alkyl group, a lower alkylthio(lower)alkyl group, a lower alkynylthio(lower)alkyl group, a lower dioxothiacycloalkyl group, a lower thiacycloalkyl group, a lower oxacycloalkyl group, a lower oxacycloalkyl(lower)alkyl group or a thienyl(lower)alkyl group and R_2 is a lower alkyl group.

14. A phosphoramidothionate of the formula:



wherein R_1 is a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, a lower cycloalkyl group, a lower cycloalkyl(lower)alkyl group, a halo(lower)alkyl group, a lower alkoxy(lower)alkyl group, a di(lower)alkoxy(lower)alkyl group, a cyano(lower)alkyl group, a lower alkylthio(lower)alkyl group, a lower alkynylthio(lower)alkyl group, a lower dioxothiacycloalkyl group, a lower thiacycloalkyl group, a lower oxacycloalkyl group, a lower oxacycloalkyl(lower)alkyl group or a thienyl(lower)alkyl group and R_2 is a lower alkyl group.

23. A method for controlling fungi which comprises applying a fungicidally effective amount of the phosphoramidothionate according to claim 1 to phytopathogenic fungi.

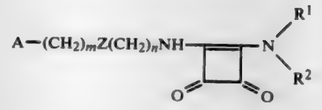
24. A method for controlling fungi which comprises applying a fungicidally effective amount of the phosphoramidothionate according to claim 14 to phytopathogenic fungi.

4,522,943
CHEMICAL COMPOUNDS

Aldo A. Algieri, Fayetteville, and Ronnie R. Crenshaw, Dewitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

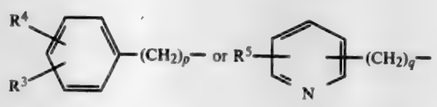
Continuation-in-part of Ser. No. 264,533, May 18, 1981, Pat. No. 4,390,701. This application Apr. 21, 1982, Ser. No. 369,971
The portion of the term of this patent subsequent to Jun. 28, 2000, has been disclaimed.
Int. Cl.³ C07D *211/06, 295/10;* A61K *31/445, 31/55*
U.S. Cl. 514—183 18 Claims

1. A compound of the formula



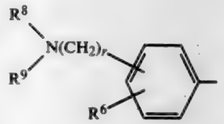
I

wherein R^1 and R^2 each are independently hydrogen or (lower)alkyl, and, when R^1 is hydrogen, R^2 may also be allyl, propargyl, cyclo(lower)alkyl(lower)alkyl, cyclo(lower)alkyl, cyano(lower)alkyl, 2-fluoroethyl, 2,2,2-trifluoroethyl, hydroxy, 2,3-dihydroxypropyl,



in which:

p is an integer of from 1 to 6 inclusive, q is an integer of from 1 to 6 inclusive, R^3 and R^4 each are independently hydrogen, (lower)alkyl having 1 or 2 carbon atoms, hydroxy, (lower)alkoxy having 1 or 2 carbon atoms or halogen, and, when R^3 is hydrogen, R^4 also may be trifluoromethyl, or R^3 and R^4, taken together, may be methylenedioxy, R^5 is hydrogen, (lower)alkyl, (lower)alkoxy, hydroxy, amino or halogen,
m is an integer of from 0 to 2 inclusive;
n is an integer of from 2 to 5 inclusive;
Z is sulfur, oxygen or methylene; and
A is



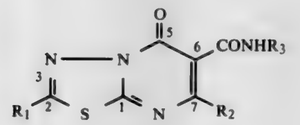
in which
R^6 is hydrogen, (lower)alkyl, (lower)alkoxy or halogen;
r is an integer of from 1 to 4 inclusive; and
R^8 and R^9 each are independently hydrogen, (lower)alkyl, allyl, propargyl, (lower)alkoxy(lower)alkyl in which the (lower)alkoxy moiety is at least two carbon atoms removed from the nitrogen atom, cyclo(lower)alkyl, or phenyl(lower)alkyl, provided that R^8 and R^9 may not both be cyclo(lower)alkyl, or R^8 and R^9, taken together with the nitrogen atom to which they are attached, may be pyrrolidino, methylpyrrolidino, dimethylpyrrolidino, piperidino, methylpiperidino, dimethylpiperidino, hydroxypiperidino, 1,2,3,6-tetrahydropyridyl, homopiperidino, heptamethyleneimino, octamethyleneimino or 3-azabicyclo[3.2.2]nonane;
with the proviso that, when $R^1$and R^2 are both hydrogen, $A—(CH_2)_mZ(CH_2)_n—$ may not be the 3-(3-piperidinomethylphenoxy)propyl moiety;
or a nontoxic, pharmaceutically acceptable salt, hydrate or solvate thereof.

4,522,944
CARBOXAMIDO-DERIVATIVES OF 5H-1,3,4-THIADIAZOLO[3,2-a]PYRIMIDINES, COMPOSITIONS AND USE

Gianfederico Doria, via L. Pasteur 16, Milan; Carlo Passarotti, via Fiume 2, Gallarate (Varese), and Ada Buttinoni, via Monte Suello 18, Milan, all of Italy

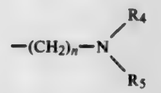
Filed Dec. 8, 1983, Ser. No. 559,322
Claims priority, application United Kingdom, Dec. 23, 1982, 8236642; Nov. 8, 1983, 8329746
Int. Cl.³ A61K *31/505, 31/535;* C07D *513/04*
U.S. Cl. 514—222 7 Claims

1. A compound of general formula (I)

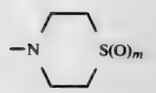


(1)

wherein
R_1 represents:
(a) a hydrogen or halogen atom or a C_1–C_6 alkyl group unsubstituted or substituted by C_1–C_6 alkoxy;
(b) a



group, wherein n is zero, 1, 2 or 3 and each of R_4 and R_5 is, independently, hydrogen or C_1–C_6 alkyl, or R_4 and R_5, taken together with the nitrogen atom to which they are linked, form an unsubstituted N-pyrrolidinyl ring or a piperidino, morpholino, N-piperazinyl or



ring, wherein m is zero, 1 or 2, the piperidino and morpholino rings are unsubstituted or substituted by one or two C_1–C_6 alkyl groups and the N-piperazinyl ring is unsubstituted or substituted by a substituent chosen from C_1–C_6 alkyl, phenyl and pyridyl;
(c) trihalomethyl or a R_6-$S(O)_p$— group, wherein p is zero, 1 or 2 and R_6 is C_1–C_6 alkyl or benzyl, wherein the phenyl ring is unsubstituted or substituted by a substituent chosen from halogen, C_1–C_6 alkyl and C_1–C_6 alkoxy; or
(d) an unsubstituted pyridyl, pyridyl-N-oxide or thienyl ring or a phenyl ring unsubstituted or substituted by one, two or three substituents independently chosen from halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy, formyloxy, C_2–C_8 alkanoyloxy, nitro, amino, formylamino, C_2–C_8 alkanoylamino and di-(C_1–C_6)alkyl-amino;
R_2 represents a hydrogen atom or a C_1–C_6 alkyl group;
R_3 represents:
(a′) a phenyl ring, unsubstituted or substituted by one or two substituents independently chosen from C_1–C_6 alkyl, C_1–C_6 alkoxy and halogen;
(b′) an unsaturated heteromonocyclic or heterobicyclic ring, containing one or more heteroatoms chosen from nitrogen and sulphur, unsubstituted or substituted by one or two substituents independently chosen from halogen, C_1–C_6 alkyl and C_1–C_6 alkoxy; and the pharmaceutically acceptable salts thereof.

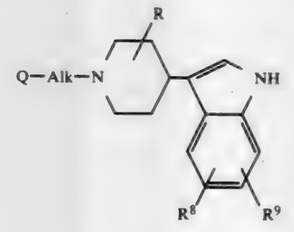
6. A method of treatment in a human patient of inflammatory processes and pains, said method comprising administering an effective amount of a compound of claim 1.

4,522,945
(PIPERIDINYLALKYL) QUINAZOLINE DERIVATIVES

Jan Vandenberk, Beerse; Ludo Kennis; Marcel Van der Aa, both of Vosselaar, and Albert Van Heertum, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

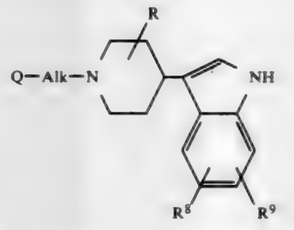
Division of Ser. No. 84,272, Oct. 12, 1979, Pat. No. 4,335,127, which is a continuation-in-part of Ser. No. 1,493, Jan. 8, 1979, abandoned. This application Mar. 26, 1982, Ser. No. 362,214
Int. Cl.³ A61K *31/505;* C07D *401/14*
U.S. Cl. 514—259 6 Claims

1. A chemical compound selected from the group consisting of a compound having the formula



and the pharmaceutically acceptable acid addition salts thereof, wherein
R is a member selected from the group consisting of hydrogen, hydroxy and lower alkyl;
Alk is an alkylene chain having from 1 to 4 carbon atoms;
R^8 and R^9 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, lower alkyloxy, trifluoromethyl and amino; and
Q is quinazolinyl, the 1-, 2-, 3- or 4-position of which is connected with the alkylene side chain, said quinazolinyl bearing in one or both of its 2- and 4-positions a oxo or thioxo group, wherein the benzene ring of said quinazolinyl is optionally substituted with 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, trifluoromethyl, nitro and cyano, and wherein the pyrimidino ring of said quinazolinyl may be partly or fully saturated, said pyrimidino ring being optionally substituted with 1 to 3 substituents independently selected from the group consisting of lower alkyl, aryl and aryl(lower alkyl);
wherein said aryl as used in the definition of said Q is a member selected from the group consisting of phenyl, substituted phenyl, thienyl and pyridinyl, wherein said substituted phenyl has from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, trifluoromethyl and amino.

6. A method of treating congestion in warm-blooded animals which comprises the administration thereto of an effective anti-congestive amount of a chemical compound selected from the group consisting of a compound having the formula

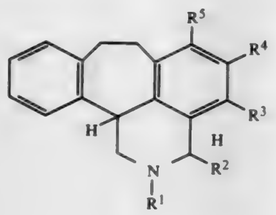


and the pharmaceutically acceptable acid addition salts thereof, wherein
R is a member selected from the group consisting of hydrogen, hydroxy and lower alkyl;

Alk is an alkylene chain having from 1 to 4 carbon atoms;
R^8 and R^9 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, lower alkyloxy, trifluoromethyl and amino; and
Q is quinazolinyl, the 1-, 2-, 3- or 4-position of which is connected with the alkylene side chain, said quinazolinyl bearing in one or both of its 2- and 4-positions a oxo or thioxo group, wherein the benzene ring of said quinazolinyl is optionally substituted with 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, trifluoromethyl, nitro and cyano, and wherein the pyrimidino ring of said quinazolinyl may be partly or fully saturated, said pyrimidino ring being optionally substituted with 1 to 3 substituents independently selected from the group consisting of lower alkyl, aryl and aryl(lower alkyl);
wherein aryl as used in the definition of said Q is a member selected from the group consisting of phenyl, substituted phenyl, thienyl and pyridinyl, wherein said substituted phenyl has from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, trifluoromethyl and amino.

4,522,946
DIOXY HEXAHYDROBENZO[6,7]CYCLOHEPTA[1,2,3-de]ISOQUINOLINE DERIVATIVES USEFUL AS NEUROLEPTIC AGENTS
André A. Asselin, St. Laurent, and Leslie G. Humber, Dollard des Ormeaux, both of Canada, assignors to Ayerst, McKenna & Harrison, Inc., Montreal, Canada
Filed Jun. 13, 1983, Ser. No. 504,014
Int. Cl.³ A61K *31/435;* **C07D** *221/18*
U.S. Cl. 514—284 **20 Claims**

1. A compound of formula I

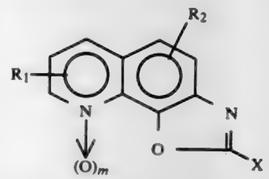


(I)

in which R^1 is hydrogen, lower alkyl, lower alkenyl, hydroxy(lower)alkyl or phenylmethyl; R^2 is hydrogen, lower alkyl, lower cycloalkyl, phenyl or phenylmethyl; R^4 is lower alkoxy or hydroxy; and R^3 is hydroxy and R^5 is hydrogen, or R^3 is hydrogen and R^5 is hydroxy; wherein lower alkyl and lower alkenyl are straight chain alkyl radicals having from 1 to 6 carbon atoms and branched chain alkyl radicals having up to 4 carbon atoms and lower cycloalkyl are cyclic alkyl radicals having 3 to 6 carbon atoms or a therapeutically acceptable acid addition salt thereof.

4,522,947
CERTAIN 1,3-OXAZOLO[4,5H]QUINOLINES USEFUL AS ANTI-ALLERGY AGENTS
John H. Musser, Malvern, Pa., and Richard E. Brown, East Hanover, N.J., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.
Continuation-in-part of Ser. No. 362,712, Mar. 29, 1982, abandoned. This application Mar. 18, 1983, Ser. No. 476,673
Int. Cl.³ C07D *498/04;* **A61K** *31/47*
U.S. Cl. 514—293 **9 Claims**

1. A quinoline compound of the formula

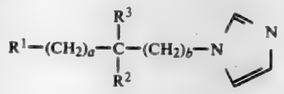


and pharmaceutically acceptable salts thereof, wherein
R_1 and R_2 are both hydrogen, or one of R_1 and R_2 is hydrogen and the other is C_1–C_5 alkyl, halo, trifluoromethyl, nitro, C_1–C_5-aklylamino, or benzyl;
m is 0 or 1; and
X is cyano, formyloximino, or $COOR_4$ in which the R_4 group is hydrogen, C_1–C_{12} alkyl or C_1–C_{12} alkyl substituted by a C_1–C_5 alkoxy, diethylamino or amino group.

9. A method of treating asthma which comprises administering to a patient requiring treatment an effective amount of a compound or salt according to claim 1.

4,522,948
SPERMICIDAL SUBSTITUTED 1-(CYCLOALKYL)ALKYLIMIDAZOLES
Keith A. M. Walker, Los Altos Hills, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Filed Apr. 24, 1981, Ser. No. 256,877
Int. Cl.³ A61K *31/415;* **C07D** *233/58*
U.S. Cl. 514—396 **7 Claims**

1. A compound of the formula

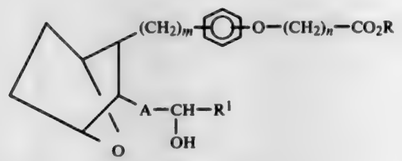


(I)

wherein:
R^1 is cycloalkyl of five to seven carbon atoms optionally substituted by one or more lower alkyl groups;
R^2 is cycloalkyl of five to seven carbon atoms, or cycloalkylalkyl of six to ten carbon atoms wherein when a cycloalkyl is cyclohexyl, it is optionally substituted by one or more lower alkyl groups;
R^3 is hydrogen or methyl;
a is 0, 1, 2 or 3; and
b is 1, 2 or 3, or a pharmaceutically acceptable acid addition salt thereof.

4,522,949
7-OXABICYCLOHEPTANE SUBSTITUTED PROSTAGLANDIN INTERPHENYLENE ANALOGS USEFUL AS CARDIOVASCULAR AGENTS
Jagabandhu Das, Plainsboro, and Martin F. Haslanger, Lambertville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Oct. 20, 1983, Ser. No. 543,681
Int. Cl.³ A61K *31/34;* **C07D** *307/00*
U.S. Cl. 514—469 **12 Claims**

1. A compound having the structural formula

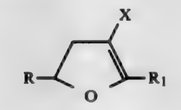


and including all stereoisomers thereof;
wherein
A is CH=CH or $(CH_2)_2$;
m is 1 to 4; n is 1 to 8; R is H, lower alkyl or alkali metal; and R^1 is lower alkyl, aryl, aralkyl, cycloalkyl or cycloalkylalkyl; wherein the term lower alkyl or alkyl by itself or as part of another group is unsubstituted or substituted with halo, trifluoromethyl, alkoxy, aryl, alkyl-aryl, haloaryl, cycloalkyl or alkylcycloalkyl;
the term aryl by itself or as part of another group contains 6 to 10 carbons and is unsubstituted or substituted with lower alkyl, halogen or lower alkoxy; and
the term cycloalkyl by itself or as part of another group contains 3 to 12 carbons and is unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups; and wherein $(CH_2)_m$ and $(CH_2)_n$ may be substituted by one or more alkyl substituents.

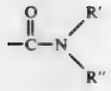
8. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,522,950
2,3-DIHYDROFURANS USEFUL AS FUNGICIDES
Allen L. Hall, Amelia, and Richard G. Fayter, Jr., Fairfield, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.
Filed Jun. 13, 1983, Ser. No. 503,975
Int. Cl.³ A01N *43/08;* **C07D** *307/30, 307/32*
U.S. Cl. 514—471 **4 Claims**

1. 4-Diethylcarbamyl-5-methyl-2-vinyl-2,3-dihydrofuran.
2. 4-Phenylcarbamyl-5-methyl-2-vinyl-2,3-dihydrofuran.
3. 4-Phenylsulfonyl-5-methyl-2-vinyl-2,3-dihydrofuran.
4. A method of inhibiting the growth of fungi which comprises contacting said fungi with a fungicidally effective amount of a compound of the formula



wherein R is an ethyl or vinyl group, R_1 is a C_{1-4} alkyl group and X is selected from the group consisting of nitrile;



and R′ is C_{1-4} alkyl or phenyl and R″ is hydrogen, C_{1-4} alkyl or phenyl; and



where R‴ is C_{1-10} alkyl, phenyl, benzyl, C_{1-4} alkyl- or alkoxyl-substituted phenyl or benzyl or the group



where R′ is C_{1-4} alkyl or phenyl and R″ is hydrogen, C_{1-4} alkyl or phenyl.

4,522,951
REMOVAL OF MG^{++} AND CA^{++} IONS FROM NaCl BRINE
John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Continuation of Ser. No. 307,827, Oct. 2, 1981, Pat. No. 4,405,574. This application Sep. 19, 1983, Ser. No. 533,682
The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.
Int. Cl.³ C08D *5/20;* **G01N** *31/04*
U.S. Cl. 521—28 **19 Claims**

1. A method for substantially removing alkaline earth metal ions from a NaCl brine feed to an electrolytic cell wherein NaCl is electrolyzed to produce chlorine and sodium hydroxide, said method comprising
passing said NaCl brine through a vessel containing a particulate, macroporous, anion exchange resin composite containing therein the post-deposited in-situ reaction product of polymeric amorphous hydrous zirconium oxide and a source of PO_4^{---} ions,
removing from contact with said composite in said vessel, the NaCl brine with its alkaline earth metal ions being substantially removed, and
thereafter feeding said NaCl brine to the said electrolytic cell.

4,522,952
PROCESS FOR THE FLUORINATION OF POLYMERS, AND PERFLUORINATED ION EXCHANGERS
Joachim Klein, Brunswick; Hartmut Widdecke, Bokensdorf; Frank Döscher, and Fritz Pohl, both of Brunswick, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Continuation of Ser. No. 276,929, Jun. 24, 1981, abandoned. This application Nov. 8, 1983, Ser. No. 550,054
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023455
Int. Cl.³ C08F *8/20*
U.S. Cl. 521—31 **1 Claim**

1. A process for preparing a perfluorinated cation exchanger consisting essentially of contacting a polymer with elemental fluorine in the absence of liquid solvent said polymer containing a repeating unit R—S′—Xm wherein R is a base unit forming a polymer matrix, X represents the radical SO_2F, S′ is an

aromatic or araliphatic radical with m+1 free valences and m is at least 1 to form a perfluorinated acid derivative and converting it into its corresponding free acid or an alkali metal salt thereof by treatment with water or an alkali metal salt thereof.

4,522,953

LOW DENSITY POROUS CROSS-LINKED POLYMERIC MATERIALS AND THEIR PREPARATION AND USE AS CARRIERS FOR INCLUDED LIQUIDS

Donald Barby, Chester, and Zia Haq, Wirral, both of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 355,291, Mar. 8, 1982,. This application Sep. 24, 1984, Ser. No. 653,612

Claims priority, application United Kingdom, Mar. 11, 1981, 8107658; Jun. 26, 1981, 8119740

Int. Cl.[3] **C08J** *9/28*

U.S. Cl. 521—64 **9 Claims**

1. A porous homogeneous cross-linked vinyl polymeric block material formed from a water-in-oil emulsion, said emulsion containing at least 90% by weight water, the polymeric block material having a dry density of less than 0.1 g/cc and formed as a cross-linked porous structure having a pore volume of more than 9 cc/g and an absorbency for hydrophobic liquids defined in terms of oleic acid of at least 7 cc/g.

4,522,954

METHOD FOR PRODUCING A LOW DENSITY FOAMED POLYESTER RESIN

Frank Ive, 1862 Ives Ave., Kent, Wash. 98031

Continuation of Ser. No. 475,052, Mar. 14, 1983,. This application Mar. 14, 1984, Ser. No. 589,040

Int. Cl.[3] **C08J** *9/14*

U.S. Cl. 521—78 **24 Claims**

1. A method for making a low density foam from a polyester resin comprising the steps of:

metering a predetermined amount of a polyester resin from a storage zone to a heating zone,

heating said resin to a temperature in the range of from 90° F. to 140° F. in said heating zone,

forwarding said heated resin to a first mixing zone,

metering a minor amount of a blowing agent to said first mixing zone and mixing said blowing agent with said polyester resin to form an activated resin,

forwarding said activated resin to a second mixing zone,

metering a minor amount of a catalyst to said second mixing zone and mixing said catalyst with said activated resin to form a catalyzed resin,

immediately thereafter depositing said catalyzed resin on a surface to produce a substantially uniformly dense resin product.

4,522,955

HIGHLY FOAMED POLYPROPYLENE PRODUCT AND AN EXTRUSION PROCESS FOR FORMING THE PRODUCT

Nobuo Fukushima, Otsu; Yoshihiko Kitagawa, Toyonaka; Takuzo Okumura, Ibaraki, and Kazuaki Sakakura, Moriguchi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 19, 1982, Ser. No. 379,878

Claims priority, application Japan, May 29, 1981, 56-83316

Int. Cl.[3] **B29D** *27/00*

U.S. Cl. 521—143 **6 Claims**

1. A non-crosslinking extrusion foaming process for producing a polypropylene highly foamed product which consists essentially of feeding a polypropylene resin having, at 190° C., a minimum value of melt tension of 3 g or more and a maximum/minimum ratio of melt tension of 2.5 or less into an extruder together with a nucleus-forming agent, melting them, thereafter feeding a volatile foaming agent into the barrel of the extruder, uniformly mixing the materials, and then extruding the mixture to a low pressure zone while cooling the mixture.

4. A foamed polypropylene product produced by the process of claim 1.

4,522,956

POLY(ETHYLENE OXIDE)/POLYETHYLENE GLYCOL-CONTAINING HYDROPHILIC DENTURE ADHESIVE

Dadi J. Dhabhar, Norwalk, and Nicholas F. Schmidt, Brookfield, both of Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Continuation of Ser. No. 403,091, Jul. 29, 1982, abandoned. This application Apr. 12, 1984, Ser. No. 599,623

Int. Cl.[3] **A61K** *6/08*

U.S. Cl. 523—120 **9 Claims**

1. A denture adhesive composition consisting essentially of a substantially anhydrous mixture of from about 20 to about 35 percent w/w poly(ethylene oxide) homopolymer having a molecular weight of from about 100,000 to about 5,000,000 as the sole adhesive component and from about 65 to about 80 percent w/w of a polyethylene glycol fraction comprising one or more polyethylene glycols each having an average molecular weight of from 200 to 20,000 and said fraction having a viscosity of from about 44 to about 25,600 centipoises at about 60° C.

4,522,957

PROCESS FOR PREPARING CURABLE POLYOLEFIN POLYMERS

Billy H. Ashley, Wadsworth, Ohio, assignor to A. Schulman, Inc., Akron, Ohio

Filed Sep. 3, 1982, Ser. No. 414,646

Int. Cl.[3] **C08K** *9/00, 9/06, 5/01*

U.S. Cl. 523—212 **20 Claims**

1. In a process for preparing curable polyolefin polymers in which a mass of dry, discrete, free-flowing particles of polyolefin polymer particles is tumbled in admixture with a curing agent effective to cause curing when the finished product is subjected to curing temperature, the improvement which comprises tumbling said mass in two separate and discrete steps in which essentially all of the curing agent is incorporated into said mass in the first tumbling step and equilibration between the curing agent and the polymer is effected in the second tumbling step while maintaining in both tumbling steps a temperature above the melting point of said curing agent but below both the agglomerating temperature and the curing temperature and, at least in the second tumbling step, a temperature which provides equilibration between the curing agent and the polymer; and thereafter tumble-cooling the thus treated mass until a dry, discrete, free-flowing mass of polymer particles is obtained, said process being characterized in that it is not dependent upon a curing agent of high volatility, such as di-tertiary butyl peroxide.

4,522,958

HIGH-SOLIDS COATING COMPOSITION FOR IMPROVED RHEOLOGY CONTROL CONTAINING CHEMICALLY MODIFIED INORGANIC MICROPARTICLES

Suryya K. Das, Pittsburgh; William G. Boberski, Gibsonia; Paul P. Greigger, Allison Park; James E. Jones, Lower Burrell; Raymond F. Schappert, Glenshaw, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 6, 1983, Ser. No. 529,421

Int. Cl.[3] **C08K** *9/06*

U.S. Cl. 523—212 **30 Claims**

1. An essentially solvent-based, organic, high-solids coating composition which is conventionally sprayable at high-solids comprising:

(A) a film-forming binder system containing a crosslinkable resin having a weight average molecular weight of from about 500 to about 10,000, and optionally a crosslinking agent for the crosslinkable resin:

(B) substantially colorless, substantially inorganic microparticles stably dispersed in the coating composition, the microparticles prior to incorporation in the coating composition ranging in size from about 1 to about 150 nanometers and in the form of a sol of the microparticles in which carbon-containing molecules are chemically bonded to the surface of the inorganic microparticles; and

(C) a solvent system for the crosslinkable resin and the optional crosslinking agent;

wherein the crosslinkable resin is in an amount of from about 15 to about 95 percent by weight and the substantially inorganic microparticles are in an amount of from about 1 to about 20 percent by weight, based on the sum of the weights of the crosslinkable resin, the optional crosslinking agent, and the inorganic microparticles.

4,522,960

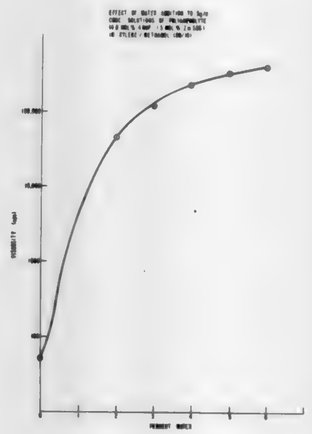
CONTROLLED GELATION ON NONAQUEOUS SOLUTIONS CONTAINING LOW CHARGE DENSITY POLYAMPHOLYTES

Dennis G. Peiffer, East Brunswick, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 6, 1984, Ser. No. 638,218

Int. Cl.[3] **C08L** *39/00*

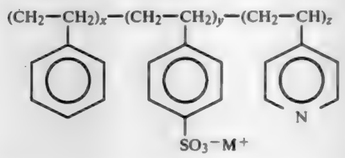
U.S. Cl. 523—339 **12 Claims**



1. A process for gelling a nonpolar organic liquid having a viscosity of at least about 50 cps which includes the steps of:

(a) forming a solvent system of said nonpolar organic liquid and a polar cosolvent, said polar cosolvent being less than about 15 weight percent of said solvent system and a viscosity of said solvent system being less than about 100 cps;

(b) dissolving a water insoluble, oil soluble terpolymer in said solvent system to form a solution, a concentration of said terpolymer in said solution being about 0.2 to about 10 weight percent and a viscosity of said solution being less than about 2000 cps, said terpolymer having the formula:



wherein x is about 40 to about 98 mole %, y is about 1 to about 50 mole %, and z is about 1 to about 50 mole %, wherein y and z are less than 60 mole %, and M is an amine or a metal cation selected from the group consisting of antimony tin, lead, Groups IA, IIA, IB and IIB of the Periodic Table of Elements; and

(c) adding about 5 to about 500 volume percent water to said solution of said terpolymer, said water being immiscible with said solution of said terpolymer, said polar cosolvent transferring from said nonpolar organic liquid to said water thereby causing the viscosity of said organic liquid to increase to at least 5000 cps.

4,522,959

THERMOPLASTIC COMPOSITIONS IN POWDER FORM

Christian Lindner, Cologne; Karl-Heinz Ott, Leverkusen, and Hans-Eberhard Braese, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,284

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1983, 3312540

Int. Cl.[3] **C08J** *3/00*

U.S. Cl. 523—335 **2 Claims**

1. In an improved process for the production of a pulverulent mixture consisting of

(A) from 60 to 99 parts, by weight of the pulverulent mixture, of a brittle copolymer consisting of from 35 to 5%, by weight of brittle copolymer, of acrylonitrile and from 95 to 65%, by weight of brittle copolymer, of a monomer of styrene, α-methylstyrene, methyl methacrylate or mixtures thereof; and

(B) from 1 to 40 parts, by weight of the pulverulent mixture, of a rubber-elastic polymer of (1) a flexible rubber-elastic polymer having a glass transition temperature less than 20° C., (2) a graft polymer, the rubber basis of which has a glass transition temperature of less than 20° C., or mixtures of (1) and (2),

the improvement consisiting of;

in a first stage, a latex of (A) or a mixture of a latex of (A) and a part of a latex of (B) are coagulated by the addition of a coagulant at a temperature of from 20° to 100° C.,

in a second stage, the latex of (B) or the remaining part of the latex of (B) is added and a sufficient amount of additional coagulent, water or mixtures thereof, is added during the second stage or after the second stage, but before a third stage to obtain a solids to water weight ratio of from 1:3 to 1:15, and

in a third stage, the precipitated mixture of (A) and (B) is separated from the aqueous phase and dried.

4,522,961

AQUEOUS SELF-CURING POLYMERIC BLENDS

Phillip C. Martino, Brunswick, and Peter P. Winner, North Royalton, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 468,364, Feb. 22, 1983, abandoned. This application Jan. 30, 1984, Ser. No. 575,287

Claims priority, application Finland, Aug. 10, 1983, 832883; New Zealand, Aug. 10, 1983, 205206; Australia, Aug. 11, 1983, 17909/83; Canada, Aug. 11, 1983, 434383; Denmark, Aug. 11, 1983, 3659/83; European Pat. Off., Aug. 11, 1983, 83304656.8; Rep. of Korea, Aug. 11, 1983, 3754/83; Mexico, Aug. 11, 1983, 198360; Norway, Aug. 11, 1983, 832885; Portugal, Aug. 11, 1983, 77186[U]; South Africa, Aug. 11, 1983, 83/5923; Spain, Aug. 11, 1983, 524.884; Ireland, Aug. 12, 1983, 1907/83; Japan, Aug. 12, 1983, 58-146741; Taiwan, Aug. 18, 1983, 7212830; Venezuela, Aug. 31, 1983, 1343

Int. Cl.[3] C08L *63/00, 51/00*

U.S. Cl. 523—407 77 Claims

1. A water-dispersed coating composition comprising a polymeric blend on a polymer solids weight basis:

between 5% and 99% of a self-curing water dispersed polymer comprising copolymerized ethylenically unsaturated monomers comprising (a) alkylol acrylamide monomer, (b) ethylenically unsaturated functional monomer containing reactive functional groups and selected from carboxyl, hydroxyl, amine, or amide functional monomers, and (c) other ethylenically unsaturated monomer, said monomers copolymerized in water to produce polymer particles wherein said alkylol acrylamide monomer is preferentially copolymerized on the surface portion of said polymer particles;

between 1% and 70% epoxy-acrylic graft copolymer; and

between 0% and 50% of a phosphated polymer.

4,522,962

EPOXY MODIFIED EMULSION POLYMERS

Kirk J. Abbey, Cleveland, and James R. Erickson, Brunswick, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Sep. 8, 1980, Ser. No. 185,253

Int. Cl.[3] C08G *59/00;* C08K *3/20*

U.S. Cl. 523—410 8 Claims

1. In an emulsion polymerization process the improvement comprising the steps of:

providing a blend comprising on a weight basis, between 0.1% and 40% of an epoxy resin polymer, between 30% and 99.8% ethylenically unsaturated monomers, and between 0.1% and 30% oxirane containing ethylenically unsaturated monomers, and polymerizing said blend in an aqueous medium in the presence of polymerization catalysts to copolymerize said ethylenically unsaturated monomers with said oxirane containing ethylenically unsaturated monomers to form an oxirane polymer and provide an in situ emulsified blend of oxirane polymer and said epoxy resin polymer.

4,522,963

PROCEDURE FOR CURING UNSATURATED POLYESTER RESINS

Géza Kecskeméthy; István Kovácsay, and László Magdányi, all of Budapest, Hungary, assignors to Müanyagipari Kutató Intézet, Budapest, Hungary

Filed Oct. 13, 1983, Ser. No. 541,433

Int. Cl.[3] C08L *67/06*

U.S. Cl. 523—510 4 Claims

1. A process for monitored cross-linking of unsaturated polyester resins in the presence of a metal-ion-containing accelerator and an organic peroxide initiator which comprises conducting the cross-linking in the presence of a color-producing compound selected from the group consisting of alizarin, sodium alizarinesulfonate, 3-nitroalizarin, chinizarine, or purpurin, in a ratio of from 0.005 to 0.5 percent mass/mass compared to the mass of the polyester resin, and tracking the cross-linking by means of the color change in the reaction mixture.

4,522,964

POLYMER POWDERS CONTAINING GRAFT POLYMER

Christian Lindner, Cologne; Walter Uerdingen, Leverkusen; Jürgen Hinz, and Ludwig Trabert, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,345

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1983, 3312541

Int. Cl.[3] C08L *31/04, 33/06, 33/20, 51/04*

U.S. Cl. 524—71 11 Claims

1. A process for the production of polymer mixtures in powder form having an average particle diameter of 0.05–5 mm which comprises:

(i) coagulating in a first stage, a latex of (A) or a mixture of a latex of (A) and a portion of the requisite amount of a latex of (B) at a temperature of from 20° to 100° C. by the addition of a coagulating agent, and

further coagulating in a second stage the product from (i) with a latex of (B) or the remaining portion of the requisite amount of the latex of (B) whereby the desired quantity ratio of (A) and (B) is attained, and until a solids/water weight ratio of from 1:3 to 1:15 is attained, and

(iii) separating in a third stage the precipitated mixture of (A) and (B) from the aqueous phase and drying the product wherein the proportion of graft polymer in the product obtained is at least 10%, by weight; wherein

(A) is from 95–20% by weight of the polymer mixture and comprises:

(A1) a rubbery polymer from the series of diene- or alkyl acrylate homo- or copolymers with styrene, acrylonitrile, methyl methacrylate, vinyl acetate or vinyl ether and which has a glass transition temperature of ≦35° C.; or

(A2) a graft polymer wherein monomers including styrene, acrylonitrile, methyl methacrylate or mixtures thereof are grafted on diene or alkyl acrylate rubbers and having a rubber content, based on the graft polymer of from 50 to 95%, by weight, and has a glass transition temperature of <20° C.; or

(A3) a mixture of said rubbery polymer (A1) and said graft polymer (A2); and wherein

(B) is from 5 to 80% by weight of the polymer mixture and comprises:

(B1) a rigid thermoplastic polymer of styrene, α-methylstyrene, acrylonitrile, methyl methacrylate and mixtures thereof; or

(B2) a graft polymer wherein monomers including styrene, α-methylstyrene, acrylonitrile, methyl methacrylate or mixtures thereof are grafted on diene rubbers or alkyl acrylate rubbers and having a rubber content less than 50%, by weight, based on the graft polymer, and having a glass transition temperature of <20° C.; or

(B3) a mixture of said rigid thermoplastic polymer (B1) and said graft polymer (B2).

4,522,965

THERMOPLASTIC CONTACT ADHESIVES CONTAINING EPOXIDE PLASTICIZERS

Helmut Waniczek, Cologne; Herbert Bartl, Odenthal; Gerhard Hohmann, and Ludwig Mott, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 13, 1984, Ser. No. 670,226

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1983, 3342307

Int. Cl.[3] C09J *3/14, 5/06*

U.S. Cl. 524—109 4 Claims

1. Thermoplastic contact adhesive, containing:

(a) from 60 to 100 parts, by weight, of a graft copolymer composed of from 65 to 97%, by weight of graft base consisting of a copolymer of from 45 to 65% by weight, of ethylene units with from 35 to 55% by weight, of vinyl acetate units and optionally up to 10%, by weight of units of other unsaturated compounds, and from 35 to 3% by weight of grafted monomer units, consisting of from 80 to 100% by weight, of methyl methacrylate units and from 0 to 20% by weight, of units of other unsaturated compounds;

(b) from 3 to 50 parts, by weight, of a plasticizer containing epoxide groups or of a mixture of various plasticizers containing epoxide groups;

(c) from 60 to 200 parts, by weight, of an adhesifying resin; and

(d) from 0 to 20 parts, by weight, of other additives; characterized in that the plasticizers containing epoxide groups are epoxidized oils or epoxidized fatty acid esters of alcohols having from 1 to 12 carbon atoms.

4,522,966

NON-FOGGING COATING COMPOSITION AND A SHAPED ARTICLE COATED THEREWITH

Masaaki Funaki, Toyonaka; Noboru Ohtani; Motoaki Yoshida, both of Nishinomiya; Akira Fujioka, Osaka, and Kazuo Sakiyama, Ibaraki, all of Japan, assignors to Nippon Sheet Glass Co., Ltd. and Sumitomo Chemical Company, Limited, both of Osaka, Japan

Filed May 28, 1981, Ser. No. 268,106

Int. Cl.[3] C08K *5/54*

U.S. Cl. 524—114 15 Claims

1. A non-fogging transparent coating composition free of organophosphate esters and amine aldehyde crosslinking agents, which comprises:

(A) 0 to 50 parts by weight

(calculated as $R_a^1-Si(R_b^2)-O_{\frac{4-a-b}{2}}$)

of at least one compound selected from the group consisting of epoxy group-containing organic silane compounds represented by the general formula (1):

$$R_a^1-Si(R_b^2)-(OR^3)_{4-a-b} \quad (1)$$

wherein R^1 stands for an organic group having an epoxy group, R^2 for a hydrogen atom, a hydrocarbon group having 1 to 6 carbon atoms or a vinyl group, R^3 for a hydrocarbon group having 1 to 5 carbon atoms, an alkoxyalkyl group or an acyl group having 1 to 4 carbon atoms, a for an integer having the value of 1 to 3 and b 0 or for an integer having the value of 1 to 2, providing that $a+b \leqq 3$ is satisfied, and partial hydrolyzates thereof,

(B) 20 to 80 parts by weight selected from triethylene glycol and a polyhydric alcohol which has an ethylene oxide chain and a molecular weight of 200 to 2000 and is capable of reacting with a component (C) as defined below or a mixture of the components (A) and (C) to form a coating film,

(C) 10 to 75 parts by weight of a polymer or copolymer containing at least 20% by weight of repeating structural units represented by the general formula (2):

$$-CH(R^4)-C(R^5)(X)- \quad (2)$$

wherein, R^4 and R^5 independently stand for a hydrogen atom, a lower alkyl group or a carboxyl group and X stands for a side chain possessing an epoxy group, and

(D) a catalytic amount of a perchlorate curing catalyst, providing that the total of the amounts of the aforementioned components (A), (B) and (C) is 100 parts by weight.

4,522,967

HEAT SEALABLE WATER DISPERSIBLE ADHESIVE

Donald A. Sheldon, Outagamie County, Wis.; Bruce G. Stokes, Cherokee County, Ga.; Robert E. Weber, Cobb County, Ga., and Edwin G. Greenman, Cherokee County, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 8, 1984, Ser. No. 618,810

Int. Cl.[3] C08K *5/06, 5/05;* C08L *79/04*

U.S. Cl. 524—377 3 Claims

1. A water dispersible heat activatable adhesive comprising:

25–87.5 parts by weight polyethyloxazoline

75–12.5 parts by weight polyethyloxazoline

compatible water dispersible plasticizer with a Tg below about 10° C. and an anti-blocking agent at a level of 5 to 35 parts per 100 parts of the polyethyloxazoline plasticizer mixture said anti-blocking agent selected from the class consisting of moderate molecular weight polyethylene glycol and moderate molecular weight polypropylene glycol.

4,522,968

PROCESS FOR THE PREPARATION OF WATER-IN-WATER SECONDARY DISPERSIONS OF WATER-SOLUBLE POLYMERS AND THEIR UTILIZATION AS FLOCCULANTS

Heinrich Horacek, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 17, 1984, Ser. No. 611,106

Claims priority, application Fed. Rep. of Germany, May 19, 1983, 3318218

Int. Cl.[3] C08L *33/00, 33/26;* C08K *5/10*

U.S. Cl. 524—388 14 Claims

1. Process for the preparation of water-in-water secondary dispersions of water-soluble polymers wherein powdered homopolymers or copolymers of (meth)acrylamides, (meth)acrylic acid and (meth)acrylic acid esters of amino alcohols or their salts are dispersed in an aqueous solution containing from about 2 to 50 percent by weight of a polymer of ethylene oxide and/or propylene oxide having a molecular weight of from 500 to 10,000.

13. The process of clarifying coal slurries and waste water and for processing ore comprising adding to such liquid the water-in-water secondary dispersions produced by the process of claim 2.

4,522,969

MODIFIED POLYURETHANE LIQUID POLYMER COMPOSITIONS

James M. O'Connor, Clinton; Donald L. Lickei, Cheshire, and Michael L. Rosin, Madison, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 467,005, Feb. 16, 1983, abandoned, which is a division of Ser. No. 306,848, Sep. 29, 1981, Pat. No. 4,439,576, which is a continuation-in-part of Ser. No. 203,212, Nov. 3, 1980, abandoned, and a continuation-in-part of Ser. No. 203,213, Nov. 3, 1980, abandoned. This application Mar. 20, 1984, Ser. No. 591,645

Int. Cl.³ C08K *3/26*

U.S. Cl. 524—425 **17 Claims**

1. A process for preparing a polyurethane polymer product comprising mixing a polyurethane oligomer, a heat activated free radical generating catalyst, and at least one additional component selected from a reinforcing agent and a filler to a homogeneous blend, and then heating said mixture at a temperature adequate to activate said catalyst and cure said mixture, said polyurethane oligomer having an equivalent ratio of NCO to OH from about 0.8/1 to about 2/1 and being prepared by reacting

(a) an organic polyisocyanate;

(b) a polyol reactant comprising

(i) a high functionality polyol having an average equivalent weight from about 75 to about 500 and an average functionality of at least about 3, said high functionality polyol being prepared by reacting an alkylene oxide, or a mixture of alkylene oxides, with a polyhydric initiator comprising a carbohydrate or a carbohydrate derivative, and

(ii) a chain extender having an average equivalent weight from about 31 to about 4,000 and an average functionality of about 2, said chain extender being employed in an amount ranging from about 20 to about 1,500 parts by weight per 100 parts by weight of said high functionality polyol; and

(c) an isocyanate reactive group-containing unsaturated monomer selected from the group consisting of

(i) hydroxyalkyl acrylates,

(ii) hydroxyalkyl methacrylates,

(iii) hydroxyalkyl acrylamides, and

(iv) mixtures thereof; and

wherein there is employed an equivalent ratio of said isocyanate reactive group-containing unsaturated monomer to said polyol reactant in the range from about 0.6/1 to about 3/1.

4,522,970

TIRE WITH TREAD RUBBER CONTAINING MEDIUM VINYL POLYBUTADIENE WITH CLAY AND CARBON BLACK

Richard M. Scriver, Grand Duchy Luxembourg, Luxembourg, and Wayne H. Stair, Munroe Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 25, 1984, Ser. No. 624,326

Int. Cl.³ C08K *3/34, 3/04;* **C08L** *9/00, 9/06*

U.S. Cl. 524—447 **11 Claims**

1. A pneumatic tire having an outer circumferential tread adapted to be ground contacting, where said tread is a sulfur cured product of an elastomeric composition comprised of, based on 100 parts of weight rubber (phr), (A) about 50 to about 90 phr of medium vinyl polybutadiene rubber having about a 30 to about 55 percent vinyl content and having in its unvulcanized state, an ML4(100° C.) viscosity in the range of about 40 to about 120, (B) about 50 to about 10 phr of at least one rubber selected from cis 1,4-polyisoprene rubber, cis 1,3-polybutadiene rubber and styrene/butadiene copolymer rubber (C) about 5 to about 20 phr kaolin clay, (D) about 50 to about 80 phr reinforcing carbon black and (E) about 1 to about 6 phr of a 3,3'-bis(trimethoxysilylpropyl) polysulfide.

4,522,971

POLYMERS CONTAINING RESORCINOL MONOBENZOATE

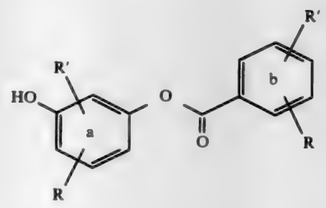
Michael DeBergalis, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 25, 1983, Ser. No. 469,689

Int. Cl.³ C08F *8/30*

U.S. Cl. 524—547 **16 Claims**

1. A polymer comprising a polymeric moiety reacted with resorcinol monobenzoate or a derivative containing resorcinol monobenzoate, said moiety being bound to the hydroxyl group on the resorcinol monobenzoate through a linking group, wherein the polymer contains, by weight, 12.5–80% resorcinol monobenzoate, the balance being said moiety, said linking group including at least one group selected from the group consisting of ether, carbonate, and urethane groups and ester groups containing at least two carbon atoms, said derivative fitting the structure



wherein R and R' are hydrogen or alkyl or alkoxy groups containing 1–14 carbon atoms, and wherein there is at least one unsubstituted position on the a ring ortho to the carbonyl groups.

4,522,972

PROCESS FOR THE PREPARATION OF AN AQUEOUS COPOLYMER DISPERSION

Josef Mondt, Königstein, and Thaddäus Wirth, Heidenrod-Wisper, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,415

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128062

Int. Cl.³ C08L *37/00, 39/00*

U.S. Cl. 524—548 **3 Claims**

1. A process for the preparation of an aqueous dispersion of a copolymer which can be crosslinked with an aminoplast resin by the action of heat and which is prepared by copolymerization of monomers from the group comprising styrene, esters of acrylic acid, esters of methacrylic acid, vinyl esters, monoolefinic unsaturated monomers having hydroxyl groups, acrylic acid, methacrylic acid, and unsaturated amides, in an aqueous phase in the presence of a radical-forming initiator and an emulsifier, which comprises copolymerizing a mixture of

30 to 60 parts by weight of styrene,

20 to 50 parts by weight of an ester of acrylic acid or of methacrylic acid, the homopolymer of which has a glass temperature T_G below +50° C., or a mixture of these esters,

5 to 30 parts by weight of a vinyl ester of a branched saturated monocarboxylic acid, which has side chains having 8 to 12 carbon atoms and in which the carboxyl group is on a tertiary carbon atom,

5 to 15 parts by weight of a hydroxyalkyl ester of a monoolefinic unsaturated monocarboxylic acid,

0.5 to 15 parts by weight of an α,β-unsaturated monocarboxylic acid and/or unsaturated dicarboxylic acid, and

0.1 to 8 parts by weight of an addition product of a glycidyl ester of a branched monocarboxylic acid with an unsaturated monocarboxylic or dicarboxylic acid.

2. The process as claimed in claim 1, wherein, in addition, 0.1 to 5 parts by weight of an unsaturated amide are copolymerized.

3. The product obtained according to the process as defined in claims 1 or 2.

4,522,973

LOW TEMPERATURE CROSSLINKABLE EMULSION

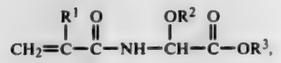
David A. Ley, Stamford, Conn., and Herbert Burkhard, Eastchester, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 6, 1983, Ser. No. 529,237

Int. Cl.³ C08J *39/00;* **C08K** *39/00*

U.S. Cl. 524—555 **12 Claims**

1. A low temperature crosslinkable emulsion comprising (a) an emulsified, crosslinkable polymer containing repeating units derived from an activated ester-containing vinyl monomer of the formula



wherein the R^1 group is H or methyl, and the R^2 and R^3 groups are independently selected from alkyls of 1–4 carbon atoms; with any balance of repeating units derived from one or more copolymerizable ethylenically unsaturated comonomers; and (b) a crosslinking agent having a plurality of primary amine groups each capable at low temperature of replacing the OR^3 moiety by nucleophilic substitution, upon coalescence of micelles of said emulsion which occurs upon evaporation of water therefrom;

wherein the crosslinkable polymer contains a sufficient amount of said repeating units derived from said activated ester-containing vinyl monomer, and said crosslinking agent is present in a sufficient amount, to produce a crosslinked polymer upon said coalescence.

4,522,974

MELT PROCESSABLE POLYESTER CAPABLE OF FORMING AN ANISOTROPIC MELT COMPRISING A RELATIVELY LOW CONCENTRATION OF 6-OXY-2-NAPHTHOYL MOIETY-4-BENZOYL MOIETY, 1,4-DIOXYPHENYLENE MOIETY, ISOPHTHALOYL MOIETY AND TEREPHTHALOYL MOIETY

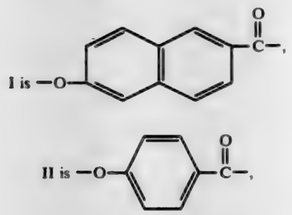
Gordon W. Calundann, North Plainfield; Larry F. Charbonneau, Chatham, and Brian C. Benicewicz, Cranford, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 401,932, Jul. 26, 1982, abandoned. This application May 6, 1983, Ser. No. 492,103

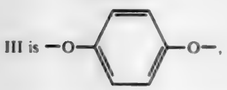
Int. Cl.³ C08G *63/60*

U.S. Cl. 524—605 **22 Claims**

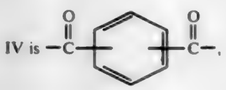
1. A melt processable polyester capable of forming an anisotropic melt phase at a temperature below approximately 400° C. consisting essentially of the recurring moieties I, II, III, and IV wherein:



-continued



where the aromatic ring optionally may include substitution of at least some of the hydrogen atoms present thereon selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, and mixtures of the foregoing, and



where the aromatic ring optionally may include substitution of at least some of the hydrogen atoms present thereon selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, and mixtures of the foregoing, and wherein approximately 40 to 90 mole percent of moiety IV is isophthaloyl moiety and approximately 10 to 60 mole percent of moiety IV is terephthaloyl moiety, and wherein said polyester comprises approximately 3 to 15 mole percent of moiety I, approximately 20 to 70 mole percent of moiety II, approximately 7.5 to 38.5 mole percent of moiety III, and approximately 7.5 to 38.5 mole percent of moiety IV.

4,522,975

SELECT NCO-TERMINATED, URETDIONE GROUP-CONTAINING POLYURETHANE PREPOLYMERS AND LIGNOCELLULOSIC COMPOSITE MATERIALS PREPARED THEREFROM

James M. O'Connor, Clinton; Theodore C. Kraus, Cheshire, and Wilhelm J. Schnabel, Branford, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Jun. 1, 1984, Ser. No. 616,453

Int. Cl.³ C08L *75/00;* **C08G** *18/74*

U.S. Cl. 524—702 **19 Claims**

1. A process for preparing an NCO-terminated, uretdione group-containing polyurethane prepolymer, comprising reacting a uretdione group-containing organic polyisocyanate with an isocyanate reactive hydrogen atom-containing compound in an equivalent ratio of NCO to OH ranging from about 1.5/1 to about 2/1, said uretdione group-containing organic polyisocyanate being derived from an organic polyisocyanate selected from the group consisting of 2,4-toluene diisocyanate; 2,6-toluene diisocyanate; isomeric mixtures of 2,4- and 2,6-toluene diisocyanate; methylene-bis (4-phenyl isocyanate); xylene diisocyanate; 3,3'-bitoluene-4,4'-diisocyanate; naphthalene 1,5-diisocyanate; and mixtures thereof, and said isocyanate reactive hydrogen atom-containing compound having an equivalent weight of less than about 500 and an average functionality from about 2 to about 8 and being selected from the group consisting of polyester polyols, polyether polyols and mixtures thereof.

4,522,976

GRAFT POLYMER DISPERSION IN A MIXTURE OF LOW MOLECULAR WEIGHT POLYOLS AND POLYETHER POLYOLS AND POLYURETHANE FOAMS PREPARED THEREFROM

Oscar M. Grace, Madison Heights, Mich.; Steven E. Wujcik, Long Beach, Calif., and Duane A. Heyman, Monroe, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 17, 1984, Ser. No. 611,134
Int. Cl.³ C08L *25/08*
U.S. Cl. 524—722 **16 Claims**

1. A stable low viscosity graft polymer dispersion prepared by polymerizing in the presence of a free radical initiator from about 25 to about 70 weight percent based on the total weight of the dispersion, an ethylenically unsaturated monomer or mixture of monomers, in a polyol mixture comprising (1) from about 25 to about 99 weight percent of a polyol containing from 2 to 8 hydroxyl groups and having an equivalent weight from 30 to about 200, and (2) from about 1 to about 75 weight percent of a macromer containing induced unsaturation, said macromer comprising the reaction product of a polyether polyol having an equivalent weight from 100 to 10,000 with a compound having both ethylenic unsaturation and a group selected from the group consisting of a hydroxyl, carboxyl, anhydride, isocyanate, and epoxy group or mixtures thereof.

4,522,977

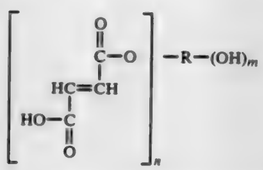
PROCESS FOR PRODUCING DICYCLOPENTADIENYL-MODIFIED POLYESTER COMPOSITIONS

Hugh C. Gardner, Somerville, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1984, Ser. No. 625,914
Int. Cl.³ C08G *63/76*
U.S. Cl. 525—48 **16 Claims**

1. A process for preparing a polyester composition comprising the steps of:

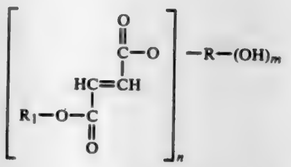
(a) contacting a molar excess of an alpha, beta unsaturated dicarboxylic acid or derivative thereof with an organic polyol for a time and at a temperature sufficient to form a composition comprising a carboxylic acid terminated polyester having the formula:



(I)

wherein n is a number having an average value of about 2 to less than about 4, m is a number equal to the free valence of R less the average value of n, the ratio of n to m is greater than about 2.0, and R is the residuum of a polyester which contained from 2 to 4 inclusive hydroxyl groups; and

(b) contacting a Diels-Alder adduct of cyclopentadiene with an olefinic or acetylenic hydrocarbon or alkylated derivative thereof with the carboxylic acid terminated polyester of (a) in the presence of a non-oxidizing acid catalyst having a non-nucleophilic anion for a time and at a temperature sufficient to form a composition comprising an unsaturated ester having the formula:



(II)

wherein n, m and R are as defined above and R_1 is the residuum of a Diels-Alder adduct of cyclopentadiene with an olefinic or acetylenic hydrocarbon or alkylated derivative thereof having from 2 to about 20 carbon atoms.

16. A composition prepared according to the process of claim **1**.

4,522,978

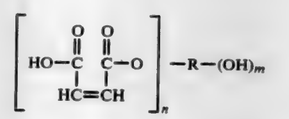
LOW VISCOSITY, DICYCLOPENTADIENYL-MODIFIED POLYESTER COMPOSITIONS AND A PROCESS FOR THE PREPARATION THEREOF

Hugh C. Gardner, Somerville, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1984, Ser. No. 626,144
Int. Cl.³ C08G *63/76*
U.S. Cl. 525—48 **15 Claims**

1. A process for preparing a polyester composition comprising the steps of:

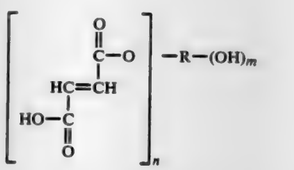
(a) contacting maleic acid or anhydride with an organic polyol for a time and at a temperature sufficient to form a composition comprising a maleate ester having the formula:



(I)

wherein n is a number having an average value of about 2 to less than about 4, m is a number equal to the free valence of R less the average value of n, the ratio of n to m is greater than about 2.0, and R is the hydroxyl-free residue of an organic polyol which contained from 2 to 4 inclusive hydroxyl groups;

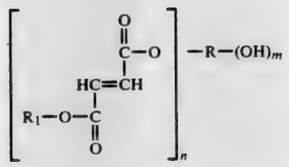
(b) heating the maleate ester of (a) in the presence of a catalyst for a time and at a temperature sufficient to form a composition comprising a fumarate ester having the formula:



(II)

wherein n, m and R are as defined above; and

(c) contacting a Diels-Alder adduct of cyclopentadiene with an olefinic or acetylenic hydrocarbon or alkylated derivatives thereof with about stoichiometric amounts of carboxyl groups of the fumarate ester of (b) in the presence of a non-oxidizing acid catalyst having a non-nucleophilic anion for a time and at a temperature sufficient to form a composition comprising an unsaturated ester having the formula:



(III)

wherein n, m and R are as defined above and R_1 is the residuum of a Diels-Alder adduct of cyclopentadiene and an olefinic or acetylenic hydrocarbon and alkylated derivatives thereof having from 2 to about 20 carbon atoms.

15. A composition prepared according to the process of claim **1**.

4,522,979

MOLDING COMPOSITIONS HAVING AN ENHANCED RESISTANCE TO GASOLINE

James Y. J. Chung, New Martinsville, W. Va., and James W. Rosthauser, Imperial, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Feb. 17, 1984, Ser. No. 581,479
Int. Cl.³ C08L *67/02, 69/00*
U.S. Cl. 525—66 **8 Claims**

1. A thermoplastic molding composition comprising

(a) a blend containing

(i) about 10 to about 80% of a thermoplastic polyester having an intrinsic viscosity of at least about 0.4 dl/gm measured as a 1% solution in a 60:40 mixture of phenol and tetrachloroethane at 30° C.,

(ii) about 15 to about 85% of a thermoplastic aromatic polycarbonate resin having a weight average molecular weight of about 10,000 to about 200,000,

(iii) about 5 to about 30% of a substantially uniformly dispersed impact modifier which is a rubbery compound selected from the group consisting of natural rubbers and synthetic rubbers, having a glass transition temperature below 20° C., and

(b) a blocked polyisocyanate prepolymer in sufficient amount to impart to said blend improved impact strength and gasoline resistance,

said percents being in relation to the weight of said blend.

4,522,980

IMPACT MODIFIED COPOLYESTER CARBONATE COMPOSITIONS

Kenneth F. Miller, Mt. Vernon, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 27, 1982, Ser. No. 452,909
Int. Cl.³ C08L *69/00*
U.S. Cl. 525—67 **5 Claims**

1. A composition comprising in admixture

a. an aromatic copolyester carbonate composition comprising a polymer derived from

i. a dihydric phenol,

ii. a carbonate precursor, and

iii. a further composition providing isophthalate units to the said aromatic copolyestercarbonate composition, wherein the further composition cannot supply more than 25% terephthalate units to the total ester units of the said aromatic copolyestercarbonate which has from about 25 to about 90 mole percent ester bonds; and

b. an impact modifier comprising a polyacrylate or an olefin comonomer and polyacrylate which improves the impact properties of aromatic polycarbonates, said impact modifier composition present in quantities which improves the impact properties of the said aromatic copolyestercarbonate, said quantities from about 2 to about 15 weight percent of the impact modifier plus aromatic copolyestecarbonate.

4,522,981

SYNTHETIC RESIN

Michael Geist, Münster, Fed. Rep. of Germany, assignor to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,292
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130545
Int. Cl.³ C08F *8/30*
U.S. Cl. 525—124 **6 Claims**

1. A synthetic resin based on an acrylate copolymer containing epoxide groups and having a number average molecular weight of 1,000 to 30,000, said acrylate copolymer comprising:

(a) 20 to 90% by weight of a first acrylate selected from the group consisting of alkyl acrylate having 1 to 18 carbon atoms in the alkyl radical and alkyl methacrylate having 1 to 20 carbon atoms in the alkyl radical;

(b) 5 to 40% by weight of a second acrylate having hydroxyl groups selected from the group consisting of hydroxyalkyl acrylate and hydroxyalkylmethacrylate; and

(c) 5 to 40% by weight of monomers containing epoxide groups selected from the group consisting of glycidylacrylate, and glycidylmethacrylate, and the total amount of components (a), (b), and (c) being 100%; and said hydroxyl groups of said acrylate having been reacted in solution at 60°–100° C. with a partially blocked isocyanate selected from the group consisting of diisocyanate and polyisocyanate to a free isocyanate content of less than 1%, and, upon subsequent baking to at an elevated temperature, isocyanate groups are liberated from said blocked isocyanate to react with said epoxide groups of component (c) to form oxazolidinone rings.

4,522,982

ISOTACTIC-STEREOBLOCK POLYMERS OF ALPHA-OLEFINS AND PROCESS FOR PRODUCING THE SAME

John A. Ewen, Houston, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 6, 1983, Ser. No. 501,588
Int. Cl.³ C08F *110/06, 4/64*
U.S. Cl. 525—240 **11 Claims**

1. Normally solid isotactic-stereoblock polypropylene comprising recurring polypropylene units, said isotactic-stereoblock polypropylene characterized by comprising alternating blocks of monomers having an average block length greater than 2 having methine carbons with the same relative configuration and wherein the methine carbon atoms in adjacent blocks are of opposite configuration.

4,522,983

POLYMERIC MOLDING COMPOSITION

Bi Le-Khac, West Chester, Pa., and Clyde Sharik, Plainsboro, N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 9, 1983, Ser. No. 473,835
Int. Cl.³ C08F *279/02*
U.S. Cl. 525—285 **8 Claims**

1. A polymeric molding composition resulting from the polymerization of 100 parts by weight of (A) from about 55 to about 99.8% by weight styrene, (B) from about 0.2 to about 5% or more by weight of at least one isomer of methylstyrene selected from the group consisting of para-methylstyrene, ortho-methylstyrene and meta methylstyrene, (C) from 5 to about 40% by weight of an unsaturated dicarboxylic acid anhydride, wherein the percentages of (A), (B) and (C) are based on the total combined weight of (A) plus (B) plus (C), in the presence of from about 1 to about 40 total parts by weight of at least one preformed rubbery polymer.

4,522,984

MODIFIED EPOXY RESIN AND COMPOSITION

Shoji Watanabe, and Kiyoshi Okitsu, both of Ohtake, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 385,212, Jun. 4, 1982, abandoned. This application Mar. 1, 1984, Ser. No. 583,793

Claims priority, application Japan, Jul. 31, 1981, 56-120507

Int. Cl.³ C08L *67/04*

U.S. Cl. 525—415 **6 Claims**

1. A lactone-modified epoxy resin which is the reaction product obtained by effecting ring-opening polymerization of from 3 to 95 parts by weight of ϵ-caprolactone, in the presence of from 97 to 5 parts by weight of an epoxy resin having terminal unreacted epoxy groups and having at least one hydroxyl group in the epoxy resin molecule, at a temperature of from 100° to 240° C., in the presence of a catalytically effective amount of a catalyst effective for polymerizing ϵ-caprolactone and selected from the group consisting of titanium compounds, organotin compounds and stannous halides, the conditions being effective to form poly(ϵ-caprolactone) as a side chain bonded to the epoxy resin molecule at the location of said hydroxyl group or groups, said poly(ϵ-caprolactone) side chain having a terminal primary hydroxyl group at the end thereof remote from said epoxy resin molecule, whereby to obtain a lactone-modified epoxy resin, and then reacting at least some of said terminal unreacted epoxy groups of said lactone-modified epoxy resin with a primary or secondary amine.

4,522,985

HEAT CURABLE SILICONE-POLYIMIDE BLOCK COPOLYMERS

Hong-Son Ryang, Camarillo, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1984, Ser. No. 604,569

Int. Cl.³ C08G *69/48*

U.S. Cl. 525—431 **7 Claims**

1. Heat curable compositions comprising,

(A) an effective amount of an organic peroxide selected from the class consisting of benzoyl peroxide, dicumyl peroxide, 2,5-dimethyl-2,5-ditertiarybutylperoxyhexane, tertiary butylperbenzoate, bis(2,4-dichlorobenzoyl)peroxide, tertiary butyl peroxide and tertiarybutylperoxyisopropyl carbonate, and

(B) a norbornane or norbornene block copolymer comprising chemically combined blocks of a member selected from

(i) polydiorganosiloxane and

(ii) a mixture of polydiorganosiloxane and polyimide where the organo radicals of the polydiorganosiloxane are selected from the class consisting of the same or different $C_{(1-13)}$ monovalent hydrocarbon radicals and substituted $C_{(1-13)}$ monovalent hydrocarbon radicals and where the norbornane or norbornene groups in the block copolymer are substituted with radicals selected from the class consisting of hydrogen and $C_{(1-8)}$ alkyl radials.

4,522,986

UREA FLOW CONTROL AGENTS FOR URETHANE PAINT PREPARED BY REACTION OF AN ISOCYANATE-TERMINATED PREPOLYMER AND AN ETHANOLAMINE

William T. Short, Southfield, and Robert A. Ottaviani, Washington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 20, 1984, Ser. No. 633,025

Int. Cl.³ C08G *18/10*

U.S. Cl. 525—458 **3 Claims**

1. A thixotropic flow control agent compatible with sprayable urethane paint compositions being an uncrosslinked oligomeric urea reaction product of an isocyanate-terminated prepolymer and an ethanolamine selected from the group consisting of monoethanolamine, diethanolamine, and triethanolamine, said flow control agent when added to a polyurethane paint composition preferably pigmented, reduces sagging of said paint during spraying.

4,522,987

LOW DENSITY POLYETHYLENE

John P. Hogan; Eric T. Hsieh, and James C. Randall, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 9, 1982, Ser. No. 396,930

Int. Cl.³ C08F *2/34, 210/16*

U.S. Cl. 526—106 **8 Claims**

1. An ethylene-hexene-1 copolymer having a density of 0.910–0.935 and a relative comonomer dispersity of over 100%.

4. A process to produce ethylene-monoolefin copolymers comprising contacting a gas mixture containing ethylene and another monoolefin selected from the group consisting of 1-butene, 1-hexene, 1-octene and 4-methyl-1-pentene with a silica/titania/chromium oxide catalyst, said silica and titania being coprecipitated, under gas phase polymerization conditions in a polymerization zone such as to produce an ethylene-monoolefin-copolymer having a density in the range of 0.915 to 0.935 g/cc

wherein said 1-butene, when used, is used in a concentration in mole percent in the gas phase on total olefins in the gas phase in the polymerization zone as 100 mole percent which is defined by the following formula

$$CGB = \frac{CPB}{K4}$$

wherein

CGB is the concentration of 1-butene in mole percent in the gas phase,

CPB is the concentration of 1-butene in the copolymer and

K4 is a factor in the range of 0.6 to 1.2;

wherein said 1-hexene, when used, is used in a concentration in mole percent in the gas phase based on total olefins in the gas phase in the polymerization zone as 100 mole percent which is defined by the following formula

$$CGH = \frac{CPH}{K6}$$

wherein

CGH is the concentration of 1-hexene in mole percent in the gas phase,

CPH is the concentration of 1-hexane in the copolymer and

K6 is a factor in the range of 1.4 to 2.5;

wherein said 1-octene, when used, is used in a concentration in mole percent in the gas phase based on total olefins in the gas phase in the polymerization zone as 100 mole percent which is defined by the following formula

$$CGO = \frac{CPO}{K8}$$

wherein

CGO is the concentration of 1-octene in mole percent in the phase phase,

CPO is the concentration of 1-octene in the copolymer and

K8 is a factor in the range of 4 to 7;

wherein said 4-methyl-1-pentene, when used, is used in a concentration in mole percent in the gas phase based on total olefins in the gas phase in the polymerization zone as 100 mole percent which is defined by the following formula

$$CGF = \frac{CPF}{K51}$$

wherein CGF is the concentration of 4-methyl-1-pentene in mole percent in the phase phase,

CPF is the concentration of 4-methyl-1-pentene in the copolymer and

K51 is a factor in the range of 1 to 1.4;

with the proviso that the higher values of the range of K4 or respectively K6 or respectively K8 or respectively K51 are associated with the lower densities and conversely wherein the lower values of these values K4, K6, K8 or K51 are associated with the higher densities of the copolymer produced.

4,522,988

METHOD OF PREPARING HIGH CIS-1,4 DIENE POLYMERS HAVING GOOD GREEN STRENGTH AND TACK

Jung W. Kang, Clinton, and James E. Hall, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jun. 4, 1984, Ser. No. 616,767

Int. Cl.³ C08F *4/26*

U.S. Cl. 526—133 **16 Claims**

1. A method of preparing diene polymers having a high content of cis-1,4 addition and good green strength and tack comprising polymerizing a 1,3-diene monomer in a hydrocarbon solvent in the presence of a catalytically effective amount of a catalyst composition which comprises:

(a) a carboxylated metal oxy borate compound selected from the group consisting of compounds represented by the formulae $(RCOOMO)_3B$ and $(RCOOMO)_2BOR'$, wherein R and R′ are alkyl radicals containing from 7 to 17 carbon atoms, and M is nickel or cobalt;

(b) an organometallic compound in which the metal is selected from Groups I, II, and III of the Periodic System; and

(c) one or more fluorine containing compounds selected from the group consisting of boron trifluoride complexes with ethers, alcohols or mixtures thereof; hydrogen fluoride; hydrogen fluoride complexes with ethers, alcohols or mixtures thereof and mixtures of said compounds.

4,522,989

METHOD OF PREPARING HIGH CIS-1,4 DIENE POLYMERS HAVING GOOD GREEN STRENGTH AND TACK USING A CATALYST COMPOSITION CONTAINING A CARBOXYLATED METAL OXY ALUMINATE COMPONENT

Jung W. Kang, Clinton, Ohio, assignor to The Firestone Tire & Rubber Company, Ohio

Filed Jun. 4, 1984, Ser. No. 616,766

Int. Cl.³ C08F *4/26*

U.S. Cl. 526—133 **16 Claims**

1. A method of preparing diene polymers having a high content of cis-1,4 addition and good green strength and tack comprising polymerizing a 1,3-diene monomer in a hydrocarbon solvent in the presence of a catalytically effective amount of a catalyst composition which comprises:

(a) a carboxylated metal oxy aluminate compound selected from the group consisting of compounds represented by the formulae $(RCOOMO)_3AL$ and $(RCOOMO)_2ALOR'$, wherein R and R′ are alkyl radicals containing from 7 to 17 carbon atoms, and M is nickel or cobalt;

(b) an organometallic compound in which the metal is selected from Groups I, II, and III of the Periodic System; and

(c) one or more fluorine containing compounds selected from the group consisting of boron trifluoride complexes with ethers, alcohols or mixtures thereof; hydrogen fluoride; hydrogen fluoride complexes with ethers, alcohols or mixtures thereof and mixtures of said compounds.

4,522,990

LIGHT STABLE POLYMERS BY ANIONIC POLYMERIZATION

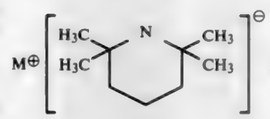
Gerald D. Andrews, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 369,937, Apr. 19, 1982, abandoned. This application Dec. 16, 1983, Ser. No. 564,011

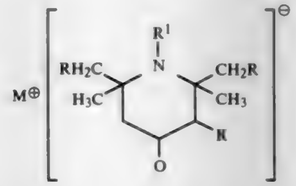
Int. Cl.³ C08F *4/48, 4/46*

U.S. Cl. 526—180 **4 Claims**

1. In an anionic polymerization process for polymerizing at least one anionically polymerizable monomer selected from the group consisting of alkyl methacrylates, fluoroalkyl methacrylates, alkoxyalkyl methacrylates, dialkylaminoalkyl methacrylates and alkadienyl methacrylates, the improvement consisting of using the initiator of the formula



and



wherein R is H or C_{1-4} alkyl, R′ is H, C_{1-18} alkyl or C_{7-12} aralkyl, and M is alkali metal to produce a polymer having good light stability.

4,522,991

METHOD FOR POLYMERIZING ETHYLENICALLY UNSATURATED MONOMER WITH NOVEL ORGANIC PERCARBONATES

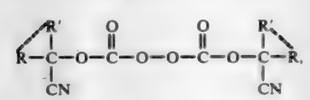
Robert H. Tang, Norton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 430,167, Sep. 30, 1982, Pat. No. 4,492,656. This application Aug. 20, 1984, Ser. No. 642,304

Int. Cl.³ C08F *4/32*

U.S. Cl. 526—230.5 **6 Claims**

1. In the process of polymerizing ethylenically unsaturated monomer in the presence of an organic peroxydicarbonate initiator, the improvement wherein the initiator is an organic peroxydicarbonate of the graphic formula:



wherein R and R′ are each selected from the group consisting of C_1–C_4 alkyl, C_5–C_7 cycloalkyl, and C_1–C_4 alkyl-substituted C_5–C_7 cycloalkyl, or participate in a cycloalkyl group of from 5 to 7 carbon atoms, provided that when one of R and R′ is each individually a cycloalkyl group, the other is a C_1–C_4 alkyl.

4,522,992

AROMATIC MONOVINYL ALKENYL ALPHAOLEFIN ANHYDRIDE TERPOLYMERS

Calvin J. Verbrugge, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jun. 28, 1983, Ser. No. 508,697

The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.

Int. Cl.³ C08F *222/04*

U.S. Cl. 526—272 **12 Claims**

1. A terpolymer of from about 49 to 60 mole percent of a maleic anhydride, from about 20 to 40 mole percent of at least one aromatic mono-alkenyl monomer selected from the group consisting of styrene, alphamethyl styrene, vinyl toluene and mixtures thereof, and from about 40 to 20 mole percent of at least one 1-alkene having at least 18 carbon atoms.

4,522,993

RESIN FOR HIGH-REFRACTIVITY LENSES AND LENSES MADE OF SAME RESIN

Katsuyoshi Sasagawa; Akio Hyugaji, and Masao Imai, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

PCT No. PCT/JP83/00218, § 371 Date Mar. 2, 1984, § 102(e) Date Mar. 2, 1984

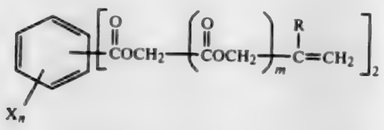
PCT Filed Jul. 7, 1983, Ser. No. 592,826

Claims priority, application Japan, Jul. 8, 1982, 57-117821

Int. Cl.³ C08F *212/32*

U.S. Cl. 526—292.4 **18 Claims**

1. A resin for high-refractivity lenses, formed by copolymerizing 10 to 70 weight percent of at least one nucleus-halogenated benzene dicarboxylate having the following formula (I):



(I)

wherein X is a chlorine atom or a bromine atom, n is 2 or 4, m is 0 or 1 and R is a hydrogen atom or a methyl group, with 30 to 90 weight percent of at least one unifunctional monomer which has a refractive index of at least 1.55 as a homopolymer, is capable of undergoing a radical polymerization and contains an aromatic ring.

4,522,994

POLYPROPYLENE RESIN FOR HIGH-RIGIDITY MOLDED PRODUCTS

Hiromasa Chiba, Chibaken; Katsumi Kumahara, Ichiharashi; Takakiyo Harada, Ichiharashi; Takahiro Oka, Ichiharashi, and Akihiro Sato, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Dec. 15, 1982, Ser. No. 449,857

Claims priority, application Japan, Jul. 15, 1982, 57-123650

Int. Cl.³ C08F *10/06*

U.S. Cl. 526—351 **3 Claims**

1. A polypropylene resin
(1) useful for high-rigidity molded products,
(2) having a melt flow rate of 0.1 to 100,
(3) having a density of 0.905 to 0.936 g/cm^3
(4) having a boiling n-heptane insoluble part
(a) whose isotactic pentad ratio (P_0) is within the range of 0.975 to 0.995, and
(b) having a pentad ratio (P_2) having two different kinds of configurations is less than 0.002%, and
(5) having a melting point of 165° to 170° as measured by differential scanning calorimetry.

4,522,995

FLUORINATED ALKYL ETHER-CONTAINING ETHYLENES, PRECURSORS THERETO, AND COPOLYMERS THEREOF WITH TETRAFLUOROETHYLENE

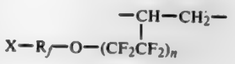
Arthur W. Anderson; Fritschel Scott J., and Howard E. Holmquist, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 2, 1983, Ser. No. 490,880

Int. Cl.³ C08F *214/18, 214/26*

U.S. Cl. 526—243 **6 Claims**

1. A copolymer that is melt-processible, non-elastomeric, and is non-brittle in extruded form, which copolymer consists of 90–99.8 mol % tetrafluoroethylene units and 0.2–10 mol % of substituted ethylene units of the formula



where n is 0 or 1; X is F—, FSO_2—, NC—, or $CF_3O(CF_2O)_m$— wherein m is 0, 1, 2 or 3; and R_f is a divalent moiety C_pF_{2p} wherein p is 2, 3, 4 or 5; said substituted ethylene units being randomly positioned throughout the copolymer chain.

4,522,996

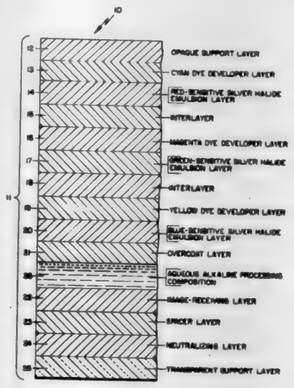
β-ELIMINATING POLYMERS FOR DIFFUSION CONTROL IN PHOTOGRAPHIC PRODUCTS

Lloyd D. Taylor, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

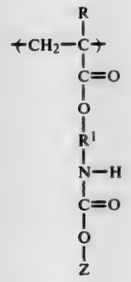
Division of Ser. No. 454,448, Dec. 29, 1982, Pat. No. 4,458,001. This application Jun. 26, 1984, Ser. No. 624,826

Int. Cl.³ C08F *228/06, 226/02*

U.S. Cl. 526—256 **10 Claims**



1. A polymer comprising recurring units having the formula



wherein R is hydrogen, halogen or lower alkyl; R^1 is alkylene; and Z is an organic moiety capable under alkaline conditions of undergoing a β-elimination reaction, said moiety containing at least two interbonded carbon atoms, one of the carbon atoms containing an acid-labile proton capable of abstraction under said alkaline conditions and an activating group effective to activate said β-elimination reaction.

4,522,997

CROSSLINKING AGENTS FOR WATER-SWELLABLE POLYMERS

Hermann Schmitz, Frankfurt, and Klaus Kühlein, Kelkheim, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

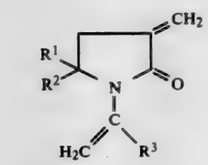
Filed Jun. 6, 1983, Ser. No. 501,537

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1982, 3225555

Int. Cl.³ C08F *226/00*

U.S. Cl. 526—264 **7 Claims**

1. In the process for preparation of crosslinked, water-swellable polymers wherein an olefinic monomer or olefinic monomers are polymerized in the presence of a crosslinking agent at temperatures from 0° to 130° C., and the polymerization is initiated by high-energy radiation or chemical catalysts, the improvement comprises said crosslinking agent being 0.001 to 2% by weight, based on monomer to be polymerized, of a compound of the formula



wherein R^1, R^2 and R^3 are identical or different and each is hydrogen or alkyl having 1 to 6 carbon atoms.

4,522,998

INTERPOLYMER, PROCESS FOR ITS PREPARATION AND ADHESIVE OF IMPROVED CREEP RESISTANCE CONTAINING THE INTERPOLYMER

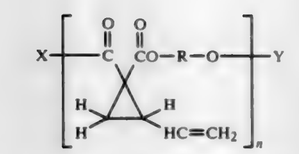
Manfred Heimberg, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,555

Int. Cl.³ C08F *32/04, 232/04*

U.S. Cl. 526—309 **38 Claims**

1. An interpolymer derived from the interpolymerization of
(a) a vinyl ester;
(b) a lower alpha olefin; and
(c) a vinylcyclopropanedicarboxylate polyester oligomer or mixture thereof of the formula:



wherein R is a bivalent radical derived from a C_{2-12} aliphatic diol, C_{3-12} cycloaliphatic diol, C_{8-10} aromatic diol or ether diol having from about 4 to about 60 carbon atoms and about 1 to about 30 ether moieties, n is an integer from about 1 to about 20 and X and Y are terminating groups.

4,522,999

VINYLCYCLOPROPANE DICARBOXYLATE POLYESTER OLIGOMER INTERPOLYMER, PROCESS FOR ITS PREPARATION AND SEMI-GLOSS LATEX PAINT OF IMPROVED WET ADHESION CONTAINING THE INTERPOLYMER

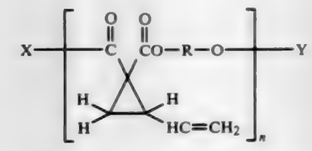
Manfred Heimberg, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,556

Int. Cl.³ C08F *32/04, 232/04*

U.S. Cl. 526—309 **44 Claims**

1. An interpolymer derived from the interpolymerization of
(a) a vinyl ester of an alpha-unbranched saturated monocarboxylic acid;
(b) a monomer selected from the group consisting of an alkyl ester of an alpha, beta ethylenically unsaturated monocarboxylic acid and a vinyl ester of an alpha-branched saturated monocarboxylic acid; and
(c) a vinylcyclopropanedicarboxylate polyester oligomer or mixture thereof of the formula:



wherein R is a bivalent radical derived from a C_{2-12} aliphatic diol, C_{3-12} cycloaliphatic diol, C_{8-10} aromatic diol or ether diol having from about 4 to about 60 carbon atoms and about 1 to about 30 ether moieties, n is an integer from about 1 to about 20 and X and Y are terminating groups.

4,523,000

COPOLYMERS, PROCESS FOR THE PREPARATION THEREOF AND IONIZING RADIATION SENSITIVE RESIST USING SUCH COPOLYMERS

Koichi Hatada, Ikeda; Yoshio Okamoto, Amagasaki, and Tatsuki Kitayama, Higashiosaka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

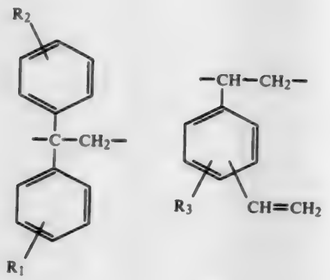
Filed Oct. 28, 1983, Ser. No. 546,337

Claims priority, application Japan, Nov. 2, 1982, 57-193068; Dec. 1, 1982, 57-210830

Int. Cl.³ C08F *212/36*

U.S. Cl. 526—336 **32 Claims**

1. A solvent-soluble copolymer having a number average molecular weight of about 1,000 to about 1,000,000 and comprising recurring units represented by the following formulae (I) and (II), said recurring units being combined to form the main alkylene chain, in which the amount of the formula (I) unit is about 3 to about 60 mol % of the total amount of the units of the formulae (I) and (II):



(I) (II)

wherein each of R_1, R_2 and R_3 represents independently hydrogen, a straight or branched chain alkyl group having 1 to 4 carbon atoms or a halogen.

4,523,001

SCAVENGERS FOR ONE COMPONENT ALKOXY-FUNCTIONAL RTV COMPOSITIONS

Roger T. Swiger, Schenectady, and John E. Hallgren, Scotia, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

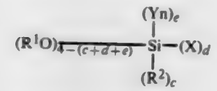
Filed Mar. 17, 1983, Ser. No. 476,000
Int. Cl.[3] C08L *83/04*; C08G *77/26, 77/04*
U.S. Cl. 528—18 **37 Claims**

1. A stable, one package, substantially anhydrous and substantially acid-free room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a tack-free elastomer comprising:

(A) a silanol-terminated organosiloxane base polymer;

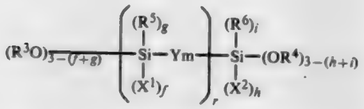
(B) an effective amount of condensation catalyst;

(C) a stabilizing amount of scavenger for hydroxy functional groups having the general formula



(i)

where R^1 is an aliphatic radical having 1 to 8 carbon atoms and is selected from the group consisting of alkyl radicals, alkylether radicals, alkylester radicals, alkylketone radicals and alkylcyano radicals or an aralkyl radical having 7 to 13 carbon atoms; R^2 is a monovalent substituted or unsubstituted hydrocarbon radical having 1 to 13 carbon atoms; X is a hydrolyzable leaving group selected from the group consisting of amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato and ureido radicals; Y is selected from the group consisting of moieties of Si, O, S, N, P, C, B, Sn, Pb, Ca, hydrazine, azo radicals, CO, CO_2, organic peroxides and metal oxides of the formula AO_z where A is selected from the group consisting of B, S, Sn, P, Al, Ti, V, Tl, Ir, Pb, Pt, Pd and Fe and where z is sufficient to satisfy chemical valence requirements; where C is attached to at least one other Y moiety; c is an integer equal to 0 to 1; d is an integer equal to 1 or 2; e is an integer equal to 1 or 2; the sum of c+d+e equals 2 or 3; n equals at least 1; or



(ii)

where R^3 and R^4 are aliphatic radicals having 1 to 8 carbon atoms and are selected from the group consisting of alkyl radicals, alkylether radials, alkylester radicals, alkylketone radicals and alkylcyano radicals or an aralkyl radical having 7 to 13 carbon atoms; R^5 and R^6 are monovalent substituted or unsubstituted hydrocarbon radicals having 1 to 13 carbon atoms or Yn; Y is selected from the group consisting of moieties of Si, O, S, N, P, C, B, Sn, Pb, Ca, hydrazine, azo radicals, CO, CO_2, organic peroxides and metal oxides of the formula AO_z where A is selected from the group consisting of B, S, Sn, P, Al, Ti, V, Tl, Ir, Pb, Pt, Pd and Fe, and z is sufficient to satisfy chemical valence requirements; X^1 and X^2 are hydrolyzable leaving groups selected from the group consisting of amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato and ureido radicals; f is an integer equal to 0 to 2 inclusive; g is an integer equal to 0 to 2 inclusive; h is an integer equal to 0 to 3 inclusive; i is an integer equal to 0 to 3 inclusive; the sum of f+g equals 0 to 2 inclusive; the sum of h+f equals at least 1; the sum of h+i equals 0 to 3 inclusive; m is equal to 0 or more and r is equal to at least 1; or

(iii) a cyclic compound with at least one silicon atom as a member of the ring, said silicon atom having attached thereto a hydrolyzable leaving group selected from the group consisting of amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato and ureido radicals; and wherein at least 1 of said silicon atoms has attached thereto an alkoxy radical having an aliphatic group of 1 to 8 carbon atoms selected from the group consisting of alkyl radicals, alkylether radicals, alkylester radicals, alkylketone radicals, and alkylcyano radicals or an aralkyl radical having 7 to 13 carbon atoms, and wherein the total number of hydrolyzable groups is at least three, or

(iv) mixtures of (i) and (ii) and (iii); and where the hydrolyzable group is enoxy

(D) an effective amount of curing accelerator selected from the group consisting of substituted guanidines, amines and mixtures thereof.

4,523,002

IONICALLY CROSS-LINKED SILOXANE POLYMERS

John R. Campbell, Clifton Park, and Robert E. Williams, Jr., Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 4, 1984, Ser. No. 568,166
Int. Cl.[3] C08G *77/04*
U.S. Cl. 528—26 **7 Claims**

1. A method of producing zwitterionic siloxane polymers comprising

a. copolymerizing an aminoalkyl-trialkoxy-silane with a hydroxy-endcapped siloxane oligomer in the presence of a catalytic quantity of acid to provide an aminoalkyl-siloxane polymer intermediate; and

b. reacting said aminoalkyl siloxane polymer intermediate with a member from the group consisting of organo-lactones and organo-sultones in the presence of a solvent.

4,523,003

STORAGE STABLE, ONE PACKAGE, HEAT CURABLE POLYUREA/URETHANE COATING COMPOSITIONS AND METHOD OF PREPARATION

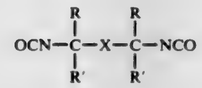
Rao S. Bezwada, Whitehouse Station, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 4, 1984, Ser. No. 568,160
Int. Cl.[3] C08G *18/24, 18/32*; B05D *3/02, 3/00*
U.S. Cl. 528—58 **11 Claims**

1. A one package, storage stable heat-curable poly urea/urethane coating composition, said composition comprising:

(a) a mixture or a prepolymer of

(i) a poly aliphatic isocyanate compound of the formula:



wherein R and R′ are each, independently, selected from hydrogen, alkyl or substituted alkyl and X is a bridging means selected from divalent aliphatic, cycloaliphatic or aromatic groups, or a polymeric adduct of said aliphatic isocyanate said polymeric adduct possessing polyaliphatic isocyanate functionality; and

(ii) at least one monomeric or polymeric compound containing a plurality of isocyanate-reactive hydrogens, wherein the molar ratio of the total isocyanate groups in (i) to the total reactive hydrogens in (ii) is from about 1:0.8 to about 1:1.2, respectively; and

(b) a minor effective amount of a polymerization catalyst.

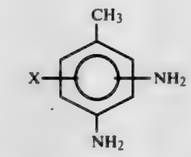
4,523,004

DIAMINE/DIOL CHAIN EXTENDER BLENDS FOR RIM PROCESS

I. Sioun Lin, Oak Ridge; Stanley J. Gromelski, Jr., West Caldwell, both of N.J.; Jesse Werner, New York, N.Y.; Michael J. Brown, Randolph Township, Morris County, N.J., and Paritosh M. Chakrabarti, Pittsburgh, Pa., assignors to GAF Corporation, Wayne, N.J.

Filed Jun. 23, 1983, Ser. No. 506,250
Int. Cl.[3] C08G *18/32, 18/14*; B29H *7/20*
U.S. Cl. 528—76 **5 Claims**

1. A normally liquid polymer chain extender blend of butanediol and a mono-substituted toluene diamine mono-substituted with an electron-withdrawing group and having the formula



wherein X is vicinal to an amino radical and is selected from the group of halo, CN, NO_2, acyl, carboxylate and isomeric mixtures thereof, said blend having a mole ratio of from 4:1 to about 19:1 butanediol to said diamine.

4,523,005

EXTRUDABLE POLYURETHANE FOR PROSTHETIC DEVICES PREPARED FROM A DIISOCYANATE, A POLYTETRAMETHYLENE ETHER POLYOL, AND 1,4-BUTANE DIOL

Michael Szycher, Lynnfield, Mass., assignor to Thermedics, Inc., Woburn, Mass.

Continuation-in-part of Ser. No. 479,922, Apr. 4, 1983, Pat. No. 4,447,590, which is a continuation of Ser. No. 316,922, Oct. 30, 1981, abandoned. This application Apr. 17, 1984, Ser. No. 600,568
The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.
Int. Cl.[3] C08G *18/30*
U.S. Cl. 528—76 **4 Claims**

1. A polymer for use in extruding and molding devices requiring a high degree of blood compatibility, said polymer consisting essentially of a polyurethane elastomer which is the reaction product of:

(a) dicyclohexyl methane diisocyanate;

(b) a polytetramethylene ether polyol having a molecular weight in the range of 1000-3000; and

(c) 1,4 butane diol,

wherein the number of moles of dicylohexyl methane diisocyanate molecules is equal to the sum of the number of moles of polytetramethylene ether polyol and the number of moles of 1,4 butane diol; the molar ratio of 1,4 butane diol to polytetramethylene ether glycol is between 1.1 to 0.9 and 1.5 to 0.5; and the average molecular weight of the polymer is 120,000–180,000 units, and a weight average molecular weight of 285,000–335,000 molecular weight units.

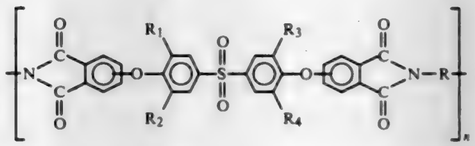
4,523,006

POLYETHERIMIDES OF DI(PHTHALIC ANHYDRIDE) DERIVATIVES OF DI(SUBSTITUTED PHENOL) SULFONES

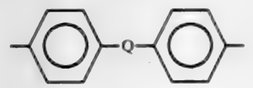
Edward N. Peters, Lenox, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Feb. 1, 1983, Ser. No. 462,921
Int. Cl.[3] C08G *73/10*
U.S. Cl. 528—172 **3 Claims**

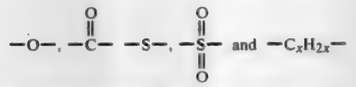
1. A polyetherimide of the formula



wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of lower alkyl of from 1 to about 10 carbon atoms; aryl of from 6 to about 15 carbon atoms; aralkyl, wherein the alkyl portion contains from 1 to about 5 carbon atoms and the aryl portion contains from 6 to about 10 carbon atoms; halogen; lower alkoxy of from 1 to about 10 carbon atoms; and aryloxy of from 6 to about 15 carbon atoms and n is an integer from 10 to about 10,000 and R is a divalent organic radical selected from the class consisting of (a) aromatic hydrogen radicals having from 6 to about 20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals and cycloalkylene radicals having from 2 to about 20 carbon atoms $C_{(2-8)}$ alkylene terminated polydiorganosiloxanes; and (c) divalent radicals included by the formula



where Q is a member selected from the class consisting of:



where x is a whole number from 1 to 5 inclusive.

4,523,007

CROSSLINKING COMPONENT FOR PAINT BINDERS AND PROCESS FOR PRODUCING SUCH COMPONENTS FROM A CARBONYL COMPOUND

Rudolf Schipfer, and Gerhard Schmölzer, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

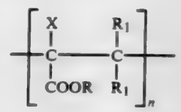
Filed Jul. 9, 1984, Ser. No. 628,844
Claims priority, application Austria, Jul. 11, 1983, 2531/83
Int. Cl.[3] C08G *2/18, 16/00*
U.S. Cl. 528—227 **9 Claims**

1. Process for producing hardener components for paint binders which will crosslink through transesterification, characterized in that a compound of the structure



wherein
X is —COOR, —CN or —$COCH_3$ and
R is an alkyl group with from 1 to 8 C-atoms
is reacted in a KNOEVENAGEL-reaction with a carbonyl compound, water being split off, and the resulting α-disubstituted alkylidene compound thereafter polymerized to a polymeric compound having a molecular weight of from between about 300 and about 6000.

7. Crosslinking component for paint binders crosslinkable through transesterification, having the general formula



wherein
X is —COOR, —CN or —$COCH_3$,
R is an alkyl group with 1 to 8 C-atoms,
R_1 is a hydrogen atom or an alkyl radical,
n is a factor multiplying said unit to a molecular weight of from between about 300 and about 6000.

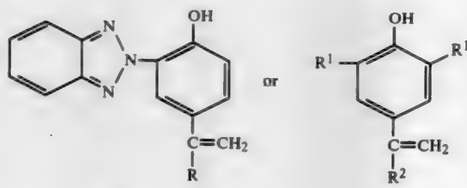
4,523,008

STABILIZED UNSATURATED POLYESTERS

Otto Vogl, New Rochelle, N.Y., and Eberhard Borsig, Bratislava, Czechoslovakia, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 6, 1984, Ser. No. 617,871
Int. Cl.³ C08G *63/20, 63/44*
U.S. Cl. 528—288 **10 Claims**

1. An unsaturated polyester polymer comprising an unsaturated polyester prepolymer interpolymerized with at least one stabilizer selected from the group consisting of:



(I) (II)

where R and R^2 are selected from H or alkyl of 1 to 6 carbon atoms and R^1 is a tertiary alkyl group containing 3 to 12 carbon atoms.

4,523,009

POLYPHOSPHAZENE COMPOUNDS AND METHOD OF PREPARATION

Robert H. Neilson, and Patty J. Wisian-Neilson, both of 6513 Lawndale Dr., Fort Worth, Tex. 76134

Continuation of Ser. No. 519,040, Aug. 1, 1983, abandoned, which is a division of Ser. No. 341,689, Jan. 22, 1982, Pat. No. 4,412,053, which is a continuation of Ser. No. 232,518, Feb. 9, 1981, abandoned. This application Jul. 31, 1984, Ser. No. 636,076
Int. Cl.³ C08G *73/00*
U.S. Cl. 528—399 **4 Claims**

1. A linear non cross-linked phosphazene polymer, having the formula:



wherein
R is an alkyl group containing 1 to 5 carbon atoms and wherein R′ is selected from the group consisting of alkyl, aryl, and lower alkyl-substituted aryl groups, said alkyl groups containing 1 to 5 carbon atoms, and said aryl and alkyl-substituted aryl groups having 6 to 10 carbon atoms;
n is greater than about 175; and
wherein both R and R′ are bonded to phosphorus atoms by direct carbon to phosphorus bonds.

4,523,010

DIHYDROXYPROPYL MIXED ETHER DERIVATIVES OF CELLULOSE

Carl Lukach, New Castle County, Del.; Thomas G. Majewicz, Chadds Ford, Pa., and Albert R. Reid, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Jun. 15, 1984, Ser. No. 621,328
Int. Cl.³ C08B *11/193*
U.S. Cl. 536—91 **8 Claims**

1. A nonionic, crosslinkable material consisting essentially of dihydroxypropyl hydroxyalkylcellulose having a dihydroxypropyl M.S. of from about 0.1 to 1.2 and a hydroxyalkyl M.S. of from about 1.5 to about 3.0.

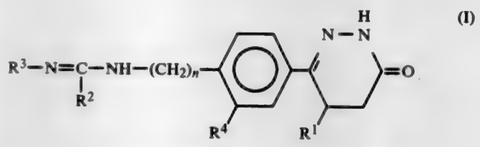
4,523,011

PROCESS FOR PREPARING 6-(SUBSTITUTED PHENYL)-4,5-DIHYDRO-3(2H)-PYRIDAZINONE COMPOUNDS

Tsutomu Katakami; Nobuyuki Fukazawa; Hajime Iizuka, all of Kanagawa; Takashi Nishina, Chiba; Joji Kamiya, Chiba; Yasuhito Tanaka, Chiba, and Takuo Nakano, Kanagawa, all of Japan, assignors to Mitsui Toatsu Kagaku Kabushiki Kaisha, Tokyo, Japan

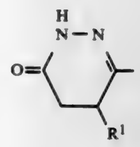
Division of Ser. No. 454,021, Dec. 28, 1982,. This application Mar. 28, 1984, Ser. No. 594,303
Claims priority, application Japan, Dec. 28, 1981, 56-209938
Int. Cl.³ C07D *237/04;* A61K *31/50*
U.S. Cl. 544—238 **12 Claims**

1. A process for the preparation of a 6-(substituted phenyl)-4,5-dihydro-3(2H)-pyridazinone compound of the formula:

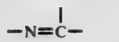


(I)

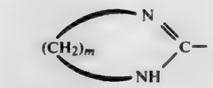
wherein R^1 is a hydrogen atom or a lower alkyl group; R^2 is a hydrogen atom, a lower alkyl group, a lower alkylthio group or the grouping R^5-NH—where R^5 is a lower alkyl group; R^3 is a phenyl group, a pyridyl group, a benzyl group, a lower alkyl group or a substituted phenyl group carrying at the para-position (4-position) on the benzene ring thereof the grouping:



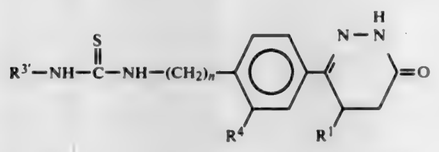
wherein R^1 has the same meaning as given above; R^4 is a hydrogen atom or a halogen atom; n is 0 or 1; and when both R^2 and R^3 are lower alkyl groups, R^2 an R^3 may be combined together with the bridging member



between them to form the structure:

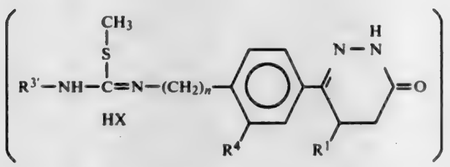


wherein m is 2 or 3, or a physiologically acceptable acid-addition salt thereof, which comprises reacting a 6-(3-R^4-4-amino- or 3-R^4-4-aminoalkyl-phenyl)-4,5-dihydro-3(2H)-pyridazinone with a thioisocyanate of the formula $R^{3'}$-NCS where $R^{3'}$ is a phenyl, pyridyl or benzyl group or a lower alkyl group to form a thiourea derivative of the formula:



(II)

wherein R^1, $R^{3'}$, R^4 and n have the same meanings as given above, reacting the thiourea derivative with a methyl halide to prepare the corresponding methylisothiuronium salt of the formula:



(II′)

wherein X is a halogen atom and R^1, $R^{3'}$, R^4 and n have the same meanings as given above, and then reacting the methylisothiuronium salt with an amine or diamine of the formula:

$$R—NH_2 \text{ or } H_2N—(CH_2)_m—NH_2$$

wherein R is a pyridyl, benzyl or phenyl group or a lower alkyl group and m is 2 or 3.

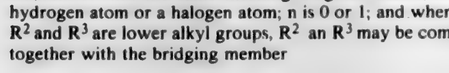
4,523,012

S-SUBSTITUTED 2-AZIDO-3-MERCAPTO-PROPIONIC ACID ESTER AND PROCESS FOR ITS PRODUCTION AND USE

Franz Effenberger, and Thomas Beisswenger, both of Stuttgart, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 418,843, Sep. 16, 1982, Pat. No. 4,456,766. This application Jan. 12, 1983, Ser. No. 457,391
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3200994
Int. Cl.³ C07C *149/243*
U.S. Cl. 544—316 **9 Claims**

1. An S-substituted 2-azido-3-mercapto-propionic acid ester of the formula:



where R^1 is a methyl or ethyl group and R^2 is an alkyl group of 1 to 8 carbon atoms, a mercapto lower alkyl group, a carboxyalkyl group having 2 to 3 carbon atoms, a lower alkyl oxycarbonyl 1–2 carbon atom alkyl group, a cyclopentyl group, a cyclohexyl group, a phenyl group, a halophenyl group, a lower alkyl phenyl group, a pyrimidyl group, or a benzyl group.

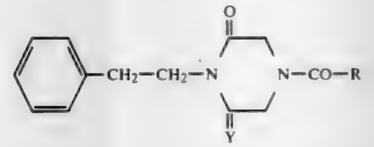
4,523,013

4-ACYL-2,6-DIOXO-1-PHENETHYL PIPEROZINES

Daniel Fréhel, Toulouse, and Jean-Pierre Maffrand, Portet-sur-Garonne, both of France, assignors to Sanofi, S.A., Toulouse, France

Filed Jan. 31, 1983, Ser. No. 462,397
Claims priority, application France, Jan. 29, 1982, 82 01758
Int. Cl.³ C07D *241/08*
U.S. Cl. 544—385 **6 Claims**

1. A compound of formula



in which Y represents O or H, OH and R represents a lower alkyl group, cycloalkyl having 3 to 8 carbon atoms, phenyl or phenyl which is mono- or disubstituted with a member selected from the group consisting of halogen, hydroxy, monoloweralkyl amino, diloweralkyl amino, mercapto, thioalkyl, cyano, trifluoromethoxy, and trifluoromethylthio.

4,523,014

PIPERAZINES 1-HEXYL-4(3-KETOHEXYL)

Bernard Loev, Scarsdale, and Ernest Magnien, Flushing, both of N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,588
Int. Cl.³ C07D *241/04;* A61K *31/495*
U.S. Cl. 544—386 **4 Claims**

1. 1-Hexyl-4-(3-ketohexyl)piperazine.
2. 1-Hexyl-4-(2-ethyl-3-ketohexyl)piperazine.

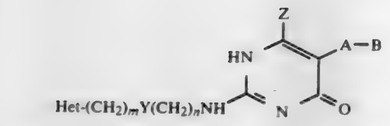
4,523,015

PROCESS AND NITROAMINOPYRIMIDONE INTERMEDIATES FOR HISTAMINE H_2-ANTAGONISTS

Thomas H. Brown, Welwyn Garden City, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

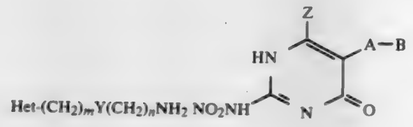
Division of Ser. No. 27,543, Apr. 6, 1979, Pat. No. 4,227,000. This application May 19, 1980, Ser. No. 151,502
Claims priority, application United Kingdom, Apr. 11, 1978, 14049/78
Int. Cl.³ C07D *401.12*
U.S. Cl. 544—320 **10 Claims**

1. A process for preparing a 2-aminopyrimidone of Structure I



(1)

in which Het is a nitrogen-containing 5- or 6-membered fully unsaturated heterocyclic group selected from imidazolyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl and thiadiazolyl which is optionally substituted by lower alkyl, trifluoromethyl, halogen, hydroxy, lower alkoxy or amino, m is 0 or 1, Y is methylene, oxygen or sulphur; n is 2 or 3; Z is hydrogen or lower alkyl; A is C_1-C_5 alkylene or $-(CH_2)_p-W(CH_2)_q-$ where W is oxygen or sulphur and the sum of p and q is 1 to 4; and B is hydrogen, methyl, C_3-C_6 cycloalkyl, a heteroaryl group selected from pyridyl, furyl, thienyl, thiazolyl, oxazolyl, isothiazolyl, imidazolyl, pyrimidyl, pyrazinyl, pyridazyl, thiadiazolyl, quinolyl, isoquinolyl, 5,6,7,8-tetrahydroquinolyl, 1,3-dioxolopyridyl, benzimidazolyl and benzthiazolyl optionally substituted by lower alkyl or lower alkoxy, or B is a napthyl, 5- or 6- (2,3-dihydro-1,4-benzodioxinyl), or a 4- or 5- (1,3-benzodioxolyl) group, or a phenyl group optionally substituted with lower alkyl, lower alkoxy, halogen, aryl(-lower alkoxy), hydroxy, lower alkoxy-lower alkoxy, trifluoromethyl, di(lower alkyl)amino, phenoxy, halophenoxy, lower alkoxyphenoxy, phenyl, halophenyl or lower alkoxyphenyl; characterised in that an amine of Structure 2 is reacted with a 2-nitroaminopyrimidone of Structure 3.



(3)

4,523,016
PROCESS FOR THE CATALYTIC DEHYDROGENATION OF PIPERIDINE

Georg Grigoleit, Dorsten; Rudolf Oberkobusch, Duisburg; Jürgen Stadelhofer, Dortmund, and Kurt Matern, Duisburg, all of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 13, 1983, Ser. No. 513,197
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1982, 3227022
Int. Cl.[3] C07D *213/02*
U.S. Cl. 546—252 6 Claims

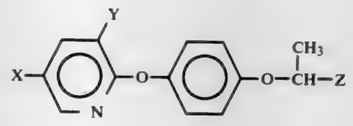
1. A process for the catalytic dehydrogenation of piperidine to pyridine in the gas phase using hydrogen as the carrier gas, which comprises contacting piperidine in the presence of hydrogen in a reaction zone with a catalyst comprising silicon dioxide activated with copper, nickel and chromium as the catalyst, the activating metals copper, nickel and chromium being present in an amount of 5–12:1–5:0.2–0.7 parts by weight per 100 parts by weight of catalyst, the hydrogen/piperidine molar ratio is 5:1, and carrying out the dehydrogenation reaction in the temperature range from 345° to 380° C., and thereafter separating and recovering the pyridine.

4,523,017
PREPARATION OF TRIFLUOROMETHYL PYRIDINYLOXYPHENOXY PROPANOIC ACIDS AND PROPANOLS AND DERIVATIVES THEREOF

Howard Johnston, Walnut Creek, and Lillian H. Troxell, Antioch, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 357,346, Mar. 11, 1982, abandoned, which is a continuation of Ser. No. 918,550, Jun. 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 817,943, Jul. 22, 1977, abandoned. This application Sep. 2, 1983, Ser. No. 529,178
Int. Cl.[3] C07D *213/64*
U.S. Cl. 546—302 9 Claims

5. A process for making a compound having the formula

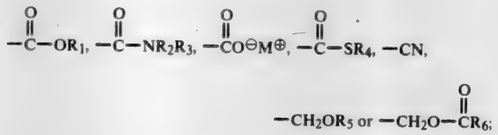


wherein

X is Cl, Br or CF_3;

Y is H, Cl, Br or CF_3, provided at least one of X and Y is CF_3;

Z is



R_1 is H, C_1-C_8 alkyl, benzyl, chlorobenzyl or C_3-C_6 alkoxyalkyl;

R_4 is C_1-C_4 alkyl;

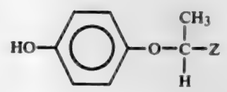
R_5 is H or C_1-C_4 alkyl;

R_6 is C_1-C_7 alkyl;

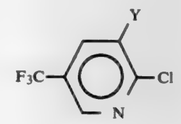
M is $-NHR_2R_3R_7$, Na, K, Mg or Ca;

R_2 and R_3 are each independently R_7 or $-OCH_3$, provided both R_2 and R_3 cannot simultaneously be OCH_3 and neither is $-OCH_3$ in $-NHR_2R_3R_7$; and

R_7 is H, C_1-C_4 alkyl or C_2-C_3 hydroxyalkyl, which comprises reacting a compound having the formula



wherein Z is as above defined, with a compound having the formula



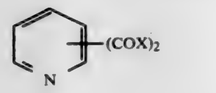
where Y is as above defined, in an inert solvent in the presence of aqueous sodium hydroxide while agitating and heating.

4,523,018
CERTAIN BIS(BENZOYL)PYRIDINE COMPOUNDS

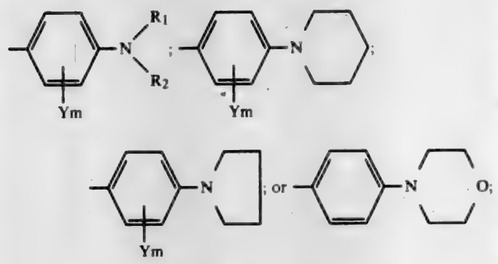
Yojiro Kumagae, Osaka, and Yasuhisa Iwasaki, Nara, both of Japan, assignors to Yamamoto Kagaku Gosei Co., Ltd., Osaka, Japan

Filed Oct. 21, 1982, Ser. No. 435,805
Claims priority, application Japan, Nov. 10, 1981, 56-178992
Int. Cl.[3] C07D *213/50, 401/02*
U.S. Cl. 546—315 18 Claims

1. A compound represented by the formula:



wherein X is:



Y is: lower alkyl, lower alkoxy, phenyl, benzyl,, which is unsubstituted or substituted with lower alkyl, halogenated lower alkyl, lower dialkylamino, lower alkoxy, halogen or cyano, or is lower dialkylamino or halo; m is: an integer of 0 to 4; and

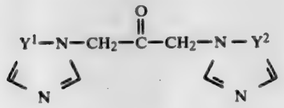
R_1 and R_2 are: alkyl of 1 to 8 carbon atoms, of phenyl or benzyl, which is unsubstituted or substituted with lower alkyl, halogenated lower alkyl, lower dialkyamino, lower alkoxy, halogen or cyano, or are cycloalkyl of 5 to 6 carbon atoms.

4,523,019
1,3-BIS(TRIAZOLYL)PROPAN-2-ONE

Paul A. Worthington, Maidenhead, England, assignor to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 269,581, Jun. 2, 1981, Pat. No. 4,416,682.
This application Sep. 12, 1983, Ser. No. 531,244
Claims priority, application United Kingdom, Jun. 2, 1980, 8017959; Mar. 30, 1981, 8109923
Int. Cl.[3] C07D *249/08*
U.S. Cl. 548—262 1 Claim

1. A compound of the formula (V)



(V)

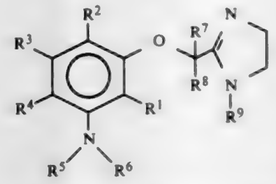
wherein Y^1 and Y^2 are =N—.

4,523,020
SUBSTITUTED 2-(3-AMINOPHENOXYMETHYL)IMIDAZOLINES

Alan E. Moormann; Barnett S. Pitzele, both of Skokie, and Peter H. Jones, Lake Bluff, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Nov. 10, 1983, Ser. No. 550,334
Int. Cl.[3] C07D *233/22*
U.S. Cl. 548—353 13 Claims

1. A compound of the formula:



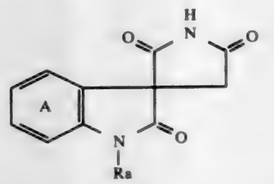
wherein R^1 and R^3, each being the same or different, are:
(a) hydrogen; or
(b) alkyl or 1 to 6 carbon atoms, inclusive;
wherein R^2 and R^4, each being the same or different, are:
(a) hydrogen; or
(b) alkyl of 1 to 6 carbon atoms, inclusive; with the proviso that R^1 and R^2 may not both be hydrogen;
wherein R^5 is hydrogen;
wherein R^6 is:
(a) alkanoyl of 2 to 7 carbon atoms, inclusive; or
(b) alkoxycarbonyl of 2 to 7 carbon atoms, inclusive;
wherein R^7 is:
(a) hydrogen; or
(b) alkyl of 1 to 6 carbon atoms, inclusive;
wherein R^8 is alkyl of 1 to 6 carbon atoms, inclusive;
wherein R^9 is:
(a) hydrogen; or
(b) alkyl of 1 to 6 carbon atoms, inclusive;
or a pharmacologically acceptable salt; the compound being either hydrated or unhydrated.

4,523,021
1'-SUBSTITUTED-SPIRO[PYRROLIDINE-3,3'-INDOLINE]-2,2',5-TRIONES

David R. Brittain, Macclesfield, and Robin Wood, Hazel Grove, both of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 377,135, May 11, 1982, Pat. No. 4,478,847. This application Aug. 7, 1984, Ser. No. 638,500
Claims priority, application United Kingdom, May 12, 1981, 8114397
Int. Cl.[3] C07D *209/96*
U.S. Cl. 548—410 5 Claims

1. A 1'-substituted-spiro(pyrrolidine-3,3'-indoline)-2,2',5-trione of the formula:



I

wherein Ra is benzyl bearing two independently selected halogeno substituents located at positions 2 and 4, or 3 and 4, or is benzyl bearing a bromo or trifluoromethyl substituent located at position 3 or 4; and benzene ring A is unsubstituted or bears one or two substituents independently selected from

halogeno, (1–4C)alkyl, trifluoromethyl and nitro; or a salt thereof with a base affording a pharmaceutically acceptable cation; or the non-toxic, biodegradable 1-pivaloyloxymethyl precursor thereof.

4,523,022

ANALOGS OF THE ANTIBIOTIC SPECTINOMYCIN

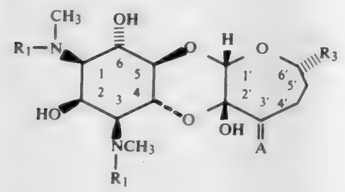
Richard C. Thomas, Oshtemo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 7, 1983, Ser. No. 511,802

Int. Cl.³ C07D *313/02*

U.S. Cl. 549—354 **7 Claims**

1. A compound of formula II



II

wherein

R_1 is

(a) hydrogen or

(b) a blocking group; and

wherein

R_3 is

(a) hydrogen

(b) alkyl of 1 to 8 carbon atoms, inclusive,

(c) $—R_{31}—O—R_{32}$, wherein R_{31} is alkylene of 1 to 4 carbon atoms, inclusive, and R_{32} is hydrogen or alkyl of 1 to 6 carbon atoms, inclusive, with the proviso that the sum of the number of carbon atoms in R_{31} and the number of carbon atoms in R_{32} is less than or equal to 7,

(d) $—R_{31}NR_{33}R_{34}$, wherein R_{31} is as defined above, wherein R_{33} is hydrogen, alkyl of 1 to 6 carbon atoms, inclusive, and R_{34} is hydrogen, alkyl of 1 to 6 carbon atoms, inclusive, or a blocking group with the proviso that if R_{34} is not a blocking group, the sum of the number of carbon atoms in R_{31} and the number of carbon atoms in whichever of R_{33} or R_{34} has the larger number of carbon atoms is less than or equal to 7, or

(e) alkyl of 1 to 4 carbon atoms, inclusive, substituted with 1, 2 or 3 halogen atoms;

wherein

A is

(a) =O or

(b) α-H:β-OH; α-OH:β-H; and pharmacologically acceptable salts thereof.

4,523,023

PREPARATION OF ISOCHROMANE DERIVATIVES

Horst Finkelmeier, and Rudolf Hopp, both of Holzminden, Fed. Rep. of Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Fed. Rep. of Germany

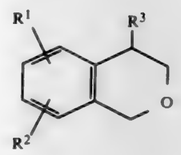
Filed Jan. 31, 1984, Ser. No. 575,439

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1983, 3306200

Int. Cl.³ C07D *311/78, 311/02*

U.S. Cl. 549—385 **6 Claims**

1. A process for the preparation of an isochromane of the formula

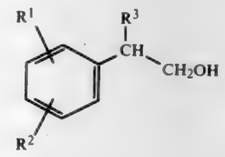


in which

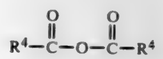
R^1 and R^2 are identical or different and denote hydrogen, lower alkyl or lower alkoxy, or together form a cyclopentane or cyclohexane ring which is optionally substituted by lower alkyl and

R^3 denotes hydrogen or lower alkyl,

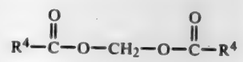
comprising reacting an alcohol of the formula



with formaldehyde and a carboxylic acid anhydride of the formula



or with a methylene diester of the formula



in which

R^4 represents a lower alkyl radical, in the presence of an acid catalyst.

4,523,024

3,4-DIHYDRO-2H-BENZOPYRAN DERIVATIVES, A METHOD OF PRODUCING THEM, A METHOD OF USING THEM AS STABILIZERS FOR ORGANIC MATERIALS, AND ORGANIC COMPOSITIONS CONTAINING SUCH STABILIZERS

Manzo Shiono; Yoshiji Fujita, and Takashi Nishida, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

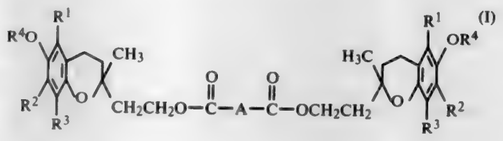
Filed Nov. 15, 1983, Ser. No. 552,068

Claims priority, application Japan, Nov. 26, 1982, 57-208252; Dec. 27, 1982, 57-229693; Mar. 3, 1983, 58-35599; Apr. 1, 1983, 58-58179; Oct. 14, 1983, 58-193179

Int. Cl.³ C07D *311/72*

U.S. Cl. 549—407 **22 Claims**

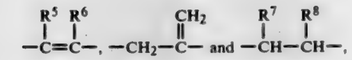
1. A compound of the general formula (I)



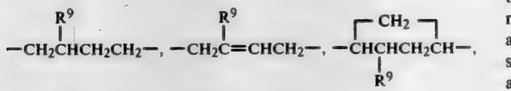
(I)

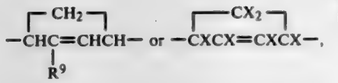
wherein R^1 is a hydrogen atom or a lower alkyl group; R^2 and R^3 are the same or different and each is a hydrogen atom, a lower alkyl group or a lower alkoxy group, or R^2 and R^3 taken together represent a group of the formula —CH=CH—CH=CH—; R^4 is a hydrogen atom or a hydroxy-protecting group;

A is a group selected from the class consisting of $—(CH_2)_n—$, phenylene, $—CH_2SCH_2—$, $—CH_2CH_2SCH_2—$, $—CH_2CH_2SCH_2CH_2—$, $—CH_2S—SCH_2—$, $—CH_2CH_2S—SCH_2CH_2—$, $—CH_2SCH_2SCH_2—$, $—CH_2CH_2SCH_2SCH_2CH_2—$,



where n is an integer equal to 1 to 14; R^5 and R^6 are the same or different and each is a hydrogen atom or a lower alkyl group, or R^5 and R^6 taken together represent a group of $—(CH_2)_4—$; R^7 and R^8 taken together represent





where R^9 is a hydrogen atom or a lower alkyl group and X is a halogen atom.

4,523,025

POLYMER POLYOLS FROM PARTIALLY REACTED POLYAMINES

Michael Cuscurida, and Howard P. Klein, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,200

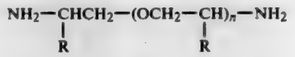
Int. Cl.³ C07C *125/077*

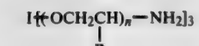
U.S. Cl. 560—26 **5 Claims**

1. A polymer polyol made by the process comprising

a. reacting

(1) a compound selected from the group consisting of compounds of the formulae





$NH_2—(CH_2CH_2—NH)_y—H$

$NH_2—(CH_2CH_2CH_2NH)_y—H$

where R is an alkyl group of from 1 to 4 carbon atoms, n ranges from 1 to 35, y ranges from 1 to 5 and where I is a trifunctional initiator selected from the group consisting of glycerine, trimethylolpropane and triethanolamine with

(2) a compound selected from the group consisting of alkylene oxides having 2 to 8 carbon atoms

to give an adduct where the tertiary amine content of the resulting adduct is less than 90%, and

b. subsequently reacting

(1) the adduct from step a. with

(2) An organic polyisocyanate selected from the group consisting of toluene diisocyanate, diphenylmethane diisocyanate, isophorone diisocyanate and methylene biscyclohexylisocyanate in the presence of

(3) a polyether polyol solvent having a molecular weight of about 3,000 to 8,000 a hydroxyl number between about 20 and 60 and a hydroxyl functionality of from about 2 to about 4

such that the ratio of equivalents of the adduct to equivalents of polyisocyanate is from about 1:1 to 2:1 and the combined weight of the adduct and the polyisocyanate is about 5 to 25 wt% of the polyether polyol solvent.

4,523,026

SYNTHESIS OF N-BENZYLOXYCARBONYL-L-ASPARTIC ACID

K. Ming Wan, East Brunswick; Mary S. Chen, Edison, and Anil D. Pendse, Highland Park, all of N.J., assignors to Hatco Chemical Corporation, Fords, N.J.

Filed Aug. 26, 1983, Ser. No. 526,581

Int. Cl.³ C07C *125/065*

U.S. Cl. 560—163 **23 Claims**

1. A method of synthesizing N-benzyloxycarbonyl-L-aspartic acid by condensing benzyl chloroformate and a dialkali metal salt of L-aspartic acid in aqueous solution, comprising adding benzyl chloroformate and an alkali metal hydroxide solution to an alkaline aqueous mixture containing L-aspartic acid while maintaining the temperature of the reaction mixture above 45° C. and at a pH of at least 9.2 and upon completion of the reaction acidifying the reaction mixture.

4,523,027

PURIFICATION OF CARBOXYLATES CONTAINING ALDEHYDES, ACETALS AND/OR UNSATURATED COMPOUNDS

Rudolf Kummer, Frankenthal; Heinz-Walter Schneider, Ludwigshafen; Volker Taglieber, Eppelheim, and Franz-Josef Weiss, Neuhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,006

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1982, 3228500

Int. Cl.³ C07C *67/56*

U.S. Cl. 560—191 **5 Claims**

1. A process for purifying a carboxylate which contains aldehydes, acetals and/or unsaturated compounds and is obtained by reacting an olefinically unsaturated compound with carbon monoxide and an alkanol which process comprises: treating said carboxylate with hydrogen at elevated temperatures in the presence of an acidic ion exchanger or zeolite doped with one or more metals of group VIII of the periodic table, and separating the resulting low and/or high boilers by distillation.

5. The process of claim 1, wherein the starting mixture is dimethyl adipate containing, as impurities, methyl 5-formylvalerate and/or methyl 6,6-dimethoxycaproate and/or dimethyl butenedicarboxylate and/or tridecenones.

4,523,028

ACRYLIC OR METHACRYLIC TERMINATED OLIGOMERS

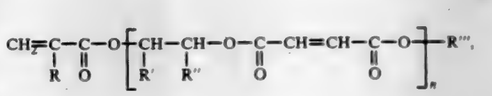
Everett J. Kelley, Moorestown, N.J., assignor to Rohm and Haas Company, Phiadelphia, Pa.

Division of Ser. No. 373,372, Apr. 30, 1982, Pat. No. 4,463,150. This application Feb. 13, 1984, Ser. No. 579,613

Int. Cl.³ C07C *69/34, 69/52*

U.S. Cl. 560—199 **3 Claims**

1. An oligomer comprising the formula:



(I)

wherein n is greater than or equal to 2;

R=—H, $—CH_3$, or $—C_2H_5$;

R′, R″=—H, $—CH_3$, $—C_2H_5$, $—CH_2Cl$, $—CH_2Br$, $—C_6H_5$,

$-CH_2OCOCH=CH_2$, $-CH_2OCOC(CH_3)=CH_2$, $-CH_2OCH_2CH=CH_2$, $-CH_2OC_6H_5$, or $-CH_2OC_4H_9$, or R' plus R'' form a cyclic ring $-C_4H_8-$; and

R'''=—H or $-C_2H_4OH$.

4,523,029

OXIDATIVE CARBONYLATION OF ALCOHOLS TO PRODUCE DIALKYL OXALATES

Steven P. Current, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 15, 1982, Ser. No. 389,209

Int. Cl.³ C07C *67/36*

U.S. Cl. 560—204 **8 Claims**

1. A process for the preparation of dialkyl oxalates by the oxidative carbonylation reaction which comprises reacting an alkanol having from 1 to 6 carbon atoms with a mixture of carbon monoxide and oxygen in the presence of a heterogeneous catalyst comprising palladium and thallium on carbon at a temperature between about 30° C. and 100° C. and a carbon monoxide partial pressure in the range of about 500 psi to 1500 psi.

4,523,030

BENZOPHENONES

Georges Haas, Binningen; Andreas von Sprecher, Oberwil, and Pier G. Ferrini, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

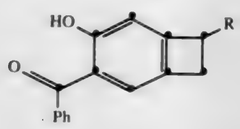
Filed Jun. 7, 1984, Ser. No. 618,152

Claims priority, application Switzerland, Jun. 15, 1983, 3270/83

Int. Cl.³ C07C *65/32*

U.S. Cl. 562—460 **20 Claims**

1. A novel substituted benzophenone of the formula



(I)

in which Ph represents unsubstituted or substituted phenyl and R represents free, esterified or amidated carboxy, or a salt thereof.

4,523,031

PROCESS FOR PRODUCING A PARA-SUBSTITUTED PHENOL DERIVATIVE

Hidefumi Hirai, and Makoto Komiyama, both of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

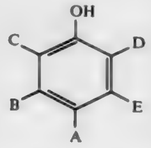
Continuation-in-part of Ser. No. 385,405, May 17, 1982, abandoned. This application Sep. 7, 1983, Ser. No. 530,158

Claims priority, application Japan, Aug. 11, 1981, 56-125558; Aug. 13, 1981, 56-127077

Int. Cl.³ C07C *65/04*

U.S. Cl. 562—475 **10 Claims**

1. A process for producing a para-substituted phenol derivative which comprises reacting a phenol compound represented by the formula (I)



(I)

wherein A, B, C, D and E each independently stand for hydrogen, a hydroxyl group, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkoxyl group or a substituted or unsubstituted aryl group, provided that A does not stand for a hydroxyl group and that when two or more of A, B, C, D, and E each independently stand for a substituted or unsubstituted alkyl group or a substituted or unsubstituted alkoxyl group, they have their respective free terminal ends or at least one of them is bonded to another group selected from said alkyl and alkoxyl groups to form a ring,

with an organic halide selected from the group consisting of a carbon tetrahalide and a substituted or unsubstituted allyl halide in the presence of an alkali metal hydroxide, using as a catalyst a modified or unmodified cyclodextrin, thereby to introduce a substituent group derived from said organic halide to the para-position of the phenol compound.

4,523,032

3,5-DIALKYL-4-HYDROXYPHENYL-SUBSTITUTED ACETIC ACIDS

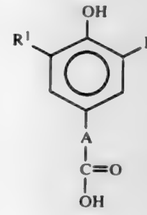
John T. Lai, Broadview Hgts., Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 7, 1983, Ser. No. 549,034

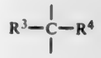
Int. Cl.³ C07C *65/01*

U.S. Cl. 562—478 **16 Claims**

1. 3,5-dialkyl-4-hydroxyphenyl-substituted acetic acids having the formula



wherein R^1 and R^2 are alkyl or cycloalkyl groups containing 1 to 12 carbon atoms, alkylcycloalkyls and aryl or alkaryl groups wherein the alkyl groups contain 1 to 8 carbon atoms, and A is (1) an alkyl group having the formula



wherein R^3 and R^4 are alkyl groups containing 1 to 18 carbon atoms, or (2) a cycloalkyl group containing 5 to 12 carbon atoms, and alkaryl groups wherein the alkyl groups contain 1 to 8 carbon atoms.

4,523,033

HEART TESTING COMPOUND

Furn F. Knapp, Jr., Oak Ridge, and Mark M. Goodman, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 29, 1983, Ser. No. 509,077

Int. Cl.³ C07C *57/30*

U.S. Cl. 562—496 **1 Claim**

1. The compound 15-(p-[^{125}I]-iodophenyl-6-telurapentadecanoic acid.

4,523,034

HERBICIDAL DIPHENYL ETHERS, THEIR PREPARATION AND THEIR USE AS HERBICIDES

Adolf Parg, Bad Durkheim; Gerhard Hamprecht, Weinheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

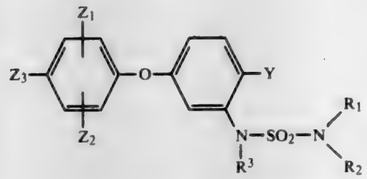
Filed Mar. 10, 1982, Ser. No. 356,736

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114072

Int. Cl.³ C07C *143/86*; A01N *41/00*

U.S. Cl. 564—79 **5 Claims**

1. A diphenyl ether of the formula



where Z_1 and Z_2 independently of one another are each hydrogen, halogen, nitro, cyano, carboxyl, lower alkyl, lower haloalkyl or lower alkoxy, Z_3 is halogen, nitro, cyano, lower alkyl, lower haloalkyl, lower alkoxy, lower haloalkyl, lower alkylmercapto, lower haloalkylmercapto, lower alkylsulfinyl, lower haloalkylsulfinyl, lower alkylsulfonyl or lower haloalkylsulfonyl, Y is cyano or nitro, R_1 is hydrogen, lower alkyl, cycloalkyl, lower alkoxy, lower haloalkyl or lower alkoxyalkyl, R_2 is hydrogen, lower alkyl, acyl or an alkali metal atom and R_3 is hydrogen, lower alkyl or an alkali metal atom.

4,523,035

PROCESS FOR SYNTHESIZING SQUARAINE COMPOSITIONS

John F. Yanus, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 5, 1983, Ser. No. 557,801

Int. Cl.³ C07C *85/00, 85/02, 85/06*

U.S. Cl. 564—307 **10 Claims**

1. A process for synthesizing a squaraine composition comprising forming a mixture comprising squaric acid, a primary alcohol having a boiling point at atmospheric pressure between about 130° C. and about 210° C. and a tertiary amine and heating said mixture in vacuo below the boiling points of said primary alcohol and said tertiary amine to form said squaraine composition.

4,523,036

PROCESS FOR THE PREPARATION OF ALDEHYDES

Boy Cornils, Dinslaken; Josef Hibbel, Oberhausen; Bernhard Lieder, Bottrop; Joachim Much, Oberhausen; Volkmar Schmidt, Oberhausen; Ernst Wiebus, Oberhausen, and Werner Konkol, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 16, 1983, Ser. No. 533,645

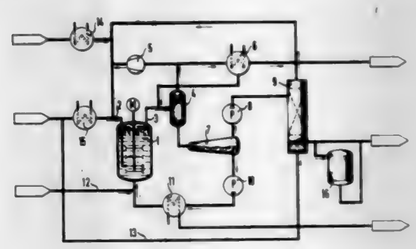
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1982, 3234701

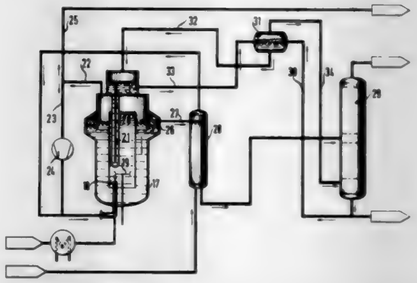
Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **42 Claims**

1. In a process for the preparation of an aldehyde comprising contacting a starting material comprising an olefin, carbon monoxide, hydrogen and water in the presence of a water-soluble rhodium-phosphine complex as a catalyst, wherein a portion of said starting material, under the reaction conditions, forms a first gaseous component and a second portion of said starting material, under the reaction conditions, forms a first liquid component by homogeneously mixing said first component at a temperature of about 90° to about 150° C. and a pressure of about 100 to about 30,000 kPa whereby a product is formed, said product comprising second gaseous and second liquid components, and cooling said product,

the improvement comprising the proportion of said first gaseous component in said first liquid component being about 5% to about 30% by volume, based on the total of





said first gaseous and first liquid components, and separating said second liquid and said gaseous components from each other to form a liquid phase and a gaseous phase, said separating occurring prior to said cooling.

4,523,037

PROCESS FOR SELECTIVELY PRODUCING PARA-SUBSTITUTED DERIVATIVES OF PHENOLS

Hidefumi Hirai, and Makoto Komiyama, both of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

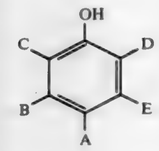
Continuation-in-part of Ser. No. 385,405, filed as PCT JP 82/00066, Mar. 9, 1982, published as WO 82/03073, Sep. 16, 1982, § 102(e), dated May 17, 1982, abandoned. This application Sep. 7, 1983, Ser. No. 530,157

Claims priority, application Japan, Mar. 9, 1981, 56-32542; Sep. 25, 1981, 56-151571; Sep. 26, 1981, 56-152524

Int. Cl.³ C07C *5/393*

U.S. Cl. 568—442 **10 Claims**

1. In a process for producing a para-substituted phenol derivative which comprises reacting a phenol compound represented by the formula (I)



(I)

wherein A, B, C, D and E each independently stand for hydrogen, a hydroxyl group, a substituted or unsubstituted alkyl group, a substituted or unsubstituted allyl group, a substituted or unsubstituted alkoxyl group or a substituted or unsubstituted aryl group, provided that A does not stand for a hydroxyl group and that when two or more of A, B, C, D, and E each independently stand for a substituted or unsubstituted alkyl

group or a substituted or unsubstituted alkoxyl group, they have their respective free terminal ends or at least one of them is bonded to another group selected from said alkyl and alkoxyl groups to form a ring, with a haloform in the presence of an alakli metal hydroxide, using as a catalyst a modified or unmodified cyclodextrin, thereby to introduce an aldehyde group or a dihalomethyl group derived from said haloform to the para-position of the phenol compound, the improvement wherein the reaction is effected while maintaining the molar ratio of said modified or unmodified cyclodextrin to said haloform at 0.5 to 10.

4,523,038

ALDEHYDE ADDUCTS AND A PROCESS FOR SEPARATING ALDEHYDES INVOLVING THEM

Norman Scott, Stockton-On-Tees, and Paul Hepworth, Upper Poppleton, both of England, assignors to Imperial Chemical Industries PLC, England

Division of Ser. No. 482,986, Apr. 7, 1983, Pat. No. 4,480,139, which is a continuation of Ser. No. 282,953, Jul. 13, 1981, abandoned. This application May 4, 1984, Ser. No. 606,943

Claims priority, application United Kingdom, Jul. 22, 1980, 8023888

Int. Cl.³ C07C *45/78*

U.S. Cl. 568—492 **13 Claims**

1. A process of separating a linear aldehyde having 7 to 21 carbon atoms from a mixture comprising the linear aldehyde, which process comprises the steps of (a) converting the linear aldehyde to a solid adduct with an α, ω linear alkane diol having 2 to 12 carbon atoms by reacting the adehyde with the diol, (b) separating the solid adduct and (c) decomposing the solid adduct to regenerate the linear aldehyde and the diol.

4,523,039

METHOD FOR FORMING PERFLUOROCARBON ETHERS

Richard J. Lagow, Austin, Tex., and Glenn E. Gerhardt, Wilmington, Del., assignors to The University of Texas, Austin, Tex.

Continuation of Ser. No. 139,181, Apr. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 901,905, May 1, 1978, abandoned. This application Dec. 19, 1983, Ser. No. 563,013

Int. Cl.³ C07C *41/01*

U.S. Cl. 568—615 **6 Claims**

1. A method for forming fluorocarbon ethers having perfluoralkyl groups, comprising:

a. fluorinating a high molecular weight polyether under conditions which produce a fluorinated polyether;

b. subjecting said fluorinated polyether to a temperature which is higher than the temperature used in the conditions in step a, and between approximately 55° C. and 210° C. to cause a controlled fragmentation of said polyether into lower molecular weight fluorocarbon ether compounds; and

c. separating said fluorocarbon ether compounds from the reaction mixture.

4,523,040

METHYL HALIDES AND METHYL ALCOHOL FROM METHANE

George A. Olah, 2252 Gloaming Way, Beverly Hills, Calif. 90210

Continuation of Ser. No. 298,390, Sep. 1, 1981, abandoned. This application May 16, 1983, Ser. No. 494,915

Int. Cl.³ C07C *41/01, 27/00, 29/00*

U.S. Cl. 568—671 **11 Claims**

1. A process for the catalytic production of methyl monohalides from methane, such process exhibiting 85 to 99% selectivity, consisting essentially of reacting methane with a halogen selected from chlorine, bromine or iodine at a temperature between about 100° and 325° C. in the presence of a solid acid catalyst from the Group IVB, VB or VIB transition metal oxides or oxyhalides supported on a chalconite carrier.

6. A process for producing methyl alcohol and by the reaction of methane, halogen selected from chlorine, bromine or iodine, and water at a temperature between about 100° and 325° C. in the presence of a catalyst from the group IVB, VB or VIB transition metal oxides or oxyhalides supported on a chalconite carrier.

8. A process of claim 1 including the further step of hydrolyzing the methyl monohalide obtained to methyl alcohol and/or dimethyl ether.

4,523,041

METHOD OF PURIFYING 4-FLUOROPHENOL

Toshikazu Kawai, Kawagoe; Haruo Suzuki, Tokyo, and Shouzou Kaneda, Kawagoe, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed May 25, 1984, Ser. No. 614,047

Claims priority, application Japan, Jun. 23, 1983, 58-111819

Int. Cl.³ C07C *37/86, 37/68*

U.S. Cl. 568—755 **7 Claims**

1. A method of purifying crude 4-fluorophenol containing phenol as impurity, the method comprising the steps of:

adding a phthal-compound which readily reacts with phenol but hardly reacts with 4-fluorophenol and a dehydrating agent to the crude 4-fluorophenol to obtain a mixture;

keeping said mixture in a liquid state until substantial completion of the reaction between said phenol and said phthal-compound; and

recovering 4-fluorophenol from the mixture containing the products of said reaction.

4,523,042

DERIVATIVES OF ALPHA-ALKYL POLYOLEFINIC CARBOXYLIC ACID USEFUL IN THE TREATMENT OF PSORIASIS

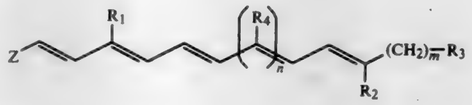
Bernard Loev, Scarsdale; Howard Jones, Ossining, and Wan-kit Chan, Yorktown Heights, all of N.Y., assignors to USV Pharmaceutical, Tuckahoe, N.Y.

Filed Jul. 29, 1983, Ser. No. 518,785

Int. Cl.³ C07C *35/18*

U.S. Cl. 568—824 **11 Claims**

1. Compounds of the structure



wherein

n is 0 to 3,

m is 0 to 1, and

R_1 and R_4 are each independently hydrogen or an alkyl group of from 1 to 5 carbon atoms;

R_2 is an alkyl group of from 1 to 5 carbon atoms;

R_3 is hydroxy;

R_5 is independently H, C_1–C_{20} alkyl, aryl, aralkyl, and

Z is a cycloalkyl, cycloalkenyl or cyclodialkenyl group substituted with from 0 to 5 C_1–C_5 alkyl groups, a keto group or a hydroxyl group, or a phenyl group substituted with from 0 to 4 hydroxy, C_1–C_5 alkoxy, C_1–C_5 alkyl or trifluoromethyl groups or halogen atoms or combinations thereof; and the pharmaceutically-acceptable salts thereof.

4,523,043

REAGENT AND METHOD FOR DECOMPOSING ORGANOSULFUR COMPOUNDS

Louis L. Pytlewski; Kenneth Krevitz, both of Philadelphia, Pa., and Arthur B. Smith, Newark, Del., assignors to The Franklin Institute, Philadelphia, Pa.

Continuation-in-part of Ser. No. 386,945, Jun. 10, 1982, abandoned, which is a division of Ser. No. 158,359, Jun. 11, 1980, Pat. No. 4,337,368, which is a continuation-in-part of Ser. No. 142,865, Apr. 21, 1980, abandoned. This application Jan. 18, 1984, Ser. No. 571,845

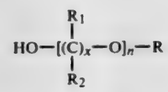
The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.

Int. Cl.³ C07C *29/00, 31/08*

U.S. Cl. 568—840 **9 Claims**

1. A process for the decomposition of an organosulfur compound containing a C-S bond, comprising the steps of:

(a) providing a decomposition reagent formed by reacting an alkali metal, a reactant having the general formula:



wherein R is hydrogen or lower alkyl, R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, unsubstituted or substituted lower alkyl, unsubstituted or substituted cycloalkyl having from 5 to 8 carbon atoms, and unsubstituted or substituted aryl, n has a value from about 2 to about 400 and x has a value of at least 2, and oxygen; and

(b) reacting said decomposition reagent with said organosulfur compound in the presence of oxygen to effect cleavage of said C-S bond, thereby decomposing said organosulfur compound.

4,523,044

COMPOSITIONS OF POLYARYLALKANE OLIGOMERS AND PROCESS FOR THEIR MANUFACTURE

Raymond Commandeur, Vizille, and Bernard Gurtner, Grenoble, both of France, assignors to Atochem, Courbevoie, France

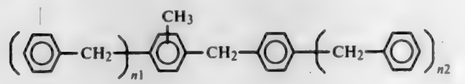
Filed Sep. 13, 1984, Ser. No. 650,765

Claims priority, application France, Sep. 23, 1983, 83 15127

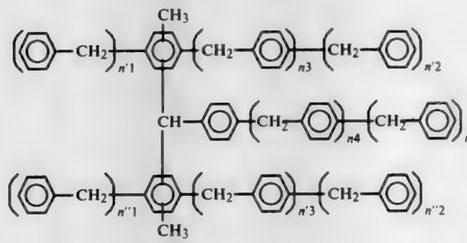
Int. Cl.³ C07C *1/16, 2/02*

U.S. Cl. 585—11 **8 Claims**

1. Polyarylalkane oligomer compositions comprising a mixture of two oligomers A and B, wherein oligomer A is a mixture of isomers of formula:



with n1 and n2=0, 1 and 2, given that n1+n2≦3; and oligomer B is a mixture of isomers of formula:



with n'1, n''1 and n4=0, 1 and 2, n'2, n''2, n3, n'3 and n5=0 and 1, given that n'1+n''1+n'2+n''2+n3+n'3+n4+n5≦2.

4,523,045

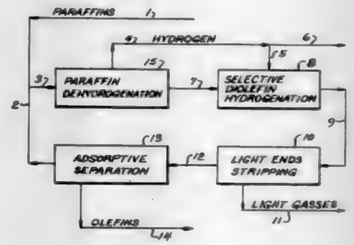
PROCESS FOR CONVERTING PARAFFINS TO OLEFINS

Bipin V. Vora, Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 596,867, Apr. 4, 1984,. This application Aug. 2, 1984, Ser. No. 637,234

Int. Cl.³ C07C *5/00*

U.S. Cl. 585—254 **9 Claims**



1. A process for the production of substantially diolefin-free monoolefinic hydrocarbons which comprises:

(a) passing a feed stream comprising at least one C_4 to C_{20} feed paraffinic hydrocarbon and a hereinafter derived recycle stream characterized as having a monoolefin hydrocarbon concentration of between 0.4 and 1.9 mole percent into a catalytic paraffin dehydrogenation zone maintained at dehydrogenation conditions containing a dehydrogenation catalyst to produce a dehydrogenation zone effluent stream comprising light hydrocarbons, hydrogen, feed paraffinic hydrocarbons and corresponding monoolefinic and diolefinic hydrocarbons;

(b) passing at least a portion of said dehydrogenation zone effluent stream through a selective catalytic hydrogenation zone containing a selective hydrogenation catalyst in the presence of hydrogen having a ratio of 1:1 to 1.8:1 of hydrogen to said diolefinic hydrocarbons and at conditions selected to convert nearly all said diolefinic hydrocarbons to monoolefinic hydrocarbons and to produce a hydrogenation zone effluent stream substantially free of diolefins and containing relatively the same content of paraffinic hydrocarbons as contained in said dehydrogenation zone effluent stream;

(c) passing said hydrogenation effluent stream to a stripping zone to strip hydrogen and light hydrocarbons from said hydrogenation zone effluent stream;

(d) passing said stripped hydrogenation stream to a separation zone effective to concentrate said monoolefinic hydrocarbons into a substantially diolefin-free monoolefinic hydrocarbon-rich product stream and effective to produce a paraffinic hydrocarbon-rich separation zone effluent stream having a monoolefinic hydrocarbon concentration of between 0.4 and 1.9 mole percent; and

(e) passing at least a portion of said paraffinic hydrocarbon-rich separation zone effluent stream into said dehydrogenation zone of step (a) as said characterized recycle stream.

4,523,046

METHOD FOR GASOLINE YIELD ENHANCEMENT IN THE FIXED BED METHANOL-TO-GASOLINE PROCESS

Ronald M. Gould, Sewell, N.J., and Sergei Yurchak, Media, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

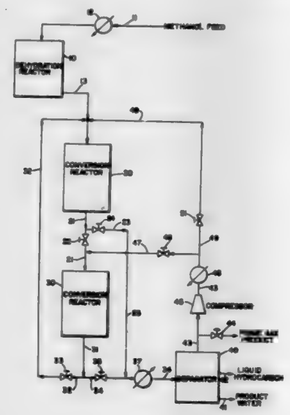
Filed Feb. 25, 1982, Ser. No. 352,417

Int. Cl.³ C07C *1/04*

U.S. Cl. 585—322 **10 Claims**

1. In a process for the conversion of methanol to gasoline

boiling range components which comprises passing a methanol feed through a heat exchanger means and a dehydration reactor means for conversion of said methanol feed to a dehydration product comprising methanol, dimethyl ether and water, and passing said dehydration product through a single fixed catalyst bed so as to completely convert said dehydration product to a product rich in gasoline boiling components, the improvement which comprises; dividing said fixed catalyst bed into a plurality of separate fixed catalyst beds comprising a first reactor bed and at least one downstream reactor bed, passing said dehydration product through said first reactor bed to complete conversion of said dehydration product therein and produce an effluent comprising said gasoline-rich product, continuing to complete conversion of dehydration product passing through said first reactor bed and bypassing said down-



stream reactor beds until such time as there is a predetermined decline of said complete conversion of said dehydration product whereupon said dehydration product is passed through said first reactor bed and said effluent comprising partially converted dehydration product passes from said first reactor bed to said downstream reactor bed to yield said complete conversion, continuing complete conversion and placing subsequent downstream reactor beds in service only upon such time as said predetermined decline of complete conversion in an immediately preceeding downstream reactor bed is detected until the final reactor bed of said plurality of separate catalyst beds is placed in service, whereby gasoline yields and cycle lengths from conversion in said divided fixed catalyst bed is improved over said single fixed catalyst bed at equivalent conversion conditions.

4,523,047

PROCESS FOR SYNGAS CONVERSIONS TO LIQUID HYDROCARBON PRODUCTS UTILIZING ZSM-45 ZEOLITE

Arthur W. Chester, Cherry Hill; Tai-Sheng Chou, Sewell, and Yung-Feng Chu, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 536,067, Sep. 26, 1983, Pat. No. 4,471,145, which is a continuation-in-part of Ser. No. 445,810, Dec. 1, 1982, Pat. No. 4,423,265. This application Jul. 16, 1984, Ser. No. 631,684

Int. Cl.³ C07C *1/04, 1/06*

U.S. Cl. 585—322 **8 Claims**

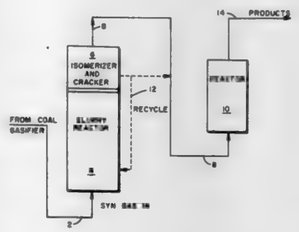
1. A process for converting synthesis gas to liquid hydrocarbons having a boiling range within that of gasoline and distillate comprising the steps of:

(a) charging said synthesis gets to a Fischer-Tropsch synthesis conversion zone comprising a catalyst providing CO reducing characteristics in a single form or a combination of catalyst particles in direct contact with a suspending liquid medium;

(b) separating at least a fraction of said suspending liquid medium containing dissolved heavier hydrocarbons from said catalyst particles;

(c) contacting said separated suspending medium containing heavier hydrocarbons in a cracking zone with a cracking and isomerization catalyst comprising zeolite ZSM-45 under conditions effective to crack and isomerize at least a portion of said heavier hydrocarbons to lighter hydrocarbons;

(d) separating the resultant product stream of (c) into two streams;



(e) removing an effluent stream from said conversion zone of (a) to a second reaction zone containing a crystalline zeolite catalyst;

(f) returning one of said streams of (d) to said effluent stream from zone (a);

(g) returning the remaining stream of (d) to said conversion zone of (a); and

(h) contacting said effluent stream from said conversion zone of (a) with a crystalline zeolite to convert the product of said Fischer-Tropsch synthesis gas conversion to hydrocarbons boiling within the range of distillate and gasoline.

4,523,048

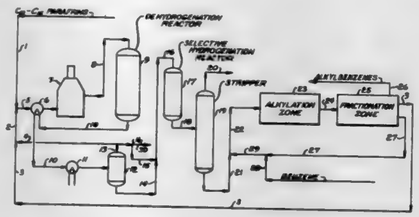
PROCESS FOR THE SELECTIVE PRODUCTION OF ALKYLBENZENES

Bipin V. Vora, Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 4, 1984, Ser. No. 596,772

Int. Cl.³ C07C *1/00*

U.S. Cl. 585—323 **14 Claims**



1. A detergent alkylation process for the production of an alkylaromatic hydrocarbon by the reaction of an aromatic hydrocarbon with monoolefinic hydrocarbons in the presence of paraffinic hydrocarbons and in the substantial absence of diolefinic hydrocarbons which comprises:

(a) passing a C_6–C_{22} paraffinic hydrocarbon through a dehydrogenation reaction zone maintained at dehydrogenation conditions effective to produce a vapor phase dehydrogenation reactor effluent stream comprising
(i) C_6-minus light hydrocarbons
(ii) C_6–C_{22} paraffinic hydrocarbons
(iii) C_6–C_{22} monoolefinic hydrocarbons
(iv) C_6–C_{22} diolefinic hydrocarbons and
(v) hydrogen;

(b) cooling and partially condensing said dehydrogenation reactor zone effluent to form a vapor-liquid dehydrogenation reactor zone effluent;

(c) passing said vapor-liquid dehydrogenation reactor zone effluent to a vapor-liquid separation zone to separate said vapor-liquid dehydrogenation reactor effluent stream into a vapor phase process stream comprising hydrogen and a liquid phase process stream which comprises:
(i) dissolved hydrogen
(ii) C_6-minus light hydrocarbons
(iii) C_6–C_{22} paraffinic hydrocarbons
(iv) C_6–C_{22} diolefin hydrocarbons;

(d) passing said liquid phase process stream derived from said vapor-liquid separtion zone and a controlled amount of a hydrogen feed stream through a selective hydrogenation reaction zone located downstream of said vapor-liquid separation zone and upstream of a hereinafter defined stripping zone of step (e), said selective hydrogenation zone containing a selective hydrogenation catalyst and maintained at selective hydrogenation conditions, wherein said amount of hydrogen in said hydrogen feed stream is selected to convert substantially all of said C_6–C_{22} diolefin to the corresponding monoolefin hydrocarbon and to produce a hydrogenation reaction zone effluent stream substantially free of C_6–C_{22} diolefinic hydrocarbons and comprising
(i) hydrogen
(ii) dissolved C_6-minus light hydrocarbons
(iii) C_6–C_{22} paraffinic hydrocarbons; and
(iv) C_6–C_{22} monoolefinic hydrocarbons;

(e) passing said hydrogenation reaction zone effluent stream into a stripping zone operated at conditions to selectively separate and remove hydrogen and C_6-minus light hydrocarbons from said hydrogenation effluent stream and to produce a stripping zone bottom effluent stream comprising:
(i) C_6–C_{22} paraffinic hydrocarbons and
(ii) C_6–C_{22} monoolefinic hydrocarbons;

(f) passing said stripping zone bottoms effluent stream and an aromatic hydrocarbon into an alkylation zone maintained at alkylation-promoting conditions and containing an alkylation zone catalyst to alkylate said aromatic hydrocarbon and to produce an alkylation zone effluent stream comprising:
(i) alkylaromatic hydrocarbon; and
(ii) C_6–C_{22} paraffinic hydrocarbon; and

(g) recovering said alkylaromatic hydrocarbon from said alkylation zone as the product of said detergent alkylate process.

4,523,049

METHANE CONVERSION PROCESS

C. Andrew Jones, Newtown Square; John J. Leonard, Springfield; John A. Sofranko, Malvern, and Howard P. Withers, Pottstown, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 16, 1984, Ser. No. 600,656

Int. Cl.³ C07C *2/00*

U.S. Cl. 585—500 **45 Claims**

1. In an improved method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane with a contact solid comprising at least one reducible oxide of at least one metal which oxide when contacted with methane at a temperature within the range of about 500° to 1000° C. is reduced and produces higher hydrocarbon products and water, the improvement which comprises conducting the contacting in the presence of an oxygen-containing gas, said solid further comprising at least one member selected from the group consisting of alkali metals, alkaline earth metals, and compounds thereof.

4,523,050

METHANE CONVERSION PROCESS

C. Andrew Jones, Newtown Square, and John A. Sofranko, Malvern, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 16, 1984, Ser. No. 600,670

Int. Cl.³ C07C *2/00*

U.S. Cl. 585—500 **15 Claims**

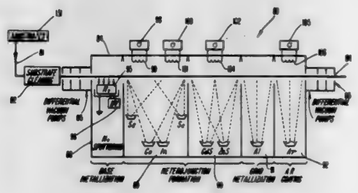
1. A method for converting methane to higher hydrocarbon products which comprises contacting a hydrocarbon gas comprising methane and an oxygen-containing gas with a contact solid comprising at least one manganese silicate at conditions to convert methane to said products.

4,523,051

THIN FILMS OF MIXED METAL COMPOUNDS

Reid A. Mickelsen, Bellevue, and Wen S. Chen, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 27, 1983, Ser. No. 536,395
Int. Cl.³ H01L *31/06, 31/18*
U.S. Cl. 136—260 **18 Claims**



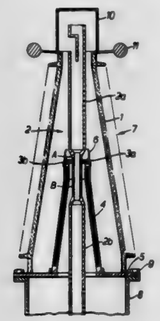
14. A thin film heterojunction solar cell, said heterojunction comprising a p-type I-III-IV_2 chalcopyrite substrate and an overlying layer of an n-type ternary mixed metal compound wherein said ternary mixed metal compound is applied to said substrate by introducing the vapor of a first metal compound to a vessel containing said substrate from a first vapor source while simultaneously introducing a vapor of a second metal compound from a second vapor source of said vessel, said first and second metals comprising the metal components of said mixed metal compound; independently controlling the vaporization rate of said first and second vapor sources; reducing the mean free path between vapor particles in said vessel, said gas being present in an amount sufficient to induce homogeneity of said vapor mixture; and depositing said mixed metal compound on said substrate in the form of a uniform composition polycrystalline mixed metal compound.

4,523,052

GAS-INSULATED BUSHING

Shuzou Takahashi, and Hiroaki Toda, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 19, 1983, Ser. No. 495,936
Claims priority, application Japan, May 19, 1982, 57-73280
Int. Cl.³ H01B *17/36, 17/54, 17/28*
U.S. Cl. 174—16 BH **8 Claims**



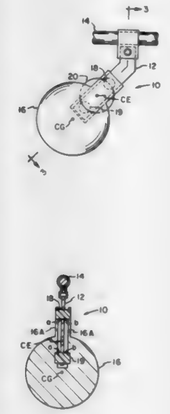
1. A gas-insulated bushing comprising:
an insulating tube filled with an insulating gas;
a central conductor centrally arranged within the insulating tube;
a capacitor unit connected to the central conductor and partitioning the interior of the insulating tube;
said central conductor having an intermediate constriction to which the capacitor unit is connected, said central conductor comprising two connected conductor parts, at least one of which is terminally restricted to form said constriction;
a pair of flanges secured to the ends of respective of said conductor parts and connecting said conductor parts at said constriction; and
a shield member supported on one of said flanges spaced apart from said conductor parts at the constriction in order to relieve the electric field at the constriction.

4,523,053

VIBRATION DAMPER

Charles B. Rawlins, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 23, 1983, Ser. No. 565,179
Int. Cl.³ H02G *7/14*
U.S. Cl. 174—42 **3 Claims**



1. A compact vibration damping device comprising:
an arm of a clamping means, and
an inertial weight member suspended from said arm, the damping device including further:
a system for suspending the weight member from the arm, the system comprising at least two diametrically opposed elastomer pads having predetermined spring constants respectively for relative translational motion of the weight member and arm and for relative rotational motion of the weight member and arm,
the elastomer pads being sandwiched between the weight member and arm and disposed in a plane that contains relative vertical and horizontal degrees of freedom for the weight member and arm such that the pads undergo shearing motion with relative movement of the weight member and arm,
the distance between the pads being substantially equal to twice the square root of the ratio of the rotational to the translational spring constants of the elastomer pads.

4,523,054

LINE-PAST INSULATOR SUPPORT SYSTEM, METHOD OF ASSEMBLY THEREOF, AND CLAMP FOR USE THEREIN

Anthony C. Baker, Rochester, and Thomas A. Pinkham, LeRoy, both of N.Y., assignors to Interpace Corporation, Purchase, N.Y.

Filed Apr. 4, 1983, Ser. No. 482,039
Int. Cl.³ H02G *7/20;* **H01B** *17/16, 17/38*
U.S. Cl. 174—45 R **10 Claims**

1. An electric power transmission system comprising:
a tower and an electrical conductor;
a line-post insulator extending horizontally from said tower

and supporting said conductor at an outer terminus of said line-post insulator away from said tower;

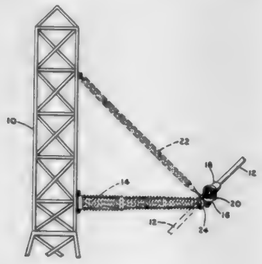
an insulating tension member extending outwardly and downwardly from said tower to meet the outer terminus of said line-post insulator;

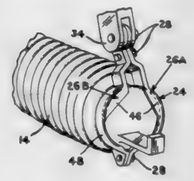
means for securing said conductor adjacent said outer terminus of said line-post insulator, said terminus of said line-post insulator having a generally convex surface;

a clamp secured to said tension member, said clamp comprising:

a first jaw and a second jaw passing between said conductor and said line-post insulator for engagement with said convex surface, said second jaw being the mirror image of said first jaw as reflected about a plane including axes of said line-post insulator and said tension member, each of said jaws having a concave arcuate gripping portion configured for mating with said convex surface of said terminus, said gripping portions of said first and said second jaws contacting said convex surface on opposite sides of said plane, each of said jaws having an arm portion curved about a line perpendicular to said plane for clearing said conductor, said arm portions extending from said gripping portions of respective ones of said jaws to a point of engagement of said clamp with said tension member; and

urging means for urging said jaws together for secure engagement of said gripping portions of said jaws with said outer terminus of said line-post insulator.





7. In an electric power transmission system comprising:

a tower and an electrical conductor;

a line-post insulator extending horizontally from said tower and supporting said conductor at an outer terminus of said line-post insulator away from said tower;

a method of securing said outer terminus of said line-post insulator to said tower during a state of power flow through said conductor comprising:

extending an electrically-insulating tension member from said tower to said terminus;

securing a clamp to an outer end of said tension member, said clamp comprising a pair of opposed jaws, each of said jaws including an arm portion extending toward said tension member;

positioning said clamp between said conductor and said terminus, said positioning including a spacing of said jaws on opposite sides of said insulator at said terminus; and

urging said jaws together while orienting a bend in each of said arm portions of said jaws for providing clearance of said conductor and connection of said tension member with said terminus.

8. A clamp for securing the outer end of a horizontal line-post insulator of an electric power transmission system comprising:

a first jaw and a second jaw, said second jaw being the mirror image of said first jaw as reflected about a central plane of said clamp, each of said jaws having a concave arcuate gripping portion configured for mating with a convex surface of an outer end of said line-post insulator, the concave portions of each of said jaws facing said central plane to permit said first jaw and said second jaw to contact opposite sides of the outer end of said line-post insulator, each of said jaws having an arm portion curved about a line perpendicular to said plane to provide clearance of an electrical conductor at the outer end of said line-post insulator, said arm portions extending from said gripping portions of respective ones of said jaws to permit engagement with a tension member of a power transmission system; and

urging means for urging the arm portions of said first and said second jaws toward each other to permit secure engagement of said gripping portions of said jaws with said outer end of said line-post insulator.

4,523,055

VOICE/TEXT STORAGE AND RETRIEVAL SYSTEM

G. Burnell Hohl, Norwalk, Conn., and Donatas V. Gasiunas, Carmel, N.Y., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 25, 1983, Ser. No. 555,262
Int. Cl.[3] H04M *1/64, 3/42, 11/10*
U.S. Cl. 179—2 DP **46 Claims**

1. A voice/text storage and retrieval apparatus comprising:

(a) digital mass storage means for storage and retrieval of digital data and of digitized voice signal data;

(b) first processor means for controlling access to said digital mass storage means;

(c) host processor means for monitoring, coordination and supervision of the operation of said apparatus;

(d) communications processor means for reception and retransmission of digital data;

(e) interface means for receiving and transmitting both digital data signals and analog voice signals, said interface means further comprising detection means for the detection of digital data signals and switch means responsive to said detection means for separating said digital data signals from said analog voice signals, said switch means operatively connecting said communications processor means to said interface means for transmission and reception of said digital signals;

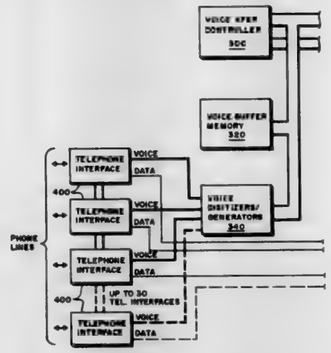
(f) conversion means operatively connected to said interface switch means for the reception and transmission of said analog voice signals, said received analog voice signals being digitized by said conversion means and said transmitted analog voice signal being generated by said conversion means in response to a digital input;

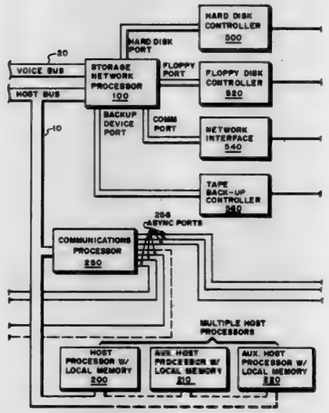
(g) buffer means for buffering the flow of data to and from said conversion means;

(h) voice transfer control means for controlling the transfer of data between said buffer means and said conversion means for signaling said host processor when a block of said digitized voice signal data must be transferred between said bufer and said mass storage means and in response to signals from said first processor means controlling such block transfers;

(i) a first bus operatively interconnecting said first processor means, said communications processor means and said host processor means, whereby digital data received by, or to be transmitted by said communications processor may be transferred between said mass storage means and said communications processor means under control of said first processor means and in response to commands from said host processor means;

(j) a second bus operatively interconnecting said first processor means, said voice transfer control means, said buffer means and said conversion means, whereby said digitized voice data may be transferred between said buffer means and said conversion means and blocks of said digitized voice data may be transferred between said mass storage means and said buffer means under control of said first processor means and said voice transfer control means; and





(k) said first bus being further operatively connected to said voice transfer control means whereby said host processor means may initiate or halt digitized voice data signal transfers to and from said conversion means.

4,523,056

TELEPHONE INCLUDING RESISTIVE ARRAY FOR DIALING AND SYSTEM FOR USING SUCH TELEPHONE

Thomas M. Fisher, Plano, Tex., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Dec. 27, 1982, Ser. No. 453,292
Int. Cl.[3] H04M *1/72*
U.S. Cl. 179—81 R **29 Claims**

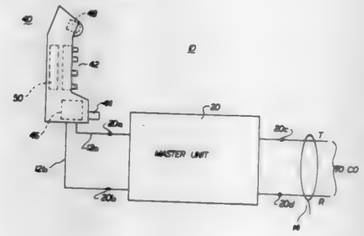
1. A system for providing service between a subscriber and a central office comprising:

(a) at least one telephone set adapted for use in said system, said telephone set having at least information entering means, receiver means for converting electrical signals to acoustical signals, transmitter means for converting acoustical signals to electrical signals and switch means,

(i) said switch means having one position when said telephone set is on-hook and another position when said telephone set is off-hook, each of said switch means positions providing said telephone set with a predetermined electrical characteristic,

(ii) said information entering means providing a multiplicity of unique impedances which are only non-reactive for said telephone set, each associated with the entry by said subscriber when said telephone set is off-hook of a respective one of a multiplicity of discrete pieces of information; and

(b) at least one interface means electrically connected between said central office and said telephone set, said interface means receiving:



(i) electrical information carrying signals and ringing signals from said central office, said information carrying signals being received when said telephone set is off-hook and said ringing signals being received when said telephone set is on-hook, and

(ii) electrical signals from said telephone set when said telephone set is off-hook,

said interface means including means responsive to said ringing signal for generating an alerting signal and means responsive to said unique non-reactive impedances in combination with said off-hook electrical characteristic for generating central office interpretable dialing signals

said interface means transmitting:

(i) to said central office said dialing interpretable signals, and

(ii) to said telephone set information signals and said alerting signal, said telephone set responsive to said alerting signal for alerting said subscriber.

4,523,057

HIGH GAIN CASCODE AMPLIFIER WITH NEGATIVE FEEDBACK

Eduard F. B. Boeckmann, Huntsville, Ala., assignor to GTE Business Communication Systems, Northlake, Ill.

Filed Apr. 2, 1984, Ser. No. 596,175
Int. Cl.[3] H04N *1/60*
U.S. Cl. 179—81 B **9 Claims**

1. A subscriber's telephone instrument circuit connected to a telephone line and including a microphone and an amplifier connected between said microphone and said telephone line, said amplifier comprising:

a cascode amplifier stage including an input and an output;

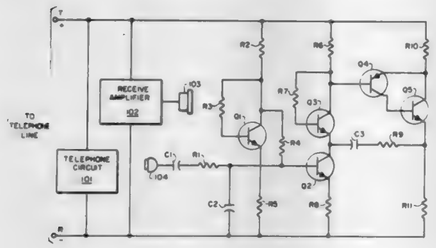
a low frequency cutoff filter connected to said microphone;

a phase shifting filter connected between said cutoff filter and the input of said cascode amplifier stage;

a bias current source connected across said telephone line and including an output connected to said cascode stage; and

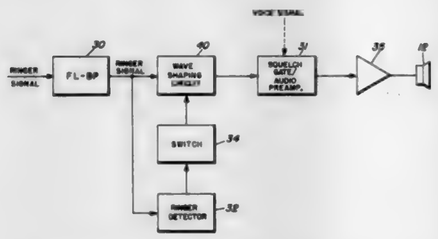
a composite amplifier stage including an input connected to

said cascode amplifier output and further including an output connected to said telephone line; whereby electri-



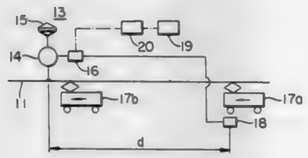
cal signals generated by said microphone are amplified and subsequently conducted to said telephone line.

4,523,058
RINGER SIGNAL WAVE SHAPING CIRCUIT
James C. Stevens, Plainfield, and James R. Haynes, Indianapolis, both of Ind., assignors to Uniden Corporation of America, Indianapolis, Ind.
Filed Oct. 24, 1983, Ser. No. 544,643
Int. Cl.[3] H04M *1/00*
U.S. Cl. 179—84 T **9 Claims**



1. In a telephone handset having audio output means to which an audio frequency ringer signal is periodically applied when the handset is in an on-hook condition, an improvement comprising a wave shaping circuit to initially block each ringer signal, and then gradually increase the amplitude of each ringer signal to substantially the level it would have had without said wave shaping circuit during a period of time not greater than the duration of each ringer signal.

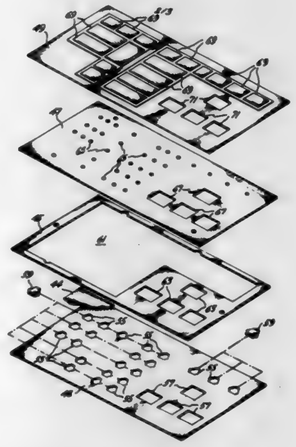
4,523,059
POWER STORAGE SYSTEM FOR ELECTRIC RAILWAY
Toshimi Kawamura, Osaka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Sep. 17, 1982, Ser. No. 419,519
Claims priority, application Japan, Sep. 25, 1981, 56-152790
Int. Cl.[3] B60L *9/00*
U.S. Cl. 191—6 **3 Claims**



1. A power storage system for electric railways having sections comprising a motor-generator connected to a power system for feeding an electric vehicle running in said sections with electric power, a flywheel coupled to said motor-generator, and means including a controller having information on the position of said vehicle in said sections for controlling said motor-generator based on the position information to increase the speed of said flywheel and store power and immediately thereafter to discharge power stored in said flywheel by driving said motor-generator in correspondence with arrival of the electric vehicle at a predetermined running section and running thereof in the section.

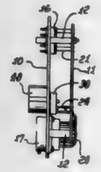
4,523,060
COMBINATION KEYBOARD
Helen E. Maguire, Post Falls, Id., assignor to Advanced Input Devices, Inc., Couer d'Alene, Id.
Filed Nov. 17, 1983, Ser. No. 552,705
Int. Cl.[3] H01H *9/26*
U.S. Cl. 200—5 A **8 Claims**

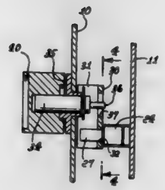




1. A combination keyboard comprising:
(a) a discrete keyboard comprising:
(1) a first set of depression actuated switches lying in a common plane, said first set of depression actuated switches comprising:
(i) a first printed wire board having a plurality of switch contact areas formed on one layer; and,
(ii) a first plurality of depressable switch closing elements, one depressable switch closing element mounted atop each switch contact area, each of said switch contact areas and its overlying depressable switch closing element forming one of said first set of depression actuated switches;
(2) a plurality of discrete keys; and,
(3) mounting means for mounting said plurality of discrete keys such that the keys overlie associated ones of said first set of depression actuated switches and such that the depression of a discrete key actuates its underlying associated switch by depressing the depressable switch closing element of said associated switch;
(b) a membrane keyboard comprising:
(1) a second set of depression actuated switches lying in a common plane, said second set of depression actuated switches comprising:
(i) a second printed wire board having a plurality of switch contact areas formed on one layer; and,
(ii) a second plurality of depressable switch closing elements, one depressable switch closing element mounted atop each switch contact area, each of said switch contact areas and its overlying depressable switch closing element forming one of said second set of depression actuated switches; and,
(2) a flexible membrane overlying said second set of depression actuated switches such that the depression of selected areas of said flexible overlay depresses and, thus, actuates an underlying associated switch, said membrane keyboard including a plurality of holes sized and positioned so as to allow said plurality of discrete keys of said discrete keyboard to partially extend through said membrane keyboard when said membrane keyboard overlies said discrete keyboard; and,
(c) mounting means for mounting said membrane keyboard above said discrete keyboard such that the said discrete keys pass through said holes in said membrane keyboard such that said selected areas of said flexible overlay and said discrete keys lie in substantially the same actuation plane.

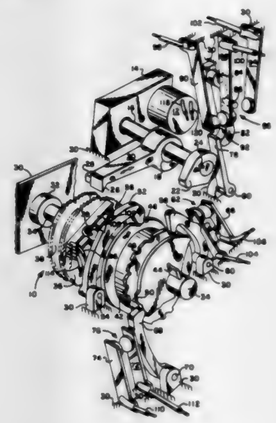
4,523,061
SWITCHING ASSEMBLY FOR TELEPHONE CABLES
Gideon B. Dagan, Santa Monica, and Charles W. Waas, Huntington Beach, both of Calif., assignors to Communications Technology Corporation, Los Angeles, Calif.
Filed Nov. 10, 1983, Ser. No. 550,311
Int. Cl.[3] H01H *3/00*
U.S. Cl. 200—17 R **5 Claims**





1. In a switching assembly for selectively connecting telephone cables to a test set or the like, the combination of:
mounting panel means including a circuit board;
first and second cable connectors carried on said panel means;
a third cable connector carried on said panel means;
a plurality of switches carried on said circuit board, each of said switches having an actuator for actuating each of said switches between first and second positions;
said circuit board providing electrical connections between said third cable connector, said switches, and said first and second cable connectors;
an actuator plate slidingly positioned between said panel means and said switches, said plate having means for engaging said switch actuators; and
means for sliding said actuator plate to actuate said switches between said first and second positions and selectively connect said third cable connector to one of said first and second cable connectors.

4,523,062
ELECTRICAL APPLIANCE PROGRAMMING
Joseph J. Mahon, Libertyville, Ill., assignor to Eaton Corporation, Cleveland, Ohio
Filed May 2, 1983, Ser. No. 490,269
Int. Cl.[3] H01H *43/00*
U.S. Cl. 200—35 R **7 Claims**



1. An appliance timer comprising:
(a) motor means operable, upon connection to a source of power, to provide rotation of an output shaft;
(b) advance pawl means connected to said output shaft and operative for cyclical advancement and retraction upon rotation of said output shaft;
(c) ratchet means operative to be sequentially advanced by said pawl means advancement, said ratchet means including:
(i) a driven ratchet wheel having an arcuate sector of the outer periphery formed into primary ratchet teeth of a first pitch diameter and the circumferentially adjacent arcuate sector forming the driven ratchet wheel remainder of the formed into secondary ratchet teeth of a major diameter less than the root diameter of the teeth of said first pitch diameter,
(ii) a masking ratchet wheel disposed closely adjacent said driven ratchet, said masking ratchet having ratchet teeth formed about the periphery thereof, said teeth having substantially the same pitch and pitch diameter as said driven ratchet teeth of said first pitch diameter, said masking ratchet having a plurality of radially deep notches formed on the periphery thereof and space circumferentially between a selected multiple of said teeth, said deep notches having the root diameter thereof not greater than the root diameter of said driven ratchet secondary teeth, wherein, said driven ratchet and said masking ratchet are disposed to be advanced by said pawl means and axially spaced an amount not greater than the width of said pawl means; and,
(d) said pawl means is operative upon said advancement to index said driven ratchet wheel and said masking wheel one-for-one when said pawl means contacts said primary ratchet teeth of said first diameter, and said pawl means is operative upon said advancement to index said driven ratchet secondary teeth only when said pawl means drops into one of said deep notches on said masking ratchet; and,
(e) main cam means rotatable upon indexing of said driven ratchet;
(f) switch means, including main cam follower means opera-

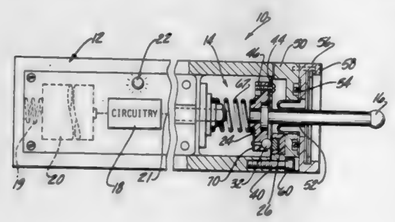
tively contacting said cam means for making and breaking an electrical circuit upon preselected indexing of said driven ratchet wheel.

4,523,063

TOUCH PROBE HAVING NONCONDUCTIVE CONTACT CARRIERS

Charles F. Kroetsch, Warren, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Filed Dec. 5, 1983, Ser. No. 557,754
Int. Cl.³ H01H *3/00;* **G01B** *5/00*
U.S. Cl. 200—61.41 **15 Claims**



1. In a probe with a stylus for detecting contact with an object, the probe having a switch assembly including a first carrier member transversely connected to the stylus and having a first set of electrically conductive contacts affixed thereto, a second carrier member having a second set of electrically conductive contacts affixed thereto, and whereby electrical characteristics between the two sets of contacts are changed when the stylus contacts an object, wherein the improvement comprises:

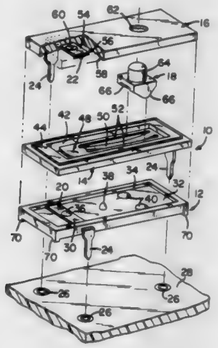
at least one of said carrier members being constructed of a body of electrically nonconductive fiber reinforced plastic thereby simplifying electrical insulation of the contacts affixed thereto while insuring repeatable accurate measurements of the probe.

4,523,064

SNAP ACTION SWITCH

William H. Rose, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 28, 1983, Ser. No. 566,259
Int. Cl.³ H01H *5/18, 9/02*
U.S. Cl. 200—67 D **10 Claims**



1. A snap action switch, comprising:

a dielectric housing including a middle section and first and second outer sections, said middle section having a rectangular opening and said outer sections having a cavity therealong;

a spring blade contact member having one end secured in said middle section, said spring blade contact member including a central compression member arched out of the plane of the spring blade contact member, tension members on each side of the central compression member and a free end defining a movable contact member, said central compression member, said tension members and said movable contact member being disposed in said rectangular opening and freely movable therein;

a first stationary contact member having one end secured in said first outer section and a first stationary contact section disposed along a bottom surface of the cavity thereof in alignment with the movable contact member;

a second stationary contact member having one end secured in said second outer section and a second stationary contact section disposed along a bottom surface of the cavity thereof in alignment with the movable contact member;

means provided by said middle and outer sections matably mounting them together forming said housing with said movable contact member in normal electrical engagement with one of the first and second stationary contact sections; and

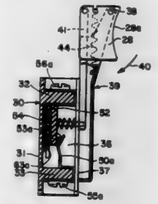
an actuating member movably mounted in said second outer section and including actuating sections directly engaging the tension members to move the tension members relative to the compression member when an actuating force is applied to the actuating member to further stress the spring blade contact member and move the movable contact member out of electrical engagement with the one stationary contact section with a snap action.

4,523,065

TRIGGER OPERATED PANIC SAFETY SWITCH

Merel A. Heggelund, 314 N. Powers Ave., Manteca, Calif. 95336

Filed Oct. 3, 1983, Ser. No. 538,115
Int. Cl.³ H01H *21/26*
U.S. Cl. 200—157 **4 Claims**



3. In a portable electrical power tool, a trigger operated panic safety switch comprising:

a switch enclosure having a pair of side walls connected to end walls to form an elongated chamber with an initial portion, an intermediate portion, and an end portion;

an interconnect carrier having an interconnect member and being movable along the length of the elongated chamber in the switch enclosure;

first and second electrical contact members being fixedly positioned within the intermediate portion of the elongated chamber and being spaced from each other to be contacted by the interconnect member;

a trigger member;

a connecting member connecting the trigger member to the interconnect member to translate the movement of the trigger member to a linear movement of the interconnect carrier along the elongated chamber;

said interconnect carrier being in the initial portion and in the end portion of the elongated chamber with its interconnect member away from the first and second contact members, and being in the intermediate portion of the elongated chamber with its interconnect member electrically connecting the first and second contact member; and

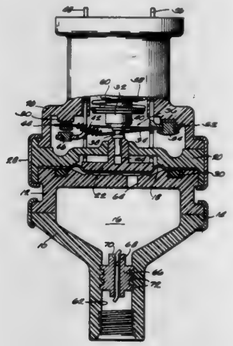
a flat insulator slide member with a detent, said slide member being positioned between one of the contact members and the interconnect carrier to be moved by its interconnect member to have one of the ends of the slide member engage the end wall in the end portion of the elongated chamber of the switch enclosure to have the interconnect member slide on top of the slide member into its detent to be carried by the slide member, and said slide member with its carried interconnect member being movable towards the end wall in the initial portion of the elongated chamber of the switch enclosure to have the other end of the slide member engage the end wall in the initial portion of the elongated chamber of the switch enclosure to have the interconnect member slide out of the detent and off the top of the slide member.

4,523,066

AUTOMOTIVE AIR CONDITIONING SYSTEM CONTROLLED BY DAMPED PRESSURE SWITCH

Charles D. Orth, Lake Forest, Ill., assignor to The Singer Company, Stamford, Conn.

Division of Ser. No. 355,628, Mar. 8, 1982,. This application Jul. 6, 1984, Ser. No. 628,669
Int. Cl.³ H01H *35/34*
U.S. Cl. 200—83 S **6 Claims**



1. A pressure switch having a diaphragm mounted in a housing to move in response to pressure changes in a chamber communicating with an inlet, movement of the diaphragm being operative to actuate a switch, wherein the improvement comprises:

a partition between the inlet and the chamber,

a hole in the partition, and

a pin mounted in the hole with clearance between the pin and the hole, the clearance being a restricted passage retarding pressure change in the chamber when pressure at the inlet changes rapidly.

4,523,067

TEMPERATURE GRADIENT ZONE MELTING APPARATUS

Roger H. Brown, Burbank; Kuen Chow, Thousand Oaks; Norman W. Goodwin, Encino, and Jan Grinberg, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

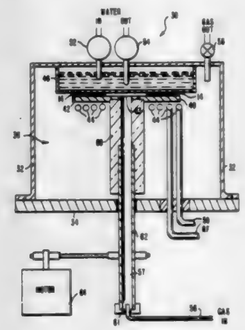
Filed Apr. 9, 1982, Ser. No. 366,901
Int. Cl.³ H05B *6/10*
U.S. Cl. 219—10.49 R **6 Claims**

1. An apparatus for fabricating a semiconductor wafer by thermal gradient zone melting, said wafer body having generally parallel opposed top and bottom surfaces, said apparatus comprising:

(a) a base;

(b) a rotatable heating means mounted on said base, said heating means having a generally planar heating surface which is capable of supporting the entire area of the bottom surface of the semiconductor wafer, which aids in establishing a substantially uniform thermal temperature gradient through said wafer such that said bottom surface of said wafer is maintained at a higher temperature than said top surface;

(c) a source of heat conductive gas;



(d) heat sink means sufficiently spaced from the heating means but in close proximity therewith, such that a semiconductor wafer placed on said heating means forms a minimal space between said heating means and said heat sink means, said space capable of receiving a high heat conductive gas, such that said heat sink means and said gas cooperatively remove heat from within said wafer body through the top surface of said semiconductor wafer to enhance the establishment of a thermal temperature gradient; and

(e) means for providing entry and exit of said heat conductive gas to and from said space.

4,523,068

APPARATUS AND METHOD FOR FUSING BATTERY TERMINALS

David L. Lund, Minneapolis, Minn.; Senajit J. Majumdar, Niles, Ill.; William E. Mullane, and Louis Krivanek, both of Warren, Ohio, assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed Sep. 19, 1983, Ser. No. 533,080
Int. Cl.³ H05B *6/10*
U.S. Cl. 219—10.53 **23 Claims**

1. An apparatus for fusing lead components of a battery being assembled comprising

a frame,

an induction heating coil,

means for fixedly supporting said induction heating coil in predetermined orientation with respect to said frame,

a mold insert disposed in concentric relation to said induction heating coil, said mold insert having a mold cavity for receiving said battery components to be fused,

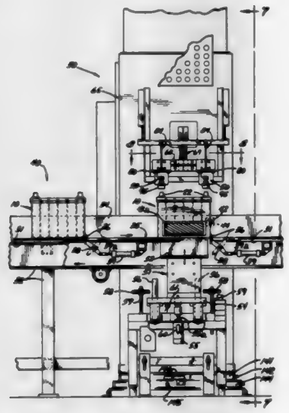
means for automatically locating said battery components to be fused in position below said mold,

means for automatically raising said battery components into said mold cavity and into operative relation to said induction heating coil,

means for generating high frequency oscillating current in said coil,

induced current concentrating means disposed in concentric relation to said induction heating coil for concentrating an induced current flow in said battery components posi-

tioned in operative relation to said coil for heating, melting and fusing said battery components together and molding said components in finished fused form in response to the generation of a high-frequency oscillating current in said coil while the surrounding non-lead components of the battery being assembled remain substantially unaffected,



said induction heating coil including a plurality of vertically arranged turns, said mold insert being supported by at least one of the turns of said coil, and said induced current concentrating means being supported by at least one other of said turns, and

means for automatically lowering and removing said battery components from said mold cavity following fusing and molding thereof to finished form.

4,523,069

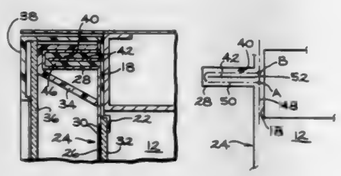
MICROWAVE OVEN DOOR SEAL

James E. Staats, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 24, 1983, Ser. No. 544,799

Int. Cl.³ H05B *6/76*

U.S. Cl. 219—10.55 D **21 Claims**



1. In a microwave oven comprising a source of microwave energy having a predetermined frequency and wavelength, an enclosure having located therein a cooking cavity for receiving items to be heated by the microwave energy, the cooking cavity having an access opening, a door for opening and closing the access opening, the door and enclosure defining therebetween a door gap, a door seal arrangement for inhibiting the leakage of microwave energy through the door gap, said door seal arrangement comprising:

one of the door and the enclosure defining an electrically conductive planar surface generally parallel to the plane of the door in its closed position;

the other of the door and enclosure having an electrically conductive channel member defining a recessed channel, said planar surface and said channel member each extending in juxtaposition with each other with the door in its closed position about the periphery of the access opening;

microwave pervious electrical insulation means interposed between said channel member and said planar surface, said insulation means and said channel member cooperating with said planar surface to define a first transmission path for microwave energy propagating through the door gap;

a transmission member disposed within said recessed channel and extending along the length thereof, said transmission member and said channel member establishing a second transmission path for microwave energy propagating through the door gap, said second path intersecting said first path at an inner intersection relatively near the cavity and at an outer intersection relatively remote from the cavity;

said first and second paths being configured proximate said inner intersection to split therebetween energy propagating through the door gap from the cavity and to recombine energy propagating along said second path with energy propagating along said first path proximate said outer intersection, the effective electrical length between said inner and outer intersections measured along said second path differing from the distance between said intersections measured along said first path such that proximate said outer intersection, energy from one of said paths differs in phase relative to that from the other path by approximately a half wavelength whereby upon recombination, energy from one of said paths substantially cancels energy from the other one of said paths, effectively inhibiting energy leakage beyond the door gap.

4,523,070

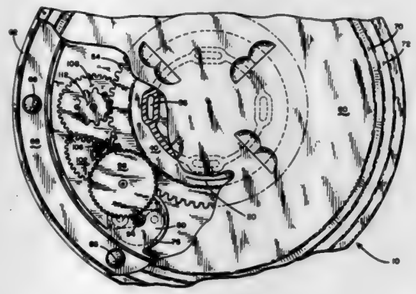
LOW PROFILE FOOD ROTATOR

Jorgen A. Jorgensen, Bloomington, and Donald W. Nygren, St. Louis Park, both of Minn., assignors to Northland Aluminum Products, Inc., Minneapolis, Minn.

Filed Jun. 16, 1983, Ser. No. 505,370

Int. Cl.³ H05B *6/80;* **A47B** *11/00*

U.S. Cl. 219—10.55 F **9 Claims**



1. A portable turntable for use in a microwave oven, comprising:

(a) a generally cylindrical housing member having a planar bottom, a cylindrical side wall projecting upwardly therefrom and an annular cover joined to the upper edge of said side wall defining a central opening in the top of said cylindrical housing;

(b) a toroidal spring case secured to said planar bottom of said housing member, a central opening in said toroidal spring case, said spring case central opening being of a predetermined diameter;

(c) a first gear member having gear teeth on the peripheral edge thereof and a central shaft projecting from a first major surface thereof, said shaft being journaled for rotation within said central opening in said toroidal spring case;

(d) a spiral power spring disposed in said toroidal spring case;

(e) means securing one end of said power spring to said spring case and means releasably connecting the other end of said power spring to said central shaft;

(f) a generally circular turntable member concentrically attached to a second major surface of said first gear member and rotatable therewith;

(g) a gear train comprising a plurality of overlapping gear elements journaled for rotation about vertical axes between said planar bottom and said annular cover of said generally cylindrical housing, one of said gear elements cooperating with said gear teeth on said first gear member; and

(h) means coupled to said gear train for regulating the speed of rotation of said first gear member.

4,523,071

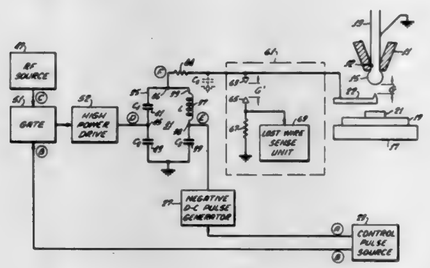
METHOD AND APPARATUS FOR FORMING A BALL AT THE END OF A WIRE

Charles F. Bancroft, Sherman Oaks; Thomas B. Brown; Peter W. Bullock, both of Vista, and Leroy V. Sutter, Jr., Culver City, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 14, 1984, Ser. No. 610,158

Int. Cl.³ B23K *9/06*

U.S. Cl. 219—56.22 **32 Claims**



1. A method of forming a ball at the tip of a wire preparatory to joining said wire tip to another surface, comprising the steps of:

a. initiating an electric arc to said wire tip by subjecting it concurrently to an RF electric field and a DC electric field, and

b. maintaining said arc by continuing to subject said wire tip to said RF electric field after removing said DC electric field.

4,523,072

PRODUCTION OF ELECTRICAL RESISTANCE WELDED STEEL TUBES WITH WELDS HAVING IMPROVED TOUGHNESS

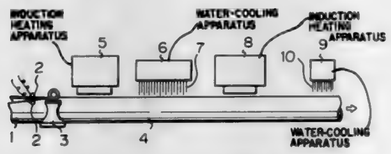
Hiroshi Nakate; Masatoshi Kondo, and Nobuyuki Gosho, all of Wakayama, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Sep. 2, 1983, Ser. No. 528,782

Claims priority, application Japan, Sep. 4, 1982, 57-154225; Sep. 4, 1982, 57-154226

Int. Cl.³ B23K *11/08*

U.S. Cl. 219—67 **15 Claims**



1. A process for producing an ERW tube having welds which have been improved in toughness without adversely affecting the toughness of the parent metal of the tube, which comprises forming a continuous low alloy steel strip into a tubular shape through a series of forming rolls, continuously carrying out electrical resistance welding of a seam which is formed from opposite side edges of the strip and which extends in a longitudinal direction to produce an electrical resistance welded tube, heating the welds of the thus obtained electrical resistance welded tube to a temperature not lower than the A_{c3} point, then cooling the heated welds at cooling rate of 15°–30° C./sec at least between 800° C. and the A_{r1} point to obtain a metallurgical structure of bainite plus fine ferrite, and tempering the thus cooled welds of the tube at a temperature of 450°–800° C.

4,523,073

WIRE-CUT ELECTRIC DISCHARGE MACHINE CONTROLLER FOR COMPENSATING THE MACHINING CORNERING PARAMETERS

Gotaro Gamo; Mitsuo Kinoshita, both of Hachioji, and Haruki Obara, Sagamihara, all of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

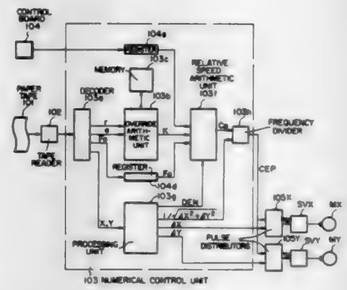
PCT No. PCT/JP81/00421, § 371 Date Aug. 25, 1982, § 102(e) Date Aug. 25, 1982, PCT Pub. No. WO82/02355, PCT Pub. Date Jul. 22, 1982

PCT Filed Dec. 28, 1981, Ser. No. 413,383

Claims priority, application Japan, Dec. 30, 1980, 55-186736

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 W **3 Claims**



1. A method of controlling a wire-cut electric discharge machine, operatively connected to receive radius of curvature data, corner angle data, thickness data of the workpiece, and a commanded feeding speed which comprise cutting command data, by applying a voltage between a wire electrode and an electrically conductive workpiece for cutting the electrically conductive workpiece to a predetermined shape with electric discharge energy while the wire electrode and the workpiece are being moved relative to each other based on the cutting command data to cut the workpiece to the predetermined shape, said method comprising the steps of:

(a) determining an amount of override, which is the amount the commanded feeding speed is adjusted in dependence upon the radius of curvature data of the corner of the workpiece, the thickness data and the corner angle data;

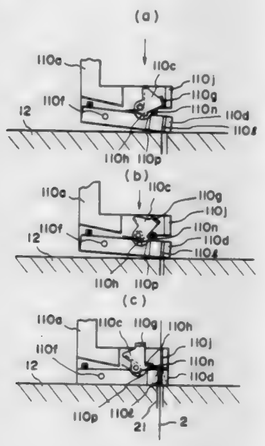
(b) determining a relative feeding movement speed between the workpiece and the wire electrode, based on the radius of curvature data of the corner of the workpiece, corner angle data, the thickness data and the commanded feeding speed which comprise the cutting command data, and the amount of override, when cutting the corner; and

(c) moving the workpiece and the wire electrode relative to each other at the relative feeding movement speed, which is lower than the commanded feeding speed, for electric discharge cutting of the corner.

4,523,074
WIRE ELECTRODE PULL-UP MECHANISM IN WIRE-CUT ELECTRIC DISCHARGE MACHINE

Kanemasa Okuda, Hino, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan

Filed Sep. 29, 1982, Ser. No. 428,288
Claims priority, application Japan, Oct. 2, 1981, 56-157190
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 W 8 Claims



1. A wire electrode pull-up mechanism in a wire-cut electric discharge machine having a wire electrode stretched between upper and lower guides for machining a workpiece by means of an electric discharge produced by impressing a voltage between the wire electrode and the workpiece, wherein the wire electrode pull-up mechanism is for pulling up, on the side of the upper guide, a wire electrode which has been passed through a bore in the workpiece until the upper end of the wire electrode protrudes from the upper side of the workpiece, wherein the wire electrode pull-up mechanism comprises:

(a) a gripping member for gripping the wire electrode, and

(b) a drive means for moving said gripping member up and down relative to the workpiece,

wherein the gripping member includes:

(i) an arm having a bearing wall at the distal end thereof,

(ii) a clamping member pivotally provided on said arm and having a cam body and a restraining portion for abutting against the bearing wall of said arm,

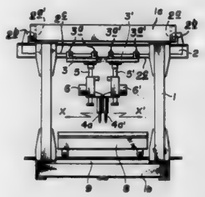
(iii) a spring means for urging said clamping member in such a manner that the restraining portion thereof abuts against said bearing wall, and

(iv) an operating member pivotally provided on said arm and having a cam operating portion abutting against the cam body of said clamping member for pivoting said clamping member, said operating member being pivoted owing to pressured contact with the upper surface of the workpiece when said gripping member is lowered into abutting contact with the upper surface of the workpiece by said drive means, wherein said clamping member is pivoted by said cam operating portion as said operating member abuts against the workpiece, in such a manner that said clamping member causes a gap to be formed between said restraining portion and said bearing wall, and wherein said operating member separates from the workpiece when said arm is raised, whereby said clamping member is pivoted by said spring means so that the upper end of the wire electrode, inserted into said gap, is retained between the restraining portion of said clamping member and the bearing wall of said arm.

4,523,075
RESISTANCE WELDING APPARATUS

Hitoshi Horii, and Yutaka Oonishi, both of Tokyo, Japan, assignors to Tachikawa Spring Co., Ltd., Japan

Filed Aug. 1, 1983, Ser. No. 519,312
Claims priority, application Japan, Jul. 31, 1982, 57-116858[U]
Int. Cl.³ B23K 11/10
U.S. Cl. 219—88 11 Claims



1. A resistance welding device for welding a pair of superposed weldable members together at a plurality of welding points disposed in a matrix configuration, said welding device comprising in combination:

a base structure including vertically separated ceiling and floor members superjacently disposed relative to one another so as to establish therebetween a welding space, said ceiling member at lateral side portions thereof including a first pair of horizontally separated rail members establishing a y-axis;

an elongated first mounting structure including first mounting means to dependently mount said first mounting structure to said first pair of rail members so that said first mounting structure is disposed transverse to said y-axis yet below said ceiling member, said first mounting means for permitting said first mounting structure to be reciprocally moveable along said first pair of rail members in a direction parallel to said y-axis, said first mounting structure along its longitudinal length including a second pair of horizontally separated rail members establishing an x-axis transversely oriented relative to said y-axis established by said first pair of rail members;

a pair of electrode gun means each including at least one electrode tip for welding said superposed weldable members at said plurality of matrix-configured welding points;

second mounting means to dependantly mount each said pair of electrode gun means to said second pair of rail members so that each of said electrode gun means is dependantly supported in said welding space below said first mounting structure, said second mounting means permitting each said pair of electrode gun means to be moveable along said x-axis so as to displacable towards and away from one another; and

jig truck means movable into and out of said welding space for establishing a platform to support said weldable members in confronting relationship to said at least one electrode tip of each said electrode gun means to thereby permit welding thereby at said matrix-configured welding points.

4,523,076
AUTOMATIC WELDING MACHINE WHICH PROVIDES UNIFORM WELDING OF A WORKPIECE DURING VERTICAL MOVEMENT THEREOF

Charles R. Laymon, Loveland, Ohio, assignor to Welco Industries, Inc., Cincinnati, Ohio

Filed Mar. 21, 1983, Ser. No. 477,063
Int. Cl.³ B23K 9/12
U.S. Cl. 219—125.1 13 Claims

1. An automatic welding machine comprising:

(a) a base frame;

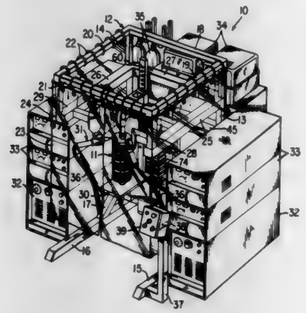
(b) a vertical slideway formed on said base frame;

(c) a work slide assembly supported on said slideway for vertical movement therealong, said work slide assembly having a mounting axis for a workpiece disposed parallel to and spaced from said slideway;

(d) antifriction means between said work slide assembly and slideway;

(e) means for supporting said workpiece at opposite ends thereof on said mounting axis of said work slide assembly;

(f) a welding head supported on said base frame at a fixed vertical position along said slideway, said welding head having means for welding said workpiece;



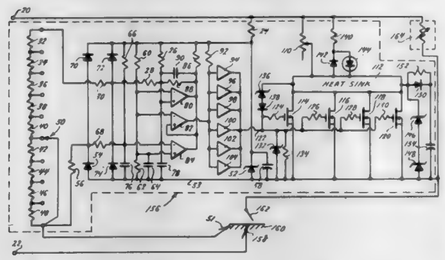
(g) means for maintaining said welding head at a controlled space from said workpiece; and

(h) means for moving said work slide assembly and said workpiece supported thereon along said slideway during simultaneous operation of said welding means to provide weld bead means on said workpiece, said moving means and antifriction means cooperating to provide smooth movement of said workpiece and thereby assure said welding means provides said weld bead means which is uniform.

4,523,077
ELECTRIC ARC WELDER THAT PROVIDES NON-STICKING ARC INITIATION AND THEREAFTER MAINTAINS THE ARC

Harold C. Hoyt, Jr., Spanish Lake, Mo.; Danilo C. Martinez, Clearwater, Fla., and Stanley M. Philipak, Overland, Mo., assignors to Big Four Manufacturing Company, Inc., O'Fallon, Mo.

Filed Jun. 16, 1983, Ser. No. 505,097
Int. Cl.³ B23K 9/10
U.S. Cl. 219—137 PS 28 Claims

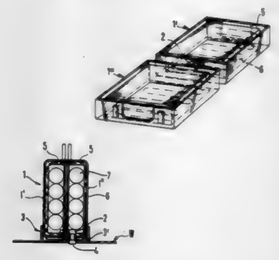


1. An electric arc welder that is connectable to a source of power and to a welding electrode and to a work piece and that comprises current-conducting means connectable to said source of power to maintain a continuous arc between said welding electrode and said work piece, while selectively supplying power to said arc along a first predetermined volt-ampere curve or along a second and distinctly-different predetermined volt-ampere curve, a sensing circuit which can sense the voltage across said arc and which develops a predetermined signal whenever said voltage across said arc falls below a predetermined value, and a control circuit that can coact with said sensing circuit to permit said current-conducting means to supply welding power to said arc along said first predetermined volt-ampere curve whenever said voltage across said arc is at or above said predetermined value, said control circuit responding to said predetermined signal from said sensing circuit to cause said current-conducting means to supply welding power to said arc along said second and distinctly-different predetermined volt-ampere curve whenever said voltage across said arc is below said predetermined value, said first predetermined volt-ampere curve having a corresponding power curve of a predetermined magnitude, said second and distinctly-different predetermined volt-ampere curve having a corresponding power curve of a greater predetermined magnitude, whereby the amount of welding power which can be supplied to said arc is greater when said current-conducting means is supplying welding power to said arc along said second and distinctly-different predetermined volt-ampere curve than when said current-conducting means is supplying welding power to said arc along said first predetermined volt-ampere curve, and said control circuit causing said current-conducting means to shift from the supplying of welding power along said first predetermined volt-ampere curve to the supplying of welding power along said second and distinctly-different predetermined volt-ampere curve so rapidly that the shift is from a point on said first predetermined volt-ampere curve to a point of substantially equal potential but very substantially larger current on said second and distinctly-different predetermined volt-ampere curve, said current-conducting means being dimensioned to supply power to said arc at levels which are great enough to do welding whenever said voltage across said arc is at or above said predetermined value and also to repeatedly supply greater values of current of momentary duration to said arc to continue to do welding whenever said voltage across said arc falls below said predetermined value during zero-going voltage spikes.

4,523,078
PORTABLE ELECTRICALLY HEATED WARMING CONTAINER FOR TRANSPORTING INFUSIONS IN A RESCUE VEHICLE

J. C. Ludwig Lehmann, Lorch, Fed. Rep. of Germany, assignor to Binz GmbH & Co., Fed. Rep. of Germany

Continuation of Ser. No. 174,747, Aug. 4, 1980, abandoned. This application Feb. 1, 1983, Ser. No. 463,060
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 7922217[U]
Int. Cl.³ H05B 1/00; A47J 36/24
U.S. Cl. 219—202 5 Claims



1. A warming container arrangement for transporting of infusions or the like in a rescue vehicle, comprising a thermally insulated warming container case having a flat bottom wall and an interior space for receiving a plurality of containers to be warmed and an electrical heater operable by connection to the

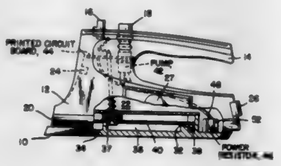
electrical system of a vehicle for warming containers received in said interior space, and a trough-shaped transport casing adapted to be fixedly installed in a vehicle and having a flat bottom wall and side walls which are low compared to the height of container case and which side walls define at least one receiving space open at the top side to at least partially snugly surround the warming container case in a manner securing same against sliding and tipping, wherein said electrical heater is detachably connectable to the electrical system of the vehicle by an electrical connecter having a plug-in electrical connector member adapted to be electrically connected to a vehicle power supply disposed on the bottom wall of the transport casing and by a complementary electrical connector member connected to said electric heater and positioned in a recess in the bottom wall of the case so as to be flush with the exterior bottom wall surface of the case and accessible externally thereof for receiving said plug-in electrical connector member upon insertion of said warming container case into said receiving space of the transport casing through said open top of said casing, said side walls of said casing acting in conjunction with the side walls of the case to guide a plug-in connector member and complementary electrical connector member into engagement as the case is inserted into the casing.

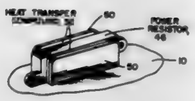
4,523,079

ELECTRIC IRON HAVING ELECTRONIC CONTROL CIRCUIT WITH A POWER RESISTOR MOUNTED ON THE SOLEPLATE

Harry Albinger, Jr., Monroe, Conn., assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 20, 1983, Ser. No. 533,933
Int. Cl.³ H05B *1/02;* **D06F** *75/18, 75/26*
U.S. Cl. 219—251 **7 Claims**





1. An electric iron comprising a housing shell forming a hollow handle structure and a heat generating soleplate, said shell, including said hollow handle structure being open to said soleplate,

low DC voltage electronic circuit control means including a printed circuit board disposed in the housing shell away from the soleplate, and means to reduce high AC line voltage to low DC supply to said circuit,

said means including a connected power resistor, said printed circuit board being directly exposed to heat from said power resistor,

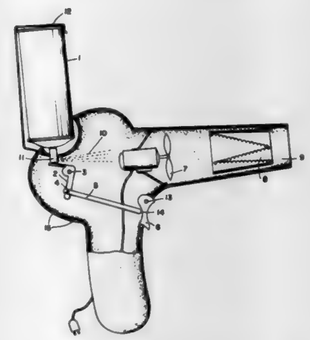
means mounting said resistor on said soleplate, in a thermally close coupling thereto, whereby the hot soleplate forms a heat sink to dissipate resistor heat preventing excessive heating of the printed circuit board.

4,523,080

APPARATUS FOR TREATMENT OF HAIR AND SCALP

John D. Bolton, 5 Shiloh Cir., Irvine, Calif. 92714

Filed Mar. 14, 1983, Ser. No. 444,422
Int. Cl.³ A45D *7/02, 20/09;* **B05B** *7/16*
U.S. Cl. 219—362 **1 Claim**



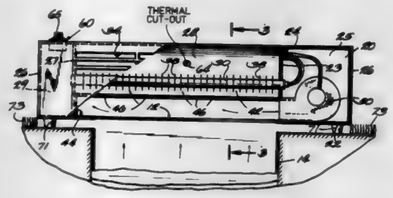
1. Apparatus for treating hair comprising, a hand held hair dryer having an air inlet and an air outlet, blower means in the hair dryer for producing a stream of air between the air inlet and the air outlet, attaching means for attaching an aerosol spray can to the hair dryer between the air inlet and the blower means so that aerosol spray leaving a nozzle of the aerosol spray can contact said stream of air between the blower means and the air inlet, whereby the blower means thoroughly mixes said stream of air and said aerosol spray, heater means between the blower means and the air outlet to the said mixed stream of air and aerosol spray, and manual trigger means on the hair dryer and connected to the aerosol spray can for controlling the flow of said aerosol spray into said stream of air.

4,523,081

FORCED AIR BASEBOARD HEATER AND AIR DUCT DIFFUSER

Henry T. Geib, Sr., Ixonia, and Wayne C. Griffith, Hartland, both of Wis., assignors to M. P. Metal Products, Inc., Ixonia, Wis.

Filed Dec. 27, 1982, Ser. No. 453,482
Int. Cl.³ F24F *5/00;* **F24H** *3/04, 9/02;* **H05B** *3/40*
U.S. Cl. 219—370 **1 Claim**



1. A portable electric heater adapted to be mounted over the discharge end of a hot air duct to diffuse air flowing into a room from the hot air duct and to selectively heat the air in the room, the electric heater comprising

a housing including a top wall, a bottom and a front wall and adapted to be positioned over the discharge end of the hot air duct, the housing including an elongated air inlet in said bottom, said air inlet being positionable over the discharge end of the hot air duct whereby air from the discharge end of the hot air duct can flow into the housing, and the housing including an air outlet opening, and an elongated chamber therein, said chamber including opposite ends,

an elongated electrical resistance heating element housed in said chamber and extending substantially along the length of said chamber, and

means for forcing air upwardly across said elongated heating element along a substantial portion of the length of said heating element and toward said air outlet opening of said housing, said means for forcing air across said elongated heating element including

means defining an air conduit positioned in said housing in parallel spaced relation from said elongated heating element and extending along the length of said elongated heating element, said air conduit comprising an elongated tube having opposite ends and said elongated tube being positioned adjacent said elongated air inlet of said housing, air outlet means along the length of said elongated tube, said air conduit air outlet means being adjacent said heating element and facing said elongated heating element whereby air flowing through said elongated tube is discharged toward said elongated heating element, and

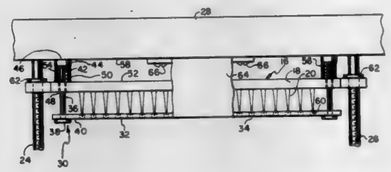
means for forcing air through said air conduit and through said air outlet means toward said elongated heating element, said means for forcing air through said elongated tube including a centrifugal fan contained in an end of said housing and connected to one of said ends of said elongated tube for forcing air into said elongated tube.

4,523,082

ELECTRODE SHIELD DEVICE

Eugene J. Sturdevant, P.O. Box 5327, Wilmington, Del. 19899

Filed May 5, 1983, Ser. No. 491,746
Int. Cl.³ H01T *19/04;* **A21B** *1/02;* **F27D** *11/12*
U.S. Cl. 219—399 **12 Claims**



9. An electrode shield device in an oven appliance having an electrode means, the shield device comprising in combination;

a movable electrode having a plurality of needles projecting from a base;

a drive means coupled to said movable electrode for moving said movable electrode from a first location near an internal top surface of the oven to a second location spacing said movable electrode further away from said internal top surface;

a shield member having a surface area sufficient to cover said plurality of needles; and

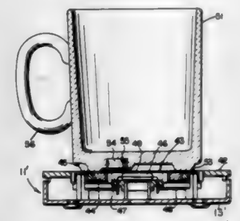
means carried by said movable electrode for supporting said shield member adjacent said needles and parallel to said base, said means supporting said shield member operative in a first position for rigidly locating said shield member away from said base to prevent physical contact with the needles when said movable electrode is in said first location and in a second position for locating said shield member engaging said base to expose said needles from said shield member when said movable electrode is in said second location.

4,523,083

BEVERAGE WARMER

William H. Hamilton, Seattle, Wash., assignor to Hamilton-Dunn Research Co., Seattle, Wash.

Continuation-in-part of Ser. No. 288,113, Jul. 29, 1981, abandoned. This application Apr. 2, 1984, Ser. No. 596,063
Int. Cl.³ F27D *11/02*
U.S. Cl. 219—433 **33 Claims**



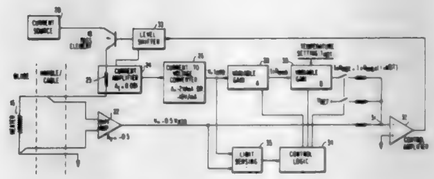
1. A beverage warmer comprising electric-heater means having an electrically heated non-magnetic surface, an energizing electrical circuit for said means having a magnetically operable normally open switch mounted adjacent said surface in a predetermined location, and a non-magnetic beverage container having a closed bottom with a periphery adapted for stabilized removable mounting on said surface, said container having thereon a magnet near one to the exclusion of another region of said periphery, said switch being locally responsive to said magnet to close for a mounted condition of said container when said container is oriented to place said one region in operative proximity to said switch, and said switch being sufficiently non-responsive to said magnet to thereby remain open when said container is oriented to place said other region in proximity to said switch.

4,523,084

CONTROLLER FOR RESISTIVE HEATING ELEMENT

Paul S. Tamura, Palo Alto, and Robert J. Strehlow, Mt. View, both of Calif., assignors to Oximetrix, Inc., Mountain View, Calif.

Filed Sep. 2, 1981, Ser. No. 298,796
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—497 **16 Claims**



1. An apparatus for controlling the flow of current from a current source through a resistive heating element disposed on a surgical scalpel such that the resistive heating element is heated from an ambient temperature to a predetermined temperature, said apparatus comprising:

voltage measuring means for sensing the magnitude of the voltage drop across the resistive heating element and for generating a voltage-representative signal having a value corresponding to the magnitude of the voltage drop so sensed;

current measuring means for sensing the magnitude of current flowing through the resistive heating element and for generating a current-representative signal having a value corresponding to the magnitude of the current so sensed;

resistance computing means for generating a computed

resistance signal having a value corresponding to the predicted resistance of the heating element at the predetermined temperature, said resistance computing means including a calibration means which produces a first signal for use in generating said computed resistance signal, said first signal having a value corresponding to the resistance of the resistive heating element at the ambient temperature, said resistance computing means also including a temperature parameter means which produces a second signal for use in generating said computed resistance signal, said second signal having a value corresponding to a temperature parameter which varies as a function of the predetermined temperature;

ratio comparision circuit means for generating a control signal, said ratio comparison circuit means including a multiplying means connected to said current measuring means and said resistance computing means for deriving a product signal having a value which corresponds to the product of said values of said current-representative signal and said computed resistance signal, said ratio comparison circuit means also including a summing means connected to said multiplying means and said voltage measuring means for combining said product signal with said voltage-representative signal in order to generate said control signal; and

means connected to receive said control signal for regulating the flow of current between the current source and the resistive heating element in response to the magnitude of said control signal.

4,523,085

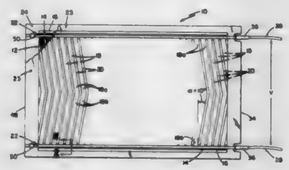
ELECTRICAL HEATING DEVICE

Frederick G. J. Grise, Osterville, Mass., assignor to Flexwatt Corporation, Canton, Mass.

Continuation-in-part of Ser. No. 295,000, Aug. 21, 1981, Pat. No. 4,485,297, which is a continuation-in-part of Ser. No. 181,074, Aug. 28, 1980, abandoned. This application Jan. 20, 1984, Ser. No. 572,678

Int. Cl.³ H05B *3/34*

U.S. Cl. 219—528 **14 Claims**





1. An electrical heating device comprising

an elongated conductor,

a semi-conductor pattern electrically connected to and extending from said conductor, and

electrically insulating sealing layers on top of and below said conductor and said semi-conductor pattern,

said device being characterized in that:

said conductor comprises a pair of rectangular in cross-section metallic conductor elements, placed one on top of the other in face-to-face engagement with and unattached to each other, the bottom one of said conductor elements facing towards one of said sealing layers and the upper one of said conductor elements facing towards and engaging the other of said sealing layers,

the upper one of said conductor elements adjacent an end of said device is folded back longitudinally upon itself to expose an upper surface of the lower one of said conductor elements and a lower surface of the upper one of said conductor elements, and

a wire engages and is electrically connected to at least one of the thus exposed upper surface of said lower one of said conductor elements and the thus exposed lower surface of said upper one of said conductor elements.

4,523,086

FLEXIBLE ELECTRICAL THERMAL ELEMENT

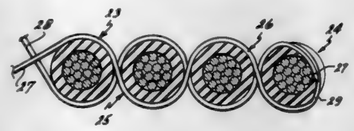
Heinz Eilentropp, Wipperfürth, Fed. Rep. of Germany, assignor to HEW Kabel, Heinz Eilentropp KG, Wipperfuerth, Fed. Rep. of Germany

Filed Sep. 13, 1983, Ser. No. 531,631

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1982, 3233904; Sep. 13, 1982, 3233928; Nov. 22, 1982, 3243061

Int. Cl.³ H05B *3/56*

U.S. Cl. 219—549 **9 Claims**



1. Flexible element for one of the following, heating and temperature measurement, and to be made on a continuous basis so that a desired length can be cut therefrom, comprising, feeder lines each having an electrically conductive core and an electrically insulating layer thereon; and a respective heating conductor being interlooped in interweaving fashion with the feeder lines whereby the heating conductor loops around the feeder lines individually for obtaining a meshlike coherent configuration there being discrete locations of the feeder lines, from which the insulation layer thereof has been removed and making contact with the respective heating or measuring conductor thereat.

4,523,087

TRANSACTION VERIFICATION SYSTEM USING OPTICAL COUPLING DATA COMMUNICATION LINK

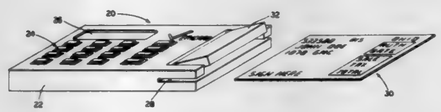
William M. Benton, 2888 NE. 25th Ct., Fort Lauderdale, Fla. 33305

PCT No. PCT/US81/00450, § 371 Date Dec. 7, 1982, § 102(e) Date Dec. 7, 1982, PCT Pub. No. WO82/03484, PCT Pub. Date Oct. 14, 1982

PCT Filed Apr. 7, 1981, Ser. No. 451,169

Int. Cl.³ G06F *15/30*

U.S. Cl. 235—379 **10 Claims**



1. A system for determining whether a requested transaction is authorized, comprising

a portable verification device to be carried by a user, said device comprising a housing, data processing and storage circuit means inside said housing; a keyboard for providing monodirectional first transaction data to said circuitry and a first optical transceiver exposed through said housing for providing bidirectional second transaction data to said circuitry;

a console at a point of transaction location, including a receptacle for receiving said verification device, a second optical transceiver within said receptacle position to establish an optical communication link with said first optical transceiver, said receptacle including means for maintaining said first and second optical transceivers in proper optical registration with each other and

means responsive to keyboard entered data and stored data for establishing transaction authorization data on said optical link.

4,523,088

CODE BAR FOR IDENTIFICATION OF SERIES PARTS

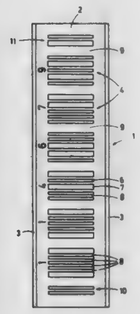
Joachim Utsch, Alte Dreisbachstrasse 19, D-5900 Siegen 31, and Theo Morgenschweis, Am Altenberg 8, D-5908 Neunkirchen 3, both of Fed. Rep. of Germany

Filed May 16, 1983, Ser. No. 495,076

Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218223

Int. Cl.³ G06K *13/107*

U.S. Cl. 235—487 **3 Claims**



1. Code bar for the identification of series parts, for example vehicle bodies, within an assembly line, with several codings in the form of alternating bright and dark stripes of differing widths, corresponding respectively to the digits 0 through 9, characterized in that the code bar (**1**) is a sheet-metal strip (**2**, **2'**) from which the dark stripes (**6**, **7**) of the codings (**4**) are punched out as slots.

4,523,089

DRIVING APPARATUS FOR SEMICONDUCTOR LASER

Takeshi Maeda, Kokubunji; Yasumitsu Mizoguchi, Odawara; Masahiro Takasago, Odawara; Tokuya Kaneda, Odawara, and Yoshito Tsunoda, Mitaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 26, 1982, Ser. No. 411,809

Claims priority, application Japan, Sep. 4, 1981, 56-138582

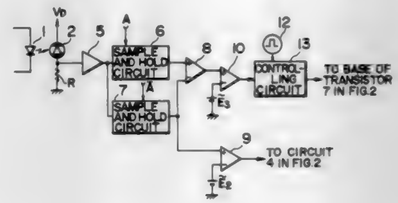
Int. Cl.³ G01J *1/32;* **H01S** *3/10*

U.S. Cl. 250—205 **4 Claims**

1. An apparatus for driving a semiconductor laser, comprising: a DC bias current source for generating a DC current applied to said semiconductor laser; a pulse generating source for producing pulses superposed onto said DC current; a photo detector for receiving laser light emitted by said semiconductor laser; first means for monitoring the output signal of said photo detector upon application of said DC bias current; and second means for monitoring the output signal of said photo detector upon application of said pulse, wherein the DC output current of said DC bias current source is controlled by utilizing the output signal of said first means, while the pulse current output of said pulse generating source is controlled by using the output signal of said second means,

wherein said first means includes a first sample and hold circuit for sampling and holding the output signal of said photo detector during a period in which said DC bias current is applied, and first comparison means for comparing the output signal of said first sample and hold circuit with a first predetermined reference value, and

wherein said second means includes a second sample and hold circuit for sampling and holding the output signal of



said photo detector during a period in which said pulse current is applied, a differential circuit for deriving difference between the output signals of said second sample and hold circuit and said first sample and hold circuit, and second comparison means for comparing the output signal of said differential circuit with a second predetermined reference value.

4,523,090

LIGHT CONTROLLED FADER

Warren E. Wagner, P.O. Box 12025, Memphis, Tenn. 38122

Filed Jun. 20, 1983, Ser. No. 506,706

Int. Cl.³ H01L *31/08*

U.S. Cl. 250—211 K **6 Claims**

1. A light controlled fader for providing an analog voltage output, said fader comprising:

(a) a first light emitting means;

(b) a first light receiving means for receiving light from said first light emitting means and for providing a voltage output proportional to the amount of light received from said first light emitting means;

(c) a second light emitting means;

(d) a second light receiving means for receiving light from said second light emitting means and for producing a voltage output proportional to the amount of light received from said second light emitting means; and

(e) control means for varying the amount of light received by said first and second light receiving means from said first and second light emitting means in an inverse proportion to one another.

4,523,091

RADIATION DETECTING APPARATUS WITH REDUCED MAGNETIC FIELD SENSITIVITY

Dennis E. Persyk, Barrington, Ill., assignor to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Mar. 22, 1982, Ser. No. 360,338

Int. Cl.³ H01J *31/50*

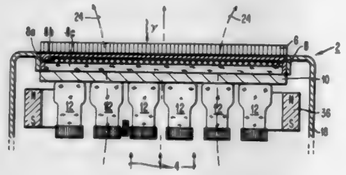
U.S. Cl. 250—213 VT **10 Claims**

1. A radiation detection apparatus containing

(a) at least one photomultiplier tube for the detection of light, said photomultiplier tube being exposed to a perturbing magnetic field; and

(b) means for superimposing an artificial magnetic field on said perturbing magnetic field at the location of said photomultiplier tube wherein the strength of said artificial magnetic field is greater than the strength of said perturb-

ing magnetic field, such that a change of said perturbing magnetic field due to a change of the position of said



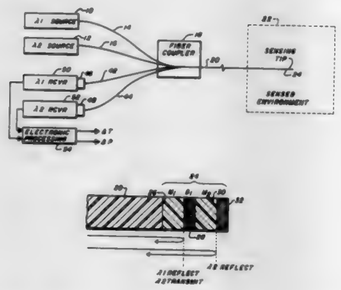
photomultiplier tube does not cause any significant field change at the location of said photomultiplier tube.

4,523,092

FIBER OPTIC SENSORS FOR SIMULTANEOUSLY DETECTING DIFFERENT PARAMETERS IN A SINGLE SENSING TIP

Arthur R. Nelson, Stow, Mass., assignor to Aetna Telecommunications Laboratories, Westboro, Mass.

Filed Jul. 29, 1982, Ser. No. 403,125
Int. Cl.³ G01D *5/26*
U.S. Cl. 250—227 **18 Claims**



1. A sensor system for simultaneously sensing at least two different parameters and utilizing selective absorption of a plurality of frequencies by different optical layers comprising:

an optical fiber;

means for applying radiation of a plurality of optical frequencies to said fiber;

said optical fiber having a termination operative to reflect said radiation of plural frequencies back through said optical fiber;

said termination including at least two contiguous and sequential semiconductor layers each having an optical absorption curve at a distinct wavelength wherein the absorption is a function of a parameter being sensed; and

means responsive to reflected radiation in said fiber for analyzing the reflected radiation at said plurality of frequencies to provide an indication of the value of the respective parameters.

4,523,093

SCANNING BEAM REFERENCE AND READ SYSTEM

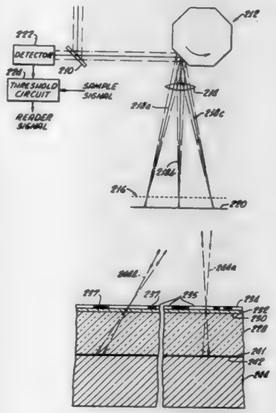
Don B. Neumann, Laguna Beach, Calif., assignor to Excellon Industries, Torrance, Calif.

Continuation-in-part of Ser. No. 298,907, Sep. 3, 1981, Pat. No. 4,447,723. This application Aug. 20, 1982, Ser. No. 409,906
Int. Cl.³ H01J *3/14*
U.S. Cl. 250—234 **20 Claims**

5. In an optical reader for reading a transparent document, such as a sheet of text or drawing having a pattern of transparent and opaque areas, and wherein an optical beam is scanned across the document to be read and reflected light is collected to provide a representation of the pattern of transparent and opaque areas on the document to be read, an improved method of collecting light comprising the steps of

detachably positioning a body of retroreflective material at one side of the document to be read,

transmitting said optical beam through the document to the retroreflective material so that light received by the retroreflective material is retroreflected back through the document,



precisely locating said optical beam in its scan, and

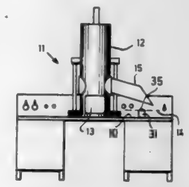
collecting light retroreflected from said material back through the document to provide reader signals at points on the document along the optical beam scan denoting whether the document is transparent or opaque at such points, said reader signals collectively indicating the pattern of transparent and opaque areas on the document.

4,523,094

EVALUATION DEVICE FOR ELECTRON-OPTICAL IMAGES

Eberhard Rossow, Oberkochen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 345,387, Feb. 3, 1982,. This application Feb. 8, 1984, Ser. No. 578,126
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 8105611[U]
Int. Cl.³ H01J *37/26*
U.S. Cl. 250—311 **9 Claims**



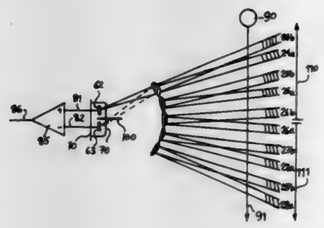
1. In an electron microscope having an evacuated envelope with a window (**13**) through which an output-image fluorescent screen (**21**) of the microscope is observable, the microscope including electron-optical means (**22**) for projecting a divergent beam of electrons to form an output image upon said screen (**21**), a device for evaluating electron-optical images by simultaneous observation of the electron-optical image and of a light-optical image; said device comprising means external to said envelope for establishing an image plane (**14**) of a visible-light plane, a housing (**15**) attached to and forming part of said envelope and extending both into and out of said envelope at a location offset from both said screen (**21**) and said image plane (**14**), and light-image projecting means carried by said housing and comprising an objective (**24**) within said housing and a reflector (**25**) within said envelope and a reflector (**23**) outside said envelope, said reflectors and objective being positioned to superpose the central ray from the light-image plane (**14**) upon the intercept of the electron-optical axis with said fluorescent screen (**21**), and said reflector within said envelope being positioned near said electron-optical means and in clearance with the electron beam whereby to achieve substantial directional conformance of focused electron-optical and of focused light-optical impingement upon said screen.

4,523,095

RADIATION DETECTOR WITH ASYMMETRICAL PATTERN

Christiane Keller-Steinbach, Maennedorf, Switzerland, assignor to Eltec Instrument A.G., Wallisellen-Zurich, Switzerland

Filed Nov. 19, 1982, Ser. No. 443,180
Int. Cl.³ G01J *5/08;* **G08B** *13/18*
U.S. Cl. 250—349 **7 Claims**



1. A radiation detector for producing a differential signal for either a near field of view or a far field of view, said detector comprising:

a radiation sensor having a pair of side by side sensing elements connected differentially for producing an essentially zero output signal if each of said elements receives equal amounts of radiated energy and in which an output signal occurs when said sensing elements receive unequal amounts of energy;

a radiation shield disposed between and perpendicular to the plane of said sensing elements; and

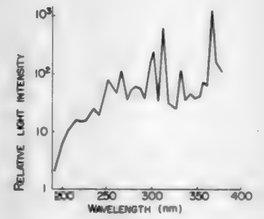
a plurality of optical lens elements disposed in an array adjacent said sensing elements such that a plurality of discrete fields of view is produced with each lens element producing a first field of view associated with one of said pair of said sensing elements and a second field of view associated with the other of said pair of sensing elements, said shield positioned to provide a different sensitivity pattern between said first field of view and said second field of view for each of said lens elements.

4,523,096

LIQUID CHROMATOGRAPHY APPARATUS

Makoto Yasuda, and Seiichi Murayama, both of Kokubunji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,600
Claims priority, application Japan, Dec. 16, 1981, 56-186348
Int. Cl.³ B01D *15/08;* **G01J** *3/00*
U.S. Cl. 250—373 **3 Claims**



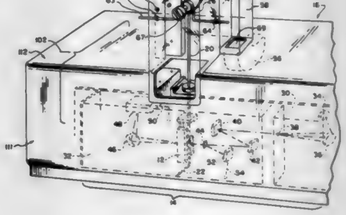
1. A liquid chromatography apparatus comprising detector means having as a light source a metal halide lamp filled with tantalum halide, mercury and rare gas.

4,523,097

METHOD AND APPARATUS FOR REDUCING SCHLIEREN NOISE IN A LIQUID CHROMATOGRAPH

Robert W. Allington, Lincoln, Nebr., assignor to ISCO, Inc., Lincoln, Nebr.

Filed Aug. 31, 1983, Ser. No. 527,954
Int. Cl.³ G01N *31/08*
U.S. Cl. 250—458.1 **22 Claims**



1. A method of operating a liquid chromatograph having at least a chromatographic column, a sample injection valve, and a flow cell comprising the steps of:

applying electrical power to an absorbance detector within an enclosure containing at least the flow cell and a portion of the chromatographic column;

blowing air from the enclosure into an air chamber that encloses a sample injection valve and at least a part of a chromatographic column and recirculating the air from a location near the sample injection valve along the column toward the flow cell until temperature changes with respect to time at each location are within less than 0.1 degree Celsius within the enclosure and chamber within a one minute time period;

passing eluant after the temperature has stabilized through the column and flow cell;

transmitting a beam of light having a wave length within a range of wave lengths of 180 nanometers to 3,000 nanometers through the flow cell from a source of light that varies less than ten percent in intensity in a one minute period; and

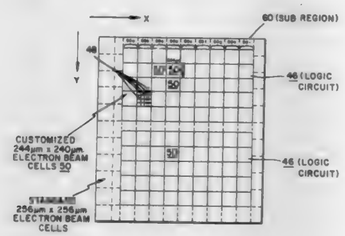
detecting changes in the absorbance of light flowing through said flow cell.

4,523,098

ELECTRON BEAM EXPOSURE APPARATUS

Akira Noma, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 287,813, Jul. 28, 1981, abandoned. This application Dec. 8, 1983, Ser. No. 559,287
Claims priority, application Japan, Aug. 8, 1980, 55-108917
Int. Cl.³ H01J *37/00*
U.S. Cl. 250—492.2 **6 Claims**



1. An electron beam apparatus for exposing a pattern having a repetitive nature on the surface of a subject with an electron beam having an electron beam scanning direction and comprising:

means for storing data representing the individual width in the beam scanning direction and data representing the pattern content of a plurality of stripes, said stripes dividing the surface of the subject to be exposed in a direction perpendicular to the electron beam scanning direction, with the width of each such stripe independently selected as a function of the pattern to be exposed on the surface of the subject to maxmize the repetitive nature of the pattern in each stripe;

means of exposing each stripe with the electron beam in accordance with said pattern content data; and

means for shifting the subject in said scanning direction in response to said width data, for a distance equal to the width of each stripe upon completion of exposure of that stripe.

4,523,099

DEVICE FOR TRANSMITTING ANALOG SENSOR DATA VIA FIBER OPTICS

Michael K. Lavine, 90 Hadley Village Rd., South Hadley, Mass. 01075

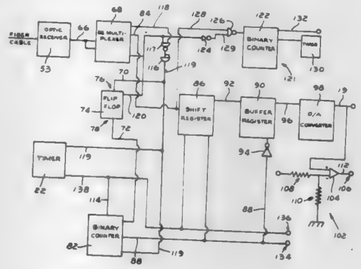
Filed Apr. 29, 1983, Ser. No. 489,769
Int. Cl.³ H04B *9/00*
U.S. Cl. 250—551 **7 Claims**

1. A device for transmitting analog sensor data via fiber optics, said device comprising:

(a) a transmission circuit for receiving electrical analog data from a sensor, converting the data into bits of binary information, and transforming the information into light pulses for subsequent transmittal to a receiver circuit, said transmission circuit including an analog-to-digital converter for receiving analog data and converting it into binary information, a shift register connected to the converter for receiving a string of binary information and shifting the information to a light-emitting diode where the information is transformed into light pulses;

(b) a fiber-optic cable having one end attached to the transmission circuit for receiving the light pulses from the light-emitting diode and transmitting them to a receiver circuit;

(c) a receiver circuit, attached to the opposite end of the fiber-optic cable, for receiving the light pulses and converting them back into an analog signal for subsequent transmission to a monitoring device, said receiver unit including a light-receiving diode attached to the fiber-optic cable for receiving the pulses transmitted by the cable, a de-multiplexer connected to the light-receiving diode for handling the data and sending the data to an attached shift register, and a digital-to-analog converter attached to the shift register for receiving a string of data from the shift register, converting the string into an analog signal, and transmitting it to a monitoring system; and,



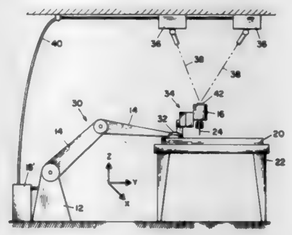
(d) means for allowing the light-emitting diode of the transmission circuit to be normally kept "off" when no monitoring information is desired by a user, and to be turned "on" only when a new string of monitoring information is desired, said means including a self-resetting means for automatically clearing the receiver circuit after the light-emitting diode is turned "on" so that the string of sensor information transmitted by the receiving circuit to the monitor only includes the new information desired by the user and does not include any stale information previously stored by the device.

4,523,100

OPTICAL VERNIER POSITIONING FOR ROBOT ARM

Fred A. Payne, Marina del Rey, Calif., assignor to R & D Associates, Marina del Rey, Calif.

Filed Aug. 11, 1982, Ser. No. 407,164
Int. Cl.³ G01N *21/86*
U.S. Cl. 250—561 **9 Claims**



1. In a computer controlled robot arm system having a work head on the free end thereof and being able to position and hold the work head adjacent the work piece at coordinates within the first tolerance, the improvements to position and hold the work head within second, closer, tolerance limits, comprising:

(a) means operably driven by the computer for directing a first collimated light beam through points associated with the desired coordinates;

(b) detector means carried by the work head and operably connected to the computer for detecting such light beam and sending a signal indicating the position of said light beam on said detector means to the computer, said detector means having a central position thereon where when said light beam is passing therethrough, the work head is at the desired coordinates within the second tolerance limits;

(c) a movable support means carried by the arm adjacent the work head for contacting the work piece and supporting the work head;

(d) vernier drive means operably connected to be driven by the computer and positioned between said support means and the work head for moving the work head in the X and Y directions when the robot arm is supported by said support means;

(e) means for moving the work head toward said coordinates and for concurrently moving said support member to contact a work piece and support the work head, with said light beam positioned within the sensing limits of the detector means; and

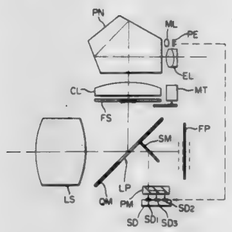
(f) means for energizing said vernier drive means in closed loop relationship with said detector means to place the work head with said light beam passing through said central position, whereby the work head is located at the desired coordinates within said second tolerance limits.

4,523,101

IMAGE SCANNING SYSTEM WITH SIGNAL INTEGRATION TIME CONTROL

Tokuichi Tsunekawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1982, Ser. No. 398,810
Claims priority, application Japan, Jul. 23, 1981, 56-115484
Int. Cl.³ G03B *3/10*; H01J *40/14*
U.S. Cl. 250—578 **23 Claims**



1. A radiation sensing system comprising:

(A) signal integration type radiation sensing means responsive to radiation and arranged to produce an electrical output indicative of the integration of the received radiation during a signal integration time;

(B) radiation measuring means arranged to measure radiation substantially equivalent to the radiation which said sensing means receives, said measuring means producing an electrical output indicative of the intensity of the received radiation; and

(C) signal integration time control means for controlling the signal integration time of said sensing means on the basis of the outputs of said measuring means and said sensing means,

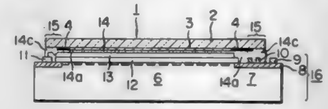
wherein said signal integration time control means is arranged to determine an initial signal integration time of said sensing means on the basis of the output of said measuring means.

4,523,102

SOLID-STATE COLOR-IMAGE SENSOR AND PROCESS FOR FABRICATING THE SAME

Ogawa Kazufumi; Shigeru Kondo; Yoshiko Yasuda; Taketoshi Yonezawa, all of Osaka, and Isamu Kitahiro, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 242,578, Mar. 11, 1981, Pat. No. 4,388,128. This application Jan. 31, 1983, Ser. No. 462,396
Claims priority, application Japan, Mar. 17, 1980, 55-33805; Mar. 18, 1980, 55-4857; Mar. 19, 1980, 55-35291
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—578 **10 Claims**



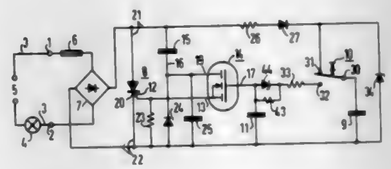
1. A solid-state color-image sensor comprising a color filter and a solid-state image sensor chip bonded together with an adhesive which is curable by ultraviolet-ray irradiation and by heating, said color filter having portions opaque to ultraviolet rays and other portions which transmit such rays.

4,523,103

ELECTRONIC TIME SWITCH

Siegmar Zirkl, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 9, 1983, Ser. No. 522,036
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1982, 3230571
Int. Cl.³ H01H *43/04*
U.S. Cl. 307—141 **3 Claims**



1. An electronic time switch for time-limited actuation of appliances which are supplied with alternating current, said appliances having a load component actuated by an electronic control element, and including terminals which supply the load component and the control element; a first storage element; a second storage element; and a pushbutton, the pushbutton having a first position for charging the first storage element through a rectifier in the inoperative condition, the pushbutton having a second position wherein said first storage element charges the second storage element through a recharging branch having a current limiting resistor; the improvement comprising in that said recharging branch includes:

a first line including a diode, the diode being in a conductive state when the pushbutton is in the second position and the magnitude of the voltage difference between the first and second storage elements exceeds a threshold value for conducting current from said first storage element to the electronic control element to actuate the electronic control element and to conduct current to the second storage element to charge the second storage element; and

a second line electrically connected in parallel with the first line and having a resister for conducting current to the second storage element when the pushbutton is in the second position and the voltage difference between the

first and second storage elements fall below the threshold value to continue conducting current from the first storage element to the electronic control element to maintain the electronic control element actuated, and to continue conducting current to the second storage element to further charge the second storage element;

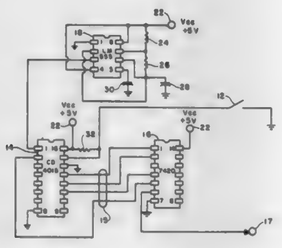
whereby, the second storage element discharges current after the pushbutton is moved from the second position to the first position to maintain the electronic control element actuated for a pre-determined length of time after the pushbutton is moved to the first position, the predetermined length of time being determined by the length of time the pushbutton is held in the second position.

4,523,104

SWITCH DEBOUNCE CIRCUIT

Frank A. Norris, and David J. Krile, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 22, 1983, Ser. No. 468,629
Int. Cl.³ H03K *19/20, 17/56;* **G08C** *9/00*
U.S. Cl. 307—247 A **2 Claims**



1. A circuit for eliminating the transient electrical effects of contact bounce occuring within a switch, for use with a single pole, single throw switch having only two contact members, one of which is a movable contact lever which engages the other contact member, the switch being closed when the two contact members are engaged and being open when the two contact members are separated, the switch having a control member having first and second positions for moving the contact members to be closed and open respectively, with bouncing between open and closed for a time after changing the position of the control member, there being a single direct-current bias source having a supply lead and a ground lead, wherein said circuit comprises:

a. a clock circuit comprising of a single integrated circuit clock chip having a predetermined clock frequency, at least one terminal of the clock chip being connected to said supply lead, one terminal of the chip being connected to the ground lead, and one terminal of the clock chip being an output terminal for the clock signal, the clock circuit being operative to produce a continuous train of clock pulses at its output terminal at a frequency providing a period of approximately one millisecond per clock pulse;

b. a shift register comprising a single integrated register circuit chip, having N stages and N parallel output terminals, N being at least four, a serial input terminal, the shift register being connected to operate in a serial input mode with output to said N parallel output terminals, one terminal of the register chip being connected to said supply lead, one terminal of the register chip being connected to the ground lead, said switch having one contact member connected to the ground lead and its other contact member connected directly to said serial input terminal, a pull-up resistor connected between the supply lead and the serial input terminal, the potential supplied via the pull-up resistor being a first logic state which appears at said serial input terminal responsive to the switch being open, and ground potential being a second logic state which appears at the serial input terminal responsive to the switch being closed, one terminal of the register chip being a clock input which is connected to said output terminal of the clock chip, the shift register being operative to advance once for each clock pulse to set its first stage to the logic state at the serial input terminal and the oter stages each to the state of the preceeding stage;

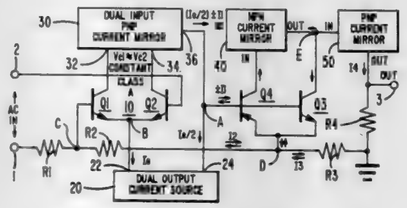
c. a gate device consisting of at least part of a gate chip, which is a single integrated circuit chip, having N input terminals connected respectively to the N parallel output terminals of the register chip, one terminal of the gate chip being connected to said supply lead, one terminal of the gate chip being connected to the ground lead, the gate chip having a gate output terminal for supplying an output signal indicative of the position of the switch, the gate being a coincidence device in which the logic state at the gate output terminal depends on wheter or not all N input terminals are at the same given one of said logic states.

4,523,105

FULL WAVE RECTIFIER CIRCUIT FOR SMALL SIGNALS

David L. Jose, Hamilton Square; Winthrop S. Pike, Princeton, and Jack Craft, Bridgewater, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 27, 1982, Ser. No. 424,264
Int. Cl.³ H03K *5/08, 5/13*
U.S. Cl. 307—261 **3 Claims**



1. A full wave rectifier circuit comprising:

amplifier means responsive to an AC input signal to be rectified for providing a bidirectional output current proportional to said AC input signal, said amplifier means including an inverting input terminal and a non-inverting input terminal first and second non-complementary emitter coupled transistors biased for operation at substantially constant collector, emitter, and base potential levels, said base of one of said first and second transistors connected to said inverting input terminal, and said base of other one of said first and second transistors connected to said non-inverting input terminal;

a first resistor coupled to apply said AC input signal to said inverting input terminal of said amplifier means;

third and fourth complementary emitter-coupled base-coupled transistors having a common base connection for receiving said bidirectional output current and a common emitter connection coupled via a second resistor to said inverting input terminal and coupled via a third resistor to a point of reference potential; and

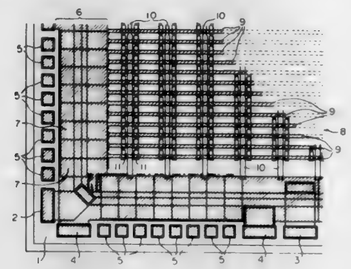
a cascade connection of first and second complementary current mirror amplifiers, the input of each being connected to the collector electrode of a respective one of said complementary transistors, the second current mirror amplifier having an output coupled to said point of reference potential via a fourth resistor for developing a full wave rectified output voltage, said first, second, third and fourth resistors being selected to provide a predetermined gain for said full wave rectifier.

4,523,106

INTEGRATED CIRCUIT HAVING PREDETERMINED OUTER TO INNER CELL PITCH RATIO

Tetsu Tanizawa; Hitoshi Omichi, both of Kawasaki, and Yoshiharu Mitono, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 25, 1982, Ser. No. 411,269
Int. Cl.³ H03K *3/26, 1/00;* **H01J** *37/28*
U.S. Cl. 307—303 **8 Claims**



1. An integrated circuit device formed on a semiconductor chip having sides, comprising:

an inner cell array having at least one side, formed on the semiconductor chip, including a plurality of inner cells having a pitch length P_I;

an outer cell array formed between said at least one side of said inner cell array and one of the sides of the semiconductor chip, including a plurality of outer cells having a pitch length P_E and patterns, and formed such that corresponding sets of said outer cells and said inner cells are arranged in predetermined positions a plurality of times along said one of the sides of the semiconductor chip, and wherein the pitch length of said outer cells and inner cells is related by the formula $mP_E=nP_I$, where m and n are positive integers;

a power supply portion, formed on said outer cell array between said one of the sides of the semiconductor chip and said at least one side of said inner cell array, having one or more outer power supply lines; and

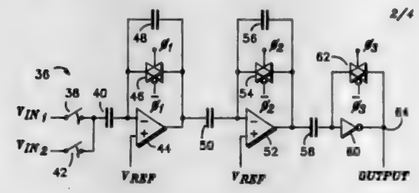
a plurality of inner power supply lines operatively connected to said outer power supply lines and formed on said inner cell array.

4,523,107

SWITCHED CAPACITOR COMPARATOR

Joe W. Peterson, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 23, 1982, Ser. No. 371,110
Int. Cl.³ G06G *7/14;* **H03K** *5/22*
U.S. Cl. 307—352 **1 Claim**



1. A switched capacitor comparator having an input terminal selectively coupled to a plurality of input voltages for providing an output voltage which is proportional to the difference of said input voltages, comprising:

a first operational amplifier having a noninverting input coupled to a reference voltage, an inverting input and an output;

a first coupling capacitor coupled between said input terminal and the inverting input of said first operational amplifier;

first switching means coupled between the inverting input and output of said first operational amplifier, said first switching means being conductive in response to a first control signal;

a first feedback capacitor coupled between the inverting input and output of said first operational amplifier;

a second operational amplifier having a noninverting input coupled to said reference voltage, an inverting input and an output;

a second coupling capacitor coupled between the inverting input of said second operational amplifier and the output of said first operational amplifier;

second switching means coupled between the inverting input and output of said second operational amplifier, said second switching means being conductive in response to a second control signal;

a second feedback capacitor coupled between the inverting input and output of said second operational amplifier;

an inverter having an input and an output for providing said output voltage;

a third coupling capacitor coupled between the output of said second operational amplifier and the input of said inverter; and

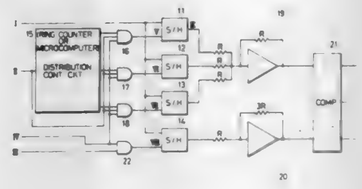
third switching means coupled between the input and output of said inverter, said third switching means being conductive in response to a third control signal, and said first, second and third control signals couple and sequentially decouple an output from a predetermined input of each of the first operational amplifier, the second operational amplifier, and the inverter, respectively.

4,523,108

AVERAGING CIRCUIT

Masaaki Niiho, and Takuo Itagaki, both of Tokyo, Japan, assignors to Asahi Kogaku K.K.K., Tokyo, Japan

Filed Jul. 21, 1982, Ser. No. 400,532
Claims priority, application Japan, Jul. 22, 1981, 56-114599
Int. Cl.³ H03K *5/01, 5/153;* **G01C** *3/08*
U.S. Cl. 307—353 **7 Claims**



1. An averaging circuit for processing an input signal which is intermittent and has a period, comprising,

first through nth sample and hold circuit means for sampling and holding said input signal in response to sample pulses applied thereto, respectively,

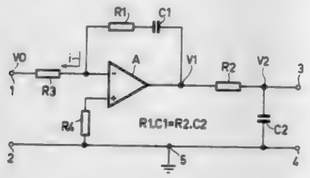
distribution means for generating and cyclically applying sample pulses to said first through said nth sample and hold circuit means, to cause said first through said nth sample and hold circuit means to sample said input signal during n successive periods thereof, respectively,

an adder for adding the outputs of said first through nth sample and hold circuit means, wherein said distribution control circuit comprises a ring counter.

4,523,109
DIFFERENTIAL AMPLIFIER FILTER CIRCUIT HAVING EQUAL RC PRODUCTS IN THE FEEDBACK AND OUTPUT LOOPS

Frederik J. Van Roessel, Upper Saddle River, N.J., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 20, 1982, Ser. No. 435,425
Claims priority, application Netherlands, Nov. 20, 1981, 8105255
Int. Cl.³ H03H *11/12*
U.S. Cl. 307—520 **2 Claims**

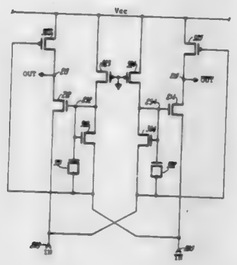


1. A filter circuit comprising input and output terminals and a differential amplifier, said amplifier having a (−) inverting input, a (+) non-inverting input and an output, the (−) inverting input being connected to the output via a series circuit including a first capacitor and a first resistor, the output of said amplifier being coupled via a series circuit of a second resistor and a second capacitor to a terminal carrying a reference voltage, the (+) non-inverting input to the amplifier having a DC connection to said reference voltage terminal, one said input to said filter circuit being connected to said reference voltage terminal, the other input to said filter circuit being coupled to said (−) inverting input to said amplifier, the junction between the second resistor and the second capacitor being connected to said output terminal of the filter circuit, the RC time constant of the first capacitor and the first resistor is substantially equal to the RC time constant of the second capacitor and the second resistor.

4,523,110
MOSFET SENSE AMPLIFIER CIRCUIT

Mark G. Johnson, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Sep. 30, 1983, Ser. No. 537,916
Int. Cl.³ H03K *5/24;* **G11C** *7/06*
U.S. Cl. 307—530 **5 Claims**



1. A sense amplifier, having a gain greater than one, for sensing the relative voltage of a pair of input signals on a pair of input terminals, comprising:

first and second amplifier transistors, each having a source terminal connected to one of said pair of input terminals and a drain terminal, that is also one of first and second output terminals, connected to a bias means for biasing said drain terminal, that is in turn connected to a supply voltage terminal;

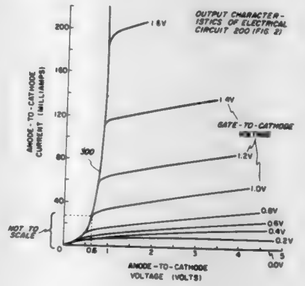
each of which amplifier transistors has a gate terminal connected to a gate voltage means for controlling said gate terminal; characterized in that:

each of said gate terminal of said first and second amplifying transistors is connected through first and second level-shifting network means to the source terminal of the other of said first and second amplifier transistors, whereby that signal present on each of said pair of input terminals is applied to the gate of one of said amplifier transistors at a first gate voltage and to the source of the other of said amplifier transistors at a first source voltage.

4,523,111
NORMALLY-OFF, GATE-CONTROLLED ELECTRICAL CIRCUIT WITH LOW ON-RESISTANCE

Bantval J. Baliga, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 7, 1983, Ser. No. 473,089
Int. Cl.³ H03K *17/60, 3/353*
U.S. Cl. 307—574 **6 Claims**



1. A normally-off, gate-controlled electrical circuit with low on-resistance, comprising:

(a) a JFET having source, drain and gate electrodes;

(b) an IGFET having source, drain and gate electrodes and being of the normally-off type;

(c) the JFET source electrode and the IGFET drain electrode being ohmically connected together and the JFET drain electrode and the IGFET source electrode being adapted to carry load current through the electrical circuit;

(d) the IGFET gate electrode constituting a circuit gate electrode for receiving control signals that determine the conductivity state of the circuit, and

(e) bias means interconnected with both the JFET and IGFET gate electrodes and responsive to control signals on the circuit gate for biasing said JFET into a bipolar conduction mode when said IGFET is in a conduction state, whereby low on-resistance of the electrical circuit is attained.

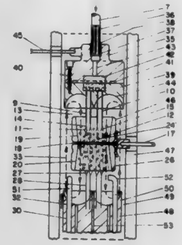
4,523,112
ELECTROTHERMODYNAMIC (ETD) POWER CONVERTER WITH CONICAL JET

Alvin M. Marks, Bigelow Rd., Athol, Mass. 01331

Continuation-in-part of Ser. No. 237,290, Feb. 23, 1981, Pat. No. 4,395,648. This application May 29, 1983, Ser. No. 479,986
Int. Cl.³ H02N *1/00*
U.S. Cl. 310—10 **8 Claims**

1. In an Electrothermodynamic heat/electric power converter, a converter body, a carrier gas-vapor having a subsonic velocity under pressure in said converter body, a source of superheated vapor, a micro orifice nozzle, the throat of said micro orifice nozzle having a diameter D_o, said superheated vapor being supplied to said micro orifice nozzle, a jet of supercooled vapor issuing from said micro orifice nozzle, an ion source comprising an emitter point, a charging electrode in proximity to said emitter point, a collector point electrode, an

electrical load connected between said emitter and said collector, said jet issuing from said nozzle at a supersonic velocity, thereby forming an expanding jet having a conical boundary between said expanding jet and said gas-vapor, the apex of said conical boundary being a distance a_o to the said throat diameter D_o of said micro orifice nozzle, said boundary making a half apex angle θ to the axis of said jet, said angle θ being between 10° to 50° as a function of the Mach Number of the jet $1.4<M<2.4$ ions from said ion source being emitted within an ion cone into the supercooled vapor of said jet, said ion cone having a half apex angle α, a charged aerosol formed by condensation of the said supercooled vapor in said jet onto said ions at the entrance plane $z=a$, the kinetic power density of the said supersonic jet being thereby decreased from $z=a_o$ to $z=a$ by a factor of $10^4>(a/a_o)^2>10^2$, said charged aerosol being

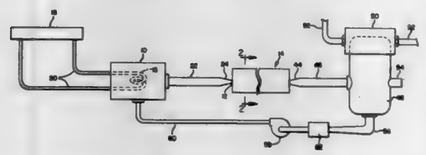


established within said conical boundary layer between said entrance plane at $z-a$ and an exit plant at $z=b$, said distances a and b being measured from said apex, ions of a sign opposite to that of said charged aerosol, said charged aerosols being discharged at the plane $z-b$ by said ions of opposite sign emitted from said collector point, said charged aerosol having a charged density which decreases according to $(z/a)^m$ from $z=a$ to $z=b$, where m is a negative exponential number $-2<m<0$, the power conversion in said cone between $z=a$ and $z=b$ being increased by the factor $40>\Gamma>1$; whereby a substantial proportion of the heat kinetic power of said supersonic jet is directly converted to electrical power within said jet, at increased current, decreased voltage and increased conversion space length $L=b-a$, compared to constant charge density conversion, for which $m=0$.

4,523,113
MAGNETOHYDRODYNAMIC GENERATOR SYSTEM

William R. Kallman, Portland, Oreg., assignor to Martin Reid Johnson, Austin, Tex., a part interest

Filed Apr. 25, 1983, Ser. No. 488,256
Int. Cl.³ H02K *45/00*
U.S. Cl. 310—11 **8 Claims**



1. A method of generating electricity which comprises:

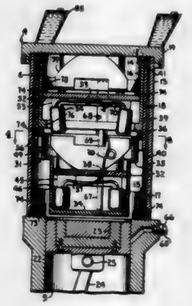
preparing a solution of liquid ammonia and an element which dissolves and ionizes in such liquid ammonia to produce cations of the element and electrons which are solvated by the ammonia, and

moving said solution containing such solvated electrons through a magnetohydrodynamic generator.

4,523,114
MAGNETIC RECIPROCATING MOTOR

Raymond H. Smith, Rte. 2 - 5AAA, Larned, Kans. 67550

Continuation of Ser. No. 523,337, Aug. 15, 1983, abandoned. This application Mar. 9, 1984, Ser. No. 587,820
Int. Cl.³ H02K *33/00*
U.S. Cl. 310—24 **11 Claims**



1. A magnetic reciprocating motor, which comprises:

(a) a block;

(b) a crankshaft journalled in said block;

(c) a cylinder mounted on said block and including inboard and outboard portions;

(d) a cylinder head mounted on said cylinder outboard portion;

(e) a piston slidably disposed in said cylinder inboard portion and including a piston magnet;

(f) a carrier assembly slidably disposed in said cylinder outboard portion and including inboard and outboard sliding elements slidably reciprocable with respect to each other;

(g) a first permanent magnet on said piston;

(h) a first electromagnet mounted on said carrier assembly inboard sliding element;

(i) a second permanent magnet mounted on said carrier assembly inboard sliding element;

(j) a second electromagnet mounted on said carrier assembly outboard sliding element;

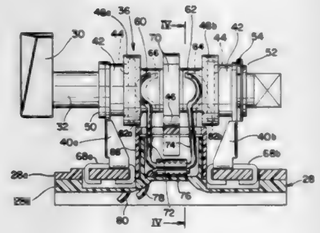
(k) a third permanent magnet mounted on said head; and

(l) means for energizing said electromagnets whereby said magnets repulse each other and said piston and said carrier assembly are reciprocated within said cylinder.

4,523,115
SWITCHING DEVICE FOR REVERSING A PORTABLE ELECTRIC TOOL

Giuseppe Cuneo, Calolziocorte, Italy, assignor to Black & Decker Inc., Newark, Del.

Filed Jun. 19, 1984, Ser. No. 622,113
Claims priority, application Italy, Jun. 21, 1983, 22175/83[U]
Int. Cl.³ H02K *7/14;* **H01H** *9/06*
U.S. Cl. 310—50 **17 Claims**



1. A portable electric tool, comprising:

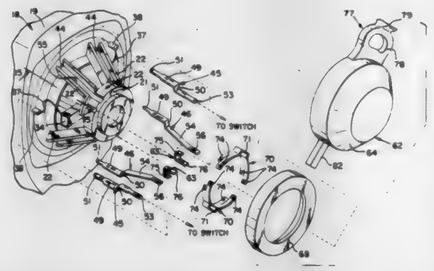
an electric motor having two directions of rotation;
a switching device for reversing the direction of the current through the motor to reverse the direction of rotation thereof;
a circuit board electrically connected to said motor;
said switching device comprising two pairs of contacts which extend in caltilever fashion from said circuit board, a rotatable shaft having axially spaced apart terminals thereon, and said terminals being electrically insulated from said contacts by insulating collars secured to said shaft;
each of said collars having a window therein for access to the respective terminal; and
said contacts being resiliently biased against said collars with one of each pair of contacts engaging a respective terminal through the respective window in one direction of rotation of the motor, and the other of each pair of contacts engaging the opposite respective terminal through the respective window in the opposite direction of rotation of the motor.

4,523,116

ELECTRICAL CONNECTION SYSTEM FOR MOTORS

John E. Dibbern, Jr., Street, and Gregory E. Moores, Reisterstown, both of Md., assignors to Black & Decker, Inc., Newark, Del.

Filed Mar. 31, 1983, Ser. No. 480,781
Int. Cl.³ B23B *45/2*; H02K *15/14*
U.S. Cl. 310—71 **24 Claims**



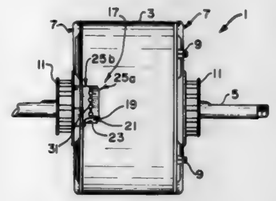
1. In an electric motor having a housing, the housing including a rear portion, an armature rotatably mounted in the housing, a commutator operatively associated with the armature, a pair of brushes engaging the commutator, a field mounted in the housing, the field having a plurality of terminals thereon, the improvement comprising: the housing further including a main portion receiving the field, the rear portion of the housing including a bearing boss and at least two discrete bridge members joining the bearing boss to the main portion of the housing, the bridge members having respective openings formed therein adjacent to the main portion of the housing, at least one of the bridge members further having an exterior surface and an open channel formed in said exterior surface, first and second contact elements mounted on the rear portion of the housing, each of the contact elements having respective forward and rearward end portions, the respective forward end portions of the contact elements being received through the respective openings in the bridge members, the forward end portions of the contact elements further being connected to respective terminals on the field, first means for connecting the rearward end portion of one of said contact elements to one of the brushes, second means for connecting the rearward end portion of the other of said contact elements to a source of electrical energy, and one of said contact elements being supported in said channel.

4,523,117

DYNAMOELECTRIC MACHINE WITH SELF-SEALING LEAD WIRE GROMMET

Nicholas R. Daniels, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jun. 16, 1978, Ser. No. 916,076
Int. Cl.³ H02K *5/10*; H02G *3/18*; H01B *17/30*
U.S. Cl. 310—71 **2 Claims**



1. In a dynamoelectric machine comprising a shell and at least one end shield engaged with the shell at one end thereof, a plurality of lead wires, said shell having an open ended slot at said one end thereof constituting a pass-through opening in the shell through which said lead wires for the motor are routed, wherein the improvement comprises: a lead wire pass-through grommet sealably engaging said lead wires and sealably closing said pass-through opening, said grommet comprising a pair of identical grommet members each having an inner end and an outer end, each of said grommet members having a plurality of lead wire receiving notches in its inner end and grooves in its sides and in the outer end thereof for reception of portions of said shell defining the sides and end of said slot, one of said grommet members being installed in said slot with the grooves in its sides and outer end receiving portions of said shell adjacent said slot and with its inner end facing outwardly of said slot, the other of said grommet members being installed in said slot with its inner end facing in toward the inner end of the previously installed grommet member and with the grooves in its sides receiving portions of said shell adjacent said slot, said pair of grommet members being so sized in relation to said slot so as to substantially close the slot, said grommet members being further to sized that the outer end of said other grommet member is engaged solely by said end shield, the inner ends of both of said grommet members being forced into sealing engagement with one another by said end shield, and the sides of both grommet members and the outer end of said one grommet member being forced into sealing engagement with the shell by said end shield, said lead wires being received in said notches and the portions of the inner ends of the grommet members defining said lead wire receiving notches being so structured so as to be forced into clamping, sealing engagement with said lead wires received therein along a line of contact thereby to seal the lead wires with respect to the grommet members and to provide strain relief for the said lead wires.

4,523,118

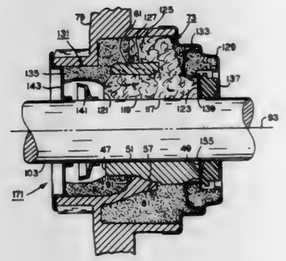
METHOD OF PROVIDING A LUBRICATION SYSTEM

Eldon R. Cunningham, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 294,748, Aug. 20, 1981, Pat. No. 4,409,714. This application Apr. 4, 1983, Ser. No. 481,951
Int. Cl.³ H02K *5/16*
U.S. Cl. 310—90 **3 Claims**

1. A method of providing a lubrication system for a shaft of a dynamoelectric machine to assure adequate shaft lubrication particularly during a run-in operation of the dynamoelectric machine when it is first energized, and the lubrication and bearing system including means for rotatably journaling the shaft, a reservoir, a feeder wick member, and a storage wick material containing a lubricating oil, the method comprising the steps of:

impregnating the feeder wick member with a solid lubricant;
assembling the impregnated feeder wick member with the journaling means in wiping engagement with the shaft and communicating at least a part of the impregnated feeder wick member with the reservoir of the lubrication system;
placing the storage wick material containing the lubricating oil in the reservoir in communication with the at least a part of the impregnated feeder wick member;
lubricating the shaft only with the solid lubricant of the impregnated feeder wick member in its wiping engagement with the shaft during at least a part of the initial run-in operation of the dynamoelectric machine when it is energized for the first time;
effecting a flow of the lubricating oil from the storage wick material through the impregnated feeder wicking member



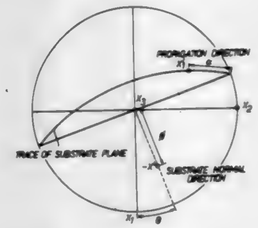
in the wiping engagement with the shaft into lubricating communication therewith in response to the rotation of the shaft within the journaling means when the dynamoelectric machine is energized;
releasing at least some of the solid lubricant bit-by-bit from the impregnated feeder wick member into the lubricating oil upon the flow thereof through the impregnated feeder wicking member so as to form a lubricating mixture of the solid lubricant with the lubricating oil;
circulating the lubricating mixture through the lubrication system to at least in part effect further release of the solid lubricant material into the lubricating mixture; and
continuing the lubrication of the shaft in the journaling means with the lubricating mixture upon further energization of the dynamoelectric machine subsequent to the initial run-in operation thereof.

4,523,119

APPLICATION OF LITHIUM TETRABORATE TO SAW DEVICES

Roger W. Whatmore, Bletchley, and Iain M. Young, Malvern, both of England, assignors to Plessey Overseas Limited, Ilford, England

Continuation of Ser. No. 271,112, Jun. 8, 1981, abandoned. This application Jun. 29, 1984, Ser. No. 625,590
Claims priority, application United Kingdom, Jun. 11, 1980, 8019062; Dec. 23, 1980, 8041183
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—313 A **1 Claim**



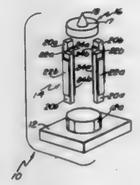
1. A piezoelectric device which is a surface acoustic wave device in which the active material is lithium tetraborate on X cut Z propogating or an orientation close to X cut or Z propagating.

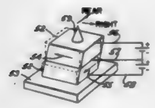
4,523,120

PRECISE BEARING SUPPORT DITHERER WITH PIEZOELECTRIC DRIVE MEANS

Gerald L. Assard, Waterford, and Arthur L. Moorcroft, Norwich, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 4, 1984, Ser. No. 617,049
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—323 **4 Claims**





1. An apparatus for dithering a jewel bearing supporting a precision instrument readout indicator, comprising:
a rigid, non-magnetic support base having a vertical axis and horizontal x and y axes;
piezoceramic dithering means, extending vertically upward from said support base, the bottom end thereof being fixedly attached to said support base while the top end

thereof is free to move, for controllably moving said dithering means top end in preselected x and y directions;

a first function generating means, connected to said dithering means, for selectively providing a first variable electrical potential to said dithering means thereby controllably producing said x direction motion;

a second function generating means, connected to said dithering means, for selectively providing a second variable electrical potential to said dithering means thereby controllably producing said y direction motion, said x motion in conjunction with said y motion thereby producing combined x-y planar motion;

first electrode means, connected to said first function generating means and fixedly attached to first preselected areas of said dithering means such that said first electrical potential, in conjunction with preselected dithering means piezoceramic polarization, produces said x direction motion of said dithering means top end;

second electrode means, connected to said second function generating means and fixedly attached to second preselected areas of said dithering means such that said second electrical potential, in conjunction with preselected dithering means piezoceramic polarization, produces said y direction motion of said dithering means top end; and

a bearing support, attached to said dithering means, for supporting said jewel bearing, whereby said jewel bearing moves in direct proportion to said combined x-y motion of said dithering means thereby producing dynamic friction between said jewel bearing and said indicator such that, by averaging readouts therefrom, greater accuracy is achieved.

4,523,121

MULTILAYER ELECTROSTRICTIVE ELEMENT WHICH WITHSTANDS REPEATED APPLICATION OF PULSES

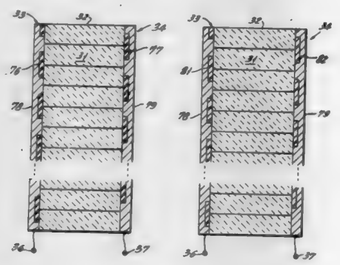
Sadayuki Takahashi; Masatomo Yonezawa; Atsushi Ochi; Takeshi Yano; Takeshige Hamatsuki, and Izumu Fukui, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 11, 1983, Ser. No. 493,583

Claims priority, application Japan, May 11, 1982, 57-79034; May 11, 1982, 57-79035; May 11, 1982, 57-79036; May 11, 1982, 57-79037; May 11, 1982, 57-79038; May 11, 1982, 57-79039; May 12, 1982, 57-78444; May 12, 1982, 57-78445; May 12, 1982, 57-78446; May 12, 1982, 57-78447; May 12, 1982, 57-78448; May 12, 1982, 57-78449

Int. Cl.³ H01L *41/18*

U.S. Cl. 310—334 **4 Claims**



1. A multilayer electrostrictive element for dimensionally changing in a first direction in response to electrical pulses and for withstanding repeated application of said pulses, said element comprising:

a stack formed by a plurality of electrostrictive sections of an electrostrictive material and a plurality of internal electrodes sandwiched between said electrostrictive sections, said stack having a peripheral surface defining a cross-sectional area of said stack, each of said internal electrodes having peripheral ends on said peripheral surface and each of said internal electrodes having an internal electrode area which is substantially equal to a cross-sectional area of said stack;

first means for electrically connecting alternate ones of said internal electrodes together without connecting others of said internal electrodes, said first means including first insulating layer portions on a first area of said peripheral surface for covering respective peripheral ends of said others of said internal electrodes while leaving portions of said first area uncovered, each said first insulating layer portion covering the peripheral end of a respective internal electrode while extending in said first direction substantially less than the entire distance between said respective first electrode and either adjacent first electrode to leave uncovered substantial portions of the surfaces of said electrostrictive sections in said first area of said peripheral surface, and a first conductive layer continuously formed on both said first insulating layer portions and on said uncovered portions of said first area; and

second means for electrically connecting said others of said internal electrodes together, said second means including second insulating layer portions on a second area of said peripheral surface for covering respective peripheral ends of said alternate ones of said internal electrodes while leaving portions of said second area uncovered, and a second conductive layer continuously formed on both said second insulating layer portions and on said uncovered portions of said second area.

4,523,122

PIEZOELECTRIC ULTRASONIC TRANSDUCERS HAVING ACOUSTIC IMPEDANCE-MATCHING LAYERS

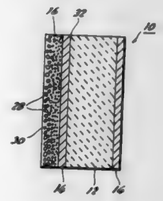
Masayuki Tone; Tsutomu Yano, both of Kawasaki, and Koetsu Saito, Sagamihara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 16, 1984, Ser. No. 590,465

Claims priority, application Japan, Mar. 17, 1983, 58-44946; Mar. 17, 1983, 58-44947; Nov. 4, 1983, 58-207909

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—334 **26 Claims**



5. An ultrasonic transducer comprising an ultrasonic transducer element, a pair of electrodes provided on opposite sides of said ultrasonic transducer element, and an acoustic impedance-matching layer formed on an ultrasonic wave radiation surface of said ultrasonic transducer element through one electrode, said acoustic impedance-matching layer being made of a composite material of thermally expanded resin microballoons dispersed in a synthetic resin matrix, having a thickness of approximately a quarter wavelength or odd harmonics at the frequency generated from said transducer element and having an acoustic impedance not larger than 0.6×10^6 Ns/m^3.

4,523,123

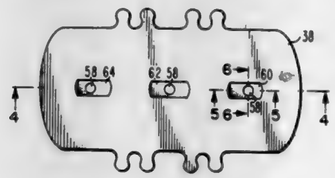
CATHODE-RAY TUBE HAVING ASYMMETRIC SLOTS FORMED IN A SCREEN GRID ELECTRODE OF AN INLINE ELECTRON GUN

Hsing-Yao Chen, Landisville, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed May 6, 1983, Ser. No. 492,044

Int. Cl.³ H01J *29/51, 29/56*

U.S. Cl. 313—412 **8 Claims**



1. In a cathode-ray tube comprising an image screen and an in-line electron gun for projecting three electron beams onto said screen, said gun comprising:

three cathodes for generating said electron beams,

a control grid, a screen grid, and a main electron lens arranged successively in alignment with said cathodes for focusing said electron beams, said control grid and said main electron lens having three apertures disposed in a plane for passing said electron beams, said screen grid having a given thickness with three transverse slots formed therein facing said main electron lens, said slots having a depth less than the thickness of said screen grid, said screen grid having an aperture within each of said slots, the improvement wherein the outer slots are asymmetric with respect to the aperture therein, each of said outer slots being displaced transversely toward said center aperture.

4,523,124

CATHODE-RAY TUBE HAVING MULTIPLATE CATHODE UNIT

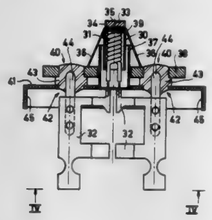
Jacob Blanken, and Paul J. Van Rijswijck, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,456

Claims priority, application Netherlands, Aug. 14, 1981, 8103814

Int. Cl.³ H01J *29/48*

U.S. Cl. 313—446 **7 Claims**



1. In a cathode-ray tube comprising an envelope containing a target and an electron gun for directing an electron beam at said target, said electron gun including a cathode unit comprising:

(a) an assembly plate extending perpendicularly to a longitudinal axis of the electron gun and having a central aperture and first and second outer apertures;

(b) a cup-shaped element coaxially-disposed around said axis and extending through said central aperture, said element having an emissive body disposed on an end face thereof and having a filament disposed therein;

(c) a plurality of suspension members extending from the cup-shaped element to the assembly plate for positioning said element with its end face parallel to and at a predetermined distance from a reference surface of said assembly plate;

(d) a supporting plate extending parallel to the assembly plate and having a central aperture for providing access to the filament and having first and second outer apertures adjacent the corresponding apertures in the assembly plate;

(e) first and second connection lugs electrically-connected to the filament of the cathode unit and attached to respective first and second supporting pins extending through the first and second openings in the supporting plate and into the first and second openings of the assembly plate; and

(f) first and second plugs of insulation material surrounding the first and second supporting pins and engaging edges of the assembly plate and the supporting plate defining their respective first and second apertures, to attach the supporting plate and the connection lugs in predetermined positions with respect to the assembly plate.

4,523,125

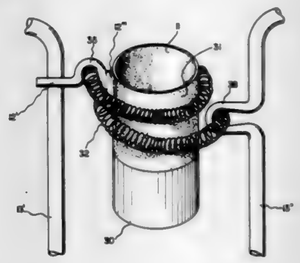
FLUORESCENT LAMP ELECTRODES

John M. Anderson, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 282,883, Jul. 13, 1981, abandoned, which is a continuation of Ser. No. 972,497, Feb. 9, 1979, abandoned. This application Jan. 3, 1984, Ser. No. 567,464

Int. Cl.³ H01J *61/067*

U.S. Cl. 313—491 **2 Claims**



1. A fluorescent lamp employing a low discharge gas pressure, said lamp comprising:

an evacuable, light-transmissive envelope having opposed ends and coated interiorly with phosphor;

a gaseous discharge medium disposed within said envelope; and

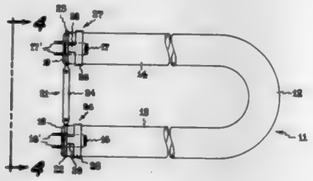
electrode means disposed at opposed ends of said envelope, said electrode means including at least one directly heated hollow cathode, coated interiorly with an emissive mixture and disposed between at least two spaced electrode supply wires for supplying electrical energy to heat said cathode, said hollow cathode comprising a metal cylinder with a filamentary coil for heating said cylinder, said coil being connected to said supply wires and disposed about the circumference of said cylinder, said coil being electrically insulated from said cylinder.

4,523,126

SHAPED DISCHARGE LAMP WITH STARTING AID

Edward E. Hammer, Mayfield Village, and Charles E. Beck, Chesterland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 15, 1982, Ser. No. 368,498
The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.
Int. Cl.³ H01J *17/00, 61/00*
U.S. Cl. 313—594 **7 Claims**



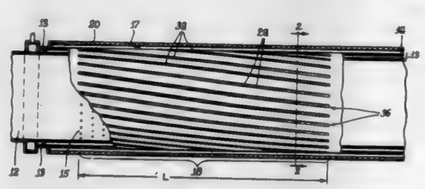
1. A discharge lamp comprising an elongated bulb shaped so that its ends are substantially closer together than if the bulb where straight and containing electrodes respectively near said ends thereof, and a starting aid comprising conductive means disposed respectively adjacent to respective ends of said bulb and completely behind the plane of said electrodes with respect to the discharge path, and spatially extending means electrically interconnecting said conductive means.

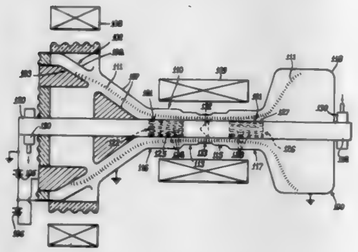
4,523,127

CYCLOTRON RESONANCE MASER AMPLIFIER AND WAVEGUIDE WINDOW

Charles P. Moeller, Del Mar, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 463,144, Feb. 2, 1983, abandoned. This application Jul. 27, 1983, Ser. No. 517,570
Int. Cl.³ H01J *25/00*
U.S. Cl. 315—4 **35 Claims**





1. Coupling apparatus for transferring microwave power between a given mode in a first waveguide and a given mode in a second waveguide, said coupling apparatus comprising first and second coaxial hollow metallic circularly cylindrical members, said first member forming a first waveguide section for coupling to said first waveguide, said first and second members forming a second waveguide section surrounding said first waveguide section and coaxial therewith for coupling to said second waveguide, said first waveguide section being bounded externally by said first member, and said second section being bounded internally by said first member and externally by said second member, said first and second members having respective radii at which a given mode in said first waveguide section propagates at substantially the same velocity as a given mode in said second waveguide section, and said first member having a plurality of apertures therethrough for transferring microwave power between said first and second waveguide sections, said apertures being small relative to the radius of said first member and spaced around the circumference of said first member.

18. A cyclotron resonance maser microwave amplifier comprising:

an assembly of components disposed successively along a common axis and including successively and coaxially an annular source of electrons, circularly cylindrical walls forming an input waveguide section, circularly cylindrical walls forming a first interaction waveguide section, circularly cylindrical walls forming a drift tube section, circularly cylindrical walls forming a second interaction waveguide section, circularly cylindrical walls forming an output waveguide section, and an annular collector of electrons;

means for forming electrons from said source into an annular beam of electrons having substantial transverse energy and directing said beam of electrons successively through said input waveguide section, said first interaction waveguide section, said drift tube section, said second interaction section and said output waveguide section to said collector, said means including magnetic means for producing magnetic lines of flux extending substantially parallel to said axis at least through said first and second interaction sections and said drift tube section;

an input waveguide extending coaxially through said annular source of electrons for introducing input microwave energy into said amplifier;

first coupling means for transferring input microwave energy from said input waveguide into said annular beam of electrons in said input waveguide section, said input waveguide providing means for transmitting microwave energy to said first interaction waveguide section, said first interaction section and said magnetic means providing means for causing said microwave energy and said electrons in said beam to interact to initiate phase bunching of said electrons, said drift tube section providing means for substantially decoupling said first interaction section from said second interaction section in respect to microwave energy while passing said bunching electrons to said second interaction section, and said second interaction section and said magnetic means providing means for causing the bunched electrons to radiate microwave energy and transfer the radiated energy to said output waveguide section, said walls forming at least one of said first and second interaction sections and said drift tube section including means for dissipating axial wall currents therein;

an output waveguide extending coaxially through said annular collector for transmitting the microwave output from said amplifier; and

second coupling means for transferring output microwave energy from said output waveguide section to said output waveguide.

4,523,128

REMOTE CONTROL OF DIMMABLE ELECTRONIC GAS DISCHARGE LAMP BALLASTS

Thomas A. Stamm, Chicago, Ill., and Zoltan Zansky, Roseville, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

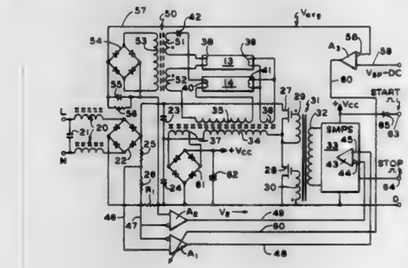
Filed Dec. 10, 1982, Ser. No. 448,538
Int. Cl.³ G05B *1/00;* **H05B** *37/02, 39/04, 41/36*
U.S. Cl. 315—291 **29 Claims**

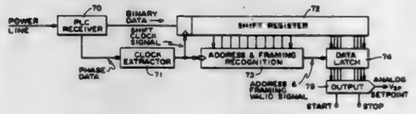
1. A remotely controlled dimming solid state ballast system for gas discharge lamps adapted to respond to external wireless control signals comprising:

solid state dimming ballast for powering one or more of said lamps, said solid state dimming ballast including control interface means for interfacing with an external wireless control system;

control means for controlling said ballast means said control means further comprising,

signal receiving means including decoding means for receiving and decoding remotely transmitted control signals,





signal recognition means connected to said decoding means for recognizing control signals addressed to said ballast,

enabling means associated with said signal recognition means for allowing transmission of recognized control signals to an output means, and

output means for generating a setpoint output control signal modulated in response to said recognized control signals and indicative of the desired control setpoint of said one or more lamps controlled by said ballast, wherein said output means is connected between said enabling means and said ballast.

4,523,129

MODULAR LIGHTING CONTROL WITH CIRCULATING INDUCTOR

Ira J. Pitel, Morristown, N.J., assignor to Cornell Dubilier Electronics, Wayne, N.J.

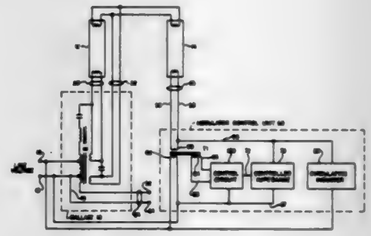
Continuation of Ser. No. 286,770, Jul. 27, 1981, Pat. No. 4,464,610. This application Apr. 3, 1984, Ser. No. 580,121
The portion of the term of this patent subsequent to Aug. 9, 2001, has been disclaimed.
Int. Cl.³ H05B *41/392*
U.S. Cl. 315—291 **8 Claims**

1. In a lighting installation of the type incorporating a magnetic ballast driven by a source of a power signal and having an output for providing power to at least one gas discharge lamp, a method for controlling the illumination of said at least one lamp comprising the steps of:

supplying a constant cathode heating power to the gas discharge lamp;

providing a controlled impedance at the output side of said ballast and in series with said at least one lamp, said controlled impedance having predefined conductive and non-conductive states;

during each cycle of said power signal, controlling the length of time which said controlled impedance remains in its conductive state in relationship to the desired illumination of said lamp; and



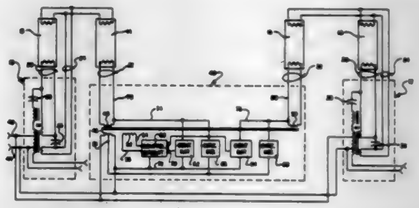
providing a current conduction path during the length of time which said controlled impedance is in a non-conductive state by interposing an inductor between said source of power signal and said at least one gas discharge lamp.

4,523,130

FOUR LAMP MODULAR LIGHTING CONTROL

Ira J. Pitel, Morristown, N.J., assignor to Cornell Dubilier Electronics Inc., Wayne, N.J.

Continuation of Ser. No. 309,260, Oct. 7, 1981, Pat. No. 4,463,287. This application Mar. 28, 1984, Ser. No. 580,173
The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.
Int. Cl.³ H05B *41/392*
U.S. Cl. 315—291 **8 Claims**



1. In a lighting installation of the type incorporating multiple magnetic ballasts driven by a source of power signal, each said ballast having an output for providing power to at least one gas discharge lamp, a method for controlling the illumination of said lamps comprising the steps of:

supplying a constant cathode heating power to the gas discharge lamps;

providing a controlled impedance at the output side of each said ballast and in series with each said lamp, each said controlled impedance having predefined conductive and non-conductive states;

during each cycle of said power signal, controlling the length of time which each said controlled impedance remains in its conductive state in relationship to the desired illumination of said lamps; and

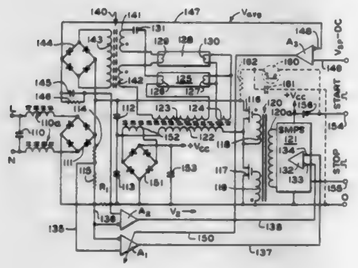
providing a current conduction path during the length of time which each said controlled impedance is in a non-conductive state by interposing an inductor between said source of power signal and said gas discharge lamps.

4,523,131

DIMMABLE ELECTRONIC GAS DISCHARGE LAMP BALLAST

Zoltan Zansky, Roseville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 10, 1982, Ser. No. 448,539
Int. Cl.³ G05F *1/00*; H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—307 **13 Claims**



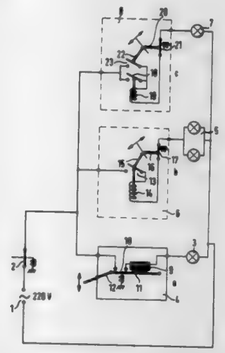
1. A two-wire electronic dimming ballast arrangement for one or more gas discharge lamps comprising:
- a source of variable pulse width square wave electric power;
- a source of full-wave rectified AC;
- single inverter means adapted to be driven by said variable pulse width electric power;
- first transformer means for supplying electric power of substantially constant voltage to the heating filaments of said one or more gas discharge lamps connected to the output of said inverter means;
- control means for modulating the pulse width of said variable pulse width square wave electric power driving said inverter means;
- distortion suppression means for suppressing current abberations and achieving substantially a unity power factor associated with said control means, said distortion suppression means further comprising:
  - first signal generating means for generating a continuous signal indicative of the instantaneous value of the voltage of said full-wave rectified AC,
  - second signal generating means for generating a continuous signal indicative of the instantaneous value of the current of said full-wave rectified AC,
  - comparator means in said control means having first and second inputs connected to the outputs of said first and second signal generating means, respectively, said comparator means generating an error signal output therefrom indicative of any phase or shape difference between said rectified voltage and said rectified current and wherein any error signal output from said comparator induces said control means to modulate the pulse width of said variable pulse width electric power driving said inverter in a manner such that the drawn current changes shape to match said voltage; and
- dimming means associated with said first signal generating means for modulating the output of said one or more gas discharge lamps by modulating the output of said first signal generating means.

4,523,132

CENTRALLY CONTROLLED LIGHTING INSTALLATION HAVING A PLURALITY OF INDIVIDUALLY SWITCHED LIGHT POINTS CENTRAL SWITCH ELEMENTS AND INDIVIDUAL LIGHT SWITCHES THEREFOR

Dieter Christiansen, Leipziger Strasse 47, Mettmann, Fed. Rep. of Germany (D-4020), and Bernd Redies, Im Rottfeld 17, Düsseldorf, Fed. Rep. of Germany (D-4000)

Continuation of Ser. No. 261,386, May 7, 1981, abandoned. This application May 30, 1984, Ser. No. 615,710
Claims priority, application Fed. Rep. of Germany, May 17, 1980, 3018948
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—321 **10 Claims**



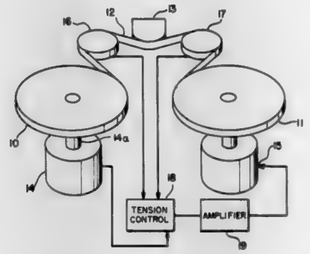
1. In an electric power system for a house or the like, where there are a plurality of individual light sources at various locations and there is a two-wire cabling for power delivery, a system which provides for individual operation of said light sources at their related locations for both activation and deactivation of related light sources, and also for deactivation of said light sources from a master location without interference with subsequent individual activation and deactivation of said light sources, said system comprising;
- (a) a plurality of individual switch assemblies, each of which is operatively connected to at least a related one of said light sources for individual operation thereof, each individual switch assembly comprising:
  - (1) a first on-off switch kept in its closed position by a magnet coil where power is delivered to said light source and kept in its open position where power is not delivered to said light source,
  - (2) means to operate said first on-off switch independent from the force effected by the magnet coil to close it, to selectively
    - (aa) close and open said first on-off switch mechanically from outside the individual switch assembly and
    - (bb) close said first on-off switch mechanically from outside the individual switch assembly and to open said first on-off switch electrically by means of a second normally kept closed on-off switch between said magnet coil and one of the power outlets of said individual switch assembly and
    - (cc) open said first on-off switch electrically by said second on-off switch and to close said first on-off switch electrically by third normally kept open on-off switch arranged parallel to said first on-off switch, and
- (b) master switch means which is normally kept in its closed switch position and which may be opened for momentary power interruption of the electrical power system, resulting in an opening of said first on-off switch of each individual switch assembly.

4,523,133

TAPE TRANSPORT SYSTEM WITH TENSION SENSING BEARINGS

Carl Messenger, Philadelphia, Pa., assignor to Computer Peripherals Inc., Minneapolis, Minn.

Filed Jan. 13, 1982, Ser. No. 339,140
Int. Cl.³ B65H *59/38*; G11B *15/43*
U.S. Cl. 318—7 **16 Claims**



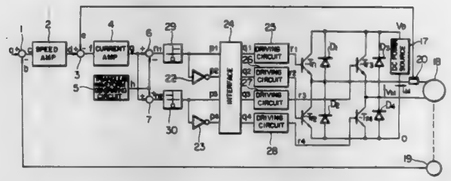
1. A system for transporting magnetic tape between reels and past a magnetic read/write head, comprising
- a pair of tape-deflecting bearings, respectively supporting the tape on opposite sides of said head,
- said bearings being geometrically positioned relative to the head so as to produce a predetermined amount of tape wrap about the head, with one direction of curvature around said bearings and the opposite direction of curvature around said head,
- said pair of bearings being the only tape-deflecting bearings between the reels and the head, and said bearings being constructed and arranged so as not to be subject to intentional displacement in the plane of rotation of the tape reels,
- each of said bearings having means for sensing the tension in the tape portion supported thereby,
- servo motors for driving said reels, and
- means for utilizing the tension sensed by both said sensing means to control the motor driving one of said reels.

4,523,134

CONTROL SYSTEM FOR DC MOTORS

Hisashi Kinoshita, Katano; Hideki Yoshitake, Toyonaka, and Nin Kake, Takarazuka, all of Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan

Filed May 8, 1984, Ser. No. 608,249
Int. Cl.³ H02P *5/00*
U.S. Cl. 318—313 **6 Claims**



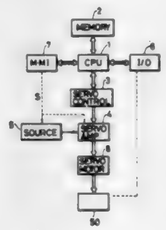
1. A DC motor control system comprising:
- a DC motor;
- a bridge circuit which is constituted by first, second, third and fourth switching elements and which is fed by a DC power source and has said DC motor connected thereto as an electric load thereon;
- a speed sensor for sensing a rotational speed of said DC motor;
- a current sensor for sensing an electric current flowing through said DC motor;
- a triangular waveform generator for generating a triangular waveform signal;
- an adder for adding the triangular waveform signal to a control signal obtained on the basis of an externally applied speed command signal and negative feedback signals supplied from said speed sensor and said current sensor;
- a subtractor for subtracting the triangular waveform signal from the control signal;
- a first comparator for generating an output signal when an output signal of said adder, which is applied to said first comparator, is at a level lower than zero volt;
- a second comparator for generating an output signal when an output signal of said subtractor, which is applied to said second comparator, is at a level higher than zero volt;
- first and second driving circuits to which the output signal of said first comparator and an inverted signal thereof are applied respectively through an interface circuit; and
- third and fourth driving circuits to which the output signal of said second comparator and an inverted signal thereof are applied respectively through said interface circuit,
- said first and second driving circuits and said third and fourth driving circuits being provided with respective output signal interlocking circuits,
- whereby said third and fourth switching elements connected in series across said DC power source are driven by said first and second driving circuits, respectively, and said first and second switching elements connected in series across said DC power source are driven by said third and fourth driving circuits, respectively.

4,523,135

SAFETY MAINTAINING APPARATUS FOR AUTOMATIC MACHINES

Takashi Kogawa, Sakura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 2, 1983, Ser. No. 547,791
Claims priority, application Japan, Nov. 2, 1982, 57-191866
Int. Cl.³ G05B *9/02*
U.S. Cl. 318—565 **18 Claims**



1. In an automatic machine having a movable part driven by a servo-control system and which operates in a plurality of different modes, a safety maintaining apparatus for an automatic machine, characterized by:
- means for generating a mode signal indicative of a specified one of a plurality of control modes; and
- means for limiting a velocity of a servomotor in response to reception of the mode signal, the limiting means being arranged in a loop of a servo-amplifier which feeds driving energy to said servomotor for driving said movable part.

4,523,136

SAFETY ARRANGEMENT FOR AN ADJUSTMENT INSTALLATION OF A SEAT ADJUSTABLE MANUALLY OR PROGRAMMED

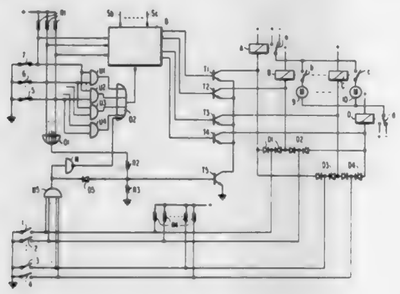
Ingo Dudeck, Weinstadt; Ulrich Hipp, Wernau/Neckar; Manfred Maass, Esslingen, and Harald Ruoff, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 16, 1984, Ser. No. 601,004

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1983, 3313633

Int. Cl.³ G05B *19/42*

U.S. Cl. 318—568 **11 Claims**



1. A safety arrangement for an adjusting installation of a seat actuatable manually by manual adjusting buttons or programmed by way of position buttons, comprising one adjusting motor for each adjusting plane selectively controllable by way of contact means, of relay means, and a control logic circuit means including position memory means for storing certain seat positions by way of a memory button, characterized in that each adjusting motor is connected in a series circuit with relay contact means coordinated thereto, that all series circuits are connected in parallel and in that the parallel circuit is connected at its two interconnections in series with a changeover relay contact means which is connected in the normal position with one terminal and in the operating position with the other terminal of an energy source,

in that the relay means include energizing windings connected on one side directly with one terminal of the energy source and on the other side with the other terminal of the energy source, on the one hand, by way of a matrix means and the manual adjusting buttons and, on the other hand, by way of a series circuit including one transistor circuit means each controlled by the coordinated position button by way of the memory means and the control logic circuit means and coordinated to a corresponding relay means and of a transistor circuit means common to all relay means, the common transistor circuit means being conductive during actuation of a position button and being nonconductive with non-actuated buttons as well as with actuated manual adjusting buttons by themselves or together with position buttons,

in that a programmed seat adjustment is interrupted if in addition to the position button coordinated to the seat adjustment a further position button or a manual adjusting button is actuated causing energization of the relay means coordinated to the actuated manual adjusting button,

in that a manual seat adjustment is interrupted as long as the two manual adjusting buttons coordinated to the forward as also to the rearward movement of one and the same adjusting motor are simultaneously actuated, and

in that an energization of a relay means is interrupted during a programmed seat adjustment if, within a predetermined time interval, the actual value of the adjusting motor position coordinated to the relay means and detected by an actual value pick-up means is not changed.

4,523,137

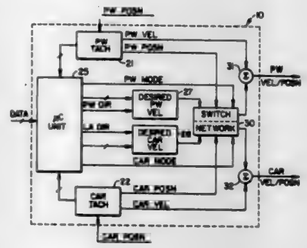
DUAL MODE PRINTER SERVO WITH IMPROVED VELOCITY SIGNAL GENERATOR

Harvey C. Wong, Kensington, Calif., assignor to Mechatron Systems, Inc., Sunnyvale, Calif.

Filed Sep. 27, 1983, Ser. No. 536,551

Int. Cl.³ G05B *19/30*

U.S. Cl. 318—604 **7 Claims**



1. A method of operating a servo in a rotary printer system having a controlled element selected from the group consisting of a rotary print wheel and a translatable print wheel carriage, a motor for driving the controlled element, a motor driver for providing driving signals for the motor, an encoder for generating position signals corresponding to actual movement of the controlled element, and a control unit for furnishing correction signals to the motor driver, the control unit including means for generating analog desired velocity signals from predetermined digital desired velocity signals and analog actual velocity signals from the encoder position signals, and means for algebraically summing the analog desired velocity signals and the analog actual velocity signals, said method comprising the steps of generating bidirectional analog desired velocity signals having a maximum value range lying both above and below a zero reference level, and summing said bidirectional analog desired velocity signals with the analog actual velocity signals to generate the motor driver correction signals.

4,523,138

DRIVE CONTROL METHOD FOR STEPPING MOTORS

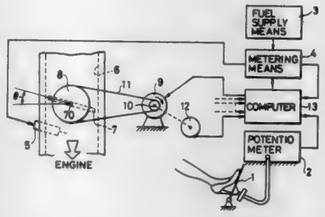
Shigeo Sakurai, Chigasaki, Japan, assignor to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1983, Ser. No. 557,547

Claims priority, application Japan, Dec. 3, 1982, 57-211368; Aug. 17, 1983, 58-150078

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—685 **3 Claims**



1. A drive control method for stepping motors for obtaining substantially smaller angular displacement of the rotor than a predetermined unit rotation angle comprising a first step of stopping the rotor of the stepping motor for a first dwell time length at a first angular position rotated by one step from a starting position, a second step of stopping said rotor for a second dwell time length at a second angular position rotated by at least a unit step of the stepping motor from said first angular position, and a third step of repeatedly actuating said rotor making the combination of the dwell times of said first and second steps one period, a predetermined equivalent intermediate angular position between said first and second angular positions being obtained substantially in time average by selecting the ratio of said first dwell time length to said second dwell time length to be a predetermined value.

4,523,139

ELECTRONIC SWITCHING POWER SUPPLY

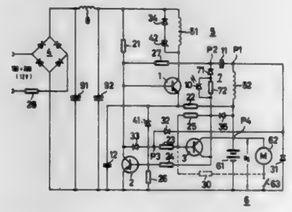
Gerhard Schwarz, Altena, and Günther Bergk, Raunheim, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed May 11, 1983, Ser. No. 493,460

Claims priority, application Fed. Rep. of Germany, May 17, 1982, 3218594

Int. Cl.³ H02J *7/04*

U.S. Cl. 320—40 **6 Claims**



1. An electrical switching power supply for supplying power to an electrical load from a variable voltage level AC or DC voltage source having first and second terminals, comprising:

a transformer (5) having a primary coil with first and second terminals and a secondary coil with first and second terminals, said first terminal of said secondary coil being connected to said electrical load;

a first transistor (1) having a base, an emitter and a collector, the emitter-collector-path of said first transistor being coupled in series with said primary coil, the series connection of said emitter-collector-path of said first transistor and said primary coil being electrically coupled to said variable level AC or DC voltage source;

a first diode (31) having a cathode and an anode connected in series with said secondary coil and said electrical load;

a first capacitor (11) connected between said base of said first transistor and said second terminal of said secondary coil;

a second transistor (2) having a base, an emitter and a collector, said collector of said second transistor being connected to said base of said first transistor and said emitter of said second transistor being connected to said second terminal of said voltage source;

a first resistor (21) connected between said first terminal of said voltage source and said base of said first transistor;

a second resistor (22) connected between said first terminal of said secondary coil and said emitter of said first transistor;

a third resistor (23);

a first Zener diode (41) having an anode and a cathode connected between said emitter of said first transistor and said base of said second transistor;

a third transistor (3) having a base, an emitter and a collector, said emitter of said third transistor being connected to said first terminal of said secondary coil;

a second diode (32) having a cathode and an anode;

a third diode (33) having a cathode and an anode, said cathode of said second diode being connected to said second terminal of said secondary coil and said anode of said second diode being connected to both the anode of said third diode and to the base of said third transistor through said third resistor;

a fourth resistor (24) connected between said collector of said third transistor and said base of said second transistor;

a fifth resistor (25) connected between said first terminal of said secondary coil and said collector of said second transistor; and

a discharge circuit connected between said first capacitor and said electrical load;

whereby said first capacitor is electrically charged during a conducting phase of said first transistor, and during a subsequent blocking phase of said first transistor, said electrical load receives the charge build up in said first capacitor during the said conducting phase.

4,523,140

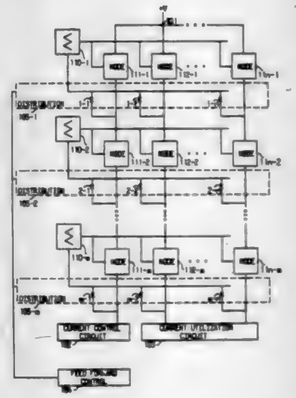
PRECISION CURRENT MIRROR ARRAYS

Herbert A. Schneider, Boulder, Colo., assignor to AT&T Bell Labs, Murray Hill, N.J.

Filed Jan. 3, 1983, Ser. No. 454,958

Int. Cl.³ G05F *3/08*

U.S. Cl. 323—315 **14 Claims**



1. A method of interconnecting control points in an n*m array where n is the number of columns in said array and m is the number of rows in said array, and each node of said array produces a control signal which is proportional to the signal passing through said node comprising the steps of:

summing said control signals on a row-by-row basis;

selecting a fixed number of said nodes in each of said rows on the basis of minimizing the differential between sums of the row numbers of said selected nodes on a columnar basis for the overall array; and

distributing on a row-by-row basis an equal share of said sum of control signals to the columns associated with each of said selected nodes.

4,523,141

PIPE COATING

Samuel J. Thomas, Hamilton; James M. Robich, Watertown, both of Mass., and Robert L. Hayes, Walnut Creek, Calif., assignors to The Kendall Company, Boston, Mass.

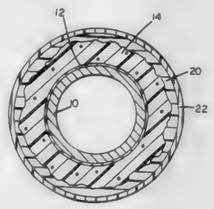
Filed Apr. 16, 1982, Ser. No. 369,036

Int. Cl.³ G01R *31/12;* **H01B** *7/14*

U.S. Cl. 324—54 **1 Claim**

1. In the method of detecting pinholes and other discontinuities in the outer barrier layer of metal pipe coated with a termal insulating layer of foamed polymeric material having an irregular outer surface and an outer barrier layer of polymeric

material which comprises measuring electrical conductivity or resistivity along the face of said barrier layer,



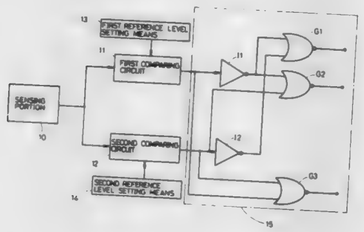
the improvement which comprises interposing between and bonding to said insulating layer and said outer barrier layer an electroconductive intermediate layer.

4,523,142

APPARATUS FOR SENSING DEW AND FROST

Michihiro Murata, Kyoto, and Akira Kumada, Ootsu, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 27, 1982, Ser. No. 424,344
Claims priority, application Japan, Jul. 1, 1981, 56-103854
Int. Cl.³ G01R *27/02*
U.S. Cl. 324—65 R **9 Claims**



1. An apparatus for sensing dry, bedewed and frosted states, comprising:

a sensing element including a base material having a permeativity which is less than the permeativity of ice and a pair of electrodes coupled to said base material at spaced locations thereof, the impedance of said sensing element as measured across said electrodes varying as a function of whether said sensing element is in the dry, bedewed or frosted states, said impedance being at a maximum value when said sensing element is in the dry state, said impedance being at a middle value lower than said maximum value when said sensing element is in the frosted state, said impedance being at a minimum value lower than said maximum and minimum values when said sensing element is in the bedewed state; and

means for measuring the impedance between said electrodes and generating electric signals indicative of whether said sensing element is in the dry, bedewed or frosted state.

4,523,143

DIGITAL LOGIC LEVEL COMPARATOR PARTICULARLY FOR DIGITAL TEST SYSTEMS

Robert V. Dvorak, Scotia, N.Y., assignor to Fairchild Camera and Instrument Corporation, Clifton Park, N.Y.

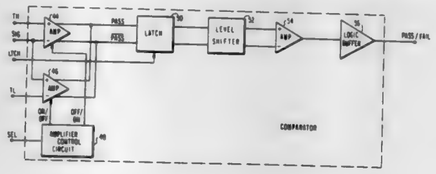
Filed Jun. 18, 1982, Ser. No. 389,880
Int. Cl.³ G01R *19/165*
U.S. Cl. 324—133 **13 Claims**

1. Apparatus for determining whether a digital test signal qualifies as an expected digital logic level comprising:

first comparing means for producing an output signal in response to a level of the digital test signal above a predetermined high threshold level;

second comparing means for producing an output signal in response to a level of the digital test signal below a predetermined low threshold level; and,

control means for inhibiting the production of the output signal from said first comparing means while enabling the production of the output signal from said second comparing means in response to an expected low logic level and for enabling the production of the output signal from said first comparing means while inhibiting the production of the output signal from said second comparing means in response to an expected high logic level, the output signal from the enabled one of the first and second comparing means thereby indicating whether the digital test signal qualifies as an expected digital logic level.

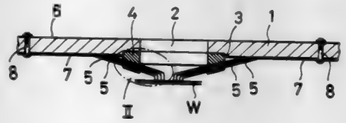


4,523,144

COMPLEX PROBE CARD FOR TESTING A SEMICONDUCTOR WAFER

Masao Okubo, and Yasuro Yoshimitsu, both of Tokyo, Japan, assignors to Japan Electronic Materials Corp., Amagasakishi, Japan

Filed May 21, 1981, Ser. No. 266,054
Claims priority, application Japan, May 27, 1980, 55-73548[U]; Jul. 3, 1980, 55-91356
Int. Cl.³ G01R *1/06, 31/02*
U.S. Cl. 324—158 P **1 Claim**



1. A probe card for testing semiconductor wafers comprising:

a printed circuit plate having an aperture at the center thereof and a ring fixed around said aperture on a bottom side of said printed circuit plate,

said ring having an underside with an inwardly declining surface,

probe needles arranged in radial arrays with respect to said aperture, each of said radial arrays having multiple layers of probe needles,

an adhesive layer for suspending said multiple layers of probe needles parallel to the inwardly declining surface of said ring,

said probe needles having tapered terminal tips aligned on a plane in parallel with but spaced from said printed circuit plate and opposite uniformly thick terminal ends connected to said printed circuit plate for external connection,

wherein said probe needles in inner layers are longer than said probe needles in outer layers, and

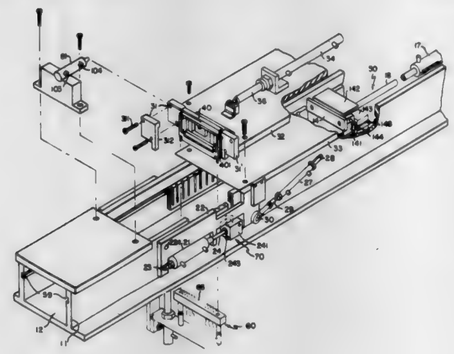
wherein said aperture is large sufficiently to allow said tapered terminal tips of said probe needles to be visually located and readily adjusted from both behind and in front of said printed circuit plate.

4,523,145

APPARATUS FOR THE AUTOMATED HANDLING AND TESTING OF ELECTRONIC MODULES

George G. Gray, Jr., Mattapoisett, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jul. 7, 1982, Ser. No. 395,953
Int. Cl.³ G01R *31/02, 15/12*
U.S. Cl. 324—158 F **10 Claims**



1. Apparatus for use with an electrical test set for electrical testing of electronic modules comprising:

a container means containing a plurality of electronic modules arranged in successive locations in said container means, each module having electrical connector pins;

means moving said container means so that each of said modules is sequentially located at a predetermined location;

connector means at said predetermined location responsive to each successive module at said predetermined location to move to sequentially electrically connect each said module pins to said electrical test set; and

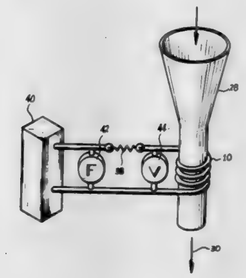
means responsive to the output signal of said test set actuating said moving means to cause the next successive location of said modules to advance to said predetermined location.

4,523,146

MASS FLOW INDICATOR FOR METAL PARTICLES

Jack M. Champaigne, 502 E. LaSalle Ave., South Bend, Ind. 46617

Division of Ser. No. 390,254, Jun. 21, 1982, abandoned. This application Feb. 22, 1984, Ser. No. 582,298
Int. Cl.³ G01N *27/74*
U.S. Cl. 324—204 **2 Claims**



1. A method of determining the size of metal particles as such particles pass along a flow path comprising the steps:

(a) Establishing an oscillatory signal in a coil of an inductive tuned circuit placed within said flow path;

(b) Varying the frequency of said signal during periods of flow and no flow for a specific size of said particles along said flow path and determining that particular frequency at which the amplitude of said signal is substantially constant; and

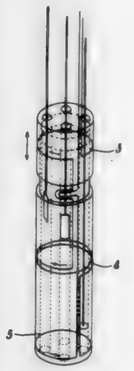
(c) Driving said coil at said particular frequency while passing said particles along said flow path through the coil and observing any changes in signal amplitude, said changes in signal amplitude being correlated to changes in particle size.

4,523,147

FINE BALANCING SECOND DERIVATIVE GRADIOMETER

Silvano D'Angelo, Rome; Ivo Modena, Grottaferrata, and Gian L. Romani, Rome, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed Jul. 28, 1982, Ser. No. 402,679
Claims priority, application Italy, Jul. 31, 1981, 49023 A/81
Int. Cl.³ G01R *33/02*
U.S. Cl. 324—248 **3 Claims**



1. A fine balancing 2nd derivative gradiometer with three coils including an upper coil and a lower coil each having N turns, and a central coil having 2N turns and being wound inversely to said upper and lower coils, comprising a support member for said coils consisting of two coaxial elements, the first of said elements bearing said central coil and said lower coil, and the second element bearing said upper coil as well as adjusting means for controlling a micrometric variation of the distance between said upper coil and said central coil by movement of said second element in order to achieve the desired fine balancing.

4,523,148

METHOD AND APPARATUS FOR DETERMINING THE SPONTANEOUS EARTH POTENTIAL LOG FROM DOWNHOLE GRADIENT MEASUREMENTS

Walter J. Maciejewski, Plano, Tex., assignor to Gearhart Industries, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 198,587, Oct. 20, 1980, abandoned. This application Jul. 13, 1981, Ser. No. 282,394
Int. Cl.³ G01V *3/18, 3/38*
U.S. Cl. 324—351 **14 Claims**

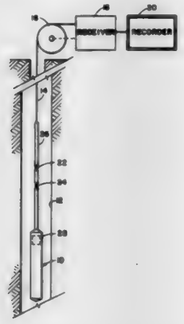
1. A method of logging an earth formation comprising the steps of:

(a) measuring the difference of an earth variable between two closely spaced positions within a well bore;

(b) establishing a window of such measurements adjacent to the position of the measurement of step (a);

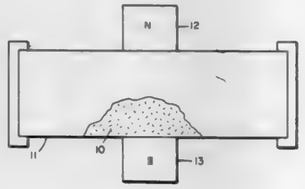
(c) establishing the average value of said measurements within said window;

(d) subtracting a weighted portion of said average value within said window from said measurement of step (a); and



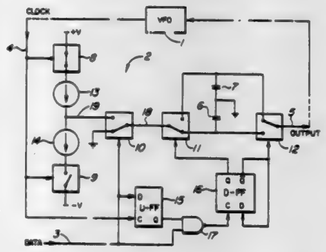
(e) repeating steps (a) through (b) at successive depths within said well bore, thereby producing a differential well log.

4,523,149
METHOD FOR IDENTIFYING SELECT NON-MAGNETIC MINERALS IN THE PRESENCE OF MAGNETIC MINERALS
Eric P. Dion, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Oct. 15, 1982, Ser. No. 434,445
Int. Cl.³ G01V *3/00*
U.S. Cl. 324—377 **2 Claims**



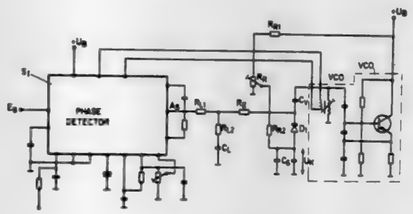
1. A method for identifying select non-magnetic minerals in the presence of magnetic minerals in earth formations, comprising the steps of:
(a) obtaining a core sample from an earth formation whose magnetic and non-magnetic material contents all to be determined,
(b) subjecting said core sample of said earth formation to a magnetizing field to attract said magnetic minerals,
(c) separating the magnetic and non-magnetic fractions of said sample while said sample is under the influence of said magnetizing field,
(d) weighing the fractions of said separated magnetic sand on-magnetic fractions,
(e) determining the weight percentage of said magnetic fraction, and
(f) quantifying the abundance of select minerals in said non-magnetic fraction based upon the weight percentage of said magnetic fraction as compared to previous recordings of relative weight percents.

4,523,150
PHASE COMPARATOR USING TWO CAPACITORS ALTERNATELY CHARGED VIA CONSTANT CURRENT SOURCES
John G. Hogeboom, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Sep. 27, 1982, Ser. No. 423,617
Claims priority, application Canada, Aug. 18, 1982, 409618
Int. Cl.³ H03L *7/08*
U.S. Cl. 328—133 **5 Claims**



1. A phase comparator for comparing the relative phases of a clock signal and a return-to-zero data signal, the phase comparator comprising:
inputs for the clock signal and the data signal, and an output;
two capacitors each having first and second terminals, the first terminals being coupled to a point of reference potential;
means for coupling the second terminals of the two capacitors alternately to the output;
means coupled to the data signal input for enabling, when the data signal has a first state, charging of that one of the two capacitors whose second terminal is not coupled to the output;
means coupled to the clock signal input for charging said one capacitor, when charging is enabled, in opposite directions during respective half cycles of the clock signal; and
means for controlling the means for coupling the second terminals of the two capacitors to interchange the connections thereof in response to the data signal adopting a second state.

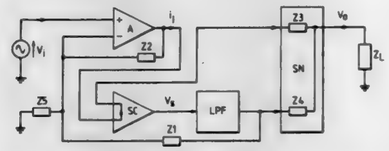
4,523,151
LINEARIZED PHASE LOCK LOOP FM-DEMODULATOR
Werner Bauerschmidt, Zirndorf, Fed. Rep. of Germany, assignor to Grundig E. M. V., Fed. Rep. of Germany
Filed Mar. 19, 1982, Ser. No. 359,925
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114595
Int. Cl.³ H03L *7/00*
U.S. Cl. 329—124 **4 Claims**



1. A circuit for minimizing the nonlinearity in the zero-axis

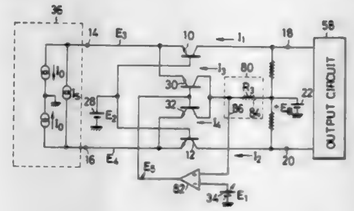
crossing of a phaselocked loop of an FM-demodulator including:
a phase detector which receives an input signal and produces an output signal corresponding to the phase of said input signal and a center frequency;
a circuit means for producing a circuit output signal in accordance with said phase detector output signal, said circuit means being adjustable to control the zero crossing linearity of the phase detector by producing a zero voltage level output signal when said input signal is at the center frequency of said phase detector;
a voltage controlled oscillator coupled between said circuit means and said phase detector to regulate said phase detector output; and
wherein said circuit means includes a filter means coupled to the output of the phase detector; capacitor means coupled between the voltage controlled oscillator and an element with variable capacitance; decoupler means for coupling the output to said element; and an adjustment means connected to the element to vary the voltage at the element and correspondingly allow for a zero voltage output from the phase detector at the center frequency of a signal being demodulated.

4,523,152
HIGH-EFFICIENCY FEEDFORWARD-ERROR-CORRECTION AMPLIFIER
Peter Garde, Bronte, Australia, assignor to Unisearch Limited, Kensington, Australia
Filed Mar. 30, 1983, Ser. No. 481,358
Claims priority, application Australia, Apr. 1, 1982, PF3424
Int. Cl.³ H03F *21/00*
U.S. Cl. 330—151 **15 Claims**



1. A high-efficiency feedforward-error-correction amplifier system comprising a high-efficiency switching circuit having a control input and an output, a low-distortion linear-amplification means having an input and an output, a summing network having a plurality of inputs, and a system output port, wherein a system input signal is fed to the input of the linear-amplification means, and an output voltage signal produced at the output of the linear-amplification means is fed to one input of the summing network, a signal which is a function of a current flowing in the output of the linear-amplification means is used to control the switching circuit via the control input and a switching output signal is produced at the output of the switching circuit and is fed to another input of the summing network, an output current flowing in the output of the switching circuit having a time rate of change limited by a low-pass-filter means, a sensing signal which is a function of the switching output signal being fed to the input of the linear-amplification means, the sensing signal being such that the output voltage signal is a function of distortion components in the switching output signal, and the summing network combines the switching output signal and the output voltage signal to produce a system output signal at the system output port, the system output signal being a function of the system input signal and having a low level of distortion, and said output port being adapted to have a load connected thereto, such that a current flowing in said load via said output port, when averaged over a period of time, is substantially provided by the switching circuit when said averaged output current is large.

4,523,153
VARIABLE GAIN AMPLIFIER
Yasuhiro Itoh, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Apr. 13, 1984, Ser. No. 599,943
Claims priority, application Japan, Apr. 27, 1983, 58-74824; Jan. 31, 1984, 59-15754
Int. Cl.³ H03G *3/18*; H03F *3/45*
U.S. Cl. 330—254 **19 Claims**

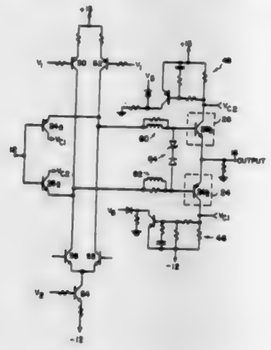


1. A variable gain amplifier system comprising:
(a) input means having first and second input terminals for receiving differential inputs;
(b) output means having first and second output terminals for providing differential outputs in response to the differential inputs;
(c) a first transistor having an emitter connected to the first input terminal and a collector connected to the first output terminal;
(d) a second transistor having an emitter connected to the second input terminal, a collector connected to the second output terminal, and a base connected to a base of the first transistor;
(e) the first and second transistors making up a first pair of transistors;
(f) a third transistor having an emitter connected to the first input terminal;
(g) a fourth transistor having an emitter connected to the second input terminal and a base connected to a base of the third transistor;
(h) the third and fourth transistors making up a second pair of transistors;
(i) collector bias means for biasing the collectors of the second pair of transistors;
(j) collector current sensing means for providing a voltage representative of the sum of the collector currents of either of the first and second pairs of transistors;
(k) a variable voltage source for providing a variable gain control voltage for controllably varying the current gain between the first input terminal and the first output terminal and between the second input terminal and the second output terminal;
(l) a differential amplifier for applying to the bases of either of the first and second pairs of transistors a voltage proportional to the difference between the output voltage of the collector current sensing means and the gain control voltage from the variable voltage source; and
(m) base bias means connected to the bases of the other of the first and second pairs of transistors.

4,523,154
ENHANCED-ACCURACY SEMICONDUCTOR POWER AMPLIFIER
James S. Congdon, Maynard, Mass., assignor to GenRad, Inc., Concord, Mass.
Filed May 18, 1983, Ser. No. 495,670
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—266 **3 Claims**

1. A DC electronic amplifier comprising:
A. a first semiconductor substrate of n-type semiconductor material;

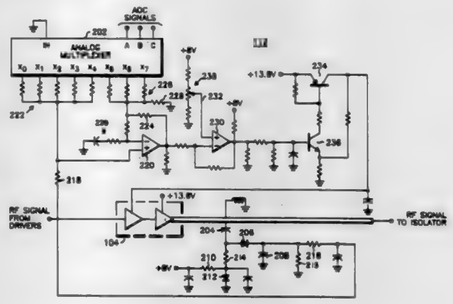
B. a second semiconductor substrate of p-type semiconductor material;
C. first and second npn transistors formed on said n-type substrate;
D. first and second pnp transistors formed on said p-type substrate; and
E. amplifier circuit means interconnecting said first and second transistors of said n-type and p-type substrates as an amplifier in which said second npn and pnp transistors form an output stage in which their emitters are connected together in a complementary emitter-follower configuration for driving an amplifier load connected to said emitters, said first npn and pnp transistors being arranged in a



previous stage with their bases connected together in a complementary emitter-follower stage, the emitter of each first transistor on a substrate being coupled to the base of the second transistor on the other substrate so that the sum of the base-to-emitter voltages of said first transistors is applied between the bases of said second transistors, whereby a temperature increase in a second transistor also occurs in the first transistor on the same substrate, reducing its diode drop and thus reducing the voltage impressed across the series combination of said base-emitter junctions of said second transistors, thermal runaway in a second transistor on a substrate thereby being counteracted by the action of the first transistor on the same substrate.

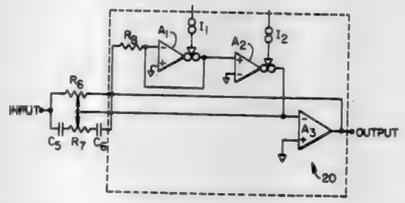
4,523,155
TEMPERATURE COMPENSATED AUTOMATIC OUTPUT CONTROL CIRCUITRY FOR RF SIGNAL POWER AMPLIFIERS WITH WIDE DYNAMIC RANGE
Thomas J. Walczak, Palatine; Richard M. Stone, Schaumburg, and Gary M. Cristiano, Itasca, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 491,499, May 4, 1983, abandoned. This application Dec. 17, 1984, Ser. No. 682,805
Int. Cl.³ H03G *3/30*
U.S. Cl. 330—279 **85 Claims**

1. Control circuitry for maintaining the magnitude of a radio frequency (RF) signal from an RF signal amplifier at one of a plurality of levels selected by level control signals from a signal source, the amplification of the RF signal amplifier being proportional to a drive current signal provided by current amplifying means, and the current amplifying means varying the magnitude of the drive current signal in response to a current control signal, said control circuitry comprising:
means coupled to the RF signal amplifier for generating an output power signal having a magnitude that is proportional to the magnitude of the RF signal from the RF signal amplifier;
means coupled to the generating means for compensating the output power signal for variations in temperature;
means coupled to the level control signals for selecting one of a plurality of amplification factors in response to the level control signals;
means coupled to the generating means for amplifying the output power signal by the selected amplification factor; and



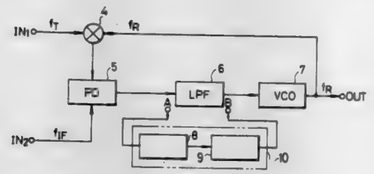
means coupled to the amplifying means for varying the magnitude of the current control signal in response to the difference between the magnitude of the amplified output power signal and a predetermined magnitude.

4,523,156
ANTI-DISTORTION ANTI-TRANSIENT TONE CONTROL CIRCUIT
Don R. Sauer, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Jul. 25, 1983, Ser. No. 517,185
Int. Cl.³ H03G *9/16*
U.S. Cl. 330—282 **12 Claims**



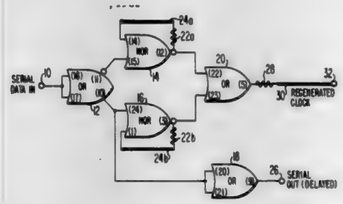
8. In a tone control circuit, including an amplifier having a continuously adjustable frequency response control operable to vary the effect of low and high frequency filters upon said amplifier, a method for suppressing amplifier output distortion and transient interference, comprising:
varying the gain of a transconductance amplifying circuit coupled between an inverting input and an output of said amplifier in response to a programming distortion/transient control signal to attenuate circuit low frequency response as the gain of said transconductance amplifying circuit is initially varied in response to said programming distortion/transient control signal and to thereafter reduce overall amplifier gain as the gain of said transconductance amplifying circuit is further varied in response to said programming distortion/transient control signal.

4,523,157
PLL OUT-OF-CAPTURE RANGE DETECTION AND LOCK ACQUISITION CIRCUIT
Yu Sato, Tokyo, Japan, assignor to Nippon Kogaku K. K., Japan
Filed Sep. 24, 1982, Ser. No. 422,952
Claims priority, application Japan, Oct. 27, 1981, 56-170738
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—4 **2 Claims**



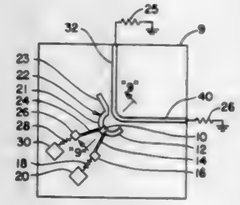
1. A phase locked loop (PLL) frequency tracking circuit for receiving a variable frequency (f_T) signal at a first input port (IN1) and a predetermined frequency (f_{IF}) signal at a second input port (IN2) and producing at an output port (OUT) an output signal having a frequency equal to the absolute value of the sum or difference of the two frequencies (f_T, f_{IF}) of the signals received at the first and second input ports, said circuit having a predetermined lock range, and including:
a mixer provided with a pair of input terminals and an output terminal, one input terminal of said pair being connected to said first input port and the other input terminal of said pair being connected to said output port,
a phase detector provided with a pair of input terminals and an output terminal, one input terminal of said pair being connected to the mixer output terminal and the other input terminal of said pair being connected to the second input port,
a voltage controlled oscillator (VCO) provided with an input terminal and an output terminal, the input terminal being connected to the phase detector output terminal and the output terminal being connected to the said other mixer input terminal, characterized in that
the PLL frequency tracking circuit further comprises a detection-control circuit connected between said phase detector output terminal and said VCO input terminal for detecting that the PLL is out of its lock range and upon the detection temporarily applying to the VCO a predetermined voltage which adjusts the oscillating frequency of the VCO to a frequency at which the PLL is in its lock range and is able to perform phase locked loop locking for said variable frequency (f_T) signal.

4,523,158
CLOCK REGENERATOR USING TWO ON-OFF OSCILLATORS
Mohamed M. A. Megeid, Zurich, Switzerland, assignor to RCA Corporation, Princeton, N.J.
Filed Feb. 2, 1983, Ser. No. 463,165
Int. Cl.³ H03L *7/24;* **H04L** *27/12*
U.S. Cl. 331—55 **1 Claim**



1. Apparatus comprising
a first OR gate having a pair of inputs for receiving data signals, and a complementary pair of outputs;
a pair of oscillators for producing output signals having substantially the same frequency, each oscillator comprising a NOR gate having a first input coupled to a respective one of said first OR gate outputs, a second input, and an output, and a transmission line coupled between said output and said second input;
a second OR gate having a pair of inputs both coupled to one of said first OR gate outputs, and an output for providing delayed data pulses;
a third OR gate having a pair of inputs respectively coupled to said NOR gate outputs, and an output for providing regenerated clock pulses;
and a transmission line means for delaying said regenerated clock pulses so that the positive going edges thereof occur approximately in the middle of said delayed data pulses.

4,523,159
MICROWAVE OSCILLATOR AND SINGLE BALANCED MIXER FOR SATELLITE TELEVISION RECEIVER
Pierre Dobrovolny, North Riverside, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
Filed Dec. 28, 1983, Ser. No. 566,237
Int. Cl.³ H03B *5/18;* **H04B** *1/28*
U.S. Cl. 331—99 **10 Claims**



1. A high frequency oscillator comprising:
a substrate having opposed top and bottom surfaces;
a conductive ground plane on said bottom surface;
a shielded dielectric resonator disposed adjacent to and below said bottom surface;
transistor means disposed within a hole extending through said substrate and having a common electrode electrically connected to said ground plane, and input and output electrodes;
first and second transmission line strips on said top surface and electrically connected to said input and output electrodes of said transistor means; and
first and second series of magnetic field coupling slots, of at least one slot each, formed in said ground plane and disposed for coupling the magnetic field developed by said dielectric resonator to said first and second transmission line strips, respectively, thereby forming a closed feedback loop.

4,523,160
WAVEGUIDE POLARIZER HAVING CONDUCTIVE AND DIELECTRIC LOADING SLABS TO ALTER POLARIZATION OF WAVES
George Ploussios, 4 Hackney Cir., Andover, Mass. 01810
Filed May 2, 1983, Ser. No. 490,346
Int. Cl.³ H01P *1/161*
U.S. Cl. 333—21 A **3 Claims**

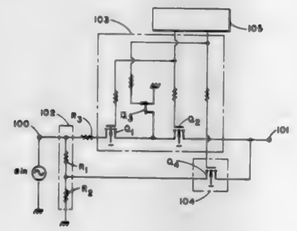
3. The method of making a polarizing waveguide comprising the steps of
providing a waveguide section having internal conductive surfaces defining a center portion free of obstructions and capable of propagating two orthogonal waves,

positioning two conductive loading slabs respectively along opposing internal surfaces of said waveguide section, and



positioning first and second slabs of dielectric material spaced from and opposite each other and extending along opposing internal surfaces of said waveguide section.

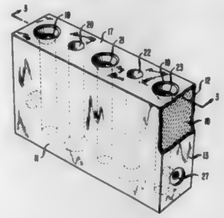
4,523,161
PROGRAMMABLE ATTENUATOR
Frank Miles, Ann Arbor, Mich., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Sep. 22, 1983, Ser. No. 534,897
Claims priority, application Japan, Oct. 27, 1982, 57-188904
Int. Cl.³ H03H *7/24*
U.S. Cl. 333—81 R **1 Claim**



1. A programmable attenuator, comprising:
first and second resistors connected in series between an input terminal and ground;
first electronic switch means connected between the input terminal and an output terminal;
second electronic switch means connected between the junction of said first and second resistors and the output terminal; and
control means for operating said first and second electronic switch means, wherein said second electronic switch means includes a single transistor while said first electronic switch means includes a pair of series-connected transistors and an additional shunt transistor connected between the junction of said series transistors and ground.

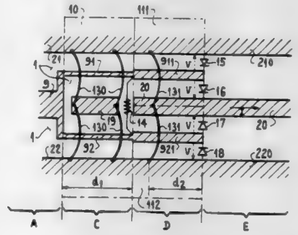
4,523,162
MICROWAVE CIRCUIT DEVICE AND METHOD FOR FABRICATION
Arlen K. Johnson, New Providence, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Aug. 15, 1983, Ser. No. 523,146
Int. Cl.³ H01P *1/205*
U.S. Cl. 333—202 **11 Claims**

4. An electric signal filter comprising a block of dielectric material having a plurality of holes therethrough each having a center line intersecting two faces of said block, said holes being parallel to one another and having their center lines in a plane, said block having substantially uniform width and height through each of its regions between a pair of adjacent ones of said holes, said width and height being proportioned in relation to diameters of said holes to establish a predetermined bandwidth for said filter, and
electric signal conductive material coated over outer and inner surfaces of said block, except in a predetermined



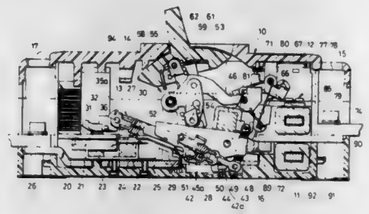
region comprising an intersection of each of said holes with one of said faces, said excepted intersecting region being dimensioned to determine fine-tuning of said filter, said material having an electrical conductivity which is much larger than the conductivity of said dielectric material.

4,523,163
WIDEBAND MICROWAVE DEVICE GENERATING EVEN HARMONICS OF AN INCIDENT SIGNAL
Michel Houdart; Edouard Arruberrenal, and Frédéric Maurette, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Sep. 24, 1982, Ser. No. 423,317
Claims priority, application France, Oct. 23, 1981, 81 19939
Int. Cl.³ H03B *19/00*
U.S. Cl. 333—218 **3 Claims**



1. A microwave harmonic generator, comprising:
an equiphase divider having an input structure for conducting an input signal at a fundamental frequency with an asymmetrical propagation mode and first and second output structures, each for conducting an output signal at the fundamental frequency with an asymmetrical propagation mode;
first and second even harmonic generator structures, each having an input structure coupled to a corresponding output structure of said equiphase divider, each harmonic generator providing an output signal on an output structure thereof in a symmetrical propagation mode including even harmonics of said fundamental frequency; and
a combining circuit structure means for receiving said symmetrical mode output signals from said first and second harmonic generators and providing a combined signal on an output structure over an asymmetrical propagation mode,
wherein the microwave harmonic generator is fabricated on a dielectric substrate, and wherein the equiphase divider includes said input structure including a central conductor between first and second equipotential earth planes, said central conductor dividing into first and second conductors with a third earth plane therebetween, the third earth plane being made equipotential with the first and second earth planes by short circuits, the first and second conductors each forming with the third earth plane and the first and second earth planes respective first and second coplanar lines, which form the first and second output structures respectively, the first and second coplanar lines being resistor coupled to each other at respective output ends thereof.

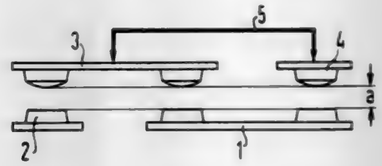
4,523,164
CIRCUIT BREAKER
Youichi Aoyama; Akira Takeuchi; Masaru Ohmuro, and Yasuo Ichimura, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jul. 26, 1984, Ser. No. 634,692
Claims priority, application Japan, Jul. 31, 1983, 58-140180
Int. Cl.³ H01H *75/10, 77/06*
U.S. Cl. 335—38 **8 Claims**



1. A circuit breaker comprising a make-and-break contact means including a fixed contactor plate having a fixed contact and a movable contactor plate having a movable contact separably contacted with said fixed contact, means for manually making and breaking said contact means, an arm means operatively coupled to said manual make and break means for holding said movable contactor plate, an armature means pivoted at one end to said arm means, a spring means provided between the other end of said armature means and the movable contactor plate so that a line passing through said spring means lies on the contact making side with respect to a pivot point of the armature means upon contact make motion of the movable contactor plate but lies on the contact breaking side with respect to said pivot point upon contact breaking motion of the movable contactor plate, means for generating a magnetic force which causes the armature means to be rotated in its contact breaking direction when an overcurrent flows through an electric path including the contact means, and means responsive to said overcurrent for tripping the manual make-and-break means from its contact making state to a tripped state.

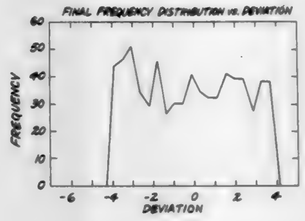
4,523,165
CONTACT ARRANGEMENT FOR RELAYS
Helmut Schedele, Diessen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Apr. 15, 1983, Ser. No. 485,401
Claims priority, application Fed. Rep. of Germany, May 10, 1982, 3217528
Int. Cl.³ H01H *67/00*
U.S. Cl. 335—106 **2 Claims**

1. A relay comprising:
housing means;
an electromagnet carried by said housing means including a coil body flange having grooves therein and an armature;
a pair of stationary bridging contacts fixedly mounted spaced from one another in respective ones of said grooves;
a pair of stationary contacts mounted in said housing means spaced from one another; and
an additional single contact and an additional bridging contact coupled to said armature and mounted between said fixedly mounted contacts as transfer contacts and so



positioned to provide a series circuit connection of contacts in either operative state of said relay.

4,523,166
OPTIMAL FIELD INHOMOGENEITY CORRECTION COIL OPERATION FOR NMR MAGNETS
Dan A. Gross, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 19, 1984, Ser. No. 662,744
Int. Cl.³ H01F *7/22*
U.S. Cl. 335—216 **8 Claims**



1. A method for operating correction coils to achieve a uniform magnetic field comprising the following steps:
(a) measuring the magnetic field, with no current in the correction coils, at a plurality N of points within the volume for which uniformity is desired, the value of the field at the ith measurement point p_i being denoted by $F(p_i)$;
(b) determining a preliminary estimate for correction coil current $I_1, I_2, \ldots, I_S$ for S correction coils by a least squares minimization of

$$\chi^2 = \sum_{n=1}^{N} \chi_i^2 = \sum_{n=1}^{N} [(F(p_i) - P(p_i))/\delta_i]^2,$$

where

$$P(p_i) = \sum_{n=1}^{S} I_n P_n(p_i).$$

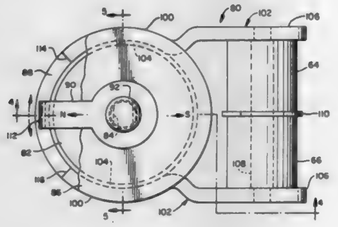
and where $P_n(p_i)$ is a polynomial function expressing the field contribution of correction coil n at point p_i with one unit of current in correction coil n, and where δ_i is a non-zero weight assigned to each point p_i;
(c) determining a new set of weights $\delta_i^{(new)}$ for each measurement point according to:

$$\delta_i^{(new)} = \delta_i^{(old)}[1 + a|X_i|/R]^{-1},$$

where $R = \max(X_1, X_2, \ldots, X_N) - \min(X_1, X_2, \ldots, X_N)$ and where a is a positive convergence constant less than 1;
(d) repeating steps (b) and (c) at least once with δ_i in step (b) replaced by $\delta_i^{(new)}$ from step (a), so as to determine new values for correction current $I_1, I_2, \ldots, I_S$; and

(e) applying said new values of currents I_1, I_2, . . . , I_S to correction coils 1 through S, respectively.

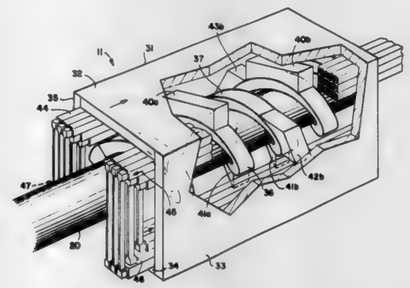
4,523,167
BISTABLE ELECTROMAGNETIC LATCH
Richard C. Remington, Pompton Plains, N.J., assignor to Presto Lock, Inc., Garfield, N.J.
Filed Dec. 27, 1982, Ser. No. 453,130
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—230 **4 Claims**



1. An electromagnetic latch comprising a magnetic circuit including a pair of magnetic pole pieces, each pole piece having an arcuate portion and a further portion, a permanent magnet rotor supported for rotation about an axis centered between said arcuate portions with said arcuate portions embracing said rotor, said arcuate portions each having first ends not merging into said further portions and spaced to define the respective ends of a first magnetic gap and each having second ends merging into said further portions, respectively, and defining respective ends of a second magnetic gap, said gaps subtending substantially equal angles about said axis, said magnetic rotor having opposite magnetic poles associated with said magnetic gaps, respectively, each magnetic pole being rotatable between the ends of the associated magnetic gap, whereby alternate magnetic paths of low reluctance and corresponding stable positions of the rotor are defined when each magnetic pole of the rotor is adjacent to either end of the associated magnetic gap, and coil means connected to said further portions of said pole pieces and responsive to the momentary flow of electrical current therethrough for producing a magnetic flux in the magnetic circuit that causes the rotor to move from one stable position to the other.

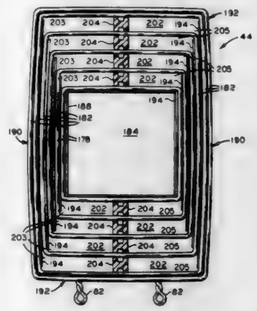
4,523,168
ELECTROMAGNET
Roy M. Emanuelson, Reading, and David P. Lebet, Ipswich, both of Mass., assignors to Scanditronix Inc., Essex, Mass.
Continuation of Ser. No. 424,643, Sep. 27, 1982, abandoned. This application Feb. 29, 1984, Ser. No. 583,785
Int. Cl.³ H01F *7/00*
U.S. Cl. 335—296 **10 Claims**

1. An electromagnet comprising:
(a) first and second interjacent open helical magnet pole means coaxial with a longitudinal axis,
(b) magnet yoke means surrounding and spaced from said pole means,
(c) first and second angularly displaced magnetic coupling means interconnecting said magnet yoke means and said first and second pole means respectively thereby to define a high permeability magnetic path with said first and second pole means and said magnet yoke means, and
(d) means for inducing magnetic flux in said coupling means thereby producing a magnetic field having a direction that



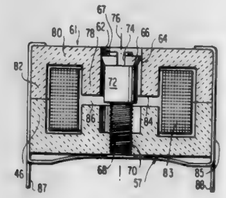
is angularly displaced along the axis in accordance with the pitch of said helical magnetic poles.

4,523,169
DRY TYPE TRANSFORMER HAVING IMPROVED DUCTING
Noah D. Hay, Huntertown, Ind., assignor to General Electric Company, New York, N.Y.
Filed Jul. 11, 1983, Ser. No. 512,736
Int. Cl.³ H01F *27/08*
U.S. Cl. 336—60 **29 Claims**



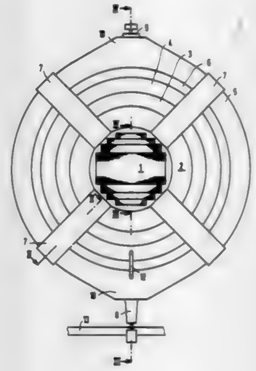
1. A dry-type air cooled transformer comprising:
a magnetic core having a core window,
a coil comprising a plurality of superimposed layers of wound conductor surrounding a vacant coil window extending axially through the coil, each layer comprising a plurality of conductor turns an wherein each layer extends in a direction generally parallel to the coil axis,
said coil being generally reactangular in planes perpendicular to the coil axis and having two end portions and two side portions, one of said side portions being disposed within said core window,
at least some of the conductor layers in one of said end portions being spaced apart in a direction perpendicular to the coil axis to form a plurality of air ducts extending generally parallel to the coil axis and adapted to permit air to flow between the spaced layers to cool the coil, and
a plurality of duct spacer means respectively in said air ducts to space apart the adjacent conductor layers defining the respective duct, said duct spacer means being an elongate, electrically insulative element, said element having an axial dimension in the direction of the coil axis much greater than dimensions in directions transverse to the coil axis,
in at least some of said ducts therein being only one duct spacer means per duct, said duct spacer spaced inwardly toward a center portion of the duct away from the coil side portions and forming two channels in said duct which are open from said spacer to said coil side portions, said channels occupying substantially all the space in said duct, said spacer means extending substantially from one end of the duct to the other in the axial direction, each of said ducts being devoid of any other elements to space apart the conductor layers forming the duct other than the one duct spacer means therein.

4,523,170
ADJUSTABLE AIR GAP FERRITE STRUCTURES AND METHODS OF MANUFACTURE
Joseph F. Huth, III, Butler, Pa., assignor to Spang & Company, Butler, Pa.
Filed Nov. 5, 1982, Ser. No. 439,370
Int. Cl.³ H01F *21/06*
U.S. Cl. 336—83 **3 Claims**



1. Method for manufacturing a magnetically-soft ferrite core part to provide unitary means for accurately adjusting the inductance of an electrical inductance device which includes such core part, comprising
providing a substantially homogeneous mass of particulate ferrimagnetic material which is reactive when treated at elevated temperatures to form a magnetically-soft ceramic ferrite,
molding such ferrimagnetic material at elevated pressure to form a unitary greem compact, such green compact including
an elongated center post symmetrically distributed about a centrally located longitudinal axis,
a web portion extending in transverse relationship to such axis contiguous to one longitudinal end of such center post, and
a skirt portion extending from such web in spaced relationship from such center post and extending in an axial direction to define a space for receiving coil windings between such center post and such skirt portion,
such center post defining a central opening extending longitudinally with and substantially symmetrically about such longitudinal axis,
such central opening presenting interior wall surface means of circular cross section in a plane transverse to such longitudinal axis,
such interior wall surface means including a wall surface portion of reduced diameter with respect to the remainder of such interior wall surface means,
such reduced diameter wall surface portion being established during pressure compaction and being contiguous to such one longitudinal end of the center post from which such web portion extends,
forming unitary helical threads solely in such reduced diameter portion of the central opening interior wall surface means,
such helical threads being formed in such reduced diameter portion of such interior wall surface means of such pressure molded unitary green compact, and thereafter
sintering such green compact at elevated temperature to form a ceramic core part with unitary helical threads established along at least a predetermined portion of its central wall surface means extending longitudinally along its central opening within its center post for receiving an externally-threaded nonmagnetic portion of an elongated male tuning member when such tuning member is inserted axially into such central opening,
such externally-threaded nonmagnetic portion of such male tuning member presenting threads of predetermined specifications,
the unitary helical threads in such portion of the central opening wall surface means of the pressure molded unitary green compact being formed with predetermined specifications to compensate for shrinkage of such unitary green compact during sintering so as to accommodate such threads of predetermined specifications presented by such externally-threaded nonmagnetic portions of such male tuning member.

4,523,171
DRY-TYPE TRANSFORMER WITH WINDINGS CAST IN CASTING RESIN
Gerhard Altmann, Kirchheim; Friedrich Alber, Köngen, and Lothar Brzuska, Wernau, all of Fed. Rep. of Germany, assignors to Transformatoren Union AG, Stuttgart, Fed. Rep. of Germany
Filed Aug. 5, 1983, Ser. No. 520,720
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1982, 3229480
Int. Cl.³ H01F *27/02*
U.S. Cl. 336—96 **9 Claims**



1. Dry-type transformer cast into casting resin, comprising windings, a main cooling canal, at least one of said windings being subdivided into coaxial winding parts spaced apart from each other defining an additional axial cooling canal therebetween, separate inner and outer casting resin bodies each having end faces and being cast around a respective one of said winding parts, reinforcements formed on diametrically opposite outer surface regions of said outer casting resin body for receiving axially extended connecting conductors for electrically wiring said winding parts, line terminals and tap terminals disposed on respective reinforcements, and elastic blocks common to all of said windings and winding parts between which said winding parts of a respective winding are clamped, said winding parts of a respective winding being metallically interconnected in front of said end faces of said casting resin bodies.

4,523,172

HIGH VOLTAGE QUICK-BREAK FUSE

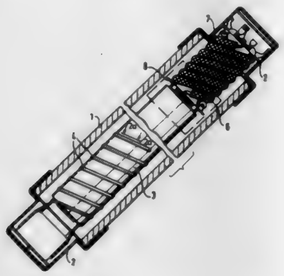
Michael Drothen, and Willi Ressel, both of Witten, Fed. Rep. of Germany, assignors to Wickmann Werke GmbH, Witten, Fed. Rep. of Germany

Filed Oct. 6, 1983, Ser. No. 539,696

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237326

Int. Cl.³ H01H *85/04*

U.S. Cl. 337—164 **8 Claims**



1. A high voltage quick-break fuse comprising: a fuse tube, at least one silver fuse element and at least one tin fuse element in series connection mounted within said tube, said silver fuse element having restricted cross-section areas at intervals along said silver fuse element to influence its characteristics and said tin fuse element being surrounded by an arc-quenching material, wherein the ratio of the total cross-sections of all the tin fuse elements to the total cross-sections of all the silver fuse elements is greater than 6, the ratio of the total cross-sections of all the tin fuse elements to the restricted cross-section area of all the silver fuse elements is greater than 15, and the ratio of the total cross-sections of all the tin fuse elements to the restricted cross-section area of a single silver fuse element is greater than 60, but smaller than 85.

4,523,173

ELECTRIC SWITCHES

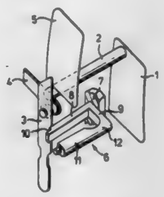
Richard A. Phillips, Buxton, and Peter W. Naylor, Tideswell, Nr. Buxton, both of England, assignors to Otter Controls Limited, Buxton, England

Filed Sep. 26, 1983, Ser. No. 536,118

Claims priority, application United Kingdom, Sep. 27, 1982, 8227498; Feb. 4, 1983, 8303075

Int. Cl.³ H01H *37/54*

U.S. Cl. 337—367 **14 Claims**



1. An electric switch having manually-releasable latching means associated with an operating member of said switch for latching said operating member in a first predetermined operating condition of said switch and preventing movement of said operating member into a second predetermined operating condition of said switch until said latching means is released, and wherein said manually-releasable latching means includes a latching member comprising a generally L-shaped lever having two limbs and mounted for pivotal movement within the plane of said limbs and generally about the junction of said limbs, and a manually operable release member coupled to the extremity of one of said limbs by means of a resilient hinge portion, said release member serving to enable the manual application of said extremity of said one limb of a force in a direction such as to cause said lever to execute said pivotal movement, said resilient hinge portion serving for accommodating the said pivotal movement of said lever during application of said force, the extremity of the other of said limbs constituting an engaging member for engagement with said operating member of said switch for latching the same in said first predetermined operating condition, the arrangement being such that, when said lever pivots under said force, said extremity of said other limb moves in a direction transverse to the respective limb and out of latching engagement with said operating member so as to enable said switch to return to its said second predetermined operating condition.

4,523,174

ILLUMINATION TYPE ROTARY VARIABLE RESISTOR

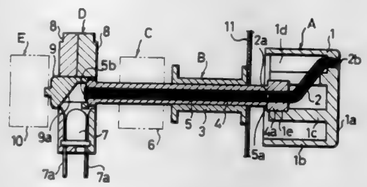
Akira Oyama, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1984, Ser. No. 575,887

Claims priority, application Japan, Feb. 1, 1983, 58-12033[U]

Int. Cl.³ H01C *10/30*

U.S. Cl. 338—119 **5 Claims**



1. An illumination type rotary variable resistor comprising a rotatable hollow shaft displaceable axially, a rotatable knob coupled to a forward end of said hollow shaft, a photo-conductive element disposed within said hollow shaft and said knob and having two ends one of which is exposed eccentrically at an end surface of said knob, a light source provided close to the other end of said photo-conductive element, a switch located rearwardly of said hollow shaft, a driver member disposed in contact with the rearward end of said hollow shaft to cause said switch to perform its switching operation upon axial movement of said hollow shaft, and means including, a reflective surface formed on said driver member to reflect light from said light source and to direct the reflected light towards said photo-conductive element regardless of the axial position of said hollow shaft.

4,523,175

DUAL SHAFT ROTARY ELECTRIC DEVICE

Michio Sakurai, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,665

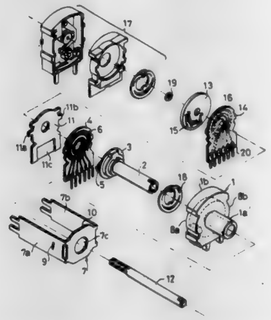
Claims priority, application Japan, Feb. 12, 1983, 58-18111[U]

Int. Cl.³ H01C *10/16;* **H01H** *19/58*

U.S. Cl. 338—134 **6 Claims**

1. A dual shaft rotary electric device comprising a dual shaft arrangement constituted by inner and outer concentric shafts, slider supports attached to said inner and outer shafts respectively, sliders attached to said slider supports respectively and insulating substrates stacked in the longitudinal direction of said dual shaft arrangement and respectively correspondingly

to said sliders, in which an insulating spacer is inserted between said insulating substrates and a front plate having side arms



extending generally parallel to said dual shaft arrangement and engaging said spacer to hold it in place.

4,523,176

ELECTRICAL SWITCH

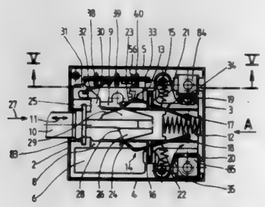
Paul Leibinger, Rietheim-Weilheim, and Alfons Steidle, Spaichingen, both of Fed. Rep. of Germany, assignors to Firma Marquardt GmbH, Rietheim-Weilheim, Fed. Rep. of Germany

Filed May 25, 1982, Ser. No. 381,759

Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121033

Int. Cl.³ H01C *10/36*

U.S. Cl. 338—179 **12 Claims**



1. A switch comprising an actuating member designed as a plunger and carrying a slider, characterized in that the plunger (**10**) is provided with a retaining groove (**72**) for the slider (**32**), extending transversely to a direction (**27**) of the plunger actuation and bounded at one end by a stop surface (**74**) and having an L-shaped a cross section to form a strip (**77**) for backing the slider (**32**), and that an attachment end portion (**73**) of the slider (**32**) is approximately S-shaped, with a free S-leg engaging the backing strip (**77**) from below while a S-leg blends into slider arms (**79,80**), and with the web of the retaining groove (**72**) being larger than the thickness of the attachment end (**73**) of the slider.

4,523,177

SMALL DIAMETER RADIANT TUBE HEATER

John M. Driggers, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 16, 1984, Ser. No. 571,214

Int. Cl.³ H01C *3/20*

U.S. Cl. 338—303 **4 Claims**

1. An electrical resistance heated radiant heating unit for internal heating of steam generator tubes comprising an insulating, refractory, generally cylindrical elongate mandrel that is formed with a lengthwise-extending bore and with enlarged diameter shoulder means at each of its ends respectively, and formed with helical recesses in its surface intermediate said shoulder means,

a bare platinum-rhodium alloy wire disposed in said helical recesses and wound in the form of a generally helical coil having groups of windings in which the adjacent windings within each group of windings are substantially uniformly spaced from each other and said groups of windings are also spaced from each other lengthwise of said mandrel for providing electrical resistance heating,

a pair of bare electrical lead members operatively connected

to opposite ends of said wire respectively and electrically insulated from each other by interposed parts of said mandrel,

one of said lead members being disposed in and extending through said bore,

each of said shoulder means being formed with an aperture for the passage therethrough of one of said lead members, respectively, and

each of said lead members extending through one of said apertures respectively, for electrical connection to the opposite ends of said wire, respectively.

4,523,178

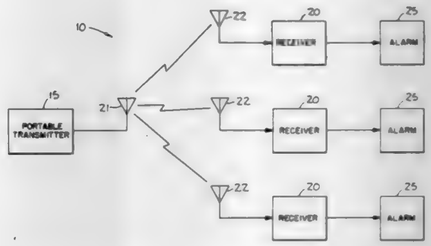
WIRELESS ALARM SYSTEM IN CONJUNCTION WITH AT LEAST ONE VEHICLE

George E. Fulhorst, 2842 Forbes Ave., Santa Clara, Calif. 95051

Filed Feb. 22, 1982, Ser. No. 351,200

Int. Cl.³ G08B *13/08;* **B60R** *25/04*

U.S. Cl. 340—64 **5 Claims**



1. A wireless alarm system comprising:

(a) a portable radio frequency transmitter for transmitting a coded signal;

(b) a plurality of radio frequency receivers for receiving said coded signal, each of said radio frequency receivers comprising:

(1) first means for detecting said coded signals, and

(2) second means activated in response to the detection of said coded signals; and

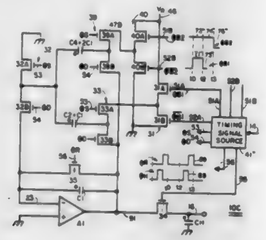
(c) a plurality of vehicle means activated respectively in response to a plurality of said second means' being activated respectively for indicating an alarm condition.

4,523,179

INTEGRATABLE D/A CONVERTER

Christopher W. Kapral, San Carlos, Calif., assignor to GTE Automatic Electric Laboratories, Incorporated, Phoenix, Ariz.

Division of Ser. No. 296,733, Aug. 27, 1981, Pat. No. 4,451,820.
This application Dec. 20, 1982, Ser. No. 455,786
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **13 Claims**



1. An integratable digital to analog converter comprising:
first and second capacitors having capacitances of the same values, and having one and other sides thereof;
a third capacitor having one and other sides and a capacitance twice that of said first capacitor;
a differential input operational amplifier means having an inverting input terminal and an output terminal electrically connected to one and other sides, respectively, of said first capacitor and having a non-inverting input electrically connected to ground for impressing a virtual ground potential on said inverting input terminal;
first switch means sequentially responsive to unique adjacent pairs of binary bits in ascending order of the bit position in a digital input word for impressing onto first and second bus lines one of a prescribed voltage from a voltage source and the ground reference voltage which may correspond to a binary one and zero, respectively, in the associated bit; the first and second bus line voltages being associated with the least significant bit and most significant bit, respectively, of a bit pair; and
second switch means operative for each bit cycle in said first switch means for first connecting said one sides of said second and third capacitors to ground and said other sides thereof to said first and second bus lines, respectively, for sampling the bus line voltages, and then simultaneously connecting said one and other sides of said second and third capacitors to associated sides of said first capacitor for redistributing the charge voltages on said capacitors.

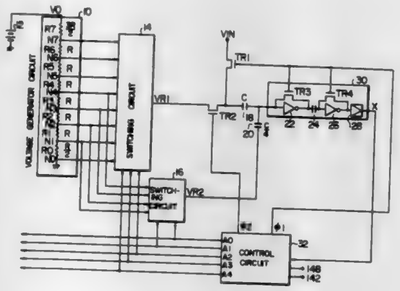
4,523,180

ANALOG TO DIGITAL CONVERTER

Shigeo Kuboki, Nakaminato, and Kazuo Kato, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 277,609
Claims priority, application Japan, Jun. 27, 1980, 55-86639
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **10 Claims**

6. An analog to digital converter comprising:
a first voltage providing means for providing a first analog voltage having a magnitude defined by the upper bits of digital data having upper and lower bits;
an input circuit which receives an analog voltage to be converted into a digital signal;
a comparator for producing a comparison result of the first analog voltage with the analog input voltage.
a first capacitor circuit coupled between the output of the first voltage providing means and an input of the comparator;
a second voltage providing means for providing a second analog voltage having a magnitude defined by the lower bits of said digital data;
a second capacitor coupled between the output of the second voltage providing means and the input of the comparator; and



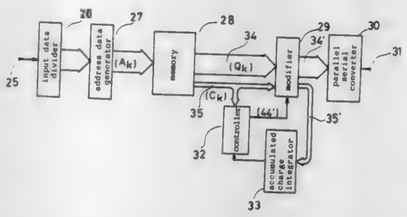
a control circuit which receives the comparison result from the comparator and delivers the first and second digital data.

4,523,181

METHOD AND APPARATUS FOR PRODUCING A BINARY INFORMATION FOR AN INFORMATION TRANSMISSION

Saburo Tazaki, Matsuyama, and Akifumi Ide, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 202,436, Oct. 30, 1980, abandoned.
This application Oct. 28, 1982, Ser. No. 437,460
Claims priority, application Japan, Oct. 31, 1979, 54-141761
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **10 Claims**



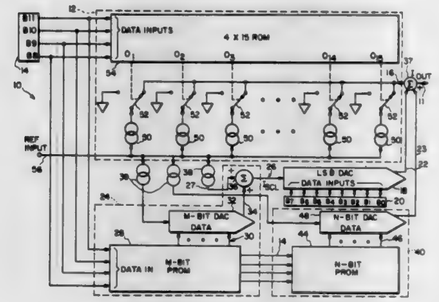
1. A method of coding an input binary data sequence signal into a binary balanced output code signal comprising the step of:
dividing the input binary data sequence signal which has a predetermined bit-cell length into blocks of signals, each block of signals having an input data pattern, thereby forming a set of input data block signals;
reading a data block signal and an accumulated charge data representing an integrated value of data over one data block from a ROM by addressing the memory data generating from said input binary data sequence signal for converting said input data block signals into corresponding output data block signals, each output data block signal having a minimum inversion interval which is longer than said predetermined bit-cell length, and a maximum inversion interval which is 7.2 or less times said bit-cell length;
integrating said accumulated charge data;
inverting data of said output data block signal to produce an inverted data block signal at least when the integrated accumulated charge is about to exceed a predetermined finite value and when integration of said accumulated charge data is not zero; and
assembling the non-inverted and inverted data block signals into said binary balanced output code signal.

4,523,182

PROM TRIMMED DIGITAL-TO-ANALOG CONVERTER

Barry Harvey, and Robert C. Barry, both of Palo Alto, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 10, 1983, Ser. No. 456,924
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **14 Claims**



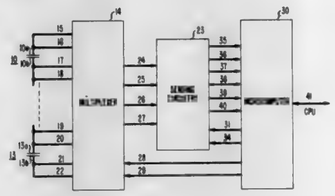
1. In an apparatus for converting input binary number signals into an analog output signal, said apparatus having means for converting first binary number signals of said input binary number signals into a first portion of said analog output signal, said first portion corresponding in value to said first binary number signals, said first binary number signals representing bits of more significance than all other input binary number signals (MSB signals) and having means for converting second binary number signals of said input binary number signals into a second portion of said analog output signal, said second binary number signals representing bits of lesser significance than said MSB signals (LSB signals), means for compensating for error in said LSB signals for each value of said MSB signals comprising:
means coupled to receive said MSB signals for supplying a compensated analog scaling value signal to said second binary signal converting means to compensate for step errors over the range of the second portion of the analog output signal.

4,523,183

ALARM-FAULT DETECTING SYSTEM

Kenneth L. Frick, Westminster, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 3, 1982, Ser. No. 374,338
Int. Cl.³ G08B *29/00*
U.S. Cl. 340—507 **27 Claims**



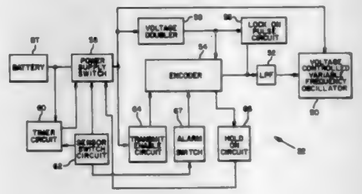
1. A signaling system comprising
a first pair of loop conductors,
a second pair of loop conductors,
contact means for signaling an occurrence of an alarm, said contact means comprising a first contact connected to said first pair of loop conductors and a second contact connected to said second pair of loop conductors, and
an electrical network means connected to said first and second pairs of loop conductors and being responsive to impedance conditions of individual ones of said loop conductors and said first and second contacts for producing a plurality of combinational logic voltages the combination of which indicates the operative state of said contact means and sensed fault conditions on said individual conductors.

4,523,184

SUPERVISED WIRELESS SECURITY SYSTEM

William E. Abel, Portland, Oreg., assignor to Sentrol, Inc., Portland, Oreg.

Filed Sep. 30, 1982, Ser. No. 429,116
Int. Cl.³ G08B *1/08*
U.S. Cl. 340—539 **5 Claims**



2. A transmitter for use in a wireless security monitoring system, comprising;
(a) a radio frequency oscillator having an actual frequency within a predetermined frequency range of a first predetermined frequency;
(b) encoder means for producing a pulse train including digitally coded address and sensor data;
(c) modulator means interconnecting said encoder means and said radio frequency oscillator for modulating said actual frequency in response to said pulse train to produce a frequency-modulated output signal;
(d) multivibrator means connected to said encoder means for periodically initiating transmission of said output signal;
(e) sensor-responsive means connected to said encoder means for initiating transmission of said output signal in response to detection of a predetermined event by a sensor; and
(f) voltage ramp generating means connected to said modulator means for causing said actual frequency to sweep through said first predetermined frequency at a predetermined rate of change of frequency before said encoder means produces said pulse train.

4,523,185

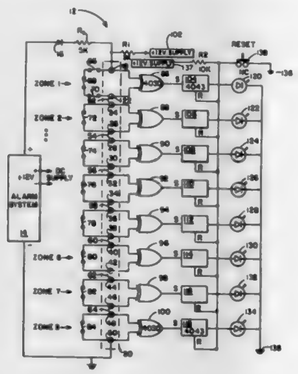
ZONED INTRUSION DISPLAY WITH SERIES-CONNECTED SENSORS

Albert Roth, 6248 Rockhurst Dr., San Diego, Calif. 92120

Filed Mar. 15, 1982, Ser. No. 358,494
Int. Cl.³ G08B *13/08, 13/02*
U.S. Cl. 340—524 **34 Claims**

1. An alarm system comprising:
a plurality of sensing means for detecting intrusion into a plurality of areas;
a plurality of zone indicating means, each being connected to a distinct one of said sensing means for indicating which

one of said sensing means has detected an intrusion, each of said zone indicating means being substantially identical;



each of said zone indicating means comprising an exclusive OR gate connected across one of said plurality of said sensing means.

4,523,186

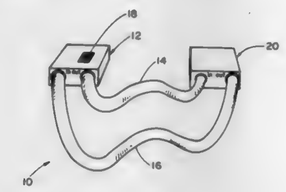
SEAL SYSTEM WITH INTEGRAL DETECTOR

Sidney Fiarman, Port Jefferson, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 12, 1982, Ser. No. 407,663

Int. Cl.³ G08B *13/18*

U.S. Cl. 340—555 **7 Claims**



1. A seal system comprising:

(a) a seal of the type wherein an optical signal is transmitted through a loop, comprising: a loop of fiber optics cable, closing said loop serving to secure an item to be sealed, and an optical detector to detect said transmitted signal so that attempts to open or tamper with said loop which cause alterations in said signal will be detected and will cause an observable change in the state of said seal;

(b) an environmental detector means for detecting changes in the local environment which might indicate an attempt to bypass the seal and tamper with the sealed item, said environmental detector means being operatively associated with said seal so that detection of such environmental change will also cause an observable change in the state of said seal;

(c) a first tamper-indicating housing, said housing containing circuitry for the transmission of an optical signal over said loop of fiber optics cable, for detection of a returned optical signal, and for provision of a unique observable change of state in response to a detected change in said returned signal;

(d) a second tamper-indicating housing, said second housing containing circuitry for detection and re-transmission of said optical signal and at least said environmental detector means for detecting changes in the local environment, said environmental detector means being operatively associated with said detection and re-transmission circuitry so that detection of an environmental change will change said re-transmitted signal.

4,523,187

ALARM SYSTEM FOR ELECTRIC FENCES

Geoffrey S. Begg, Heidelberg, Australia, assignor to Norman W. Hutchinson & Sons PTY. Ltd., South Melbourne, Australia

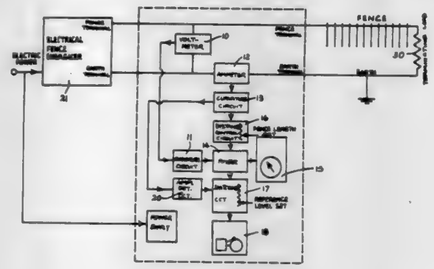
PCT No. PCT/AU81/00123, § 371 Date Apr. 20, 1982, § 102(e) Date Apr. 20, 1982, PCT Pub. No. WO82/00936, PCT Pub. Date Mar. 18, 1982

PCT Filed Jul. 27, 1981, Ser. No. 375,270

Claims priority, application Australia, Aug. 29, 1980, 5330/80

Int. Cl.³ H05C *3/00*; G08B *23/00*; G01R *19/00*

U.S. Cl. 340—661 **7 Claims**



1. A monitoring system for an electric fence having energizer means for applying an electric pulse of a certain magnitude to a long fence conductor near one end thereof, said long fence conductor forming the electric fence, and being adapted to cooperate with an indicating device, said long fence conductor having a remote end opposite said one end, said system comprising

a voltage sensor for sensing and measuring voltage on the conductor with respect to a voltage reference point,

a current sensor for sensing and measuring current flow in the conductor,

the values of voltage and current sensed being related to the magnitude of the electric pulse in the conductor, and being normally within a predetermined range of values,

a curvature circuit connected to said sensors for linearizing the measured voltage and current, and

a mixer circuit for receiving the linearized values of the voltage and the current, and for providing an output indicative of an apparent voltage level at the remote end of said long fence conductor,

said sensors, said curvature circuit, and said mixer circuit being located in proximity to said energizer means,

said indicating device being arranged

to receive and measure said output in the vicinity of said mixer circuit,

to provide from said output at any instant a measurement of said apparent voltage level at the remote end of said long fence conductor, and

to operate alarm means when said values fall outside said predetermined range of values.

4,523,188

AUTOMATED MAP AND DISPLAY ALIGNMENT

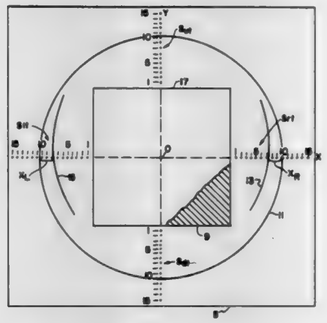
William A. Huber, Sea Girt, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 25, 1982, Ser. No. 436,249

Int. Cl.³ G09G *1/00*

U.S. Cl. 340—734 **6 Claims**

1. Apparatus for automatically aligning an overlay map with an underlying electronic display, comprising, wide margins on said map on which are printed a circle concentric with the map's center and in machine-readable ink, said margins also having printed in the same type of ink a pair of mirror-image spirals of Archimedes, four arrays of sensors capable of sensing said ink located along the extended x and y axes of said electronic display, said spirals being located in the vicinity of the positive and negative x-axes of said display, scanning means



adapted to scan said arrays of sensors to determine the intercepts of said circle and said spirals with said sensor arrays, circuit means for calculating the translational and rotational error of said map and said display from said intercepts, and further circuit means for shifting the position of said electronic display so that said map and display register with each other.

4,523,189

EL DISPLAY DEVICE

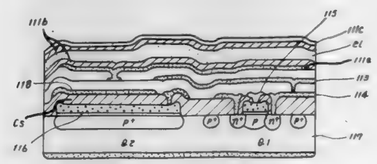
Kazuhiro Takahara, Kawasaki; Keizo Kurahashi, Sagamihara; Hiroyuki Gondo, Kobe; Kenichi Oki, Takarazuka, and Shoshin Miura, Kobe, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 21, 1982, Ser. No. 380,698

Claims priority, application Japan, May 25, 1981, 56-80307; Feb. 23, 1982, 57-29634

Int. Cl.³ G09G *3/30*

U.S. Cl. 340—781 **8 Claims**



1. An EL display device having an EL layer having a luminous voltage level for activating an electroluminescent phosphor and a non-luminous voltage level and picture elements, formed on a semiconductor substrate, comprising:

a plurality of display electrodes, corresponding to the picture elements, arranged on the semiconductor substrate; and

switching transistors, formed on the semiconductor substrate and respectively, operatively connected to said plurality of display electrodes, for selectively driving the respective display electrodes corresponding to the picture elements, each of said switching transistors having a p-n junction with a breakdown voltage equal to a voltage difference between the luminous voltage level and non-luminous voltage level of the EL layer.

4,523,190

LOCAL EXCHANGE EQUIPMENT FOR A CABLE NETWORK

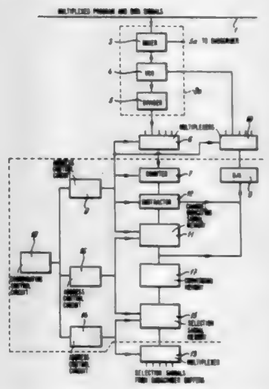
Minno De Roo, Delft, Netherlands, assignor to Deltakabel B.V., Netherlands

Filed Jul. 27, 1982, Ser. No. 402,280

Claims priority, application European Pat. Off., Apr. 29, 1982, 82200516.1

Int. Cl.³ H04Q *9/00*; H04N *7/16*

U.S. Cl. 340—825.03 **24 Claims**



1. Switching system comprising an exchange and a number of subscriber posts connected to said exchange through a cable network, whereby each subscriber post comprises selector means for generating selection signals for selecting one out of a number of program or data signals accomodated into channels received in the exchange over a multiplex line, and said exchange furthermore comprises for each subscriber post a mixing stage and a corresponding voltage controlled oscillator with a voltage memory, and furthermore comprises means for scanning the selection signals of the subscriber posts by means of a multiplexer, means for deriving a frequency signal, related to the nominal oscillator frequency, out of each selection signal, means for deriving a signal from the oscillator assigned to the corresponding subscribing post through a multiplexer and means for comparing said derived oscillator signal with said frequency signal related to the nominal oscillator frequency to generate a control signal for the voltage memory assigned to the measured oscillator which control signal is delivered thereto through a multiplexer for adjusting the oscillator such, that the program- or data signals chosen by means of the selection signals are transmitted from the exchange through the mixing stage and the cable network to the corresponding subscriber, characterized in that each of the subscriber posts comprises a buffer memory for storing selection signals and the exchange comprises means for distinguishing a new selection signal from an unaltered selection signal, a selection signal memory in which the new selection signals received from the buffer memories in the subscriber posts are stored, a conversion memory for deriving a digital channel indication signal out of a selection signal from the selection signal memory, a digital to analogue converter for converting said digital channel indication signal into a control signal for the related voltage memory, a frequency measuring unit for measuring each time the frequency of one of the voltage controlled oscillators, and a comparator for comparing the output signal of the frequency measuring unit with the corresponding digital channel indication signal and deriving a correction signal for the related voltage memory,

whereby in a first circuit the buffer memories in the subscriber posts are scanned in a predetermined sequence and the read out new selection signals are stored into the selection signal memory,

that in a second circuit which is in principle independent

from said first mentioned circuit each time one of the selection signals is read out from the selection signal memory and is converted by means of a conversion memory into the digital channel indication signal which is used to adjust the related voltage memory through the digital to analogue converter,

that in a third circuit in principle independent from said first and said second circuit the voltage controlled oscillators are scanned in a predetermined sequence and the frequencies thereof are measured by means of the frequency measuring unit, after which the value delivered by the frequency measuring unit is each time compared with the channel indication signal, corresponding to the related oscillator and supplied by the conversion memory, whereby a deviation between both results into a correction signal delivered to the voltage memory.

4,523,191

DEVICE FOR INTERCONNECTING A SERIES OF DATA ACQUISITION APPARATUSES TO A REMOTE RECEIVING AND RECORDING SYSTEM

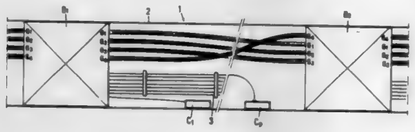
Jacques Cretin, Le Chesnay, and Claude Beauducel, Henouville, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison and Compagnie Generale de Geophysique, Massy, both of, France

Filed Jul. 30, 1982, Ser. No. 404,092

Claims priority, application France, Jul. 30, 1981, 81 15008

Int. Cl.³ H04Q *9/00;* **G01V** *1/22*

U.S. Cl. 340—825.52 **6 Claims**



1. An interconnection arrangement for connecting a series of data acquisition devices to a remote central receiving and recording system through a plurality of transmission cables, each device being operative for collecting signals generated by a particular set of signal generators and for transmitting said collected signals sequentially to said central receiving and recording system upon reception of a command control signal emanating from said system and transmitted to the data acquisition devices by said transmission cables, the data acquisition devices being interconnected by transmission cable sections of substantially equal length, and the series of data acquisition devices being subdivided into a plurality of groups, each group comprising the same number m of data acquisition devices, with the groups being consecutively arranged in the series, the respective single data acquisition devices of the same rank of each one of the groups being connected in parallel by a single transmission cable to the central receiving and recording system, and the data acquisition devices of different ranks in all the groups being connected by different transmission cables to the central receiving and recording system.

4,523,192

DATA PROCESSING NETWORK

Christopher P. Burton, Alderley Edge, and Kenneth C. Johnson, Cheadle, both of United Kingdom, assignors to International Computers Limited, London, England

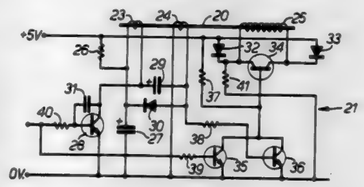
Filed Sep. 20, 1982, Ser. No. 420,272

Claims priority, application United Kingdom, Dec. 17, 1981, 8138099

Int. Cl.³ H04Q *9/00;* **H04B** *3/50*

U.S. Cl. 340—825.57 **4 Claims**

1. A data processing network comprising a plurality of data processing stations; a common bus for interconnecting the stations; and separate means for inductively separately coupling the stations to the bus, including a first magnetic core; first and second signal transmitter windings operatively coupled to the first core; a signal transmitter including first and second capacitors respectively in series with the first and second signal transmitter windings; means for charging the capacitor; first circuit paths between the first and second transmitter windings and the charging means; switching means for enabling the capacitors to be discharged through the respective transmitter windings thereby producing an output pulse on the



common bus; a diode connected between the first and second transmitter windings being non-conducting whilst the capacitors are being discharged; and second circuit paths including said diode between the capacitors and the associated transmitter winding wherein when the switching means is turned off, induced electromotive force in the first and second transmitter windings causes the diode to conduct thereby completing the second circuit paths to allow the capacitors to be charged by induced currents from the transmitter.

4,523,193

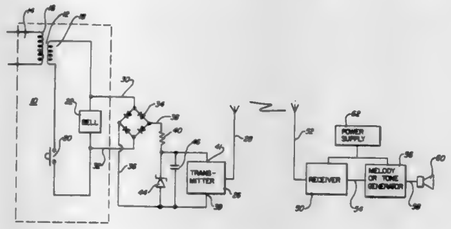
REMOTE-CONTROLLED DOORBELL SIGNAL RECEIVER

Samuel H. Levinson, 182 Maple Hill Rd., Glencoe, Ill. 60022, and Jack R. Caldicott, 28461 W. Kelsey Ct., Barrington, Ill. 60010

Filed Nov. 21, 1983, Ser. No. 553,974

Int. Cl.³ H04Q *9/00;* **H04B** *1/00;* **G08B** *27/00*

U.S. Cl. 340—825.69 **9 Claims**



1. A doorbell system for providing a sound in a selected location having a wired doorbell system, in response to the actuation of an existing doorbell switch that is positioned adjacent to a door, which comprises:

a transmitter for generating an over-the-air radio signal;

means for actuating said transmitter when the doorbell switch is operated;

said actuating means comprising means for coupling the transmitter across the existing bell of the existing wired doorbell, and rectifier means for rectifying the alternating current in the existing doorbell and providing direct current to the transmitter;

a remote receiver for receiving said radio signal and for providing a predetermined output in response to receipt of said radio signal; and

sound producing means coupled to the output of said remote receiver for providing a sound in response to said predetermined output from said remote receiver.

4,523,194

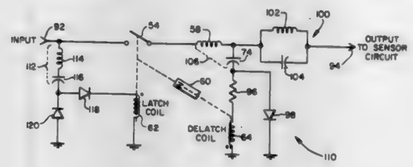
REMOTELY OPERATED DOWNHOLE SWITCHING APPARATUS

Robert L. Hyde, Bartlesville, Okla., assignor to TRW, Inc., Cleveland, Ohio

Filed Oct. 23, 1981, Ser. No. 314,665

Int. Cl.³ E21B *47/00, 47/06*

U.S. Cl. 340—856 **17 Claims**



4. A downhole switching apparatus for controlling the connection of a downhole device to a cable which carries energizing current to a downhole motor, comprising switch means connected between the downhole device and the cable, the switch means having a closed position at which the downhole device is connected to the cable and having an open position at which the downhole device is disconnected from the cable, latching means responsive to a latching signal carried by the cable for closing the switch means, delatching means responsive to current flow of a predetermined direction therethrough for opening the switch means, frequency responsive means responsive to a delatching signal carried by the cable and capable of passing to the delatching means a current in said predetermined direction and a current in the opposite direction, and means connected to the delatching means for preventing current in said opposite direction from passing through the delatching means, wherein the latching means and the delatching means comprise a latch and a delatch coil, respectively, wherein the preventing means comprises a diode, wherein the delatching means further comprises a resistor connected in series with the delatch coil, and the diode is connected in parallel with the resistor and the delatch coil.

4,523,195

ROTATIONAL DIRECTION AND ANGLE DETECTING APPARATUS

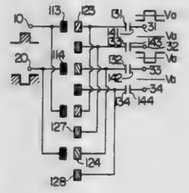
Hiroaki Tanaka, and Shigeyuki Akita, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 3, 1982, Ser. No. 354,433

Claims priority, application Japan, Mar. 9, 1981, 56-33585

Int. Cl.³ G08C *19/10*

U.S. Cl. 340—870.37 **9 Claims**



1. A rotation detecting apparatus comprising:

a fixed first circular plate having a plurality of first and second input electrodes alternately arranged at equal spatial invervals along the circumference of said first plate;

a rotatable second circular plate facing said first plate so that a plurality of third output electrodes arranged at equal spatial intervals along the circumference of said second plate are in opposed relation with said first and second input electrodes of said first plate at one rotational position of said second plate, and so that a plurality of fourth output electrodes arranged at equal spatial intervals along the circumference of said second plate are adapted to be in opposed relation with said first and second input electrodes when said second plate is rotated such that said third output electrodes are not in opposed relation which said first and second input electrodes of said first plate;

periodic signal supply circuit means for supplying signals of a predetermined period and opposite alternating phase to said first and second input electrodes, respectively, of said first plate, said signals inducing signals in said third and fourth electrodes when they are positioned opposite said first and second electrodes;

induced signal transmission means for transmitting said signals induced in said third and fourth electrodes from said second plate to said first plate;

first and second rotation signal generator circuit means for detecting the phases of said signals induced in said third and fourth output electrodes and comparing said detected phases with the phase of said signals supplied by said periodic signal supply circuit means to thereby produce first and second rotation signals; and

rotation output circuit means for producing, in response to said first and second rotation signals, a signal indicating the direction of rotation of said second plate and for indicating the angle of said rotation.

4,523,196

TEST EQUIPMENT FOR A SYNTHETIC APERTURE RADAR SYSTEM

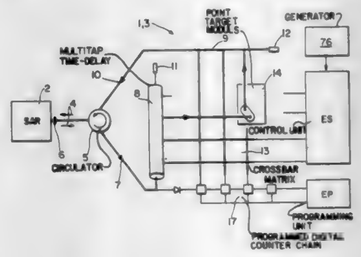
Wolfgang Gieraths, Friedrichshafen, Fed. Rep. of Germany, assignor to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 348,687

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112112

Int. Cl.³ G01S *7/40*

U.S. Cl. 343—17.7 **15 Claims**



1. Test equipment, for a synthetic aperture radar (SAR) system having input/output terminals normally connected to an antenna, the antenna being disconnected from the terminals during a test, the test equipment provided for generating a selectible test pattern for simulating various targets, comprising, an input circuit connected to the terminals for receiving pulses or signals emitted by the SAR system in the absence of a SAR antenna, and for returning simulated response signals to the SAR system, and including a circulator for combining incoming and outgoing pulses or signals of the SAR system;

a signal loop connected to the input circuit and being composed of a forward branch and a return branch combined at said circulator, the forward branch including means for reproducing the varying travel times of the pulses or signals issued by the SAR system comprising of a multitap time-delay, thereby providing a plurality of differently delayed signals, said return branch including a bus for combining delayed pulses or signals;

the loop further including a crossbar matrix, having input lines connected respectively to the taps of said multitap delay and having output lines, seperated from the input

lines but defining cross-points therewith and being connected to said bus of said return branching;

the matrix further including target module means operating as point target modulators, for selectively interconnecting an input line with an output line of said matrix at a cross-point thereof, so that a loop is established through the forward and return branches and at least one target module at the matrix crosspoint;

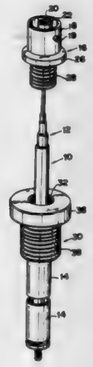
said two branches being terminated at their ends by their characteristic impedances.

4,523,197

ANTENNA WITH BNC-TYPE COAXIAL CONNECTOR

Kazuyoshi Imazeki, and Nobuaki Yokoyama, both of Tokyo, Japan, assignors to General Research of Electronics, Inc., Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 471,892
Int. Cl.³ H01Q *1/50*
U.S. Cl. 343—702 **5 Claims**



1. An antenna comprising: an antenna body telescopically extendable from a fully retracted position and having a free end; a BNC-type coaxial receptacle member mounted to the free end of said antenna body, said receptacle member including a tubular, electrically conductive inner electrode electrically coupled with the antenna body and defining an axial bore and a tubular, electrically conductive outer electrode coaxially surrounding said inner electrode; base means for mounting said antenna body to a radio, said base means including a cylindrical portion for telescopically mounting said antenna body and a receptacle portion for receiving said outer electrode member when the antenna body is in said fully retracted position; said outer electrode and said receptacle portion of said base means being in electrically conductive contact when said antenna body is in said fully retracted position so as to electrically ground said outer electrode.

4,523,198

RADIO FREQUENCY LENS ANTENNA

Roger E. Clapp, Cambridge, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 7, 1983, Ser. No. 511,697
Int. Cl.³ H01Q *19/06*
U.S. Cl. 343—754 **4 Claims**

1. An R-2R lens antenna system comprising:

first, second and third lens assemblies,

each of said lens assemblies comprising a pair of R-2R lenses each having N signal transfer ports, where N is a number, disposed about the circular periphery thereof,

each of said lens assemblies further comprising N ninety degree hybrid couplers each having an element signal port, a beam signal port, and a pair of phase-related signal ports, said phase-related signal ports being connected to like-positioned signal transfer ports in said pair of R-2R lenses,

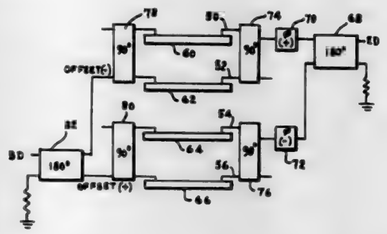
a plurality of antenna elements arranged in a circular array,

first coupler means for combining diametrically-opposed pairs of said antenna elements to form element sum and element difference signals,

means for coupling said element sum signals to element signal ports of said first lens assembly,

phase shift means for receiving said element difference signals to form phase leading and phase lagging element difference signals,

said phase shift means providing a progressively incremented value of phase shift for element difference signals derived from progressively arranged pairs of said antenna elements,



means for coupling said phase leading element difference signals to the element signal port of said second lens assembly,

means for coupling said phase lagging element difference signals to the element signal port of said third lens assembly,

second coupler means coupled to the beam signal ports of said second and said third lens assembly to provide a composite beam difference signal, and

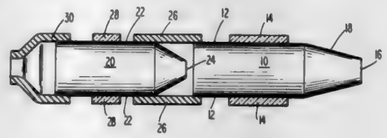
third coupler means coupled to the beam signal port of said first lens assembly and receiving the composite beam difference signal from said second coupler means to provide beam signals for diametrically-opposed beam directions.

4,523,199

HIGH STABILITY DEMAND INK JET APPARATUS AND METHOD OF OPERATING SAME

Robert J. Ott, Newtown, Conn., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 29, 1982, Ser. No. 428,427
Int. Cl.³ G01D *9/00, 15/16*
U.S. Cl. 346—1.1 **10 Claims**



1. An ink jet apparatus comprising:

an ink jet chamber including a droplet ejection orifice and an ink supply inlet;

a supply channel coupled to said inlet for supplying ink thereto;

restrictor means between said inlet and said channel so as to substantially preclude flow of ink from said chamber to said channel;

transducer means coupled to said chamber for expanding and contracting said chamber so as to eject a droplet of ink on demand as the chamber contracts; and

said transducer means also coupled to said supply channel for contracting said chamber as said channel expands and expanding said supply channel as said chamber contracts.

8. A method of operating an ink jet apparatus comprising an ink chamber including a droplet ejection orifice, an ink supply inlet and a supply channel coupled to said inlet for supplying ink thereto, said method comprising the following steps:

expanding the chamber so as to fill the chamber with ink;

contracting the channel so as to assist in filling the chamber while simultaneously expanding the chamber;

contracting the chamber so as to eject a droplet of ink;

expanding the channel while simultaneously contracting the chamber and ejecting a droplet of ink; and

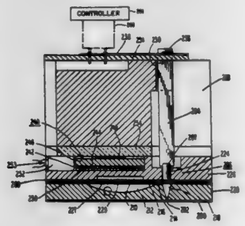
substantially precluding the flow of ink from said chamber to said supply channel.

4,523,200

METHOD FOR OPERATING AN INK JET APPARATUS

Stuart D. Howkins, Ridgefield, Conn., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 27, 1982, Ser. No. 453,571
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—1.1 **6 Claims**



1. A method for driving an ink jet head with a composite waveform including independent successive first and second electrical pulses for ejecting an ink droplet of controlled volume to print at droplet velocities ranging from 3.5 meters per second to in excess of 50.0 meters per second, said method further providing stabilized operation of said ink jet head for both producing high-velocity ink droplets substantially free of "satellite droplets", and substantially eliminating the formation of "puddles of ink" about an associated orifice of said ink jet head, said method comprising:

(1) constructing said first electrical pulse to have an amplitude greater than said second electrical pulse, whereby termination of said first electrical pulse causes rapid volume reduction of an associated ink chamber of said ink jet head, for initiating the ejection of an ink droplet from said associated orifice;

(2) constructing said first electrical pulse to have a pulse width substantially greater than that of said second electrical pulse, whereby application of said second electrical pulse causes rapid volume expansion of said associated ink chamber for causing earlier break off of said ink droplet from said associated orifice relative to only using first electrical pulse; and

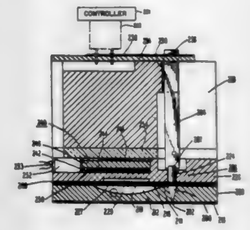
(3) controlling the volume of said ink droplet(s) via adjustment of either one or a combination of the ratios of the amplitudes and pulse widths of said first to said second pulses, and the time period between the termination of said first pulse and initiation of said second pulse.

4,523,201

METHOD FOR IMPROVING LOW-VELOCITY AIMING IN OPERATING AN INK JET APPARATUS

Stephen J. Liker, Danbury, Conn., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 27, 1982, Ser. No. 453,293
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—1.1 **8 Claims**



1. A method for driving an ink jet head with a composite waveform including independent successive first and second electrical pulses for ejecting an ink droplet to print with improved droplet aim accuracy at droplet velocities less than 3.5 meters per second, said method further comprising:

constructing said second electrical pulse with a pulse width substantially shorter than the pulse width of said first electrical pulse; and

further constructing said second electrical pulse to have an amplitude not greater than the amplitude of said first electrical pulse, whereby termination of said first electrical pulse causes rapid volume reduction of an associated ink chamber of said ink jet head, thereby initiating the ejection of an ink droplet from an associated orifice of said ink chamber, followed by initiation of said second electrical pulse for rapidly expanding the volume of said ink chamber, for causing said droplet to break-off earlier from the center of said associated orifice relative to the time and location of break-off in the absence of said second electrical pulse.

4,523,202

RANDOM DROPLET LIQUID JET APPARATUS AND PROCESS

Rodger L. Gamblin, Dayton, Ohio, assignor to Burlington Industries, Inc., Greensboro, N.C.

PCT No. PCT/US82/00140, § 371 Date Sep. 28, 1982, § 102(e) Date Sep. 28, 1982, PCT Pub. No. WO82/02767, PCT Pub. Date Aug. 19, 1982
Continuation-in-part of Ser. No. 231,326, Feb. 4, 1981, abandoned. This PCT application Feb. 3, 1982, Ser. No. 428,490
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **12 Claims**



1. Apparatus for randomly generating liquid droplets and for selectively applying such liquid droplets to a moving substrate surface, said apparatus comprising:

a source of pressurized liquid;

an array of spaced apart liquid jet orifices extending in a cross-machine direction transverse to the direction of movement of said substrate surface, each of said orifices being in fluid communication with said source of pressurized fluid;

random signal generation means including a random signal generator driving an electro-acoustic transducer acoustically coupled to said liquid for actively inducing random drop formation processes in fluid streams issuing from said orifices in a manner substantially independent of the cross-machine dimension by substantially avoiding stationary standing acoustic waves or other phenomena associated with regular periodic perturbations that would, if regular periodic perturbations were used, limit the maximum cross-machine dimension;

charging electrode means disposed downstream of said orifices and extending over the zone of random drop formation for selectively imparting electrical charges to said drops as they are randomly formed; and

deflection electrode means disposed downstream of said charging electrode means for deflecting electrically charged droplets away from the substrate surface.

4,523,203

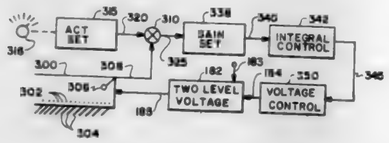
GREY SCALE THERMAL PRINTER CONTROL SYSTEM

William M. Adkisson, and Richard W. Adkisson, both of Englewood, Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 7, 1984, Ser. No. 607,984

Int. Cl.³ B41J *1/24*

U.S. Cl. 346—76 PH **20 Claims**



1. In a thermal recording system having a succession of control cycles each containing a "write" portion and a "no write" portion, the system including a thermal recording heater, a first power source, and a second power source of magnitude less than the first power source, the first power source operable to energize the heater, during the "write" portion of a control cycle to increase the temperature of the heater to at least a first value that produces a melt in a thermally responsive recording medium positioned near the heater, the improvement comprising:

control means operable to control the time interval during which the first power source energizes the heater so as to produce a predetermined size of the melt and to interrupt the energization of the heater by the first power source thereafter so that the heater cools to a low value below the first value during the "no write" portion of the control cycle, and

further means operable to energize the heater by the second power source during the "no write" portion of the control cycle to raise the temperature of the heater to a predetermined value below the first value prior to the "write" portion of the next control cycle.

4,523,204

METHOD AND APPARATUS FOR TIMING RACES

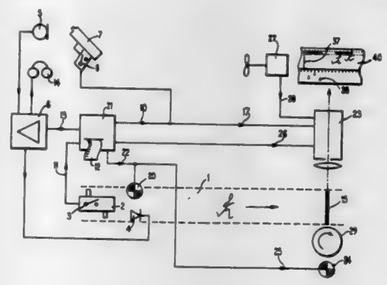
Jean-Pierre Bovay, Bienne, Switzerland, assignor to SSIH Equipment S.A., Bienne, Switzerland

Continuation of Ser. No. 334,012, Dec. 23, 1981, abandoned. This application Apr. 9, 1984, Ser. No. 597,566

Claims priority, application France, Dec. 31, 1980, 80 27958

Int. Cl.³ G01D *9/24*

U.S. Cl. 346—107 B **5 Claims**



1. A system for recording on a single document indications of first events occuring at the start of a race at a start line and second events occuring at the end of a race at a finish line, said system comprising:

a camera positioned at a fixed position at the finish line;

means for producing a start signal at said start line;

means responsive to said start signal for simultaneously therewith producing a manifestation of said start signal at said finish line;

means for producing manifestations of said second events at said finish line subsequent to said manifestation of said first event;

said camera including means for separately recording at the time of their occurrence and on a single document first said manifestation of said start signal as a first event and subsequently said manifestations of said second events; and,

means for generating within the field of view of said camera a luminous indication for each race participant indicating the instant at which each race participant leaves said start line.

4,523,205

HEAT-SENSITIVE RECORDING MATERIALS

Toshitake Suzuki, Hyogo; Ryuzo Hayashi; Naoto Arai, both of Osaka, and Yoshitaka Oeda, Nara, all of Japan, assignors to Kanzaki Paper Mfg. Co., Ltd., Tokyo, Japan

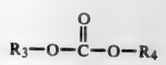
Filed Nov. 18, 1983, Ser. No. 552,919

Claims priority, application Japan, Nov. 30, 1982, 57-210057; Aug. 4, 1983, 58-144277

Int. Cl.³ B41M *5/18*

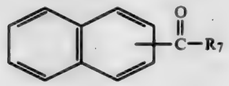
U.S. Cl. 346—208 **5 Claims**

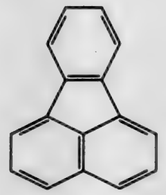
1. A heat-sensitive recording material comprising a support having formed thereon a heat-sensitive layer comprising a colorless or pale-colored basic dye and a color developing material that, when heated, reacts with the basic dye to form a color, wherein said heat-sensitive recording layer further comprises at least one heat-fusible material having a melting point in the range of 70° C. to 140° C. and selected from the compounds represented by following formulae (II), (IV), (V):



(II)

-continued





wherein R_7 independently represents a phenyl group, a benzyl group, or a tolyl group, each of which groups may be substituted with a halogen atom; and R_3 and R_4 independently represent an aryl group or an aralkyl group, each of which groups may be substituted with an alkyl group, an aralkyl group, a halogen atom, a hydroxy group, an alkoxy group, an aryloxy group, an alkylcarbonyloxy group, an arylcarbonyloxy group, an alkoxycarbonyl group, or an aryloxycarbonyl group.

4,523,206

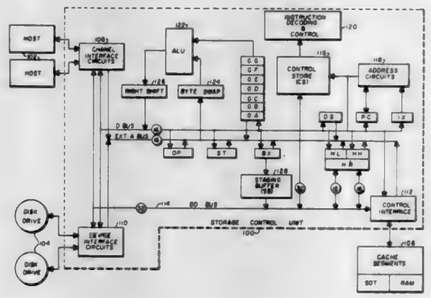
CACHE/DISK SYSTEM WITH WRITEBACK REGULATION RELATIVE TO USE OF CACHE MEMORY

Lawrence D. Sssscer, Santa Clara, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 3, 1982, Ser. No. 354,327

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **11 Claims**



1. In a cache/disk system having a host processor for issuing read and write commands, a plurality of disk drive devices, a cache memory for storing segments of data most likely to be used in executing commands from said host processor, storage means for storing in a queue commands issued by said host processor but not yet executed, each of said commands including a priority value for determining the relative priorities of execution of said queued commands and a storage control unit for controlling the transfer of segments of data between said cache memory and said disk drive devices, said storage control unit having means for generating a command for controlling the transfer of a written-to segment from said cache memory of one of said disk drive devices, the improvement comprising:

first means for generating a written-to priority value in accordance with the percentage of the total number of segments in said cache memory that have been written to; and,

second means responsive to said first means for inserting said written-to priority value into the command generated for transferring a given written-to segment to one of said disk drive devices.

4,523,207

MULTIPLE COPY THERMAL RECORD SHEET

(IV) **Maurice W. Lewis, Dayton, and Stephen D. Lukes, West Carrollton, both of Ohio, assignors to NCR Corporation, Dayton, Ohio**

Filed Mar. 30, 1983, Ser. No. 480,518

Int. Cl.³ B41M *5/18*

(V) **U.S. Cl. 346—214** **10 Claims**



1. A thermal-sensitive sheet copy system for use with at least one thermal printing element for initiating an image and forming a copy thereof, said copy system comprising a

first sheet having a coating on the back thereof, and a

second sheet rearward of and in contact with the coating on the first sheet, said coating including crystal violet lactone thermochromic dye of about 5–7% by weight, a wax of about 26–30% by weight and 4,4' isopropylidenediphenol phenolic resin of about 26–30% by weight mixed in a binding of about 10% polyterpene resin material wherein the image initiated by the thermal printing element is the coating on the first sheet becomes tacky when heated at low energy levels and causes transfer and adherence of a portion of the coating of the initiated image to the second sheet thereby producing a multiple-copy image during a printing operation.

4,523,208

HEAT-SENSITIVE RECORDING MATERIAL

Helmut Barzynski, Bad Durkheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 22, 1983, Ser. No. 554,326

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 3243945

Int. Cl.³ B41M *5/18*

U.S. Cl. 346—214 **9 Claims**

1. A heat-sensitive recording material which comprises a heat-sensitive layer which is applied onto a base and contains a color-producing substance, which is usually colorless or only slightly colored, and an activator which, under the action of heat, causes the color-producing substance to produce a coloration, wherein the activator is a sulfonic acid ester.

4,523,209

APPARATUS FOR THE MANUFACTURE OF PROFILE SEGMENTS

Jan H. Popken, Assen, Netherlands, assignor to Popken Metaal B.V., Assen, Netherlands

Filed Dec. 3, 1982, Ser. No. 446,828

Claims priority, application Netherlands, Dec. 10, 1981, 8105561

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—469 **5 Claims**

1. An apparatus for the continuous manufacture, from metal or plastic strip material, of profile segments, cut to size and possibly perforated, and having a one-sided or two-side profile, comprising a strip supply, a strip guiding path with at least one profile rolling unit, a driving motor for driving transport rolls of the strip guiding path and the rolling unit, and a periodically activatable cutting means, the apparatus comprising:

at least one first profile rolling unit for profiling the one lateral side of the strip supplied, and at least one second

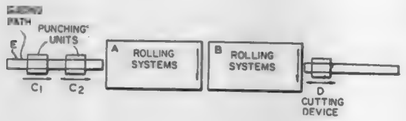
profile rolling unit for profiling the other lateral side of the strip profiled unilaterally by the first profile rolling unit, said first and second profile rolling units being adjustable transversely to the strip passage direction,

at least one periodically activatable perforating unit for making a desired perforation pattern in the strip, said perforation unit being mounted on a carriage, which can be mounted in a detachable way before, between or behind the rolling units, and

a periodically activatable cutting means, also mounted on a detachable carriage,

as well as an electronic control system comprising:

a pulse generator, of which the pulse frequency is tuned to the passage rate of the strip, a pulse counter, a plurality of selectable counting storages, one for each perforating unit and one for the cutting means, each counting storage having fixed counting contents, which correspond with the time for initiating operation of the respective perforating unit or cutting means concerned,



a process unit, which compares the count of the pulse counter with the counting contents of the selected counting storages and, if equal values are found, issues a trigger signal for the activation of the perforating unit or cutting means concerned, and resets the counter at the end of a counting cycle,

programming means for setting the counting storages and for the transverse adjustment of the first and second profile rolling units, and for setting the production number,

means comprising supervision logic for supervising the material, the material supply, the machine functions, the settings and the production counting,

a control panel and a means for adjusting the timing of said initial operation of said cutting means and perforating unit associated with each of said cutting means and perforating units, said means individually adjusting said timing to account for the inertia of said cutting means and perforating unit, respectively, so that the size of said segments and the spacing between any perforations therein are independent of the inertia of said cutting means and perforating unit.

4,523,210
FAST ERROR CHECKED MULTIBIT MULTIPLIER
Glen R. Kregness, Minnetonka, Minn., assignor to Sperry Corporation, New York, N.Y.
Filed Jun. 11, 1982, Ser. No. 387,644
Int. Cl.³ G06F *7/52*
U.S. Cl. 364—760 **3 Claims**

1. A fast, error checked multibit multiplier to provide increased performance for the multiply operations of a large scale data processor by processing a plurality of bits per machine cycle comprising:

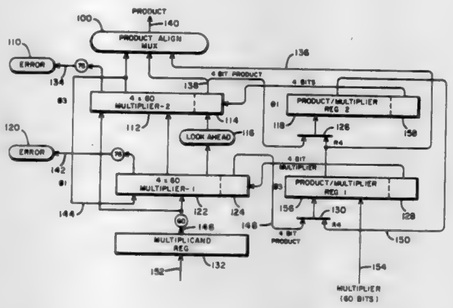
(a) a multiplicand register connected to receive the multiplicand;

(b) a first and a second multiplier array each connected to said multiplicand register to receive therefrom the contents of said multiplicand register; said first and second multiplier arrays being further iteratively interconnected such that the output of the second multiplier array is connected to the input of the first array;

(c) a first and a second multiplier register iteratively interconnected such that the output of said first multiplier register is connected to the input of the second and the output of the second is connected to the input of the first;

(d) said first and second multiplier arrays and said first and second multiplier registers further interconnected one to another such that a portion of said first multiplier array is connected to the input of the first multiplier register and a portion of said second multiplier array is connected to the input of said second multiplier register,

(e) a multiple phase activating source connected to said first and second multiplier arrays and to said first and second multiplier registers such that said first multiplier array and said second multiplier register are simultaneously actuated during one phase and said second multiplier array and said first multiplier register are simultaneously actuated during another;

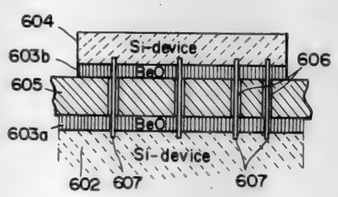


(f) a first multiplier control means connected between said first multiplier array and said first multiplier register such that a portion of the output of the first multiplier register is used to control said first multiplier array;

(g) a second multiplier control means connected between said second multiplier array and said second multiplier register such that a portion of the output of said second multiplier register is used to control said second multiplier array; and

(h) a multiplexing and aligning means connected to sequentially receive portions of product output signals from said second multiplier array and portions of product output signals from said first multiplier register and to properly align said portions into a complete product.

4,523,211
SEMICONDUCTOR DEVICE
Kiyoshi Morimoto, Mobara, and Toshinori Takagi, Nagaoka-kyo, both of Japan, assignors to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan
Filed Mar. 8, 1983, Ser. No. 473,243
Claims priority, application Japan, Mar. 16, 1982, 57-40309
Int. Cl.³ H01L *27/12*
U.S. Cl. 357—4 **17 Claims**



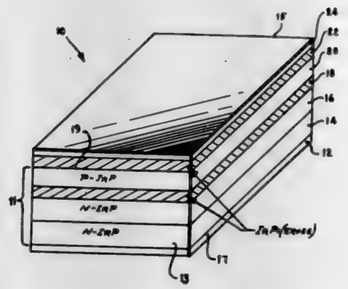
1. A semiconductor device comprising:

a lower semiconductor layer;

an electrical insulating layer made of a crystalline beryllium oxide thin film, said electrical insulating layer being deposited on said lower semiconductor layer; and

an upper semiconductor layer, said upper semiconductor layer being grown on said electrical insulating layer to be regulated by the crystalline structure of beryllium oxide thin film.

4,523,212
SIMULTANEOUS DOPED LAYERS FOR SEMICONDUCTOR DEVICES
Frank Z. Hawrylo, Trenton, N.J., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 12, 1982, Ser. No. 357,441
Int. Cl.³ H01L *33/00, 27/14, 29/167, 23/48*
U.S. Cl. 357—17 **2 Claims**



1. A semiconductor device comprising:

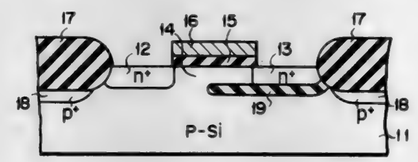
a solid having a plurality of semiconductor layers and a substrate, said semiconductor layers being formed upon said substrate, said layers being composed of indium phosphide;

at least one ohmic capping layer formed on an outer surface of said solid, said capping layer comprised of indium phosphide, and both a group II element, and a group VI element, said capping layer being formed of material comprising indium phosphide, zinc, and selenium having been formed from a growth solution in amounts of about 99.6199% indium, 0.1762% phosphorous, 0.1801% selenium and 0.0238% zinc by weight;

a first electrical contact on said capping layer for connecting said semiconductor device into a circuit; and

a second electrical contact formed on said substrate for connecting said device into a circuit.

4,523,213
MOS SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME
Masami Konaka, Kawasaki; Hiroshi Iwai, Tokyo, and Yoshio Nishi, Yokohama, all of Japan, assignors to VLSI Technology Research Association, Tokyo, Japan
Continuation of Ser. No. 144,837, Apr. 29, 1980, abandoned.
This application Jul. 9, 1982, Ser. No. 396,843
Claims priority, application Japan, May 8, 1979, 54-55870
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23.7 **8 Claims**



1. An MOS semiconductor device, which comprises:

a semiconductor substrate of a first conductivity type;

a source region of a second conductivity type, said source region being formed in said semiconductor substrate;

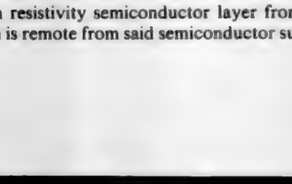
a drain region of a second conductivity type, said drain region being formed in said semiconductor substrate;

a short channel region disposed between said source and drain regions;

a gate electrode deposited on the channel region through a gate insulation layer; and

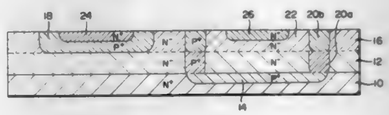
a buried solid insulating region formed in said substrate over at least a part of a bottom plane of the channel region wherein said channel region is integrally coupled with said semiconductor substrate.

4,523,214
SOLID STATE IMAGE PICKUP DEVICE UTILIZING MICROCRYSTALLINE AND AMORPHOUS SILICON
Masataka Hirose, Hiroshima; Kazuhiro Kawajiri, Asaka, and Yosuke Nakajima, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Jul. 2, 1982, Ser. No. 394,499
Claims priority, application Japan, Jul. 3, 1981, 56-104885; Jul. 3, 1981, 56-104886; Jul. 3, 1981, 56-104887
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **8 Claims**



1. A solid state image pickup essentially consisting of a semiconductor substrate provided with light detecting sections and a scanning means for sequentially selecting the signals detected by said light detecting sections, each light detecting section contains a first silicon layer in which microcrystalline silicon and amorphous silicon are uniformly distributed and the crystal structure of said first silicon layer varies substantially continuously throughout.

4,523,215
SEMICONDUCTOR DEVICE
Shiro Iwatani, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 21, 1981, Ser. No. 227,784
Claims priority, application Japan, Jan. 21, 1980, 55-6558
Int. Cl.³ H01L *27/02, 27/04, 29/72*
U.S. Cl. 357—40 **1 Claim**



1. A semiconductor device comprising: a low resistivity semiconductor substrate of a first type of conductivity; a first high resistivity semiconductor layer of said first type of conductivity which is disposed on an entire surface of said semiconductor substrate; a buried low resistivity anode layer of a second type of conductivity which is disposed on a predetermined portion of a boundary between said semiconductor substrate and said first high resistivity semiconductor layer; a first anode wall in the form of an annulus extending through said first high resistivity semiconductor layer from a surface thereof which is remote from said semiconductor substrate and

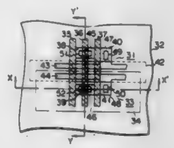
reaching a peripheral portion of said buried anode layer, said first anode wall being of said second type of conductivity and having a low resistivity; a second high resistivity semiconductor layer of said first type of conductivity which is disposed on an entire surface of said first high resistivity semiconductor layer including said first anode wall; a second anode wall in the form of an annulus extending through said second high resistivity semiconductor layer from a surface thereof which is remote from said first high resistivity semiconductor layer and reaching said first anode wall, said second anode wall being of said second type of conductivity and having a low resistivity; a low resistivity base layer of said second type of conductivity which is selectively disposed on an exposed surface of said second high resistivity semiconductor layer and reaching said first high resistivity semiconductor layer at a position which is located outside of said annulus of said second anode wall on said second high resistivity semiconductor layer so as to be spaced therefrom; a low resistivity cathode layer of said first type of conductivity which is selectively disposed on an exposed surface of a portion of said second high resistivity semiconductor layer which is encircled by said second anode wall; and a low resistivity emitter layer of said first type of conductivity which is selectively disposed on a surface of said base layer; wherein a power transistor is formed with said emitter layer as an emitter, said base layer used as a base and both a portion of said first high resistivity semiconductor layer located directly under said base layer and said semiconductor substrate used as a collector and wherein a power semiconductor diode is formed with said buried anode layer and said first and second anode walls used as an anode and said low resistivity cathode layer and portions of said first and second high resistivity semiconductor layers which are respectively encircled by said first and second anode walls used as a cathode and wherein said second high resistivity layer of said first type of conductivity is thicker than said first high resistivity semiconductor layer of said first type of conductivity.

4,523,216

CMOS DEVICE WITH HIGH DENSITY WIRING LAYOUT

Yoshihisa Shiotari, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 2, 1982, Ser. No. 354,034
Claims priority, application Japan, Apr. 24, 1981, 56-62229
Int. Cl.³ H01L *23/48, 29/04, 27/02*
U.S. Cl. 357—42 **2 Claims**





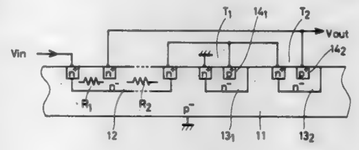
1. A CMOS device comprising:
a semiconductor substrate of a first conductivity type;
a first transistor having a source region and a drain region of a second conductivity type formed in said semiconductor substrate spaced apart from one another, and having an insulation gate layer formed over said substrate between said source and drain regions;
a well region of said second conductivity type provided in said semiconductor substrate;
a second transistor having a source region and a drain region of said first conductivity type formed in said well region spaced apart from one another and having an insulation gate layer formed over said well region between said source and drain regions and extending to said insulation gate layer of said first transistor to thereby form a first insulation layer, said source and drain regions of said first and second transistors being separated from one another by a portion of said substrate and by a portion of said well region which forms an isolation region between said transistors;
a first wiring layer positioned on said first insulating layer to cross said isolation region and to form gate electrodes of said first and second transistors;
a second wiring layer crossing said isolation region and electrically connected the drain regions of said first and second transistors;
a second insulating layer formed on said semiconductor substrate and on said well region for preventing said second wiring layer from directly contacting either said semiconductor substrate or said well region;
a first electrical contact electrically connecting the drain region of said first transistor with said second wiring layer;
a second electrical contact electrically connecting the drain region of said second transistor with said second wiring layer and having a structure the same as the structure of said first electrical contact;
a third insulating layer disposed over at least those portions of said first and second wiring layers which are located over said isolation region; and
a power source wiring layer disposed over said isolation region so as to cross said first and second wiring layers at right angles.

4,523,217

SOLAR POWERED CIRCUIT HAVING CMOS AND BIPOLAR TRANSISTORS

Mitsuo Jibu, Ueno, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 17, 1983, Ser. No. 495,253
Claims priority, application Japan, May 31, 1982, 57-93425
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—43 **2 Claims**



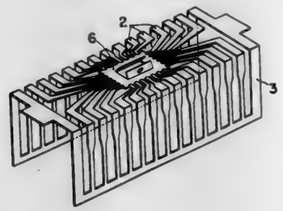
1. A circuit powered by a solar cell for use in an electronic appliance comprising:
appliance control circuit means including a first conductivity type semiconductor substrate having p and n channel complementary MOS transistors; and constant voltage control circuit means for supplying a constant reference voltage to said appliance circuit including N ($N \geqq 2$) bipolar transistors provided in the same said semiconductor substrate, said semiconductor substrate serving as a collector region, each transistor including a second conductivity type base region formed in said collector region and a first conductivity type emitter region formed in said base region, the base region of said first bipolar transistor being connected to a reference potential provided by said solar cell, the base regions of i-th ($i \leqq N$) bipolar transistors being connected to the emitter regions of $(i-1)$-th bipolar transistors.

4,523,218

LEAD FRAME FOR INTEGRATED CIRCUITS AND METHOD OF FABRICATING THE SAME

Yoshihisa Kato, Kokubunji, Japan, assignor to Sumitomo Metal Mining Company, Ltd., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 425,102
Claims priority, application Japan, Sep. 29, 1981, 56-154653
Int. Cl.³ H01L *23/48, 23/04*
U.S. Cl. 357—70 **11 Claims**



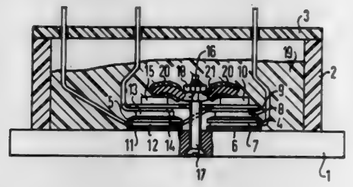
1. A lead frame for use in an integrated circuits package, comprising:
a multiplicity of spaced leads extending outwardly from a central opening and having inner and outer ends;
a support frame integrally supporting said outer ends of said leads; and
a metal piece disposed in said central opening and having in peripheral edges thereof alternate recesses and projections, said recesses fitting over and receiving said inner ends and said projections fitting in gaps between said inner ends, said metal piece also having slots spaced inwardly from said recesses and projections and cut-outs defined between said slots, said slots and said cut-outs jointly dividing said metal piece into a plurality of comb-shaped members interconnected by a plurality of bendable portions defined therebetween by said slots and said cut-outs, said comb-shaped members being independently bendable.

4,523,219

SEMICONDUCTOR COMPONENT WITH PRESSURE CONTACT

Peter Heidegger, and Jakob Kiefer, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 526,556
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1982, 3232168
Int. Cl.³ H01L *23/42, 23/44, 23/46*
U.S. Cl. 357—79 **4 Claims**



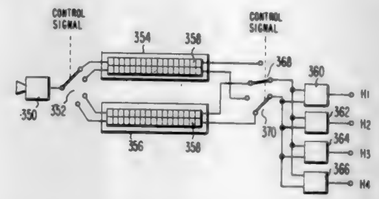
1. Semiconductor component, comprising a case having a metal bottom, at least one semiconductor body disposed in said case and having first and second principal surfaces, said first principal surface being in at least thermal contact with said metal bottom, at least one lead electrode in contact with said second principal surface, a spring anchored in said metal bottom and pressing said metal bottom, semiconductor body and lead electrode together into contact with each other, casting compound at least partially filling said case and contacting given surfaces of said spring seating said spring in said casting compound, and a permanently elastic synthetic resin mass at least partially coating said given surfaces of said spring being in contact with said casting compound.

4,523,220

COMPATIBLE HIGH-DEFINITION TELEVISION SYSTEM UTILIZING HADAMARD BASIS FUNCTIONS

Edward H. Adelsen, Plainsboro, and Charles B. Oakley, Princeton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jan. 19, 1983, Ser. No. 459,334
Int. Cl.³ H04N *5/38, 5/46*
U.S. Cl. 358—12 **19 Claims**



1. A high-definition television system for generating a high-definition television signal compatible with a standard-definition television receiver arranged to normally process a lower-definition television signal conforming to a given broadcast standard having a limited-bandwidth, said system comprising:
scanning means for scanning an image to provide a high definition image signal, the effective line scan rate of said image signal being greater than the line rate of said given broadcast standard;
quantizing means for time quantizing samples of said image signal to provide a sampled signal having a given sample rate;
Hadamard means responsive to said sampled signal for transforming at least three of said time quantized samples formed in a polygonal fashion into a plurality of coefficients representative of the coefficients of Hadamard basis functions, one of said plurality of coefficients being the sum of said samples formed in said polygonal fashion; and
wherein
said effective line rate of said scanning means and said given sample rate of said quantizing means are each selected with respect to said given broadcast standard such that said one of said plurality of coefficients of said Hadamard basis function corresponds to a picture element in said given broadcast standard; and
means for limiting the bandwidth of said one of said plurality of coefficients provided by said Hadamard means to said bandwidth of said given broadcast standard to thereby provide said high-definition television signal having an effective line rate and bandwidth compatible with said standard-definition television receiver.

4,523,221

TV RECEIVER CIRCUITRY FOR PERFORMING CHROMA GAIN, AUTO-FLESH CONTROL AND THE MATRIXING OF I AND Q SIGNALS TO (R-Y), (B-Y) AND (G-Y) SIGNALS

Danny Chin, Plainsboro; Eric P. Batterman, North Brunswick, and Thomas V. Bolger, Merchantville, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 7, 1983, Ser. No. 501,908
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—21 R **14 Claims**

1. In a TV signal processing system including a source of a first pair of quadrature related color mixture signals associated

with a first set of coordinate axes, means for generating a second set of color mixture signals associated with a second set of coordinate axes, comprising:

means responsive to said first pair of color mixture signals for determining the vector sum, C, thereof;

means responsive to said first pair of color mixture signals for determining the angle, θ, between said vector sum and one axis of said first pair of axes;

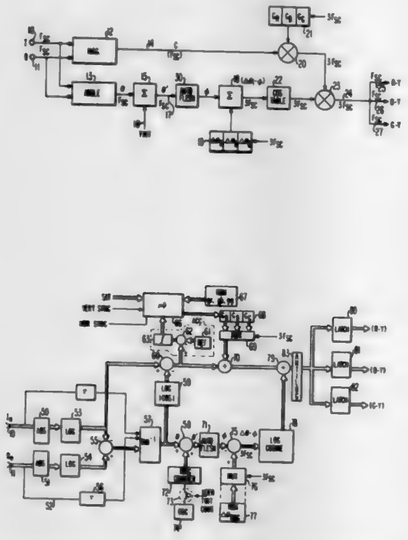
a source of angle values $\Delta\theta_i$, i being an index, said angle values being respectively equal to the angular separation between said one of said first pair of axis and each of said second set of coordinate axes;

means responsive to said angular values for forming signal values equal to algebraic sums of said angle value $\Delta\theta_i$ and angles θ for each value of θ and $\Delta\theta_i$;

means for producing signal values corresponding to trigonometric ratios (TR_i) associated with said algebraic sums of said angles; and

means responsive to said trigonometric ratio values TR_i and the magnitude, C, for producing products of C times TR_i.

12. In a color TV signal processing system including a



source of quadrature related color mixture signals I and Q associated with coordinate axes $\overline{I}$ and $\overline{Q}$, a method for generating (R-Y), (B-Y) and (G-Y) color mixture signals associated with coordinate axes (R-Y) (B-Y) and (G-Y) respectively displaced from a reference axis by angles $\Delta\theta_R$, $\Delta\theta_B$, and $\Delta\theta_G$, said method comprising:

determining the magnitude, C, of the vector sum of the I and Q signals;

determining the angle θ between said vector sum and said reference axis;

generating respective algebraic sums of the angles θ and said angle values $\Delta\theta_R$, $\Delta\theta_B$ and $\Delta\theta_G$;

generating respective trigonometric ratios (for example cosines) associated with said algebraic sums, for projecting said vector sums onto said (R-Y), (B-Y) and (G-Y) axes;

multiplying the magnitude, C, by respective projection coefficients g_R, g_B and g_G; and

multiplying said respective trigonometric ratios associated with the angle indicies R, B, and G by the respective products of said coefficients times magnitude C associated with coefficient indicies R, B and G.

4,523,222

SET OF THREE INTEGRATED CIRCUITS FOR DIGITAL VIDEO SIGNAL PROCESSING IN COLOR-TELEVISION RECEIVERS

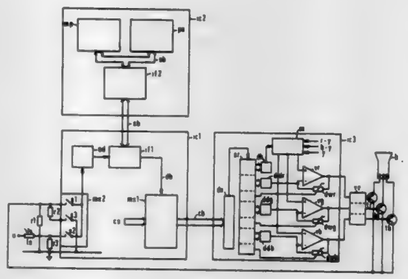
Laurin C. Freyberger, Bahlingen; Daniel Mlynek, Wolfgantzen, and Friedrich Schmidtpott, Gundelfingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 10, 1983, Ser. No. 465,697

Claims priority, application European Pat. Off., Feb. 27, 1982, 82101519.5

Int. Cl.³ H04N 9/535

U.S. Cl. 358—27 **8 Claims**



1. Set of three integrated circuits(ic1, ic2, ic3) for digital video-signal processing in color-television receivers,

wherein the first integrated circuit (ic1) contains an analog-to-digital converter (ad) followed by a first bus interface circuit (if1) for a serial data bus (sb), and a first multiplexer (mx1) following the first bus interface circuit (if1), the analog-to-digital converter (ad) being fed with measured data corresponding to the cathode currents of the picture tube (b) flowing at "black" (="dark current") and "white" (="white level") in each of the three electron guns, and with the signal of an ambient-light detector (ls) via a second multiplexer (mx) in the vertical blanking interval, and the first multiplexer (mx1) being fed with the processed digital chrominance signals (cs),

wherein the second integrated circuit (ic2) contains a microprocessor (mp), an electrically reprogrammable memory (ps), and a second serial-data-bus interface circuit (if2) corresponding to the first bus interface circuit (if1), the memory (ps) holding alignment data and nominal dark-current/white-level data of the picture tube used (b) which were entered by the manufacturer of the color-television receiver and, together with the measured data, are used by the microprocessor (mp) to generate video-signal-independent operating data for the picture tube (b), and

wherein the third integrated circuit (ic3) contains a demultiplexer (dx), an analog RGB matrix (m), and three analog amplifiers (vr, vg, vb) each designed to drive one of the electron guns via an external video output stage (ve), the dark current of the picture tube (b) being adjusted via the operating point of the respective analog amplifier, and the white level of the picture tube (b) being adjusted by adjusting the gain of the respective amplifier after digital-to-analog conversion, and with the demultiplexer (dx) connected to the first multiplexer (mx1)of the first integrated circuit (ic1) via a chroma bus (cb),

Characterized by the Following Features:

The first multiplexer (mx1) consists of three electronic switches (s1, s2, s3),

the first of which (s1) has its input grounded through a first resistor (r1) and connected to the collectors of external transistors (tr, tg, tb) which are each associated with one of the electron guns and the base of each of which is driven by the associated video output stage, while the emitter is connected to the associated electron gun system,

and the output of the first switch (s1) is connected to the input of the analog-to-digital converter (ad);

the second of which (s2) has its input connected to the light detector (ls), while its output is coupled with the input of the analog-to-digital converter (ad), and

the third of which (s3) has its input connected to the input of the first electronic switch (s1) via a second resistor (r2), and its output is grounded, the value of the second resistor (r2) being about one order of magnitude smaller than that of the first resistor (r1);

the three electronic switches (s1, s2, s3) have the following positions:

	s1	s2	s3
during vertical sweep	closed	open	closed
during vertical retrace: for leakage/light-det. current meas.	closed/open	open/closed	open/closed
for white level measurement	closed	open	closed
for dark current measurement	closed	open	open

the measurements of the dark current together with the white level of each electron gun and the measurements of the light-detector current together with the cathode leakage currents are performed in four successive vertical blanking intervals;

to this end, the cathodes are connected at one end to a voltage for blacker than black (us), and at the other end to a voltage for black (ud) and then to a voltage for white (uw) in accordance with the following table:

	Measurement		Cathode		
Vertical blanking interval No.	in the first half of the vertical blanking interval	at about the end of the vertical blanking interval	red	green	blue
1	Leakage currents of the cathodes	Light-detector current	us	us	us
2	Dark current red	White level red	ud/uw	us	us
3	Dark current green	White level green	us	ud/uw	us
4	Dark current blue	White level blue	us	us	ud/uw

the measured data are transferred from the analog-to-digital converter (ad) to the microprocessor (mp) of the second integrated circuit (ic2) via the two interface circuits (if1, if2) and the data bus (sb) at an appropriate instant, and

the video-signal-independent operating data for the picture tube (b), which are generated by the microprocessor (mp), are transferred from the second integrated circuit (ic2) via the two interface circuits (if1, if2) and a line (db) to the first multiplexer (mx1) of the first integrated circuit (ic1) at an appropriate instant, and from there over a wire of the chroma bus (cb) into a shift register (sr) of the third integrated circuit (ic3) shortly after the beginning of the next vertical blanking interval, the parallel outputs of which shift register (sr) are combined in groups each assigned to one type of operating value, and each of the groups is connected to one digital-to-analog converter (dh, ddr, ddg, ddd, dwr, dwg, dwb) which drives the RGB matrix (m) or the respective analog amplifier (vr, vg, vb).

4,523,223

METHOD AND APPARATUS FOR CONTROLLING THE DIGITAL CHROMINANCE SIGNALS OF A COLOR TELEVISION RECEIVER

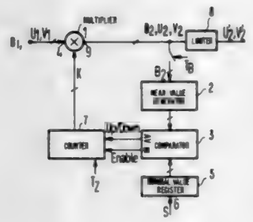
Rainer Lüder, Oberhaching, and Wolfgang Haussmann, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 383,265

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1981, 3123038

Int. Cl.³ H04N 9/535

U.S. Cl. 358—27 **8 Claims**



1. Method for forming and controlling the digital chrominance signals of a color television receiver depending upon the amplitude of the color burst signal, which comprises multiplying the digital chrominance signal and the color burst signal by a coefficient in a multiplier, forming a mean value of the color burst amplitude of the burst signal from an output signal of the multiplier, comparing the mean value of the burst amplitude with a nominal value corresponding to a desired color contrast setting thereby producing said coefficient.

4,523,224

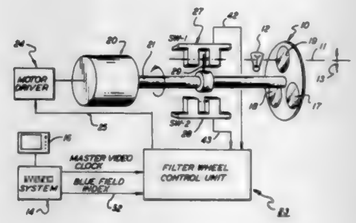
COLOR FILTER WHEEL SYNCHRONIZER

Andrew Longacre, Jr., Skaneateles, N.Y., assignor to Welch Allyn Inc., Skaneateles Falls, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,471

Int. Cl.³ H04N 9/04

U.S. Cl. 358—42 **8 Claims**



1. A method synchronizing the rotational speed of a color filter wheel to the field rate of a video system that includes the steps of

driving a color filter wheel with a stepping motor to sequentially advance different color filters past a fixed optical axis,

deriving the input of the stepping motor from the output of the master clock of the video system,

adjusting the rate of the stepping motor input signal by an amount equal to the number of cycles of the master clock output signal contained in each video field divided by the number of steps required to bring each color filter past the fixed optical axis,

phase locking the input signal applied to the motor to the output signal of the master clock by advancing the speed

of the motor in steps up to a desired synchronous speed which is related to the video field rate, and

monitoring the rotational speed of the wheel and automatically reinitiating the stepping of the motor in the event the wheel speed falls below a predetermined rate.

4,523,225

IMAGE DISPLAY APPARATUS

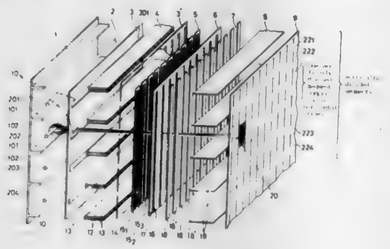
Mitsuya Masuda, Takatsuki; Sadahiro Iyehara, Suita; Shizuo Inohara, Toyonaka; Minoru Ueda, Takatsuki; Keisuke Yamamoto, Ibaraki, and Yoshio Yasumoto, Higashiosaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 13, 1983, Ser. No. 494,311

Claims priority, application Japan, May 13, 1982, 57-80902; May 17, 1982, 57-83446

Int. Cl.³ H04N *5/66*

U.S. Cl. 358—56 **4 Claims**



1. A display apparatus comprising:

a phosphor screen comprising a first predetermined number of horizontally divided sections,

a second predetermined number of electron beam sources for in-turn emitting said second predetermined number of horizontal rows of electron beams, each row having said first predetermined number of electron beams, producing one horizontal line on said screen,

horizontal deflection means for selective impingements of said electron beams on regions of in-turn selected corresponding positions of said horizontally divided sections at one time,

vertical deflection means for vertically deflecting said electron beams in such a manner that electron beams of a horizontal row impinges said phosphor screen in one vertically divided segment which is corresponding to said one horizontal row, thereby vertically moving said one horizontal line in said vertically divided segment,

electron beam control means for simultaneous controlling of intensities of respective electron beams responding to image signal to produce a line-at-a-time displaying of video picture,

a flat shaped vacuum enclosure containing said above-mentioned components therein, one end face thereof forming a screen face in which said phosphor screen is provided, wherein

said horizontal deflection means and said vertical deflection means comprises:

digital memory means which stores data of digital deflection signals for deflections of said electron beam,

D/A converters for converting said data of digital deflection signals into analog signals, and

address counters for controlling said digital memory means,

said digital memory means comprising first memory means which stores data of said digital deflection signals for odd number field and second memory means which stores data of said digital deflection signals for even number field,

said address counters, issuing different address signals for odd number field and even number field, thereby to make accessing in said first memory means and said second memory means for said odd number field and said even number field, respectively.

4,523,226

STEREOSCOPIC TELEVISION SYSTEM

Lenny Lipton, Pt. Richmond; Michael R. Starks, Fairfax; James D. Stewart, Oakland, and Lawrence D. Meyer, Ross, all of Calif., assignors to Stereographics Corporation, San Rafael, Calif.

Continuation-in-part of Ser. No. 343,124, Jan. 27, 1982, abandoned. This application Jan. 19, 1983, Ser. No. 459,174

Int. Cl.³ H04N *9/54*

U.S. Cl. 358—88 **42 Claims**



1. A television system having means for providing standard video fields of standard duration but with each field comprising a first subfield in its upper half with the image therein vertically compressed and a second subfield in its lower half with the image therein vertically compressed, said first and second subfields being separated by a blanking area including a vertical sync pulse.

4,523,227

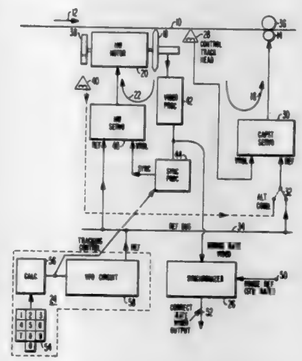
SYSTEM FOR SYNCHRONIZING A VIDEO SIGNAL HAVING A FIRST FRAME RATE TO A SECOND FRAME RATE

Robert N. Hurst, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 201,436, Oct. 28, 1980, Pat. No. 4,393,415. This application Dec. 6, 1982, Ser. No. 447,140

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—105 **6 Claims**



1. Apparatus for synchronizing video signals from a video signal source, said video signals being organized into recurrent frames having a first frame rate, to frame synchronizing signals having a second frame rate produced by a source of frame synchronizing signals, said apparatus comprising:

storage means coupled to said video signal source for receiving said video signals for continuously writing said video signals into said storage means at said first frame rate and for storing a predetermined number of said frames of said video signal to form stored video signals;

reading means coupled to said storage means and to said source of frame synchronizing signals for reading said video signals from said storage means at said second frame rate, whereby said writing and reading are of frames progressively more separated in time due to the disparity of said first and second frame rates when said first frame rate exceeds said second frame rate, and said writing and reading are of frames progressively less separated in time due to the disparity of said first and second frame rates when said second frame rate exceeds said first frame rate;

auxiliary reading means coupled to said storage means for reading that portion of said stored video signals representing said video signals written a first integer number of frames prior to that portion of said video signals currently being written;

comparing means coupled to said video signal source, to said auxiliary reading means and to said source of frame synchronizing signals for comparing said video signals currently being written into said storage means with video signals derived from said auxiliary reading means for generating a control signal indicative of substantial similarity between the frame of said video signal currently being written and the frame of said stored video signals currently being read by said auxiliary reading means; and

switching means coupled to said reading means and to said comparing means for instantaneously changing said reading of said video signals from said storage means by said integer number of frames when said control signal indicates that said substantial similarlity exists between the frame of said video signals currently being written and the frame of said stored video signals currently being read by said auxiliary reading means, said changing of said reading of said video signals being in a sense to counteract the progressive change due to said disparity of said first and second frame rates.

4,523,228

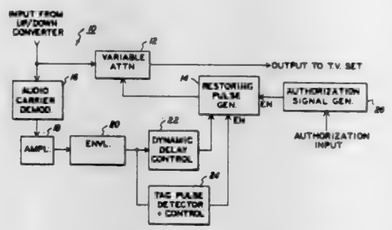
SYNC SUPPRESSION SCRAMBLING OF TELEVISION SIGNALS FOR SUBSCRIPTION TV

Robert O. Banker, Cumming, Ga., assignor to Scientific Atlanta Inc., Atlanta, Ga.

Filed Feb. 15, 1983, Ser. No. 466,698

Int. Cl.³ H04N *7/16;* **H04K** *1/04*

U.S. Cl. 358—120 **12 Claims**



1. In a sync suppression scrambling system in which TV signals are transmitted with sync pulses thereof suppressed, together with timing pulses having a dynamically variable time delay relationship with said sync pulses and together with delay control pulses which represent said time relationship, descrambling apparatus which comprises means for restoring said suppressed sync pulses of said TV signal with restoring pulses, and means for operating said restoring means to generate said restoring pulses in different time relationships with said timing pulses depending upon the number of said delay control pulses which are detected in a given period of time.

4,523,229

SHADING CORRECTION DEVICE

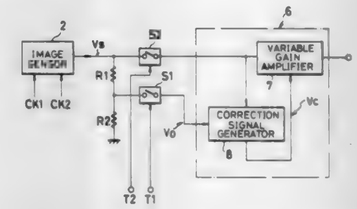
Yoshiaki Kanmoto, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Jun. 15, 1982, Ser. No. 388,679

Claims priority, application Japan, Jun. 15, 1981, 56-91689

Int. Cl.³ H04N *1/38*

U.S. Cl. 358—163 **12 Claims**



1. A device for carrying out the shading correction of an image signal on the basis of a reference data obtained by scanning a reference density reflecting plate comprising:

image sensing means for converting light image information into an electrical image signal, said image sensing means being capable of storing an accumulated charge by scanning along different lines on said reflecting plate thereby forming an expanded image signal when supplied as an output;

control means for controlling the supply of said output from said image sensing means is an ordinary image signal or said expanded image signal;

averaging means for taking an average of said expanded image signal to form said reference data; and

correction means for supplying a correction signal to be used in shading correction in response to said reference data.

4,523,230

SYSTEM FOR CORING AN IMAGE-REPRESENTING SIGNAL

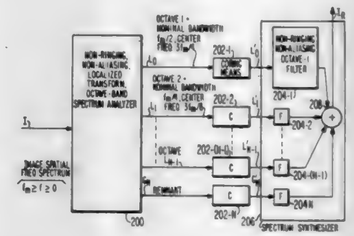
Curtis R. Carlson; Edward H. Adelson, both of Princeton, and Charles H. Anderson, Rocky Hill, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 22, 1984, Ser. No. 663,152

Claims priority, application United Kingdom, Nov. 1, 1983, 8329109

Int. Cl.³ H04N *5/14, 5/21*

U.S. Cl. 358—167 **24 Claims**



1. An image-processing system comprising:

a substantially non-ringing, non-aliasing, localized transform spectrum analyzer responsive to an input image-representing signal defined in at least one dimension of the represented image by a spectrum of spatial frequencies within a range extending downward from a maximum frequency f_m to zero, said analyzer separating said input-signal spectrum in descending spatial frequency order starting from f_m into a group of one or more contiguous bandpass subspectra output signals each of which subspectrum has a nominal bandwidth no greater than one octave within said range, and into a remnant subspectrum output signal con-

tining all those spatial frequencies of said input-signal spectrum which are below those contained in the lowest spatial frequency bandpass subspectrum output-signal;

means for coring at least one of said bandpass subspectra output signals and remnant subspectrum output signal, thereby introducing spurious out-of-band spatial frequency components into each cored subspectrum output signal; and

a spectrum synthesizer coupler to said analyzer through said coring means and responsive to all of said subspectra signals from said analyzer being applied thereto for deriving an output image-representing signal;

wherein said synthesizer is comprised of substantially non-ringing, non-aliasing filter means individually associated with the subspectrum of at least each cored signal that is lower than the highest spatial frequency bandpass subspectrum output signal, for substantially removing at least those spurious frequency components therefrom which are above-band with regard to that subspectrum, and means for summing all said subspectra signals, including both any that has been cored and/or filtered and any that has been neither cored nor filtered, thereby to derive said output image representing signal;

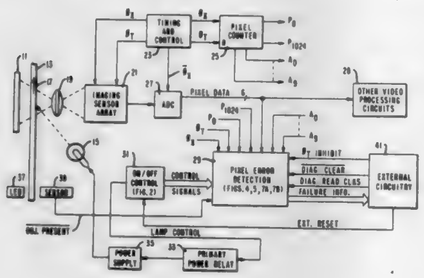
whereby any noise component originally present in the spectrum of said input image-representing signal has been reduced in the spectrum of said output image-representing signal without introducing any signifficant amount of aliasing or other spurious spatial frequency component in the spectrum of said output image-representing signal.

4,523,231

METHOD AND SYSTEM FOR AUTOMATICALLY DETECTING CAMERA PICTURE ELEMENT FAILURE

Roger H. Therrien, Waterloo, Canada, assignor to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada

Filed Jan. 26, 1983, Ser. No. 461,056
Int. Cl.³ H04N *5/30*
U.S. Cl. 358—139 **17 Claims**



1. A system comprising:

a reference background for reflecting radiant energy impinging thereon;

means for illuminating said reference background with radiant energy during a mode of operation;

scanning means having at least one array containing N image viewing elements for providing N reference signal pixels for each scan of said reference background;

first means for producing an error signal during said mode of operation whenever any given reference signal pixel is less than a reference level; and

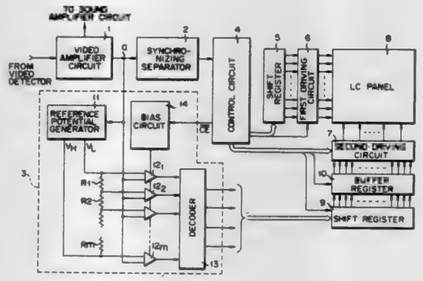
second means responsive to said error signal for indicating that at least one of said elements in said array is defective.

4,523,232

VIDEO SIGNAL ANALOG-TO-DIGITAL CONVERTER FOR AN IMAGE DISPLAY APPARATUS

Osamu Kameda, and Takahiro Fuse, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1983, Ser. No. 474,547
Claims priority, application Japan, Mar. 24, 1982, 57-46776
Int. Cl.³ H04N *5/14, 5/66*
U.S. Cl. 358—236 **5 Claims**



1. A video signal analog-to-digital converter for an image display device, which samples a video signal and converts the sampled video signal into n-bit digital codes used to control the brightness of the image displayed, comprising:

reference potential generating means including means for detecting the average level of a video signal, means for generating an upper and lower reference potential for setting a reference potential width, and means connected to said video signal average level detecting means for generating a variable upper and a variable lower reference potential for setting a potential width, over which said video signal is coded, by varying said upper and lower reference potentials according to variations in the average level of said video signal;

means connected to said reference potential generating means for analog-to-digital converting said video signal in the potential range between the upper and lower reference potentials determined by the average level of said video signal; and

bias circuit means connected to said analog-to-digital converting means for generating and supplying a bias signal to provide it to the said analog-to-digital converting means.

4,523,233

AUTOMATIC BIAS CONTROL SYSTEM WITH COMPENSATED SENSE POINT

James C. Tallant, II, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

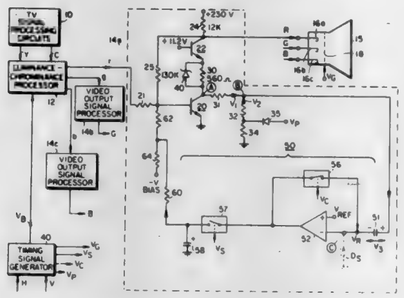
Filed Nov. 12, 1982, Ser. No. 441,217
Int. Cl.³ H04N *5/68, 9/535*
U.S. Cl. 358—242 **32 Claims**

1. In a system including a video signal channel for processing video signals including image and blanking intervals, apparatus comprising:

means coupled to a sensing point in said video channel for deriving a signal representative of an operating characteristic of said video channel during image blanking intervals;

signal processing means responsive to said derived representative signal for providing a control signal to said video channel for maintaining a desired condition of said operating characteristic; and

means, coupled to said sensing point and responsive to video signals during image intervals, for attenuating amplitude excursions manifested by video signals at said sensing point during image intervals when said amplitude excursions exceed a given threshold level.

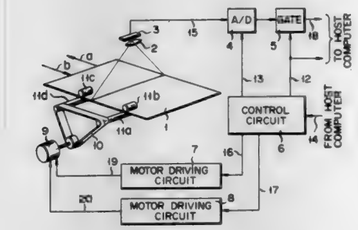


4,523,234

SCANNING CONTROL APPARATUS AND METHOD THEREFOR

Akio Sangu, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 24, 1983, Ser. No. 497,680
Claims priority, application Japan, Jun. 2, 1982, 57-93157
Int. Cl.³ H04M *1/10*
U.S. Cl. 358—293 **8 Claims**



1. A scanning control means, comprising:

a. scanning means for line-scanning an object;

b. feeding means for feeding the object in a direction perpendicular to a direction of the line-scanning;

c. driving means for selectively driving said feeding means in a forward direction or a backward direction; and

d. control means for controlling said driving means and said scanning means such that said driving means drives said feeding means in a backward direction for a predetermined time after the apparatus is started, and then drives said feeding means in a forward direction until the forward velocity becomes constant before said scanning means produces scanned data.

4,523,235

ELECTRONIC MICROCOPIER APPARATUS

Jan Rajchman, 268 Edgerstoune Rd., Princeton, N.J. 08540

Filed Jan. 11, 1982, Ser. No. 338,505
Int. Cl.³ H04N *1/02*
U.S. Cl. 358—256 **35 Claims**

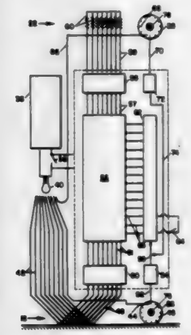
1. A pocket sized copying apparatus that copies by manually sweeping said apparatus across the material to be copied and subsequently manually sweeping said apparatus across the material upon which the copy is to be made, said apparatus comprising:

optical reading means for reading the information to be copied and for producing signals related thereto;

addressable electronic memory means for storing said information read by said optical reading means;

writing means controlled by said information stored by said addressable electronic memory means for reproducing the information to be copied;

position reckoning means for producing signals codifying the position of said reading means when it is swept across



the material to be copied and for codifying the position of said writing means when it is subsequently swept across the material upon which the copy is to be made;

addressing means to address said addressable electronic memory means in accordance with said position codifying signals,

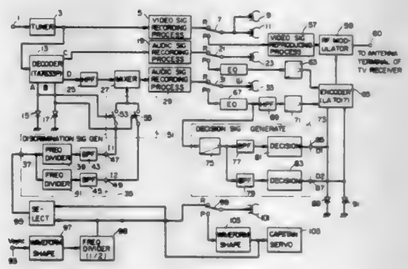
wherein said optical reading means, memory means, writing means, position reckoning means and said addressing means are physically integrated into a hand-holdable unit.

4,523,236

VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS, INCLUDING MEANS FOR DISCRIMINATING THE MODE OF MULTIPLEXING OF AN AUDIO SIGNAL

Nobutaka Hayashi, and Yoshinori Komori, both of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed May 21, 1982, Ser. No. 380,825
Claims priority, application Japan, Jun. 19, 1981, 56-95498; Jul. 6, 1981, 56-100983[U]
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—341 **15 Claims**



1. A video signal recording/reproducing apparatus, comprising:

a recording medium including at least one audio track, at least one video track and at least one control track,

video track recording means for recording a video signal in said video track,

audio track recording means for recording an audio signal corresponding to said signal in said audio track,

said audio signal being recordable in a stereo mode, a bilingual mode or a monaural mode, corresponding to the video signal to be recorded,

control track recording means for recording a control signal in said control track,

mode discrimination signal producing means for generating a mode discrimination signal of a relatively low frequency representing the mode of said audio signal,

discrimination signal providing means coupled to said mode discrimination signal producing means and adapted to receive said audio signal for providing said mode discrimination signal as well as said audio signal to said audio track recording means,

select means for providing a signal to be used for generating said mode discrimination signal to said discrimination signal providing means,

said select means providing to said discrimination signal providing means a signal which is identical to said control signal to be recorded in said control track of said recording medium by said control track recording means on the occasion of recording,

video track reproducing means for reproducing the video signal from said video track,

audio track reproducing means for reproducing said audio signal and said mode discrimination signal from said audio track,

means for reproducing said control signal recorded in said control track,

means for bringing said reproduced control signal to a predetermined phase relation with said reproduced mode discrimination signal,

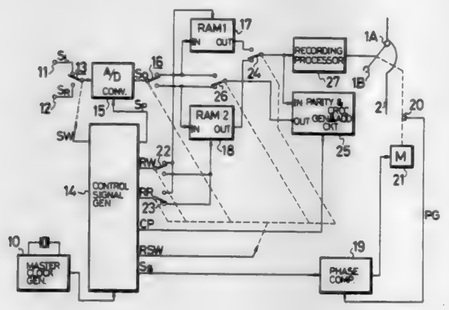
decision signal generating means responsive to the mode discrimination signal included in the reproduced signal from said audio track reproducing means for generating a decision signal representing the mode of said audio signal by comparing said reproduced control signal brought to said predetermined phase relation and said reproduced mode discrimination signal.

4,523,237

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING AN ANALOG SIGNAL

Shinichi Fukuda, Tokyo, and Kentaro Odaka, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1983, Ser. No. 485,065
Claims priority, application Japan, Apr. 15, 1982, 57-62838
Int. Cl.³ G11B *5/60*
U.S. Cl. 360—8 **23 Claims**



1. A method of recording an analog signal on a magnetic medium using at least two recording heads that periodically trace the magnetic medium, the method comprising the steps of:

providing a digital signal corresponding to a predetermined real time signal period of the analog signal;

tracing the magnetic medium with the heads to provide at least one recording period during each said predetermined real time signal period, the duration of said at least one recording period being shorter than said real time signal period to provide at least one free period when all of the heads are free of the medium;

adding to said digital signal during said free period additional digital data for providing a composite digital signal; and

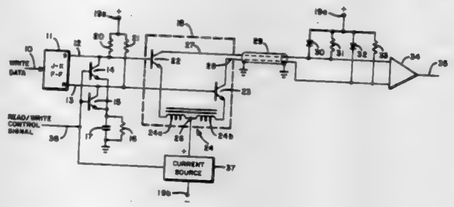
time-base compressing said composite digital signal to a period substantially equal to said recording period for recording the compressed composite digital signal on the magnetic medium during said recording period.

4,523,238

MAGNETIC HEAD PREAMPLIFIER/DRIVER

Beat G. Keel, Prior Lake, and Robert W. Johnson, Bloomington, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Feb. 15, 1983, Ser. No. 466,400
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—46 **4 Claims**



1. A combination driver and preamplifier circuit for use with a magnetic transducer having a winding with a center tap and first and second end taps, said circuit powered by a current source having the first of its two terminals connected to the center tap and supplying read and write levels of current responsive respectively to the read and write states of a read/write control signal, and by a power supply having first and second terminals of polarity respectively matching the polarity of the first and second terminals of the current source, the second of its two terminals being connected to the second of the current source terminals, said circuit modulating the write current flow through the winding responsive to a bipolar write data signal, and preamplifying the read-back signal generated in the winding by a fluctuating magnetic field applied thereto, comprising:

(a) first and second transistors each having their emitters connected to the first and second end taps respectively;

(b) a pair of pull-up resistors, each connected between one transistor base and the first power supply terminal;

(c) a pair of write data lines, each connected at a first end to one transistor base and each receiving one half of the bipolar write data signal at the second end thereof;

(d) a pair of clamp circuits, each connected between one write line and an AC ground point, and receiving the read/write control signal, and responsive to the read and write mode states respectively of the read/write control signal, clamping and unclamping the write data lines to AC ground;

(e) a pair of read data lines, each connected at its first end to one transistor collector, and supplying at their second ends the preamplified read-back signal; and

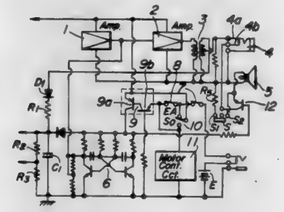
(f) a pair of non-linear collector pull-up impedances each connected between the second end of one read data line and the first power supply terminal.

4,523,239

TAPE RECORDER HAVING AN ALARM AND STOP MECHANISM FOR END-OF-TAPE CONDITIONS

Teruo Iwasawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 295,328, Aug. 24, 1981, abandoned, which is a continuation of Ser. No. 116,753, Jan. 30, 1980, abandoned, which is a continuation of Ser. No. 924,807, Jul. 14, 1978, abandoned. This application Jun. 29, 1983, Ser. No. 509,098
Claims priority, application Japan, Jul. 16, 1977, 52-85349
Int. Cl.³ G11B *15/22*
U.S. Cl. 360—74.1 **5 Claims**



1. In a tape recorder having a final end alarm mechanism for producing an alarm sound when a tape reaches a final end and an automatic stop mechanism for stopping said tape, the improvement comprising a selective switch for selectively switching between a first and second condition, said first condition permitting the operation of the final end alarm mechanism and a second condition preventing the operation of said final end alarm mechanism, both conditions also permitting the normal operation of the automatic stop mechanism, said selective switch including:

a first switch for indicating an end of tape condition;

a second switch coupled to said first switch and including a pair of semiconductor elements for controlling power supplied to the alarm mechanism and automatic stop mechanism; and

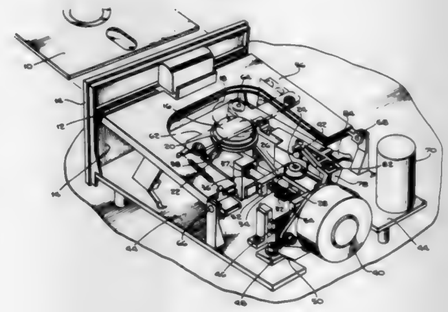
a third switch in connection with said first and second switches for making the selection between said first and second condition; and; including a motor control circuit wherein said first switch is a normally closed switch and having a power source applied at one end, said third switch having an arm, an alarm contact and a motor off contact, said second switch including a first and second transistor, said first transistor stopping current through its emitter at the time of ending of the tape, having its emitter connected to the arm of said third switch, having its collector connected to the final end alarm mechanism and having its base connected to a collector of the second transistor; said second transistor having its emitter connected to one end of said first switch and to said motor off contact and being coupled to a motor control circuit with said recorder so that when said third switch has its arm connected to its alarm contact and when the first switch opens, power supplied to the motor control circuit will stop and power will be supplied through the second switch to the alarm, and when said third switch has its arm connected to its motor off contact and when the first switch opens, power supplied to the motor will stop and the second switch will prevent supply of power to the alarm.

4,523,240

HIGH PRECISION FLOPPY DISC MEMORY SYSTEM

Ericson M. Dunstan, Hidden Hills; William J. Gervais, Northridge, and S. Barry McClelland, Woodland Hills, all of Calif., assignors to Micropolis, Chatsworth, Calif.

Continuation-in-part of Ser. No. 863,309, Dec. 22, 1977,. This application May 25, 1979, Ser. No. 42,721
Int. Cl.³ G11B *5/016*
U.S. Cl. 360—99 **14 Claims**



1. A precision, high capacity floppy disc memory system having low thermal deviation, comprising:

a magnetic storage type floppy disc having a central mounting opening of a predetermined diameter;

means including a central rotatable hub having an outer diameter equal to or slightly greater than said predetermined diameter for accurately mounting said magnetic storage type floppy disc for rotation about said central mounting opening in the disc, the opening in said disc therefore making a "line on line" or an interference fit with said mounting means;

at least one head for magnetically reading and/or writing on said magnetic disc;

means including a lead screw having a precision groove for selectively shifting the position of said head to different tracks on said storage disc;

means for mounting the inner end of said lead screw fixed against longitudinal movement along the axis of said screw relative to said rotatable hub adjacent the center of said magnetic disc;

carriage means for supporting said head in close physical proximity to said lead screw;

tapered means secured to said carriage and resiliently mating with a single turn of the groove in said lead screw substantially in one plane only along the length of said lead screw and making contact with said lead screw at only two points or along only two lines to cause the magnetic head to precisely move to the radial position indicated by the orientation of said lead screw despite wear in said lead screw; said tapered means being in close physical proximity to said head;

stepping motor means for rotating said lead screw to shift said head between tracks, said stepping motor means having more accurately located angular step positions spaced apart by a predetermined number of normal steps of said stepping motor means; and

said apparatus further including means for actuating said stepping motor means in either direction by an angle equal to said predetermined number of steps to move said head between adjacent tracks which are less than 0.015 inch apart.

4,523,241

HEAD SHIFT MECHANISM IN A MAGNETIC TAPE APPARATUS

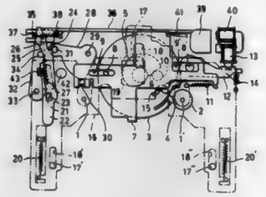
Yukio Ito; Kazuki Takai, and Satoshi Takagi, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 391,069

Claims priority, application Japan, Jun. 24, 1981, 56-96734; Jun. 25, 1981, 56-97571

Int. Cl.³ G11B *5/54*

U.S. Cl. 360—105 **5 Claims**



1. A head shift mechanism in a magnetic tape apparatus which comprises:

a rotatably supported gear and means for effecting rotation thereof;

an engaging member which is movably supported and is intermittently engageable with said gear;

a cam member which is operatively coupled to and moves simultaneously with said engaging member;

a movably supported changeover member having means cooperable with said cam member for effecting movement of said changeover member in response to movement of said cam member;

selectively actuable means for causing said engaging member to operatively engage said gear, said gear effecting movement of said engaging member when engaged therewith;

an operating member which is movably supported and has a magnetic head supported thereon, said operating member and said magnetic head being movable between advanced and retracted positions;

a control member responsive to movement of said changeover member and cooperable with said operating member, said control member effecting movement of said operating member toward said advanced position in response to movement of said changeover member;

lock means for releasably locking said control member in a position in which it holds said magnetic head and said operating member in said advanced position; and

selectively actuable means for causing said lock means to release said control member.

4,523,242

MAGNETIC HEAD ADJUSTING APPARATUS

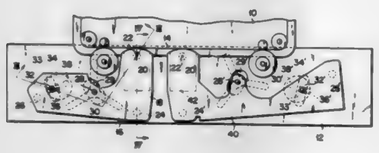
Shoichi Saito, and Kazumi Miyazi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,442

Claims priority, application Japan, Aug. 25, 1981, 56-125574[U]

Int. Cl.³ G11B *21/24*

U.S. Cl. 360—109 **2 Claims**



1. A magnetic head adjusting apparatus comprising:

a generally planar base;

a generally planar auxiliary base disposed to extend over the base for supporting a magnetic head;

a first adjusting member engaged with the base to be in contact with a surface of the auxiliary base which faces the base, said first adjusting member being arranged to move in a direction transverse of the base plane to move the auxiliary base in the same direction and coupled with the auxiliary base to support the auxiliary base for rotation around the first adjusting member;

a second adjusting member engaged with the base at a position away from the first adjusting member to be in contact with the surface of the auxiliary base which faces the base, and arranged to move in a direction transverse of the base plane to move the auxiliary base in the same direction;

a third adjusting member engaged with the base at a position away from those of the first and the second adjusting members to be in contact with the surface of the auxiliary base which faces the base so that the first, the second and the third adjusting members form three vertexes of a triangle, said third adjusting member also being arranged to move in a direction transverse of the base plane to move the auxiliary base in the same direction; and

a rotating member mounted for relative rotation on the base and coupled with a portion of the auxiliary base which is away from the first adjusting member and at a position offset from the axis of rotation of the rotating member relative to the base, so that the auxiliary base is rotated around the first adjusting member as the rotating member is rotated relative to the base;

wherein said first adjusting member is a screw having a pin on its front end face, said auxiliary base has a conical opening extending outward from the surface of the auxiliary base which faces the base in the direction in which the first adjusting member extends from the base, and the pin of the first adjusting member engages said conical opening, and said second and said third adjusting members are screws.

4,523,243

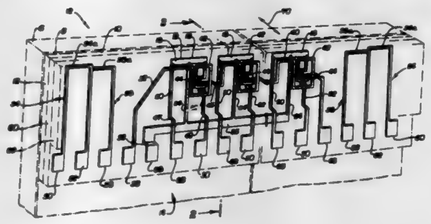
MAGNETORESISTIVE TRANSDUCER USING AN INDEPENDENT RECESSED ELECTROMAGNETIC BIAS

Robert L. Billington, Lafayette, Colo., assignor to Storage Technology Corporation

Filed May 24, 1982, Ser. No. 381,387

Int. Cl.³ G11B *5/12, 5/30;* H01L *43/02;* G01R *33/02*

U.S. Cl. 360—113 **25 Claims**



1. A thin film magnetoresistive transducer for sensing the magnetic field recorded on a magnetic medium, comprising:

a planar substrate;

a thin film magnetoresistive sense element located on the substrate at the edge thereof;

a plurality of conductive leads connected to the sense element for supplying sense current to the sense element in a differential configuration;

a first dielectric member deposited over said sense element, conductive leads, and substrate; and

a bias conductor located on the first dielectric member opposite the sense element to provide a bias current therefor, wherein the bias conductor is electrically isolated from the sense element to facilitate separate optimization of bias and sense currents for the transducer.

4,523,244

MAGNETIC HEAD

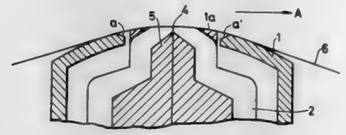
Naohiko Toshimitsu, and Masayuki Fujimura, both of Chichibu, Japan, assignors to Canon Denshi Kabushiki Kaisha, Saitama, Japan

Filed Jun. 10, 1982, Ser. No. 386,875

Claims priority, application Japan, Jul. 15, 1981, 56-109401

Int. Cl.³ G11B *5/10*

U.S. Cl. 360—129 **2 Claims**



1. A magnetic head assembly comprising at least two magnetic head elements disposed proximate to each other for recording information in or reproducing information from respective tracks on a magnetic recording medium and a housing of magnetic material for magnetically shielding said magnetic head elements; wherein:

each of said magnetic head elements includes a magnetic core having a gap therein;

said housing includes an opening for exposing the recording medium to said gaps as the recording medium travels relative to said opening in a predetermined direction over a surface of said housing;

said opening has at least one edge extending substantially perpendicular to the predetermined direction of travel of the recording medium; and

at least one said edge has a chamfered portion at said surface.

4,523,245

SLIDING MEMBER

Shiro Takahashi, Sendai, Japan, assignor to Sony Corporation, Tokyo, Japan

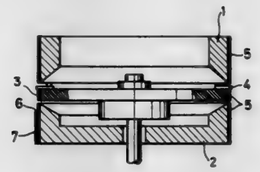
PCT No. PCT/JP81/00366, § 371 Date Aug. 4, 1982, § 102(e) Date Aug. 4, 1982, PCT Pub. No. WO82/01896, PCT Pub. Date Jun. 10, 1982

PCT Filed Dec. 4, 1981, Ser. No. 414,334

Claims priority, application Japan, Dec. 5, 1980, 55-174654[U]

Int. Cl.³ G11B *5/10, 5/40*

U.S. Cl. 360—130.21 **4 Claims**



1. A magnetic head drum assembly comprising first and second cylindrical drums coaxially supported to form a composite guiding surface for a traveling magnetic recording medium, said first and second drums being spaced by an axial gap, at least one magnetic head extending into said axial gap and arranged to contact a traveling magnetic recording medium on said guiding surface, and at least a portion of said guiding surface being composed of an amorphous metallic material.

4,523,246

FLEXIBLE MAGNETIC DISK

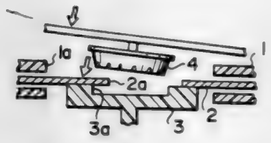
Yasutoshi Okuzawa, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 21, 1984, Ser. No. 591,878

Claims priority, application Japan, Mar. 29, 1983, 58-53171

Int. Cl.³ G11B *23/02, 5/016*

U.S. Cl. 360—133 **5 Claims**



1. A flexible magnetic disk comprising a jacket and a flexible magnetic disk sheet housed in said jacket, said flexible magnetic disk sheet being provided at the center thereof with a circular hole for loading into an information writing and read-out apparatus, said jacket being provided with an aperture for exposing said circular hole of said flexible magnetic disk sheet, wherein the improvement comprises applying a lubricant onto one surface or both surfaces of said flexible magnetic disk sheet at the peripheral edge portion of said circular hole which comes into contact with at least one sheet positioning member of said information writing and read-out apparatus, thereby decreasing the coefficient of frcition of said peripheral edge portion of said circular hole.

4,523,247

SIGNAL DETECTION OPERATING LEVER DEVICE OF MAGNETIC RECORDING TAPE REPRODUCING APPARATUS

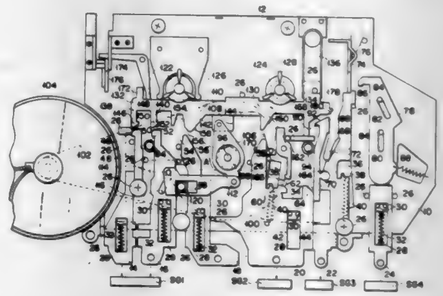
Shigeru Nemoto; Gōrō Kitajima; Sinichi Saitou, and Hazime Osada, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 382,207, May 26, 1982,. This application Jul. 9, 1984, Ser. No. 628,122

Claims priority, application Japan, May 28, 1981, 56-81721

Int. Cl.³ G11B *15/48, 15/18, 15/32;* G03B *1/04*

U.S. Cl. 360—137 **3 Claims**



1. A signal detection operating lever device for a magnetic recording tape reproducing apparatus which uses a tape cassette and which sets a magnetic recording tape transport mode comprising:

a first base plate;

a second base plate parallel to said first base plate with a distance therebetween;

a first operating lever disposed between said first and second base plates to be movable along the first and second base plates between a first position and a second position to

determine a magnetic recording tape transport mode in the magnetic recording tape reproducing apparatus;

a second operating lever having a magnetic head and disposed between said first and second base plates to move said magnetic head along said first and second base plates between a first position in which said magnetic head is separated from the magnetic recording tape of the tape cassette and a second position in which said magnetic head comes in contact with the magnetic recording tape;

an accidental erasure preventive lever disposed at least at one of said first and second base plates to be movable between a first position in which said second operating lever is prohibited to move from the first position to the second position thereof, and a second position in which said second operating lever is allowed to move from the first position to the second position thereof;

a third operating lever disposed between said first and second base plates to be movable between a first position which allows movement of said accidental erasure preventive lever between the first and second positions thereof along said first and second base plates, and a second position in which said accidental erasure preventing lever is kept at the second position thereof; and

magnetic head function selecting means connected to said second and third operating levers for allowing said magnetic head to function as an erase head upon movement of said second operating lever to the second position thereof and for allowing said magnetic head to function as a signal detecting head upon movement of said third operating lever to the second position thereof.

4,523,248

SAFETY CIRCUIT FOR A DETACHABLE CONNECTING CABLE

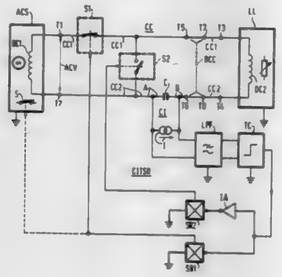
Peter C. Schmale, and Marinus C. W. Van Buul, both of Breda, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 31, 1983, Ser. No. 499,599

Claims priority, application Netherlands, Jun. 4, 1982, 8202259

Int. Cl.³ H02H *3/20*

U.S. Cl. 361—1 **19 Claims**



1. A safety circuit for use in a power supply system including an a.c. voltage supply source, a load and a connecting cable between the source and the load, the connecting cable having two cable conductors coupled to two connecting terminals of the a.c. voltage supply source and the load, respectively, with the cable having a detachable cable connection between the load and the a.c. voltage supply source, the safety circuit being operative to prevent the a.c. supply voltage from occurring between the cable conductors in the event the cable connection is in a non-connected state, the safety circuit comprising a switching circuit which comprises an on/off switch of the power supply system, a parallel arrangement of at least one capacitor and a direct current source connected in a direct current circuit which comprises a direct current path between the connecting terminals of the a.c. voltage supply source and the load, and the cable conductors connected thereto, means coupling said parallel arrangement via a threshold circuit having a threshold voltage value to the switching circuit comprising the on/off switch of the power supply system, said switch being switched on or off, before or after, respectively, the threshold voltage value has been exceeded by the voltage across said parallel arrangement.

4,523,249

ALTERNATING CURRENT LIMITING APPARATUS

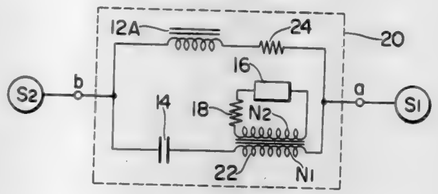
Satomi Arimoto, Nishinomiya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1983, Ser. No. 531,644

Claims priority, application Japan, Sep. 21, 1982, 57-165532

Int. Cl.³ H02H *9/02*

U.S. Cl. 361—58 **5 Claims**



1. An alternating current limiting apparatus comprising:

a first circuit formed of a series combination, of a capacitor and a winding means, connected between two different kinds of power systems;

a second circuit formed of a series combination, of a first resistor and a closing device, connected across the output terminals of said winding means;

and a third circuit formed of a series combination, of a reactor and a second resistor, connected in parallel with said first circuit;

said closing device of said second circuit being normally kept in its open state to form a series resonance circuit of said winding means and said capacitor and to interconnect said systems with the resultant impedance of said first circuit being zero, while upon system faults said closing device of said second circuit being closed to switch the impedance as seen from the input terminals of said winding means over to a predetermined small value to detune the resonance point of said series resonance circuit, thereby forming a parallel resonance circuit between the series combination of the small impedance with said capacitor and said third circuit to enlarge the total impedance value between said systems with an overcurrent therebetween being suppressed.

4,523,250

MAGNETIC CHUCK CONTROL SYSTEM

Daniel P. Bacchiere, 7067 Birchwood Ave., Niles, Ill. 60648, and Stanley F. Polinski, Chicago, Ill., assignors to Daniel P. Bacchiere, Niles, Ill.

PCT No. PCT/US80/01624, § 371 Date Feb. 9, 1982, § 102(e) Date Feb. 9, 1982, PCT Pub. No. WO81/01769, PCT Pub. Date Jun. 25, 1981

Continuation-in-part of Ser. No. 101,508, Dec. 7, 1979, Pat. No. 4,306,269. This PCT application Dec. 8, 1980, Ser. No. 479,867

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.³ H01F *13/00*

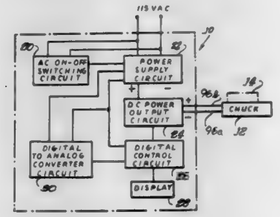
U.S. Cl. 361—145 **7 Claims**

1. A system for magnetizing and demagnetizing a magnetizable object, comprising, in combination,

a DC power supply including a power supply circuit having an AC power supply and a bridge rectifier adapted to establish said DC power supply,

a power output circuit operatively connected to said DC power supply and a magnetizable object and adapted to apply DC voltage signals to the object in a manner to magnetize the object, said output circuit including a reversing circuit enabling reversing of the polarity of said DC voltage signals during demagnetizing, said reversing circuit defining a pair of input terminals connected in circuit with said DC power supply and a pair of output terminals connected to the object, bidirectional current control means selectively connected between said pairs of terminals so as to enable selective directional current flow through the object,

a digital control circuit operatively associated with said current control means and operative to effect predetermined sequential conditioning of said bidirectional current control means so as to enable current flow through the object in alternating directions,



a digital-to-analog converter circuit cooperative with said digital control circuit and adapted to produce successive output voltage signals of predetermined decreasing magnitude in direct relation to said predetermined conditioning of said bidirectional control means,

and means connected in circuit with said DC power supply and said reversing circuit and being responsive to said successive output signals to control successively decreasing DC voltage signals to the object, said digital control circuit being adapted to control said bidirectional current control means so that said successively decreasing DC voltage signals applied to the object are of alternating polarity,

said means for controlling said successively decreasing DC voltage signals to said object including switch means connected in said power supply circuit between said AC power supply and said bridge rectifier and being controlled by said digital-to-analog converter circuit and said digital control circuit.

4,523,251

ELECTRONIC APPARATUS COMPRISING AN INPUT STAGE WITH A BINARY OUTPUT CONNECTED TO A RELAY CONTROL CIRCUIT

Jürgen Erdmann; Karl O. Buchholz, and Hartmut Knappe, all of Waldkirch, Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,217

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3140682; Feb. 8, 1982, 3204234

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—152 **3 Claims**

1. A relay control circuit for controlling a relay from an input stage having a binary output in the form of either a first output signal associated with an energised state of said relay or a second output signal associated with a deenergised state of said relay, the control circuit comprising:

a power source;

an energising circuit for energising said relay from said power source;

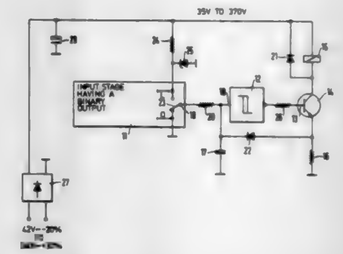
a first resistor lying in the energising circuit of said relay so that the voltage across said first resistor corresponds to the current flowing through said relay;

an electronic threshold switch having an input to which said binary output is connected via a second resistor;

a capacitor connected to said second resistor to form an RC circuit;

a semiconductor switching component determining whether or not current flows through said relay; and

means for tapping off said voltage from said first resistor and passing it to said input of said threshold switch,



whereby said threshold switch is periodically switched over in dependence on the current flowing through said relay, with said semiconductor switching component being thereby made alternately conductive and nonconductive, in such a way that said relay is periodically energised by a current continuously increasing from zero, is switched off each time a predetermined current is reached and is again re-energised with the increasing current shortly before it drops out.

4,523,252

DEVICE FOR ELIMINATING STATIC ELECTRICITY

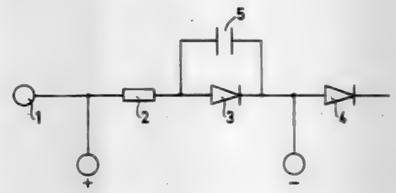
Jan O. Wallén, Strängnäs, Sweden, assignor to J-O Wallen Electronic Int. AB, Strangnas, Sweden

Filed Apr. 19, 1983, Ser. No. 486,432

Claims priority, application Sweden, Apr. 27, 1982, 8202628

Int. Cl.³ H05F *3/00*

U.S. Cl. 361—212 **1 Claim**



1. A device for eliminating static charge buildup of a first member from a second member, said device comprising:

a series circuit electrically connected to said first member, said series circuit including an electrical resistance and a tunnel diode, said tunnel diode being connected to conduct current away from said first member;

a coupling diode connected between said series circuit and said second member and having a polarity to conduct current toward said second member;

a capacitor connected in parallel with said tunnel diode; and

means for applying a small d.c. voltage across said series circuit to produce current flow through said series circuit in a direction away from said first member.

4,523,253

ENCAPSULATED MEDIUM-VOLTAGE ELECTRICAL LOAD SWITCHING APPARATUS

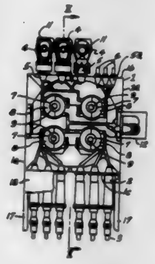
Kurt Grünberg, Offenbach; Rainer Poth, Bad Vilbel; Peter Werner, Oberursel; Kurt Koch, Neu-Isenburg; Friedrich Schweppe, Eppertshausen, and Kurt Voigtländer, Offenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 348,821

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1981, 3107911

Int. Cl.³ H02B *1/04*

U.S. Cl. 361—335 **15 Claims**



1. An encapsulated medium-voltage electrical load switching apparatus, comprising:

a generally rectangular parallelepiped-shaped metal housing having floor, ceiling, side, front and back walls, and being sealed against access from without;

a quantity of electronegative gas contained within the metal housing;

a switch arrangement, comprising at least three rotary switches oriented in the same direction within the metal housing with their rotary axes parallel to each other and extending between the front and back walls of the housing, the switches having front faces aligned in a vertical plane which is prependicular to the floor, ceiling and side walls, and each switch being able to be set to closed-circuited, open-circuited and grounded positions;

a plurality of insulated housings mounted within the metal housing, each insulated housing supporting a respective one of the switches, and each insulated housing containing a portion of the electronegative gas in a way which permits communication of the contained gas with the rest of the gas in the metal housing;

means, including a first plurality of gastight bushings arranged side-by-side in a row in the floor of the metal housing aligned with the reference plane and establishing electrical connections between the switches and external circuitry;

means, including a second plurality of gastight bushings arranged in pairs in two rows in the ceiling of the metal housing and establishing electrical connections between the switches and externally-positioned fuses connected across the pairs of bushings, the two rows being parallel to each other and also parallel to the row of the first plurality of bushings;

means, including a third plurality of gastight bushings arranged side-by-side in a row in the ceiling of the metal housing establishing electrical connections between the switches and the terminals of a transformer branch; and

switch control means, actuating the switches in a gastight way, for control of the position setting of the switches from outside the metal housing.

4,523,254

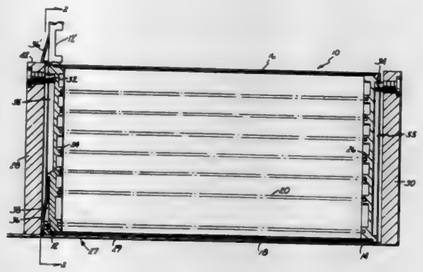
EQUIPMENT MODULE

Michael V. Konshak, Colorado Springs, Colo., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Dec. 28, 1983, Ser. No. 566,470

Int. Cl.³ H05K *7/16*

U.S. Cl. 361—391 **2 Claims**



1. Apparatus for mounting a substantially cubical equipment module in a casing comprising:

a substantially cubical equipment module comprising:

a housing having two opposed vertically disposed mounting means for mounting printed circuit boards therebetween, the mounting means having top, rear and bottom edges;

a forward slot formed on the exterior of each of said mounting means, said slot having a vertical portion extending from adjacent the top edge of the mounting means to adjacent the bottom edge and an intersecting lower horizontal portion, the forward end of the horizontal portion being closed and the rearward end of the horizontal portion being open and communicating with the bottom edge of the mounting means;

a rearward slot formed on the exterior of each of said mounting means, said rearward slot having a vertical portion, shorter than the vertical portion of the foward slot, extending from adjacent the top edge of the mounting means and an intersecting lower horizontal portion, the forward end of the horizontal portion being closed and the rearward end of the horizontal portion being open and communicating with the rear edge of the mounting means;

casing means for mounting therein said equipment module comprising:

two vertically disposed opposed walls each having a forward and a rearward pin mounted adjacent the top of the walls and spaced from each other a distance equal to the distance between the centers of the corresponding forward and rearward vertical slots, the pins further sized to fit into the corresponding forward and rearward slots, the two opposed casing walls further spaced from each other such that when the equipment module is inserted into the casing, the pins slide into their corresponding slots via the communicating open ends of the slots, each rearward pin sliding in via the open ends of the corresponding horizontal portions of the rearward slots at the rear edges of each mounting means, and each forward pin sliding in via the open ends of the corresponding horizontal portions of the forward slots at the bottom edges of each mounting means;

the closed ends of the horizontal portions of the forward and rearward slots comprising abutment means for holding the equipment module in a raised and tilted position;

the vertical portions of the forward and rearward slots comprising means for lowering or raising the equipment module vertically into or out of the casing to or from an ultimate mounted position; and

the open ends of the horizontal slots comprising further means for slidably removing the equipment module from engagement with their corresponding pins and thereafter from the casing from a tilted and raised position.

4,523,255

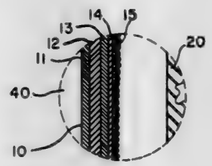
CATHODE FOR AN ELECTROLYTIC CAPACITOR

Donald G. Rogers, Pownal, Vt., assignor to Sprague Electric Company, North Adams, Mass.

Filed Sep. 19, 1983, Ser. No. 533,678

Int. Cl.³ H01G *9/00*

U.S. Cl. 361—433 **7 Claims**



1. In a tantalum electrolytic capacitor having a porous pellet anode and a liquid electrolyte in a metal container serving as a cathode, wherein said cathode comprises a drawn composite clad can having three metal layers bonded together, one layer being tantalum and forming the interior surface of said can, an intermediate layer of copper bonded to said tantalum, and a layer of nickel bonded to said copper layer and forming the exterior surface of said can, a layer of tantalum carbide formed on said tantalum interior surface and bonded thereto, and a layer of finely-divided carbon overlying said tantalum carbide surface.

4,523,256

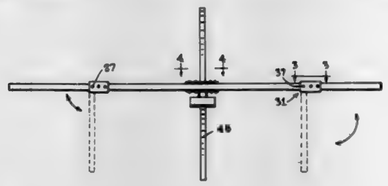
VARIABLE POSITION LIGHT STAND

LeRoy O. Small, 3311 NE. 97th Ave., Vancouver, Wash. 98662

Filed Nov. 8, 1983, Ser. No. 549,718

Int. Cl.³ G03B *15/02*

U.S. Cl. 362—11 **5 Claims**



1. A portable variable position light stand comprising:

a vertically disposed elongated main shaft;

means attached to the bottom of said main shaft for selectively holding said main shaft in said vertically disposed position;

arm means for attachment to said main shaft;

light means for producing light rays;

means for attaching said light means to said arm means;

arm attaching means for adjustably vertically attaching said arm means to said main shaft; and

angle adjusting means attached to said arm attaching means for selectively adjusting the angle of said arm means with respect to said main shaft, said angle adjusting means comprising housing and spring steel means attached at one end thereof said arm means and having projection means on the other end thereof and a plurality of openings in said housing means for receiving said projection means whereby the angle of said arm means will be different upon which of said openings said projection means is disposed in, said spring steel means being for biasing said projection means towards a respective one of said openings for locking the arm means in at a desired angle and permitting said projection means to be selectively removed from a respective one of said openings for permitting pivoting of the arm means for adjusting the position of the arm means to a different angle with respect to the main shaft.

4,523,257

ARTIFICIAL LIGHT SOURCE DEVICE

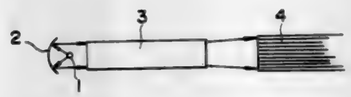
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Jan. 16, 1984, Ser. No. 571,251

Claims priority, application Japan, Jan. 20, 1983, 58-7605

Int. Cl.³ F21V *7/04*

U.S. Cl. 362—32 **10 Claims**



1. An artificial light source device comprising a light source lamp, a reflection mirror for converting light from said light source lamp into a parallel beam of light and reflecting said parallel beam of light, an optical conductor rod having a light-receiving edge surface and a light-discharging edge surface, said light-receiving edge surface being arranged opposite to said reflection mirror such that said parallel beam of light is guided into said optical conductor rod, and an optical conductor cable comprising a plurality of optical fibers, said cable having a light-receiving edge surface arranged opposite to said light-discharging edge surface of said optical conductor rod, the light discharged from said optical fibers being used as the light source, whereby the use of said optical conductor rod between said light source lamp and said optical conductor cable protects said light receiving edge surface of said optical conductor cable from burn-out.

4,523,258

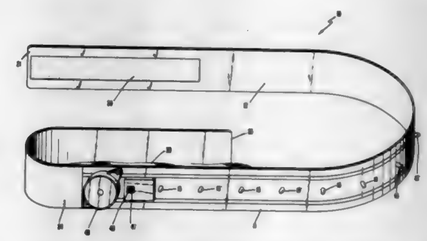
FLEXIBLE SAFETY BELT WITH FLASHING LIGHT-EMITTING DEVICES AND ALARM

John H. Morse, 3437 Catalina Dr., Chamblee, Ga. 30341, and Robert Skrynecki, 2754 FosterRidge Rd., Atlanta, Ga. 30345

Continuation-in-part of Ser. No. 533,233, Sep. 19, 1983, abandoned. This application Mar. 29, 1984, Ser. No. 594,854

Int. Cl.³ F21L *15/14*

U.S. Cl. 362—108 **8 Claims**



1. Apparatus for increasing visibility of a wearer under conditions of low ambient light comprising in combination:

a hollow belt of flexible material characterized by a pair of ends;

fastening means connected to said pair of ends for securing said pair of ends together;

a plurality of light-emitting devices disposed in spaced apart relationship along the length of one side of said belt of flexible material and connected in a plurality of subsets of light-emitting devices;

an elongated strip of flexible circuit board enclosed with the

interior of said hollow belt, said flexible circuit board including oscillator means and connecting means for connecting said oscillator means to said plurality of light-emitting devices, whereby said light-emitting devices are caused to be intermittently lit, said oscillator means controlling which particular subset is intermittently lit while also controlling the intermittent lighting of the particular subset chosen to be intermittently lit;

further wherein an alarm means is connected to said circuit board in parallel with said light-emitting devices with respect to a power source of said circuit board; and

further including means controlling the activation of said alarm means comprising a first manually controlled on-off switch, and further including a second manually controlled on-off switch for controlling the activation of said light-emitting devices.

4,523,259
BOLT-LIGHT BULB COMBINATION
Danny R. Dorsett, U.S. Hwy. 6, and Gerald D. Smith, Jr., 355 Marian Dr., both of Valparaiso, Ind. 46383
Filed Dec. 23, 1983, Ser. No. 565,163
Int. Cl.³ B25K *23/18*
U.S. Cl. 362—120 **11 Claims**



1. A bolt and light bulb combination wherein said bolt comprises a shank having exterior threads and a head at one end of said shank, said threaded shank being the fastening element, and said head being a clamping element, said shank having a passageway longitudinally therethrough terminating in said head, and said head having a passageway through a side thereof transversely of and communicating with said longitudinal passageway in said head;

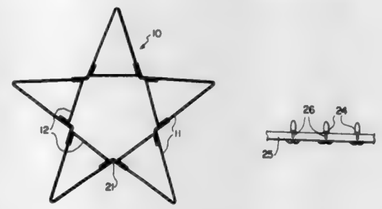
and wherein said light bulb comprises a body and wire leads, said light bulb body being positioned in said passageways at the intersection of said longitudinal and transverse passageways, and said wire leads of said bulb extending from said longitudinal passageway exterior of the other end of said bolt shank.

4,523,260
STAR DISPLAY
Freda Duncan, P.O. Box 531, Elkton, Oreg. 97436
Continuation of Ser. No. 293,149, Aug. 17, 1981, abandoned. This application Feb. 10, 1984, Ser. No. 578,312
Int. Cl.³ F21P *1/02*
U.S. Cl. 362—121 **3 Claims**

1. A uniplanar star which comprises;

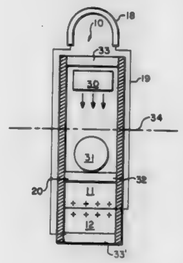
a plurality of identical point members formed of an opaque strap material, each said member in the shape of an open-base triangle having two sides with an outwardly extending leg at the terminus of each said side, said point members having mounted thereon a plurality of decorative lights, each said point member having a pair of holes in each of said leg portions and in each of said sides, said hole pairs for receiving fastening means therethrough;

a plurality of identical brace members, one for each point member, formed of a flat strap material and having a straight central portion with inwardly turned ends, each of said brace member ends having a pair of holes indexable with the hole pairs in said point members; and



fastening means insertable through indexed hole pairs of a point member side, a point member leg portion and a brace member end to hold said members in a rigid, parallel, superposed attitude.

4,523,261
LIGHT SOURCE, MANUALLY OPERATED
Philip G. West, Rte. 3, Box 215, Orange, Va. 22960
Filed Aug. 5, 1982, Ser. No. 405,632
Int. Cl.³ H04R *17/00, 21/00*
U.S. Cl. 362—192 **1 Claim**



1. A manually operated light source comprising:

a cylinder containing at one end two or more piezoelectric crystals arranged with facing opposite polarities between a moveable metallic anvil and a first retaining anvil located at one end of the cylinder;

said moveable anvil is circular in shape to conform in close tolerance with the interior wall of the cylinder; and,

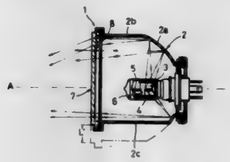
a gravity driven hammer slideably mounted within the cylinder for moving back and forth between the moveable anvil and a second retaining anvil located at the other end of the cylinder;

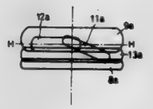
said cylinder fitted with electrical connection means that connect positive and negative faces of the piezoelectric crystals to a gas-filled discharge tube,

whereby the cylinder upon being rotated end for end allows the hammer to fall under force of gravity to strike the moveable anvil and cause the piezoelectric crystals to emit an electrical charge for intermittent lighting of the gas-filled tube.

4,523,262
HEADLIGHT FOR AN AUTOMOTIVE VEHICLE
Hiroaki Shinkai, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Sep. 29, 1982, Ser. No. 428,193
Claims priority, application Japan, Oct. 5, 1981, 56-148576[U]
Int. Cl.³ F21M *3/14*
U.S. Cl. 362—214 **2 Claims**

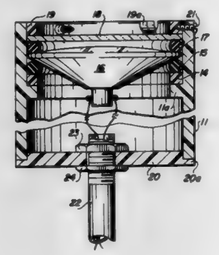
1. A headlight for an automotive vehicle, the headlight comprising a concave reflector having a focusing portion, with an optical axis and a focus on said optical axis, and a front opening, a main-beam lamp filament positioned in the vicinity of said focus on said optical axis, a low-beam filament positioned on the front side of said main-beam filament, and a lens mounted in the front opening of the reflector, wherein said lens comprises an upper lens element, an upper middle lens element arranged just below said upper lens element, a middle lens element arranged just below said upper middle lens element and consisting of a right lens member, a central lens member, and a left lens member, and a lower lens element arranged just





below said middle lens element, the vertical dimension of said lens below the optical axis being substantially less than the vertical dimension of said lens above the optical axis, and said upper lens element having a cross-sectional shape in elevation such that light rays from the main-beam filament that are incident thereon after reflection by the concave reflector are refracted downwardly to provide a light distribution pattern from said upper lens element that crosses, and fills in below, the light distribution patterns from said upper middle, middle, and lower lens elements under main-beam operation of the headlight.

4,523,263
OUTDOOR LIGHTING FIXTURE
David D. Poyer, 858 Roseway St., Naples, Fla. 33942
Filed Jun. 22, 1984, Ser. No. 623,319
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **6 Claims**



1. An electric lighting fixture for outdoor use comprising:

a cylindrical housing made entirely of polyvinyl chloride and having concentric inner and outer walls,

said housing having an annular ring projecting from its inner wall,

a first flexible O-ring having an outer diameter slightly less than the diameter of the inner wall of said housing positioned against the surface of said ring,

a low voltage electric lamp having an outer diameter slightly less than the diameter of the inner wall of said housing,

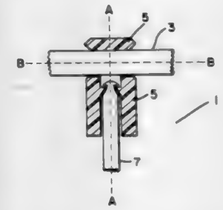
the lower edge of said lamp being positioned against said first O-ring,

a second O-ring identical to the first O-ring positioned against the upper edge of said lamp,

a circular lens having an outer diameter slightly less than the diameter of the inner wall of said housing positioned against said second O-ring, and

a lens retaining ring made entirely of polyvinyl chloride with an outer diameter slightly less than the diameter of the inner wall of said housing firmly pressed against the outer surface of said lens so as to cause the two flexible O-rings to seal against the inner wall of said housing and said ring being secured in position by joinder to said housing.

4,523,264
TWO-PIECE TUBE SUPPORT ASSEMBLY
Gordon M. West, Miami, Fla., assignor to West & Associates, Inc., Miami, Fla.
Filed Jan. 9, 1984, Ser. No. 569,446
Int. Cl.³ F21V *21/00*
U.S. Cl. 362—396 **1 Claim**



1. A two-piece assembly for use in holding a tube, comprising a tube holder and support,

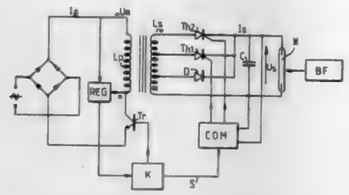
said tube holder being formed of a resilient plastic and comprising a substantially cylindrical body having a hole formed along the longitudinal axis thereof, said hole having formed in the wall thereof an annular recess, and projections integral with said cylindrical body forming a bore between them substantially circular in cross section and corresponding to the tube to be held, having its longitudinal axis substantially perpendicular to the longitudinal axis of the cylindrical body; and

said support comprising a base and a cylindrical support member formed integrally thereon, the end of the support member distal from the base having formed therein an annular projection which mates with the annular recess in the holder when the holder and support are pressed together.

4,523,265
PROCESS AND DEVICE FOR ELIMINATING THE DISTURBANCES RELATED TO THE FLUCTUATIONS OF THE LOAD IN CHOPPED POWER SUPPLIES
Louis Deprez, Palaiseau, France, assignor to Compagnie de Signaux et D'Entreprises Electriques, Paris, France
Filed Jun. 29, 1983, Ser. No. 509,271
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 **11 Claims**

1. A chopped voltage supply comprising: a magnetic circuit, a pair of input terminals, chopping transistor means connecting said input terminals to said magnetic circuit and arranged to operate periodically to build up magnetic energy in said magnetic circuit during an initial portion of each period of operation, said magnetic circuit including a tapped winding for transfer of energy to a load during the remaining portion of each period of operation, said winding having end terminals and a plurality of tap terminals, a pair of load terminals for connection to a load, a connection between one of said wind-

ing terminals and one load terminal and a plurality of switch elements connected between others of said winding terminals and the iother load terminal, and a voltage threshold control circuit coupled to said load terminals and coupled to said



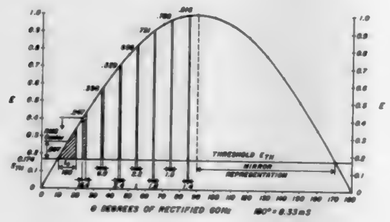
switch elements for controlling conduction of said switch elements to control the value of the inductance of said winding which is connected in series with the load and to regulate the load voltage.

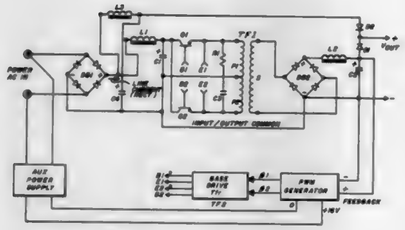
4,523,266

AC TO DC CONVERSION SYSTEM WITH CURRENT SPREADING CIRCUIT

Dale H. Nelson, Natick, Mass., assignor to Prime Computer, Inc., Framingham, Mass.

Filed Feb. 14, 1983, Ser. No. 466,331
Int. Cl.³ H02P *13/24*
U.S. Cl. 363—26 **4 Claims**





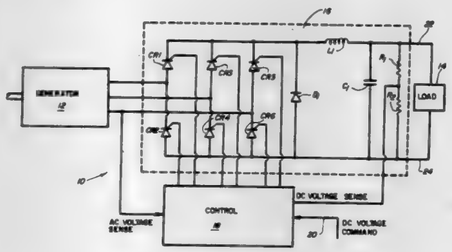
1. A current spreading circuit comprising;
input circuit means for receiving an input AC voltage and rectifying said AC voltage,
output circuit means for providing a DC output voltage,
and pulse-width-modulation means intercoupled between said input circuit means and said output circuit means and comprising means adapted to pass input AC current in pulse width increments with the pulse width varying in inverse proportion to the AC voltage,
whereby when the instantaneous AC voltage is low the pulse widths are wider and when the voltage is high the pulse widths are narrower,
said pulse-width-modulation means comprising a pulse-width-modulation (PWM) generator having feedback means responsive to output voltage, electronic switch means and drive circuit means coupled from said PWM generator to said switch means for controlling conduction of said switch means,
said drive circuit means including a base drive transformer,
said electronic switch means comprising a pair of transistors,
said pulse-width-modulation means further comprising a transformer coupled from said transistors to said output circuit means,
said transformer having a pair of primary windings and a secondary winding,
said output circuit means including an output bridge and an inductor-capacitor circuit with the capacitor functioning as a storage capacitor,
and a second inductor-capacitor circuit at the output of said means for rectifying.

4,523,267

POWER CONVERTER CONTROL CIRCUIT

Byron R. Mehl, Belvidere, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 14, 1983, Ser. No. 560,888
Int. Cl.³ H02P *13/20, 13/26*
U.S. Cl. 363—87 **15 Claims**



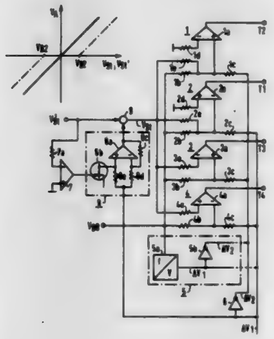
1. In a power converter for converting between polyphase periodic power and unidirectional power having a plurality of controllable switches, an improved means for controlling the switches, comprising:
first means for sensing a parameter of the periodic power;
a ramp generator coupled to the first means for generating a ramp signal having a frequency equal to the frequency of the periodic power;
second means for sensing a parameter representative of a condition at the output of the power converter;
means coupled to the ramp generator and to the second means for combining the outputs therefrom to generate a time-varying signal having a frequency equal to the frequency of the periodic power but shifted in time relative thereto, with the shift being dependent upon the output parameter;
a phase-locked loop coupled to the combining means for developing a PLL signal whose frequency is a multiple of the frequency of the time-varying signal, the phase-locked loop having means for generating a DC signal representing the frequency of the PLL signal, the DC signal being coupled to the ramp generator to vary the slope of the ramp signal; and
multi-phase logic means coupled between the phase-locked loop and the switches for operating the switches in accordance with the PLL signal.

4,523,268

METHOD AND CIRCUIT FOR GENERATING DRIVE PULSES FOR A DC CONTROL ELEMENT

Antonio Brajder, and Klaus Hantke, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 30, 1983, Ser. No. 509,806
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1982, 3226001
Int. Cl.³ H02P *13/18*
U.S. Cl. 363—98 **7 Claims**



1. A method of generating drive pulses for a DC control element of the type having four semiconductor switches arranged in a bridge circuit, the method being of the type having the step of producing drive pulses by comparing a triangular voltage waveform with a control voltage, there being a pause between conductive states of the semiconductor switches within a bridge branch of the bridge circuit, the method comprising the further steps of:
forming first and second triangular voltage waveforms which are shifted with respect to one another by a difference voltage;
driving a first semiconductor switch of a predetermined bridge branch in response to a comparison between said first triangular voltage waveform and the control voltage; and
driving a second semiconductor switch of said bridge branch in response to a comparison of said second triangular voltage waveform with the control voltage.

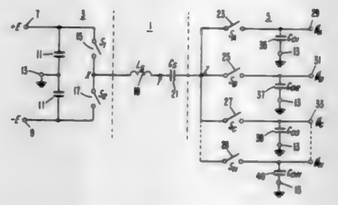
4,523,269

SERIES RESONANCE CHARGE TRANSFER REGULATION METHOD AND APPARATUS

Richard H. Baker, Bedford, Mass.; David L. Chu, Summit, N.J., and Derek Chambers, Bayville, N.Y., assignors to Reliance Electric Company, Cleveland, Ohio

Filed Nov. 16, 1983, Ser. No. 552,335
Int. Cl.³ H02M *7/515*
U.S. Cl. 363—138 **56 Claims**

1. A method of regulating a load so it has a predetermined voltage, the load being regulated with a resonant circuit selectively connected between the load and a source, the resonant circuit including a series capacitor, the load including a shunt capacitor having a value such that the load voltage remains relatively constant between adjacent exchanges of energy between the resonant circuit and to the load, comprising charging the series capacitor to a level determined by the source voltage and the voltage across the shunt capacitor, and connecting the source in series with the load and the resonant circuit while the series capacitor is charged to said level for an interval equal to one half cycle of the resonant circuit resonant frequency so current flowing between the source and the load



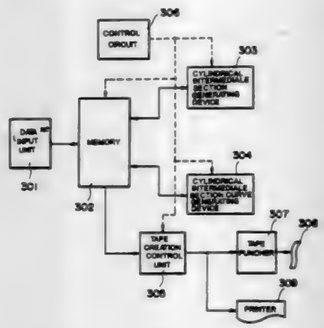
via the resonant circuit during the interval is zero at the beginning and end of the interval.

4,523,270

METHOD AND DEVICE FOR CREATING CURVED SURFACES

Hajimu Kishi, Hino, and Masaki Seki, Tokyo, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP81/00402, § 371 Date Aug. 23, 1982, § 102(e) Date Aug. 23, 1982, PCT Pub. No. WO82/02434, PCT Pub. Date Jul. 22, 1982
PCT Filed Dec. 23, 1981, Ser. No. 413,331
Claims priority, application Japan, Dec. 30, 1980, 55-186733
Int. Cl.³ G06F *15/46*; G05B *19/42*
U.S. Cl. 364—191 **13 Claims**



1. A method of generating a curved surface of a three dimensional body, comprising
providing at least two given sections and respective given section curves to include at least a first given cylindrical section and a respective first given cylindrical section curve, each said given cylindrical section having an axis parallel to a first direction,
generating a plurality of intermediate cylindrical sections so that the axis of each said cylindrical intermediate section is parallel to said first direction, and so that each said given and intermediate cylindrical section does not intersect each other, and
generating a respective intermediate cylindrical section curve in said intermediate section from said given section curves in said given sections, and from the respective radii, and any separation between the axes, of the given and intermediate cylindrical sections,
wherein, when said given sections and respective given section curves include only one given cylindrical section and one respective given cylindrical section curve, then all of said given and intermediate cylindrical sections are concentric and said given sections and respective given section curves include two reference sections and respective reference section curves.

4,523,271

SOFTWARE PROTECTION METHOD AND APPARATUS

Raphael L. Levien, Rte. 1, Box 19, McDowell, Va. 24458

Filed Jun. 22, 1982, Ser. No. 390,885
Int. Cl.³ G06F *9/00, 13/00, 11/30*
U.S. Cl. 364—200 **14 Claims**

MACHINE CYCLE		STATUS			CONTROL		
		IO/M	S1	S0	RD	WR	INTA
OPCODE FETCH	(OF)	0	1	1	0	1	1
MEMORY READ	(MR)	0	1	0	0	1	1
MEMORY WRITE	(MW)	0	0	1	1	0	1
I/O READ	(IOR)	1	1	0	0	1	1
I/O WRITE	(IOW)	1	0	1	1	0	1
ACKNOWLEDGE OF INTR	(INA)	1	1	1	1	1	0
BUS IDLE	(BI): DAD ACK. OF RST. TRAP	0	1	0	1	1	1
	HALT	TS	0	0	TS	TS	1

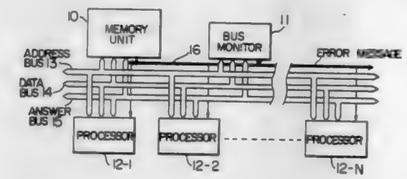
1. In a computer having a processor unit, a memory and a bus for interfacing said processor unit and said memory, said processor unit being operative to fetch instructions and access data stored in said memory, an apparatus for protecting data stored in said memory, comprising means for applying a "read data" instruction to said processor unit, memory access means for detecting a memory access signal generated by said processor unit to access data stored in said memory in response to said instruction, monitoring means for determining whether said instruction was previously fetched from said memory and means responsive to said memory access means and said monitoring means for enabling memory access only if said instruction was previously fetched from said memory.

4,523,272

BUS SELECTION CONTROL IN A DATA TRANSMISSION APPARATUS FOR A MULTIPROCESSOR SYSTEM

Yasushi Fukunaga, Hitachi; Tadaaki Bandoh, Ibaraki; Ryosei Hiraoka; Hidekazu Matsumoto, both of Hitachi; Jushi Ide, Mito, and Tetsuya Kawakami, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Filed Apr. 8, 1982, Ser. No. 366,785
Claims priority, application Japan, Apr. 10, 1981, 56-52948; Apr. 10, 1981, 56-52949; Apr. 17, 1981, 56-57226
Int. Cl.³ G06F *15/16, 15/40*
U.S. Cl. 364—200 **12 Claims**



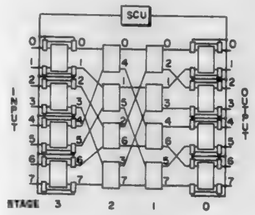
1. A data transmission apparatus for a multiprocessor system comprising at least one memory unit; a plurality of processors; synchronous common bus means including at least an address bus, a data bus and an answer bus connected between said memory unit and said processors for transferring data therebetween; and bus control means provided in each of said processors and said memory unit for controlling the use of said common bus means, said common bus means further including bus request control lines, associated with said address bus, said data bus and said answer bus and connected to the bus control means in said memory unit and each of said processors, for requesting use of a bus of said common bus means; and each said bus control means including selection means connected to said separate bus request control lines for controlling use of one or more of the buses of said common bus means by the memory unit or processor in which the selection means is provided in response to bus status signals received via said bus request control lines and bus request signals generated in the memory unit or processor in which the selection means is provided, such that a data read request is transmitted through only the address bus, a data write request is transmitted through the address bus and the data bus, a read answer is transmitted through the data bus and the answer bus and a write answer is transmitted through only the answer bus when said buses are not in use as indicated by said received bus status signals, whereby said memory unit and said processors may separately select said address bus, said data bus and said answer bus, if not in use by the memory unit or a processor, to transfer data address and answer signals to permit simultaneous use of different buses of said common bus means by more than one processor or by said memory unit and a processor for read, write and answer operations.

4,523,273

EXTRA STAGE CUBE

George B. Adams, III, and Howard J. Siegel, both of West Lafayette, Ind., assignors to Purdue Research Foundation, Lafayette, Ind.

Filed Dec. 23, 1982, Ser. No. 452,438
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—200 **14 Claims**



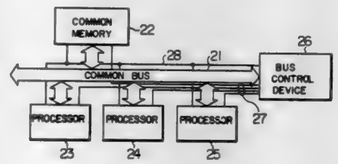
1. A multistage data routing system comprising a cube comprising a plurality of stages sequentially numbered n−1 through 0, an extra stage n situated to precede stage n−1 of the cube, extra stage n and stage 0 including means for selectively bypassing stage n or stage 0 or neither stage n nor stage 0.

4,523,274

DATA PROCESSING SYSTEM WITH PROCESSORS HAVING DIFFERENT PROCESSING SPEEDS SHARING A COMMON BUS

Yasushi Fukunaga, Hitachi, and Tadaaki Bandoh, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,644
Claims priority, application Japan, Apr. 4, 1980, 55-43496
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **7 Claims**



1. A data processing system comprising:
(a) a plurality of processors having different processing speeds;
(b) a common bus of synchronous type with which said plurality of processors are connected;

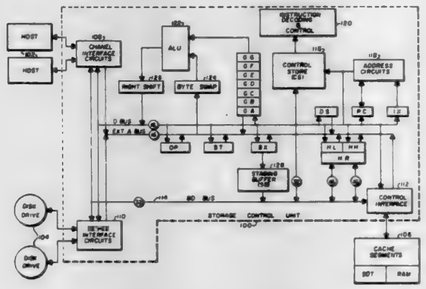
(c) a common memory connected with said common bus and accessed by said plurality of processors through said common bus;
(d) bus control means connected with said common bus and including high-frequency master clock signal generating means for producing a master clock signal to be applied in common to said plurality of processors;
(e) each said processor including means for determining a machine cycle corresponding to the processing speed thereof by frequency-dividing said master clock signal produced by said high frequency master clock signal generating means; and
(f) wherein said bus control means comprises means including a preferential selection circuit connected to said processor and said common memory and a bus control circuit connected to said preferential selection circuit for controlling the selection of said common bus in accordance with common bus occupation demands by each of said processors and said common memory, and gate means responsive to said preferential selection circuit for controlling the operation of the bus control circuit in synchronism with the master clock signal from the high frequency master clock signal generating means.

4,523,275

CACHE/DISK SUBSYSTEM WITH FLOATING ENTRY

Robert E. Swenson, Mendota Heights, Minn.; Lawrence D. Sasscer, and Don M. Robinson, both of San Jose, Calif., assignors to Sperry Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 207,060, Nov. 14, 1980, abandoned. This application Mar. 21, 1983, Ser. No. 477,563
Int. Cl.³ G06F *11/00, 13/00*
U.S. Cl. 364—200 **9 Claims**



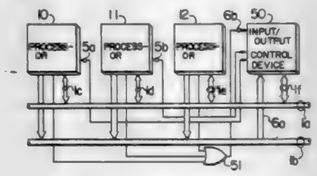
1. In a data processing system including a host processor for issuing commands, a bulk memory, a cache store for storing segments of data, a storage control unit, first means for storing a command queue and second means for storing a segment descriptor table having an entry therein corresponding to each segment of data in said cache store, said storage control unit including third means responsive to a given command from said host processor for writing data into said cache store and setting a written-to indicator in the segment descriptor table entry corrseponding to a segment of data written to in response to said given command, fourth means for searching said segment descriptor table to determine which one of the written-to segments in said cache store should be transferred to said bulk memory and forming and storing in said first means a trickle command to control said transfer, and fifth means for detecting the occurrence of an error which prevents the transfer of said one segment of data to said bulk memory, the improvement comprising:
sixth means in said storage control unit responsive to said fifth means for setting a floater indicator in the segment descriptor table entry corresponding to the segment in said cache store from which said transfer is prevented because of said error; and,
seventh means in said storage control unit responsive to said sixth means for deleting from said command queue the command formed by said fourth means.

4,523,276

INPUT/OUTPUT CONTROL DEVICE WITH MEMORY DEVICE FOR STORING VARIABLE-LENGTH DATA AND METHOD OF CONTROLLING THEREOF

Hideo Maejima; Ikuro Masuda; Hidekazu Matsumoto, all of Hitachi, and Shyoichi Miyazawa, Narashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 194,226, Oct. 6, 1980, abandoned. This application Sep. 19, 1983, Ser. No. 533,803
Claims priority, application Japan, Oct. 5, 1979, 54-127958
Int. Cl.³ G06F *5/00, 13/00, 15/16*
U.S. Cl. 364—200 **18 Claims**



1. A method of controlling a data processing system for processing data having different word lengths at most equal to 2^N bits, where N is a positive integer, using a memory device which comprises a first and a second memory, the method comprising the steps of:
producing a first group of data words, in which first group at least one of the words is of different word length than the other words of the first group, each data word being at most equal to 2^N bits, producing a first signal indicating the word length 2^n of each data word of the first group, where n=0, 1, . . . , (N−1) or N, and producing a second signal specifying an address in the first memory at which each data word is to be stored;
storing the data words of the first group in the first memory at the address specified by said second signal and in such a way that data words of the same word length as indicated by said first signal are successively stored with no unused storage space intervening between adjacent stored data words;
reading out the contents of said first memory as units of a fixed word length 2^m, wherein m=0, 1 . . . (N−1) or N;
producing a second group of data words, each second group having said fixed word length 2^m;
storing the second group of data words in said second memory; and
outputting the data words stored in said second memory in the form of data words of different word length from each other and having a length at most equal to 2^N bits.

4,523,277

PRIORITY INTERRUPT SYSTEM FOR MICROCOMPUTER

Vernon K. Schnathorst, Monument, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 30, 1982, Ser. No. 429,580
Int. Cl.³ G06F *9/46, 9/32, 9/42*
U.S. Cl. 364—200 **3 Claims**

3. A priority interrupt system for a microcomputer having a program read only memory for storing service routines for servicing a plurality of peripheral devices, comprising:
program counter means for stepping through the addresses of the program read-only memory in the microcomputer;
input means for receiving interrupt request signals from the peripheral devices indicating requests for access to the microcomputer, said input means including a first set of

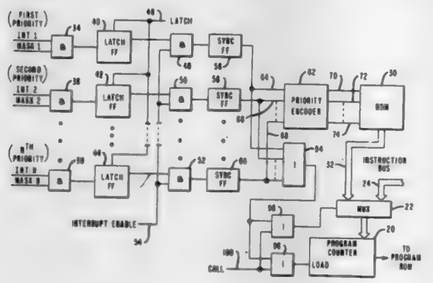
storage devices corresponding in number to the number of peripheral devices and adapted to being coupled to a second set of storage devices for actuating a control means in response to an interrupt request signal; and

enabling means coupling said first set of storage devices to a second set of storage devices to selectively enable and disable the transfer of the interrupt request signals from the first set of storage devices to said second set of storage devices:

read-only memory means for storing interrupt address jump vectors corresponding to the service routines for servicing the peripheral devices;

priority encoder means responsive to said input means for producing priority signals to select interrupt address jump vectors from said read-only memory means in accordance with a predetermined priority basis in response to the interrupt request signals from the peripheral devices;

control means responsive to said input means for transfer-



ring the contents of said program counter means into the microcomputer memory upon occurrence of an interrupt signal;

multiplex means connected between the instruction bus of the microcomputer and said program counter means and operated by said control means in response to an interrupt request signal for coupling said read-only memory means to said program counter means to receive the corresponding interrupt address jump vectors therefrom;

a second set of storage devices corresponding in number to the number of peripheral devices coupled to said enabling means and responsive to the interrupt request signals from different peripheral devices; and

means for latching at any selected time said sets of storage devices to store the interrupt request signals therein while the corresponding interrupt address jump vectors are loaded in sequence into said program counter means to allow the peripheral devices requesting access to be serviced on the predetermined priority basis.

4,523,278

METHOD OF AUTOMATIC DETECTION OF CELLS AND DETERMINATION OF CELL FEATURES FROM CYTOLOGICAL SMEAR PREPARATIONS

Erich Reinhardt, and Rainer Erhardt, both of Stuttgart, Fed. Rep. of Germany, assignors to Prof. Dr.-Ing. Werner H. Bloss, Fed. Rep. of Germany

Continuation of Ser. No. 392,590, Jun. 28, 1982, abandoned, which is a continuation of Ser. No. 117,515, Feb. 1, 1980, abandoned. This application Jun. 7, 1984, Ser. No. 618,447

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903855

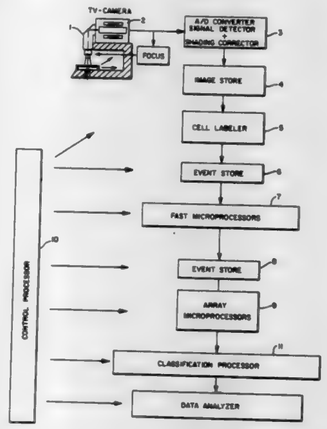
Int. Cl.³ G06F *15/42*

U.S. Cl. 364—413 **17 Claims**

1. A method for automatic classification of cells and determination of cell features from cytological smear preparations, on the basis of an original television image displaying a plurality of cell nuclear images, obtained by means of a television camera, wherein only the cell nuclei are used for evaluation, while irrelevant structures displayed in said original image are ignored, and wherein said classification and determination is based on a feature set consisting of topological parameters of the boundaries of said nuclei as displayed both in the original image and in one or more transformed images, the steps comprising

(a) storing the original television images in memory as an array of image point gray scale values;

(b) filtering the original images to suppress the scale values representing irrelevant structures, including structures beneath a predetermined size, thus obtaining filtered and transformed images;



(c) establishing threshold values of the filtered images to determine relative gray value peaks thereby smoothing and simultaneously localizing cell nuclei as individual nuclear images;

(d) determining the image points corresponding to the boundary of a nucleus as displayed in said nuclear image;

(e) measuring one or more topological parameters of the boundary of said nucleus, as displayed in said original and transformed images, to obtain a set of features of said nucleus;

(f) classifying said nucleus on the basis of said features set; and

(g) repeating steps (c) through (f) for each individual nuclear image in said filtered image.

4,523,279

APPARATUS FOR DETERMINING OXYGEN SATURATION LEVELS IN BLOOD

Johnie M. Sperinde, San Jose; Stanley D. Goldring, Cupertino, and Dean T. Miller, Portola Valley, all of Calif., assignors to Oximetrix, Inc., Mountain View, Calif.

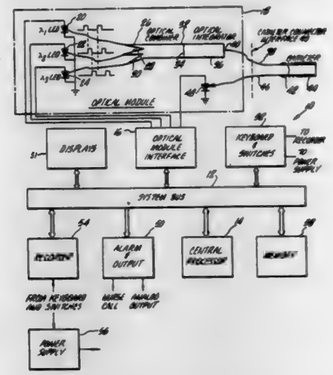
Continuation of Ser. No. 210,032, Nov. 24, 1980, Pat. No. 4,453,218. This application Jun. 4, 1984, Ser. No. 616,817

The portion of the term of this patent subsequent to Jun. 5, 2001, has been disclaimed.

Int. Cl.³ A61B *5/04*

U.S. Cl. 364—416 **8 Claims**

1. An apparatus for determining oxygen saturation levels in blood comprising means for generating electromagnetic radiation at a plurality of different wavelengths, means coupled to said generating means for transmitting said electromagnetic radiation at each of said plurality of different wavelengths to the blood and for receiving electromagnetic radiation reflected back from the blood at each of said plurality of different wavelengths in response to said electromagnetic radiation so transmitted, a detector coupled to said receiving means for generating a plurality of signals respectively having values which vary in proportion to the intensities of said electromagnetic radiation received at each of said plurality of different wavelengths, means for monitoring said signals from said detector ro determine short time intervals when said signals increase substantially in value to indicate that said receiving means is receiving



reflections from other than solely said blood, means for negating the effect of the signals received during said short time intervals, and means connected to receive said signals for generating an oxygen saturation output signal as a function of said signals except for the negated signals.

4,523,280

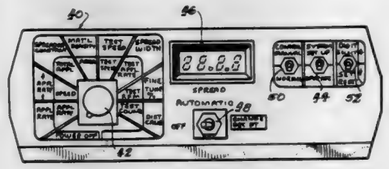
SPREADER CONTROL

Wesley J. Bachman, Auburn, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Filed Feb. 24, 1983, Ser. No. 469,205

Int. Cl.³ G06F *15/20;* **B05B** *9/06*

U.S. Cl. 364—424 **12 Claims**



1. An improvement in a control system for a mobile material distribution apparatus including ground speed sensor means for developing a signal corresponding to the ground speed of the mobile apparatus, distributing means for spreading said material along the path of travel of the mobile apparatus, variable rate delivery means for delivering material at a controllably variable rate to said distributing means, delivery rate sensor means for developing a signal corresponding to the actual rate of delivery of material to said distributing means, and desired distribution rate control means for developing a signal corresponding to a desired distribution rate of material per unit area; said control system comprising: calculating circuit means responsive to said ground speed signal, to said actual delivery rate signal and to said desired distribution rate signal for periodically calculating a desired delivery rate of material to the distributing means necessary to achieve said desired distribution rate and for periodically calculating the difference between said desired delivery rate and said actual delivery rate and developing a corresponding difference signal; and control signal producing means responsive to each said difference signal for developing a control signal; said variable rate delivery means being responsive to said control signal for varying the delivery rate of material to said distributing means in the amount necessary to achieve said desired material delivery rate, so as to achieve and thereafter maintain said desired distribution rate; the improvement comprising: said control signal producing means further including means responsive to values of said differences signal within a predetermined range of values for developing said control signal as a cyclical signal having a duty cycle which varies in a predetermined fashion in accordance with the value of said difference signal; and means responsive to values of said difference signal which are below said predetermined range of values for accumulating said periodically developed difference signals until the sum of the values of the accumulated difference signals is within said predetermined range of values and for thereafter developing said cyclical, variable duty cycle control signal in accordance with the value of said sum.

4,523,281

AUTOMATIC TRANSMISSION CONTROLLER FOR AUTOMOBILES

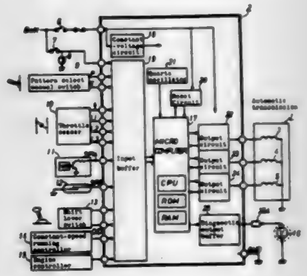
Munetaka Noda, Chiryu; Yukio Tobe, Kariya; Yutaka Taga; Shinya Nakamura, both of Toyota; Kazumasa Nakamura, Okazaki; Takafumi Inagaki, and Hiroshi Ito, both of Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 21, 1982, Ser. No. 400,402

Claims priority, application Japan, Jul. 23, 1981, 56-115701

Int. Cl.³ F16H *5/66;* **B60K** *41/06, 41/22;* **G06F** *15/20*

U.S. Cl. 364—424.1 **5 Claims**



1. An electronic automatic transmission control system for an automobile comprising:

speed sensor means for producing a speed signal indicative of a running speed of the automobile;

load sensor means for producing a load signal indicative of an engine load;

manually operable mode selecting means for selecting any one of power, normal and economy modes;

shift solenoid means for controlling shift of the automatic transmission;

lock-up solenoid means for controlling lock-up of the automatic transmission;

memory means for storing a plurality of shift patterns and lock-up patterns in relation to the running speed and the engine load; and

processor means for selecting one of said shift patterns and one of said lock-up patterns in accordance with the mode selected by said mode selecting means, said processor producing a solenoid control signal for said shift solenoid means and said lock-up solenoid means based on the selected shift pattern and the selected lock-up pattern, respectively, in response to said speed signal and said load signal.

4. An electronic automatic transmission control system for an automobile comprising:

speed sensor means for producing a speed signal indicative of a running speed of the automobile;

load sensor means for producing a load signal indicative of an engine load;

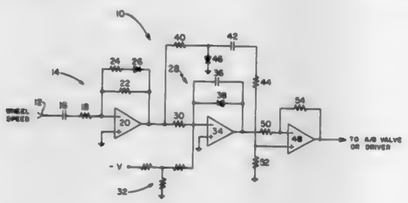
solenoid means including a plurality of solenoids for controlling shifts and lock-up of said automatic transmission;
output circuit means connected to said solenoids for controlling the operation of said solenoids and producing solenoid state signals indicative of operating states of said solenoids; and
programmed computer means connected to said speed sensor means, said load sensor means and said output circuit means and having a memory which stores a predetermined shift pattern and a lock-up pattern in relation to the running speed and the engine load,
said computer means normally producing solenoid control signals applied to said output circuit means to control said solenoids in response to said speed signal and said load signal and based on said shift pattern and said lock-up pattern,
said computer means detecting failure of said solenoids in response to said solenoid control signals produced therefrom and said solenoid state signals produced from said output circuit means and further changing said solenoid control signals upon detection of the solenoid failure so that the shift or lock-up condition of the automatic transmission caused by the solenoid failure is disabled and is changed to a different shift or lock-up condition.

4,523,282

ANTISKID CONTROL CIRCUIT

Arnold A. Beck, Clinton, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Mar. 8, 1982, Ser. No. 355,502
Int. Cl.³ B60T *8/08*
U.S. Cl. 364—426 **9 Claims**



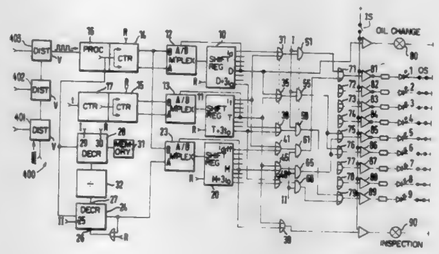
1. An antiskid control circuit, comprising:
a deceleration detector, receiving an input signal corresponding to the instantaneous speed of a wheel and generating therefrom a deceleration signal;
modulation means connected to and receiving said deceleration signal from said deceleration detector for generating a brake control signal therefrom dependent upon rotational activity of the wheel; and
said deceleration detector including gain selection means for changing the output gain of said deceleration detector as a function of said rotational activity of the wheel, said gain selection means providing a first gain to said deceleration detector during periods in which the wheel accelerates and a second gain during periods in which the wheel decelerates, said first gain being lower than said second gain.

4,523,283

SERVICE-INTERVAL DISPLAY FOR MOTOR VEHICLE AND CIRCUIT FOR A DISPLAY OF THIS TYPE

Heinz Muhlberger, Eching; Erwin Starmuhler, Munich; Walter Weishaupt, Munich; Peter Flohr, Munich, and Fritz Bourauel, Munich, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,765
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1981, 3104197
Int. Cl.³ G06F *3/14, 15/20;* G08B *5/36;* G07C *5/08*
U.S. Cl. 364—431.01 **47 Claims**



42. Apparatus for a service-interval display for a motor vehicle comprising
first means for visually indicating service intervals,
a first shift register means for generating an output signal representing distance traveled by the vehicle and supplied with an input signal when a fixed distance (i_d) is traveled by the vehicle,
a second shift register means for generating an output signal representing time elapsed and supplied with an input signal when a fixed time interval (i_t) has elapsed,
gating means controlling the first means in accordance with the output signals of the first and second shift registers.
47. The method of displaying a service-interval display for motor vehicles comprising the steps of
sensing movement of the vehicle to produce a signal,
modifying the signal in accordance with an engine operating characteristic, to produce clock signals,
generating signals for indicating the distance traveled through a plurality of fixed distance intervals (i_d) within a predetermined fixed distance (D),
indicating the passage of the vehicle through the fixed distance intervals in response to said generated signals,
eliminating the indication representing passage of the vehicle through a fixed distance interval when the vehicle passes to a succeeding fixed distance interval and
indicating that the predetermined distance (D) has been traversed.

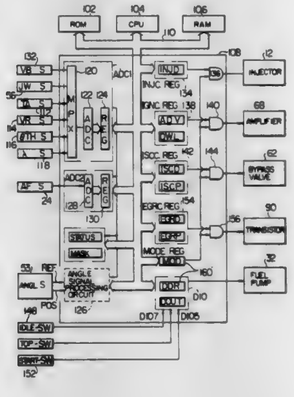
4,523,284

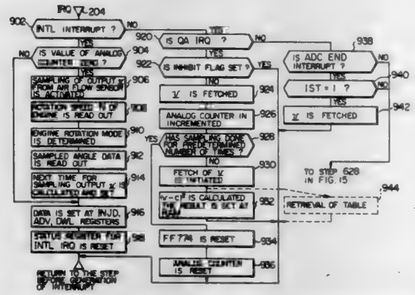
METHOD OF CONTROLLING INTERNAL COMBUSTION ENGINE

Matsuo Amano; Shinichi Sakamoto, both of Hitachi; Masayuki Miki, Katsuta; Takao Sasayama, Hitachi; Seiji Suda, Mito; Yasunori Mouri, and Toshio Ishii, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1980, Ser. No. 218,671
Claims priority, application Japan, Dec. 25, 1979, 54-169919
Int. Cl.³ G06F *15/20;* G05B *15/02;* F02B *3/12;* F02D *5/02*
U.S. Cl. 364—431.12 **45 Claims**

1. A method of controlling an internal combustion engine system which comprises an internal combustion engine in which an air-fuel mixture prepared from air introduced through an intake air passage and fuel fed from fuel supply means is subjected to combustion to produce thermal energy which is converted into mechanical energy for rotating an output shaft of said engine, while exhaust gas resulting from the combustion is discharged through an exhaust gas passage; an air flow sensor for producing an output signal representative of the state of intake air flow within said intake air passage of said engine; and an arithmetic circuit for producing a control signal for driving said fuel supply means in dependence on the output signal from said air flow sensor;
said method comprising the steps of:
arithmetically determining the quantity of air charged to said engine on the basis of the output signal from said air flow sensor;
generating said control signal on the basis of the result of said arithmetic determination;
driving said fuel supply means in dependence on said control signal;
wherein said step of arithmetically determining the air quantity charged to said engine comprises:
a first step of generating data representative of a sensor





signal sampling timing for sampling the output signal from said air flow sensor in synchronism with pulsation of the air flow fed to said engine;
a second step of producing a timing signal for sampling said sensor output signal on the basis of said data representative of the timing for sampling sensor output signal;
a third step of sampling the output signal from said air flow sensor in accordance with said timing signal produced at said second step; and
a fourth step of determining the intake air quantity on the basis of a number of the signal values sampled at said third step.

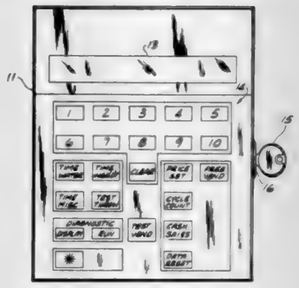
7. A method of controlling an internal combustion engine system having an internal combustion engine in which an air-fuel mixture prepared from air introduced through an intake air passage and fuel fed from fuel supply means is subjected to combustion by air-fuel mixture ignition means to produce thermal energy which is converted into mechanical energy for rotating an output shaft of said engine, while exhaust gas resulting from the combustion of fuel is discharged through an exhaust gas passage, an air flow sensor for producing an output signal representative of the state of intake air flow within said intake air passage of said engine, which signal varies in synchronism with the rotation of the output shaft of said engine, and a signal processing device for producing a control signal for driving said fuel supply means and said air-fuel mixture ignition means in response to an interrupt signal and in accordance with the output signal from said air flow sensor,
said method comprising the the steps of:
(a) sampling the output signal produced by said air flow sensor a plurality of times for the generation of each interrupt signal and in synchronization with the variation of said intake air flow, so as to be in synchronization with the angle of rotation and dependent upon the rate of rotation of said output shaft,
(b) supplying a prescribed plurality of data representative of the plurality of samples of the output signal sampled in step (a) to said signal processing device, and
(c) producing said control signal in accordance with the average value of said prescribed plurality of data representative of said plurality of said samples of said output signal supplied in step (b), whereby said control signal for driving said fuel supply means and said air-fuel mixture ignition means is produced in accordance therewith.

4,523,285

VENDOR CONTROLLER

William W. Hendrickson, and Theodore B. Boerding, both of St. Charles, Mo., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Oct. 22, 1981, Ser. No. 313,813
Int. Cl.³ G06F *15/20;* G07F *11/00*
U.S. Cl. 364—479 **28 Claims**



1. For a vendor for vending a plurality of items, a controller comprising:
a memory for electronically storing numeric information associated with the vending of items, said information being divided into a number of categories which are subdivided into units;
a set of manually operable selectors, one selector for each category of information;
an alphanumeric display; and
logic means interconnected with said memory, said manually operable selectors and said alphanumeric display and responsive to actuation of the selectors for retrieving from the memory one unit of vending information from the category corresponding to the actuated selector for each actuation of the selector and supplying said one unit of vending information to the alphanumeric display to display a multi-character alphanumeric designation identifying the particular information unit retrieved and a number representing the numeric value of that information unit, said logic means being responsive to repeated actuations of the corresponding selector to retrieve from said mem-

ory and display on said alphanumeric display the designations and numeric values for all units of a given category.

4,523,286

APPARATUS FOR MAKING DIAGNOSIS OF VALVE DEVICE IN TURBINE SYSTEM

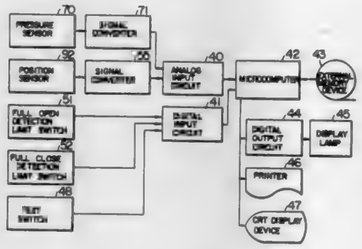
Tsuguaki Koga; Hidesumi Kuwashima; Hidenori Inoue; Hidetoshi Hamaoka, and Hiroshi Ohta, all of Hitachi, Japan, assignors to Hitachi, Ltd.; Hitachi Engineering Co. and Hitachi Service Engineering Co., Ltd., all of Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,350

Claims priority, application Japan, Aug. 7, 1981, 56-122972; Aug. 7, 1981, 56-122973

Int. Cl.³ F16K *37/00*

U.S. Cl. 364—494 **12 Claims**



1. A diagnostic apparatus for diagnosing a state of a valve device in a turbine system, said apparatus comprising:

first sensor means for sensing the state of operation of said valve device;

second sensor means to sense that said valve device is in a fully open position;

third sensor means to sense that said valve device is in a fully closed position;

processing means connected to said first sensor means and to judge whether there is any abnormality in the operation of said valve device in accordance with the output from said first sensor means and to display the result of the judgement; and

means for interrupting the operative connection between said first sensor means and said processing means when one of the fully opened position and the full closed position of said valve device is sensed by one of said second sensor means respectively and said third sensor means.

4,523,287

METHOD FOR EXTRAPOLATING A PATH OF A ROBOT AND APPARATUS THEREFOR

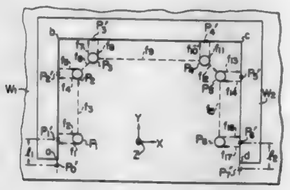
Takashi Kogawa, Sakura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,846

Claims priority, application Japan, Mar. 20, 1981, 56-39436

Int. Cl.³ G05B *19/46*

U.S. Cl. 364—513 **10 Claims**



1. A method of path control for a robot having means for detecting a boundary of a workpiece, said method comprising the steps of: setting a plurality of detecting points in proximity to the workpiece; detecting the locations of a plurality of boundary reference points on the workpiece boundary relative to respective ones of the detecting points; computing an extrapolated point arithmetically, which is disposed on an extension of a particular line extending through an adjacent pair of detected boundary reference points, the extrapolated point being spaced from the nearer one of the adjacent pair of detected boundary reference points by a predetermined length; and controlling a robot manipulator to pass along a path through the extrapolated point and the adjacent pair of detected boundary reference points.

4,523,288

INTERVAL-EXPANDING TIMER

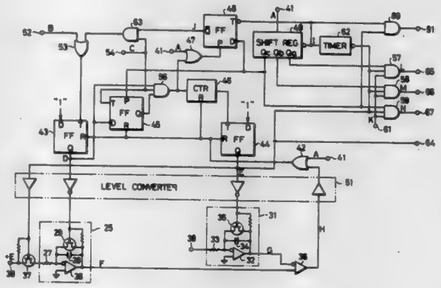
Mishio Hayashi, Saitama, Japan, assignor to Takeda Riken Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,730

Claims priority, application Japan, Mar. 16, 1981, 56-37448

Int. Cl.³ G04F *10/04*

U.S. Cl. 364—569 **17 Claims**



14. A timer, for measuring a time interval ΔT between the occurrence of an input signal supplied thereto and the first clock pulse following said input signal of a first clock signal having period T_0 also supplied thereto, comprising:

a first integrator for integrating a first constant voltage for three successive first periods of time $\Delta T+nT_0$, nT_0 and $(n+1)T_0$ in a predetermined order, n being a positive integer, and for holding and outputting each integrated value for a respective holding period prior to performing the integration for the next first period of time;

a second integrator for integrating a second constant voltage for three respective expanded intervals corresponding to said three periods of time, wherein the combination of the relative magnitude of said second constant voltage with respect to said first constant voltage and the time constants of said first and second integrators are such that each said expanded interval is longer than the respective first period;

coincidence signal means supplied successively with respective pairs of said integrated values from said first and second integrators for corresponding one of said first periods of time and expanded intervals, for outputting a coincidence signal when the output of said second integrator equals the respective integrated value that is being held by said first integrator;

a second clock for providing second clock pulses;

counting means for counting said second clock pulses during each said expanded interval; and

control means for controlling said first and second integrators to perform said integrating, so as to output from said first integrator the integrated value held therein and the respective output of said second integrator to said coincidence means for detecting said coincidence;

wherein said time interval ΔT is determined using the count values of the counting means corresponding to said three

respective periods of time in the formula $((\Delta T+nT_0)-nT_0)/((n+1)T_0-nT_0))$.

4,523,289

TIME INTERVAL MEASURING SYSTEM

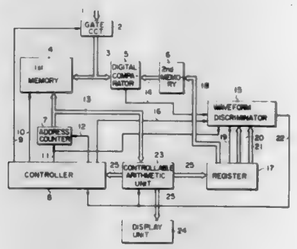
Masafumi Soma, Fussa, and Yoshihiko Kohno, Kokubunji, both of Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 217,463, Dec. 17, 1980, abandoned. This application Jan. 17, 1983, Ser. No. 458,469

Claims priority, application Japan, Dec. 27, 1979, 54-169456

Int. Cl.³ G01R *23/02*

U.S. Cl. 364—569 **4 Claims**



1. A time interval measuring system comprising:

an N-bit input terminal for receiving a series of digital quantities represented by N bits and sampled at equal time intervals;

a first memory connected to the N-bit input terminal for storing the series of digital quantities;

at least one N-bit digital comparator means for comparing with each other two digital quantities respectively representing the output from the first memory and a threshold level;

means for storing the series of digital quantities in the first memory,

means for reading out the series of digital quantities from the first memory for input to the digital comparator means,

a second memory formed by an N-bit register having its output connected to the digital comparator means for storing the threshold value, means for storing data in the second memory,

at least one waveform discriminator connected to the digital comparator means and operative to remove small time deviations in the compared output near the threshold level and to generate a coincidence signal when the number of slopes crossing with the threshold level reaches a predetermined number; and

means for selecting two different addresses of the first memory when said coincidence signal is generated for a distinct set of the threshold value, the polarity and the number of slopes, and for measuring from a difference between said two addresses of the first memory, at a high speed, a time interval between two digital quantities in the first memory.

4,523,290

DATA PROCESSOR ARCHITECTURE

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation-in-part of Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,209,853, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, and Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953. This application Oct. 25, 1977, Ser. No. 844,765

Int. Cl.³ G06J *1/00*

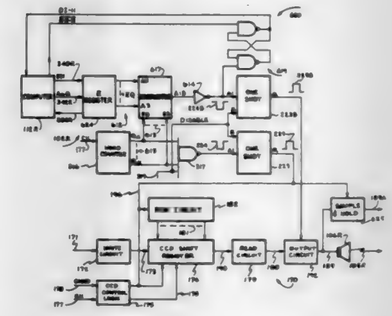
U.S. Cl. 364—602 **63 Claims**

1. A data processor system comprising:

an analog memory for storing a program, said analog memory including means for storing the program as a plurality of analog signals;

analog refresh circuitry for refreshing the analog signals stored in said analog memory;

accessing circuitry for accessing the program of stored analog signals from said analog memory; and



a stored program digital data processor for processing data under control of the program of stored analog signals accessed from said analog memory with said accessing circuitry.

4,523,291

DEVICE FOR ESTIMATING THE OPERATING FREQUENCY OF A SOURCE OF RECURRENT SIGNALS

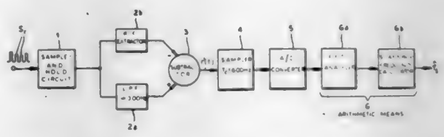
Marco Giubbolini, and Walter Marziali, both of Rome, Italy, assignors to Selenia-Industrie Elettroniche Associate S.p.A., Rome, Italy

Filed Jun. 24, 1982, Ser. No. 391,869

Claims priority, application Italy, Jun. 25, 1981, 48762 A/81

Int. Cl.³ G06F *15/31*; G01R *23/16*

U.S. Cl. 364—724 **4 Claims**



1. A device for estimating the operating frequency of a source of current incident signals lying within a predetermined frequency range, comprising:

input circuitry for receiving an incident signal;

filter means connected to said input circuitry for isolating an a-c component of said incident signal;

sampling means connected to said filter means for deriving a sequence of amplitude pulses of predetermined cadence, corresponding to twice the upper limit of the frequency range of the incident signal, from said a-c component;

conversion means connected to said sampling means for digitizing said amplitude pulses; and

arithmetic means including an FFT analyzer, said arithmetic means being connected to said conversion means for subjecting the sequence of digitized amplitude pulses to a Fourier analysis and calculating an estimated operating frequency of said source from the index derived from selected terms in the resulting Fourier series having real and imaginary coefficients whose absolute values add up to a maximum numerical value in said series, said arithmetic means further including calculating means, connected to said FFT analyzer for weighting said index and means for deriving a corrective value from averaged differences between the Fourier coefficients of a limited number of

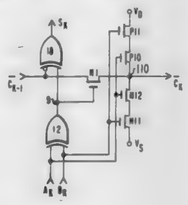
terms preceding and succeeding said selected terms in said series connected to said calculating means for weighting said index with the corrective value as thus derived, said calculating means being also provided with means for summing the real and imaginary coefficients of at least a number of terms of said Fourier series and comparing the resulting sums for determining the selected terms from the highest sum of said series.

4,523,292

COMPLEMENTARY FET RIPPLE CARRY BINARY ADDER CIRCUIT

John Armer, Middlesex, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 30, 1982, Ser. No. 429,328
Int. Cl.³ G06F *7/50*
U.S. Cl. 364—786 **1 Claim**



1. A binary ADDER stage for producing the sum of two single bit binary numbers and the complement of a single bit binary carry signal and providing the complement of a carry output signal associated with said sum, comprising:
first and second binary input terminals;
a sum output terminal;
a carry complement input and a carry complement output terminal;
an exclusive OR gate having first and second input terminals connected to the first and second binary input terminals respectively, and having an output terminal;
an exclusive NOR gate having first and second input terminals connected respectively to said carry complement input terminal and the output terminal of the exclusive OR gate;
a first transistor having a principal conduction path connected between the carry complement input and carry complement output terminals and having a control electrode connected to the output terminal of said exclusive OR gate;
first and second P-type transistors serially connected between the carry complement output terminal and a point of relatively positive supply potential and having respective control electrodes connected to the first and second binary input terminals respectively; and
third and fourth N-type transistors serially connected between the carry complement output terminal and a point of relatively negative supply potential and having respective control electrodes connected to the first and second binary input terminals respectively.

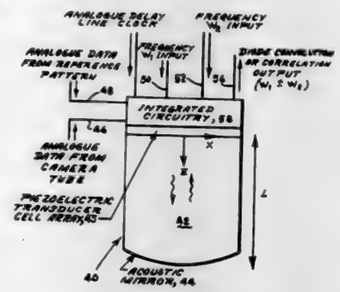
4,523,293

TWO-DIMENSIONAL BULK ACOUSTIC WAVE CORRELATOR-CONVOLVER

Bert A. Auld, Menlo Park; Donald W. Pettibone, Cupertino, and James D. Plummer, Mountain View, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 5, 1983, Ser. No. 482,377
Int. Cl.³ G06G *7/00;* **G06C** *7/195*
U.S. Cl. 364—821 **10 Claims**

1. A two-dimensional bulk acoustic wave correlator-convolver comprising:
a cylindrical rod having a first and a second end surface,
said first end surface being planar and perpendicular to the longitudinal axis of said rod,
a piezoelectric disc having one side thereof affixed to the external portion of said first end surface of said rod, and
an integrated circuit multiplexing means attached to the other side of said piezoelectric disc,



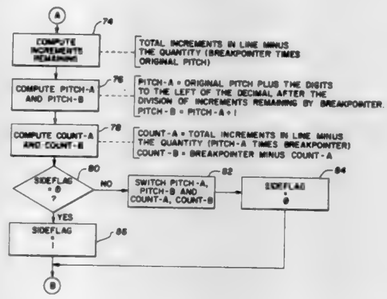
said integrated circuit multiplexing means including electrodes defining a matrix of addressable transducer cells in said piezoelectric disc,
said second end surface of said rod being convex to form an acoustic mirror for reflecting acoustic waves originating at said piezoelectric disc and propagated through said rod,
said rod having a length equivalent to twice the focal length of said acoustic mirror.

4,523,294

CHARACTER SPACED JUSTIFICATION METHOD AND APPARATUS

Bryan D. C. Winn, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed May 27, 1982, Ser. No. 382,630
Int. Cl.³ B41J *19/00;* **G06F** *5/00, 9/16*
U.S. Cl. 364—900 **4 Claims**



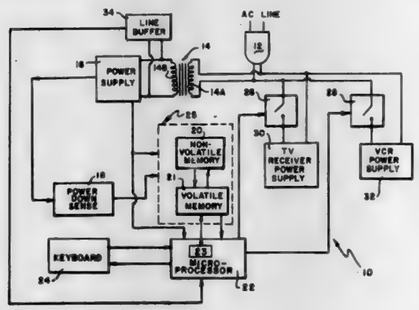
1. A method of operating a printwheel type letter quality printer for producing character spaced justified text with aid of a microprocessor comprising:
providing a data base for said letter quality printer to said microprocessor including at least,
an original pitch increment "P(O)", and
positions at which margins are set on said letter quality printer, said microprocessor using said positions to determine total increments in a line of text "T";
serially receiving a string of characters for a line of text into an interface from a terminal;
counting each character of said string of characters in counting means of said microprocessor as each said character enters said interface;
recording in recording means of said microprocessor an increment position of delimiters "B" at spaces or hyphens as said string of characters are counted by said counting means;
deleting said increment position from said recording means and substituting a new increment position for said delimiter "B" at each new space or hyphen as said string of characters is counted by said counting means;
comparing in comparing means of said microprocessor number of said characters of said line of text received with said text "T" to determine if enough of said characters have been received to form an intermediate line of text for justification, said comparing being repeated after receipt of each said character by said comparing means;
feeding said intermedite line of text up to a last of said delimiters "B" from said microprocessor to a random access memory for storage of said intermediate line of text when said intermediate line of text has been accumulated in said microprocessor;
calculating from said original pitch increment "P(O)" in said microprocessor number of increments "R" required to complete a justified line of text from said last of said delimiters "B" after said storage of said intermediate line of text;
first computing from said original pitch increment "P(0)" and increment "R" in said microprocessor a first pitch "P(1)" representing pitch to which said letter quality printer is set by said microprocessor for a first part of said justified line of text;
second computing from said original pitch increment "P(0)" and increment "R" in said microprocessor a second pitch "P(2)" representing pitch to which said letter quality printer is set by said microprocesor for a second part of said justified line of text;
activating said letter quality printer by said microprocessor to print said justified line of text from said random access memory when said first pitch "P(1)" and second pitch "P(2)" have been computed; and
repeating said serially receiving, counting, recording, deleting, comparing, feeding, calculating, first computing, second computing and activating steps for each subsequent line of text.

4,523,295

POWER LOSS COMPENSATION FOR PROGRAMMABLE MEMORY CONTROL SYSTEM

Thomas J. Zato, Palatine, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 7, 1982, Ser. No. 415,309
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 **10 Claims**



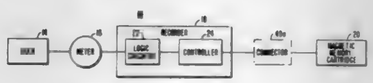
1. In an arrangement for controlling a programmable device energized by an AC source, said arrangement including a DC power supply coupled to said AC source for generating a DC output voltage, clock means coupled to said AC source for generating real time data, programming means responsive to user-initiated inputs for generating program time data, a controller energized by said DC power supply and coupled to said programmable device, to said programming means for receiving said program time data therefrom and to said clock means for receiving said real time data therefrom, and wherein is stored a time-based control program for controlling said programmable device in accordance with said program time data referenced to said real time data, and a volatile memory coupled to said controller for temporarily storing said program and real time data during the execution of said time-based control program, a power loss protection system comprising:
power sense means coupled to said volatile memory and to said DC power supply, said power sense means comprising means for developing first control signal and capacitive means for developing second control signals respectively representing the present and a previous output voltage of said DC power supply and comparison means for comparing said first and second control signals for generating and providing to said volatile memory a write instruction when said first control signal drops below said second control signal and a read instruction when said first control signal rises above said second control signal; and
a nonvolatile memory coupled to said volatile memory for receiving and storing said program and real time data when said volatile memory receives a write instruction and for transferring said program and real time data to said volatile memory when said volatile memory receives a read instruction for later recall by said controller in resuming control of said programmable device in accordance with said time-based control program following an interruption in the output of said DC power supply, wherein the operation of said programmable device is shifted in time by an interval equal to the duration of the interruption of said power supply.

4,523,296

REPLACEABLE INTERMEDIATE SOCKET AND PLUG CONNECTOR FOR A SOLID-STATE DATA TRANSFER SYSTEM

Jerry V. Healy, Jr., Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 3, 1983, Ser. No. 455,435
Int. Cl.³ G01D *9/00*
U.S. Cl. 364—900 **4 Claims**



1. A solid-state data transfer system, comprising:
a controller means for receiving a train of pulses, said train of pulses being convertible into a preselected digital data format, said controller means having a terminal portion with a first set of two female sockets, said first set of two female sockets being partially enclosed by a first chamber;
a cartridge having a solid-state memory device contained within, said cartridge having a first set of two prongs connected in electrical communication with said solid-state memory device, said first set of two prongs being partially enclosed by a second chamber, said second chamber extending beyond the distal ends of each of said two prongs of said first set of two prongs, said second chamber being shaped to receive said first chamber in sliding association, said first set of two prongs being shaped to be received in interference relation by said first set of two female sockets simultaneously with said first chamber being received by said second chamber; and
an intermediate connector having a socket member and a prong member, said socket member having a second set of two female sockets and a third chamber, said second set of

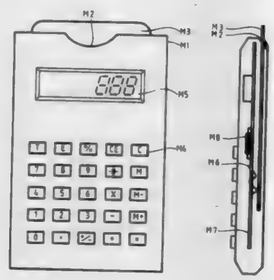
two female sockets being partially enclosed by said third chamber, said third chamber being shaped to be received by said second chamber in sliding relation, said second set of two female sockets being shaped to receive said first set of two prongs in interference relation simultaneously with said third chamber being received by said second chamber, said prong member having a second set of two prongs and a fourth chamber, said second set of two prongs being partially enclosed by said fourth chamber, said fourth chamber extending beyond the distal ends of each of said two prongs of said second set of two prongs, said fourth chamber being shaped to receive said first chamber in sliding association, said second set of two prongs being shaped to be received in interface relation by said first set of two female sockets simultaneously with said first chamber being received by said fourth chamber, said socket member and said prong member being rigidly attached together, each one of said two female sockets of said second set of two female sockets being connected in electrical communication with a preselected one of said two prongs of said second set of two prongs.

4,523,297

HAND-HELD PROCESSOR WITH TWO-WAY DIALOG BETWEEN MICROPROCESSOR IN CASE AND MICROPROCESSOR ON CARRIER INSERTABLE INTO CASING SLOT

Michel Ugon, Maurepas, and Jean-Pierre Nonat, Maule, both of France, assignors to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull, Paris, France

Continuation of Ser. No. 546,588, Oct. 28, 1983, abandoned, which is a continuation of Ser. No. 262,606, May 11, 1981, abandoned. This application Sep. 7, 1984, Ser. No. 648,607
Claims priority, application France, May 30, 1980, 80 012109
Int. Cl.³ G06F *15/16, 3/00*
U.S. Cl. 364—900 **9 Claims**



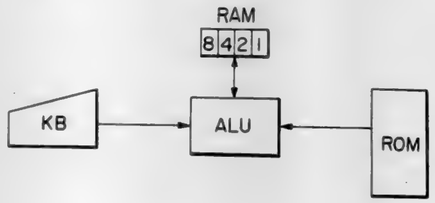
1. A portable hand-held data processor comprising a case sized to enable the case to be hand-held, the case having thereon a keyboard for manual data entry and a display, and having a slot therein for receiving a removable carrier; first processing means including a first microprocessor and a first memory disposed within the case and connected to the keyboard and to the display for performing a first predetermined set of data processing operations; a removable carrier received within the slot and releasably connected electrically to the first processing means, the removable carrier comprising a card embodying therein second processing means including a second microprocessor and a second memory for performing a second predetermined set of data processing operations; and means for the bidirectional transmission of messages in bit serial form between the first and second processing means by variations of a signal on a single conductor line connecting the first processing means to the second processing means of the removable carrier received in the slot, the first and second memories embodying programs for controlling the first and second microprocessors so as to afford bidirectional communication therebetween over said single conductor line and to expand the data processing capability of the portable data processor to enable the portable data processor to perform both said first and second predetermined sets of data processing operations.

4,523,298

INPUT DEVICE WITH A KEYBOARD IN WHICH ACTUATION OF A KEY MORE THAN ONCE MAY CAUSE A DIFFERENT FUNCTION TO BE PERFORMED

Atsushi Sakurai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 133,504, Mar. 24, 1980, abandoned. This application May 31, 1983, Ser. No. 498,677
Claims priority, application Japan, Mar. 28, 1979, 54-35429
Int. Cl.³ G06F *15/02*
U.S. Cl. 364—900 **14 Claims**



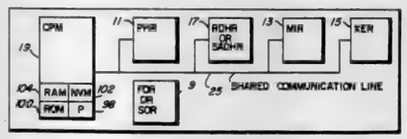
1. An input device, comprising:
keyboard means having a plurality of input keys, at least one of said input keys being assigned more than one function and the actuation of said one input key more than once in a sequence of actuations performing a function different from that performed by the first actuation thereof;
first memory means for storing status data for said one input key;
second memory means for storing next status data for replacing the status data in said first memory means; and
process means for generating input information as a function of a combination of the status data from said first memory means and actuation of said one input key from among said plurality of input keys,
said process means supplying the next status data in said second memory means to said first memory means in accordance with the combination of the operated input key and the status data in said first memory means whereby the previous status data stored in said first memory means is replaced by the next status data so that said one operated input key performs different functions when actuated more than once in a sequence of actuations.

4,523,299

MESSAGE TRANSMITTING SYSTEM FOR REPRODUCTION MACHINES AND COPIERS

James M. Donohue, Los Alamitos; Robert E. Markle, Rancho Palos Verdes, and George E. Mager, Hermosa Beach, all of Calif.; Stephen P. Wilczek, Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 421,019
Int. Cl.³ G06F *9/00*; G03G *15/00*
U.S. Cl. 364—900 **4 Claims**



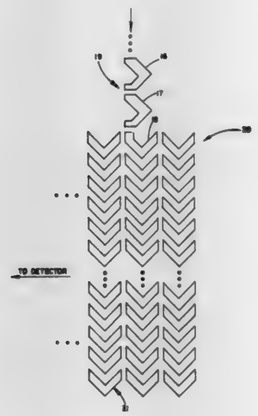
1. In a copy reproducing machine for making copies of document originals having a master control module and remote operating modules cooperable with one another to form said copy reproducing machine, the combination of:
(a) a shared communication line linking said modules together, said shared communication line serving as the sole vehicle for communicating control instructions between said modules for making said copies;
(b) a shared line transmitter for each of said modules including
(1) means for addressing control instructions from the module to at least one other of said modules, and
(2) means for placing said control instructions following said addressing onto said shared communication line for transmission over said shared communication line to said modules; and
(c) a shared line receiver for each of said modules including
(1) means for detecting control instructions addressed to said module from control instructions addressed to other modules being transmitted on said shared communication line, and
(2) means for receiving said control instructions addressed to said module from said shared communication line to said module.

4,523,300

CHEVRON DETECTOR EXPANDER FOR MAGNETIC BUBBLE DOMAIN SYSTEM

Leonard R. Tocci, Mission Viejo, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 278,501, filed as PCT US 80/00489, Apr. 28, 1980, published as WO 81/03237, Nov. 12, 1981, § 102(e), dated Apr. 28, 1980, abandonded. This application Apr. 28, 1980, Ser. No. 546,068
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—43 **24 Claims**



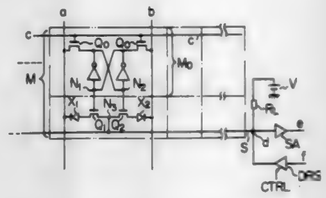
20. The combination comprising:
at least two expander bubble propagation elements arranged in a first row of an expander and having their surfaces uniformly spaced in juxtaposition including a first element at one end of said row and a second element at the other end of said row, said first expander element having a first side with a middle portion and first and second end portions, said second expander element having a first side with a middle portion and first and second end portions,
an input bubble propagation element associated with one of said first sides in said first row,
a second row of bubble propagation elements positioned in said expander on a first side of said first row, and
a third row of bubble propagation elements positioned in said expander on the second side of said first row whereby a bubble propagating from said input element to one of said expander elements first sides will expand to form a stripe in said expander.

4,523,301

ASSOCIATIVE MEMORY

Hiroshi Kadota, Toyonaka, and Eisuke Ichinohe, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 1, 1983, Ser. No. 499,912
Claims priority, application Japan, Jun. 4, 1982, 57-96405
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—49 **5 Claims**



1. An associative memory comprising memory cells arrayed in columns and rows and each including a bistable circuit having two nodal points having complementary potentials and a pair of first switching elements controlling electrical connections between the nodal points and a pair of bit lines respectively, each of said bit line pairs being disposed for each column of said memory cells, a word line disposed for each row of said memory cells for controlling on-off of said first switching elements depending on its potential, a first series connection of a first rectifying element and a second switching element connected between a sense line and one of said bit lines in each of said memory cells, a second series connection of a second rectifying element and a third switching element connected between said sense line and the other of said bit lines in each of said memory cells, the control terminals of said second and third switching elements being connected to said complementary nodal points respectively in said bistable circuit in each of said memory cells, a sensing amplifier connected to each of said sense lines for sensing the potential thereof, a potential setting circuit connected to each of said sense lines for setting the potential thereof, and a load element connected at one of its terminals to each of said sense lines and at the other terminal to a power source.

4,523,302

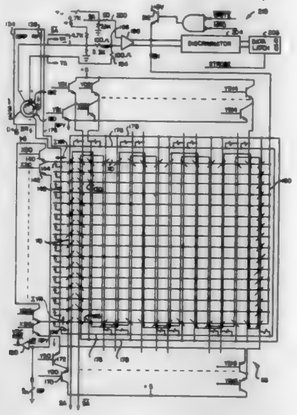
CORE MEMORY WITH RETURN DRIVE SCHEME

Thomas J. Gilligan, Rolling Hills Estates, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jul. 16, 1981, Ser. No. 283,973
Int. Cl.³ G11C *7/02, 11/061*
U.S. Cl. 365—195 **9 Claims**

2. A core memory drive system comprising a plurality of X conductors and a plurality of Y conductors inductively coupling an array of magnetic memory cores to provide coincident current selection of a selected core therein, the X conductors each having a drive end and an opposite common end coupled to a common end of each of the other X conductors, the Y conductors each having a drive end and an opposite common end coupled to a common end of each of the other Y conductors, an X drive circuit connected to generate a partial select X drive current in a selected one of the X conductors, the X drive circuit providing an oppositely directed return path for a proportionate share of the X drive current between the drive end of each unselected X drive conductor and a first bus; a Y drive circuit connected to generate a partial select Y drive current in a selected one of the Y conductors, the Y drive

circuit providing an oppositely directed return path for a proportionate share of the Y drive current between the drive end of each unselected Y drive conductor and a second bus; and a conductor interconnecting the first and second buses with the



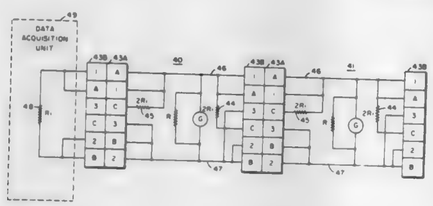
X and Y drive circuits being coupled such that one sources a drive end of a selected conductor while the other sinks a drive end of a selected conductor to provide a single current passing through both a selected X conductor and a selected Y conductor.

4,523,303

SEISMIC DATA GATHERING CABLE

Wilfried K. Lenhardt, Richardson, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 7, 1982, Ser. No. 395,897
Int. Cl.³ G01V *1/16*
U.S. Cl. 367—20 **2 Claims**



1. A seismic data gathering cable, comprising:

(a) a plurality of cable sections each having a seismic detector and a pair of signal lines for carrying the seismic energy signals produced by said detector in response to the detection of seismic energy waves,

(b) a plurality of mating connectors between adjoining cable sections having at least four electrical terminals, first and second of said terminals connecting said pair of signal lines between said adjoining cable sections,

(c) a first shunting resistance located in each cable section and connected between said pair of signal lines,

(d) a second shunting resistance located in each cable section having one end connected to a first of said pair of signal lines within said cable section and the other end connected through a third of the terminals of said mating connectors to the second of said pair of second lines in the next succeeding cable section, and

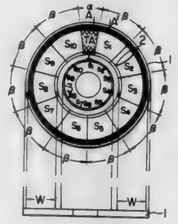
(e) a third shunting resistance located in each cable section having one end connected to a first of said pair of signal lines within said cable section and the other end connected through a fourth of the terminals of said mating connector to the second of said pair of signal lines in the immediately preceding cable section, whereby any of said cable sections may be reversed without affecting the electrical characteristics of said seismic cable.

4,523,304

OPTICAL DATA RECORDING AND REPRODUCING APPARATUS

Isao Satoh, Neyagawa; Tomio Yoshida, Katano; Shunji Harigae, Neyagawa, and Kenji Koishi, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 14, 1982, Ser. No. 368,361
Claims priority, application Japan, Apr. 17, 1981, 56-58927; Oct. 2, 1981, 56-157841
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—32 **13 Claims**



1. An optical data recording and reproducing apparatus comprising:

an optical disc including grooved guide tracks having a recording material formed thereon traceable by a laser light beam, each said guide track being divided into a plurality of sectors, each sector including an identification field formed of concave-convex pits and a data field for recording data signals and having a uniform groove, said identification field including identification data indicative of an address of said sector and a flag indicative of initiation of the identification data and formed in front of the identification data, said identification field being recorded with a first modulation signal variable in dependence on a signal corresponding to a clock pulse, said data field being recorded with a second modulation signal different from the first modulation signal;

a first demodulation means for demodulating the signals of said identification field; and

a second demodulation means for demodulating said data signals when the output of said first demodulation means produces a predetermined address.

4,523,305

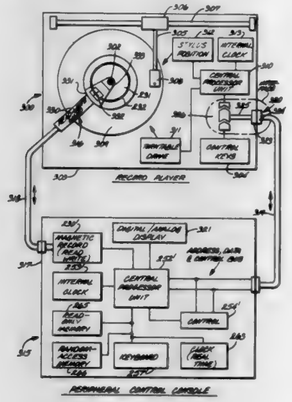
MAGNETICALLY RECORDABLE LABEL FOR MECHANICALLY-DEFINED INFORMATION-BEARING DISCS

Robert G. Cheeseboro, 3525 S. Bronson Ave., Los Angeles, Calif. 90018

Continuation-in-part of Ser. No. 322,948, Nov. 19, 1981, Pat. No. 4,423,503, which is a continuation-in-part of Ser. No. 164,922, Jul. 1, 1980, Pat. No. 4,302,832, which is a division of Ser. No. 951,563, Oct. 16, 1978, Pat. No. 4,222,574, which is a division of Ser. No. 778,027, Mar. 16, 1977, Pat. No. 4,121,836.
This application Dec. 19, 1983, Ser. No. 562,853
The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.
Int. Cl.³ G11B *3/68*
U.S. Cl. 369—33 **4 Claims**

1. The combination of a programmable record and a cooperatively arranged record player in which the record, when programmed, provides instructions to the record player for commanding the record player to play back the record in a programmed sequence,

the record player comprising a read/write head for creating programming instructions on the record and for receiving the programming instructions from the record, a transducing means cooperable with the record for playback of primary information contained by the record apart from the programming instructions, and a logic/memory means for receiving the programming instructions from the read/write head and for directing the operation of the transducing means,



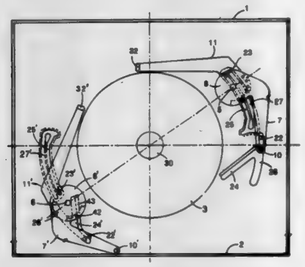
the record also comprising an outer annular region and a central annular region, the outer region containing primary information that is transducible by the transducing means on the record player, the central region comprising machine readable means cooperable with the read/write head for receiving and storing the programming instructions, such instructions being descriptive of the location on the outer annular region of a least one discrete portion of the primary information.

4,523,306

RECORD LOADING APPARATUS FOR A SLOT TYPE RECORD PLAYER

Marcel J. H. Staar, Brussels, Belgium, assignor to Staar S. A., Belgium

Filed Jan. 4, 1984, Ser. No. 568,140
Claims priority, application Belgium, Jan. 28, 1983, 0/209993
Int. Cl.³ G11B *17/04, 25/04*
U.S. Cl. 369—77.1 **9 Claims**



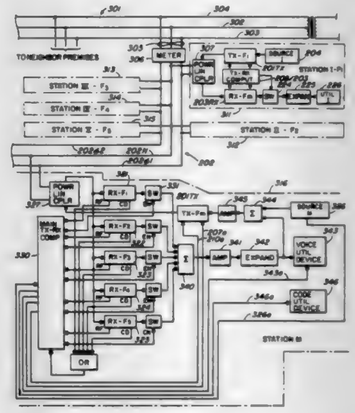
1. In a record player apparatus for automatically guiding and centering records of different sizes on a driving spindle, the combination comprising, a base, a record support helically rotatable on the base between a raised load position for receiving a record and a lowered play position for positioning a record on the driving spindle, two pairs of levers mounted for pivotable movement on the support at diametrically opposed pivot points, means on the levers for engaging a record in the load position, guide means for the levers for guiding the record to a centered position as the record is inserted into the player, and trigger means responsive to the degree of deflection of the lever pairs for initiating the helical rotation of the record support from the load to the play position.

4,523,307

POWER LINE CARRIER MULTI TELEPHONE EXTENSION SYSTEM FOR FULL DUPLEX CONFERENCING AND INTERCOM BETWEEN TELEPHONES

William M. Brown, Acton, and James R. Lindquist, Rowley, both of Mass., assignors to Astech, Inc., Bedford, Mass.

Filed Nov. 30, 1982, Ser. No. 445,499
Int. Cl.³ H04M *11/00*
U.S. Cl. 370—30 **27 Claims**



19. A telephone extension system for signalling between a telephone subscriber's telephone line of a conventional telephone communication system wherein a separate telephone line is provided from a central switching system at one location to each subscriber at the subscriber's premises and two or more of the subscriber's extension telephones over a two element transmission line at the subscriber's premises, referred to herein as the premises transmission line, including at the premises: a main station (M) near the telephone line and having access to the two element transmission line and two or more extension stations (E_1, E_2--En--EN), each having access to the two element transmission line, comprising,

(a) at the M station:

(a1) detector means connected to the telephone line for detecting audio frequency signals on the telephone line, said detected signals referred to herein as TL signals,

(a2) a transmitter for producing a main carrier frequency signal, Fm, and including modulating means in said transmitter for modulating said Fm signal,

(a3) N receivers, one for each of the En stations, each receiver for receiving a different one of the En stations transmitted RF carrier frequency signals, F_1, F_2--Fn--FN, and said receiver including an F_n demodulator, for re-producing modulations of Fn at the output of the receivers,

(a4) first combining means for combining the outputs of said N receivers to produce a combined receiver output signal referred to herein as MRXN,

(a5) second combining means comprising a mulitport hybrid network for combining the TL signals and MRXN signals and coupling the combined signals to

the input of said transmitter, said transmitter input being referred to herein as MTX, and

(a6) coupling means for coupling the transmitter output to the transmission line, and

(a7) mode command means for producing an intercom mode command signal, herein referred to as the I signal to control the operation of the hybrid network such that the MRXN and TL signals are or are not combined and MRXN is or is not coupled to the telephone line, depending upon the occurrence of said I signal;

whereby the premises transmission line carries the modulated Fm to the N E stations; and

(b) at each E section, denoted generally as En:

(b1) an En telephone,

(b2) a source of power for the En telephone,

(b3) said En telephone including means for producing audio and dial signals when it is used by the subscriber,

(b4) an En receiver for receiving the modulated Fm from the power line, said En receiver including an Fm demodulator for re-producing the modulations of Fm in the output thereof, said output referred to herein as EnRX

(b5) means for coupling the received modulated Fm from the premises transmission line to the input of the receiver, and

(b6) means for coupling said EnRX from said En receiver to the En telephone,

whereby the En telephone receives the audio signals, TL and MRXN,

(b7) an En transmitter including means for producing an En telephone carrier frequency signal, Fn, and modulating means in said En transmitter for modulating said Fn signal by the En telephone audio signals from the En telephone and signals representative of the En dial signals from the En telephone to produce a modulated Fn signal and

(b8) means for coupling the modulated Fn signal to the premises transmission line,

whereby said line carries the modulated Fn to the main station and telephone calls from the telephone line can be answered by any of the E_1, E_2--En--EN telephones and any or all of the E_1, E_2--En--EN telephones can conference on a telephone line call.

4,523,308

TELEPHONE CONCENTRATOR SWITCH ARRANGEMENT

John Bull, Lithia; Leon Croft; David B. DeVaney, both of Longwood; Russell R. Davis, Geneva; David L. Hinshaw; Haresh C. Jotwani, both of Longwood; Ronald J. Kandell, Winter Springs; Richard F. Kurtz, Longwood; Ernest O. Lee, Jr., Longwood; Gunter F. Neumeier, Longwood; Glenn L. Richards, Longwood, and Richard Scott, Longwood, all of Fla., assignors to Stromberg-Carlson Corporation, Lake Mary, Fla.

Filed Sep. 29, 1982, Ser. No. 427,513

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—56 **24 Claims**

1. A telephony network comprising a plurality of subscriber lines, each subscriber line being connected to one of a plurality of line switch means, with each line switch means being connected to a central office over a plurality of port group highways,

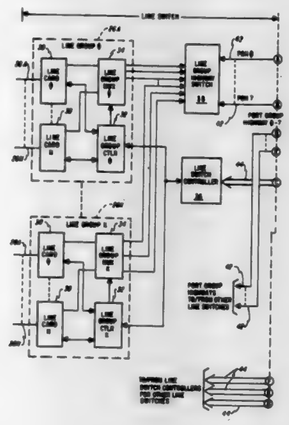
a. each line switch means including:

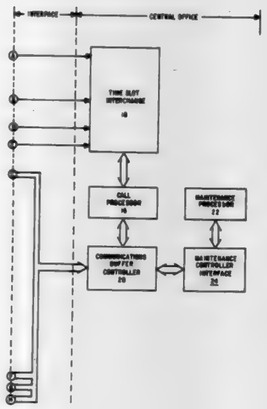
(i) line group means connected to a plurality of subscriber lines for converting the voice signals between analog and digital form;

(ii) a plurality of line group highway means connected to said line group means for transferring the digital voice signals from and to the line group means in a plurality of time slot channels;

(iii) line group highway switch means for selectively coupling the digital voice signals between all of the plurality of line group highway means and the port group highways during the time slot channels thereby to permit voice signals to be coupled between any subscriber line and any port group highway during each time slot channel; and

(iv) control means for selectively determining for said line group highway switch means a line group highway means, the port group highways and the time slot channels to effect the transfer of the voice signals between





said line group highways and said port group highways for each call; and

b. the central office means including (i) receiving means connected to the port group highways from all of said line switch means for receiving digital voice signals from and transmitting digital voice signals over said port group highways; and (ii) switch means for switching digital voice signals among said receiving means.

4,523,309

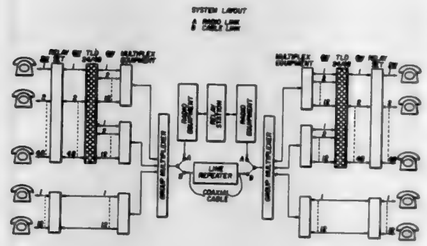
TIME ASSIGNMENT SPEECH INTERPOLATION APPARATUS

Joshua Piasecki, Ramat-Gan; Reuven Zelinkovsky, Moshav Beit Yehoshua; Aharon Segev, Kiryat Ono, and Teodor Henquin, Tel-Aviv, all of Israel, assignors to Electronics Corporation of Israel, Ltd., Tel-Aviv, Israel

Filed Dec. 4, 1979, Ser. No. 100,270

Int. Cl.³ H04J *6/02*

U.S. Cl. 370—81 **31 Claims**



1. A time assignment speech interpolation communication system for interconnecting a transmission trunk link having a plurality of communication channels to a second plurality of telephone communication lines, the second plurality exceeding the first plurality, and comprising:

transmission apparatus at a first end of the transmission trunk link including first input/out means comprising A-D conversion means operative to translate signals received along at least one of said second plurality of communications lines into digital form, digital means for detecting signals on said second plurality of telephone communication lines, and means for assigning each telephone communication line on which signals are present to an available one of the first plurality of communication channels, and second input/output means comprising D-A conversion means operative to translate said signals in digital form for transmission along at least one of said first plurality of communication channels into analog form;

receiving apparatus at a second end of the transmission link including third input/output means comprising A-D conversion means operative to translate signals received along at least one of said first plurality of communication channels into digital form, means for assigning each of the first plurality of communication channels carrying signals to a corresponding one of said second plurality of communication lines in accordance with assignment information received from said transmission apparatus, and fourth input/output means comprising D-A conversion means operative to translate signals in digital form into analog form for transmission along at least one of said second plurality of communication lines,

at least one of said first, second, third and fourth input/output means including direct digital input/output means operative to permit direct digital communication with at least one of said first plurality of communication channels and said second plurality of communication lines;

apparatus for communicating messages including assignment information between said transmission apparatus and said receiving apparatus;

said transmission apparatus, receiving apparatus and message communicating apparatus being operative for selectable analog and digital speech signal transmissions along said transmission trunk link.

4,523,310

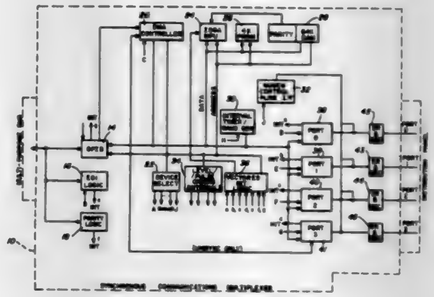
SYNCHRONOUS COMMUNICATIONS MULTIPLEXER

William H. Brown, Coral Springs; James A. Starkweather, Fort Lauderdale, and Hugh M. Humphreys, Coral Springs, all of Fla., assignors to Gould Computer Systems Inc., Fort Lauderdale, Fla.

Filed Jan. 28, 1983, Ser. No. 462,056

Int. Cl.³ H04J *3/02*

U.S. Cl. 370—112 **7 Claims**



1. A synchronous communications multiplexer adopted to couple a synchronous communications line to a host computer via multi-purpose bus and an input output processor, said host computer generating a plurality of microcode instruction sets, each microcode instruction set corresponding to a different communications protocol and mode of data transfer over said communications line, said host computer generating control commands relating to the data transfer across said communications line including a load control command and a write command in one instance for sending one data block outbound across said communications line in accordance with one mode of data transfer and a read command in another instance for receiving another data block inbound across said communications line; the synchronous communications multiplexer comprising:

a microprocessor means coupled to an internal bus;

an I/O interface means for interfacing said microprocessor means to said multi-purpose bus via said internal bus;

memory means for storing the outbound data block and the corresponding microcode instruction set, and said memory means being coupled to said internal bus;

direct memory access controller means for transferring said outbound data block between said multi-purpose bus and said memory means via said internal bus and said interface means upon receipt of a first transfer command;

a port being coupled to said communications line;

a port interface means for transferring data to and receiving data from said port, said port interface means including a programmable modem control and line interface circuit means for generating and detecting various line communication control signals which control the outbound and inbound transfer of data blocks across said port and said communications line, and said port interface means being coupled to said internal bus;

said microprocessor means including:

means for obtaining the corresponding microcode instruction set related to said one mode of data transfer and storing the same in said memory means upon receipt of said load control command;

means for executing said corresponding microcode instruction set upon storage thereof in said memory means and programming said programmable modem control and line interface circuit means in accordance therewith;

means for generating said first transfer command upon receipt of said write command in said one instance and applying said first transfer command to said direct memory access controller means;

means for controlling said port interface means to direct said outbound data block over said communications line from said memory means; and

means for coordinating the inbound transfer of said another data block received at said port to said multi-purpose bus upon receipt of said read command.

4,523,311

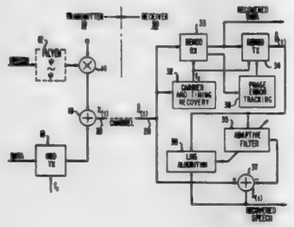
SIMULTANEOUS TRANSMISSION OF SPEECH AND DATA OVER AN ANALOG CHANNEL

Edward A. Lee, Berkeley, Calif., and David G. Shaw, Middletown, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 483,923, Apr. 11, 1983, abandoned. This application Nov. 16, 1984, Ser. No. 672,155

Int. Cl.³ H04J *1/02*

U.S. Cl. 370—69.1 **7 Claims**



1. A receiver comprising:

an input terminal capable of simultaneously receiving an analog speech signal which includes a predetermined power density characteristic over a predetermined bandwidth, and a modulated data signal which is received in a portion of the received analog speech signal bandwidth where the analog speech signal is present and the power density characteristic of the analog speech signal is at a low value;

a first and a second output terminal

means capable of demodulating the data signal from a received composite analog speech and modulated data signal for transmission to the first output terminal and for generating phase error signals detected in the received data signal;

means capable of remodulating the recovered data signal at the output of the demodulating and recovering means while introducing said phase jitter and frequency offset information signals for generating an output signal corresponding substantially to the data signal received at the input terminal of the receiver including said phase error signal;

adaptive filtering means capable of generating a first signal representative of an estimate of an impulse response of a channel connected to the input terminal of the receiver, and convolving said first signal with the remodulated data output signal from the remodulating means to generate a resultant output signal; and

means capable of subtracting the resultant output signal generated by the adaptive filtering means from the composite analog speech and modulated data signal received at the input terminal of the receiver for substantially cancelling the data signal forming part of the composite received signal and generating a resultant output signal at the second output terminal of the receiver which comprises the recovered analog speech signal.

4,523,312

IC TESTER

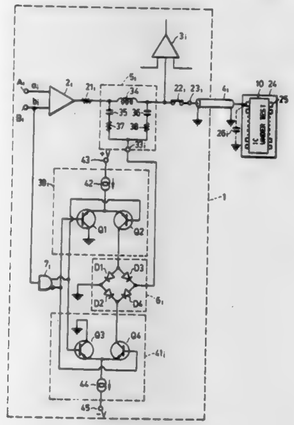
Kunio Takeuchi, Gyoda, Japan, assignor to Takeda Riken Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1982, Ser. No. 435,742

Claims priority, application Japan, Oct. 29, 1981, 56-173428

Int. Cl.³ G01R *31/28;* **G06F** *11/00*

U.S. Cl. 371—1 **18 Claims**



1. An IC tester for testing an IC having a plurality of terminal pins by supplying a plurality of test pattern signals to the terminal pins and by receiving outputs from the IC in response to the test pattern signals, comprising:

a plurality of drivers with output terminals for supplying the test pattern signals to respective ones of the terminal pins of the IC being tested;

a plurality of connector lines for being respectively connected between said output terminals of said drivers and the respective the terminal pins of the IC being tested for passing therethrough the test pattern signals from said drivers, said connector lines having characteristic impedances equal to the output impedances of said drivers; and

a plurality of low-pass filters respectively connected between said output terminals of said drivers and said connector lines, said low-pass filters having nominal impedances equal to said output impedances of said drivers and cutoff frequencies selected so that differences between propagation times required for the test pattern signals to reach the terminal pins of the IC being tested are smaller than a predetermined value.

4,523,313

PARTIAL DEFECTIVE CHIP MEMORY SUPPORT SYSTEM

Chester M. Nibby, Jr., Peabody; Reeni Goldin, Somerville, and Timothy A. Andrews, Arlington, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 17, 1982, Ser. No. 450,846

Int. Cl.³ G06F *11/20;* **G11C** *13/00*

U.S. Cl. 371—10 **30 Claims**

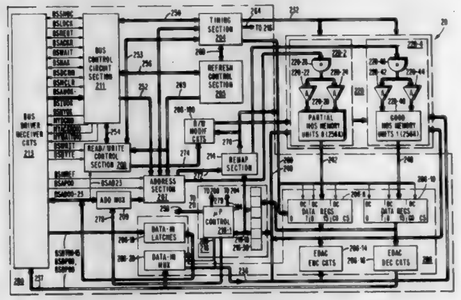
1. An addressable semiconductor memory system for providing a number of word locations for storing information words having a number of bits, said system comprising:

an addressable partially good memory including a plurality of partially good RAM chips, each chip having a number of internal rows and columns of bit locations containing a predefined small number of faults distributed randomly, said chips being organized into a number of system rows and columns, said number of system columns being organized into a number of groups, each group providing a different portion of said number of word locations;

an addressable good memory including a plurality of defect-free RAM chips, each chip being organized into said number of internal rows and columns of bit locations, said chips being organized into at least one system row and said number of system columns, said number of system columns being organized into said number of groups, each group providing an assigned portion of said number of word locations;

an addressable RAM static memory having a plurality of locations much less in number than said partially good memory, each location for storing a column address specifying one of said number of internal column locations in said good memory and a number of slice bit signals coded to specify the operating status of each of said number of groups of a corresponding word location in said partially good memory;

addressing means coupled to receive row and column address portions of a memory command, said address means being coupled to said partially good memory for applying said row and column address portions to said partially good memory, said addressing means including means



coupled to said good and static memories, said means for selectively applying one of said memory command row and column address portions to said static memory for read out of said column address and said slice bit signals of one of said locations and the other one of said row and column address portions to said good memory and said good memory being coupled to receive said column address from said static memory; and,

control means coupled to each of said memories, said control means being operative in response to said memory command specifying a memory write operation and said slice bit signals read out from said one location of said static memory to generate selectively control signals for simultaneously conditioning for writing, only those groups of chips in the system rows of said partially good and good memories specified by said coding of said slice bit signals, said specified groups of chips providing a defect-free word location composed of portions of said addressed good memory location and portions of said addressed partial memory location as specified by said coding of said slice bit signals.

4,523,314

READ ERROR OCCURRENCE DETECTOR FOR ERROR CHECKING AND CORRECTING SYSTEM

Gary D. Burns, Cottage Grove, and Scott D. Schaber, St. Paul, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 7, 1983, Ser. No. 464,184

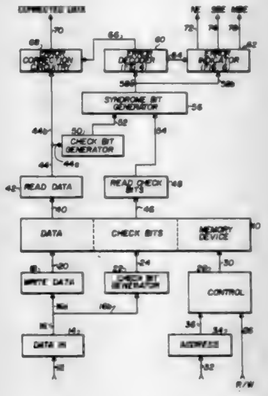
Int. Cl.³ G06F *11/10*

U.S. Cl. 371—38 **13 Claims**

1. An improved error occurrence detector for use with an error correction code system that has check bits associated with data words and includes circuitry for providing reconstituted check bits for the data words and syndrome bit generating circuitry responsive to the check bits and the reconstituted check bits for providing syndrome bits, said error occurrence detector comprising:

first circuit means responsive to selected ones of the syndrome bits for providing first signals indicative of multiple bit errors and check bit single bit errors;

adder means responsive to predetermined combinations of syndrome bits for providing second signals indicative that more than one syndrome bit is present, said adder means including a plurality of full adder circuit means each responsive at least in part to different ones of the syndrome bits, and each capable of providing sum and carry output signals;



gate circuit means responsively coupled to said adder means for providing third signals in response to said second signals indicative that single bit or multiple bit errors have occurred, and for providing fourth signals in the absence of said second signals indicative that a check bit single bit error or no error has occurred; and

selector means responsively coupled to said first circuit means and said gate circuit means for providing first indicating signals indicative of a first type of detected error and for providing second indicating signals indicative of a second type of detected error in response to said first, third and fourth signals.

4,523,315

RAMAN GAIN MEDIUM

Julian Stone, Rumson, N.J., assignor to AT&T Bell Laboratories, N.J.

Filed Apr. 9, 1982, Ser. No. 367,093

Int. Cl.³ H01S *3/30*

U.S. Cl. 372—3 **10 Claims**



1. A Raman laser comprising

a gain medium comprising a length of filamentary waveguide comprising multiatomic Raman-active molecules contained interstitially in at least some of the waveguide material, the laser further comprising

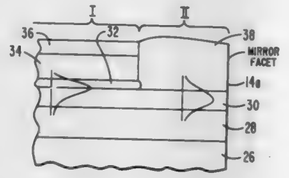
means for coupling pump radiation into the waveguide,

means for resonating within the waveguide Raman radiation emitted by the molecules

and

means for coupling at least a part of the Raman radiation out of the waveguide.

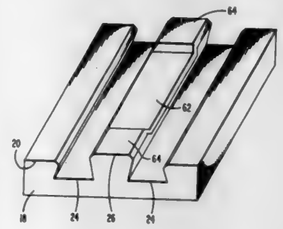
4,523,316
SEMICONDUCTOR LASER WITH NON-ABSORBING MIRROR FACET
Dan Botez, Mount Holly, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Oct. 29, 1982, Ser. No. 437,838
Int. Cl.³ H01S 3/19
U.S. Cl. 372—45 **9 Claims**



1. A semiconductor laser comprising:
a body of material having a pair of opposed mirror facets which are reflective of light, at least one of which is partially transmissive of light, said body including:
a substrate having first and second opposed surfaces with a pair of substantially parallel channels with a mesa therebetween, in said first surface and extending between said facets;
a first confinement layer overlying said first surface and the surfaces of said channels and said mesa;
a guide layer overlying said first confinement layer and tapering in thickness in the lateral direction;
an active layer overlying a portion of the guide layer and extending towards but not contacting at least one of said facets, thereby forming a first region in the body where said active layer overlies the guide layer and a second region where said active layer does not overlie said guide layer;
a second confinement layer overlying said active layer in said first region;
a confinement region overlying said guide layer in said second region; and
first and second electrical contacts overlying said second confinement layer and said second surface respectively;
wherein the lateral tapers of the guide layer in the first and second regions are different; and
wherein said active layer has a larger refractive index than said guide layer, said first and second confinement layers and said confinement region.

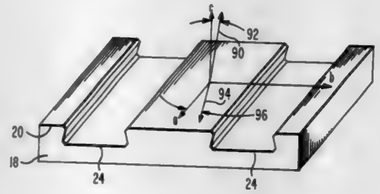
4,523,317
SEMICONDUCTOR LASER WITH REDUCED ABSORPTION AT A MIRROR FACET
Dan Botez, Mount Holly, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Oct. 29, 1982, Ser. No. 437,839
Int. Cl.³ H01S 3/19
U.S. Cl. 372—45 **8 Claims**

1. A laser comprising:
a body of semiconductor material having a pair of opposed mirror facets which are reflective of light, at least one of which is partially transmissive of light, said body including:
a substrate having first and second opposed major surfaces and having a pair of channels, with a mesa therebetween, in said first major surface and extending between said facets;
a first confinement layer overlying said first major surface and the surface of said channels and said mesa;
an active region, comprising a guide layer and an adjacent active layer, overlying said first confinement layer, said active layer extending to said facets and having a thinner portion thereof at at least one of said mirror facets which has a non-zero thickness over said mesa which is less than the thickness of a thicker portion of said active layer over the remainder of said mesa;



a second confinement layer overlying said active region;
a first electrical contact overlying said second confinement layer; and
a second electrical contact overlying said second major surface.

4,523,318
SEMICONDUCTOR LASER HAVING HIGH MANUFACTURING YIELD
John C. Connolly, Cranbury, and Dan Botez, Mount Holly, both of N.J., assignors to RCA Corporation, Princeton, N.J.
Filed Oct. 29, 1982, Ser. No. 437,840
Int. Cl.³ H01S 3/19
U.S. Cl. 372—48 **7 Claims**

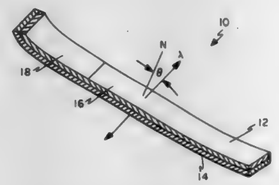


1. In a laser comprising a body of semiconductor material, said body including a substrate having a pair of channels in a first major surface thereof with a mesa therebetween, a first confinement layer overlying the first major surface, the mesa and partially filling the channels; a light propagation region, comprising an active layer, overlying the first confinement layer; and a second confinement layer overlying the light propagation region:
the improvement which comprises the first major surface of the substrate being misoriented from a member of the {100} family of crystallographic planes by a tilt angle between about 0.2° and 1.5° with a misorientation angle of between about 5° and 45°.

4,523,319
LASER TAPE SYSTEMS
Dale R. Pfost, Los Altos, Calif., assignor to Brown University, Providence, R.I.
Filed May 10, 1983, Ser. No. 493,149
Int. Cl.³ H01S 3/06
U.S. Cl. 372—54 **20 Claims**

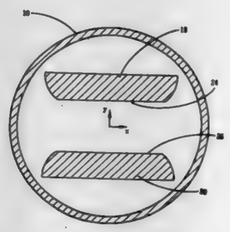
1. A laser tape system for use in a resonant cavity of a laser having a source of excitation energy, the tape system comprising:

A. a flexible tape carrying at least one lasing dye and located within the resonant cavity;
B. a drive means for moving the tape such that the excitation



energy can be focused on different portions of the tape within the cavity and
an energy extraction means for extracting the energy from the resonant cavity.

4,523,320
UNIFORM-FIELD ELECTRODE
Eddy A. Stappaerts, Rancho Palos Verdes, Calif., assignor to Northrop Corporation, Hawthorne, Calif.
Filed Jan. 14, 1983, Ser. No. 457,985
Int. Cl.³ H01S 3/00
U.S. Cl. 372—87 **2 Claims**



1. Apparatus for producing a uniform electric field, the apparatus being defined relative to a 3-dimensional Cartesian coordinate system having X, Y and Z principal axes, comprising:
two elongated electrodes disposed on opposite sides of the X-Z plane; and
means for applying a voltage between the two electrodes;
each electrode having a surface facing the other electrode which is symmetrical about the Y-Z plane, which has its longitudinal dimension parallel to the Z-axis, and which has a transverse cross-section whose contour satisfies the following equation:

$$dy/dx = -E_x/E_y$$

wherein E_x and E_y are the following fuctions of x and y:

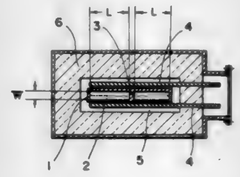
$$\begin{aligned} E_x/E_o = {} & (a^2 - b^2 - ax + by)/[(x-a)^2 + (y-b)^2] \\ & - (a^2 - b^2 - ax - by)/[(x-a)^2 + (y+b)^2] \\ & - (a^2 - b^2 + ax + by)/[(x+a)^2 + (y-b)^2] \\ & + (a^2 - b^2 + ax - by)/[(x+a)^2 + (y+b)^2] \\ E_y/E_o = {} & (2ab - ay - bx)/[(x-a)^2 + (y-b)^2] \\ & + (2ab + ay - bx)/[(x-a)^2 + (y+b)^2] \\ & + (2ab - ay + bx)/[(x+a)^2 + (y-b)^2] \\ & + (2ab + ay + bx)/[(x+a)^2 + (y+b)^2] \end{aligned}$$

and wherein E_o is a scale factor having any desired value either greater than or less than zero and a and b are parameters whose values are uniquely determined as follows by a parameter p having a value greater than 0.18 and less than or equal to one:

$$a^2 = (2\sqrt{p} - 1 + p)/(4p)$$

$$b^2 = (2\sqrt{p} + 1 - p)/(4p).$$

4,523,321
VERTICAL CARBONIZING FURNACE FOR USE IN THE PRODUCTION OF CARBON FIBERS
Yukihiro Murakami, Ehime; Shigeomi Murakami, Otsu, and Katsunosuke Maeda, Nishinomiya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed May 26, 1983, Ser. No. 498,526
Claims priority, application Japan, May 26, 1982, 57-88119
Int. Cl.³ F27B 9/04
U.S. Cl. 373—110 **15 Claims**

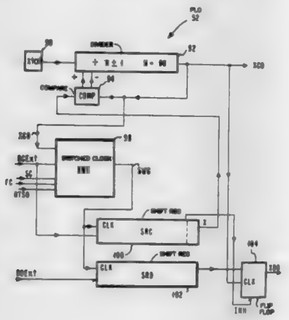


1. A vertical carbonizing furnace comprising:
a conduit through which a plurality of precursors pass, said conduit being disposed vertically;
a plurality of heaters vertically disposed at the outside of said conduit;
an inert gas introduction inlet provided in the lower portion of said conduit and an exhaust gas discharge pipe provided at the upper portion of said conduit;
a water seal sealing the lower end of said conduit by virtue of having the lower end of said conduit immersed in water;
a gas withdrawal outlet provided between said water seal and said inlet gas introduction inlet; and
a gas feeding duct for reuse through which said gas withdrawal outlet is in communication with the upper portion of said conduit.

4,523,322
INTERFACE DEVICE FOR MODEMS
Jean-Claude Abbiate, La Gaude, France, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 23, 1982, Ser. No. 452,565
Claims priority, application 12291981, Dec. 29, 1981, 81430044.8
Int. Cl.³ H04L 7/02
U.S. Cl. 375—36 **5 Claims**

1. An interface device for synchronizing together an internally clocked modem and at least one data terminal equipment (DTE) each of said DTE being provided with a clock circuit for generating an external clock signal RC Ext, said interface including:
a phase locked oscillator (PLO) provided with a control input and generating a recovered clock signal (XCO) to be used for adjusting said modem clock;
a switched clock generating circuit connected to said PLO and provided with one of said RC Ext signals for deriving a switched clock signal representative of the phase delay between said recovered clock signal and said one RC Ext signal;
a first shift register provided with said one RC Ext signal and controlled by said switched clock signal for providing a shifted reference signal, said reference signal being applied to said PLO control input;

a second shift register connected to said at least one DTE for receiving data therefrom, and controlled by said switched clock signal for shifting said data; and



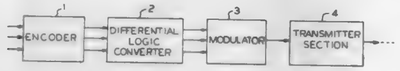
a gate connected to said second shift register and controlled by said recovered clock signal for providing in phase data to said modem.

4,523,323

DIGITAL SIGNAL COMMUNICATION SYSTEM FOR MULTI-LEVEL MODULATION INCLUDING UNIQUE ENCODER AND DECODER

Masahiro Nakajima, and Hiromi Hashimoto, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1983, Ser. No. 465,789
Claims priority, application Japan, Feb. 15, 1982, 57-23399
Int. Cl.³ G06F *11/12*
U.S. Cl. 375—37 **9 Claims**



1. A digital signal communication system comprising transmitter means having first means for differentially converting first digital signals of n trains (n is an integer of 3 or larger) into second digital signals of n trains comprising a plurality of words, second means responsive to said second digital signals for providing a modulated signal with $2^n(=N)$ modulation levels, third means for transmitting said modulated signal, receiver means having fourth means for receiving said modulated signal, fifth means for demodulating the output from said fourth means to provide third digital signals of n trains corresponding to said second digital signals, and sixth means for differentially converting said third digital signals of n trains to provide fourth digital signals of n trains corresponding to said first digital signals, the second and third means being characterized in that the Hamming distance between two words of said second and third digital signals corresponding to two adjacent modulation levels is either 1 or 2 and each of the Hamming distance of 1 and of 2 is equal to N/2.

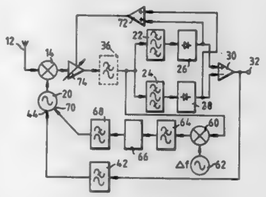
4,523,324

DIRECT MODULATION FM DATA RECEIVER

Christopher B. Marshall, Horley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 20, 1982, Ser. No. 435,426
Claims priority, application Netherlands, Oct. 26, 1981, 8132181
Int. Cl.³ H03D *3/13*
U.S. Cl. 375—91 **3 Claims**

1. A direct modulation FM data receiver, comprising:
an input signal receiving element for receiving a directly-modulated FM input signal having a channel frequency within a channel frequency range of $f_c \pm \Delta f$ wherein f_c is the frequency of a carrier signal and Δf is a frequency deviation from the carrier signal;
a signal mixer having a first input, a second input, and an output, the first input being connected to the input signal receiving element;
local oscillator signal means for producing and applying, to the second input of the signal mixer, a local oscillator



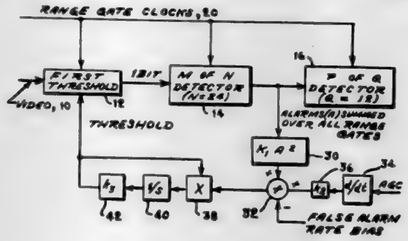
signal having a frequency within the channel frequency range of the FM input signal, but offset from the frequency of the carrier signal by an offset frequency amount δf. and
demodulating means, connected to the output of the signal mixer, for distinguishing between signalling tones $\Delta f + \delta f$ and $\Delta f - \delta f$ of an output signal of the signal mixer and deriving, from the signalling tones $\Delta f + \delta f$ and $\Delta f - \delta f$, an output data signal.

4,523,325

THREE-STAGE BINARY COINCIDENCE DETECTOR APPARATUS WITH ADAPTIVE CONSTANT FALSE ALARM RATE

Jimmie J. Justus, Yorba Linda, Calif., assignor to The Unites States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 26, 1982, Ser. No. 382,069
Int. Cl.³ H03K *13/00*
U.S. Cl. 377—44 **6 Claims**



1. A three-stage binary coincidence detector apparatus with an adaptive constant false alarm rate comprising in combination:
a threshold means for establishing a first threshold level, said threshold means receiving a video signal, said threshold means receiving a range gate clock signal, said threshold means sampling said video signal at said range gate clock signal rate, said threshold means providing a logical output for each range gated video level that exceeds said first threshold level,
a first counter for counting a first predetermined number of digital bits, said first counter receiving said logical output from said threshold means, said first counter means having a first predetermined binary length, said first counter recieving said range gate clock signal, said first counter providing a binary bit output every time said first predetermined number is exceeded,
a second counter for counting a first predetermined number

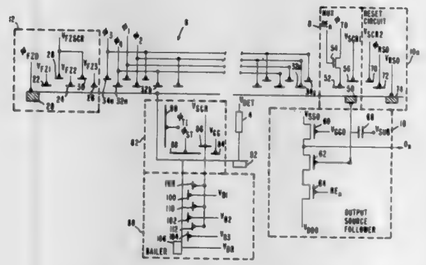
of binary bits, said second counter receiving said binary bit output from said first counter, said second counter having a second predetermined binary length, said second counter receiving said range gate clock signal, said second counter providing an alarm signal when said first predetermined number of binary bits is either equalled or exceeded, and,
a threshold feedback loop connected between said first and second counters to said threshold means, said threshold feedback loop receiving a false alarm rate bias signal and an AGC signal, said threshold feedback loop receiving said alarm signal from said first counter, said threshold feedback loop providing a threshold set signal to said threshold means.

4,523,326

LOW NOISE CHARGE COUPLED IMAGER CIRCUIT

Mary J. Hewitt, Playa del Rey, and Arthur L. Morse, Manhattan Beach, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Jan. 17, 1983, Ser. No. 458,607
Int. Cl.³ G11C *19/28*; H01L *29/78, 27/14, 31/00*
U.S. Cl. 377—58 **4 Claims**



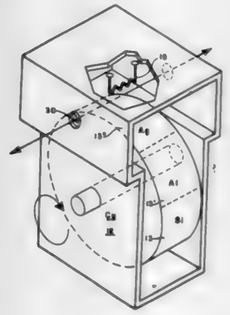
1. A low noise charge transfer device imager formed on a semiconductive substrate, comprising:
a plurality of semiconductive photodetectors organized by columns;
a plurality of column charge transfer device registers disposed to receive charge from each corresponding column of photodetectors, said charge transfer device registers including pluralities of charge transfer device gates connected to receive clock signals;
means for integrating charge from each photodetector during an integration period and therefater injecting the integrated charge into an adjacent portion of the corresponding one of said column charge transfer device registers as a charge packet;
means for multiplexing the output signals from each of said charge transfer device registers;
a reference column charge transfer device register;
means for subtracting the output from each of said charge transfer device column registers from that of said reference column charge device registers;
means for periodically bailing a certain amount of charge from said integrating means by a selected number of times during said integration; and
a FAT zero charge injector including a FAT zero metering gate overlying said substrate at the input to each of said column charge transfer device registers including means for applying an electrical potential to said metering gate to form a surface potential well therebeneath in said substrate registered to said metering gate, the effective area of said metering gate being reduced to a small amount relative to the effective area of said charge transfer device gates.

4,523,327

MULTI-COLOR X-RAY LINE SOURCE

Jay D. Eversole, Lancaster, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 5, 1983, Ser. No. 455,674
Int. Cl.³ H01J *35/04*
U.S. Cl. 378—124 **17 Claims**



1. A multi-target X-ray source comprising:
an envelope;
an anode rotatably supported within the envelope and having an annular target portion;
an electron emitting cathode supported within the envelope in spaced relationship with the target portion;
the target portion being comprised of a plurality of segments of different target materials of a substantially uniform thickness, with the target material of each segment being an integral unit having a smooth continuous surface;
wherein said envelope includes a window of beryllilum which is very thin and has a small aperature, the window being attached to a port in said envelope by a flexible bellows and mounted to permit manipulation of the aperature to adjust the take off angle of the X-ray beam which passes through the window.

4,523,328

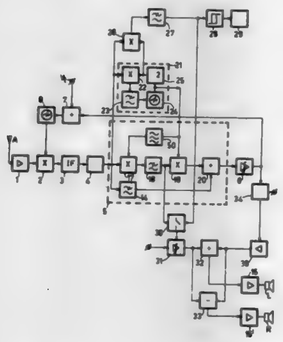
FM-RECEIVER INCLUDING A FREQUENCY-LOCKED LOOP

Wolfdietrich G. Kasperkovitz, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,229
Claims priority, application Netherlands, Mar. 9, 1982, 8200959
Int. Cl.³ H04H *5/00*
U.S. Cl. 381—3 **8 Claims**

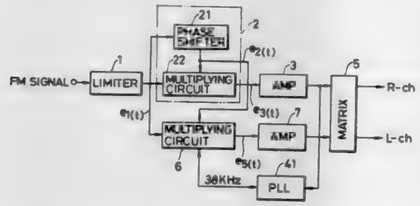
1. An FM-receiver comprising a frequency lock loop including a voltage controlled oscillator, a mixer connected to receive an aerial input signal and said voltage controlled oscillator output signal, an IF filter connected to receive an IF signal from said mixer, an FM-detector connected to demodulate an IF signal from said IF filter, a loop filter connected to provide a control voltage from said FM-detector through a loop amplifier to said voltage controlled oscillator comprising:
a first lowpass filter for selecting an audio-frequency stereo sum signal from a stereophonic FM multiplex signal; and
a bandpass filter in parallel with the first lowpass filter for selecting a difference stereo signal amplitude modulated

on a suppressed stereo sub-carrier from a stereophonic FM-multiplex signal;



said first lowpass filter and bandpass filter having a phase shift within the frequency passband of the frequency lock loop of not more than 90°.

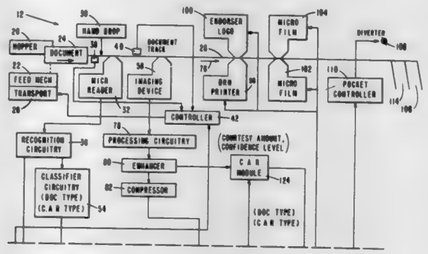
4,523,329
FM RECEIVER
Kohji Ishida; Tatsuo Numata, and Masaharu Sakamoto, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 6, 1983, Ser. No. 529,781
Claims priority, application Japan, Sep. 4, 1982, 57-154224
Int. Cl.[3] H04H *5/00*
U.S. Cl. 381—3 **8 Claims**



1. An FM receiver, comprising:
a phase shifter (**21**) for shifting the phase of an incoming FM signal by an amount corresponding to the frequency of said FM signal;
a first multiplier (**22**) for multiplying said incoming FM signal and the output of said phase shifter, thereby producing a main signal (L+R);
a generator of an FM subcarrier wave; and
a second multiplier (**6**), connected in parallel with said first multiplier, for multiplying said FM signal, the output of said phase shifter, and the output of said generator thereby producing a subsignal (L−R).

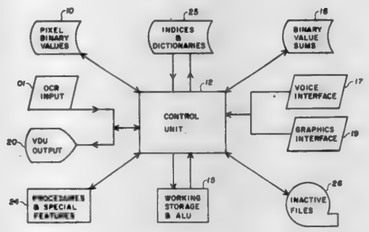
4,523,330
BANKING SYSTEM AND METHOD
John D. Cain, Kitchener, Canada, assignor to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada
Filed Dec. 23, 1982, Ser. No. 452,563
Int. Cl.[3] G06K *9/20*
U.S. Cl. 382—7 **10 Claims**

1. An apparatus for processing documents, comprising:
a unit for reading machine-readable data including courtesy amount location data and for generating image data from said documents as said documents are moved along a track in operative relationship with said unit;
said unit also including recognitin means receiving said image data and a portion of said machine-readable data including said courtesy amount location data to produce courtesy amount data along with confidence level data relative to said courtesy amount data for each said document; and



control means operatively coupled to said recognition means for storing said machine-readable data, image data, courtesy amount data, and confidence level data by an identification number which is assigned thereto by said control means for each corresponding said document.

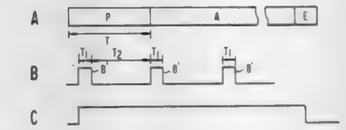
4,523,331
AUTOMATED IMAGE INPUT, STORAGE AND OUTPUT SYSTEM
Satya P. Asija, 7 Woonsocket Ave., Shelton, Conn. 06484
Filed Sep. 27, 1982, Ser. No. 424,731
Int. Cl.[3] G06K *9/00*
U.S. Cl. 382—18 **15 Claims**



1. An automated image input, recognition, storage output, generation and retrieval system comprising:
(a) an input device;
(b) an output device;
(c) a binary value sums storage unit;
(d) a procedures and special features (such as design parameters) storage unit;
(e) a working storage unit;
(f) an index storage unit;
(g) plurality of active and inactive files storage units;
(h) (miscellaneous) interface unit; and
(i) a control unit connected to said input device, said output device, said binary value sums storage unit, said procedures and special features or design parameters storage unit, said working storage unit, said plurality of active and inactive files storage units, said (miscellaneous) interface unit such that each unit of the system is capable of transferring information, images and data to and from any other unit of the system individually and collectively under command signals from the control unit via said interface unit in accordance with the procedures stored in said procedures (and special features) storage unit and wherein an image to be input is comprised of a plurality of pixels, each pixel being assigned a power of two that is unique with respect to all other pixels in the image and wherein said binary value sums storage unit stores a binary sum that is the algebraic sum of each pixel of said image.

4,523,332
BATTERY SAVER CIRCUIT FOR USE WITH PAGING RECEIVER
Toshihiro Mori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 11, 1983, Ser. No. 484,023
Claims priority, application Japan, Apr. 14, 1982, 57-62714
Int. Cl.[3] H04B *1/16;* **H04Q** *9/14*
U.S. Cl. 455—343 **10 Claims**

1. A battery saver circuit for use with a pager receiver including, a front end having a demodulator for demodulating an incoming signal which includes a preamble and a message signal following the preamble, a wave shaping circuit coupled to said front end for producing a rectangular signal responsive to the output of said front end, and a battery saver control for periodically supplying power to the receiver under control of timing pulses, said battery saver circuit, comprising:
a valid incoming signal detector adapted to receive the output of said wave shaping circuit for detecting the baud rate of either of said preamble or said message signal and producing a first logic signal indicative of the detection of a valid incoming signal; and

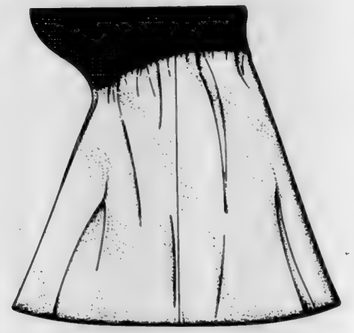


a battery saver terminating means responsive to said first logic signal to generate a second logic signal for extending the time period for which power is supplied to said receiver.

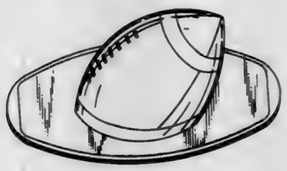
279,135
COSTUME
Robert Fletcher, Los Angeles, Calif., assignor to Paramount Pictures Corporation, New York, N.Y.
Filed Jun. 7, 1982, Ser. No. 385,985
Term of patent 14 years
U.S. Cl. D2—30



279,136
MATERNITY SKIRT OR THE LIKE
Marilyn M. Stern,. Washington, D.C., assignor to Ninth Moon, Washington, D.C.
Filed Feb. 29, 1984, Ser. No. 584,875
Term of patent 14 years
U.S. Cl. D2—223



279,137
HAT
George C. Sing, 12906 - 104A Ave., Surrey, British Columbia, Canada
Filed Jul. 1, 1982, Ser. No. 394,236
Term of patent 14 years
U.S. Cl. D2—248



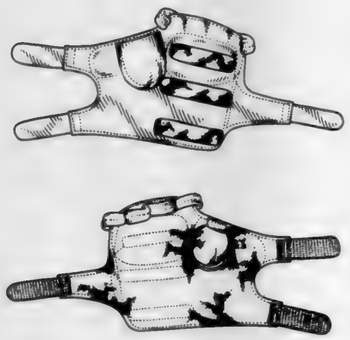
279,138
ATHLETIC SHOE WITH POCKET
Robert J. Gamm, St. Louis County, Mo., assignor to Kangaroos U.S.A., Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 314,136, Oct. 23, 1981, , which is a continuation-in-part of Ser. No. 116,279, Jan. 28, 1980, Pat. No. Des. 261,695. This application Dec. 13, 1982, Ser. No. 449,411
Term of patent 14 years
U.S. Cl. D2—309



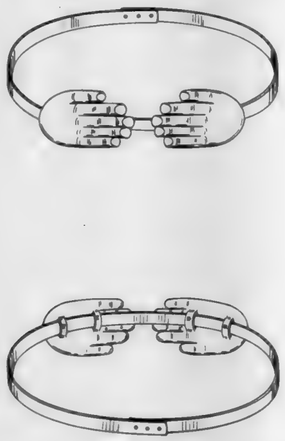
279,139
ATHLETIC SHOE
Robert J. Gamm, St. Louis, Mo., assignor to Kangaroos U.S.A. Inc., St. Louis, Mo.
Filed Jan. 5, 1983, Ser. No. 455,814
Term of patent 14 years
U.S. Cl. D2—310



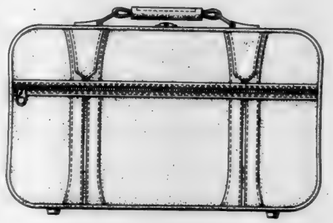
279,140
PROTECTIVE GLOVE FOR A FOOTBALL PLAYER
John C. Paulson, 1425 S. 100 West, Orem, Utah 84057
Filed Sep. 29, 1982, Ser. No. 427,392
Term of patent 14 years
U.S. Cl. D2—361



279,141
INFLATABLE BELT
Richard L. Poland, 419 W. Broadway, Long Beach, Calif. 90802
Filed Dec. 16, 1982, Ser. No. 450,564
Term of patent 14 years
U.S. Cl. D2—385



279,142
LUGGAGE
John Pulichino; Harvey J. Bomes, both of Wellesey, Mass.; John J. Migliore, East Greenwich, R.I.; Lonnie M. Smith, Fort Smith, R.I., and Wayne Schmitt, Bristol, R.I., assignors to American Tourister, Inc., Warren, R.I.
Filed Mar. 9, 1982, Ser. No. 356,595
Term of patent 14 years
U.S. Cl. D3—71



279,143
POUCH
Taichi Ueda, Yokohama, Japan, assignor to Fuji Co., Ltd., Kanagawa, Japan
Filed Jan. 28, 1983, Ser. No. 462,066
Claims priority, application Japan, Jul. 30, 1982, 57-34780
Term of patent 14 years
U.S. Cl. D3—71



279,144
EXPANDABLE HANG-UP GARMENT BAG
James H. Allen, Covington, Ky., assignor to 'totes', incorporated, Loveland, Ohio
Filed Apr. 18, 1983, Ser. No. 486,050
Term of patent 14 years
U.S. Cl. D3—71

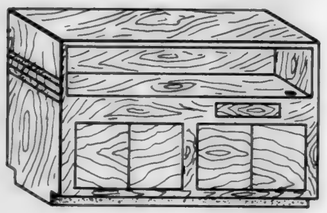
279,145
JEWELRY BOX
Neil Lippe, New York, N.Y., assignor to Jacmel Jewelry, Inc., New York, N.Y.
Filed May 18, 1983, Ser. No. 495,704
Term of patent 14 years
U.S. Cl. D3—75



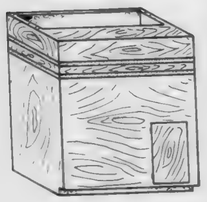
279,146
PICTURE FRAME
James A. McCaffrey, 1220 St. Lawrence Dr., Alpharetta, Ga. 30201
Filed Jul. 22, 1983, Ser. No. 516,100
Term of patent 14 years
U.S. Cl. D6—309



279,147
RECEPTIONIST DESK
Mary E. Florsek, Kirkwood, Mo., assignor to Command Concept Company, Clayton, Mo.
Filed May 6, 1982, Ser. No. 375,479
Term of patent 14 years
U.S. Cl. D6—422



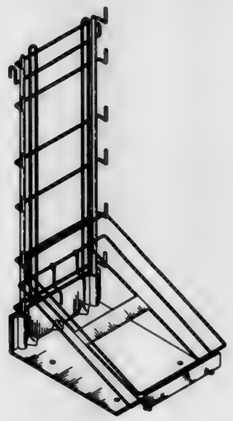
279,148
HAIR CARE UNIT
Mary E. Florsek, Kirkwood, Mo., assignor to Command Concept Company, Clayton, Mo.
Filed May 6, 1982, Ser. No. 375,477
Term of patent 14 years
U.S. Cl. D6—432



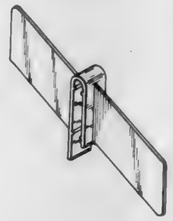
279,149
HAIR CARE UNIT
Mary E. Florsek, Kirkwood, Mo., assignor to Command Concept Company, Clayton, Mo.
Filed May 6, 1982, Ser. No. 375,480
Term of patent 14 years
U.S. Cl. D6—444



279,150
COMBINED DISPLAY RACK AND SHELF UNIT
Anthony S. Belotta, Bloomfield, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jul. 2, 1982, Ser. No. 394,605
Term of patent 14 years
U.S. Cl. D6—462



279,151
PRODUCT SPACER FOR MERCHANDISE RACK
Peter J. Weiller, Armonk, N.Y., assignor to Thomson-Leeds Company, Inc., New York, N.Y.
Filed Feb. 10, 1983, Ser. No. 465,516
Term of patent 14 years
U.S. Cl. D6—491



279,152
COMBINED SEAT AND BACKREST UNIT
Edsel E. Murry, Christiana, Tenn., assignor to Samsonite Corporation, Denver, Colo.
Filed May 27, 1982, Ser. No. 382,659
Term of patent 14 years
U.S. Cl. D6—501



279,153
ARMREST
Robert J. Aronowitz, New York, and Bernard D. Katzanek, Brooklyn, both of N.Y., assignors to Samsonite Corporation, Denver, Colo.
Filed May 27, 1982, Ser. No. 382,797
Term of patent 14 years
U.S. Cl. D6—501



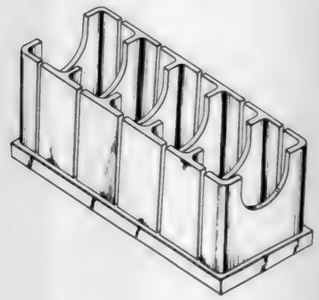
279,154
COMBINED SEAT AND BACKREST UNIT
Robert J. Aronowitz, New York, and Bernard D. Katzanek, Brooklyn, both of N.Y., assignors to Samsonite Corporation, Denver, Colo.
Filed May 27, 1982, Ser. No. 382,800
Term of patent 14 years
U.S. Cl. D6—501



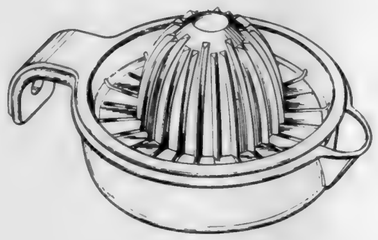
279,155
COMBINED SEAT AND BACKREST UNIT
Robert J. Aronowitz, New York, and Bernard D. Katzanek, Brooklyn, both of N.Y., assignors to Samsonite Corporation, Denver, Colo.
Filed May 27, 1982, Ser. No. 382,657
Term of patent 14 years
U.S. Cl. D6—501



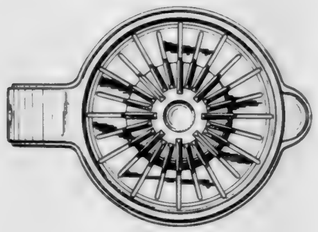
279,156
BAGEL SLICING JIG
Leonard Levine, 2978 Beechwood Blvd., Pittsburgh, Pa. 15217
Continuation-in-part of Ser. No. 455,220, Jan. 3, 1983,. This application Jul. 11, 1983, Ser. No. 512,244
The portion of the term of this patent subsequent to Jan. 8, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—43



279,157
CITRUS-FRUIT SQUEEZER
Bruno Gecchelin, Milan, Italy, assignor to F.lli Guzzini S.p.A., Recanati, Italy
Filed Feb. 9, 1982, Ser. No. 347,151
Claims priority, application Italy, Mar. 16, 1981, 21085/81[U]
Term of patent 14 years
U.S. Cl. D7—48

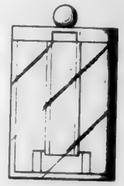






279,158
CONDIMENT DISPENSER
William E. Bounds, 3737 W. 240th St., Torrance, Calif. 90505
Filed Nov. 29, 1982, Ser. No. 445,249
Term of patent 14 years
U.S. Cl. D7—54







279,159
CONDIMENT DISPENSER
William E. Bounds, 3737 W. 240th St., Torrance, Calif. 90505
Filed Nov. 29, 1982, Ser. No. 445,250
Term of patent 14 years
U.S. Cl. D7—57



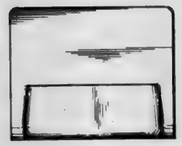




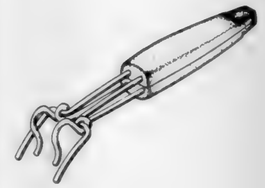
279,160
TACO HOLDER
Dale A. Hunt, 7940 Sunfield Ct., Indianapolis, Ind. 46224
Filed Feb. 11, 1982, Ser. No. 348,204
Term of patent 14 years
U.S. Cl. D7—76







279,161
HAND-HELD GRIPPING TOOL FOR COOKING UTENSILS
Mel J. Gould, 19125 Haynes St., Unit #6, Reseda, Calif. 91335
Filed Sep. 24, 1982, Ser. No. 422,852
Term of patent 14 years
U.S. Cl. D7—393



279,162
FOOD SHREDDING DEVICE
John N. Samuel, 2212 Sheridan St., Hyattsville, Md. 20782
Filed Feb. 3, 1983, Ser. No. 463,802
Term of patent 14 years
U.S. Cl. D7—412



279,163
COMBINED RATCHET WRENCH SOCKET NUT EJECTOR SPRING AND RETAINER
Howard D. Lye, 317 N. 16th East, Riverton, Wyo. 82501
Filed Jul. 30, 1982, Ser. No. 403,559
Term of patent 14 years
U.S. Cl. D8—25



279,164
CONCRETE REINFORCING ROD SPACER
Diana L. Mitchell, and Howard Hewitt, both of #204-1107 Homer St., Vancouver, B.C., Canada (V6R 2Y1)
Filed May 9, 1984, Ser. No. 608,452
Term of patent 14 years
U.S. Cl. D8—354





279,165
SWIMMING POOL COVER POSITIONING UNIT
Edward R. Smith, Blairstown, N.J., assignor to Sealed Air Corporation, Fair Lawn, N.J.
Filed Nov. 26, 1982, Ser. No. 444,709
Term of patent 14 years
U.S. Cl. D8—354

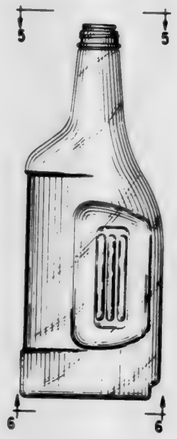




279,166
PRESSURIZED DISPENSING CONTAINER
Tetsuya Tada, Tokyo, Japan, assignor to Canyon Corporation, Tokyo, Japan
Filed Jun. 30, 1982, Ser. No. 393,779
Term of patent 14 years
U.S. Cl. D9—300



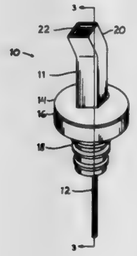
279,167
BOTTLE
Jack E. Haney, Norcross; Sue A. Mager, and William B. Mikolaitis, both of Lilburn, all of Ga., assignors to Standard Oil Company (Indiana), Chicago, Ill.
Filed Dec. 21, 1982, Ser. No. 451,773
Term of patent 14 years
U.S. Cl. D9—378



279,168
PACKAGING CONTAINER OR THE LIKE
David Goldsmith, Chappaqua, N.Y., assignor to Erica Goldsmith Trust and Evan Goldsmith Trust
Filed Dec. 8, 1982, Ser. No. 448,442
Term of patent 14 years
U.S. Cl. D9—429



279,169
DISPENSING CLOSURE
Wayne R. Banasik, 24N064 Lakeside Dr., Lake Zurich, Ill. 60047
Filed Dec. 7, 1981, Ser. No. 328,467
Term of patent 14 years
U.S. Cl. D9—447



279,170
LOOSE FILL PACKING ELEMENT
Stephen L. Witte, Memphis, Tenn., assignor to Inter-Pac Packaging Corporation, Memphis, Tenn.
Filed Aug. 17, 1982, Ser. No. 408,802
Term of patent 14 years
U.S. Cl. D9—456



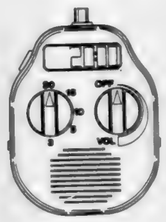
279,171
DIGITAL CLOCK
Bernard Mermelstein, c/o M. Z. Berger & Co., Inc., 20 W. 37th St., New York, N.Y. 10018
Filed Mar. 15, 1982, Ser. No. 358,114
Term of patent 14 years
U.S. Cl. D10—9



279,172
WRIST WATCH
Jörg Hysek, Nyon, Switzerland, assignor to Jean Lassale S.A., Carouge, Switzerland
Filed Jun. 20, 1983, Ser. No. 505,681
Claims priority, application Hague, Dec. 20, 1982, 72.826
Term of patent 14 years
U.S. Cl. D10—32



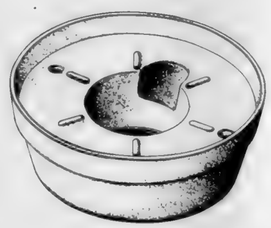
279,173
COUNTDOWN TIMER
William P. Ketcham, 47 Sinawoy Rd., Cos Cob, Conn. 06807
Filed Jan. 20, 1983, Ser. No. 459,372
Term of patent 14 years
U.S. Cl. D10—40



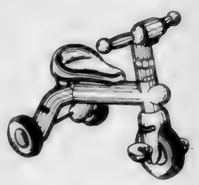
279,174
SKI PIN
Gary R. Wolfberg, Dallas, Tex., assignor to G. R. Marketing, Inc., Cerritos, Calif.
Filed Feb. 22, 1983, Ser. No. 445,926
Term of patent 14 years
U.S. Cl. D11—47



279,175
WATER RESERVOIR FOR POTTED PLANTS
Krister Eklöf, Bastugatan 17, S-117 25 Stockholm, Sweden
Filed Oct. 13, 1983, Ser. No. 541,744
Claims priority, application Sweden, Apr. 14, 1983, 83-1055
Term of patent 14 years
U.S. Cl. D11—164



279,176
TRICYCLE FOR CHILDREN
Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushiki Kaisha, Osaka, Japan
Filed Mar. 28, 1983, Ser. No. 479,434
Term of patent 14 years
U.S. Cl. D12—112



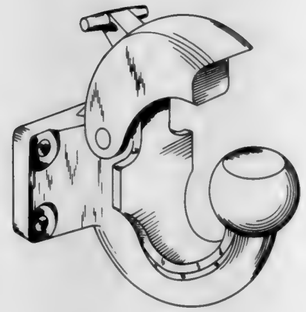
279,177
TIRE
Peter J. Walker, Bradford-on-Avon, England, assignor to Avon Tyres Limited, Great Britain
Filed Jan. 31, 1983, Ser. No. 462,683
Claims priority, application United Kingdom, Aug. 5, 1982, 1008167
Term of patent 14 years
U.S. Cl. D12—136



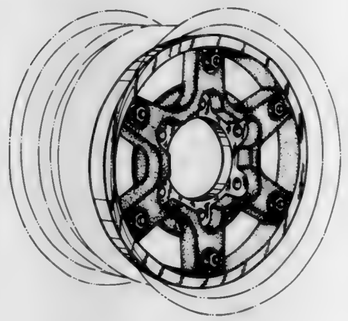
279,178
VEHICLE TIRE
Masao Nakamura; Hiroshi Kojima, both of Tokyo, and Hideaki Nishio, Saitama, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan
Filed Jun. 27, 1983, Ser. No. 507,646
Claims priority, application Japan, Jan. 7, 1983, 58-67
Term of patent 14 years
U.S. Cl. D12—151



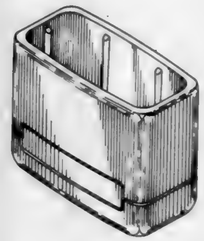
279,179
DUPLEX HITCH
Ernest A. Landry, Jr., 50 Bennett St., Lynn, Mass. 01905
Filed Jun. 7, 1982, Ser. No. 385,450
Term of patent 14 years
U.S. Cl. D12—162



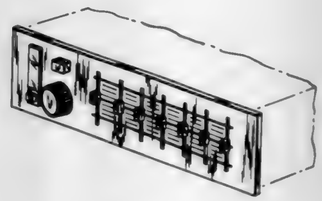
279,180
VEHICLE WHEEL CENTER
Raymond J. Hedlund, 1250 Pinecreek Way, Concord, Calif. 94520
Filed Dec. 9, 1982, Ser. No. 448,155
Term of patent 14 years
U.S. Cl. D12—211



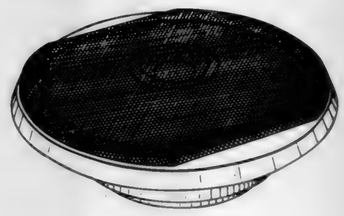
279,181
PORTABLE BATTERY CHARGER OR SIMILAR ARTICLE
Bruce A. Claxton, Coral Springs, Fla., and Sylvia Ramos, Royal Oak, Mich., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 28, 1983, Ser. No. 480,048
Term of patent 14 years
U.S. Cl. D13—5



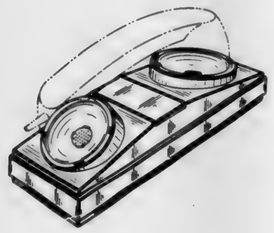
279,182
FRONT PANEL FOR A GRAPHIC EQUALIZER OR SIMILAR ARTICLE
William B. Shenk, Jr., Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sep. 12, 1983, Ser. No. 531,310
Term of patent 14 years
U.S. Cl. D14—1



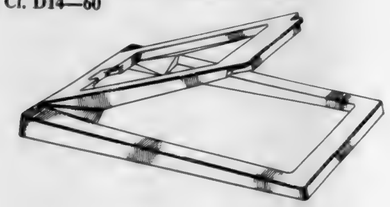
279,183
LOUDSPEAKER
Katsuya Yoshikawa, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Division of Ser. No. 379,191, May 17, 1982,. This application May 22, 1984, Ser. No. 612,937
Claims priority, application Japan, Dec. 17, 1981, 56-55972; Dec. 17, 1981, 56-55973
Term of patent 14 years
U.S. Cl. D14—30

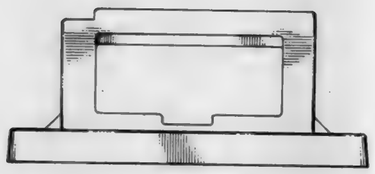


279,184
TELEPHONE ACOUSTIC COUPLER BASE
Junichi Sakamoto, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Sep. 30, 1982, Ser. No. 431,143
Claims priority, application Japan, Apr. 7, 1982, 57-15087
Term of patent 14 years
U.S. Cl. D14—57



279,185
STAND FOR A TELEPHONE OR SIMILAR ARTICLE
Christian J. Felix, Flushing, N.Y.; Frank V. Gates, Succasunna, N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 25, 1982, Ser. No. 436,345
Term of patent 14 years
U.S. Cl. D14—60

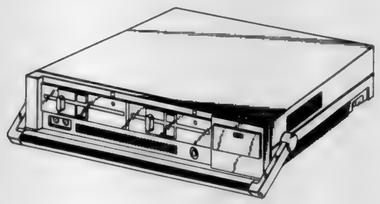




279,186
COMBINED PEN, WATCH AND RADIO
Tse Tung, and Sou K. Ko, both of 7th Fl., No. 8, La. 473, Kuang Fu S. Rd., Taipei, Taiwan
Filed Jul. 20, 1982, Ser. No. 400,519
Term of patent 14 years
U.S. Cl. D14—68



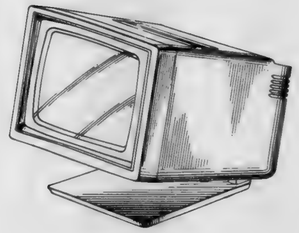
279,187
COMPUTER
Tomoki Tsumura, Yokohama; Hiroshi Maruoka, Fujisawa; Toshio Asaji, Yokohama, and Mitsuru Yamamoto, Yamato, all of Japan, assignors to Panafacom Limited, Kanagawa, Japan
Filed Jan. 24, 1983, Ser. No. 460,637
Claims priority, application Japan, Jul. 22, 1982, 57-33200
Term of patent 14 years
U.S. Cl. D14—100



279,188
DESK ELECTRONIC COMPUTER
Noriko Satake, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Nov. 29, 1983, Ser. No. 555,955
Claims priority, application Japan, May 31, 1983, 58-23572
Term of patent 14 years
U.S. Cl. D14—100



279,189
DISPLAY
Tomoki Tsumura, Yokohama; Hiroshi Maruoka, Fujisawa; Toshio Asaji, Yokohama, and Mitsuru Yamamoto, Yamato, all of Japan, assignors to Panafacom Limited, Kanagawa, Japan
Filed Jan. 21, 1983, Ser. No. 459,942
Claims priority, application Japan, Jul. 22, 1982, 57-33202
Term of patent 14 years
U.S. Cl. D14—113



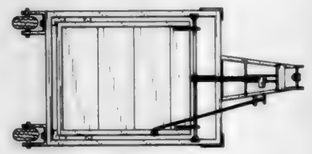
279,190
KEYBOARD
Tomoki Tsumura, Yokohama; Hiroshi Maruoka Fujisawa; Toshio Asaji, Yokohama, and Mitsuru Yamamoto, Yamato, all of Japan, assignor to Panafacom Limited, Kanagawa, Japan
Filed Jan. 21, 1983, Ser. No. 459,943
Claims priority, application Japan, Jul. 22, 1982, 57-33201
Term of patent 14 years
U.S. Cl. D14—100

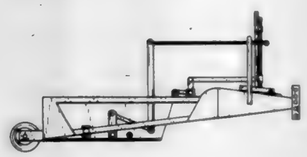


279,191
KEYBOARD
Tadashi Nakamura, Tokyo, and Yutaka Nakano, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan
Filed Mar. 25, 1983, Ser. No. 478,724
Claims priority, application Japan, Oct. 14, 1982, 57-46687
Term of patent 14 years
U.S. Cl. D14—100



279,192
COMBINED DIRT SCRAPER AND SPREADER
Ray A. Marler, 2432 Mansfield, Del City, Okla. 73115
Filed May 24, 1983, Ser. No. 497,519
Term of patent 14 years
U.S. Cl. D15—13





279,193
FRONT RIFLE SCOPE SHADE
Charles F. Surber, P.O. Box 684, Marfa, Tex. 79843
Division of Ser. No. 190,433, Sep. 24, 1980, abandoned. This application Dec. 30, 1982, Ser. No. 454,837
Term of patent 14 years
U.S. Cl. D16—132

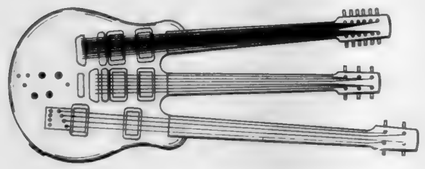


279,194
FRONT RIFLE SCOPE SHADE
Charles F. Surber, P.O. Box 684, Marfa, Tex. 79843
Continuation-in-part of Ser. No. 190,433, Sep. 24, 1980, abandoned. This application Dec. 30, 1982, Ser. No. 454,838
Term of patent 14 years
U.S. Cl. D16—132





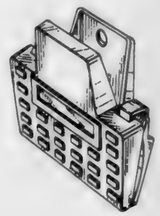
279,195
THREE-NECKED GUITAR
Glenn E. Perkins, Denver, Colo., assignor to Max L. Wymore, Denver, Colo., a part interest
Filed Jan. 6, 1983, Ser. No. 455,934
Term of patent 14 years
U.S. Cl. D17—15



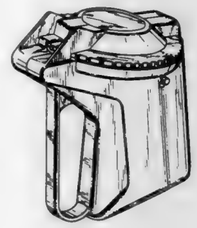
279,196
ELECTRONIC CALCULATOR WITH WATCH
Shigeru Kurozumi, and Masaji Sawada, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Mar. 7, 1983, Ser. No. 473,023
Term of patent 14 years
U.S. Cl. D18—2



279,197
CALCULATOR CLIP
Danny C. Chi Hung, Hong Kong, Hong Kong, assignor to Dah Sun Electronics Company Limited, Hong Kong, Hong Kong
Filed Oct. 5, 1983, Ser. No. 539,245
Claims priority, application United Kingdom, Apr. 14, 1983, 1012494
Term of patent 14 years
U.S. Cl. D18—2



279,198
EMBOSSING TOOL
Dane Pedersen, Alameda, Calif., assignor to Esselte Dymo N V, Belgium
Filed Nov. 24, 1982, Ser. No. 443,538
Claims priority, application United Kingdom, May 25, 1982, 1006924
Term of patent 14 years
U.S. Cl. D18—19



279,199
FONT OF TYPE
William M. Wiley, and Mary H. Wiley, both of 1855 E. 700 South, Lebanon, Ind. 46052
Filed Jun. 27, 1983, Ser. No. 507,735
Term of patent 14 years
U.S. Cl. D18—30



279,200
RECIPE MEMO HOLDER
James R. Dunn, Fairfield, Conn., assignor to Coats & Clark, Inc., Stamford, Conn.
Filed Jan. 20, 1983, Ser. No. 459,699
Term of patent 14 years
U.S. Cl. D19—91



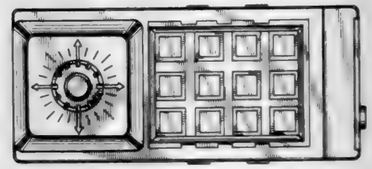
279,201
FLOOR STAND DISPLAY CARD HOLDER
Bernard E. Shuman, Merrick, N.Y., assignor to Eastern Electrical Equipment Co., Inc., Hicksville, N.Y.
Filed Apr. 25, 1983, Ser. No. 488,129
Term of patent 14 years
U.S. Cl. D20—43



279,202
CONTROL FOR A VIDEO GAME OR THE LIKE
Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.
Filed Jan. 6, 1983, Ser. No. 456,262
Term of patent 14 years
U.S. Cl. D21—48



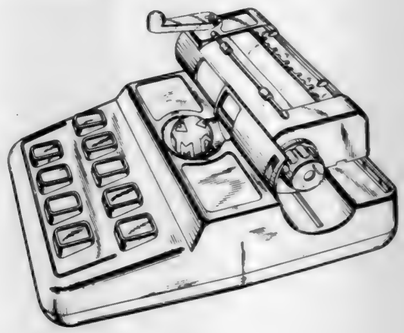
279,203
CONTROL FOR A VIDEO GAME
Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.
Filed Apr. 25, 1983, Ser. No. 487,916
Term of patent 14 years
U.S. Cl. D21—48



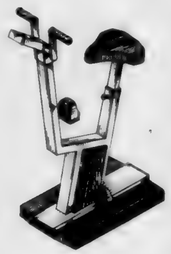
279,204
TOY CASH REGISTER
Pietro Catelli, Como, Italy, assignor to Artsana S.P.A., Italy
Filed Jul. 28, 1983, Ser. No. 518,157
Term of patent 14 years
U.S. Cl. D21—124



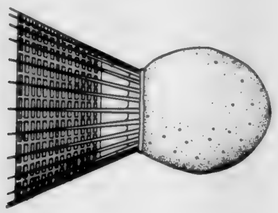
279,205
TOY TYPEWRITER
Pietro Catelli, Como, Italy, assignor to Artsana S.P.A., Italy
Filed Jul. 28, 1983, Ser. No. 518,154
Term of patent 14 years
U.S. Cl. D21—127



279,206
EXERCISE BICYCLE
David B. Smith, Mercer Island, and Randolph F. Miller, Mt. Vernon, both of Wash., assignors to Precor, Incorporated, Redmond, Wash.
Filed Jan. 19, 1984, Ser. No. 572,565
Term of patent 14 years
U.S. Cl. D21—194



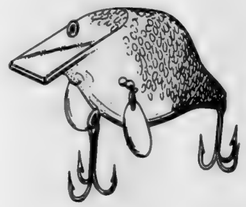
279,207
FOAM-HEAD SHUTTLECOCK
John Hand, Phippen House, off Summer St., Manchester, Mass. 01944
Continuation-in-part of Ser. No. 230,032, Jan. 30, 1981,. This application Jan. 17, 1983, Ser. No. 458,523
Term of patent 14 years
U.S. Cl. D21—207



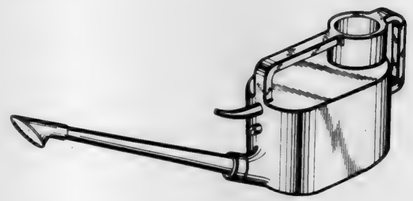
279,208
GOLF TEE GUIDE
Fred Schuster, 653 Donegal Dr., London, Ontario, Canada (N6H 3H6)
Filed May 31, 1983, Ser. No. 499,520
Claims priority, application Canada, Jan. 31, 1983, 31-01-83-25
Term of patent 14 years
U.S. Cl. D21—234



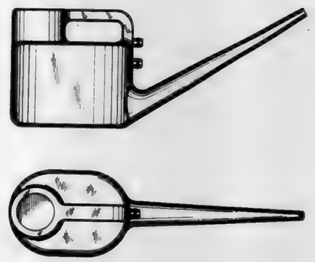
279,209
FISHING LURE
Loyce W. Hevrin, 11656 Merritt St., Castroville, Calif. 95012
Filed Apr. 11, 1983, Ser. No. 483,472
Term of patent 14 years
U.S. Cl. D22—28



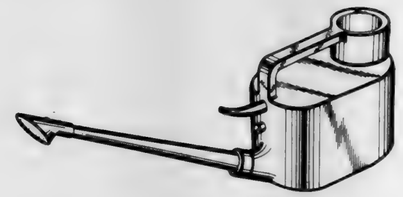
279,210
WATERING CAN
Arthur R. Carlson, Melbourne, Australia, assignor to Brian Davis and Company Proprietary Limited, Scoresby, Australia
Filed May 2, 1983, Ser. No. 490,308
Claims priority, application Australia, Nov. 12, 1982, 2127/82; Nov. 12, 1982, 2129/82; Nov. 12, 1982, 2130/82; Nov. 12, 1982, 2131/82; Nov. 12, 1982, 2132/82
Term of patent 14 years
U.S. Cl. D23—11



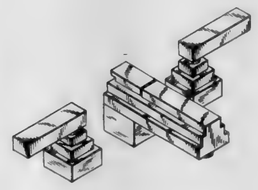
279,211
WATERING CAN
Arthur R. Carlson, Melbourne, Australia, assignor to Brian Davis and Company Proprietary Limited, Scoresby, Australia
Filed May 2, 1983, Ser. No. 490,309
Claims priority, application Australia, Mar. 22, 1983, 3300/83
Term of patent 14 years
U.S. Cl. D23—11



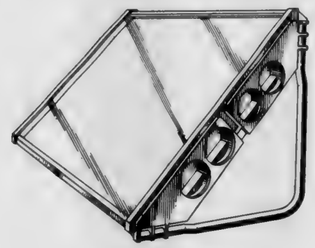
279,212
WATERING CAN
Arthur R. Carlson, Melbourne, Australia, assignor to Brian Davis and Company Proprietary Limited, Seoresby, Australia
Filed May 2, 1983, Ser. No. 490,310
Claims priority, application Australia, Nov. 12, 1982, 2126/82; Nov. 12, 1982, 2129/82; Nov. 12, 1982, 2130/82; Nov. 12, 1982, 2131/82; Nov. 12, 1982, 2132/82
Term of patent 14 years
U.S. Cl. D23—11



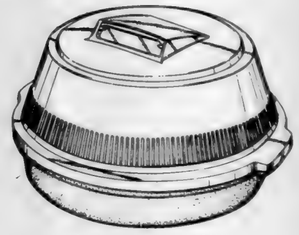
279,213
FAUCET SET
Stanley M. Paul, Rye, N.Y., assignor to Paul Associates Inc., Long Island City, N.Y.
Filed Apr. 25, 1983, Ser. No. 488,579
Term of patent 14 years
U.S. Cl. D23—25



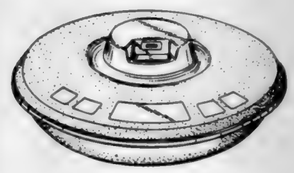
279,214
SOLAR COLLECTOR
David J. Hanson, River Rd., New Castle, Me. 04553
Filed Aug. 30, 1982, Ser. No. 413,184
Term of patent 14 years
U.S. Cl. D23—72



279,215
HUMIDIFER
Joseph R. Mango, Midlothian, and Donald G. Wolfe, Lake Barrington, both of Ill., assignors to Gerber Products Company, Fremont, Mich.
Filed Sep. 16, 1982, Ser. No. 418,910
Term of patent 14 years
U.S. Cl. D23—146



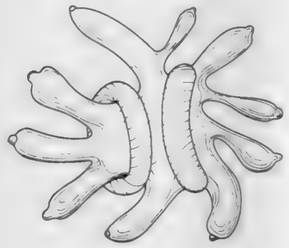
279,216
VAPORIZER
Joseph R. Mango, Midlothian, and Donald G. Wolfe, Lake Barrington, both of Ill., assignors to Gerber Products Company, Fremont, Mich.
Filed Nov. 16, 1983, Ser. No. 552,226
Term of patent 14 years
U.S. Cl. D23—148



279,217
AIR-IN-LINE SENSOR FOR FLUID DELIVERY SYSTEMS OR THE LIKE
Robert B. Truitt, La Jolla; Clifford C. Cox, Irvine, and Joseph J. Manno, San Diego, all of Calif., assignors to IVAC Corporation, San Diego, Calif.
Filed Apr. 26, 1982, Ser. No. 372,002
Term of patent 14 years
U.S. Cl. D24—17



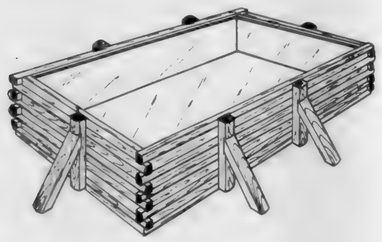
279,218
MULTIPLE NIPPLE PACIFIER
Emmett F. Carpel, 2683 E. Lake of the Isles, Minneapolis, Minn. 55408
Filed Sep. 22, 1982, Ser. No. 421,240
Term of patent 14 years
U.S. Cl. D24—46



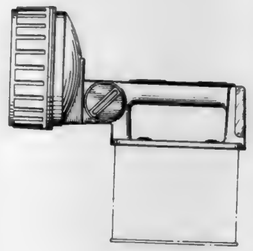
279,219
BREATHING DEVICE FOR ATHLETES
Raymond J. Hanlon, 4 Wildflower Rd., Barrington, R.I. 02806
Filed Apr. 12, 1982, Ser. No. 367,636
Term of patent 14 years
U.S. Cl. D24—62



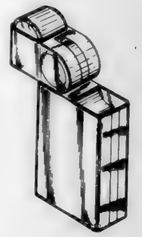
279,220
SWIMMING POOL
Jack A. Freeman, R.D. #2, Box 613, Hollidaysburg, Pa. 16648
Filed Aug. 12, 1981, Ser. No. 292,179
Term of patent 14 years
U.S. Cl. D25—2



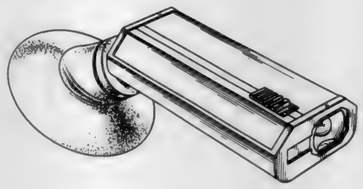
279,221
EMERGENCY LANTERN
John F. Schosser, New Fairfield, Conn.; Charles M. Dole, Purdys, N.Y., and Walter P. Koda, Newtown, Conn., assignors to Duracell Inc., Bethel, Conn.
Filed Feb. 7, 1983, Ser. No. 464,458
Term of patent 14 years
U.S. Cl. D26—44



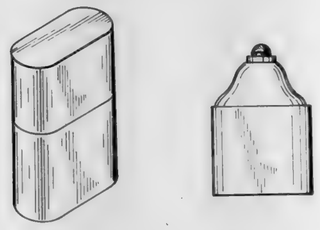
279,222
PORTABLE LIGHT
John H. Drane, London, England, assignor to Duracell Inc., Bethel, Conn.
Filed Nov. 6, 1981, Ser. No. 318,783
Claims priority, application United Kingdom, May 13, 1981, 1000442
Term of patent 14 years
U.S. Cl. D26—44



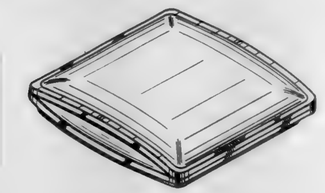
279,223
PORTABLE VEHICLE LIGHT
Yoshihisa Tanaka, Ichikawa, Japan, assignor to Tanaka Manufacturing Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1983, Ser. No. 458,860
Term of patent 14 years
U.S. Cl. D26—60



279,224
FRAGRANCE APPLICATOR
Irving M. Wolbrom, Great Neck, N.Y., assignor to Presentation Vehicles, Ltd., New York, N.Y.
Filed Jan. 10, 1983, Ser. No. 457,061
Term of patent 14 years
U.S. Cl. D28—7



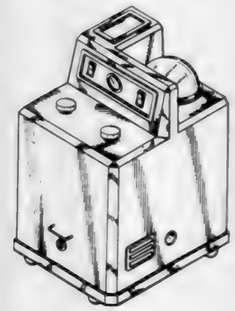
279,225
COSMETIC BOX
Alain Chevassus, Sceaux, France, assignor to Lefebure Isolants Reunis, Rungis, France
Filed Apr. 26, 1982, Ser. No. 371,577
Claims priority, application France, Dec. 24, 1981, 814469
Term of patent 14 years
U.S. Cl. D28—83



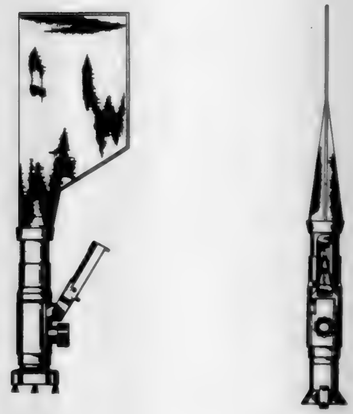




279,226
DISPENSARY CABINET FOR CARPET CLEANERS AND THE LIKE
Anthony Salmon, Toronto, Canada, assignor to Salmon Sanitation Market Place Inc., Mississauga, Canada
Filed Apr. 20, 1982, Ser. No. 370,279
Claims priority, application Canada, Oct. 28, 1981, 28-10-81-2
Term of patent 14 years
U.S. Cl. D32—1



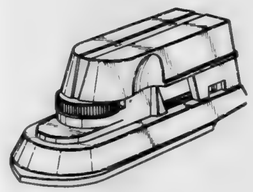
279,227
COMBINED FILTER AND VACUUM HEAD FOR CLEANING UNDERWATER SURFACES
Kenneth E. Price, 1534 Channelwood Dr., Whittier, Calif. 90601
Division of Ser. No. 205,873, Nov. 10, 1980, Pat. No. Des. 271,816. This application May 11, 1983, Ser. No. 493,723
Term of patent 14 years
U.S. Cl. D32—31



279,228
ICE SCRAPING TOOL
Kenneth E. Peterson, Minneapolis, Minn., assignor to IK Products, Inc., Minneapolis, Minn.
Filed Feb. 28, 1983, Ser. No. 470,207
Term of patent 14 years
U.S. Cl. D32—49



279,229
MINI TRAVEL IRON
Lam-Kwan Lun, Kowloon, Hong Kong, assignor to Wing Sang Bakelite Electrical Manufactory Limited, Hong Kong, Hong Kong
Filed Feb. 22, 1983, Ser. No. 468,199
Claims priority, application United Kingdom, Dec. 2, 1982, 1010077
Term of patent 14 years
U.S. Cl. D32—70



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Brust, John E. Filter apparatus. 4,522,717, Cl. 210-238.000.
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Bull, John; Croft, Leon; DeVaney, David B.; Davis, Russell R.; Hinshaw, David L.; Jotwani, Haresh C.; Kandell, Ronald J.; Kurtz, Richard F.; Lee, Ernest O., Jr.; Neumeier, Gunter F.; Richards, Glenn L.; and Scott, Richard, to Stromberg-Carlson Corporation. Telephone concentrator switch arrangement. 4,523,308, Cl. 370-56.000.
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Bunker, Robert L. Dental floss applicator. 4,522,216, Cl. 132-92.00R.
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Campbell, Donald C. Ramp-operated mechanical gate systems. 4,521,992, Cl. 49-269.000.
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Carey, Henry S., Jr., to Kerr-McGee Corporation. Non-plugging injection valve. 4,522,222, Cl. 137-240.000.
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Carlson, Heinz F. Burglar alarm system incorporating pneumatically operated components. 4,522,146, Cl. 116-2.000.
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Carro, Jose ; and de Velasco, Frank. Soluble assay. 4,522,922, Cl. 436-500.000.
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Castle, Gary. Tape wiper. 4,521,934, Cl. 15-236.00R.
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Hyde, Rebecca A.; Krimminger, Kenneth R.; and Swander, Robert E., 4,522,616, Cl. 493-44.000.
Menezes, Edgar V.; Southern, John H.; Ballman, Richard L.; and Chamberlin, J. M., 4,522,773, Cl. 264-167.000.
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Chasar, Dwight W., to B. F. Goodrich Company, The. Polyphosphoramidite oligomers and stabilizer compositions thereof. 4,522,735, Cl. 252-49.900.
Chatterton, Robert T., Jr., to Northwestern University. Method of totally suppressing ovarian follicular development. 4,522,831, Cl. 514-169.000.
Cheeseboro, Robert G. Magnetically recordable label for mechanically-defined information-bearing discs. 4,523,305, Cl. 369-33.000.
Chen, Hsing-Yao, to RCA Corporation. Cathode-ray tube having asymmetric slots formed in a screen grid electrode of an inline electron gun. 4,523,123, Cl. 313-412.000.
Chen, Mary S.: *See—*
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Kurkov, Victor P., 4,522,745, Cl. 252-500.000.
Thompson, Robert E.; Gould, Gordon; and Soodak, Charles I., 4,522,464, Cl. 350-96.230.
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Kistler, Walter P.; and Chinn, Martin D., 4,522,066, Cl. 73-781.000.
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Chiba, Hiromasa; Kumahara, Katsumi; Harada, Takakiyo; Oka, Takahiro; and Sato, Akihiro, 4,522,994, Cl. 526-351.000.
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cracking using in-situ crystallized ZSM-5 clay aggregates. 4,522,705, Cl. 208-120.000.
Chu, Yung F.: *See—*
Chester, Arthur W.; and Chu, Yung F., 4,522,929, Cl. 502-77.000.
Chu, Yung-Feng: *See—*
Chester, Arthur W.; Chou, Tai-Sheng; and Chu, Yung-Feng, 4,523,047, Cl. 585-322.000.
Chung, James Y. J.; and Rosthauser, James W., to Mobay Chemical Corporation. Molding compositions having an enhanced resistance to gasoline. 4,522,979, Cl. 525-66.000.
Church, Royce F.; McCaffrey, Donald B.; and Plude, Leo W., to Boeing Company, The. Door anti-hijacking latch/lock mechanism with pneumatic decompression override. 4,522,359, Cl. 244-129.500.
Ciba Geigy AG: *See—*
Ikin, John B., 4,522,497, Cl. 356-431.000.
Ciba-Geigy Corporation: *See—*
Haas, Georges; von Sprecher, Andreas; and Ferrini, Pier G., 4,523,030, Cl. 562-460.000.
Hilti, Bruno; Mayer, Carl W.; and Rihs, Grety, 4,522,754, Cl. 260-239.00R.
Cibie Projecteurs: *See—*
Baciu, Antoine; Rius, Jean M.; and Sivry, Bernard, 4,522,778, Cl. 264-328.700.
Ciriscioli, Peter R.: *See—*
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Claassen, Pamela L.; and Booz, A. David, to Aluminum Company of America. Metal pigment of improved storage resistance. 4,522,655, Cl. 106-290.000.
Clapp, Roger E., to United States of America, Air Force. Radio frequency lens antenna. 4,523,198, Cl. 343-754.000.
Clapper, Robert L.; Gradle, Richard J.; and Bake, Earl A., to Rockwell International Corporation. Orifice plate seal ring for controlled closure check valve. 4,522,230, Cl. 137-496.000.
Clare, Hugh J.: *See—*
Shah, Ramesh C. R.; Clare, Hugh J.; and Berry, Ronald F., 4,522,544, Cl. 414-330.000.
Clarion Co., Ltd.: *See—*
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Clark Equipment Company: *See—*
Shelbourn, William C.; Kuhn, Patrick; and Vig, Michael A., 4,522,373, Cl. 251-297.000.
Clark, Gary A.; Johnson, Frederick W.; and Queener, Carl A., to International Business Machines Corporation. Method and apparatus for adaptive collation. 4,522,486, Cl. 355-14.0SH.
Clark, George W.; and Keene, Christopher B., to 434743 Ontario Inc. Rigid polyethylene carry golf bag with stand. 4,522,299, Cl. 206-315.300.
Clarke, Peter J.: *See—*
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Clawges, Charles A. Golf putter. 4,522,405, Cl. 273-167.00A.
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Process for separating fatty acids from rosin acids. 4,522,761, Cl. 260-419.000.
Clecak, Nicholas J.; McKean, Dennis R.; Miller, Robert D.; Tompkins, Terry C.; and Willson, Carlton G., to International Business Machines Corporation. Deep ultra-violet lithographic resists with diazohomotetramic acid compounds. 4,522,911, Cl. 430-192.000.
Clecim: *See—*
Doudet, Michel, 4,522,052, Cl. 72-265.000.
Cleland, Keith B. Ore separator apparatus. 4,522,711, Cl. 209-298.000.
Clerk, Ernest J. Hand-held fishing reel. 4,522,349, Cl. 242-96.000.
Clineschmidt, Bradley V.: *See—*
Remy, David C.; and Clineschmidt, Bradley V., 4,522,821, Cl. 514-320.000.
Closson, James M.; and Hay, Noah D., to General Electric Company. Method of making a ducted dry type transformer. 4,521,955, Cl. 29-605.000.
Clowes, Ernest J., to Aluminum Company of America. Aluminum alloy food can body and method for making same. 4,522,049, Cl. 72-46.000.
Coble, William H.: *See—*
Casstevens, Arvil; Coble, William H.; Shields, Harper; Ferrell, Roscoe M.; and Jordan, Bobby R., 4,522,042, Cl. 66-140.00S.
Coburn Optical Industries: *See—*
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Richter, Simon J., 4,522,319, Cl. 222-481.500.
Coe, Anthony D.: *See—*
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Coenen, Hubert: *See—*
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Malcolm, John I., 4,522,389, Cl. 272-4.000.
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Schlom, Jeffery; Colcher, David; Nuti, Marianna; Hand, Patricia H.; and Austin, Faye, 4,522,918, Cl. 435-68.000.
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Miller, Charles M., Jr.; and Orlando, Samuel J., 4,522,397, Cl. 273-63.00D.
Combustion Engineering, Inc.: *See—*
Felice, Frank T., 4,522,926, Cl. 501-127.000.
Commandeur, Raymond; and Gurtner, Bernard, to Atochem. Compositions of polyarylalkane oligomers and process for their manufacture. 4,523,044, Cl. 585-11.000.
Commissariat a l'Energie Atomique: *See—*
Chaix, Jean E., 4,522,156, Cl. 122-34.000.
Commonwealth of Australia, The: *See—*
Patrick, James F.; Crosby, Peter A.; Kuzma, Janusz A.; and Money, David K., 4,522,209, Cl. 128-419.00R.
Communications Technology Corporation: *See—*
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Compagnie de Signaux et D'Entreprises Electriques: *See—*
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Compagnie Generale de Geophysique: *See—*
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Compagnie Internationale pour l'Informatique Cii-Honeywell Bull: *See—*
Ugon, Michel; and Nonat, Jean-Pierre, 4,523,297, Cl. 364-900.000.
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Congdon, James S., to GenRad, Inc. Enhanced-accuracy semiconductor power amplifier. 4,523,154, Cl. 330-266.000.
Conley, Edwin E. Pre-stressed fiber-resin sucker rod and method of making same. 4,522,529, Cl. 403-343.000.
Conley, William R.: *See—*
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Connolly, John C.; and Botez, Dan, to RCA Corporation. Semiconductor laser having high manufacturing yield. 4,523,318, Cl. 372-48.000.
Connolly, John D., Jr.; Gallivan, Timothy J.; and Ringle, Richard P., to General Electric Company. Method for the manufacture of nuclear fuel products. 4,522,769, Cl. 264-0.500.
Consiglio Nazionale Delle Ricerche: *See—*
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Container Graphics Corporation: *See—*
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Container Products Corp.: *See—*
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Continental Group, Inc., The: *See—*
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Sulouff, Robert E.; Hartin, Sam S.; Cook, Koy B.; Kerns, David V., Jr.; Davidson, Jimmy L.; and Warren, Keith O., 4,522,072, Cl. 73-765.000.
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Gallant, Ben J., 4,522,597, Cl. 433-216.000.
Corey, John A., to Mechanical Technology Incorporated. Multi-cylinder hot gas engine. 4,522,030, Cl. 60-525.000.
Corfield, Brian L.; and Rowe, Raymond C., to Imperial Chemical Industries PLC. Manufacture of highlighted intagliated articles. 4,522,840, Cl. 427-3.000.
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Cornell Dubilier Electronics Inc.: *See—*
Pitel, Ira J., 4,523,130, Cl. 315-291.000.
Cornet, Julien; and Van Laethem, Robert, to Glaverbel. Coating vitreous substrates. 4,522,847, Cl. 427-55.000.
Cornils, Boy; Hibbel, Josef; Lieder, Bernhard; Much, Joachim; Schmidt, Volkmar; Wiebus, Ernst; and Konkol, Werner, to Ruhrchemie Aktiengesellschaft. Process for the preparation of aldehydes. 4,523,036, Cl. 568-454.000.
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Cornwall, Harry J.; and Hanebrink, Daniel E. Two wheel trailer. 4,522,425, Cl. 280-656.000.
Corporation of the Town of Vaughan, The: *See—*
Campbell, R. Clark; and Townsend, D. Ronald, 4,522,533, Cl. 405-36.000.
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Courbin, Gerard: *See—*
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Courbot, Pierre: *See—*
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Coyne, Daniel P.; and Coyne, Alberta P. Educational toy mailbox. 4,522,598, Cl. 434-259.000.
Craft, Jack: *See—*
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Crenshaw, Ronnie R.: *See—*
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,522,943, Cl. 514-183.000.
Crespy, Serge. Lighter combined with instrument. 4,522,584, Cl. 431-253.000.
Cretin, Jacques; and Beauducel, Claude, to Institut Francais du Petrole; and Compagnie Generale de Geophysique. Device for interconnecting a series of data acquisition apparatuses to a remote receiving and recording system. 4,523,191, Cl. 340-825.520.
Cristiano, Gary M.: *See—*
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Crosby, Peter A.: *See—*
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Croset, Michel; and Mercandalli, Louis, to Thomson-CSF. Method of reduction of a compound forming a layer on a substrate and the application of said method to the fabrication of a field-effect semiconducting structure. 4,521,951, Cl. 29-571.000.
Cullinan, George J.: *See—*
Ades, Edwin W.; and Cullinan, George J., 4,522,750, Cl. 260-112.00R.
Culp, Charles H., to Honeywell Inc. Adaptive optimum start/stop control system. 4,522,336, Cl. 236-46.00R.
Cuneo, Giuseppe, to Black & Decker Inc. Switching device for reversing a portable electric tool. 4,523,115, Cl. 310-50.000.
Cunningham, Eldon R., to General Electric Company. Method of providing a lubrication system. 4,523,118, Cl. 310-90.000.
Cunningham, Frank W.; and Weir, David. Reusable, sterile covering for a surgical camera. 4,522,196, Cl. 128-4.000.
Current, Steven P., to Chevron Research Company. Oxidative carbonylation of alcohols to produce dialkyl oxalates. 4,523,029, Cl. 560-204.000.
Curtis, Richard D., to Coleman Company, Inc., The. Fuel control system for burners. 4,522,582, Cl. 431-123.000.
Cuscurida, Michael; and Klein, Howard P., to Texaco Inc. Polymer polyols from partially reacted polyamines. 4,523,025, Cl. 560-26.000.
CVI Incorporated: *See—*
Jensen, Jack E., 4,522,033, Cl. 62-6.000.
Dacomed Corporation: *See—*
Timm, Gerald W.; Sandford, Donald L.; Claude, Timothy J.; and Helms, Richard A., 4,522,198, Cl. 128-79.000.
Dagan, Gideon B.; and Waas, Charles W., to Communications Technology Corporation. Switching assembly for telephone cables. 4,523,061, Cl. 200-17.00R.
Daicel Chemical Industries, Ltd.: *See—*
Kanno, Tatsuya; and Toga, Yuzo, 4,522,913, Cl. 430-285.000.
Watanabe, Shoji; and Okitsu, Kiyoshi, 4,522,984, Cl. 525-415.000.
Daimler-Benz Aktiengesellschaft: *See—*
Dudeck, Ingo; Hipp, Ulrich; Maass, Manfred; and Ruoff, Harald, 4,523,136, Cl. 318-568.000.
Frankle, Gerhard; and Joppig, Peter, 4,522,164, Cl. 123-180.00R.
Struck, Helmut; Richter, Karl H.; Klein, Michael; Ruth, Ulrich; and Ulke, Walter, 4,522,418, Cl. 280-95.00A.
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Matsumoto, Katsutoshi, 4,522,123, Cl. 101-349.000.
D'Alterio, Joseph C. Paired conveyor belts with zigzag travel. 4,522,217, Cl. 134-75.000.
Dana Corporation: *See—*
Joyner, Robert G., 4,522,608, Cl. 464-134.000.
D'Angelo, Silvano; Modena, Ivo; and Romani, Gian L., to Consiglio Nazionale Delle Ricerche. Fine balancing second derivative gradiometer. 4,523,147, Cl. 324-248.000.
Daniels, Nicholas R., to Emerson Electric Co. Dynamoelectric machine with self-sealing lead wire grommet. 4,523,117, Cl. 310-71.000.
d'Anjou, Daniel: *See—*
Peterson, Gudmundur P.; and d'Anjou, Daniel, 4,522,026, Cl. 60-39.281.
Dantzig, Jonathan A.; and Patton, John V., to Olin Corporation. Flux concentrator. 4,522,790, Cl. 422-246.000.
Das, Jagabandhu; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane substituted prostaglandin interphenylene analogs useful as cardiovascular agents. 4,522,949, Cl. 514-469.000.
Das, Suryya K.; Boberski, William G.; Greigger, Paul P.; Jones, James E.; Schappert, Raymond F.; and Seiner, Jerome A., to PPG Industries, Inc. High-solids coating composition for improved rheology control containing chemically modified inorganic microparticles. 4,522,958, Cl. 523-212.000.
Datakey, Inc.: *See—*
Wehrmacher, William H., 4,522,456, Cl. 339-17.00R.
Daud, Taher: *See—*
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David Brown Tractors Ltd.: *See—*
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Davis, Phillip N. Lock and door reinforcing plate means. 4,522,048, Cl. 70-417.000.
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Davis, Russell R.: *See—*
Bull, John; Croft, Leon; DeVaney, David B.; Davis, Russell R.; Hinshaw, David L.; Jotwani, Haresh C.; Kandell, Ronald J.; Kurtz, Richard F.; Lee, Ernest O., Jr.; Neumeier, Gunter F.; Richards, Glenn L.; and Scott, Richard, 4,523,308, Cl. 370-56.000.
Davis, Wilfrid E.; and Davis, Richard A. Wall panels. 4,522,002, Cl. 52-309.100.
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Dean, Robert R.: *See—*
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Dean, Walter C., II, to Budd Company, The. Shock mount apparatus. 4,522,304, Cl. 206-591.000.
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Kilroy, Eugene J.; Morse, James E.; Grimm, Thomas H.; and DeAnda, Nicholas, 4,522,607, Cl. 446-447.000.
DeBergalis, Michael, to Du Pont de Nemours, E. I., and Company. Polymers containing resorcinol monobenzoate. 4,522,971, Cl. 524-547.000.
Dechow, Fred J.; Mitchell, Donald H.; Pearce, Richard M.; Smith, C. Byron; and Brown, Sand T., to Mitco Water Laboratories, Inc. Upflow ion exchange treatment of natural edible juices containing high acidity and suspended solids. 4,522,836, Cl. 426-271.000.
Deere & Company: *See—*
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Wohlford, William P., 4,522,452, Cl. 305-43.000.
Degen, Max, to Schweizerische Eidgenossenschaft vertreten durch die Gruppe fur Rustungsdienste. Apparatus for an aircraft for dropping objects, especially bombs. 4,522,104, Cl. 89-1.510.
Degner, Frederick M., to Budd Company, The. Method and apparatus for processing slag. 4,522,377, Cl. 266-196.000.
Degussa Aktiengesellschaft: *See—*
Effenberger, Franz; and Beisswenger, Thomas, 4,523,012, Cl. 544-316.000.
Deininger, Horst, to Linde Aktiengesellschaft. Adjustable axial piston pumps with reglating units and regulating units for the same. 4,522,566, Cl. 417-222.000.
Del Bon, Luigi. Discharge valve for use in a pressurized container. 4,522,318, Cl. 222-402.240.
Delevallee , Francoise; and Deraedt, Roger, to Roussel Uclaf. Analgesic treatment and compositions. 4,522,816, Cl. 514-52.000.
Delonge, Jean-Claude L.: *See—*
Bouiller, Jean G.; and Delonge, Jean-Claude L., 4,522,557, Cl. 415-115.000.
DeLorme, David M. Universal hub for geodesic type structures. 4,521,998, Cl. 52-81.000.
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DeNovellis, Michelangelo: *See—*
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Denzin, Horst; and Pach, Horst, to Francotyp Gesellschaft mbH. Chassis for a franking or postage metering machine. 4,522,121, Cl. 101-92.000.
Deprez, Louis, to Compagnie de Signaux et D'Entreprises Electriques. Process and device for eliminating the disturbances related to the fluctuations of the load in chopped power supplies. 4,523,265, Cl. 363-21.000.
Deraedt, Roger: *See—*
Delevallee , Francoise; and Deraedt, Roger, 4,522,816, Cl. 514-52.000.
De Roo, Minno, to Deltakabel B.V. Local exchange equipment for a cable network. 4,523,190, Cl. 340-825.030.
D'Errico, Michael J., to Sherwin-Williams Company, The. Dialkylaminomethyl aromatic triazoles as corrosion inhibitors. 4,522,785, Cl. 422-12.000.
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Deschenes, Charles: *See—*
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DeSoto, Inc.: *See—*
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Desson, Carmen F. Big blotter towel. 4,522,858, Cl. 428-96.000.

Detonics Pistol Accessories Ltd.: *See—*
Woodcock, Sidney H.; Maes, Michel E.; and Steimel, Ronald W., 4,522,107, Cl. 89-196.000.

Deutsch, Alice; and Platt, Herbert, to Genetic Diagnostics Corporation. Self-contained assay method and kit. 4,522,923, Cl. 436-536.000.

Deutsche Automobilgesellschaft mit beschrankter Haftung: *See—*
Klink, Rainer, 4,522,290, Cl. 192-107.00M.

Deutsche Gesellschaft: *See—*
Leister, Peter, 4,522,620, Cl. 494-10.000.

DeVaney, David B.: *See—*
Bull, John; Croft, Leon; DeVaney, David B.; Davis, Russell R.; Hinshaw, David L.; Jotwani, Haresh C.; Kandell, Ronald J.; Kurtz, Richard F.; Lee, Ernest O., Jr.; Neumeier, Gunter F.; Richards, Glenn L.; and Scott, Richard, 4,523,308, Cl. 370-56.000.

de Velasco, Frank: *See—*
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Devins, John C.; and Sharbaugh, Amandus H., to General Electric Company. Remote pressure sensor. 4,522,065, Cl. 73-705.000.

De Volder, Noel J.: *See—*
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DeWald, Jack J. Unitized well testing apparatus for use in hostile environments. 4,522,258, Cl. 166-57.000.

de Winter, Walter F.; Uytterhoeven, Herman J.; Gilliams, Yvan K.; and De Volder, Noel J., to AGFA-Gevaert N.V. Liquid electrophoretic developer. 4,522,908, Cl. 430-114.000.

Dhabhar, Dadi J.; and Schmidt, Nicholas F., to Richardson-Vicks Inc. Poly(ethylene oxide)/polyethylene glycol-containing hydrophilic denture adhesive. 4,522,956, Cl. 523-120.000.

Dibbern, John E., Jr.; and Moores, Gregory E., to Black & Decker, Inc. Electrical connection system for motors. 4,523,116, Cl. 310-71.000.

Dickakian, Ghazi B., to Du Pont de Nemours, E. I., and Company. Process for preparing an anisotropic aromatic pitch. 4,522,701, Cl. 208-40.000.

Dickey-john Corporation: *See—*
Bachman, Wesley J., 4,523,280, Cl. 364-424.000.

Didier-Werke A.G.: *See—*
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Diels, Wolfgang: *See—*
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Diesel Kiki Co., Ltd.: *See—*
Nomura, Hiroshi, 4,522,112, Cl. 92-71.000.
Shibuya, Tsunenori, 4,522,573, Cl. 418-23.000.

Di Gregorio, Vincenzo. Subdivided block components reassemblable into three dimensional figures. 4,522,404, Cl. 273-157.00R.

Dimock, Jack A.; and Clarke, Peter J., to Sputtered Films, Inc. Wafer processing machine. 4,522,697, Cl. 204-298.000.

Dinger, Hans; Holzhauer, Hilbert; and Lang, Erberhard, to MTU. Method and apparatus for the displacement of two thrust reversers of jet engines of an aircraft in synchronism during the thrust reversal phase. 4,522,358, Cl. 244-110.00B.

Dion, Eric P., to Mobil Oil Corporation. Method for identifying select non-magnetic minerals in the presence of magnetic minerals. 4,523,149, Cl. 324-377.000.

DiRico, Mark A. Carton support and erection machine. 4,522,016, Cl. 53-564.000.

Disco Co., Ltd.: *See—*
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Ditter, Walter: *See—*
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Diver, James J.: *See—*
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Dobrovolny, Pierre, to Zenith Electronics Corporation. Microwave oscillator and single balanced mixer for satellite television receiver. 4,523,159, Cl. 331-99.000.

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Mowry, Donald E., 4,522,617, Cl. 493-126.000.

Donaldson Company, Inc.: *See—*
Fischer, Paul M.; and Schwarz, Carl E., 4,522,712, Cl. 210-86.000.

Donnelly, Edward N.; Haberkorn, Wilhelm A.; Hagen, Gerry A.; McGregor, Thomas R.; and Postman, William, to Badische Corporation. Integrated process for the production of textured polycaprolactam multifilament yarn. 4,522,774, Cl. 264-168.000.

Donohue, James M.; Markle, Robert E.; and Mager, George E., to Xerox Corporation. Message transmitting system for reproduction machines and copiers. 4,523,299, Cl. 364-900.000.

Doria, Gianfederico; Passarotti, Carlo; and Buttinoni, Ada. Carboxamido-derivatives of 5H-1,3,4-thiadiazolo[3,2-a]pyrimidines, compositions and use. 4,522,944, Cl. 514-222.000.

Dornier System GmbH: *See—*
Gieraths, Wolfgang, 4,523,196, Cl. 343-17.700.

Dorosz, Adolph S. Pallet nibbler method. 4,522,092, Cl. 83-40.000.

Dorow, Rainer; Horowski, Reinhard; Kehr, Wolfgang; and Wachtel, Helmut, to Schering Aktiengesellschaft. Trans-dihydrolisuride antipsychotic. 4,522,820, Cl. 424-288.000.

Dorsett, Danny R.; and Smith, Gerald D., Jr. Bolt-light bulb combination. 4,523,259, Cl. 362-120.000.

Doscher, Frank: *See—*
Klein, Joachim; Widdecke, Hartmut; Doscher, Frank; and Pohl, Fritz, 4,522,952, Cl. 521-31.000.

Doucette, Adrian R.: *See—*
Lindig, Charles E.; Brandstetter, Robert W.; and Doucette, Adrian R., 4,522,466, Cl. 350-162.120.

Doudet, Michel, to Clecim. Processes and devices for the drawing of tubes by extrusion. 4,522,052, Cl. 72-265.000.

Douthit, C. Staton; and Kirby, Edward R., to Associated Truss Company. Heavy load conveyor system. 4,522,547, Cl. 414-391.000.

Dow Chemical Company, The: *See—*
Arndt, Kim E.; Rogers, Richard B.; and McCormick, Ronald W., 4,522,642, Cl. 71-11.000.
Johnston, Howard; and Troxell, Lillian H., 4,523,017, Cl. 546-302.000.
Lee, John M.; and Bauman, William C., 4,522,951, Cl. 521-28.000.
Zieke, Larry M., 4,522,678, Cl. 156-501.000.

Dowa Co., Ltd.: *See—*
Miyahara, Kingo, 4,522,834, Cl. 426-231.000.

Doyle, Keith H. Water ski bindings. 4,522,603, Cl. 441-70.000.

Dragerwerk Aktiengesellschaft: *See—*
Wallroth, Carl F.; and Bauerle, Rainer, 4,522,213, Cl. 128-716.000.

Dreher, Adolf E. S., to Washex Machinery Corporation. Continuous batch laundry system. 4,522,046, Cl. 68-27.000.

Dresser Industries, Inc.: *See—*
Lunghofer, Eugene P., 4,522,731, Cl. 252-8.55R.

Driggers, John M., to Westinghouse Electric Corp. Small diameter radiant tube heater. 4,523,177, Cl. 338-303.000.

Dril-Quip, Inc.: *See—*
Reimert, Larry E., 4,522,431, Cl. 285-27.000.

Drothen, Michael; and Ressel, Willi, to Wickmann Werke GmbH. High voltage quick-break fuse. 4,523,172, Cl. 337-164.000.

DuBois, R. Clark. Apparatus and process for drop-feeding sheets to a typing or printing machine including separable paper clamping trays. 4,522,519, Cl. 400-624.000.

Ducombs, Marcel: *See—*
Messe , Gerard; Faure, Michel; and Ducombs, Marcel, 4,522,094, Cl. 83-92.000.

Dudeck, Ingo; Hipp, Ulrich; Maass, Manfred; and Ruoff, Harald, to Daimler-Benz Aktiengesellschaft. Safety arrangement for an adjustment installation of a seat adjustable manually or programmed. 4,523,136, Cl. 318-568.000.

Dumas, David H., to Hercules Incorporated. Aqueous sizing compositions. 4,522,686, Cl. 162-158.000.

Duncan, Freda. Star display. 4,523,260, Cl. 362-121.000.

Duncan, Robert: *See—*
Kerrey, John S.; and Duncan, Robert, 4,522,330, Cl. 228-182.000.

Dunn, James M., to Verex Laboratories, Inc. Constant release rate solid oral dosage formulations of propranolol. 4,522,804, Cl. 424-19.000.

Dunn, John R., to Polysar Limited. Bonded elastomeric hose assembly. 4,522,852, Cl. 428-36.000.

Dunn, Michael R.: *See—*
Lind, Michael A.; and Dunn, Michael R., 4,521,963, Cl. 30-92.000.

Dunn, Richard A. Center of gravity block removal, appraisal and balancing game. 4,522,393, Cl. 273-1.0GF.

Dunstan, Ericson M.; Gervais, William J.; and McClelland, S. Barry, to Micropolis. High precision floppy disc memory system. 4,523,240, Cl. 360-99.000.

Dunsworth, Charles L., to Metalines, Inc. Phosphorescent tread plate and composition. 4,522,861, Cl. 428-192.000.

Du Pont de Nemours, E. I., and Company: *See—*
Anderson, Arthur W.; Fritschel Scott J.; and Holmquist, Howard E., 4,522,995, Cl. 526-243.000.
Andrews, Gerald D., 4,522,990, Cl. 526-180.000.
DeBergalis, Michael, 4,522,971, Cl. 524-547.000.
Dickakian, Ghazi B., 4,522,701, Cl. 208-40.000.
Ebersole, Richard C., 4,522,786, Cl. 422-56.000.
Heiart, Robert B.; and Cohen, Abraham B., 4,522,903, Cl. 430-22.000.
Krueger, Achim R., 4,522,879, Cl. 428-323.000.
Lee, Duk H.; Feierberg, Susan; and O'Brien, Robert E., 4,522,742, Cl. 252-301.160.
Levitt, George, 4,522,645, Cl. 71-93.000.

Dusel, Robert O.; and Blaha, Gerald E., to Artos Engineering Company. Cutter and belt type conveyor for wire segments. 4,521,946, Cl. 29-33.00M.

Dvorak, Robert V., to Fairchild Camera and Instrument Corporation. Digital logic level comparator particularly for digital test systems. 4,523,143, Cl. 324-133.000.

Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, to Feldmuhle Aktiengesellschaft. Pre-combustion or turbulence chamber for internal combustion engines. 4,522,171, Cl. 123-270.000.

Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, to Feldmuhle Aktiengesellschaft. Piston ring for an internal combustion engine. 4,522,415, Cl. 277-216.000.

Dyer, David; and Wise, James L., to TechMark Corporation. Method and apparatus for recovering waste energy. 4,522,035, Cl. 62-79.000.

Dyer, Henry B. Abrasive bodies. 4,522,633, Cl. 51-307.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Neuschaffer, Karl-Heinz; Engels, Hans-Werner; Gebert, Hans-Jurgen; Laube, Robert W.; and Zoche, Gunter, 4,522,652, Cl. 106-84.000.

Dyneer Corporation: *See—*
Frazer, Benjamin F., 4,522,612, Cl. 474-168.000.

Dyonics, Inc.: *See—*
Whipple, Terry L.; and Sjostrom, Douglas D., 4,522,206, Cl. 128-312.000.

Dyson Refractories Limited: *See—*
Sambrook, Rodney M.; and Ross, Julian R. H., 4,522,940, Cl. 502-328.000.

Dzus Fastener Co., Inc.: *See—*
Bidwell, Richard H., 4,522,541, Cl. 411-554.000.

E.N.I. Ente Nazionale Idrocarburi: *See—*
Sisto, Alessandro; Verdini, Antonio S.; and Virdia, Antonino, 4,522,752, Cl. 260-112.50R.

E. R. Squibb & Sons, Inc.: *See—*
Das, Jagabandhu; and Haslanger, Martin F., 4,522,949, Cl. 514-469.000.

Eastman Kodak Company: *See—*
Minor, James C., 4,522,542, Cl. 412-25.000.
Stockbridge, Bruce W., 4,521,944, Cl. 28-264.000.

Eaton Corporation: *See—*
Goscenski, Edward J., Jr., 4,522,609, Cl. 474-62.000.
Kroll, John W.; and Hyink, Roy, 4,522,147, Cl. 116-216.000.
Mahon, Joseph J., 4,523,062, Cl. 200-35.00R.

Ebersole, Richard C., to Du Pont de Nemours, E. I., and Company. Multilayered test device for detecting analytes in liquid test samples. 4,522,786, Cl. 422-56.000.

Ebneth, Harold; Wolf, Gerhard D.; and Giesecke, Henning, to Bayer Aktiengesellschaft. Lightning protection composite material. 4,522,889, Cl. 428-614.000.

Eckenhoff, James B.: *See—*
Peery, John R.; and Eckenhoff, James B., 4,522,622, Cl. 604-191.000.

Ecopool Design Limited: *See—*
Bastenhof, Dirk, 4,522,535, Cl. 405-79.000.

Edgren, David, to Alza Corporation. Drug dispenser comprising wall formed of semipermeable member and enteric member. 4,522,625, Cl. 604-892.000.

Edwards, Merle L.; Meyer, Wayne A.; and Shook, James M., to Bolens Corporation. Grass catching receptacle. 4,522,019, Cl. 56-202.000.

Effenberger, Franz; and Beisswenger, Thomas, to Degussa Aktiengesellschaft. S-substituted 2-azido-3-mercapto-propionic acid ester and process for its production and use. 4,523,012, Cl. 544-316.000.

Eggeling, Ernst: *See—*
Munschenborn, Dieter; and Rautenbach, Robert, 4,522,342, Cl. 241-57.000.

Ehlers, Raymond C.: *See—*
Bauers, Barton M.; Raudat, John L.; Ehlers, Raymond C.; and Thompson, Timothy H., 4,522,011, Cl. 53-55.000.

Eichelberger, Charles W.; and Wojnarowski, Robert J., to General Electric Company. Electrical conductors arranged in multiple layers. 4,522,888, Cl. 428-546.000.

Eilentropp, Heinz, to HEW Kabel, Heinz Eilentropp KG. Flexible electrical thermal element. 4,523,086, Cl. 219-549.000.

Eisai Co., Ltd.: *See—*
Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Kajiwara, Akiharu; and Ota, Kiichiro, 4,522,759, Cl. 260-404.000.

Elastomer Seals, Inc.: *See—*
Nicholas, John D., 4,522,413, Cl. 277-205.000.

Electro-Flow Controls, Inc.: *See—*
Smith, George E., 4,522,068, Cl. 73-32.00A.

Electrolux Corporation: *See—*
Medwed, Peter M., 4,521,936, Cl. 15-377.000.

Electronics Corporation of Israel, Ltd.: *See—*
Piasecki, Joshua; Zelinkovsky, Reuven; Segev, Aharon; and Henquin, Teodor, 4,523,309, Cl. 370-81.000.

Elektro-Thermit GmbH: *See—*
Guntermann, Hans; and Skreba, Gerhard, 4,522,322, Cl. 222-597.000.

Eli Lilly and Company: *See—*
Ades, Edwin W.; and Cullinan, George J., 4,522,750, Cl. 260-112.00R.
Shreve, Barbara B.; and Turner, Jan R., 4,522,919, Cl. 435-119.000.
Ward, John S.; and Jones, C. David, 4,522,758, Cl. 260-397.500.

Elias, Moenes L.; and Burger, Walter L., to Plastic Specialties and Technologies, Inc. Dissolution of metals utilizing tungsten-diol combinations. 4,522,683, Cl. 156-666.000.

Elmar Industries, Inc.: *See—*
Minard, Everett S., 4,522,238, Cl. 141-142.000.

Eltec Instrument A.G.: *See—*
Keller-Steinbach, Christiane, 4,523,095, Cl. 250-349.000.

Emanuelson, Roy M.; and Lebet, David P., to Scanditronix Inc. Electromagnet. 4,523,168, Cl. 335-296.000.

Emerson Electric Co.: *See—*
Daniels, Nicholas R., 4,523,117, Cl. 310-71.000.
Hochstatter, Brian R., 4,522,454, Cl. 308-3.00R.

Endo, Keizo; Matsumura, Hiroshi; Hasunuma, Yoshifumi; Masai, Siro; and Oguma, Noboru, to Tokyo Tatsuno Co., Ltd. Apparatus for dispensing liquids. 4,522,237, Cl. 141-95.000.

Engel, Larry J.; and Turko, John W., to Michigan Consolidated Gas Co. Gaseous hydrocarbon fuel storage system and power plant for vehicles and associated refueling apparatus. 4,522,159, Cl. 123-1.00A.

Engelhard Corporation: *See—*
Hwang, Herng-Shinn; Heck, Ronald M.; and Yarrington, Robert M., 4,522,894, Cl. 429-17.000.

Engels, Hans-Werner: *See—*
Neuschaffer, Karl-Heinz; Engels, Hans-Werner; Gebert, Hans-Jurgen; Laube, Robert W.; and Zoche, Gunter, 4,522,652, Cl. 106-84.000.

Enright, Philip G.; Hughes, Ian R.; and Jordan, Richard M., to Alcan International Limited. Casting metals. 4,522,784, Cl. 420-590.000.

Entrepose Travaux Publics: *See—*
Grandpierre, Cyril M., 4,522,527, Cl. 403-49.000.

Eppstein, Deborah A.; Fraser-Smith, Elizabeth B.; and Matthews, Thomas R., to Syntex (U.S.A.) Inc. Serial injection of muramyldipeptides and liposomes enhances the anti-infective activity of muramyldipeptides. 4,522,811, Cl. 514-2.000.

Epson Corporation: *See—*
Iijima, Chiyoaki, 4,522,470, Cl. 350-350.00R.

Erdmann, Jurgen; Buchholz, Karl O.; and Knappe, Hartmut, to Erwin Sick GmbH Optik-Elektronik. Electronic apparatus comprising an input stage with a binary output connected to a relay control circuit. 4,523,251, Cl. 361-152.000.

Erhardt, Rainer: *See—*
Reinhardt, Erich; and Erhardt, Rainer, 4,523,278, Cl. 364-413.000.

Erickson, James R.: *See—*
Abbey, Kirk J.; and Erickson, James R., 4,522,962, Cl. 523-410.000.

Ericsson, Lars A.: *See—*
Wiklund, Klas R.; and Ericsson, Lars A., 4,521,973, Cl. 33-366.000.

Ernst, Hans-Hellmut, to Britax-Kolb GmbH & Co. Safety belt emergency locking retractor. 4,522,350, Cl. 242-107.40A.

Eruotungstene-Poudres: *See—*
Leclercq, Lucien; and Provost, Marcelle, 4,522,708, Cl. 208-136.000.

Erwin Sick GmbH Optik-Elektronik: *See—*
Erdmann, Jurgen; Buchholz, Karl O.; and Knappe, Hartmut, 4,523,251, Cl. 361-152.000.

Esco Corporation: *See—*
Hiatt, David M., 4,522,611, Cl. 474-162.000.

Eshel Residual for Cooling and Heating Ltd.: *See—*
Vardi, Isaih; Bourne, Joseph; Ben-Dror, Jonathan; and Kimchi, Yigal, 4,522,720, Cl. 210-512.100.

Esmay, Donald L., to Minnesota Mining and Manufacturing Company. Linerless double-coated pressure-sensitive adhesive tape. 4,522,870, Cl. 428-252.000.

Esmil B.V.: *See—*
Klaren, Dick G., 4,522,252, Cl. 165-1.000.

Espenscheid, Wilton F., to Mobil Oil Corporation. Process for treating high-sulfur caking coals to inactivate the sulfur and eliminate caking tendencies thereof. 4,522,626, Cl. 44-1.00R.

Esrom, Hilmar, to Brown, Boveri & Cie AG. High-temperature storage battery. 4,522,898, Cl. 429-120.000.

ESS GmbH Skibindungen: *See—*
Jaeger, Knut, 4,522,422, Cl. 280-617.000.
Luitz, Max; and Weiss, Eugen, 4,522,424, Cl. 280-633.000.

Ethyl Corporation: *See—*
Li, Hsueh M., 4,522,795, Cl. 423-300.000.
Li, Hsueh M., 4,522,796, Cl. 423-300.000.
Lum, Genevieve S.; Li, Hsueh M.; and Pettigrew, F. Alexander, 4,522,798, Cl. 423-300.000.
Pettigrew, F. Alexander; Li, Hsueh M.; and Lum, Genevieve S., 4,522,797, Cl. 423-300.000.
Seemuth, Paul D., 4,522,630, Cl. 44-53.000.

Euverard, Maynard R.; Diver, James J.; and Schneider, Thomas C., to Velten & Pulver, Inc. Pattern forming apparatus and product orienter therefor. 4,522,292, Cl. 198-374.000.

Evans, Michael E.; and Oberg, Bradley W., to Owens-Corning Fiberglas Corporation. Insulated wall construction. 4,522,004, Cl. 52-409.000.

Eveque-Mourroux, Michel C., to Goodyear Tire & Rubber Company, The. Reinforcing belt for tires with a radial carcass. 4,522,243, Cl. 152-528.000.

Everitt, Delmar K.: *See—*
Goldfarb, Adolph E.; Everitt, Delmar K.; and Burger, Norman J., 4,522,606, Cl. 446-433.000.

Eversole, Jay D., to United States of America, Air Force. Multi-color X-ray line source. 4,523,327, Cl. 378-124.000.

Ewen, John A., to Exxon Research & Engineering Co. Isotactic-stereoblock polymers of alpha-olefins and process for producing the same. 4,522,982, Cl. 525-240.000.

Ewer, Ronald W.: *See—*
Roscrow, Harold N.; Ewer, Ronald W.; and Squires, Philip H., 4,522,768, Cl. 264-2.200.

Ewing, Channing B. Pharmaceutical methods using parabenzoquinone to treat muscle spasms. 4,522,830, Cl. 514-690.000.

Ewing, James H., to MKS Instruments, Inc. Laminar-flow channeling in thermal flowmeters and the like. 4,522,058, Cl. 73-202.000.

Excellon Industries: *See—*
Neumann, Don B., 4,523,093, Cl. 250-234.000.

Exxon Production Research Co.: *See—*
Konak, A. Riza, 4,522,218, Cl. 137-3.000.

Exxon Research & Engineering Co.: *See—*
Achia, Biddanda U.; Shaw, David H.; and Bushnell, James D., 4,522,710, Cl. 208-349.000.
Bertsch, Carl F., 4,522,704, Cl. 208-113.000.
Ewen, John A., 4,522,982, Cl. 525-240.000.
Howkins, Stuart D., 4,523,200, Cl. 346-1.100.
Liker, Stephen J., 4,523,201, Cl. 346-1.100.

McVicker, Gary B.; Carter, James L.; Murrell, Lawrence L.; and Ziemiak, John J., 4,522,928, Cl. 502-26.000.
Mitchell, Howard L., III, 4,522,932, Cl. 502-153.000.
Ott, Robert J., 4,523,199, Cl. 346-1.100.
Peiffer, Dennis G.; and Lundberg, Robert D., 4,522,960, Cl. 523-339.000.
Wheelock, Kenneth S.; and Schucker, Robert C., 4,522,706, Cl. 208-121.000.

Eynon, David L.; Kingsnorth, Stanley W.; and Varma, Mani K., to Internationale Octrooi Maatschappij "Octropa" B.V. Flow box with two deflectors. 4,522,687, Cl. 162-336.000.

FAG Kugelfischer Georg Schafer, Kommanditgesellschaft auf Aktien: *See—*
Neese, Gerhard, 4,522,516, Cl. 384-572.000.
Schmitt, Gunther, 4,522,021, Cl. 57-88.000.

Fairchild Camera and Instrument Corporation: *See—*
Dvorak, Robert V., 4,523,143, Cl. 324-133.000.

Fairey Engineering Limited: *See—*
Parramore, Thomas S., 4,521,932, Cl. 14-2.400.

Faist, Clifford H.: *See—*
Mourao, Antonio M.; and Faist, Clifford H., 4,522,631, Cl. 44-57.000.

Falk, Gerhard, to Robert Bosch GmbH. Drive and mounting for coaxial tape reels. 4,522,352, Cl. 242-193.000.

Fanuc Ltd.: *See—*
Okuda, Kanemasa, 4,523,074, Cl. 219-69.00W.

Fanuc Ltd: *See—*
Gamo, Gotaro; Kinoshita, Mitsuo; and Obara, Haruki, 4,523,073, Cl. 219-69.00W.
Kishi, Hajimu; and Seki, Masaki, 4,523,270, Cl. 364-191.000.

Farmitalia Carlo Erba S.p.A.: *See—*
Bargiotti, Alberto; Penco, Sergio; and Casazza, Anna M., 4,522,815, Cl. 514-34.000.

Farnhill, William M.: *See—*
Parker, Alan; and Farnhill, William M., 4,522,022, Cl. 57-401.000.

Faure, Michel: *See—*
Messe , Gerard; Faure, Michel; and Ducombs, Marcel, 4,522,094, Cl. 83-92.000.

Fayter, Richard G., Jr.; and Harris, Eugene G., to National Distillers and Chemical Corporation. Process for augmenting or enhancing the aroma of a fragrance by adding a vinylcyclopropane compound. 4,522,749, Cl. 252-522.00R.

Fayter, Richard G., Jr.: *See—*
Hall, Allen L.; and Fayter, Richard G., Jr., 4,522,950, Cl. 514-471.000.

Fearon, William W.; and Macy, Arnel M., to Peabody Noise Control, Inc. Composite panel structure. 4,522,284, Cl. 181-292.000.

Featherstone, John L.: *See—*
Gallup, Darrell L.; and Featherstone, John L., 4,522,728, Cl. 210-714.000.

Fedrick, Ronald M. Bottom-seated portable cofferdam and method of use. 4,522,532, Cl. 405-11.000.

Feierberg, Susan: *See—*
Lee, Duk H.; Feierberg, Susan; and O'Brien, Robert E., 4,522,742, Cl. 252-301.160.

Feldmann, Herman F., to International Paper Company. Method of operating a spent pulping liquor combustion apparatus. 4,527,685, Cl. 162-30.110.

Feldmuhle Aktiengesellschaft: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, 4,522,171, Cl. 123-270.000.
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, 4,522,415, Cl. 277-216.000.

Felice, Frank T., to Combustion Engineering, Inc. Aluminum resistant refractory composition. 4,522,926, Cl. 501-127.000.

Fell, Barry M.; and Ciriscioli, Peter R., to Hexcel Corporation. Heat insulating blanket. 4,522,673, Cl. 156-307.300.

Ferguson, Kenneth F. Shower flow controller. 4,522,232, Cl. 137-625.320.

Ferguson, Susan A.: *See—*
Chin, Roland L.; and Ferguson, Susan A., 4,522,886, Cl. 428-446.000.

Ferlan, Stephen J.: *See—*
Shallenberger, John M.; and Ferlan, Stephen J., 4,522,780, Cl. 376-260.000.

Ferrell, Roscoe M.: *See—*
Casstevens, Arvil; Coble, William H.; Shields, Harper; Ferrell, Roscoe M.; and Jordan, Bobby R., 4,522,042, Cl. 66-140.00S.

Ferrini, Pier G.: *See—*
Haas, Georges; von Sprecher, Andreas; and Ferrini, Pier G., 4,523,030, Cl. 562-460.000.

Fiarman, Sidney, to United States of America, Energy. Seal system with integral detector. 4,523,186, Cl. 340-555.000.

Figgie International: *See—*
Robinson, Chris E., 4,522,014, Cl. 53-382.000.

Figgie International Inc.: *See—*
Ansite, William K.; and Ryder, James H., 4,522,639, Cl. 55-314.000.

Finch, Harvey E.; and Trapanese, Salvatore P., to FPS Development Partnership. Olive oil recovery. 4,522,119, Cl. 99-483.000.

Fingerle, Dieter: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, 4,522,171, Cl. 123-270.000.
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, 4,522,415, Cl. 277-216.000.

Fingerson, Conrad F. Lock rod system for flooring grating and method for assembling same. 4,522,009, Cl. 52-667.000.

Finkelmeier, Horst; and Hopp, Rudolf, to Haarmann & Reimer GmbH. Preparation of isochromane derivatives. 4,523,023, Cl. 549-385.000.

Finney, Robert H.: *See—*
Reyes, Peter A.; and Finney, Robert H., 4,522,563, Cl. 416-134.00A.

Firestone Tire & Rubber Company, The: *See—*
Kang, Jung W.; and Hall, James E., 4,522,988, Cl. 526-133.000.
Kang, Jung W., 4,522,989, Cl. 526-133.000.

Firmenich SA: *See—*
Maurer, Bruno; and Hauser, Arnold, 4,522,748, Cl. 252-522.00R.

Fischer, Dan E. Knitted gingival retraction cord. 4,522,593, Cl. 433-136.000.

Fischer, Paul M.; and Schwarz, Carl E., to Donaldson Company, Inc. Double-ended, spin-on fuel water separator. 4,522,712, Cl. 210-86.000.

Fisher, Almon P., to Xerox Corporation. Cleaning apparatus for a magnetographic printing device. 4,522,488, Cl. 355-15.000.

Fisher, John H.: *See—*
Pettigrew, Robert M.; Bradbrook, John D.; Smith, Alan M.; and Fisher, John H., 4,522,482, Cl. 355-3.00R.

Fisher, Sidney E., to Britax Weathershields Limited. Hinge comprising an arcuate spade member and an arcuate socket. 4,521,937, Cl. 16-332.000.

Fisher, Thomas M., to Reliance Electric Company. Telephone including resistive array for dialing and system for using such telephone. 4,523,056, Cl. 179-81.00R.

Fives-Cail Babcock: *See—*
Ghestem, Gerard, 4,521,978, Cl. 34-57.00R.
Lebesgue, Jean, 4,522,131, Cl. 110-229.000.

Flakt Aktiebolag: *See—*
Matts, Sigvard, 4,522,635, Cl. 55-2.000.

Flanagan, Elaine W., to Starmax, Inc. Interment arrangements for cremated remains. 4,521,999, Cl. 52-103.000.

Flanagan, Joseph E.: *See—*
Schack, Carl J.; and Flanagan, Joseph E., 4,522,756, Cl. 260-349.000.

Flatscher, Georg: *See—*
Bayer, Erich; Beckerbauer, Anton; Flatscher, Georg; and Ullrich, Martin, 4,522,862, Cl. 428-195.000.

Flexwatt Corporation: *See—*
Grise, Frederick G. J., 4,523,085, Cl. 219-528.000.

Flohr, Peter: *See—*
Muhlberger, Heinz; Starmuhler, Erwin; Weishaupt, Walter; Flohr, Peter; and Bourauel, Fritz, 4,523,283, Cl. 364-431.010.

Fluidmaster, Inc.: *See—*
Blau, Frederick, Jr.; Gross, John M.; and Vandermeyden, Tom R., 4,522,333, Cl. 236-20.00R.

Fogg, James L.; Vining, George E.; Smith, John H.; and Howell, Cecil A., to Westinghouse Electric Corp. Individual nuclear fuel rod weighing system. 4,522,276, Cl. 177-145.000.

Fohlen, George M.: *See—*
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., 4,522,755, Cl. 260-245.750.

Fonash, Stephen J.: *See—*
Rohatgi, Ajeet; Rai-Choudhury, Prosenjit; Gigante, Joseph R.; Singh, Ranbir; and Fonash, Stephen J., 4,522,657, Cl. 148-1.500.

Ford Aerospace & Communications Corp.: *See—*
Bains, William R.; and Sumrall, Calhoun W., 4,522,357, Cl. 244-3.220.

Ford Motor Company: *See—*
Bewers, Ronald, 4,522,528, Cl. 403-61.000.
Stockton, Thomas R., 4,522,565, Cl. 417-220.000.

Forsberg, Soren: *See—*
Nordin, Olof; and Forsberg, Soren, 4,522,669, Cl. 156-157.000.

Forsheda AB: *See—*
Nordin, Olof; and Forsberg, Soren, 4,522,669, Cl. 156-157.000.

Foster Wheeler Energy Corporation: *See—*
Stewart, Robert D.; and Gamble, Robert L., 4,521,976, Cl. 34-10.000.

Fountain, Michael W.: *See—*
Lenk, Robert P.; Fountain, Michael W.; Janoff, Andrew S.; Ostro, Marc J.; and Popescu, Micrea C., 4,522,803, Cl. 424-1.100.

Fox, Charles L., Jr.; and Modak, Shanta M., to Norwich Eaton Pharmaceuticals, Inc. 1-Ethyl-6-fluoro-1,4-dihydro-4-oxo-7-(1-piperazinyl)-3-quinoline carboxylic acid and metal salts thereof useful in burn therapy. 4,522,819, Cl. 514-187.000.

Fox, Clarence D.; and Baron, Tibor, to Borg-Warner Corporation. Proportional solenoid valve. 4,522,371, Cl. 251-139.000.

FPS Development Partnership: *See—*
Finch, Harvey E.; and Trapanese, Salvatore P., 4,522,119, Cl. 99-483.000.

Framatome & Cie.: *See—*
Leclercq, Joseph, 4,522,782, Cl. 376-438.000.

Francis, Leslie H.: *See—*
Overall, Colin D.; and Francis, Leslie H., 4,522,309, Cl. 220-2.10A.

Francotyp Gesellschaft mbH: *See—*
Denzin, Horst; and Pach, Horst, 4,522,121, Cl. 101-92.000.

Frank, Werner, to Walther & Cie Aktiengesellschaft. Method and apparatus for automatic regulation of the operation of an electrostatic filter. 4,522,634, Cl. 55-2.000.

Frankle, Gerhard; and Joppig, Peter, to Daimler-Benz Aktiengesellschaft. Cold-start assisting device for combustion engines. 4,522,164, Cl. 123-180.00R.

Franklin Institute, The: *See—*
Pytlewski, Louis L.; Krevitz, Kenneth; and Smith, Arthur B., 4,523,043, Cl. 568-840.000.

Fraser-Smith, Elizabeth B.: *See—*
Eppstein, Deborah A.; Fraser-Smith, Elizabeth B.; and Matthews, Thomas R., 4,522,811, Cl. 514-2.000.

Frazer, Benjamin F., to Dyneer Corporation. Balanced pulley construction. 4,522,612, Cl. 474-168.000.

Frehel, Daniel; and Maffrand, Jean-Pierre, to Sanofi, S.A. 4-Acyl-2,6-dioxo-1-phenethyl piperozines. 4,523,013, Cl. 544-385.000.

French, David W.: *See—*
Martin, William W., Jr.; and French, David W., 4,522,578, Cl. 425-110.000.

Frentzel, Richard L.; and Moss, Ernest K., to Celotex Corporation, The. Extraction of polyoxyalkylene surfactants for phenolic foam stabilization. 4,522,877, Cl. 428-304.400.

Freyberger, Laurin C.; Mlynek, Daniel; and Schmidtpott, Friedrich, to ITT Industries, Inc. Set of three integrated circuits for digital video signal processing in color-television receivers. 4,523,222, Cl. 358-27.000.

Frick, Kenneth L., to AT&T Bell Laboratories. Alarm-fault detecting system. 4,523,183, Cl. 340-507.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Kriegel, Ernst; and Coenen, Hubert, 4,522,707, Cl. 208-180.000.

Friesen, Wilmer J., to Vulcan Engineering Co. Segmented mold weight and combination with mold jacket. 4,522,248, Cl. 164-394.000.

Fritschel Scott J.: *See—*
Anderson, Arthur W.; Fritschel Scott J.; and Holmquist, Howard E., 4,522,995, Cl. 526-243.000.

Frye, John W., Jr. Rudder-tiller control system for a boat. 4,522,142, Cl. 114-163.000.

Fuchs, Andreas: *See—*
Harting, Jurgen; and Fuchs, Andreas, 4,522,829, Cl. 514-652.000.

Fudge, Chester: *See—*
Kasprzycki, Robert; and Fudge, Chester, 4,521,981, Cl. 40-2.00A.

Fuji Electric Company, Ltd.: *See—*
Kina, Hideki; Iijima, Toshiyuji; Tanabe, Eizo; Kazama, Toyoki; and Namba, Masaharu, 4,522,904, Cl. 430-54.000.

Fuji Electric Corporate Research & Development, Ltd.: *See—*
Kina, Hideki; Iijima, Toshiyuji; Tanabe, Eizo; Kazama, Toyoki; and Namba, Masaharu, 4,522,904, Cl. 430-54.000.

Fuji Photo Film Co., Ltd.: *See—*
Asao, Yasuzi; and Yamamoto, Ichiro, 4,522,906, Cl. 430-60.000.
Hirano, Tsumoru, 4,522,916, Cl. 430-548.000.
Hirose, Masataka; Kawajiri, Kazuhiro; and Nakajima, Yosuke, 4,523,214, Cl. 357-30.000.
Ichijima, Seiji; and Watanabe, Toshiyuki, 4,522,915, Cl. 430-505.000.
Ichijima, Seiji; Mihayashi, Keiji; and Itoh, Isamu, 4,522,917, Cl. 430-564.000.
Okuzawa, Yasutoshi, 4,523,246, Cl. 360-133.000.

Fuji Standard Research Kabushiki Kaisha: *See—*
Gomi, Shimpei; Takeuchi, Tomomitsu; Matsuo, Itaru; Tsutsui, Toshio; Nakagawa, Takao; and Miwa, Shigeru, 4,522,627, Cl. 44-1.00R.

Fujikawa, Kazuhiko: *See—*
Tanino, Hiroshi; Okamoto, Tetsuhiko; Ueyama, Shinichiro; Fujikawa, Kazuhiko; and Tsumiyama, Takatoshi, 4,522,689, Cl. 203-52.000.

Fujimoto, Ryoichi: *See—*
Ochiai, Hideo; Nagoya, Yoshinari; Fujimoto, Ryoichi; Yamazaki, Susumu; Sasamoto, Nobuhiko; and Ishida, Shinichi, 4,522,040, Cl. 62-419.000.

Fujimura, Masayuki: *See—*
Toshimitsu, Naohiko; and Fujimura, Masayuki, 4,523,244, Cl. 360-129.000.

Fujimura, Toshiro: *See—*
Takenoya, Hideaki; Fujimura, Toshiro; Hara, Masanori; and Tonomura, Yoshinobu, 4,522,137, Cl. 112-266.100.

Fujioka, Akira: *See—*
Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,522,966, Cl. 524-114.000.

Fujita, Yoshiji: *See—*
Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,523,024, Cl. 549-407.000.

Fujitsu Limited: *See—*
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirofumi, 4,522,909, Cl. 430-137.000.
Takahara, Kazuhiro; Kurahashi, Keizo; Gondo, Hiroyuki; Oki, Kenichi; and Miura, Shoshin, 4,523,189, Cl. 340-781.000.
Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, 4,523,106, Cl. 307-303.000.

Fujiwara, Yoshio: *See—*
Kobayashi, Naotake; Abe, Tetsuya; and Fujiwara, Yoshio, 4,522,881, Cl. 428-336.000.

Fukahori, Hidehiko: *See—*
Iwashita, Tomonori; and Fukahori, Hidehiko, 4,522,477, Cl. 354-173.100.

Fukazawa, Nobuyuki: *See—*
Katakami, Tsutomu; Fukazawa, Nobuyuki; Iizuka, Hajime; Nishina, Takashi; Kamiya, Joji; Tanaka, Yasuhito; and Nakano, Takuo, 4,523,011, Cl. 544-238.000.

Fukuda, Hiroyuki: *See—*
Shigeta, Masatomo; Fukuda, Hiroyuki; Saitoh, Kuniyuki; and Kaji, Hisatsugu, 4,522,895, Cl. 429-44.000.

Fukuda, Mitsutoshi: *See—*
Koyama, Kenji; Ohno, Syotaro; and Fukuda, Mitsutoshi, 4,522,725, Cl. 210-639.000.

Fukuda Press Kogyo Kabushiki Kaisha: *See—*
Musumiya, Raita; Sano, Hideo; Izichi, Yasuto; Inoue, Mitsuru; and Izawa, Kenzyu, 4,522,082, Cl. 74-512.000.

Fukuda, Shinichi; and Odaka, Kentaro, to Sony Corporation. Method and apparatus for recording and reproducing an analog signal. 4,523,237, Cl. 360-8.000.

Fukui, Izumu: *See—*
Takahashi, Sadayuki; Yonezawa, Masatomo; Ochi, Atsushi; Yano, Takeshi; Hamatsuki, Takeshige; and Fukui, Izumu, 4,523,121, Cl. 310-334.000.

Fukui, Masahiro: *See—*
Inoue, Hiromichi; Inukai, Takashi; Goto, Yasuyuki; Sato, Hideo; and Fukui, Masahiro, 4,522,741, Cl. 252-299.630.

Fukuizumi, Hideaki: *See—*
Yoshinari, Osamu; Kawakatsu, Yoshifumi; and Fukuizumi, Hideaki, 4,522,801, Cl. 423-447.400.

Fukunaga, Yasushi; Bandoh, Tadaaki; Hiraoka, Ryosei; Matsumoto, Hidekazu; Ide, Jushi; and Kawakami, Tetsuya, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Bus selection control in a data transmission apparatus for a multiprocessor system. 4,523,272, Cl. 364-200.000.

Fukunaga, Yasushi; and Bandoh, Tadaaki, to Hitachi, Ltd. Data processing system with processors having different processing speeds sharing a common bus. 4,523,274, Cl. 364-200.000.

Fukuoka, Tatsuhiko: *See—*
Nozue, Shigehiro; and Fukuoka, Tatsuhiko, 4,522,513, Cl. 384-368.000.

Fukushima, Nobuo; Kitagawa, Yoshihiko; Okumura, Takuzo; and Sakakura, Kazuaki, to Sumitomo Chemical Company, Limited. Highly foamed polypropylene product and an extrusion process for forming the product. 4,522,955, Cl. 521-143.000.

Fukuta, Kinsho, to Toyota Jidosha Kabushiki Kaisha. Device for adjusting height of cushion in rear part of seat. 4,522,078, Cl. 74-89.150.

Fulhorst, George E. Wireless alarm system in conjunction with at least one vehicle. 4,523,178, Cl. 340-64.000.

Fulks, Ronald T.: *See—*
Powell, Ronald A.; and Fulks, Ronald T., 4,522,845, Cl. 427-53.100.

Funabashi, Motohisa: *See—*
Wakamori, Fumio; Noma, Toshiyuki; Adachi, Masao; Funabashi, Motohisa; and Suzuki, Masayoshi, 4,522,534, Cl. 405-37.000.

Funahashi, Masaya; Inoue, Kenichi; and Mizushima, Kunio, to Hitachi Maxell, Ltd. Magnetic recording medium. 4,522,885, Cl. 428-422.000.

Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, to Nippon Sheet Glass Co., Ltd.; and Sumitomo Chemieal Company, Limited. Non-fogging coating composition and a shaped article coated therewith. 4,522,966, Cl. 524-114.000.

Funakoshi, Keigo; and Ametani, Minoru, to Nitto Electric Industrial Co., Ltd. Apparatus for sticking adhesive film on a ring and a thin article. 4,522,679, Cl. 156-510.000.

Furujho, Sakae: *See—*
Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; Furujho, Sakae; Okane, Kohji; and Anezaki, Shoji, 4,522,650, Cl. 75-48.000.

Furukawa, Yoshimi: *See—*
Sano, Shoichi; and Furukawa, Yoshimi, 4,522,416, Cl. 280-91.000.
Sano, Shoichi; and Furukawa, Yoshimi, 4,522,417, Cl. 280-91.000.

Furukawa, Yutaka: *See—*
Matsuoka, Hiroshi; and Furukawa, Yutaka, 4,522,614, Cl. 474-260.000.

Fuse, Takahiro: *See—*
Kameda, Osamu; and Fuse, Takahiro, 4,523,232, Cl. 358-236.000.

Futaba Denshi Kogyo Kabushiki Kaisha: *See—*
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,523,211, Cl. 357-4.000.

G. D. Searle & Co.: *See—*
Moormann, Alan E.; Pitzele, Barnett S.; and Jones, Peter H., 4,523,020, Cl. 548-353.000.

G.D Societa per Azioni: *See—*
Seragnoli, Enzo, 4,522,295, Cl. 198-493.000.

GA Technologies Inc.: *See—*
Moeller, Charles P., 4,523,127, Cl. 315-4.000.

GAF Corporation: *See—*
Lin, I. Sioun; Gromelski, Stanley J., Jr.; Werner, Jesse; Brown, Michael J.; and Chakrabarti, Paritosh M., 4,523,004, Cl. 528-76.000.

Gagnol, Jean-Pierre: *See—*
Wagnon, Jean; Gautier, Patrick; and Gagnol, Jean-Pierre, 4,522,824, Cl. 514-414.000.

Gaitten, Dorothy A., executrix: *See—*
Gaitten, Walden M., deceased, 4,522,239, Cl. 144-2.00Z.

Gaitten, Walden M., deceased (by Gaitten, Dorothy A., executrix), to Southeastern Technology, Inc. Swath cutting and gripping tree delimber. 4,522,239, Cl. 144-2.00Z.

Gale, Edwin J.: *See—*
Valentine, Gordon A.; and Gale, Edwin J., 4,522,433, Cl. 285-93.000.

Gallant, Ben J., to Cooper LaserSonics, Inc. Equipment and method for delivering an abrasive-laden gas stream. 4,522,597, Cl. 433-216.000.

Gallivan, Timothy J.: *See—*
Connolly, John D., Jr.; Gallivan, Timothy J.; and Ringle, Richard P., 4,522,769, Cl. 264-0.500.

Gallup, Darrell L.; and Featherstone, John L., to Union Oil Company of California; Mono Power Company; and Southern Pacific Land

Company. Acidifiction of steam condensate for incompatibility control during mixing with geothermal brine. 4,522,728, Cl. 210-714.000.
Gamble, Robert L.: *See—*
Stewart, Robert D.; and Gamble, Robert L., 4,521,976, Cl. 34-10.000.
Gamblin, Rodger L., to Burlington Industries, Inc. Random droplet liquid jet apparatus and process. 4,523,202, Cl. 346-75.000.
Gamo, Gotaro; Kinoshita, Mitsuo; and Obara, Haruki, to Fanuc Ltd. Wire-cut electric discharge machine controller for compensating the machining cornering parameters. 4,523,073, Cl. 219-69.00W.
Gandrud, Dale E., to Gandy Company. Granular material applicator with speed compensator. 4,522,340, Cl. 239-654.000.
Gandy Company: *See—*
Gandrud, Dale E., 4,522,340, Cl. 239-654.000.
Ganson, John P. Apparatus and method for showing motion in a single photograph. 4,522,475, Cl. 352-39.000.
GAO Gesellschaft fur Automation und Organisation GmbH: *See—*
Leuthold, Karl, 4,522,387, Cl. 271-187.000.
Garbis, Dennis; Chan, Joseph Y.; Granata, Amedeo J.; and Heller, Robert C., to General Instrument Corp. Reactor and susceptor for chemical vapor deposition process. 4,522,149, Cl. 118-725.000.
Garde, Peter, to Unisearch Limited. High-efficiency feedforward-error-correction amplifier. 4,523,152, Cl. 330-151.000.
Gardner, Hugh C., to Union Carbide Corporation. Process for producing dicyclopentadienyl-modified polyester compositions. 4,522,977, Cl. 525-48.000.
Gardner, Hugh C., to Union Carbide Corporation. Low viscosity, dicyclopentadienyl-modified polyester compositions and a process for the preparation thereof. 4,522,978, Cl. 525-48.000.
Gardner, Lloyd E.: *See—*
Aldag, Arthur W., Jr.; and Gardner, Lloyd E., 4,522,709, Cl. 208-216.00R.
Gardner, Norman A.; and Voticky, Michael P., to Nocopi Inc. Method of rendering documents resistant to photocopying, and anti-copying paper and ink therefor. 4,522,429, Cl. 283-91.000.
Garrett, William R.: *See—*
Kellner, Jackson M.; and Garrett, William R., 4,522,234, Cl. 138-108.000.
Gasiunas, Donatas V.: *See—*
Hohl, G. Burnell; and Gasiunas, Donatas V., 4,523,055, Cl. 179-2.0DP.
Gassmann, Wolfgang: *See—*
Goldner, Walther; and Gassmann, Wolfgang, 4,522,445, Cl. 297-284.000.
Gautier, Patrick: *See—*
Wagnon, Jean; Gautier, Patrick; and Gagnol, Jean-Pierre, 4,522,824, Cl. 514-414.000.
Gawel, Henry A.: *See—*
Horodysky, Andrew G.; Ashjian, Henry; and Gawel, Henry A., 4,522,734, Cl. 252-49.600.
Gearhart Industries, Inc.: *See—*
Maciejewski, Walter J., 4,523,148, Cl. 324-351.000.
Gebert, Hans-Jurgen: *See—*
Neuschaffer, Karl-Heinz; Engels, Hans-Werner; Gebert, Hans-Jurgen; Laube, Robert W.; and Zoche, Gunter, 4,522,652, Cl. 106-84.000.
Gebr. Hennig GmbH: *See—*
Bierbrauer, Heiner; and Diels, Wolfgang, 4,522,246, Cl. 160-223.000.
Gebruder Schmidt GMBH & Co. KG: *See—*
Schmidt, Karl W., 4,522,509, Cl. 368-300.000.
Geib, Henry T., Sr.; and Griffith, Wayne C., to M. P. Metal Products, Inc. Forced air baseboard heater and air duct diffuser. 4,523,081, Cl. 219-370.000.
Geipel, Werner: *See—*
Billet, Reinhard; Kober, Rainer; Mackowiak, Jerzy; and Geipel, Werner, 4,522,767, Cl. 261-94.000.
Geist, Michael, to BASF Farben & Fasern AG. Synthetic resin. 4,522,981, Cl. 525-124.000.
Geke, Jurgen: *See—*
Schmid, Karl; Baumann, Horst; Geke, Jurgen; Germscheid, Hans-Gunther; Ludecke, Werner; Piorr, Robert; Rossmann, Christian; Scharf, Rolf; and Schlussler, Hans-Joachim, 4,522,740, Cl. 252-174.210.
Gelinas, Sandra L.; Cerundolo, Daniel G.; and Abele, John E., to Mansfield Scientific, Inc. Endocardial electrode. 4,522,212, Cl. 128-642.000.
Gelse, Hans-Dieter; Heger, Werner; and Kramer, Manfred, to WABCO Fahrzeugbremsen GmbH. Compressor apparatus. 4,522,568, Cl. 417-307.000.
Gemignani, Andre . Pilot-controlled safety valve. 4,522,369, Cl. 251-61.500.
Gene West, Inc.: *See—*
West, Gene P., 4,522,241, Cl. 144-193.00A.
General Dynamics, Pomona Division: *See—*
Lair, Clair K.; Jonas, Jules; and Anderson, Keith D., 4,522,356, Cl. 244-3.150.
General Electric Company: *See—*
Anderson, John M., 4,523,125, Cl. 313-491.000.
Baliga, Bantval J., 4,523,111, Cl. 307-574.000.
Bell, Gordon M.; and Hopkinson, Philip J., 4,521,956, Cl. 29-605.000.
Burge, Joseph C.; and Bathori, Julius, 4,522,559, Cl. 415-196.000.
Campbell, John R.; and Williams, Robert E., Jr., 4,523,002, Cl. 528-26.000.
Closson, James M.; and Hay, Noah D., 4,521,955, Cl. 29-605.000.
Connolly, John D., Jr.; Gallivan, Timothy J.; and Ringle, Richard P., 4,522,769, Cl. 264-0.500.
Cunningham, Eldon R., 4,523,118, Cl. 310-90.000.
Devins, John C.; and Sharbaugh, Amandus H., 4,522,065, Cl. 73-705.000.
Eichelberger, Charles W.; and Wojnarowski, Robert J., 4,522,888, Cl. 428-546.000.
Gigliotti, Michael F. X., Jr.; Yang, Swe-Wong; Jackson, Melvin R.; Bruch, Charles A.; and Nguyen-Dinh, Xuan, 4,522,664, Cl. 148-404.000.
Gorowitz, Bernard; and Saia, Richard J., 4,522,681, Cl. 156-643.000.
Gross, Dan A., 4,523,166, Cl. 335-216.000.
Hammer, Edward E.; and Beck, Charles E., 4,523,126, Cl. 313-594.000.
Hanson, John R.; Hauser, James L.; Kilfeather, James F., Jr.; and Hendriks, Hendrik B., 4,522,667, Cl. 156-87.000.
Hay, Noah D., 4,523,169, Cl. 336-60.000.
King, James L.; and Hennessy, John E., 4,521,953, Cl. 29-596.000.
Laskaris, Evangelos T., 4,522,034, Cl. 62-45.000.
Lewandowski, Robert S., 4,522,849, Cl. 427-237.000.
McLeod, Ramon M., 4,521,957, Cl. 29-609.000.
McLoughlin, Joseph R., 4,522,771, Cl. 264-61.000.
Miller, Kenneth F., 4,522,980, Cl. 525-67.000.
Peters, Edward N., 4,523,006, Cl. 528-172.000.
Rademaker, Leo C.; Hopkinson, Philip J.; Bell, Gordon M.; and Hay, Noah D., 4,521,954, Cl. 29-605.000.
Ryang, Hong-Son, 4,522,985, Cl. 525-431.000.
Staats, James E., 4,523,069, Cl. 219-10.55D.
Swiger, Roger T.; and Hallgren, John E., 4,523,001, Cl. 528-18.000.
General Foods Corporation: *See—*
Rattmann, James A., 4,522,093, Cl. 83-42.000.
General Indicator Corporation: *See—*
Murray, Ledell L., 4,521,984, Cl. 40-576.000.
General Instrument Corp.: *See—*
Garbis, Dennis; Chan, Joseph Y.; Granata, Amedeo J.; and Heller, Robert C., 4,522,149, Cl. 118-725.000.
General Motors Corporation: *See—*
Mackin, Steven J.; and Tillotson, Harry T., 4,522,081, Cl. 74-473.00R.
Short, William T.; and Ottaviani, Robert A., 4,522,986, Cl. 525-458.000.
General Research of Electronics, Inc.: *See—*
Imazeki, Kazuyoshi; and Yokoyama, Nobuaki, 4,523,197, Cl. 343-702.000.
Genetic Diagnostics Corporation: *See—*
Deutsch, Alice; and Platt, Herbert, 4,522,923, Cl. 436-536.000.
GenRad, Inc.: *See—*
Congdon, James S., 4,523,154, Cl. 330-266.000.
GEO Vann, Inc.: *See—*
Yates, Donald N., Jr.; and Oestrich, Michael, 4,522,665, Cl. 149-21.000.
Georgia-Pacific Corporation: *See—*
Jespersen, Paul W., 4,522,346, Cl. 242-55.300.
Gerber, Hans-Adolf: *See—*
Kuhn-Kuhnenfeld, Franz; Kramler, Josef; and Gerber, Hans-Adolf, 4,522,656, Cl. 148-1.500.
Gerhard, Helmut, to Westerwalder Eisenwerk Gerhard GmbH. Corner fitting for freight containers. 4,521,941, Cl. 24-287.000.
Gerhardt, Glenn E.: *See—*
Lagow, Richard J.; and Gerhardt, Glenn E., 4,523,039, Cl. 568-615.000.
Germscheid, Hans-Gunther: *See—*
Schmid, Karl; Baumann, Horst; Geke, Jurgen; Germscheid, Hans-Gunther; Ludecke, Werner; Piorr, Robert; Rossmann, Christian; Scharf, Rolf; and Schlussler, Hans-Joachim, 4,522,740, Cl. 252-174.210.
Gershman, Leonard. Cat litter disposal housing. 4,522,150, Cl. 119-1.000.
Gervais, William J.: *See—*
Dunstan, Ericson M.; Gervais, William J.; and McClelland, S. Barry, 4,523,240, Cl. 360-99.000.
Getronics AB: *See—*
Wiklund, Klas R.; and Ericsson, Lars A., 4,521,973, Cl. 33-366.000.
GH TTE: *See—*
Heilhecker, Joseph K.; and Byrne, James E., 4,522,450, Cl. 303-9.000.
Ghestem, Gerard, to Fives-Cail Babcock. Heat exchanger for thermally treating a pulverulent material. 4,521,978, Cl. 34-57.00R.
Gibbs, Andrew R., to Stanley Tools Limited. Dowelling jig. 4,522,539, Cl. 408-72.00R.
Gieraths, Wolfgang, to Dornier System GmbH. Test equipment for a synthetic aperture radar system. 4,523,196, Cl. 343-17.700.
Giese, Emil; Maurer, Ruprecht; and Hagen, Max, to Ringspann Albrecht Maurer K.G. Retainer ring for a freewheel clutch. 4,522,289, Cl. 192-41.00A.
Giesecke, Henning: *See—*
Ebneth, Harold; Wolf, Gerhard D.; and Giesecke, Henning, 4,522,889, Cl. 428-614.000.
Gigante, Joseph R.: *See—*
Rohatgi, Ajeet; Rai-Choudhury, Prosenjit; Gigante, Joseph R.; Singh, Ranbir; and Fonash, Stephen J., 4,522,657, Cl. 148-1.500.
Gigliotti, Michael F. X., Jr.; Yang, Swe-Wong; Jackson, Melvin R.; Bruch, Charles A.; and Nguyen-Dinh, Xuan, to General Electric Company. Phase stable carbide reinforced nickel-base superalloy eutectics having improved high temperature stress-rupture strength and improved resistance to surface carbide formation. 4,522,664, Cl. 148-404.000.
Gille, Etienne; Lucas, Jean; Mechineau, Didier; and Monod, Marie-Odile, to Centre National Du Machinisme Agricole, Du Genie Rural, Des Eaux et des Forets (Cemagref). Process for the stabilization with respect to a desired path of a member which is movably mounted according to at least one component of movement and its application to the stabilization of a spray manifold. 4,522,841, Cl. 427-4.000.
Gilliams, Yvan K.: *See—*
de Winter, Walter F.; Uytterhoeven, Herman J.; Gilliams, Yvan K.; and De Volder, Noel J., 4,522,908, Cl. 430-114.000.
Gilligan, Thomas J., to Ampex Corporation. Core memory with return drive scheme. 4,523,302, Cl. 365-195.000.
Girard, Thomas L.; and Lewis, Monty D., to Indoor Activities Unlimited. Game ball. 4,522,396, Cl. 273-58.00K.
Giubbolini, Marco; and Marziali, Walter, to Selenia-Industrie Elettroniche Associate S.p.A. Device for estimating the operating frequency of a source of recurrent signals. 4,523,291, Cl. 364-724.000.
Glaverbel: *See—*
Cornet, Julien; and Van Laethem, Robert, 4,522,847, Cl. 427-55.000.
Gleman, Jon F. Log loading tool. 4,522,437, Cl. 294-9.000.
Glowacki, Pierre A.; and Mandet, Gerard M. F., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A. Turbine rotor cooling. 4,522,562, Cl. 416-95.000.
GME, Inc.: *See—*
Hamilton, Glen T., 4,522,013, Cl. 53-220.000.
GNB Batteries Inc.: *See—*
Lund, David L.; Majumdar, Senajit J.; Mullane, William E.; and Krivanek, Louis, 4,523,068, Cl. 219-10.530.
Goldfarb, Adolph E.; Everitt, Delmar K.; and Burger, Norman J., to Everitt, Delmar K.; and Burger, Norman J. Self-powered miniature toy vehicle with treads and with unusual four-wheel-drive climbing capability. 4,522,606, Cl. 446-433.000.
Goldin, Reeni: *See—*
Nibby, Chester M., Jr.; Goldin, Reeni; and Andrews, Timothy A., 4,523,313, Cl. 371-10.000.
Goldner, Walther; and Gassmann, Wolfgang, to Keiper Recaro GmbH & Co. Vehicle seat, particularly a motor vehicle seat. 4,522,445, Cl. 297-284.000.
Goldring, Stanley D.: *See—*
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Golner, Jerold J.: *See—*
Strout, Russell B.; and Golner, Jerold J., 4,522,348, Cl. 242-96.000.
Gomi, Shimpei; Takeuchi, Tomomitsu; Matsuo, Itaru; Tsutsui, Toshio; Nakagawa, Takao; and Miwa, Shigeru, to Fuji Standard Research Kabushiki Kaisha. Process for producing oil-containing, microspherical carbonaceous particles. 4,522,627, Cl. 44-1.00R.
Goncalves, Antonin, to L'Oreal. Dosage dispenser device for a viscous product. 4,522,317, Cl. 222-391.000.
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Takahara, Kazuhiro; Kurahashi, Keizo; Gondo, Hiroyuki; Oki, Kenichi; and Miura, Shoshin, 4,523,189, Cl. 340-781.000.
Goodman, Mark M.: *See—*
Knapp, Furn F., Jr.; and Goodman, Mark M., 4,523,033, Cl. 562-496.000.
Goodwin, Norman W.: *See—*
Brown, Roger H.; Chow, Kuen; Goodwin, Norman W.; and Grinberg, Jan, 4,523,067, Cl. 219-10.49R.
Goodyear Aerospace Corporation: *See—*
Beck, Arnold A., 4,523,282, Cl. 364-426.000.
Goodyear Tire & Rubber Company, The: *See—*
Eveque-Mourroux, Michel C., 4,522,243, Cl. 152-528.000.
Kluss, Karl K.; Allen, Terry F.; and Sawyer, John M., 4,522,235, Cl. 138-130.000.
Scriver, Richard M.; and Stair, Wayne H., 4,522,970, Cl. 524-447.000.
Gordon, Norman. Tooth and gum dentifrice. 4,522,805, Cl. 424-52.000.
Gorowitz, Bernard; and Saia, Richard J., to General Electric Company. Method for tapered dry etching. 4,522,681, Cl. 156-643.000.
Goscenski, Edward J., Jr., to Eaton Corporation. Fan drive system for transverse engine. 4,522,609, Cl. 474-62.000.
Goscianski, Michel, to U.S. Philips Corporation. Information display device having a liquid crystal cell. 4,522,468, Cl. 350-332.000.
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Nakate, Hiroshi; Kondo, Masatoshi; and Gosho, Nobuyuki, 4,523,072, Cl. 219-67.000.
Gossens, Peter: *See—*
Heinen, Peter; and Gossens, Peter, 4,521,945, Cl. 28-273.000.
Gostomski, Richard B. Raisable cover. 4,522,440, Cl. 296-100.000.
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Gould Computer Systems Inc.: *See—*
Brown, William H.; Starkweather, James A.; and Humphreys, Hugh M., 4,523,310, Cl. 370-112.000.
Gould, Gordon: *See—*
Thompson, Robert E.; Gould, Gordon; and Soodak, Charles I., 4,522,464, Cl. 350-96.230.
Gould, Ronald M.; and Yurchak, Sergei, to Mobil Oil Corporation. Method for gasoline yield enhancement in the fixed bed methanol-to-gasoline process. 4,523,046, Cl. 585-322.000.
Grace, Oscar M.; Wujcik, Steven E.; and Heyman, Duane A., to BASF Wyandotte Corporation. Graft polymer dispersion in a mixture of low molecular weight polyols and polyether polyols and polyurethane foams prepared therefrom. 4,522,976, Cl. 524-722.000.
Graco Inc.: *See—*
Kelly, Lawrence S.; McCormick Marty P.; and Weikel, William A., 4,522,789, Cl. 422-133.000.
Gradle, Richard J.: *See—*
Clapper, Robert L.; Gradle, Richard J.; and Bake, Earl A., 4,522,230, Cl. 137-496.000.
Graff, Roderich W. Method and an apparatus for extracting gases and vapors from a drying hopper filled with bulk material. 4,521,977, Cl. 34-32.000.
Granata, Amedeo J.: *See—*
Garbis, Dennis; Chan, Joseph Y.; Granata, Amedeo J.; and Heller, Robert C., 4,522,149, Cl. 118-725.000.
Grandpierre, Cyril M., to Entrepose Travaux Publics. Tubular-type scaffoldings, method for assembling them and to the horizontal transoms incorporated therein. 4,522,527, Cl. 403-49.000.
Gray, Frederick W., to Colgate-Palmolive Company. Activated peroxy compound bleaching compositions and bleaching detergent compositions and process of using same. 4,522,739, Cl. 252-95.000.
Gray, George G., Jr., to Raytheon Company. Apparatus for the automated handling and testing of electronic modules. 4,523,145, Cl. 324-158.00F.
Green, Arlene. Disposable toothbrush with integral dentifrice. 4,522,524, Cl. 401-183.000.
Green, Gregory M.: *See—*
Johnston, Charles R.; and Green, Gregory M., 4,521,935, Cl. 15-322.000.
Green, Robert H.; and Simon, James D. Splitting wedge for log splitter. 4,522,240, Cl. 144-193.00E.
Greenman, Edwin G.: *See—*
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Greenwood, William S., to Thomas & Betts Corporation. Apparatus for electrical connection of multiconductor cables. 4,521,969, Cl. 33-180.00R.
Gregory, James N.: *See—*
Bodine, Albert G.; and Gregory, James N., 4,522,271, Cl. 175-56.000.
Greigger, Paul P.: *See—*
Das, Suryya K.; Boberski, William G.; Greigger, Paul P.; Jones, James E.; Schappert, Raymond F.; and Seiner, Jerome A., 4,522,958, Cl. 523-212.000.
Greiner, Max; and Konrath, Karl, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,522,181, Cl. 123-502.000.
Greschner, Johann: *See—*
Bohlen, Harald; Kaus, Gerhard; Greschner, Johann; Keyser, Joachim H.; and Kulcke, Werner, 4,522,893, Cl. 428-641.000.
Greskovics, Paul: *See—*
Chivens, Donald R.; Greskovics, Paul; and Kelm, Edward C., 4,522,221, Cl. 137-118.000.
Greune, Christian; and Kummeke, Heinrich, to MTU. Apparatus for controlling load distribution and speed of gas speed of gas turbine systems and particularly of gas turbine engines. 4,522,025, Cl. 60-39.150.
Greverath, Peter H., to Pyles Division. Linear in-line mixing system. 4,522,504, Cl. 366-339.000.
Gries, Heinz; and Mutzel, Wolfgang, to Schering Aktiengesellschaft. 3-Substituted 2,4,6-trihalogenated benzamides as sweetening agents. 4,522,839, Cl. 426-548.000.
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Geib, Henry T., Sr.; and Griffith, Wayne C., 4,523,081, Cl. 219-370.000.
Grigoleit, Georg; Oberkobusch, Rudolf; Stadelhofer, Jurgen; and Matern, Kurt, to Rutgerswerke Aktiengesellschaft. Process for the catalytic dehydrogenation of piperidine. 4,523,016, Cl. 546-252.000.
Grimm, Thomas H.: *See—*
Kilroy, Eugene J.; Morse, James E.; Grimm, Thomas H.; and DeAnda, Nicholas, 4,522,607, Cl. 446-447.000.
Grinberg, Jan: *See—*
Brown, Roger H.; Chow, Kuen; Goodwin, Norman W.; and Grinberg, Jan, 4,523,067, Cl. 219-10.49R.
Grise, Frederick G. J., to Flexwatt Corporation. Electrical heating device. 4,523,085, Cl. 219-528.000.
Gromelski, Stanley J., Jr.: *See—*
Lin, I. Sioun; Gromelski, Stanley J., Jr.; Werner, Jesse; Brown, Michael J.; and Chakrabarti, Paritosh M., 4,523,004, Cl. 528-76.000.
Gronauer, Thomas W.: *See—*
O'Sullivan, Thomas F.; and Gronauer, Thomas W., 4,522,157, Cl. 122-510.000.
Gross, Dan A., to General Electric Company. Optimal field inhomogeneity correction coil operation for NMR magnets. 4,523,166, Cl. 335-216.000.
Gross, John M.: *See—*
Blau, Frederick, Jr.; Gross, John M.; and Vandermeyden, Tom R., 4,522,333, Cl. 236-20.00R.
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Lindig, Charles E.; Brandstetter, Robert W.; and Doucette, Adrian R., 4,522,466, Cl. 350-162.120.
Grunberg, Kurt; Poth, Rainer; Werner, Peter; Koch, Kurt; Schweppe, Friedrich; and Voigtlander, Kurt, to Siemens Aktiengesellschaft. Encapsulated medium-voltage electrical load switching apparatus. 4,523,253, Cl. 361-335.000.

Grund, Peter; and Holz, Peter, to Messer Griesheim GmbH. Centrifugal throwing wheel for ejection of blasting materials onto workpieces. 4,521,996, Cl. 51-434.000.

Grundig E. M. V.: *See—*
Bauerschmidt, Werner, 4,523,151, Cl. 329-124.000.

Gruner, Heiko: *See—*
Burger, Kurt; and Gruner, Heiko, 4,522,067, Cl. 73-862.650.

Grunwald, Werner; Pfizenmaier, Heinz; de la Prieta, Claudio; Schmid, Kurt; and Schmidt, Ewald, to Robert Bosch GmbH. Method of applying an electrical conductor pattern on an apertured substrate. 4,522,671, Cl. 156-235.000.

GTE Automatic Electric Laboratories, Incorporated: *See—*
Kapral, Christopher W., 4,523,179, Cl. 340-347.0DA.

GTE Business Communication Systems: *See—*
Boeckmann, Eduard F. B., 4,523,057, Cl. 179-81.00B.

GTE Laboratories Incorporated: *See—*
Berger, Eric V., 4,522,055, Cl. 72-477.000.

GTE Valeron Corporation: *See—*
Kroetsch, Charles F., 4,523,063, Cl. 200-61.410.

Guay, Lawrence A., Jr. Gravity-operated toy. 4,522,605, Cl. 446-228.000.

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Gummelt, Klaus: *See—*
Illmann, Joachim; and Gummelt, Klaus, 4,522,899, Cl. 429-181.000.

Guntermann, Hans; and Skreba, Gerhard, to Elektro-Thermit GmbH. Self-opening closure for a casting crucible used in aluminothermic reactions. 4,522,322, Cl. 222-597.000.

Gurtner, Bernard: *See—*
Commandeur, Raymond; and Gurtner, Bernard, 4,523,044, Cl. 585-11.000.

Gustafson, William O. Manipulatable puzzle toy. 4,522,401, Cl. 273-153.00S.

Haacker, Heinz: *See—*
Vollhardt, Frohmut; and Haacker, Heinz, 4,522,155, Cl. 122-7.00R.

Haarmann & Reimer GmbH: *See—*
Finkelmeier, Horst; and Hopp, Rudolf, 4,523,023, Cl. 549-385.000.

Haas, Georges; von Sprecher, Andreas; and Ferrini, Pier G., to Ciba-Geigy Corporation. Benzophenones. 4,523,030, Cl. 562-460.000.

Haberkorn, Wilhelm A.: *See—*
Donnelly, Edward N.; Haberkorn, Wilhelm A.; Hagen, Gerry A.; McGregor, Thomas R.; and Postman, William, 4,522,774, Cl. 264-168.000.

Hachiro, Nobuaki: *See—*
Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, 4,522,108, Cl. 91-376.00R.

Hafner, Hans W., to Pfister GmbH. Apparatus for measuring several force components. 4,522,074, Cl. 73-862.040.

Haga, Ryoichi: *See—*
Ishida, Masahiko; and Haga, Ryoichi, 4,522,721, Cl. 210-603.000.

Hagedorn, Floyd T.; and Koontz, Merwyn L., to Libbey-Owens-Ford Company. Apparatus for bending glass sheets. 4,522,641, Cl. 65-291.000.

Hagen, Floyd W., to Rosemount Inc. Method and apparatus for correcting barometric pressure for wind velocity and direction. 4,522,070, Cl. 73-384.000.

Hagen, Gerry A.: *See—*
Donnelly, Edward N.; Haberkorn, Wilhelm A.; Hagen, Gerry A.; McGregor, Thomas R.; and Postman, William, 4,522,774, Cl. 264-168.000.

Hagen, Helmut: *See—*
Markert, Jurgen; Hagen, Helmut; and Wuerzer, Bruno, 4,522,646, Cl. 71-94.000.

Hagen, Max: *See—*
Giese, Emil; Maurer, Ruprecht; and Hagen, Max, 4,522,289, Cl. 192-41.00A.

Hahn, Paul L. Strike indicator and hook setter, combined. 4,522,572, Cl. 43-16.000.

Haldemann A.G.: *See—*
Haldemann, Gaston; and Wirz, Francois, 4,522,423, Cl. 280-624.000.

Haldemann, Gaston; and Wirz, Francois, to Haldemann A.G. Safety binding of a boot on a ski. 4,522,423, Cl. 280-624.000.

Hale, William D.: *See—*
Chen, Tyen C.; Busching, Forrest B.; Hale, William D.; and Kristoffersen, Bjorn R., 4,521,925, Cl. 4-362.000.

Haley, William J., to Borg-Warner Corporation. Control system for continuously variable transmission. 4,522,086, Cl. 74-867.000.

Hall, Allen L.; and Fayter, Richard G., Jr., to National Distillers and Chemical Corporation. 2,3-Dihydrofurans useful as fungicides. 4,522,950, Cl. 514-471.000.

Hall, James E.: *See—*
Kang, Jung W.; and Hall, James E., 4,522,988, Cl. 526-133.000.

Hall, Karen: *See—*
Berczi, Charles N.; and Hall, Karen, 4,522,872, Cl. 428-257.000.

Hallgren, John E.: *See—*
Swiger, Roger T.; and Hallgren, John E., 4,523,001, Cl. 528-18.000.

Halliburton Company: *See—*
Barrington, Burchus Q., 4,522,266, Cl. 166-330.000.
Rao, S. Prabhakara; Brothers, Lance E.; and Brake, Bobby G., 4,522,653, Cl. 106-90.000.
Stromberg, James L., 4,522,430, Cl. 285-24.000.
Walker, Michael L., 4,522,658, Cl. 148-6.14R.

Hallman, Robert W., to Napp Systems (USA), Inc. Photosensitive graphic arts article. 4,522,910, Cl. 430-157.000.

Hamanishi, Makio: *See—*
Kawai, Hisasi; Ina, Toshikazu; Igashira, Toshihiko; Nomura, Ken; Yoshida, Masakazu; Komoda, Takao; and Hamanishi, Makio, 4,522,177, Cl. 123-478.000.

Hamaoka, Hidetoshi: *See—*
Koga, Tsuguaki; Kuwashima, Hidesumi; Inoue, Hidenori; Hamaoka, Hidetoshi; and Ohta, Hiroshi, 4,523,286, Cl. 364-494.000.

Hamatsuki, Takeshige: *See—*
Takahashi, Sadayuki; Yonezawa, Masatomo; Ochi, Atsushi; Yano, Takeshi; Hamatsuki, Takeshige; and Fukui, Izumu, 4,523,121, Cl. 310-334.000.

Hamblet, Newman. Club protective devices for golf bags. 4,522,300, Cl. 206-315.400.

Hamilton-Dunn Research Co.: *See—*
Hamilton, William H., 4,523,083, Cl. 219-433.000.

Hamilton, Glen T., to GME, Inc. Yieldable platform for food wrapping machine. 4,522,013, Cl. 53-220.000.

Hamilton-Pax, Inc.: *See—*
Laue, Charles E., 4,521,948, Cl. 29-157.10R.

Hamilton, William H., to Hamilton-Dunn Research Co. Beverage warmer. 4,523,083, Cl. 219-433.000.

Hammer, Edward E.; and Beck, Charles E., to General Electric Company. Shaped discharge lamp with starting aid. 4,523,126, Cl. 313-594.000.

Hamprecht, Gerhard, to BASF Aktiengesellschaft. N-Alkoxycarbonyl- and N-alkoxythiocarbonyl-amidines and their preparation. 4,522,763, Cl. 260-455.00A.

Hamprecht, Gerhard: *See—*
Parg, Adolf; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,523,034, Cl. 564-79.000.

Hand, Patricia H.: *See—*
Schlom, Jeffery; Colcher, David; Nuti, Marianna; Hand, Patricia H.; and Austin, Faye, 4,522,918, Cl. 435-68.000.

Hanebrink, Daniel E.: *See—*
Cornwall, Harry J.; and Hanebrink, Daniel E., 4,522,425, Cl. 280-656.000.

Haney, Keith M., to Walker-Neer Manufacturing Co., Inc. Automatic pipe elevator. 4,522,439, Cl. 294-110.100.

Hanna, Marie R.: *See—*
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,522,765, Cl. 260-463.000.

Hannappel, Gerald J. All terrain vehicle conversion system. 4,522,420, Cl. 280-289.00A.

Hanson, Harley M., to Merck & Co., Inc. Orexigenic use of α-fluoromethyl-histidine. 4,522,823, Cl. 514-400.000.

Hanson, John R.; Hauser, James L.; Kilfeather, James F., Jr.; and Hendriks, Hendrik B., to General Electric Company. Method for making multi-layer metal core circuit board laminate with a controlled thermal coefficient of expansion. 4,522,667, Cl. 156-87.000.

Hantke, Klaus: *See—*
Brajder, Antonio; and Hantke, Klaus, 4,523,268, Cl. 363-98.000.

Hanyu, Susumu; Takenoya, Hideaki; and Kato, Shinichi, to Janome Sewing Machine Co. Ltd. Pattern generating system of computer sewing machine. 4,522,134, Cl. 112-453.000.

Haq, Zia: *See—*
Barby, Donald; and Haq, Zia, 4,522,953, Cl. 521-64.000.

Hara, Masanori: *See—*
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Harada, Michiko. Portable small-sized washing machine. 4,522,045, Cl. 68-22.00A.

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Chiba, Hiromasa; Kumahara, Katsumi; Harada, Takakiyo; Oka, Takahiro; and Sato, Akihiro, 4,522,994, Cl. 526-351.000.

Haraguchi, Keisuke: *See—*
Kando, Toru; and Haraguchi, Keisuke, 4,522,478, Cl. 354-288.000.

Hardesty, Edwin C.; and Hutchins, Erle M., to AT&T Technologies, Inc. Systems for and methods of making electrical connections. 4,522,459, Cl. 339-98.000.

Harding A/S: *See—*
Klem, Per G., 4,522,144, Cl. 114-348.000.

Harigae, Shunji: *See—*
Satoh, Isao; Yoshida, Tomio; Harigae, Shunji; and Koishi, Kenji, 4,523,304, Cl. 369-32.000.

Harris, Eugene G.: *See—*
Fayter, Richard G., Jr.; and Harris, Eugene G., 4,522,749, Cl. 252-522.00R.

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Packer, Herbert, 4,522,865, Cl. 428-212.000.

Harte, J. Richard. Computer assisted instructional and testing apparatus with switch closure at two different depths. 4,522,599, Cl. 434-339.000.

Hartin, Sam S.: *See—*
Sulouff, Robert E.; Hartin, Sam S.; Cook, Koy B.; Kerns, David V., Jr.; Davidson, Jimmy L.; and Warren, Keith O., 4,522,072, Cl. 73-765.000.

Harting, Jurgen; and Fuchs, Andreas, to Merck Patent Gesellschaft mit Beschrankter Haftung. 1-(p-2-Isopropoxyethoxymethyl-phenoxy)-3-isopropylamino-propan-2-ol for decreasing the intra-ocular pressure and an ophthalmic preparation thereof. 4,522,829, Cl. 514-652.000.

Hartmann, Horst: *See—*
Horn, Dieter; Schmidt, Hans W.; Ditter, Walter; Hartmann, Horst; Lueddecke, Erik; and Schmieder, Klaus, 4,522,743, Cl. 252-311.000.

Harvey, Barry; and Barry, Robert C., to Advanced Micro Devices, Inc. PROM trimmed digital-to-analog converter. 4,523,182, Cl. 340-347.0DA.

Hasebe, Nobuhisa; Kawada, Hiroshi; Yokoyama, Naoki; and Komori, Shigeki, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for removing cutting burr sticking to lower surface of slab. 4,522,540, Cl. 409-293.000.

Hasegawa, Tsuneo, to Man Design Co., Ltd. Gloves for recovering the functions of the carpal joint, the hand and the fingers. 4,522,197, Cl. 128-26.000.

Hasegawa, Yoji; and Shinzawa, Motohiro, to Nissan Motor Company, Limited. Exhaust particle removal system for an internal combustion engine. 4,522,027, Cl. 60-274.000.

Hasegawa, Yoji; and Shinzawa, Motohiro, to Nissan Motor Company, Limited. Regenerative burner control apparatus. 4,522,028, Cl. 60-277.000.

Hashimoto, Hiromi: *See—*
Nakajima, Masahiro; and Hashimoto, Hiromi, 4,523,323, Cl. 375-37.000.

Hashizume, Atsushi, to Mitsubishi Denki Kabushiki Kaisha. Ignition circuit for an internal combustion engine. 4,522,186, Cl. 123-643.000.

Haslanger, Martin F.: *See—*
Das, Jagabandhu; and Haslanger, Martin F., 4,522,949, Cl. 514-469.000.

Hasunuma, Yoshifumi: *See—*
Endo, Keizo; Matsumura, Hiroshi; Hasunuma, Yoshifumi; Masai, Siro; and Oguma, Noboru, 4,522,237, Cl. 141-95.000.

Hatada, Koichi; Okamoto, Yoshio; and Kitayama, Tatsuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Copolymers, process for the preparation thereof and ionizing radiation sensitive resist using such copolymers. 4,523,000, Cl. 526-336.000.

Hatco Chemical Corporation: *See—*
Wan, K. Ming; Chen, Mary S.; and Pendse, Anil D., 4,523,026, Cl. 560-163.000.

Hatherley, Bruce E. Financial board game. 4,522,407, Cl. 273-256.000.

Hatley, Kenneth J.: *See—*
Preiser, Herman S.; Ticker, Arthur; and Hatley, Kenneth J., 4,522,882, Cl. 428-351.000.

Hattori, Torao, to Honda Giken Kogyo Kabushiki Kaisha. V-belt. 4,522,613, Cl. 474-245.000.

Hauser, Arnold: *See—*
Maurer, Bruno; and Hauser, Arnold, 4,522,748, Cl. 252-522.00R.

Hauser, James L.: *See—*
Hanson, John R.; Hauser, James L.; Kilfeather, James F., Jr.; and Hendriks, Hendrik B., 4,522,667, Cl. 156-87.000.

Haussmann, Wolfgang: *See—*
Luder, Rainer; and Haussmann, Wolfgang, 4,523,223, Cl. 358-27.000.

Hawrylo, Frank Z., to United States of America, Air Force. Simultaneous doped layers for semiconductor devices. 4,523,212, Cl. 357-17.000.

Hay, Noah D., to General Electric Company. Dry type transformer having improved ducting. 4,523,169, Cl. 336-60.000.

Hay, Noah D.: *See—*
Closson, James M.; and Hay, Noah D., 4,521,955, Cl. 29-605.000.
Rademaker, Leo C.; Hopkinson, Philip J.; Bell, Gordon M.; and Hay, Noah D., 4,521,954, Cl. 29-605.000.

Hayashi, Masahiro; Shimizu, Makoto; Kobayashi, Kazuo; and Sekiya, Teruo, to Hitachi, Ltd. Continuous rolling mill. 4,522,051, Cl. 72-235.000.

Hayashi, Mishio, to Takeda Riken Co., Ltd. Interval-expanding timer. 4,523,288, Cl. 364-569.000.

Hayashi, Nobutaka; and Komori, Yoshinori, to Sanyo Electric Co., Ltd. Video signal recording and reproducing apparatus, including means for discriminating the mode of multiplexing of an audio signal. 4,523,236, Cl. 358-341.000.

Hayashi, Ryuzo: *See—*
Suzuki, Toshitake; Hayashi, Ryuzo; Arai, Naoto; and Oeda, Yoshitaka, 4,523,205, Cl. 346-208.000.

Hayes, Robert L.: *See—*
Thomas, Samuel J.; Robich, James M.; and Hayes, Robert L., 4,523,141, Cl. 324-54.000.

Haynes, James R.: *See—*
Stevens, James C.; and Haynes, James R., 4,523,058, Cl. 179-84.00T.

Hayward, C. Michael. Matrix board. 4,522,449, Cl. 361-407.000.

Healy, Jerry V., Jr., to Westinghouse Electric Corp. Replaceable intermediate socket and plug connector for a solid-state data transfer system. 4,523,296, Cl. 364-900.000.

Heck, Ronald M.: *See—*
Hwang, Herng-Shinn; Heck, Ronald M.; and Yarrington, Robert M., 4,522,894, Cl. 429-17.000.

Heger, Werner: *See—*
Gelse, Hans-Dieter; Heger, Werner; and Kramer, Manfred, 4,522,568, Cl. 417-307.000.

Heggelund, Merel A. Trigger operated panic safety switch. 4,523,065, Cl. 200-157.000.

Heiart, Robert B.; and Cohen, Abraham B., to Du Pont de Nemours, E. I., and Company. Sequential automatic registration and imagewise exposure of a sheet substrate. 4,522,903, Cl. 430-22.000.

Heidegger, Peter; and Kiefer, Jakob, to Siemens Aktiengesellschaft. Semiconductor component with pressure contact. 4,523,219, Cl. 357-79.000.

Heidmann, Kurt R.; Canale, Jon S.; and Burkhardt, Hans, to Bendix Corporation, The. Disc brake with camming member and torsion spring for vibration control. 4,522,287, Cl. 188-73.350.

Heil, Guenter: *See—*
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Heilhecker, Joseph K.; and Byrne, James E., to GH TTE. Brake system. 4,522,450, Cl. 303-9.000.

Heimberg, Manfred, to National Distillers and Chemical Corporation. Interpolymer, process for its preparation and adhesive of improved creep resistance containing the interpolymer. 4,522,998, Cl. 526-309.000.

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Heine, Heinrich; Herzan, Georg; and Kunkel, Fred, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Arrangement for applying compressed air to underside of sheet on feed table of printing press. 4,522,388, Cl. 271-245.000.

Heinen, Peter; and Gossens, Peter, to Akzona Incorporated. Yarn bulking jet. 4,521,945, Cl. 28-273.000.

Heise, Michael S.; Tucker, Christopher S.; and Schwarz, James A., to Syracuse University. Method of controlling the distribution of a coating material upon the surface of a support. 4,522,941, Cl. 502-333.000.

Heller, Robert C.: *See—*
Garbis, Dennis; Chan, Joseph Y.; Granata, Amedeo J.; and Heller, Robert C., 4,522,149, Cl. 118-725.000.

Helms, Richard A.: *See—*
Timm, Gerald W.; Sandford, Donald L.; Claude, Timothy J.; and Helms, Richard A., 4,522,198, Cl. 128-79.000.

Hendrickson, William W.; and Boerding, Theodore B., to UMC Industries, Inc. Vendor controller. 4,523,285, Cl. 364-479.000.

Hendriks, Hendrik B.: *See—*
Hanson, John R.; Hauser, James L.; Kilfeather, James F., Jr.; and Hendriks, Hendrik B., 4,522,667, Cl. 156-87.000.

Henkel, Donald J.; and Hurley, Donald L., to Western States Machine Company, The. Mechanism for latching an axially displaceable rotary part to a concentric rotary part. 4,522,718, Cl. 210-371.000.

Henkel Kommanditgesellschaft: *See—*
Schmid, Karl; Baumann, Horst; Geke, Jurgen; Germscheid, Hans-Gunther; Ludecke, Werner; Piorr, Robert; Rossmann, Christian; Scharf, Rolf; and Schlussler, Hans-Joachim, 4,522,740, Cl. 252-174.210.

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Henneberry, James W. Refuse storage and discharge apparatus. 4,522,551, Cl. 414-517.000.

Hennessy, John E.: *See—*
King, James L.; and Hennessy, John E., 4,521,953, Cl. 29-596.000.

Henquin, Teodor: *See—*
Piasecki, Joshua; Zelinkovsky, Reuven; Segev, Aharon; and Henquin, Teodor, 4,523,309, Cl. 370-81.000.

Henry, Rohan G. Triangular prism game-puzzle. 4,522,402, Cl. 273-153.00S.

Henson, Jack C. Pistol mounting bracket. 4,521,930, Cl. 5-508.000.

Hepworth, Paul: *See—*
Scott, Norman; and Hepworth, Paul, 4,523,038, Cl. 568-492.000.

Herb, Armin: *See—*
Hoffmann, Armin; and Herb, Armin, 4,522,316, Cl. 222-327.000.

Hercules Incorporated: *See—*
Dumas, David H., 4,522,686, Cl. 162-158.000.
Lukach, Carl; Majewicz, Thomas G.; and Reid, Albert R., 4,523,010, Cl. 536-91.000.

Herd, Richard S.: *See—*
Horodysky, Andrew G.; and Herd, Richard S., 4,522,632, Cl. 44-72.000.

Herzan, Georg: *See—*
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Hetterich, Hermann: *See—*
Olschewski, Armin; Hetterich, Hermann; Horling, Peter; and Beyfuss, Berthold, 4,522,514, Cl. 384-569.000.

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Eilentropp, Heinz, 4,523,086, Cl. 219-549.000.

Hewitt, Mary J.; and Morse, Arthur L., to Hughes Aircraft Company. Low noise charge coupled imager circuit. 4,523,326, Cl. 377-58.000.

Hewlett-Packard Company: *See—*
Bradbury, Donald R.; Tsao, Chi-Wing; and Kamins, Theodore I., 4,522,662, Cl. 148-175.000.

Hexcel Corporation: *See—*
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Heyman, Duane A.: *See—*
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Hi-Sonic Co., Ltd.: *See—*
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Hiatt, David M., to Esco Corporation. Sprocket assembly with replaceable teeth. 4,522,611, Cl. 474-162.000.

Hibbel, Josef: *See—*
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Hibiya, Taketoshi; Ohta, Yoshinori; and Matsumi, Koichi, to Nippon Electric Co., Ltd. Faraday rotator for an optical device. 4,522,473, Cl. 350-377.000.

Hiers, John J., to Lydall, Inc. Integral textile composite fabric. 4,522,876, Cl. 428-285.000.

Higgins, Kenneth B., to Milliken Research Corporation. Carpet tile with stabilizing material embedded in adhesive layer. 4,522,857, Cl. 428-95.000.

Higgins, Theodore E.: *See—*
Humason, Dan C.; Buchwitz, Mayleta; and Higgins, Theodore E., 4,522,864, Cl. 428-201.000.

Hildebolt, William M., to Campbell Soup Company. Phased aseptic sterilization and packaging process and system. 4,522,015, Cl. 53-425.000.

Hill, H. Wayne, Jr.; and Reed, Jerry O., to Phillips Petroleum Company. Biaxially oriented polyamide film. 4,522,867, Cl. 428-220.000.

Hiller, Irving A.: *See—*
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Hilti Aktiengesellschaft: *See—*
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Hilti, Bruno; Mayer, Carl W.; and Rihs, Grety, to Ciba Geigy Corporation. Metallically conducting (2-fluoro-5,6,11,12-tetraselenotetracene)$_2$-bromide. 4,522,754, Cl. 260-239.00R.

Hinshaw, David L.: *See—*
Bull, John; Croft, Leon; DeVaney, David B.; Davis, Russell R.; Hinshaw, David L.; Jotwani, Haresh C.; Kandell, Ronald J.; Kurtz, Richard F.; Lee, Ernest O., Jr.; Neumeier, Gunter F.; Richards, Glenn L.; and Scott, Richard, 4,523,308, Cl. 370-56.000.

Hintermann, Hans-Erich: *See—*
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Hinz, Jurgen: *See—*
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Hipp, Ulrich: *See—*
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Hirabayashi, Yuji: *See—*
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Hirai, Hidefumi; and Komiyama, Makoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing a para-substituted phenol derivative. 4,523,031, Cl. 562-475.000.

Hirai, Hidefumi; and Komiyama, Makoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for selectively producing para-substituted derivatives of phenols. 4,523,037, Cl. 568-442.000.

Hirano, Tsumoru, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,522,916, Cl. 430-548.000.

Hiraoka, Ryosei: *See—*
Fukunaga, Yasushi; Bandoh, Tadaaki; Hiraoka, Ryosei; Matsumoto, Hidekazu; Ide, Jushi; and Kawakami, Tetsuya, 4,523,272, Cl. 364-200.000.

Hirayama, Takeshi: *See—*
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Hirose, Masataka; Kawajiri, Kazuhiro; and Nakajima, Yosuke, to Fuji Photo Film Co., Ltd. Solid state image pickup device utilizing microcrystalline and amorphous silicon. 4,523,214, Cl. 357-30.000.

Hitachi Engineering Co.: *See—*
Koga, Tsuguaki; Kuwashima, Hidesumi; Inoue, Hidenori; Hamaoka, Hidetoshi; and Ohta, Hiroshi, 4,523,286, Cl. 364-494.000.

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Amano, Matsuo; Sakamoto, Shinichi; Miki, Masayuki; Sasayama, Takao; Suda, Seiji; Mouri, Yasunori; and Ishii, Toshio, 4,523,284, Cl. 364-431.120.
Arai, Nobukatsu; and Maeda, Naoki, 4,522,574, Cl. 418-55.000.
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Koga, Tsuguaki; Kuwashima, Hidesumi; Inoue, Hidenori; Hamaoka, Hidetoshi; and Ohta, Hiroshi, 4,523,286, Cl. 364-494.000.
Kogawa, Takashi, 4,523,135, Cl. 318-565.000.
Kogawa, Takashi, 4,523,287, Cl. 364-513.000.
Kuboki, Shigeo; and Kato, Kazuo, 4,523,180, Cl. 340-347.0AD.
Maeda, Takeshi; Mizoguchi, Yasumitsu; Takasago, Masahiro; Kaneda, Tokuya; and Tsunoda, Yoshito, 4,523,089, Cl. 250-205.000.
Maejima, Hideo; Masuda, Ikuro; Matsumoto, Hidekazu; and Miyazawa, Shyoichi, 4,523,276, Cl. 364-200.000.
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Toudo, Kenzi; and Miyanaka, Motoshi, 4,522,337, Cl. 236-46.00F.
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Hitachi Service Engineering Co., Ltd.: *See—*
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Hochel, Robert C.; and Saturday, Kathy A., to United States of America, Energy. Fluorination process using catalyst. 4,522,794, Cl. 423-251.000.

Hochgesand, Gerhard; Kahles, Heinz; Wiesner, Paul; and Stonner, Hans-Martin, to Metallgesellschaft Aktiengesellschaft. Process for the treatment of an aqueous condensate. 4,522,730, Cl. 210-750.000.

Hochreuther, Karl; and Tragatschnig, Jorg, to Metrawatt GmbH. Portable measuring device. 4,522,061, Cl. 73-431.000.

Hochstatter, Brian R., to Emerson Electric Co. Linear slide. 4,522,454, Cl. 308-3.00R.

Hoechst Aktiengesellschaft: *See—*
Baltes, Herbert; Litterer, Heinz; Leupold, Ernst I.; and Wunder, Friedrich, 4,522,800, Cl. 423-329.000.
Klein, Joachim; Widdecke, Hartmut; Doscher, Frank; and Pohl, Fritz, 4,522,952, Cl. 521-31.000.
Mondt, Josef; and Wirth, Thaddaus, 4,522,972, Cl. 524-548.000.

Hoek, Arend; Minderhoud, Johannes K.; and Post, Martin F. M., to Shell Oil Company. Process for preparing a catalyst. 4,522,938, Cl. 502-307.000.

Hoen, Cuyler; and Pufpaff, Frederick J., to Simmons Fastener Corporation. Spring-loaded toggle latch. 4,522,436, Cl. 292-113.000.

Hoffmann, Armin; and Herb, Armin, to Hilti Aktiengesellschaft. Container for plastic substances. 4,522,316, Cl. 222-327.000.

Hogan, John P.; Hsieh, Eric T.; and Randall, James C. Low density polyethylene. 4,522,987, Cl. 526-106.000.

Hogeboom, John G., to Northern Telecom Limited. Phase comparator using two capacitors alternately charged via constant current sources. 4,523,150, Cl. 328-133.000.

Hohhausel, Manfred: *See—*
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Hohl, G. Burnell; and Gasiunas, Donatas V., to Pitney Bowes Inc. Voice/text storage and retrieval system. 4,523,055, Cl. 179-2.0DP.

Hohmann, Gerhard: *See—*
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Holan, Mirek: *See—*
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Hollingsworth (U.K.) Limited: *See—*
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Holmquist, Howard E.: *See—*
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Holz, Peter: *See—*
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Holzbaur, Siegfried, to Carabo A.G. Folding boat with bow and stern sections. 4,522,143, Cl. 114-344.000.

Holzer, Helmut, to Carl Freudenberg, Firma. Shaft seal. 4,522,328, Cl. 277-47.000.

Holzer, Helmut, to Carl Freudenberg, Firma. Axle or shaft seal with overlapping ring extension members. 4,522,410, Cl. 277-56.000.

Holzhauer, Hilbert: *See—*
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Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Musumiya, Raita; Sano, Hideo; Izichi, Yasuto; Inoue, Mitsuru; and Izawa, Kenzyu, 4,522,082, Cl. 74-512.000.
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Sano, Shoichi; and Furukawa, Yoshimi, 4,522,417, Cl. 280-91.000.
Takenaka, Masahiko, 4,522,442, Cl. 296-37.100.
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Honeywell GmbH: *See—*
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Honeywell Inc.: *See—*
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Culp, Charles H., 4,522,336, Cl. 236-46.00R.
Stamm, Thomas A.; and Zansky, Zoltan, 4,523,128, Cl. 315-291.000.

Venkatasetty, Hanumanthaiya V., 4,522,690, Cl. 204-1.00T.
Zansky, Zoltan, 4,523,131, Cl. 315-307.000.

Honeywell Information Systems Inc.: *See—*
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Hooper, Bernard. Stepped piston and stepped piston engine. 4,522,163, Cl. 123-73.00F.

Hopkins, Daniel N.; and Snavely, Earl S., to Mobil Oil Corporation. Stem drive oil recovery method utilizing a downhole steam generator and anti clay-swelling agent. 4,522,263, Cl. 166-272.000.

Hopkinson, Philip J.: *See—*
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Rademaker, Leo C.; Hopkinson, Philip J.; Bell, Gordon M.; and Hay, Noah D., 4,521,954, Cl. 29-605.000.

Hopp, Rudolf: *See—*
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Horacek, Heinrich, to BASF Aktiengesellschaft. Process for the preparation of water-in-water secondary dispersions of water-soluble polymers and their utilization as flocculants. 4,522,968, Cl. 524-388.000.

Horii, Hitoshi; and Oonishi, Yutaka, to Tachikawa Spring Co., Ltd. Resistance welding apparatus. 4,523,075, Cl. 219-88.000.

Horii, Kenichi: *See—*
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Horling, Peter: *See—*
Olschewski, Armin; Hetterich, Hermann; Horling, Peter; and Beyfuss, Berthold, 4,522,514, Cl. 384-569.000.

Horn, Dieter; Schmidt, Hans W.; Ditter, Walter; Hartmann, Horst; Lueddecke, Erik; and Schmieder, Klaus, to BASF Aktiengesellschaft. Preparation of finely divided pulverulent carotinoid and retinoid compositions. 4,522,743, Cl. 252-311.000.

Horodysky, Andrew G.; and Landis, Phillip S., to Mobil Oil Corporation. Borated phosphonates as lubricant and fuel additives. 4,522,629, Cl. 44-53.000.

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Horowski, Reinhard: *See—*
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Hotta, Wataru: *See—*
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Houdart, Michel; Arruberrenal, Edouard; and Maurette, Frederic, to Thomson-CSF. Wideband microwave device generating even harmonics of an incident signal. 4,523,163, Cl. 333-218.000.

Houghton, Royal E.; and Walasewicz, Stanley J. Gimbal-mounted dressing device for grinding machine. 4,522,188, Cl. 125-11.0CC.

Howell, Carmen. Electrical lift for trailers. 4,522,375, Cl. 254-425.000.

Howell, Cecil A.: *See—*
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Howell, George B., III. Vase locking device. 4,522,366, Cl. 248-551.000.

Howell, John L.: *See—*
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Howkins, Stuart D., to Exxon Research & Engineering Co. Method for operating an ink jet apparatus. 4,523,200, Cl. 346-1.100.

Hoyt, Harold C., Jr.; Martinez, Danilo C.; and Philipak, Stanley M., to Big Four Manufacturing Company, Inc. Electric arc welder that provides non-sticking arc initiation and thereafter maintains the arc. 4,523,077, Cl. 219-137.0PS.

Hsieh, Eric T.: *See—*
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Hsu, Chao-Yang; and Lyons, James E., to Sun Tech, Inc. Process for oxidizing a phenol to a p-benzoquinone. 4,522,757, Cl. 260-396.00R.

Hu, Kwoh H.: *See—*
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Huber, William A., to United States of America, Army. Automated map and display alignment. 4,523,188, Cl. 340-734.000.

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Hughes Aircraft Company: *See—*
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Brown, Roger H.; Chow, Kuen; Goodwin, Norman W.; and Grinberg, Jan, 4,523,067, Cl. 219-10.49R.
Hewitt, Mary J.; and Morse, Arthur L., 4,523,326, Cl. 377-58.000.

Hughes, Ian R.: *See—*
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Humason, Dan C.; Buchwitz, Mayleta; and Higgins, Theodore E., to Humason, Dan C.; and Buchwitz, Mayleta. Decals and process for making same. 4,522,864, Cl. 428-201.000.

Humber, Leslie G.: *See—*
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Humphreys, Hugh M.: *See—*
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Hunter Douglas Inc.: *See—*
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Hurley, Donald L.: *See—*
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Hurner, Erwin E. Lubricating oil monitor. 4,522,167, Cl. 123-196.00S.

Hurst, Robert N., to RCA Corporation. System for synchronizing a video signal having a first frame rate to a second frame rate. 4,523,227, Cl. 358-105.000.

Husky Injection Molding Systems Ltd.: *See—*
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Hussmann Corporation: *See—*
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Hutchins, Erle M.: *See—*
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Huth, Joseph F., III, to Spang & Company. Adjustable air gap ferrite structures and methods of manufacture. 4,523,170, Cl. 336-83.000.

Hutson, James H. Hydraulic fed log debarker. 4,522,242, Cl. 144-208.00E.

Hwang, Edward F.: *See—*
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Miller, John H., 4,522,192, Cl. 126-343.50A.
Miller, John H., 4,522,587, Cl. 432-114.000.

Hyatt, Gilbert P. Data processor architecture. 4,523,290, Cl. 364-602.000.

Hyde, Rebecca A.; Krimminger, Kenneth R.; and Swander, Robert E., to Celanese Corporation. Method and apparatus for forming cigarette filter rods. 4,522,616, Cl. 493-44.000.

Hyde, Robert L., to TRW, Inc. Remotely operated downhole switching apparatus. 4,523,194, Cl. 340-856.000.

Hyer, Frank S., to Hyer Industries, Inc. Wall-mounted agitator for particulate material. 4,522,500, Cl. 366-113.000.

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Hyer, Frank S., 4,522,500, Cl. 366-113.000.

Hyink, Roy: *See—*
Kroll, John W.; and Hyink, Roy, 4,522,147, Cl. 116-216.000.

Hyugaji, Akio: *See—*
Sasagawa, Katsuyoshi; Hyugaji, Akio; and Imai, Masao, 4,522,993, Cl. 526-292.400.

Iceberg Cribs, Inc.: *See—*
Kuck, David L., 4,522,537, Cl. 405-288.000.

Ichijima, Seiji; and Watanabe, Toshiyuki, to Fuji Photo Film Co., Ltd. Color photographic silver halide light-sensitive materials containing novel magenta color-forming couplers. 4,522,915, Cl. 430-505.000.

Ichijima, Seiji; Mihayashi, Keiji; and Itoh, Isamu, to Fuji Photo Film Co., Ltd. Photographic silver halide light-sensitive material. 4,522,917, Cl. 430-564.000.

Ichimura, Yasuo: *See—*
Aoyama, Youichi; Takeuchi, Akira; Ohmuro, Masaru; and Ichimura, Yasuo, 4,523,164, Cl. 335-38.000.

Ichinohe, Eisuke: *See—*
Kadota, Hiroshi; and Ichinohe, Eisuke, 4,523,301, Cl. 365-49.000.

Ide, Akifumi: *See—*
Tazaki, Saburo; and Ide, Akifumi, 4,523,181, Cl. 340-347.0DD.

Ide, Jushi: *See—*
Fukunaga, Yasushi; Bandoh, Tadaaki; Hiraoka, Ryosei; Matsumoto, Hidekazu; Ide, Jushi; and Kawakami, Tetsuya, 4,523,272, Cl. 364-200.000.

IE PE GE B.V.: *See—*
Van Gils, Antonius C. M., 4,522,036, Cl. 62-157.000.

Igashira, Toshihiko: *See—*
Kawai, Hisasi; Ina, Toshikazu; Igashira, Toshihiko; Nomura, Ken; Yoshida, Masakazu; Komoda, Takao; and Hamanishi, Makio, 4,522,177, Cl. 123-478.000.

Iijima, Chiyoaki, to Epson Corporation. Liquid crystal composition and display device. 4,522,470, Cl. 350-350.00R.

Iijima, Toshiyuji: *See—*
Kina, Hideki; Iijima, Toshiyuji; Tanabe, Eizo; Kazama, Toyoki; and Namba, Masaharu, 4,522,904, Cl. 430-54.000.

Iizuka, Hajime: *See—*
Katakami, Tsutomu; Fukazawa, Nobuyuki; Iizuka, Hajime; Nishina, Takashi; Kamiya, Joji; Tanaka, Yasuhito; and Nakano, Takuo, 4,523,011, Cl. 544-238.000.

Ikeda, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Lid with a see-through plate. 4,522,311, Cl. 220-254.000.

Ikin, John B., to Ciba Geigy AG. Web scanning apparatus. 4,522,497, Cl. 356-431.000.

Illinois Tool Works, Inc.: *See—*
Nelson, John F., 4,522,378, Cl. 267-141.400.

Volkers, Jack C.; and Conley, William R., 4,522,890, Cl. 428-624.000.

Illmann, Joachim; and Gummelt, Klaus, to Varta Batterei A.G. Gas and liquid tight pole seal for electric storage batteries, particularly lead storage batteries. 4,522,899, Cl. 429-181.000.

Imai, Chikara; and Koichi, Yasushi, to Ricoh Company, Ltd. Toner supply control method for electrophotographic copier. 4,522,481, Cl. 355-3.0DD.

Imai, Masao: *See*—
Sasagawa, Katsuyoshi; Hyugaji, Akio; and Imai, Masao, 4,522,993, Cl. 526-292.400.

Imazeki, Kazuyoshi; and Yokoyama, Nobuaki, to General Research of Electronics, Inc. Antenna with BNC-type coaxial connector. 4,523,197, Cl. 343-702.000.

Immuno Aktiengesellschaft fur Chemisch-Medizinische Produkte: *See*—
Linnau, Yendra; and Schwarz, Otto, 4,522,751, Cl. 260-112.00B.

Imperial Chemical Industries PLC: *See*—
Brittain, David R.; and Wood, Robin, 4,523,021, Cl. 548-410.000.
Brody, Harry, 4,522,884, Cl. 428-400.000.
Corfield, Brian L.; and Rowe, Raymond C., 4,522,840, Cl. 427-3.000.
Scott, Norman; and Hepworth, Paul, 4,523,038, Cl. 568-492.000.
Worthington, Paul A., 4,523,019, Cl. 548-262.000.

Ina, Toshikazu: *See*—
Kawai, Hisasi; Ina, Toshikazu; Igashira, Toshihiko; Nomura, Ken; Yoshida, Masakazu; Komoda, Takao; and Hamanishi, Makio, 4,522,177, Cl. 123-478.000.

Inagaki, Takafumi: *See*—
Noda, Munetaka; Tobe, Yukio; Taga, Yutaka; Nakamura, Shinya; Nakamura, Kazumasa; Inagaki, Takafumi; and Ito, Hiroshi, 4,523,281, Cl. 364-424.100.

Inamori, Mikio: *See*—
Takenoya, Hideaki; and Inamori, Mikio, 4,522,138, Cl. 112-266.100.

Indoor Activities Unlimited: *See*—
Girard, Thomas L.; and Lewis, Monty D., 4,522,396, Cl. 273-58.00K.

Ingalls, Marjorie D.; and Ingalls, Richard D. Method for reproducing one or more target colors on photographic paper or the like. 4,522,491, Cl. 355-77.000.

Ingalls, Richard D.: *See*—
Ingalls, Marjorie D.; and Ingalls, Richard D., 4,522,491, Cl. 355-77.000.

Ingebrigtsen, Janis: *See*—
Seeney, Charles E.; Kraemer, John F.; and Ingebrigtsen, Janis, 4,522,799, Cl. 423-306.000.

Ingersoll-Rand Company: *See*—
Aumick, James M., 4,521,949, Cl. 29-446.000.

Inhofer, John D.: *See*—
Speers, Leonard E.; Inhofer, John D.; and Redenbarger, Philip D., 4,522,160, Cl. 123-41.490.

Inmont Corporation: *See*—
Chisvette, Dominick; Lattimore, James; and Sova, Stanley G., 4,522,654, Cl. 106-288.00Q.

Inohara, Shizuo: *See*—
Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; Yamamoto, Keisuke; and Yasumoto, Yoshio, 4,523,225, Cl. 358-56.000.

Inoue, Hidenori: *See*—
Koga, Tsuguaki; Kuwashima, Hidesumi; Inoue, Hidenori; Hamaoka, Hidetoshi; and Ohta, Hiroshi, 4,523,286, Cl. 364-494.000.

Inoue, Hiromichi; Inukai, Takashi; Goto, Yasuyuki; Sato, Hideo; and Fukui, Masahiro, to Chisso Corporation. Trans-4-alkyloxymethyl-1-(4'-substituted biphenylyl-4)cyclohexanes. 4,522,741, Cl. 252-299.630.

Inoue, Kenichi: *See*—
Funahashi, Masaya; Inoue, Kenichi; and Mizushima, Kunio, 4,522,885, Cl. 428-422.000.

Inoue, Mitsuru: *See*—
Musumiya, Raita; Sano, Hideo; Izichi, Yasuto; Inoue, Mitsuru; and Izawa, Kenzyu, 4,522,082, Cl. 74-512.000.

Inoue, Toshitsugu; Nakada, Akiyoshi; Kaji, Haruo; Doi, Makoto; and Takezawa, Kuninori, to Matsushita Electric Industrial Co., Ltd. Handling apparatus. 4,522,555, Cl. 414-733.000.

Insouth Microsystems, Inc.: *See*—
Sulouff, Robert E.; Hartin, Sam S.; Cook, Koy B.; Kerns, David V., Jr.; Davidson, Jimmy L.; and Warren, Keith O., 4,522,072, Cl. 73-765.000.

Institut Francais du Petrole: *See*—
Cretin, Jacques; and Beauducel, Claude, 4,523,191, Cl. 340-825.520.
Martin, Madeleine; Lesage, Jean; Courbin, Gerard; and Rivereau, Alain, 4,522,878, Cl. 428-313.700.

Institut Pasteur: *See*—
Adamowicz, Philippe; and Muller, Ludwig, 4,522,809, Cl. 424-89.000.

INTERATOM Internationale Atomreaktorbau GmbH: *See*—
Knaak, Joachim, 4,522,073, Cl. 73-861.120.

International Business Machines Corporation: *See*—
Abbiate, Jean-Claude, 4,523,322, Cl. 375-36.000.
Bohlen, Harald; Kaus, Gerhard; Greschner, Johann; Keyser, Joachim H.; and Kulcke, Werner, 4,522,893, Cl. 428-641.000.
Clark, Gary A.; Johnson, Frederick W.; and Queener, Carl A., 4,522,486, Cl. 355-14.0SH.
Clecak, Nicholas J.; McKean, Dennis R.; Miller, Robert D.; Tompkins, Terry C.; and Willson, Carlton G., 4,522,911, Cl. 430-192.000.
Riseman, Jacob, 4,521,952, Cl. 29-590.000.

International Computers Limited: *See*—
Burton, Christopher P.; and Johnson, Kenneth C., 4,523,192, Cl. 340-825.570.

International Flavors & Fragrances Inc.: *See*—
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,522,765, Cl. 260-463.000.

International Key Marketing Incorporated: *See*—
Kasprzycki, Robert; and Fudge, Chester, 4,521,981, Cl. 40-2.00A.

International Minerals & Chemical Corp.: *See*—
Seeney, Charles E.; and Kraemer, John F., 4,522,651, Cl. 106-38.300.
Seeney, Charles E.; Kraemer, John F.; and Ingebrigtsen, Janis, 4,522,799, Cl. 423-306.000.

International Paper Company: *See*—
Feldmann, Herman F., 4,522,685, Cl. 162-30.110.

International Rice Research Institute, Republic of the Philippines: *See*—
Buttery, Ronald G.; Ling, Louisa C.; and Juliano, Bienvenido O., 4,522,838, Cl. 426-537.000.

Internationale Octrooi Maatschappij "Octropa" B.V.: *See*—
Eynon, David L.; Kingsnorth, Stanley W.; and Varma, Mani K., 4,522,687, Cl. 162-336.000.

Interpace Corporation: *See*—
Baker, Anthony C.; and Pinkham, Thomas A., 4,523,054, Cl. 174-45.00R.

Inukai, Takashi: *See*—
Inoue, Hiromichi; Inukai, Takashi; Goto, Yasuyuki; Sato, Hideo; and Fukui, Masahiro, 4,522,741, Cl. 252-299.630.

Iowa State University Research Foundation, Inc.: *See*—
Walters, Rodney R., 4,522,715, Cl. 210-198.200.

IPCO Corporation: *See*—
Braun, Frank D.; Witt, Walter; and Putra, Stanislav, 4,522,591, Cl. 433-60.000.

Ireks Arkady GmbH, Firma: *See*—
Menzel, Waldemar, 4,522,041, Cl. 62-342.000.

Isanta, Alberto P.: *See*—
Llauge, Joaquin R.; and Isanta, Alberto P., 4,522,225, Cl. 137-351.000.

ISCO, Inc.: *See*—
Allington, Robert W., 4,523,097, Cl. 250-458.100.

Iseard, Barry S., to Anglo-American Research Ltd. Automatic watering system for batteries and fuel cells. 4,522,896, Cl. 429-63.000.

Ishida, Kohji; Numata, Tatsuo; and Sakamoto, Masaharu, to Pioneer Electronic Corporation. FM receiver. 4,523,329, Cl. 381-3.000.

Ishida, Masahiko; and Haga, Ryoichi, to Agency of Industrial Science and Technology, The. Treating process of organic wastes. 4,522,721, Cl. 210-603.000.

Ishida, Shinichi: *See*—
Ochiai, Hideo; Nagoya, Yoshinari; Fujimoto, Ryoichi; Yamazaki, Susumu; Sasamoto, Nobuhiko; and Ishida, Shinichi, 4,522,040, Cl. 62-419.000.

Ishiguri, Yukio: *See*—
Kohsaka, Hideo; Sasaki, Mitsuru; and Ishiguri, Yukio, 4,522,817, Cl. 514-95.000.
Kohsaka, Hideo; Mitsuru, Sasaki; and Ishiguri, Yukio, 4,522,942, Cl. 514-95.000.

Ishii, Hiroshi, to Casio Computer Co., Ltd. Electronic musical instrument for reading out and performing musical tone data previously stored. 4,522,100, Cl. 84-1.030.

Ishii, Hiroshi: *See*—
Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,522,507, Cl. 368-157.000.

Ishii, Toshio: *See*—
Amano, Matsuo; Sakamoto, Shinichi; Miki, Masayuki; Sasayama, Takao; Suda, Seiji; Mouri, Yasunori; and Ishii, Toshio, 4,523,284, Cl. 364-431.120.

Itagaki, Takuo: *See*—
Niiho, Masaaki; and Itagaki, Takuo, 4,523,108, Cl. 307-353.000.

Ito, Hiroshi: *See*—
Noda, Munetaka; Tobe, Yukio; Taga, Yutaka; Nakamura, Shinya; Nakamura, Kazumasa; Inagaki, Takafumi; and Ito, Hiroshi, 4,523,281, Cl. 364-424.100.

Ito, Tomoo: *See*—
Kamifuji, Hiroshi; Ito, Tomoo; and Niida, Chiaki, 4,522,175, Cl. 123-339.000.

Ito, Yukio; Takai, Kazuki; and Takagi, Satoshi, to Clarion Co., Ltd. Head shift mechanism in a magnetic tape apparatus. 4,523,241, Cl. 360-105.000.

Itoh, Isamu: *See*—
Ichijima, Seiji; Mihayashi, Keiji; and Itoh, Isamu, 4,522,917, Cl. 430-564.000.

Itoh, Yasuhiro, to Iwatsu Electric Co., Ltd. Variable gain amplifier. 4,523,153, Cl. 330-254.000.

ITT Industries, Inc.: *See*—
Freyberger, Laurin C.; Mlynek, Daniel; and Schmidtpott, Friedrich, 4,523,222, Cl. 358-27.000.

ITW Espana S.A.: *See*—
Llauge, Joaquin R.; and Isanta, Alberto P., 4,522,225, Cl. 137-351.000.

Ive, Frank. Method for producing a low density foamed polyester resin. 4,522,954, Cl. 521-78.000.

Iwai, Hiroshi: *See*—
Konaka, Masami; Iwai, Hiroshi; and Nishi, Yoshio, 4,523,213, Cl. 357-23.700.

Iwaki, Akio; Suzuki, Norihito; Yamamoto, Takeshi; and Aoki, Toru, to Konishiroku Photo Industry Co., Ltd. Support for lithographic printing plate. 4,522,891, Cl. 428-626.000.

Iwasa, Koji: *See*—
Suginoya, Mitsuru; Iwasa, Koji; Kamamori, Hitoshi; Sano, Yutaka; and Terada, Yumiko, 4,522,691, Cl. 204-18.100.

Iwasaki Tsushinki Kabushiki Kaisha: *See*—
Soma, Masafumi; and Kohno, Yoshihiko, 4,523,289,. Cl. 364-569.000.

Iwasaki, Yasuhisa: *See*—
Kumagae, Yojiro; and Iwasaki, Yasuhisa, 4,523,018, Cl. 546-315.000.

Iwasawa, Teruo, to Olympus Optical Co., Ltd. Tape recorder having an alarm and stop mechanism for end-of-tape conditions. 4,523,239, Cl. 360-74.100.

Iwashita, Tomonori; and Fukahori, Hidehiko, to Canon Kabushiki Kaisha. Electric motor drive device for camera. 4,522,477, Cl. 354-173.100.

Iwatani, Shiro, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device. 4,523,215, Cl. 357-40.000.

Iwatsu Electric Co., Ltd.: *See*—
Itoh, Yasuhiro, 4,523,153, Cl. 330-254.000.

Iyehara, Sadahiro: *See*—
Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; Yamamoto, Keisuke; and Yasumoto, Yoshio, 4,523,225, Cl. 358-56.000.

Izawa, Kenzyu: *See*—
Musumiya, Raita; Sano, Hideo; Izichi, Yasuto; Inoue, Mitsuru; and Izawa, Kenzyu, 4,522,082, Cl. 74-512.000.

Izichi, Yasuto: *See*—
Musumiya, Raita; Sano, Hideo; Izichi, Yasuto; Inoue, Mitsuru; and Izawa, Kenzyu, 4,522,082, Cl. 74-512.000.

Izu, Masatsugu: *See*—
Ovshinsky, Stanford R.; and Izu, Masatsugu, 4,522,663, Cl. 148-403.000.

Izumiyama, Hiroo: *See*—
Koizumi, Hajime; Ohara, Shumpei; Kouda, Kiyoshi; Nagatomo, Muneshige; Sagara, Noriyasu; Togari, Satoshi; and Izumiyama, Hiroo, 4,522,254, Cl. 165-34.000.

J. D. Phillips Corporation: *See*—
Phillips, James D., 4,522,189, Cl. 125-11.0TP.

J. I. Case Company: *See*—
Marchi, Gary C.; and Logan, Richard H., 4,522,109, Cl. 91-420.000.
Speers, Leonard E.; Inhofer, John D.; and Redenbarger, Philip D., 4,522,160, Cl. 123-41.490.

J-M Manufacturing Co., Inc.: *See*—
Martin, William W., Jr.; and French, David W., 4,522,578, Cl. 425-110.000.

J. Mulcahy Enterprises Incorporated: *See*—
Mulcahy, Joseph A., 4,522,249, Cl. 164-466.000.

J-O Wallen Electronic Int. AB: *See*—
Wallen, Jan O., 4,523,252, Cl. 361-212.000.

J. T. Baker Chemical Company: *See*—
Ramsden, Hugh E., 4,522,724, Cl. 210-635.000.

Jabarin, Saleh A., to Owens-Illinois, Inc. Method for production of poly(ethylene terephthalate) articles. 4,522,779, Cl. 264-530.000.

Jackson, Melvin R.: *See*—
Gigliotti, Michael F. X., Jr.; Yang, Swe-Wong; Jackson, Melvin R.; Bruch, Charles A.; and Nguyen-Dinh, Xuan, 4,522,664, Cl. 148-404.000.

Jacobsen, Stephen C.; Knutti, David F.; and Johnson, R. Todd, to University of Utah. Electrically driven artificial arm. 4,521,924, Cl. 3-1.100.

Jacobsson, Kenth, to Tetra Pak Developpement SA. Opening arrangement for packing containers with pressurized contents. 4,522,305, Cl. 206-632.000.

Jacobsson, Rolf A.: *See*—
Adman, Nils G.; and Jacobsson, Rolf A., 4,522,269, Cl. 173-12.000.

Jacquet, Bernard; Lang, Gerard; and Malaval, Alain, to Societe Anonyme dite: L'Oreal. Anti-sunburn compositions containing 2-phenylindole derivatives. 4,522,808, Cl. 424-59.000.

Jaeger, Knut, to ESS GmbH Skibindungen. Ski binding. 4,522,422, Cl. 280-617.000.

Jaegers, Leopold. Transporter for heavy loads. 4,522,297, Cl. 198-774.000.

Jagoe, A. Louis, III. Means for chilling cardioplegic solutions. 4,522,640, Cl. 62-4.000.

Janoff, Andrew S.: *See*—
Lenk, Robert P.; Fountain, Michael W.; Janoff, Andrew S.; Ostro, Marc J.; and Popescu, Micrea C., 4,522,803, Cl. 424-1.100.

Janome Sewing Machine Co. Ltd.: *See*—
Hanyu, Susumu; Takenoya, Hideaki; and Kato, Shinichi, 4,522,134, Cl. 112-453.000.
Takenoya, Hideaki; Fujimura, Toshiro; Hara, Masanori; and Tonomura, Yoshinobu, 4,522,137, Cl. 112-266.100.
Takenoya, Hideaki; and Mishima, Fumiyuki, 4,522,520, Cl. 400-636.100,

Janome Sewing Machine Industry Co., Ltd.: *See*—
Koide, Akio, 4,522,140, Cl. 112-279.000.
Takenoya, Hideaki; and Inamori, Mikio, 4,522,138, Cl. 112-266.100.

Janssen Pharmaceutica N.V.: *See*—
Vandenberk, Jan; Kennis, Ludo; Van der Aa, Marcel; and Van Heertum, Albert, 4,522,945, Cl. 514-259.000.

Japan Electronic Materials Corp.: *See*—
Okubo, Masao; and Yoshimitsu, Yasuro, 4,523,144, Cl. 324-158.00P.

Jeffery, James E.; Kozlik, Antonin; and Wilmshurst, Eric C., to Boots Company plc, The. Therapeutic agents. 4,522,828, Cl. 514-646.000.

Jenck, Jean, to Rhone-Poulenc Chimie de Base. Recovery of palladium values from carbonylation reaction medium. 4,522,760, Cl. 260-410.90R.

Jenneman, Gary E.: *See*—
McInerney, Michael J.; Jenneman, Gary E.; Knapp, Roy M.; and Menzie, Donald E., 4,522,261, Cl. 166-246.000.

Jennings, Kenneth L.: *See*—
Jennings, Paul D.; and Jennings, Kenneth L., 4,522,313, Cl. 221-1.000.

Jennings, Paul D.; and Jennings, Kenneth L. Article dispenser. 4,522,313, Cl. 221-1.000.

Jensen, Jack E., to CVI Incorporated. Cryogenic refrigerator with gas spring loaded valve. 4,522,033, Cl. 62-6.000.

Jerberyd, Leif, to Nitro Nobel AB. Device for charging drillholes. 4,522,129, Cl. 104-138.00G.

Jespersen, Paul W., to Georgia-Pacific Corporation. Method and apparatus for dispensing web material from split core rolls. 4,522,346, Cl. 242-55.300.

Jester, James M. Water bed sheet anchoring apparatus. 4,521,970, Cl. 33-180.00R.

Jibu, Mitsuo, to Sharp Kabushiki Kaisha. Solar powered circuit having CMOS and bipolar transistors. 4,523,217, Cl. 357-43.000.

Johann Nicolaas Raubenheimer: *See*—
Raubenheimer, Johann N., 4,521,933, Cl. 15-1.700.

Johannes Heidenhain GmbH: *See*—
Bayer, Erich; Beckerbauer, Anton; Flatscher, Georg; and Ullrich, Martin, 4,522,862, Cl. 428-195.000.

Johl, Armin, to Karl Seeger Lederwarenfabrik GmbH. Document case. 4,522,047, Cl. 70-69.000.

Johnson, Arlen K., to AT&T Bell Laboratories. Microwave circuit device and method for fabrication. 4,523,162, Cl. 333-202.000.

Johnson, Edward J.; and Koble, Robert L., Jr., to Phoenix Manufacturing, Inc. Blower wheel apparatus. 4,522,558, Cl. 416-187.000.

Johnson, Frederick W.: *See*—
Clark, Gary A.; Johnson, Frederick W.; and Queener, Carl A., 4,522,486, Cl. 355-14.0SH.

Johnson, Kenneth C.: *See*—
Burton, Christopher P.; and Johnson, Kenneth C., 4,523,192, Cl. 340-825.570.

Johnson, Mark G., to Mostek Corporation. MOSFET sense amplifier circuit. 4,523,110, Cl. 307-530.000.

Johnson, Martin Reid: *See*—
Kaliman, William R., 4,523,113, Cl. 310-11.000.

Johnson, R. Todd: *See*—
Jacobsen, Stephen C.; Knutti, David F.; and Johnson, R. Todd, 4,521,924, Cl. 3-1.100.

Johnson, Richard H. Modular electrified cover plate. 4,522,455, Cl. 339-14.00R.

Johnson, Robert W.: *See*—
Keel, Beat G.; and Johnson, Robert W., 4,523,238, Cl. 360-46.000.

Johnson, Russell W.: *See*—
Robinson, Delmar W.; Johnson, Russell W.; and Moser, Mark D., 4,522,935, Cl. 502-223.000.

Johnson, W. Grant. Valve structure for an oral evacuator system. 4,522,592, Cl. 433-95.000.

Johnson, William C.: *See*—
Bailen, Eddie H.; Rasmussen, David H.; and Johnson, William C., 4,522,615, Cl. 493-37.000.

Johnston, Charles R.; and Green, Gregory M., to Container Products Corp. Vacuum spray head. 4,521,935, Cl. 15-322.000.

Johnston, Howard; and Troxell, Lillian H., to Dow Chemical Company, The. Preparation of trifluoromethyl pyridinyloxyphenoxy propanoic acids and propanols and derivatives thereof. 4,523,017, Cl. 546-302.000.

Jonas, Jules: *See*—
Lair, Clair K.; Jonas, Jules; and Anderson, Keith D., 4,522,356, Cl. 244-3.150.

Jones, C. Andrew; Leonard, John J.; Sofranko, John A.; and Withers, Howard P., to Atlantic Richfield Company. Methane conversion process. 4,523,049, Cl. 585-500.000.

Jones, C. Andrew; and Sofranko, John A., to Atlantic Richfield Company. Methane conversion process. 4,523,050, Cl. 585-500.000.

Jones, C. David: *See*—
Ward, John S.; and Jones, C. David, 4,522,758, Cl. 260-397.500.

Jones, Howard: *See*—
Loev, Bernard; Jones, Howard; and Chan, Wan-kit, 4,523,042, Cl. 568-824.000.

Jones, James E.: *See*—
Das, Suryya K.; Boberski, William G.; Greigger, Paul P.; Jones, James E.; Schappert, Raymond F.; and Seiner, Jerome A., 4,522,958, Cl. 523-212.000.

Jones, Peter H.: *See*—
Moormann, Alan E.; Pitzele, Barnett S.; and Jones, Peter H., 4,523,020, Cl. 548-353.000.

Jonnes, Nelson, to American Polywater Corporation. Substantially neutral aqueous lubricant. 4,522,733, Cl. 252-49.300.

Joppig, Peter: *See*—
Frankle, Gerhard; and Joppig, Peter, 4,522,164, Cl. 123-180.00R.

Jordan, Bobby R.: *See*—
Casstevens, Arvil; Coble, William H.; Shields, Harper; Ferrell, Roscoe M.; and Jordan, Bobby R., 4,522,042, Cl. 66-140.00S.

Jordan, Richard M.: *See*—
Enright, Philip G.; Hughes, Ian R.; and Jordan, Richard M., 4,522,784, Cl. 420-590.000.

Jorgensen, Jorgen A.; and Nygren, Donald W., to Northland Aluminum Products, Inc. Low profile food rotator. 4,523,070, Cl. 219-10.55F.

Jose, David L.; Pike, Winthrop S.; and Craft, Jack, to RCA Corporation. Full wave rectifier circuit for small signals. 4,523,105, Cl. 307-261.000.

Joslin, Frederick R., to United Technologies Corporation. Electrochemical machining a workpiece uniformly using a porous electrode. 4,522,692, Cl. 204-129.500.

Jost, Bernhard. Wind propulsion for all types of vehicles and stationary machines. 4,522,600, Cl. 440-8.000.

Jotwani, Haresh C.: *See—*
Bull, John; Croft, Leon; DeVaney, David B.; Davis, Russell R.; Hinshaw, David L.; Jotwani, Haresh C.; Kandell, Ronald J.; Kurtz, Richard F.; Lee, Ernest O., Jr.; Neumeier, Gunter F.; Richards, Glenn L.; and Scott, Richard, 4,523,308, Cl. 370-56.000.

Joyner, Robert G., to Dana Corporation. Flange yoke. 4,522,608, Cl. 464-134.000.

Juliano, Bienvenido O.: *See—*
Buttery, Ronald G.; Ling, Louisa C.; and Juliano, Bienvenido O., 4,522,838, Cl. 426-537.000.

Justus, Jimmie J., to United States of America, Air Force. Three-stage binary coincidence detector apparatus with adaptive constant false alarm rate. 4,523,325, Cl. 377-44.000.

K. S. Macey Machine Company, Inc.: *See—*
Macey, Keith S., 4,522,383, Cl. 270-53.000.

Kabushiki Kaisha Imamura Seisakusho: *See—*
Shimokawa, Hiroshi, 4,522,076, Cl. 73-863.410.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Konishi, Satoshi; and Sashiki, Takashi, 4,522,274, Cl. 177-25.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Tamura, Yukio; Kaminishi, Masashi; and Kato, Yutaka, 4,522,451, Cl. 305-18.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,522,507, Cl. 368-157.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Kato, Kimio; Kobayashi, Hisao; Mukai, Takamitsu; Kono, Hiroya; and Yamamoto, Taku, 4,522,567, Cl. 417-270.000.

Kabushiki Kaisha Universal: *See—*
Nishikawa, Ikuo, 4,522,399, Cl. 273-143.00R.

K.K. Toyota Chuo Kenkyusho: *See—*
Oshima, Yujiro; and Aoyama, Taro, 4,522,172, Cl. 123-276.000.

Kadota, Hiroshi; and Ichinohe, Eisuke, to Matsushita Electric Industrial Co., Ltd. Associative memory. 4,523,301, Cl. 365-49.000.

Kahles, Heinz: *See—*
Hochgesand, Gerhard; Kahles, Heinz; Wiesner, Paul; and Stonner, Hans-Martin, 4,522,730, Cl. 210-750.000.

Kaji, Haruo: *See—*
Inoue, Toshitsugu; Nakada, Akiyoshi; Kaji, Haruo; Doi, Makoto; and Takezawa, Kuninori, 4,522,555, Cl. 414-733.000.

Kaji, Hisatsugu: *See—*
Shigeta, Masatomo; Fukuda, Hiroyuki; Saitoh, Kuniyuki; and Kaji, Hisatsugu, 4,522,895, Cl. 429-44.000.

Kajima Corporation: *See—*
Akihama, Shigeyuki; Koizumi, Hajime; Umeki, Yoshihiko; Saito, Makoto; Banno, Tadashi; and Tateno, Shinya, 4,522,003, Cl. 52-391.000.

Kajima Kensetsu Kabuhiki Kaisha: *See—*
Koizumi, Hajime; Ohara, Shumpei; Kouda, Kiyoshi; Nagatomo, Muneshige; Sagara, Noriyasu; Togari, Satoshi; and Izumiyama, Hiroo, 4,522,254, Cl. 165-34.000.

Kajiwara, Akiharu: *See—*
Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Kajiwara, Akiharu; and Ota, Kiichiro, 4,522,759, Cl. 260-404.000.

Kake, Nin: *See—*
Kinoshita, Hisashi; Yoshitake, Hideki; and Kake, Nin, 4,523,134, Cl. 318-313.000.

Kaler, Ward S.: *See—*
O'Brien, Larry S.; and Kaler, Ward S., 4,522,787, Cl. 422-78.000.

Kallestad, Daniel R.; Kress, Bruce A.; and Satre, Kenneth I., to Sentry Technologies, Inc. Method and apparatus for aeration of stored grain. 4,522,335, Cl. 236-44.00C.

Kallman, William R., to Johnson, Martin Reid, a part interest. Magneto-hydrodynamic generator system. 4,523,113, Cl. 310-11.000.

Kalowski, Thaddeus J.: *See—*
Weimer, Ralph E.; Kalowski, Thaddeus J.; and Novy, Robert A., 4,522,117, Cl. 99-348.000.

Kamamori, Hitoshi: *See—*
Suginoya, Mitsuru; Iwasa, Koji; Kamamori, Hitoshi; Sano, Yutaka; and Terada, Yumiko, 4,522,691, Cl. 204-18.100.

Kameda, Osamu; and Fuse, Takahiro, to Casio Computer Co., Ltd. Video signal analog-to-digital converter for an image display apparatus. 4,523,232, Cl. 358-236.000.

Kamifuji, Hiroshi; Ito, Tomoo; and Niida, Chiaki, to Hitachi, Ltd. Rotational speed control apparatus for internal combustion engines. 4,522,175, Cl. 123-339.000.

Kaminishi, Masashi: *See—*
Tamura, Yukio; Kaminishi, Masashi; and Kato, Yutaka, 4,522,451, Cl. 305-18.000.

Kamins, Theodore I.: *See—*
Bradbury, Donald R.; Tsao, Chi-Wing; and Kamins, Theodore I., 4,522,662, Cl. 148-175.000.

Kamiya, Joji: *See—*
Katakami, Tsutomu; Fukazawa, Nobuyuki; Iizuka, Hajime; Nishina, Takashi; Kamiya, Joji; Tanaka, Yasuhito; and Nakano, Takuo, 4,523,011, Cl. 544-238.000.

Kamiya, Osamu; and Sekimura, Nobuyuki, to Canon Kabushiki Kaisha. Copying machine including a dielectric covered metal reflective device. 4,522,485, Cl. 355-11.000.

Kanazawa, Hirotaka, to Mazda Motor Corporation. Steering device for a vehicle. 4,522,279, Cl. 180-143.000.

Kanbe, Junichiro: *See—*
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,522,905, Cl. 430-60.000.

Kandell, Ronald J.: *See—*
Bull, John; Croft, Leon; DeVaney, David B.; Davis, Russell R.; Hinshaw, David L.; Jotwani, Haresh C.; Kandell, Ronald J.; Kurtz, Richard F.; Lee, Ernest O., Jr.; Neumeier, Gunter F.; Richards, Glenn L.; and Scott, Richard, 4,523,308, Cl. 370-56.000.

Kando, Toru; and Haraguchi, Keisuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Cover-equipped camera. 4,522,478, Cl. 354-288.000.

Kane, Garold L. Variable lobe cam mechanism. 4,522,085, Cl. 74-568.00R.

Kaneda, Shouzou: *See—*
Kawai, Toshikazu; Suzuki, Haruo; and Kaneda, Shouzou, 4,523,041, Cl. 568-755.000.

Kaneda, Tokuya: *See—*
Maeda, Takeshi; Mizoguchi, Yasumitsu; Takasago, Masahiro; Kaneda, Tokuya; and Tsunoda, Yoshito, 4,523,089, Cl. 250-205.000.

Kaneko, Tadashi: *See—*
Nishimura, Hirofumi; Oda, Hiroyuki; Kaneko, Tadashi; Takai, Akira; and Takeuchi, Nobuo, 4,522,179, Cl. 123-481.000.

Kang, Jung W.; and Hall, James E., to Firestone Tire & Rubber Company, The. Method of preparing high cis-1,4 diene polymers having good green strength and tack. 4,522,988, Cl. 526-133.000.

Kang, Jung W., to Firestone Tire & Rubber Company, The. Method of preparing high cis-1,4 diene polymers having good green strength and tack using a catalyst composition containing a carboxylated metal oxy aluminate component. 4,522,989, Cl. 526-133.000.

Kanmoto, Yoshiaki, to Ricoh Company, Ltd. Shading correction device. 4,523,229, Cl. 358-163.000.

Kanno, Tatsuya; and Toga, Yuzo, to Daicel Chemical Industries, Ltd. Monoacrylate or diacrylate of 2-methyl-propylene glycol and photosensitive composition containing the diacrylate. 4,522,913, Cl. 430-285.000.

Kano, Tokio: *See—*
Tamagawa, Akira; and Kano, Tokio, 4,522,493, Cl. 356-36.000.

Kanzaka, Yoshihiro, to Nippon Notion Kogyo Co., Ltd. Fastening for a garment. 4,521,943, Cl. 24-689.000.

Kanzaki Paper Mfg. Co., Ltd.: *See—*
Suzuki, Toshitake; Hayashi, Ryuzo; Arai, Naoto; and Oeda, Yoshitaka, 4,523,205, Cl. 346-208.000.

Kaplan, Carl, to Plough, Inc. Substantive topical compositions. 4,522,807, Cl. 424-59.000.

Kapral, Christopher W., to GTE Automatic Electric Laboratories, Incorporated. Integratable D/A converter. 4,523,179, Cl. 340-347.0DA.

Karch, John A.: *See—*
Yoo, Jin S.; Karch, John A.; Poss, Richard F.; and Burk, Emmett H., Jr., 4,522,937, Cl. 502-302.000.

Karl Seeger Lederwarenfabrik GmbH: *See—*
Johl, Armin, 4,522,047, Cl. 70-69.000.

Karlsson, Thomas, to Lidkopings Mekaniska Verkstads AB. Method and apparatus for determining the position of the center of a circular object. 4,521,966, Cl. 33-1.00M.

Karwat, Heinz, to Linde AG. Method and apparatus for regulating the NH_3 content in scrubbing liquid used in a gas scrubbing process. 4,522,638, Cl. 55-37.000.

Kasai, Masaji: *See—*
Koguchi, Toshiro; Kase, Hiroshi; Kawamoto, Isao; Kasai, Masaji; Shirahata, Kunikatsu; Okachi, Ryo; and Nakayama, Kiyoshi, 4,522,812, Cl. 514-7.000.

Kase, Hiroshi; Matsumoto, Yoshiaki; and Ohkawa, Kouji, to O-M Limited. Automatic tool change machine tool. 4,521,950, Cl. 29-568.000.

Kase, Hiroshi: *See—*
Koguchi, Toshiro; Kase, Hiroshi; Kawamoto, Isao; Kasai, Masaji; Shirahata, Kunikatsu; Okachi, Ryo; and Nakayama, Kiyoshi, 4,522,812, Cl. 514-7.000.

Kasegawa, Norimichi: *See—*
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,522,278, Cl. 180-79.100.

Kashima, Masao; and Tomuro, Noboru, to Mitsubishi Mining; and Cement Company Ltd. Dielectric ceramic composition. 4,522,927, Cl. 501-139.000.

Kasperkovitz, Wolfdietrich G., to U.S. Philips Corporation. FM-receiver including a frequency-locked loop. 4,523,328, Cl. 381-3.000.

Kasprzycki, Robert; and Fudge, Chester, to International Key Marketing Incorporated. Key holder. 4,521,981, Cl. 40-2.00A.

Kassahun, Bahiru; and Viriyayuthakorn, Montri, to AT&T Technologies, Inc. Apparatus for coating lightguide fiber. 4,522,148, Cl. 118-405.000.

Katakami, Tsutomu; Fukazawa, Nobuyuki; Iizuka, Hajime; Nishina, Takashi; Kamiya, Joji; Tanaka, Yasuhito; and Nakano, Takuo, to Mitsui Toatsu Kagaku Kabushiki Kaisha. Process for preparing

6-(substituted phenyl)-4,5-dihydro-3(2H)-pyridazinone compounds. 4,523,011, Cl. 544-238.000.

Kataoka, Masao: *See—*
Ohuchi, Shigehiro; and Kataoka, Masao, 4,522,868, Cl. 428-224.000.

Kato Hatsujo Kaisha Ltd.: *See—*
Ohkata, Ichizo, 4,522,219, Cl. 137-62.000.

Kato, Kazuo: *See—*
Kuboki, Shigeo; and Kato, Kazuo, 4,523,180, Cl. 340-347.0AD.

Kato, Kimio; Kobayashi, Hisao; Mukai, Takamitsu; Kono, Hiroya; and Yamamoto, Taku, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash plate compressor. 4,522,567, Cl. 417-270.000.

Kato, Shinichi: *See—*
Hanyu, Susumu; Takenoya, Hideaki; and Kato, Shinichi, 4,522,134, Cl. 112-453.000.

Kato, Yoshihisa, to Sumitomo Metal Mining Company, Ltd. Lead frame for integrated circuits and method of fabricating the same. 4,523,218, Cl. 357-70.000.

Kato, Yutaka: *See—*
Tamura, Yukio; Kaminishi, Masashi; and Kato, Yutaka, 4,522,451, Cl. 305-18.000.

Katsuki, Kosuke; Nishioka, Youiti; and Nomura, Susumu, to Toray Industries, Inc. Method for threading filaments on rollers of oxidizing furnace and apparatus therefor. 4,521,931, Cl. 8-149.200.

Kauffman, Jim W.; and Laughlin, William C., to Kerr-McGee Corporation. Process for the removal and recovery of heavy metals from aqueous solutions. 4,522,723, Cl. 210-611.000.

Kaus, Gerhard: *See—*
Bohlen, Harald; Kaus, Gerhard; Greschner, Johann; Keyser, Joachim H.; and Kulcke, Werner, 4,522,893, Cl. 428-641.000.

Kawabata, Takashi; Shinoda, Nobuhiko; and Sakai, Shinji, to Canon Kabushiki Kaisha. Battery voltage checking device for cameras. 4,522,480, Cl. 354-468.000.

Kawada, Hiroshi: *See—*
Hasebe, Nobuhisa; Kawada, Hiroshi; Yokoyama, Naoki; and Komori, Shigeki, 4,522,540, Cl. 409-293.000.

Kawai, Hisasi; Ina, Toshikazu; Igashira, Toshihiko; Nomura, Ken; Yoshida, Masakazu; Komoda, Takao; and Hamanishi, Makio, to Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Temperature compensated fuel injection system for internal combustion engines. 4,522,177, Cl. 123-478.000.

Kawai, Toshikazu; Suzuki, Haruo; and Kaneda, Shouzou, to Central Glass Company, Limited. Method of purifying 4-fluorophenol. 4,523,041, Cl. 568-755.000.

Kawajiri, Kazuhiro: *See—*
Hirose, Masataka; Kawajiri, Kazuhiro; and Nakajima, Yosuke, 4,523,214, Cl. 357-30.000.

Kawakami, Tetsuya: *See—*
Fukunaga, Yasushi; Bandoh, Tadaaki; Hiraoka, Ryosei; Matsumoto, Hidekazu; Ide, Jushi; and Kawakami, Tetsuya, 4,523,272, Cl. 364-200.000.

Kawakatsu, Yoshifumi: *See—*
Yoshinari, Osamu; Kawakatsu, Yoshifumi; and Fukuizumi, Hideaki, 4,522,801, Cl. 423-447.400.

Kawamoto, Isao: *See—*
Koguchi, Toshiro; Kase, Hiroshi; Kawamoto, Isao; Kasai, Masaji; Shirahata, Kunikatsu; Okachi, Ryo; and Nakayama, Kiyoshi, 4,522,812, Cl. 514-7.000.

Kawamura, Toshimi, to Mitsubishi Denki Kabushiki Kaisha. Power storage system for electric railway. 4,523,059, Cl. 191-6.000.

Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, to Kabushiki Kaisha Suwa Seikosha. Step motor control mechanism for electronic timepiece. 4,522,507, Cl. 368-157.000.

Kawasaki Steel Corporation: *See—*
Koshikawa, Takao; Ueda, Tsunehiro; and Ozeki, Tadao, 4,522,251, Cl. 164-491.000.

Kayser, Robert B.: *See—*
Purcell, Robert F.; and Kayser, Robert B., 4,522,732, Cl. 252-8.55D.

Kayser-Roth Hosiery, Inc.: *See—*
Casstevens, Arvil; Coble, William H.; Shields, Harper; Ferrell, Roscoe M.; and Jordan, Bobby R., 4,522,042, Cl. 66-140.00S.
Lineberry, Roger D.; and Shields, Harper, 4,522,044, Cl. 66-185.000.

Kazama, Toyoki: *See—*
Kina, Hideki; Iijima, Toshiyuji; Tanabe, Eizo; Kazama, Toyoki; and Namba, Masaharu, 4,522,904, Cl. 430-54.000.

Kazufumi, Ogawa; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, to Matsushita Electric Industrial Co., Ltd. Solid-state color-image sensor and process for fabricating the same. 4,523,102, Cl. 250-578.000.

Keck, Daniel H.; Braun, Ralph V.; and Majors, Mark B., to Kimberly-Clark Corporation. Soft nonwoven laminate bonded by adhesive on reinforcing scrim. 4,522,863, Cl. 428-196.000.

Kecskemethy, Geza; Kovacsay, Istvan; and Magdanyi, Laszlo , to Muanyagipari Kutato Intezet. Procedure for curing unsaturated polyester resins. 4,522,963, Cl. 523-510.000.

Keefer, Donald W., to Classic Corp. Heated waterbed. 4,521,929, Cl. 5-422.000.

Keel, Beat G.; and Johnson, Robert W., to Control Data Corporation. Magnetic head preamplifier/driver. 4,523,238, Cl. 360-46.000.

Keene, Christopher B.: *See—*
Clark, George W.; and Keene, Christopher B., 4,522,299, Cl. 206-315.300.

Kehr, Wolfgang: *See—*
Dorow, Rainer; Horowski, Reinhard; Kehr, Wolfgang; and Wachtel, Helmut, 4,522,820, Cl. 424-288.000.

Keikoku Piston Ring Co., Ltd.: *See—*
Kubo, Yukihiko, 4,522,412, Cl. 277-138.000.

Keiper Recaro GmbH & Co.: *See—*
Goldner, Walther; and Gassmann, Wolfgang, 4,522,445, Cl. 297-284.000.

Keller-Steinbach, Christiane, to Eltec Instrument A.G. Radiation detector with asymmetrical pattern. 4,523,095, Cl. 250-349.000.

Kelley, Everett J., to Rohm and Haas Company. Acrylic or meth-acrylic terminated oligomers. 4,523,028, Cl. 560-199.000.

Kellner, Jackson M.; and Garrett, William R., to Smith International Inc. Multiple conduit drill pipe. 4,522,234, Cl. 138-108.000.

Kelly, Lawrence S.; McCormick Marty P.; and Weikel, William A., to Graco Inc. Plural component mixing and dispensing system. 4,522,789, Cl. 422-133.000.

Kelly, Timothy A.; and Turbyfill, Rueben M., to Ventilator Associates. Ventilator for vehicle. 4,522,115, Cl. 98-2.140.

Kelm, Edward C.: *See—*
Chivens, Donald R.; Greskovics, Paul; and Kelm, Edward C., 4,522,221, Cl. 137-118.000.

Kemper, Yves J., to Caterpillar Tractor Co. Continuously variable transmission unit. 4,522,079, Cl. 74-191.000.

Kendall Company, The: *See—*
Thomas, Samuel J.; Robich, James M.; and Hayes, Robert L., 4,523,141, Cl. 324-54.000.

Kennis, Ludo: *See—*
Vandenberk, Jan; Kennis, Ludo; Van der Aa, Marcel; and Van Heertum, Albert, 4,522,945, Cl. 514-259.000.

Kent, Harold B.: *See—*
McGaffigan, Thomas H.; and Kent, Harold B., 4,522,457, Cl. 339-30.000.

Kerchiss, Roman R., to RK Chemical Company Limited. Printing ink proofer. 4,522,057, Cl. 73-150.00R.

Kerns, David V., Jr.: *See—*
Sulouff, Robert E.; Hartin, Sam S.; Cook, Koy B.; Kerns, David V., Jr.; Davidson, Jimmy L.; and Warren, Keith O., 4,522,072, Cl. 73-765.000.

Kerr-McGee Corporation: *See—*
Carey, Henry S., Jr., 4,522,222, Cl. 137-240.000.
Kauffman, Jim W.; and Laughlin, William C., 4,522,723, Cl. 210-611.000.

Kerrey, John S.; and Duncan, Robert, to Westinghouse Electric Corp. Grid and sleeves welding fixture and method. 4,522,330, Cl. 228-182.000.

Ketterer, Stanley J., to Singer Company, The. Feed controlling arrangement for button sewing machine. 4,522,133, Cl. 112-112.000.

Ketterer, Stanley J., to Singer Company, The. Looper and cam assembly for chain stitch sewing machine. 4,522,135, Cl. 112-199.000.

Keyser, Joachim H.: *See—*
Bohlen, Harald; Kaus, Gerhard; Greschner, Johann; Keyser, Joachim H.; and Kulcke, Werner, 4,522,893, Cl. 428-641.000.

Khanna, Satish K.; Thakoor, Anilkumar P.; and Williams, Roger M., to United States of America, Administrator, National Aeronautics and Space Administration. Corrosion resistant coating. 4,522,844, Cl. 427-38.000.

Kibler, Holly S.: *See—*
Berry, W. Wess; Schmeda, Rae A.; and Kibler, Holly S., 4,522,726, Cl. 210-660.000.

Kiefer, Jakob: *See—*
Heidegger, Peter; and Kiefer, Jakob, 4,523,219, Cl. 357-79.000.

Kiernan, Jane A., to American Cyanamid Company. Phenylethane derivatives and acid addition salts thereof for increasing lean meat deposition and/or improving lean meat to fat ratio in warm blooded animals. 4,522,822, Cl. 514-376.000.

Kiesler, James A.: *See—*
Sharkozy, Frank L.; and Kiesler, James A., 4,522,912, Cl. 430-278.000.

Kilfeather, James F., Jr.: *See—*
Hanson, John R.; Hauser, James L.; Kilfeather, James F., Jr.; and Hendriks, Hendrik B., 4,522,667, Cl. 156-87.000.

Killion, John J., III: *See—*
Wickman, John A.; Killion, John J., III; and Deschenes, Charles, 4,522,288, Cl. 190-106.000.

Kilroy, Eugene J.; Morse, James E.; Grimm, Thomas H.; and DeAnda, Nicholas, to Mattel, Inc. Toy railroad vehicle with alignment bias. 4,522,607, Cl. 446-447.000.

Kimberly-Clark Corporation: *See—*
Bolick, Martha E., 4,522,624, Cl. 604-385.00R.
Keck, Daniel H.; Braun, Ralph V.; and Majors, Mark B., 4,522,863, Cl. 428-196.000.
Sheldon, Donald A.; Stokes, Bruce G.; Weber, Robert E.; and Greenman, Edwin G., 4,522,967, Cl. 524-377.000.

Kimchi, Yigal: *See—*
Vardi, Isaih; Bourne, Joseph; Ben-Dror, Jonathan; and Kimchi, Yigal, 4,522,720, Cl. 210-512.100.

Kimura, Takahiko: *See—*
Takao, Mitsunori; Kimura, Takahiko; and Hirabayashi, Yuji, 4,522,176, Cl. 123-339.000.

Kina, Hideki; Iijima, Toshiyuji; Tanabe, Eizo; Kazama, Toyoki; and Namba, Masaharu, to Fuji Electric Company, Ltd.; and Fuji Electric Corporate Research & Development, Ltd. Electrophotographic process. 4,522,904, Cl. 430-54.000.

King, Charles: *See—*
Scott, John T.; and King, Charles, 4,522,860, Cl. 428-132.000.

King, James L.; and Hennessy, John E., to General Electric Company. Method of assembling a dynamoelectric machine. 4,521,953, Cl. 29-596.000.

Kingsnorth, Stanley W.: *See—*
Eynon, David L.; Kingsnorth, Stanley W.; and Varma, Mani K., 4,522,687, Cl. 162-336.000.
Kinoshita, Hisashi; Yoshitake, Hideki; and Kake, Nin, to Matsushita Electrical Industrial Co., Ltd. Control system for DC motors. 4,523,134, Cl. 318-313.000.
Kinoshita, Kinjiro, to Yamato Scale Company, Limited. Gate driving device. 4,522,321, Cl. 222-504.000.
Kinoshita, Mitsuo: *See—*
Gamo, Gotaro; Kinoshita, Mitsuo; and Obara, Haruki, 4,523,073, Cl. 219-69.00W.
Kirby, Edward R.: *See—*
Douthit, C. Staton; and Kirby, Edward R., 4,522,547, Cl. 414-391.000.
Kiruna Truck AB: *See—*
Niva, Karl-Erik, 4,522,549, Cl. 414-474.000.
Kishi, Hajimu; and Seki, Masaki, to Fanuc Ltd. Method and device for creating curved surfaces. 4,523,270, Cl. 364-191.000.
Kishi, Ichiro, to Matsushita Electric Works, Ltd. Hand-held electric tool. 4,522,270, Cl. 173-163.000.
Kistler-Morse Corporation: *See—*
Kistler, Walter P.; and Chinn, Martin D., 4,522,066, Cl. 73-781.000.
Kistler, Walter P.; and Chinn, Martin D., to Kistler-Morse Corporation. Temperature-compensated extensometer. 4,522,066, Cl. 73-781.000.
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Torque sensor. 4,522,278, Cl. 180-79.100.
Kitagawa, Yoshihiko: *See—*
Fukushima, Nobuo; Kitagawa, Yoshihiko; Okumura, Takuzo; and Sakakura, Kazuaki, 4,522,955, Cl. 521-143.000.
Kitahiro, Isamu: *See—*
Kazufumi, Ogawa; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,523,102, Cl. 250-578.000.
Kitajima, Goro : *See—*
Nemoto, Shigeru; Kitajima, Goro ; Saitou, Sinichi; and Osada, Hazime, 4,523,247, Cl. 360-137.000.
Kitao, Shoichi: *See—*
Murata, Michihiro; and Kitao, Shoichi, 4,522,060, Cl. 73-336.500.
Kitayama, Tatsuki: *See—*
Hatada, Koichi; Okamoto, Yoshio; and Kitayama, Tatsuki, 4,523,000, Cl. 526-336.000.
Kittle, Donald. Combination vehicle, shock absorber and tool to remove said shock absorbers from said vehicle. 4,522,090, Cl. 81-55.000.
Klaren, Dick G., to Esmil B.V. Method of operating a liquid-liquid heat exchanger. 4,522,252, Cl. 165-1.000.
Klein, Howard P.: *See—*
Cuscurida, Michael; and Klein, Howard P., 4,523,025, Cl. 560-26.000.
Klein, Joachim; Widdecke, Hartmut; Doscher, Frank; and Pohl, Fritz, to Hoechst Aktiengesellschaft. Process for the fluorination of polymers, and perfluorinated ion exchangers. 4,522,952, Cl. 521-31.000.
Klein, Michael: *See—*
Struck, Helmut; Richter, Karl H.; Klein, Michael; Ruth, Ulrich; and Ulke, Walter, 4,522,418, Cl. 280-95.00A.
Klem, Per G., to Harding A/S. Life saving system for marine structure. 4,522,144, Cl. 114-348.000.
Klieman, Charles H.; and Densmore, Richard M., to Klieman, Charles H. Spring activated hemostatic clip applicator. 4,522,207, Cl. 128-325.000.
Kling, Dieter: *See—*
Balsys, Manfred; Kling, Dieter; Maier, Hans; Miller, Franz; and Schmid, Walter, 4,522,223, Cl. 137-240.000.
Klink, Rainer, to Deutsche Automobilgesellschaft mit beschrankter Haftung. Frictional lining for a wet clutch or brake. 4,522,290, Cl. 192-107.00M.
Klippan GmbH Sicherheitsgerate: *See—*
Weman, Olaf, 4,522,426, Cl. 280-808.000.
Klostermeier, Werner; Lasher, Jeffery D.; Meyer, Gerhard; and Zengel, Hans, to Akzona Incorporated. Thick polyimide-metal laminates with high peel strength. 4,522,880, Cl. 428-332.000.
Kluss, Karl K.; Allen, Terry F.; and Sawyer, John M., to Goodyear Tire & Rubber Company, The. Hose structure. 4,522,235, Cl. 138-130.000.
Knaak, Joachim, to INTERATOM Internationale Atomreaktorbau GmbH. Magnetic-inductive flow meter for high temperatures. 4,522,073, Cl. 73-861.120.
Knapp, Furn F., Jr.; and Goodman, Mark M., to United States of America, Energy. Heart testing compound. 4,523,033, Cl. 562-496.000.
Knapp, Roy M.: *See—*
McInerney, Michael J.; Jenneman, Gary E.; Knapp, Roy M.; and Menzie, Donald E., 4,522,261, Cl. 166-246.000.
Knappe, Hartmut: *See—*
Erdmann, Jurgen; Buchholz, Karl O.; and Knappe, Hartmut, 4,523,251, Cl. 361-152.000.
Knoll AG: *See—*
Marlettini, Maria G.; DeNovellis, Michelangelo; Labriola, Ernesto; Salomone, Teresa; and Tomassetti, Paola, 4,522,827, Cl. 514-671.000.
Knote, Charles E. Bait station and trap. 4,521,987, Cl. 43-131.000.
Knowles, Joe E.; and Winters, Mellie E., to Coleman Company, Inc., The. Non-pull apart telescoping roof jack assembly for furnace. 4,522,191, Cl. 126-307.00R.
Knutti, David F.: *See—*
Jacobsen, Stephen C.; Knutti, David F.; and Johnson, R. Todd, 4,521,924, Cl. 3-1.100.
Kobayashi, Hisao: *See—*
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Kobayashi, Kazuo: *See—*
Hayashi, Masahiro; Shimizu, Makoto; Kobayashi, Kazuo; and Sekiya, Teruo, 4,522,051, Cl. 72-235.000.
Kobayashi, Naotake; Abe, Tetsuya; and Fujiwara, Yoshio, to Sony Corporation. Cover film for color hard copy printing paper. 4,522,881, Cl. 428-336.000.
Kobayashi, Nobuo, to Tomy Kogyo Company, Incorporated. Toy arcade game. 4,522,409, Cl. 273-316.000.
Kobelt, Jacob. Double-acting, fluid actuated positioning actuator. 4,522,111, Cl. 92-48.000.
Kober, Rainer: *See—*
Billet, Reinhard; Kober, Rainer; Mackowiak, Jerzy; and Geipel, Werner, 4,522,767, Cl. 261-94.000.
Koberle, Karl. Flow measuring system including a venturi. 4,522,077, Cl. 73-861.630.
Koble, Robert L., Jr.: *See—*
Johnson, Edward J.; and Koble, Robert L., Jr., 4,522,558, Cl. 416-187.000.
Kobler, Ingo: *See—*
Burger, Rainer; Bittl, Gerhard; and Kobler, Ingo, 4,522,124, Cl. 101-350.000.
Koch, Kurt: *See—*
Grunberg, Kurt; Poth, Rainer; Werner, Peter; Koch, Kurt; Schweppe, Friedrich; and Voigtlander, Kurt, 4,523,253, Cl. 361-335.000.
Kocher, Hans R.: *See—*
Lammer, Johann; Kocher, Hans R.; and Hintermann, Hans-Erich, 4,522,453, Cl. 308-3.00R.
Koda, N. John, to United States of America, National Aeronautics and Space Administration. Liquid crystal light valve structures. 4,522,469, Cl. 350-342.000.
Koebisu, Mamoru; Shinzawa, Masayuki; and Murakami, Masatsugi, to Toray Industries, Inc. Laminated film of biaxially oriented polypropylene and an olefin polymer film. 4,522,887, Cl. 428-461.000.
Koga, Tatsumi. Net fabric for trawling. 4,521,986, Cl. 43-9.000.
Koga, Tsuguaki; Kuwashima, Hidesumi; Inoue, Hidenori; Hamaoka, Hidetoshi; and Ohta, Hiroshi, to Hitachi, Ltd.; Hitachi Engineering Co.; and Hitachi Service Engineering Co., Ltd. Apparatus for making diagnosis of valve device in turbine system. 4,523,286, Cl. 364-494.000.
Kogawa, Takashi, to Hitachi, Ltd. Safety maintaining apparatus for automatic machines. 4,523,135, Cl. 318-565.000.
Kogawa, Takashi, to Hitachi, Ltd. Method for extrapolating a path of a robot and apparatus therefor. 4,523,287, Cl. 364-513.000.
Koguchi, Toshiro; Kase, Hiroshi; Kawamoto, Isao; Kasai, Masaji; Shirahata, Kunikatsu; Okachi, Ryo; and Nakayama, Kiyoshi, to Kyowa Hakko Kogyo Co., Ltd. Novel physiologically active substance K-4, a process for preparation thereof and a pharmaceutical composition containing the same. 4,522,812, Cl. 514-7.000.
Kohno, Yoshihiko: *See—*
Soma, Masafumi; and Kohno, Yoshihiko, 4,523,289, Cl. 364-569.000.
Kohsaka, Hideo; Sasaki, Mitsuru; and Ishiguri, Yukio, to Sumitomo Chemical Company, Limited. Phosphoramidothionates and fungicidal use. 4,522,817, Cl. 514-95.000.
Kohsaka, Hideo; Mitsuru, Sasaki; and Ishiguri, Yukio, to Sumitomo Chemical Company, Limited. Phosphoramidothionates. 4,522,942, Cl. 514-95.000.
Koichi, Yasushi: *See—*
Imai, Chikara; and Koichi, Yasushi, 4,522,481, Cl. 355-3.0DD.
Koide, Akio, to Janome Sewing Machine Industry Co., Ltd. Clutch for sewing machine thread winding mechanism. 4,522,140, Cl. 112-279.000.
Koishi, Kenji: *See—*
Satoh, Isao; Yoshida, Tomio; Harigae, Shunji; and Koishi, Kenji, 4,523,304, Cl. 369-32.000.
Koizumi, Hajime; Ohara, Shumpei; Kouda, Kiyoshi; Nagatomo, Muneshige; Sagara, Noriyasu; Togari, Satoshi; and Izumiyama, Hiroo, to Kajima Kensetsu Kabuhiki Kaisha. Heat storage trough. 4,522,254, Cl. 165-34.000.
Koizumi, Hajime: *See—*
Akihama, Shigeyuki; Koizumi, Hajime; Umeki, Yoshihiko; Saito, Makoto; Banno, Tadashi; and Tateno, Shinya, 4,522,003, Cl. 52-391.000.
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Komiyama, Makoto: *See—*
Hirai, Hidefumi; and Komiyama, Makoto, 4,523,031, Cl. 562-475.000.
Hirai, Hidefumi; and Komiyama, Makoto, 4,523,037, Cl. 568-442.000.
Komoda, Takao: *See—*
Kawai, Hisasi; Ina, Toshikazu; Igashira, Toshihiko; Nomura, Ken; Yoshida, Masakazu; Komoda, Takao; and Hamanishi, Makio, 4,522,177, Cl. 123-478.000.
Komori, Shigeki: *See—*
Hasebe, Nobuhisa; Kawada, Hiroshi; Yokoyama, Naoki; and Komori, Shigeki, 4,522,540, Cl. 409-293.000.
Komori, Yoshinori: *See—*
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Konak, A. Riza, to Exxon Production Research Co. Method and apparatus for splitting two-phase flow at pipe tees. 4,522,218, Cl. 137-3.000.
Konaka, Masami; Iwai, Hiroshi; and Nishi, Yoshio, to VLSI Technology Research Association. MOS Semiconductor device and method of manufacturing the same. 4,523,213, Cl. 357-23,700.
Kondo, Masatoshi: *See—*
Nakate, Hiroshi; Kondo, Masatoshi; and Gosho, Nobuyuki, 4,523,072, Cl. 219-67.000.
Kondo, Shigeru: *See—*
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Konishi, Satoshi; and Sashiki, Takashi, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing method. 4,522,274, Cl. 177-25.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Iwaki, Akio; Suzuki, Norihito; Yamamoto, Takeshi; and Aoki, Toru, 4,522,891, Cl. 428-626.000.
Konkol, Werner: *See—*
Cornils, Boy; Hibbel, Josef; Lieder, Bernhard; Much, Joachim; Schmidt, Volkmar; Wiebus, Ernst; and Konkol, Werner, 4,523,036, Cl. 568-454.000.
Kono, Hiroya: *See—*
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Konrath, Karl: *See—*
Greiner, Max; and Konrath, Karl, 4,522,181, Cl. 123-502.000.
Konshak, Michael V., to Magnetic Peripherals Inc. Equipment module. 4,523,254, Cl. 361-391.000.
Koontz, Merwyn L.: *See—*
Hagedorn, Floyd T.; and Koontz, Merwyn L., 4,522,641, Cl. 65-291.000.
Korte, Siegfried: *See—*
Neukam, Theo; Brauer, Wolfgang; and Korte, Siegfried, 4,522,764, Cl. 260-456.00R.
Korthoff, Herbert W.; and Tompkins, Thomas M., to United States Surgical Corporation. Surgical fastener applying apparatus. 4,522,327, Cl. 227-19.000.
Koshikawa, Takao; Ueda, Tsunehiro; and Ozeki, Tadao, to Kawasaki Steel Corporation. Method of increasing casting width for a slab during a continuous casting operation. 4,522,251, Cl. 164-491.000.
Kotzin, Bernard. Rocking scale. 4,522,277, Cl. 177-250.000.
Kouda, Kiyoshi: *See—*
Koizumi, Hajime; Ohara, Shumpei; Kouda, Kiyoshi; Nagatomo, Muneshige; Sagara, Noriyasu; Togari, Satoshi; and Izumiyama, Hiroo, 4,522,254, Cl. 165-34.000.
Kovacsay, Istvan: *See—*
Kecskemethy, Geza; Kovacsay, Istvan; and Magdanyi, Laszlo , 4,522,963, Cl. 523-510.000.
Koyama, Kenji; Ohno, Syotaro; and Fukuda, Mitsutoshi, to Toyo Soda Manufacturing Co., Ltd. Process for separating plasma albumin. 4,522,725, Cl. 210-639.000.
Koyo Seiko Company Limited: *See—*
Miki, Toshio; Toda, Yoshihide; and Horii, Kenichi, 4,522,515, Cl. 384-571.000.
Kozlik, Antonin: *See—*
Jeffery, James E.; Kozlik, Antonin; and Wilmshurst, Eric C., 4,522,828, Cl. 514-646.000.
Kraemer, John F.: *See—*
Seeney, Charles E.; and Kraemer, John F., 4,522,651, Cl. 106-38.300.
Seeney, Charles E.; Kraemer, John F.; and Ingebrigtsen, Janis, 4,522,799, Cl. 423-306.000.
Kramer, Manfred: *See—*
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Kramler, Josef: *See—*
Kuhn-Kuhnenfeld, Franz; Kramler, Josef; and Gerber, Hans-Adolf, 4,522,656, Cl. 148-1.500.
Kraser, Gary S. Cigarette lighter. 4,522,583, Cl. 431-125.000.
Kraus, Theodore C.: *See—*
O'Connor, James M.; Kraus, Theodore C.; and Schnabel, Wilhelm J., 4,522,975, Cl. 524-702.000.
Kregness, Glen R., to Sperry Corporation. Fast error checked multibit multiplier. 4,523,210, Cl. 364-760.000.
Kress, Bruce A.: *See—*
Kallestad, Daniel R.; Kress, Bruce A.; and Satre, Kenneth I., 4,522,335, Cl. 236-44.00C.
Krevitz, Kenneth: *See—*
Pytlewski, Louis L.; Krevitz, Kenneth; and Smith, Arthur B., 4,523,043, Cl. 568-840.000.
Kriegel, Ernst; and Coenen, Hubert, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method for processing used oil. 4,522,707, Cl. 208-180.000.
Krile, David J.: *See—*
Norris, Frank A.; and Krile, David J., 4,523,104, Cl. 307-247.00A.
Krimminger, Kenneth R.: *See—*
Hyde, Rebecca A.; Krimminger, Kenneth R.; and Swander, Robert E., 4,522,616, Cl. 493-44.000.
Kristoffersen, Bjorn R.: *See—*
Chen, Tyen C.; Busching, Forrest B.; Hale, William D.; and Kristoffersen, Bjorn R., 4,521,925, Cl. 4-362.000.
Krivanek, Louis: *See—*
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Kroetsch, Charles F., to GTE Valeron Corporation. Touch probe having nonconductive contact carriers. 4,523,063, Cl. 200-61.410.
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Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, 4,522,171, Cl. 123-270.000.
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, 4,522,415, Cl. 277-216.000.
Kroll, John W.; and Hyink, Roy, to Eaton Corporation. SME shutter mechanism. 4,522,147, Cl. 116-216.000.
Krueger, Achim R., to Du Pont de Nemours, E. I., and Company. Two-package urethane maintenance primer. 4,522,879, Cl. 428-323.000.
Kryos Energy Inc.: *See—*
Markbreiter, Stephen J.; and Schorr, Hans P., 4,522,636, Cl. 55-23.000.
Kubo, Yukihiko, to Keikoku Piston Ring Co., Ltd. Oil ring with coil expander. 4,522,412, Cl. 277-138.000.
Kuboki, Shigeo; and Kato, Kazuo, to Hitachi, Ltd. Analog to digital converter. 4,523,180, Cl. 340-347.0AD.
Kubotsu, Akira: *See—*
Akagi, Takao; Yamaguchi, Shinji; and Kubotsu, Akira, 4,522,873, Cl. 428-283.000.
Kubushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Suzuki, Takatoshi; Tachikawa, Hideo; and Moriyama, Shigeo, 4,522,660, Cl. 148-20.300.
Kuchirka, Peter J.: *See—*
Argall, Bruce M.; Kuchirka, Peter J.; and Radford, Kenneth C., 4,522,744, Cl. 252-478.000.
Kuck, David L., to Iceberg Cribs, Inc. Ice crib. 4,522,537, Cl. 405-288.000.
Kudler, Paul S., to Majestic Rides Mfg. Co. Bumper car ride. 4,522,390, Cl. 272-29.000.
Kuether, Christian L. Bath chair. 4,521,926, Cl. 4-579.000.
Kuhlein, Klaus: *See—*
Schmitz, Hermann; and Kuhlein, Klaus, 4,522,997, Cl. 526-264.000.
Kuhn, Elmar, to Astor-Werk, Otto Berning & Co. Feller attachment for a heat-sealing machine for belts. 4,522,677, Cl. 156-467.000.
Kuhn-Kuhnenfeld, Franz; Kramler, Josef; and Gerber, Hans-Adolf, to Wacker-Chemitronic Gesellschaft Fur Elektronik-Grundstoffe mbH. Method of making reference surface markings on semiconductor wafers by laser beam. 4,522,656, Cl. 148-1.500.
Kuhn, Patrick: *See—*
Shelbourn, William C.; Kuhn, Patrick; and Vig, Michael A., 4,522,373, Cl. 251-297.000.
Kuhn, William E.; Hu, Kwoh H.; and Black, Stanley A., to University of Cincinnati. Flexible electrochemical heater. 4,522,190, Cl. 126-263.000.
Kukes, Simon G.; and Battiste, David R., to Phillips Petroleum Company. Demetallization of heavy oils with phosphorous acid. 4,522,702, Cl. 208-89.000.
Kukes, Simon G.; and Banks, Robert L. Metathesis catalyst. 4,522,936, Cl. 502-249.000.
Kulcke, Werner: *See—*
Bohlen, Harald; Kaus, Gerhard; Greschner, Johann; Keyser, Joachim H.; and Kulcke, Werner, 4,522,893, Cl. 428-641.000.
Kulkaski, Bernard J.: *See—*
Sayer, Bertram; and Kulkaski, Bernard J., 4,521,991, Cl. 49-161.000.
Kulprathipanja, Santi: *See—*
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,522,761, Cl. 260-419.000.
Kulzer & Co. GmbH: *See—*
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Kumada, Akira: *See—*
Murata, Michihiro; and Kumada, Akira, 4,523,142, Cl. 324-65.00R.
Kumagae, Yojiro; and Iwasaki, Yasuhisa, to Yamamoto Kagaku Gosei Co., Ltd. Certain bis(benzoyl)pyridine compounds. 4,523,018, Cl. 546-315.000.
Kumahara, Katsumi: *See—*
Chiba, Hiromasa; Kumahara, Katsumi; Harada, Takakiyo; Oka, Takahiro; and Sato, Akihiro, 4,522,994, Cl. 526-351.000.
Kummeke, Heinrich: *See—*
Greune, Christian; and Kummeke, Heinrich, 4,522,025, Cl. 60-39.150.
Kummer, Rudolf; Schneider, Heinz-Walter; Taglieber, Volker; and Weiss, Franz-Josef, to BASF Aktiengesellschaft. Purification of carboxylates containing aldehydes, acetals and/or unsaturated compounds. 4,523,027, Cl. 560-191.000.
Kundrot, Robert A. Deacidification of library materials. 4,522,843, Cl. 427-27.000.
Kunicki, Maryan; and Roussel, Michel. Process for desulfurization of gases with molten mineral baths during gasification of carbon products. 4,522,648, Cl. 75-24.000.
Kunkel, Fred: *See—*
Heine, Heinrich; Herzan, Georg; and Kunkel, Fred, 4,522,388, Cl. 271-245.000.
Kuo, Meng S.: *See—*
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Kupcikevicius, Vytautas, to Union Carbide Corporation. Casing sizing means, method and apparatus. 4,521,938, Cl. 17-49.000.
Kurahashi, Keizo: *See—*
Takahara, Kazuhiro; Kurahashi, Keizo; Gondo, Hiroyuki; Oki, Kenichi; and Miura, Shoshin, 4,523,189, Cl. 340-781.000.
Kurahashi, Muneshige; and Yamamori, Shinji, to Nihon Kohden Corporation. Respiratory gas concentration measuring apparatus. 4,522,204, Cl. 128-719.000.

Kuraray Co., Ltd.: *See—*
Akagi, Takao; Yamaguchi, Shinji; and Kubotsu, Akira, 4,522,873, Cl. 428-283.000.
Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,523,024, Cl. 549-407.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Shigeta, Masatomo; Fukuda, Hiroyuki; Saitoh, Kuniyuki; and Kaji, Hisatsugu, 4,522,895, Cl. 429-44.000.

Kurkov, Victor P., to Chevron Research Company. Fused 5,6,5-membered heterocyclic electroactive polymers. 4,522,745, Cl. 252-500.000.

Kurt Vogelsang GmbH: *See—*
Vogelsang, Kurt, 4,522,523, Cl. 401-126.000.

Kurtz, Richard F.: *See—*
Bull, John; Croft, Leon; DeVaney, David B.; Davis, Russell R.; Hinshaw, David L.; Jotwani, Haresh C.; Kandell, Ronald J.; Kurtz, Richard F.; Lee, Ernest O., Jr.; Neumeier, Gunter F.; Richards, Glenn L.; and Scott, Richard, 4,523,308, Cl. 370-56.000.

Kuwajima, Soichi; and Sakamoto, Naojiro, to Nihon Schumacher K.K.; and Toyo Element Kogyo Kabushiki Kaisha. Filter with a tubular filter element. 4,522,719, Cl. 210-457.000.

Kuwashima, Hidesumi: *See—*
Koga, Tsuguaki; Kuwashima, Hidesumi; Inoue, Hidenori; Hamaoka, Hidetoshi; and Ohta, Hiroshi, 4,523,286, Cl. 364-494.000.

Kuzma, Janusz A.: *See—*
Patrick, James F.; Crosby, Peter A.; Kuzma, Janusz A.; and Money, David K., 4,522,209, Cl. 128-419.00R.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Koguchi, Toshiro; Kase, Hiroshi; Kawamoto, Isao; Kasai, Masaji; Shirahata, Kunikatsu; Okachi, Ryo; and Nakayama, Kiyoshi, 4,522,812, Cl. 514-7.000.

Kytta, Oswald O.; and Bach, Lloyd G., to Bendix Corporation, The. Fluid pressurizing device. 4,522,031, Cl. 60-547.100.

Labib, Mohamed E.; Poll, Robert F.; and Wang, Chih-Chun, to RCA Corporation. Capacitance electronic disc molding compositions. 4,522,747, Cl. 252-511.000.

Laboratoire Suisse de Recherches Horlogeres: *See—*
Lammer, Johann; Kocher, Hans R.; and Hintermann, Hans-Erich, 4,522,453, Cl. 308-3.00R.

LaBounty, Roy E. Rail lifting and breaking machine. 4,522,323, Cl. 225-2.000.

Labriola, Ernesto: *See—*
Marlettini, Maria G.; DeNovellis, Michelangelo; Labriola, Ernesto; Salomone, Teresa; and Tomassetti, Paola, 4,522,827, Cl. 514-671.000.

Laemmle, Joseph T.; Bohaychick, John; and Lansdale, Willie, to Aluminum Company of America. Continuous casting with glycerol trioleate parting composition. 4,522,250, Cl. 164-472.000.

Lagow, Richard J.; and Gerhardt, Glenn E., to University of Texas, The. Method for forming perfluorocarbon ethers. 4,523,039, Cl. 568-615.000.

Lai, John T., to B. F. Goodrich Company, The. 3,5-Dialkyl-4-hydroxyphenyl-substituted acetic acids. 4,523,032, Cl. 562-478.000.

Lair, Clair K.; Jonas, Jules; and Anderson, Keith D., to General Dynamics, Pomona Division. Multiple target seeking clustered munition and system. 4,522,356, Cl. 244-3.150.

Lakes, Stephen D.: *See—*
Lewis, Maurice W.; and Lakes, Stephen D., 4,523,207, Cl. 346-214.000.

Lammer, Johann; Kocher, Hans R.; and Hintermann, Hans-Erich, to Laboratoire Suisse de Recherches Horlogeres. Tribological coatings for the protection of moving machine parts from wear and corrosion. 4,522,453, Cl. 308-3.00R.

Landa, Benzion, to Savin Corporation. Electrophotographic apparatus for increasing the apparent sensitivity of photoconductors. 4,522,484, Cl. 355-3.0DD.

Landis, Phillip S.: *See—*
Horodysky, Andrew G.; and Landis, Phillip S., 4,522,629, Cl. 44-53.000.

Lang, Erberhard: *See—*
Dinger, Hans; Holzhauer, Hilbert; and Lang, Erberhard, 4,522,358, Cl. 244-110.00B.

Lang, Gerard: *See—*
Jacquet, Bernard; Lang, Gerard; and Malaval, Alain, 4,522,808, Cl. 424-59.000.

Langenfeld, Wilhelm, to Didier-Werke A.G. Gas flushing inlet arrangement in a metallurgical vessel and method of operation of such an arrangement. 4,522,376, Cl. 266-47.000.

Lansdale, Willie: *See—*
Laemmle, Joseph T.; Bohaychick, John; and Lansdale, Willie, 4,522,250, Cl. 164-472.000.

Large, Scott F.; and Metcalf, Bruce D., to Mitre Corporation, The. Fiber optic bidirectional wavelength division multiplexer/demultiplexer with total and/or partial redundancy. 4,522,462, Cl. 350-96.190.

Larson, Harold A.; Boehme, Manfred F.; and Sheets, Jeffrey W. Removing H_2S from natural gas using two-stage molecular sieves. 4,522,793, Cl. 423-230.000.

Larson, Leslie N. Drilling rig. 4,522,273, Cl. 175-135.000.

Larson, Marlow W. Illuminated sighting structure for archery bows. 4,521,972, Cl. 33-265.000.

Larson, Ulf R.; and Schmidt, Max-Gunther. Apparatus for discharging liquid-covered particles from a reaction chamber and subsequent drying of said particles. 4,522,589, Cl. 432-239.000.

Lasher, Jeffery D.: *See—*
Klostermeier, Werner; Lasher, Jeffery D.; Meyer, Gerhard; and Zengel, Hans, 4,522,880, Cl. 428-332.000.

Laska, Eugene M.: *See—*
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,522,826, Cl. 514-569.000.

Laskaris, Evangelos T., to General Electric Company. Horizontal cryostat penetration insert and assembly. 4,522,034, Cl. 62-45.000.

Lattimore, James: *See—*
Chisvette, Dominick; Lattimore, James; and Sova, Stanley G., 4,522,654, Cl. 106-288.00Q.

Laube, Robert W.: *See—*
Neuschaffer, Karl-Heinz; Engels, Hans-Werner; Gebert, Hans-Jurgen; Laube, Robert W.; and Zoche, Gunter, 4,522,652, Cl. 106-84.000.

Laue, Charles E., to Hamilton-Pax, Inc. Method for fabricating a valve. 4,521,948, Cl. 29-157.10R.

Laughlin, William C.: *See—*
Kauffman, Jim W.; and Laughlin, William C., 4,522,723, Cl. 210-611.000.

Lauterjung, Friedrich G. Suction bottle for medicinal purposes. 4,522,623, Cl. 604-319.000.

LaValley, Richard W. Shower pipes for rotary drum filter. 4,522,716, Cl. 210-210.000.

Lavine, Michael K. Device for transmitting analog sensor data via fiber optics. 4,523,099, Cl. 250-551.000.

Laymon, Charles R., to Welco Industries, Inc. Automatic welding machine which provides uniform welding of a workpiece during vertical movement thereof. 4,523,076, Cl. 219-125.100.

Lebesgue, Jean, to Fives-Cail Babcock. Installation for the thermal treatment of pulverulent mineral products. 4,522,131, Cl. 110-229.000.

Lebet, David P.: *See—*
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O'Brien, Larry S.; and Kaler, Ward S., 4,522,787, Cl. 422-78.000.
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Lepley, Joseph M., to Altronic, Inc. Silicon controlled rectifier shut-off circuit for capacitive discharge ignition system. 4,522,184, Cl. 123-599.000.

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Barby, Donald; and Haq, Zia, 4,522,953, Cl. 521-64.000.
Muhlemann, Hans R.; and Saxer, Ulrich P., 4,522,806, Cl. 424-52.000.

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Lewis, Maurice W.; and Lakes, Stephen D., to NCR Corporation. Multiple copy thermal record sheet. 4,523,207, Cl. 346-214.000.

Lewis, Monty D.: *See—*
Girard, Thomas L.; and Lewis, Monty D., 4,522,396, Cl. 273-58.00K.

Lewison, Richard A., to Wetherell, Ronald D. Shredder/plow combination. 4,522,267, Cl. 172-28.000.

Ley, David A.; and Burkhard, Herbert, to American Cyanamid Company. Low temperature crosslinkable emulsion. 4,522,973, Cl. 524-555.000.

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Li, Hsueh M., to Ethyl Corporation. Phosphonitrilic chloride polymers. 4,522,795, Cl. 423-300.000.

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Hagedorn, Floyd T.; and Koontz, Merwyn L., 4,522,641, Cl. 65-291.000.

Lickei, Donald L.: *See—*
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Liebermann, Howard H.; and Tahlmore, Claude D., to Allied Corporation. Method of brazing with low melting point copper-tin foils. 4,522,331, Cl. 228-263.180.

Liebert, Richard B.; and White, Roger P., to North American Philips Corporation. Electrophoretic image display with reduced drives and leads. 4,522,472, Cl. 350-362.000.

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Cornils, Boy; Hibbel, Josef; Lieder, Bernhard; Much, Joachim; Schmidt, Volkmar; Wiebus, Ernst; and Konkol, Werner, 4,523,036, Cl. 568-454.000.

Liker, Stephen J., to Exxon Research & Engineering Co. Method for improving low-velocity aiming in operating an ink jet apparatus. 4,523,201, Cl. 346-1.100.

Lin, I. Sioun; Gromelski, Stanley J., Jr.; Werner, Jesse; Brown, Michael J.; and Chakrabarti, Paritosh M., to GAF Corporation. Diamine/diol chain extender blends for rim process. 4,523,004, Cl. 528-76.000.

Lind, Michael A.; and Dunn, Michael R., to New Draulics, Inc. Hydraulic cable and rod cutting and crimping device. 4,521,963, Cl. 30-92.000.

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Linde AG: *See—*
Karwat, Heinz, 4,522,638, Cl. 55-37.000.

Linde Aktiengesellschaft: *See—*
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Lindgren, Erik V. Ski holder. 4,522,379, Cl. 269-47.000.

Lindig, Charles E.; Brandstetter, Robert W.; and Doucette, Adrian R., to Grumman Aerospace Corporation. Recursive optical filter system. 4,522,466, Cl. 350-162.120.

Lindner, Christian; Ott, Karl-Heinz; and Braese, Hans-Eberhard, to Bayer Aktiengesellschaft. Thermoplastic compositions in powder form. 4,522,959, Cl. 523-335.000.

Lindner, Christian; Uerdingen, Walter; Hinz, Jurgen; and Trabert, Ludwig, to Bayer Aktiengesellschaft. Polymer powders containing graft polymer. 4,522,964, Cl. 524-71.000.

Lindquist, James R.: *See—*
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Lindsay, Harold W. Milling cutter with multiple indexable cutting inserts. 4,522,538, Cl. 407-35.000.

Lineberry, Roger D.; and Shields, Harper, to Kayser-Roth Hosiery, Inc. Ankle and arch support sock. 4,522,044, Cl. 66-185.000.

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Liposome Company, Inc., The: *See—*
Lenk, Robert P.; Fountain, Michael W.; Janoff, Andrew S.; Ostro, Marc J.; and Popescu, Micrea C., 4,522,803, Cl. 424-1.100.

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Llauge, Joaquin R.; and Isanta, Alberto P., to ITW Espana S.A. Cock for the heating circuits of a vehicle. 4,522,225, Cl. 137-351.000.

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Loev, Bernard; and Magnien, Ernest, to USV Pharmaceutical Corporation. Piperazines 1-hexyl-4(3-ketohexyl). 4,523,014, Cl. 544-386.000.

Loev, Bernard; Jones, Howard; and Chan, Wan-kit, to USV Pharmaceutical. Derivatives of alpha-alkyl polyolefinic carboxylic acid useful in the treatment of psoriasis. 4,523,042, Cl. 568-824.000.

Logan, Richard H.: *See—*
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Logue, DeWitt M. Retriever and dispenser for deformable balls. 4,522,438, Cl. 294-19.200.

Lohr, Heinz P., to Lindauer Dornier Gesellschaft mbH. Electrical system for monitoring warp yarns in weaving machines. 4,522,236, Cl. 139-353.000.

Long, Delmar D.: *See—*
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L'Oreal: *See—*
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Lozfau, Arthur; and Lucey, William H., to Dennison National Company. Ring mechanism for loose leaf binders and method of manufacture therefor. 4,522,526, Cl. 402-37.000.

Lubke, Wilfried, to Siemens Aktiengesellschaft. Liquid-ring compressor for gases. 4,522,560, Cl. 415-210.000.

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Lucas, Jean: *See—*
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Luder, Rainer; and Haussmann, Wolfgang, to Siemens Aktiengesellschaft. Method and apparatus for controlling the digital chrominance signals of a color television receiver. 4,523,223, Cl. 358-27.000.

Ludwick, Lanny E. One piece sanitary diaper changing station. 4,522,381, Cl. 269-328.000.

Lueddecke, Erik: *See—*
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Luitz, Max; and Weiss, Eugen, to ESS GmbH Skibindungen. Ski binding clamp. 4,522,424, Cl. 280-633.000.

Lukach, Carl; Majewicz, Thomas G.; and Reid, Albert R., to Hercules Incorporated. Dihydroxypropyl mixed ether derivatives of cellulose. 4,523,010, Cl. 536-91.000.

Lum, Genevieve S.; Li, Hsueh M.; and Pettigrew, F. Alexander, to Ethyl Corporation. Halophosphazene polymers. 4,522,798, Cl. 423-300.000.

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Lummus Company, The: *See—*
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Lummus Crest Inc.: *See—*
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Lund, David L.; Majumdar, Senajit J.; Mullane, William E.; and Krivanek, Louis, to GNB Batteries Inc. Apparatus and method for fusing battery terminals. 4,523,068, Cl. 219-10.530.

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Lunghofer, Eugene P., to Dresser Industries, Inc. Hydraulic fracturing propping agent. 4,522,731, Cl. 252-8.55R.

Luque, Phillip R.: *See—*
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Lydall, Inc.: *See—*
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M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft: *See—*
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M. P. Metal Products, Inc.: *See—*
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Maack, Werner; and Zendler, Richard, to AMP Incorporated. Apparatus for terminating flat flexible cables. 4,521,960, Cl. 29-749.000.

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Macey, Keith S., to K. S. Macey Machine Company, Inc. Reciprocating stitcher assembly. 4,522,383, Cl. 270-53.000.

Maciejewski, Walter J., to Gearhart Industries, Inc. Method and apparatus for determining the spontaneous earth potential log from downhole gradient measurements. 4,523,148, Cl. 324-351.000.

Maciorowski, Michael W. Balance toy. 4,522,403, Cl. 273-154.000.

Mackey, Charles P. Name belt with selective letter inserts. 4,521,923, Cl. 2-338.000.

Mackin, Steven J.; and Tillotson, Harry T., to General Motors Corporation. Boot cover for a floor-mounted transmission lever. 4,522,081, Cl. 74-473.00R.

Mackowiak, Jerzy: *See—*
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MacNamee, Richard W., to Sangamo Weston, Inc. Electrolytes for electrolytic capacitors. 4,522,737, Cl. 252-62.200.

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Maeda, Katsunosuke: *See—*
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Maeda, Naoki: *See—*
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Maeda, Takeshi; Mizoguchi, Yasumitsu; Takasago, Masahiro; Kaneda, Tokuya; and Tsunoda, Yoshito, to Hitachi, Ltd. Driving apparatus for semiconductor laser. 4,523,089, Cl. 250-205.000.

Maejima, Hideo; Masuda, Ikuro; Matsumoto, Hidekazu; and Miyazawa, Shyoichi, to Hitachi, Ltd. Input/output control device with memory device for storing variable-length data and method of controlling thereof. 4,523,276, Cl. 364-200.000.

Maes, Michel E.: *See—*
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Maget, Henri J. R. Electrochemical prime mover. 4,522,698, Cl. 204-301.000.

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Magnetic Peripherals Inc.: *See—*
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Maguire, Helen E., to Advanced Input Devices, Inc. Combination keyboard. 4,523,060, Cl. 200-5.00A.

Mahon, Joseph J., to Eaton Corporation. Electrical appliance programming. 4,523,062, Cl. 200-35.00R.

Maier, Hans: *See—*
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Majors, Mark B.: *See—*
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Malaval, Alain: *See—*
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Man Design Co., Ltd.: *See—*
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Mankey, Harry S.: *See—*
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Manten Co., Ltd.: *See—*
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Marchi, Gary C.; and Logan, Richard H., to J. I. Case Company. Leak-detecting hydraulic system. 4,522,109, Cl. 91-420.000.

Markbreiter, Stephen J.; and Schorr, Hans P., to Kryos Energy Inc.; and Brooklyn Union Gas Company, The. Pipeline gas pressure reduction with refrigeration generation. 4,522,636, Cl. 55-23.000.

Markert, Jurgen; Hagen, Helmut; and Wuerzer, Bruno, to BASF Aktiengesellschaft. 3,7-Dichloroquinoline derivatives and their use for controlling undesirable plant growth. 4,522,646, Cl. 71-94.000.

Markle, Robert E.: *See—*
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Marks, Alvin M. Electrothermodynamic (ETD) power converter with conical jet. 4,523,112, Cl. 310-10.000.

Marlettini, Maria G.; DeNovellis, Michelangelo; Labriola, Ernesto; Salomone, Teresa; and Tomassetti, Paola, to Knoll AG. Method of treating acute pancreatitis with isometheptene. 4,522,827, Cl. 514-671.000.

Marquardt GmbH, Firma: *See—*
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Marquest Medical Products, Inc.: *See—*
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Marshall, Christopher B., to U.S. Philips Corporation. Direct modulation FM data receiver. 4,523,324, Cl. 375-91.000.

Martin, Madeleine; Lesage, Jean; Courbin, Gerard; and Rivereau, Alain, to Institut Francais du Petrole. Material having high mechanical strength and density close to unity, the manufacture and uses thereof. 4,522,878, Cl. 428-313.700.

Martin, Steven J. Fireplace starter. 4,522,585, Cl. 431-344.000.

Martin, William W., Jr.; and French, David W., to J-M Manufacturing Co., Inc. Apparatus for introducing a foamable plastic insulation into the space defined by an inner core pipe and an outer casing pipe while maintaining the spacing of the pipes. 4,522,578, Cl. 425-110.000.

Martinez, Danilo C.: *See—*
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Martino, Phillip C.; and Winner, Peter P., to SCM Corporation. Aqueous self-curing polymeric blends. 4,522,961, Cl. 523-407.000.

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Maruyama, Takashi. Tool for meals with the function of scissors. 4,521,964, Cl. 30-148.000.

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Marvin M. Stark Research Foundation: *See—*
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Masao, Mikami. Apparatus for manufacturing a roof lining for automobiles. 4,522,676, Cl. 156-443.000.

Massachusetts Institute of Technology: *See—*
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Masuda, Ikuro: *See—*
Maejima, Hideo; Masuda, Ikuro; Matsumoto, Hidekazu; and Miyazawa, Shyoichi, 4,523,276, Cl. 364-200.000.

Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; Yamamoto, Keisuke; and Yasumoto, Yoshio, to Matsushita Electric Industrial Co., Ltd. Image display apparatus. 4,523,225, Cl. 358-56.000.

Masunaga, Makoto, to Canon Kabushiki Kaisha. Distance measuring device. 4,522,492, Cl. 356-1.000.

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Grigoleit, Georg; Oberkobusch, Rudolf; Stadelhofer, Jurgen; and Matern, Kurt, 4,523,016, Cl. 546-252.000.

Mato Maschinen-und Metallwarenfabrik Curt Matthaei GmbH & Co KG: *See—*
Stolz, Hermann, 4,522,329, Cl. 227-153.000.

Matsumi, Koichi: *See—*
Hibiya, Taketoshi; Ohta, Yoshinori; and Matsumi, Koichi, 4,522,473, Cl. 350-377.000.

Matsumoto, Hidekazu: *See—*
Fukunaga, Yasushi; Bandoh, Tadaaki; Hiraoka, Ryosei; Matsumoto, Hidekazu; Ide, Jushi; and Kawakami, Tetsuya, 4,523,272, Cl. 364-200.000.
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Matsumoto, Hiroshi; and Watanabe, Junji, to Tokyo Shibaura Denki Kabushiki Kaisha. Image forming apparatus. 4,522,483, Cl. 355-3.00R.

Matsumoto, Katsutoshi, to Dainippon Screen Mfg. Co., Ltd. Pinhole removal device in printing. 4,522,123, Cl. 101-349.000.

Matsumoto, Yoshiaki: *See—*
Kase, Hiroshi; Matsumoto, Yoshiaki; and Ohkawa, Kouji, 4,521,950, Cl. 29-568.000.

Matsumura, Hiroshi: *See—*
Endo, Keizo; Matsumura, Hiroshi; Hasunuma, Yoshifumi; Masai, Siro; and Oguma, Noboru, 4,522,237, Cl. 141-95.000.

Matsuno, Kiyotaka: *See—*
Ogawa, Toshihisa; Miyagi, Hideo; Nagase, Masaomi; and Matsuno, Kiyotaka, 4,522,168, Cl. 123-198.00D.

Matsuno, Yoshio, to Nissan Motor Company, Limited. Air duct assembly. 4,522,114, Cl. 98-2.090.

Matsuo, Itaru: *See—*
Gomi, Shimpei; Takeuchi, Tomomitsu; Matsuo, Itaru; Tsutsui, Toshio; Nakagawa, Takao; and Miwa, Shigeru, 4,522,627, Cl. 44-1.00R.

Matsuoka, Hiroki; and Murai, Toshimi, to Toyota Jidosha Kabushiki Kaisha. Air-fuel ratio control apparatus. 4,522,180, Cl. 123-489.000.

Matsuoka, Hiroshi; and Furukawa, Yutaka, to Bando Chemical Industries, Ltd. Automatic tension maintaining transmission belt. 4,522,614, Cl. 474-260.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Inoue, Toshitsugu; Nakada, Akiyoshi; Kaji, Haruo; Doi, Makoto; and Takezawa, Kuninori, 4,522,555, Cl. 414-733.000.
Kadota, Hiroshi; and Ichinohe, Eisuke, 4,523,301, Cl. 365-49.000.
Kazufumi, Ogawa; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,523,102, Cl. 250-578.000.
Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; Yamamoto, Keisuke; and Yasumoto, Yoshio, 4,523,225, Cl. 358-56.000.
Ogawa, Kazufumi, 4,522,680, Cl. 156-624.000.
Satoh, Isao; Yoshida, Tomio; Harigae, Shunji; and Koishi, Kenji, 4,523,304, Cl. 369-32.000.
Tazaki, Saburo; and Ide, Akifumi, 4,523,181, Cl. 340-347.0DD.
Tone, Masayuki; Yano, Tsutomu; and Saito, Koetsu, 4,523,122, Cl. 310-334.000.

Matsushita Electric Works, Ltd.: *See—*
Aoyama, Youichi; Takeuchi, Akira; Ohmuro, Masaru; and Ichimura, Yasuo, 4,523,164, Cl. 335-38.000.
Kishi, Ichiro, 4,522,270, Cl. 173-163.000.

Matsushita Electrical Industrial Co., Ltd.: *See—*
Kinoshita, Hisashi; Yoshitake, Hideki; and Kake, Nin, 4,523,134, Cl. 318-313.000.

Mattel, Inc.: *See—*
Kilroy, Eugene J.; Morse, James E.; Grimm, Thomas H.; and DeAnda, Nicholas, 4,522,607, Cl. 446-447.000.

Matthews, Thomas R.: *See—*
Eppstein, Deborah A.; Fraser-Smith, Elizabeth B.; and Matthews, Thomas R., 4,522,811, Cl. 514-2.000.

Matts, Sigvard, to Flakt Aktiebolag. Method and device for varying a d.c. voltage connected to an electrostatic dust separator. 4,522,635, Cl. 55-2.000.

Maurer, Bruno; and Hauser, Arnold, to Firmenich SA. Bicyclic aldehyde and its use as perfuming agent. 4,522,748, Cl. 252-522.00R.

Maurer, Ruprecht: *See—*
Giese, Emil; Maurer, Ruprecht; and Hagen, Max, 4,522,289, Cl. 192-41.00A.

Maurette, Frederic: *See—*
Houdart, Michel; Arruberrenal, Edouard; and Maurette, Frederic, 4,523,163, Cl. 333-218.000.

Mauser-Werke Oberndorf GmbH: *See—*
Mayer, Manfred, 4,521,971, Cl. 33-199.00B.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
Meier, Gerd E. A.; and Thompson, Philip A., 4,522,183, Cl. 123-558.000.

Mayer, Carl W.: *See—*
Hilti, Bruno; Mayer, Carl W.; and Rihs, Grety, 4,522,754, Cl. 260-239.00R.

Mayer, Manfred, to Mauser-Werke Oberndorf GmbH. Measuring head for screw thread measuring machines. 4,521,971, Cl. 33-199.00B.

Mayer, Thomas; Boling, Norman L.; and Rancourt, James D., to Burroughs Corporation. Spiral-coated media for optical recording. 4,522,846, Cl. 427-54.100.

Mays, Alfred T., to Chicopee. Water impervious materials. 4,522,203, Cl. 128-132.00D.

Mazda Motor Corporation: *See—*
Kanazawa, Hirotaka, 4,522,279, Cl. 180-143.000.
Nishimura, Hirofumi; Oda, Hiroyuki; Kaneko, Tadashi; Takai, Akira; and Takeuchi, Nobuo, 4,522,179, Cl. 123-481.000.

Mazumder, Ali T., to NCR Canada Ltd - NCR Canada Ltee. Fast impact hammer for high speed printer. 4,522,122, Cl. 101-93.020.

McCaffrey, Donald B.: *See—*
Church, Royce F.; McCaffrey, Donald B.; and Plude, Leo W., 4,522,359, Cl. 244-129.500.

McClelland, S. Barry: *See—*
Dunstan, Ericson M.; Gervais, William J.; and McClelland, S. Barry, 4,523,240, Cl. 360-99.000.

McCormick Marty P.: *See—*
Kelly, Lawrence S.; McCormick Marty P.; and Weikel, William A., 4,522,789, Cl. 422-133.000.

McCormick, Ronald W.: *See—*
Arndt, Kim E.; Rogers, Richard B.; and McCormick, Ronald W., 4,522,642, Cl. 71-11.000.

McGaffigan, Thomas H.; and Kent, Harold B., to Raychem Corporation. Compliant connecting device with heat-recoverable driver. 4,522,457, Cl. 339-30.000.

McGard, Inc.: *See—*
Taylor, John H., 4,522,569, Cl. 417-434.000.

McGregor, Thomas R.: *See—*
Donnelly, Edward N.; Haberkorn, Wilhelm A.; Hagen, Gerry A.; McGregor, Thomas R.; and Postman, William, 4,522,774, Cl. 264-168.000.

McInerney, Michael J.; Jenneman, Gary E.; Knapp, Roy M.; and Menzie, Donald E., to University of Oklahoma, The Board of Regents for the. Biosurfactant and enhanced oil recovery. 4,522,261, Cl. 166-246.000.

McKean, Dennis R.: *See—*
Clecak, Nicholas J.; McKean, Dennis R.; Miller, Robert D.; Tompkins, Terry C.; and Willson, Carlton G., 4,522,911, Cl. 430-192.000.

McKee, David M. Peg board game apparatus. 4,522,408, Cl. 273-271.000.

McLeod, Ramon M., to General Electric Company. Method of constructing a magnetic core. 4,521,957, Cl. 29-609.000.

McLoughlin, Joseph R., to General Electric Company. Method of fabricating layer insulation for use in high-voltage electrical equipment. 4,522,771, Cl. 264-61.000.

McMillan, Donnell W. Device for raising and lowering a spare tire. 4,522,325, Cl. 224-42.210.

McMillan, John D., to Sigma Research Inc. Ultrasonic method and apparatus for determining the depth of a crack in a solid material. 4,522,064, Cl. 73-592.000.

McNeer, Johnny C., to Otis Engineering Corporation. Apparatus and method for treating wells. 4,522,264, Cl. 166-278.000.

McNeill, John L. Ice cube machine cube cutters. 4,522,039, Cl. 62-320.000.

McVicker, Gary B.; Carter, James L.; Murrell, Lawrence L.; and Ziemiak, John J., to Exxon Research and Engineering Co. Removal of metal comtaminants from catalysts using buffered oxalic acid. 4,522,928, Cl. 502-26.000.

Mechanical Technology Incorporated: *See—*
Corey, John A., 4,522,030, Cl. 60-525.000.

Mechatron Systems, Inc.: *See—*
Wong, Harvey C., 4,523,137, Cl. 318-604.000.

Mechineau, Didier: *See—*
Gille, Etienne; Lucas, Jean; Mechineau, Didier; and Monod, Marie-Odile, 4,522,841, Cl. 427-4.000.

Medd, Ronald A., to C. R. Medd & Sons. Rotor for liquid mixing device. 4,522,505, Cl. 366-343.000.

Medwed, Peter M., to Electrolux Corporation. Self-cleaning joint. 4,521,936, Cl. 15-377.000.

Megeid, Mohamed M. A., to RCA Corporation. Clock regenerator using two on-off oscillators. 4,523,158, Cl. 331-55.000.

Mehl, Byron R., to Sundstrand Corporation. Power converter control circuit. 4,523,267, Cl. 363-87.000.

Meier, Gerd E. A.; and Thompson, Philip A., to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Method for converting a retrograde substance to the gaseous state. 4,522,183, Cl. 123-558.000.

Meinardus, Elmond F., to Riviana Foods Inc. Method of removing bran from cereal grains. 4,522,837, Cl. 426-482.000.

Meister, Leonhard, to Montres Universal S.A. Watch case. 4,522,508, Cl. 368-276.000.

Mejia, Santiago. Battery cell. 4,522,900, Cl. 429-181.000.

Melsheimer, Thomas, to Adolph Coors Company. Tone generator. 4,522,099, Cl. 84-1.010.

Mendehall, Robert L. Asphaltic concrete recycle apparatus and method. 4,522,498, Cl. 366-4.000.

Menezes, Edgar V.; Southern, John H.; Ballman, Richard L.; and Chamberlin, J. M., to Celanese Corporation. Process for producing self-crimping polyester yarn. 4,522,773, Cl. 264-167.000.

Menicucci, Gian F. Metallic alloys to be used in dentistry. 4,522,783, Cl. 420-503.000.

Menzel, Waldemar, to Ireks Arkady GmbH, Firma. Ice-cream maker. 4,522,041, Cl. 62-342.000.

Menzie, Donald E.: *See—*
McInerney, Michael J.; Jenneman, Gary E.; Knapp, Roy M.; and Menzie, Donald E., 4,522,261, Cl. 166-246.000.

Mercandalli, Louis: *See—*
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Merck & Co., Inc.: *See—*
Hanson, Harley M., 4,522,823, Cl. 514-400.000.
Nutt, Ruth F., 4,522,813, Cl. 424-177.000.
Remy, David C.; and Clineschmidt, Bradley V., 4,522,821, Cl. 514-320.000.

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Harting, Jurgen; and Fuchs, Andreas, 4,522,829, Cl. 514-652.000.

Messe , Gerard; Faure, Michel; and Ducombs, Marcel, to Alsthom-Atlantique. Automatic lamination cutting machine for electric shunt induction winding. 4,522,094, Cl. 83-92.000.

Messenger, Carl, to Computer Peripherals Inc. Tape transport system with tension sensing bearings. 4,523,133, Cl. 318-7.000.

Messer Griesheim GmbH: *See—*
Grund, Peter; and Holz, Peter, 4,521,996, Cl. 51-434.000.

Metalcore Limited: *See—*
Scott, John T.; and King, Charles, 4,522,860, Cl. 428-132.000.

Metalines, Inc.: *See—*
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Metallgesellschaft Aktiengesellschaft: *See—*
Hochgesand, Gerhard; Kahles, Heinz; Wiesner, Paul; and Stonner, Hans-Martin, 4,522,730, Cl. 210-750.000.

Metcalf, Bruce D.: *See—*
Large, Scott F.; and Metcalf, Bruce D., 4,522,462, Cl. 350-96.190.

Metrawatt GmbH: *See—*
Hochreuther, Karl; and Tragatschnig, Jorg, 4,522,061, Cl. 73-431.000.

Meyer, Anton. Set of bricks with plugging connections. 4,522,001, Cl. 52-309.100.

Meyer, Bruno. Sprouting apparatus. 4,521,989, Cl. 47-14.000.

Meyer, Gerhard: *See—*
Klostermeier, Werner; Lasher, Jeffery D.; Meyer, Gerhard; and Zengel, Hans, 4,522,880, Cl. 428-332.000.

Meyer, James R. Animal feeder. 4,522,152, Cl. 119-56.00R.

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Lipton, Lenny; Starks, Michael R.; Stewart, James D.; and Meyer, Lawrence D., 4,523,226, Cl. 358-88.000.

Meyer, Wayne A.: *See—*
Edwards, Merle L.; Meyer, Wayne A.; and Shook, James M., 4,522,019, Cl. 56-202.000.

Michigan Consolidated Gas Co.: *See—*
Engel, Larry J.; and Turko, John W., 4,522,159, Cl. 123-1.00A.

Mickelsen, Reid A.; and Chen, Wen S., to Boeing Company, The. Thin films of mixed metal compounds. 4,523,051, Cl. 136-260.000.

Micropolis: *See—*
Dunstan, Ericson M.; Gervais, William J.; and McClelland, S. Barry, 4,523,240, Cl. 360-99.000.

Mihayashi, Keiji: *See—*
Ichijima, Seiji; Mihayashi, Keiji; and Itoh, Isamu, 4,522,917, Cl. 430-564.000.

Miki, Masayuki: *See—*
Amano, Matsuo; Sakamoto, Shinichi; Miki, Masayuki; Sasayama, Takao; Suda, Seiji; Mouri, Yasunori; and Ishii, Toshio, 4,523,284, Cl. 364-431.120.

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Mikic, Frank; and Pagac, William T., to Snap-on Tools Corporation. Housing holder and cooperating detachable housing. 4,522,310, Cl. 220-4.00R.

Mikuni Kogyo Kabushiki Kaisha: *See—*
Sakurai, Shigeo, 4,523,138, Cl. 318-685.000.

Miles, Frank, to Tektronix, Inc. Programmable attenuator. 4,523,161, Cl. 333-81.00R.

Miller, Charles M., Jr.; and Orlando, Samuel J., to Columbia Industries, Inc. Filled shell bowling ball. 4,522,397, Cl. 273-63.00D.

Miller, Dean T.: *See—*
Sperinde, Johnie M.; Goldring, Stanley D.; and Miller, Dean T., 4,523,279, Cl. 364-416.000.

Miller, Franz: *See—*
Balsys, Manfred; Kling, Dieter; Maier, Hans; Miller, Franz; and Schmid, Walter, 4,522,223, Cl. 137-240.000.

Miller, John H., to Hy-Way Heat Systems, Inc. Extruder melter apparatus. 4,522,192, Cl. 126-343.50A.

Miller, John H., to Hy-Way Heat Systems, Inc. Rotating melter. 4,522,587, Cl. 432-114.000.

Miller, John R.; and Stubbs, John L., to Southern Railway Company. Railway tie plug driving apparatus. 4,522,127, Cl. 104-17.00R.

Miller, Kenneth F., to General Electric Company. Impact modified copolyester carbonate compositions. 4,522,980, Cl. 525-67.000.

Miller, Richard W.: *See—*
Mitchell, Albert W.; and Miller, Richard W., 4,521,922, Cl. 2-171.000.

Miller, Robert D.: *See—*
Clecak, Nicholas J.; McKean, Dennis R.; Miller, Robert D.; Tompkins, Terry C.; and Willson, Carlton G., 4,522,911, Cl. 430-192.000.

Miller, William P.; and Shah, Atul, to Parker Hannifin Corporation. Hose coupling joint. 4,522,435, Cl. 285-256.000.

Milliken Research Corporation: *See—*
Berczi, Charles N.; and Hall, Karen, 4,522,872, Cl. 428-257.000.
Higgins, Kenneth B., 4,522,857, Cl. 428-95.000.

Minard, Everett S., to Elmar Industries, Inc. Valve control mechanism for reciprocating valves of a positive displacement rotary filling machine. 4,522,238, Cl. 141-142.000.

Minchak, Robert J.; and Schenk, William N., to B. F. Goodrich Company, The. Polymeric battery separators. 4,522,902, Cl. 429-252.000.

Minderhoud, Johannes K.; and Post, Martin F. M., to Shell Oil Company. Preparation of catalyst for producing middle distillates from syngas. 4,522,939, Cl. 502-242.000.

Minderhoud, Johannes K.: *See—*
Hoek, Arend; Minderhoud, Johannes K.; and Post, Martin F. M., 4,522,938, Cl. 502-307.000.

Minnesota Mining and Manufacturing Company: *See—*
Esmay, Donald L., 4,522,870, Cl. 428-252.000.

Minor, James C., to Eastman Kodak Company. Apparatus for producing finished booklets. 4,522,542, Cl. 412-25.000.

Misawa, Norio, to Tokyo Shibaura Denki Kabushiki Kaisha. Sealing device for electrostatic copying machine. 4,522,487, Cl. 355-15.000.

Mishima, Fumiyuki: *See—*
Takenoya, Hideaki; and Mishima, Fumiyuki, 4,522,520, Cl. 400-636.100.

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Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,522,905, Cl. 430-60.000.

Mitchell, Albert W.; and Miller, Richard W., to Wet Wraps, Inc. Evaporative non-dripping sweat band. 4,521,922, Cl. 2-171.000.

Mitchell, Donald H.: *See—*
Dechow, Fred J.; Mitchell, Donald H.; Pearce, Richard M.; Smith, C. Byron; and Brown, Sand T., 4,522,836, Cl. 426-271.000.

Mitchell, Howard L., III, to Exxon Research & Engineering Co. Phosphine and phosphonium compounds and catalysts. 4,522,932, Cl. 502-153.000.

Mitco Water Laboratories, Inc.: *See—*
Dechow, Fred J.; Mitchell, Donald H.; Pearce, Richard M.; Smith, C. Byron; and Brown, Sand T., 4,522,836, Cl. 426-271.000.

Mitono, Yoshiharu: *See—*
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Mitre Corporation, The: *See—*
Large, Scott F.; and Metcalf, Bruce D., 4,522,462, Cl. 350-96.190.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Arimoto, Satomi, 4,523,249, Cl. 361-58.000.
Hashizume, Atsushi, 4,522,186, Cl. 123-643.000.
Iwatani, Shiro, 4,523,215, Cl. 357-40.000.
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Mitsuhashi, Yasuo; and Ohsaki, Ichiro, to Canon Kabushiki Kaisha. Method for developing latent images using resin donor member. 4,522,907, Cl. 430-102.000.

Mitsui Petrochemical Ind.: *See—*
Albizzati, Enrico; Parodi, Sandro; and Barbe, Pier C., 4,522,930, Cl. 502-124.000.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Sasagawa, Katsuyoshi; Hyugaji, Akio; and Imai, Masao, 4,522,993, Cl. 526-292.400.

Mitsui Toatsu Kagaku Kabushiki Kaisha: *See—*
Katakami, Tsutomu; Fukazawa, Nobuyuki; Iizuka, Hajime; Nishina, Takashi; Kamiya, Joji; Tanaka, Yasuhito; and Nakano, Takuo, 4,523,011, Cl. 544-238.000.

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Mitutoyo Mfg. Co., Ltd.: *See—*
Uchino, Kenju, 4,521,967, Cl. 33-169.00R.

Mitzner, Erik L., to Westinghouse Electric Corp. Trap for an umbilical plug separated from a missile. 4,522,103, Cl. 89-1.811.

Miura, Shoshin: *See—*
Takahara, Kazuhiro; Kurahashi, Keizo; Gondo, Hiroyuki; Oki, Kenichi; and Miura, Shoshin, 4,523,189, Cl. 340-781.000.

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Miyagi, Hideo: *See—*
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Miyahara, Kingo, to Dowa Co., Ltd. Method of and apparatus for producing electrically processed foodstuffs. 4,522,834, Cl. 426-231.000.

Miyanaka, Motoshi: *See—*
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Miyauchi, Yujiro: *See—*
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Miyazaki, Yoshihisa: *See—*
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Miyazawa, Shyoichi: *See—*
Maejima, Hideo; Masuda, Ikuro; Matsumoto, Hidekazu; and Miyazawa, Shyoichi, 4,523,276, Cl. 364-200.000.

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Mizoguchi, Yasumitsu: *See—*
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Mizushima, Kunio: *See—*
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MKS Instruments, Inc.: *See—*
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Mlynek, Daniel: *See—*
Freyberger, Laurin C.; Mlynek, Daniel; and Schmidtpott, Friedrich, 4,523,222, Cl. 358-27.000.

Moba Holding Barneveld B.V.: *See—*
van Kattenbroek, Hendrik J., 4,522,293, Cl. 198-377.000.

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Chung, James Y. J.; and Rosthauser, James W., 4,522,979, Cl. 525-66.000.
Rosthauser, James W., 4,522,851, Cl. 427-386.000.

Mobil Oil Corporation: *See—*
Andress, Harry J.; and Ashjian, Henry, 4,522,736, Cl. 252-51.50A.
Chester, Arthur W.; and Chu, Yung F., 4,522,929, Cl. 502-77.000.
Chester, Arthur W.; Chou, Tai-Sheng; and Chu, Yung-Feng, 4,523,047, Cl. 585-322.000.
Chu, Pochen; and Pasquale, Gary M., 4,522,705, Cl. 208-120.000.
Dion, Eric P., 4,523,149, Cl. 324-377.000.
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Gould, Ronald M.; and Yurchak, Sergei, 4,523,046, Cl. 585-322.000.
Hopkins, Daniel N.; and Snavely, Earl S., 4,522,263, Cl. 166-272.000.
Horodysky, Andrew G.; and Landis, Phillip S., 4,522,629, Cl. 44-53.000.
Horodysky, Andrew G.; and Herd, Richard S., 4,522,632, Cl. 44-72.000.
Horodysky, Andrew G.; Ashjian, Henry; and Gawel, Henry A., 4,522,734, Cl. 252-49.600.
Lenhardt, Wilfried K., 4,523,303, Cl. 367-20.000.
Savins, Joseph G., 4,522,628, Cl. 44-1.0SR.
Sharps, Gordon V., Jr., 4,522,675, Cl. 156-244.110.
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Yan, Tsoung Y.; and Chen, Nai Y., 4,522,703, Cl. 208-106.000.

Modak, Shanta M.: *See—*
Fox, Charles L., Jr.; and Modak, Shanta M., 4,522,819, Cl. 514-187.000.

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Moeller, Charles P., to GA Technologies Inc. Cyclotron resonance maser amplifier and waveguide window. 4,523,127, Cl. 315-4.000.

Mojadad, Yousef, to Smith & Loveless, Inc. Multi-position plug valve. 4,522,233, Cl. 137-625.470.

Monarch Marking Systems, Inc.: *See—*
Brister, Eneas E.; and Williams, Frederick P., 4,522,672, Cl. 156-238.000.

Mondt, Josef; and Wirth, Thaddaus, to Hoechst Aktiengesellschaft. Process for the preparation of an aqueous copolymer dispersion. 4,522,972, Cl. 524-548.000.

Money, David K.: *See—*
Patrick, James F.; Crosby, Peter A.; Kuzma, Janusz A.; and Money, David K., 4,522,209, Cl. 128-419.00R.

Mono Power Company: *See—*
Gallup, Darrell L.; and Featherstone, John L., 4,522,728, Cl. 210-714.000.

Monod, Marie-Odile: *See—*
Gille, Etienne; Lucas, Jean; Mechineau, Didier; and Monod, Marie-Odile, 4,522,841, Cl. 427-4.000.

Montedison S.p.A.: *See—*
Albizzati, Enrico; Parodi, Sandro; and Barbe, Pier C., 4,522,930, Cl. 502-124.000.
Regiroli, Giovanni; Caprioli, Vincenzo; and Longoni, Angelo, 4,522,825, Cl. 514-517.000.

Montepolimeri S.p.A: *See—*
Gubitosa, Giuseppe; Berton, Antonio; Pernicone, Nicola; and Vidotto, Graziano, 4,522,931, Cl. 502-150.000.

Montgomery, Dan T.: *See—*
Nelson, Leon F.; Montgomery, Dan T.; Wyffels, Michael K.; and Sikula, William J., Jr., 4,522,553, Cl. 414-526.000.

Montres Universal S.A.: *See—*
Meister, Leonhard, 4,522,508, Cl. 368-276.000.

Mooney, Paul C. Locking spreader leg for tripod. 4,522,361, Cl. 248-188.800.

Moorcroft, Arthur L.: *See—*
Assard, Gerald L.; and Moorcroft, Arthur L., 4,523,120, Cl. 310-323.000.

Moores, Gregory E.: *See—*
Dibbern, John E., Jr.; and Moores, Gregory E., 4,523,116, Cl. 310-71.000.

Moormann, Alan E.; Pitzele, Barnett S.; and Jones, Peter H., to G. D. Searle & Co. Substituted 2-(3-aminophenoxymethyl)imidazolines. 4,523,020, Cl. 548-353.000.

Moran, Robert D., to United States of America, Navy. Apparatus for scanning a rotating gyroscope. 4,522,355, Cl. 244-3.200.

Morbark Industries, Inc.: *See—*
Morey, Norval K., 4,522,344, Cl. 241-79.000.

Morey, Norval K., to Morbark Industries, Inc. Wood chip screening and processing methods and apparatus. 4,522,344, Cl. 241-79.000.

Morgan, Clyde R. Bicycle handlebar grips. 4,522,083, Cl. 74-551.900.

Morgenschweis, Theo: *See—*
Utsch, Joachim; and Morgenschweis, Theo, 4,523,088, Cl. 235-487.000.

Mori, Kei. Artificial light source device. 4,523,257, Cl. 362-32.000.

Mori, Toshihiro, to NEC Corporation. Battery saver circuit for use with paging receiver. 4,523,332, Cl. 455-343.000.

Morimoto, Kiyoshi; and Takagi, Toshinori, to Futaba Denshi Kogyo Kabushiki Kaisha. Semiconductor device. 4,523,211, Cl. 357-4.000.

Moriyama, Shigeo: *See—*
Suzuki, Takatoshi; Tachikawa, Hideo; and Moriyama, Shigeo, 4,522,660, Cl. 148-20.300.

Morris, George H.; and Nicholls, Douglas C., to Morris Rod Weeder Co. Ltd. Packer wheel. 4,522,268, Cl. 172-518.000.

Morris Rod Weeder Co. Ltd.: *See—*
Morris, George H.; and Nicholls, Douglas C., 4,522,268, Cl. 172-518.000.

Morrison, Andrew D.; and Daud, Taher, to United States of America, National Aeronautics and Space Administration. Low defect, high purity crystalline layers grown by selective deposition. 4,522,661, Cl. 148-33.200.

Morrison, Bradley W., to Ogilvie Mills Ltd. Lactase-containing baking formulations. 4,522,832, Cl. 426-20.000.

Morse, Arthur L.: *See—*
Hewitt, Mary J.; and Morse, Arthur L., 4,523,326, Cl. 377-58.000.

Morse, James E.: *See—*
Kilroy, Eugene J.; Morse, James E.; Grimm, Thomas H.; and DeAnda, Nicholas, 4,522,607, Cl. 446-447.000.

Morse, John H.; and Skrynecki, Robert. Flexible safety belt with flashing light-emitting devices and alarm. 4,523,258, Cl. 362-108.000.

Morton Thiokol Inc.: *See—*
Bell, Frank H., 4,522,126, Cl. 102-370.000.

Moser, Mark D.: *See—*
Robinson, Delmar W.; Johnson, Russell W.; and Moser, Mark D., 4,522,935, Cl. 502-223.000.

Moss, Ernest K.: *See—*
Frentzel, Richard L.; and Moss, Ernest K., 4,522,877, Cl. 428-304.400.

Moss Rosenberg Verft A/S: *See—*
Schrader, Rolf F., 4,522,010, Cl. 52-745.000.

Mostek Corporation: *See—*
Johnson, Mark G., 4,523,110, Cl. 307-530.000.

Motorola, Inc.: *See—*
Peterson, Joe W., 4,523,107, Cl. 307-352.000.
Walczak, Thomas J.; Stone, Richard M.; and Cristiano, Gary M., 4,523,155, Cl. 330-279.000.

Mott, Ludwig: *See—*
Waniczek, Helmut; Bartl, Herbert; Hohmann, Gerhard; and Mott, Ludwig, 4,522,965, Cl. 524-109.000.

Mourao, Antonio M.; and Faist, Clifford H., to Texaco Inc. Diesel fuel containing rare earth metal and oxygenated compounds. 4,522,631, Cl. 44-57.000.

Mouri, Yasunori: *See—*
Amano, Matsuo; Sakamoto, Shinichi; Miki, Masayuki; Sasayama, Takao; Suda, Seiji; Mouri, Yasunori; and Ishii, Toshio, 4,523,284, Cl. 364-431.120.

Mowbray, Dorian F., to Lucas Industries plc. Fuel system for compression ignition engine. 4,522,182, Cl. 123-509.000.

Mowry, Donald E., to Don Mowry Flexo Parts, Inc. Conversion belt and stop plate assembly for upstacking corrugated box machinery. 4,522,617, Cl. 493-126.000.

MTU: *See—*
Dinger, Hans; Holzhauer, Hilbert; and Lang, Erberhard, 4,522,358, Cl. 244-110.00B.
Greune, Christian; and Kummeke, Heinrich, 4,522,025, Cl. 60-39.150.

Muanyagipari Kutato Intezet: *See—*
Kecskemethy, Geza; Kovacsay, Istvan; and Magdanyi, Laszlo , 4,522,963, Cl. 523-510.000.

Much, Joachim: *See—*
Cornils, Boy; Hibbel, Josef; Lieder, Bernhard; Much, Joachim; Schmidt, Volkmar; Wiebus, Ernst; and Konkol, Werner, 4,523,036, Cl. 568-454.000.

Mueller, Warren E.: *See—*
Seaburg, Paul A.; and Mueller, Warren E., 4,522,005, Cl. 52-544.000.

Muhlberger, Heinz; Starmuhler, Erwin; Weishaupt, Walter; Flohr, Peter; and Bourauel, Fritz, to Bayerische Motoren Werke AG. Service-interval display for motor vehicle and circuit for a display of this type. 4,523,283, Cl. 364-431.010.

Muhlemann, Hans R.; and Saxer, Ulrich P., to Lever Brothers Company. Oral compositions for hexetidine and zinc salts for the synergistic inhibition of dental plaque. 4,522,806, Cl. 424-52.000.

Mukai, Takamitsu: *See—*
Kato, Kimio; Kobayashi, Hisao; Mukai, Takamitsu; Kono, Hiroya; and Yamamoto, Taku, 4,522,567, Cl. 417-270.000.

Mulcahy, Joseph A., to J. Mulcahy Enterprises Incorporated. Continuous casting of steel. 4,522,249, Cl. 164-466.000.

Mullane, William E.: *See—*
Lund, David L.; Majumdar, Senajit J.; Mullane, William E.; and Krivanek, Louis, 4,523,068, Cl. 219-10.530.

Muller, Ludwig: *See—*
Adamowicz, Philippe; and Muller, Ludwig, 4,522,809, Cl. 424-89.000.

Multrus, Vladimir, to Honeywell GmbH. Diaphragm module for pneumatic control systems. 4,522,220, Cl. 137-85.000.
Munk, Werner G. Volume expanding beverage package. 4,522,332, Cl. 229-43.000.
Munschenborn, Dieter; and Rautenbach, Robert, to Nickel, Heinrich; and Eggeling, Ernst. Impact mill. 4,522,342, Cl. 241-57.000.
Murai, Toshimi: *See*—
Matsuoka, Hiroki; and Murai, Toshimi, 4,522,180, Cl. 123-489.000.
Murakami, Masatsugi: *See*—
Koebisu, Mamoru; Shinzawa, Masayuki; and Murakami, Masatsugi, 4,522,887, Cl. 428-461.000.
Murakami, Shigeomi: *See*—
Murakami, Yukihiro; Murakami, Shigeomi; and Maeda, Katsunosuke, 4,523,321, Cl. 373-110.000.
Murakami, Yukihiro; Murakami, Shigeomi; and Maeda, Katsunosuke, to Toray Industries, Inc. Vertical carbonizing furnace for use in the production of carbon fibers. 4,523,321, Cl. 373-110.000.
Muramatsu, Kiyohide: *See*—
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirofumi, 4,522,909, Cl. 430-137.000.
Murarka, Shyam P.: *See*—
Levinstein, Hyman J.; Murarka, Shyam P.; and Williams, David S., 4,522,842, Cl. 427-8.000.
Murata Manufacturing Co., Ltd.: *See*—
Murata, Michihiro; and Kitao, Shoichi, 4,522,060, Cl. 73-336.500.
Murata, Michihiro; and Kumada, Akira, 4,523,142, Cl. 324-65.00R.
Murata, Michihiro; and Kitao, Shoichi, to Murata Manufacturing Co., Ltd. Dry/dew/frost sensor. 4,522,060, Cl. 73-336.500.
Murata, Michihiro; and Kumada, Akira, to Murata Manufacturing Co., Ltd. Apparatus for sensing dew and frost. 4,523,142, Cl. 324-65.00R.
Murayama, Seiichi: *See*—
Yasuda, Makoto; and Murayama, Seiichi, 4,523,096, Cl. 250-373.000.
Murray, John F., to Teleflora, Inc. Retainer for attaching floral lid container. 4,521,990, Cl. 47-41.120.
Murray, Ledell L., to General Indicator Corporation. Menu board frame and insert. 4,521,984, Cl. 40-576.000.
Murrell, Lawrence L.: *See*—
McVicker, Gary B.; Carter, James L.; Murrell, Lawrence L.; and Ziemiak, John J., 4,522,928, Cl. 502-26.000.
Musser, John H.; and Brown, Richard E., to USV Pharmaceutical Corporation. Certain 1,3-oxazolo[4,5H]quinolines useful as antiallergy agents. 4,522,947, Cl. 514-293.000.
Musumiya, Raita; Sano, Hideo; Izichi, Yasuto; Inoue, Mitsuru; and Izawa, Kenzyu, to Honda Giken Kogyo Kabushiki Kaisha; and Fukuda Press Kogyo Kabushiki Kaisha. Pedal assist apparatus. 4,522,082, Cl. 74-512.000.
Mutzel, Wolfgang: *See*—
Gries, Heinz; and Mutzel, Wolfgang, 4,522,839, Cl. 426-548.000.
Mylander, Gerald D. Fill valve responsive to liquid level. 4,522,227, Cl. 137-393.000.
Nagamatsu, Henry T.: *See*—
Barnwell, Richard; Bushnell, Dennis; Nagamatsu, Henry T.; Bahi, Lakhdar; and Ross, Janet, 4,522,360, Cl. 244-204.000.
Nagano, Masashi, to Shimano Industrial Company Limited. Gear crank apparatus for a bicycle. 4,522,610, Cl. 474-141.000.
Nagase, Masaomi: *See*—
Ogawa, Toshihisa; Miyagi, Hideo; Nagase, Masaomi; and Matsuno, Kiyotaka, 4,522,168, Cl. 123-198.00D.
Nagatomo, Muneshige: *See*—
Koizumi, Hajime; Ohara, Shumpei; Kouda, Kiyoshi; Nagatomo, Muneshige; Sagara, Noriyasu; Togari, Satoshi; and Izumiyama, Hiroo, 4,522,254, Cl. 165-34.000.
Nagoya, Yoshinari: *See*—
Ochiai, Hideo; Nagoya, Yoshinari; Fujimoto, Ryoichi; Yamazaki, Susumu; Sasamoto, Nobuhiko; and Ishida, Shinichi, 4,522,040, Cl. 62-419.000.
Nakada, Akiyoshi: *See*—
Inoue, Toshitsugu; Nakada, Akiyoshi; Kaji, Haruo; Doi, Makoto; and Takezawa, Kuninori, 4,522,555, Cl. 414-733.000.
Nakagawa, Takao: *See*—
Gomi, Shimpei; Takeuchi, Tomomitsu; Matsuo, Itaru; Tsutsui, Toshio; Nakagawa, Takao; and Miwa, Shigeru, 4,522,627, Cl. 44-1.00R.
Nakajima, Hideki: *See*—
Sato, Jun; and Nakajima, Hideki, 4,522,354, Cl. 242-219.000.
Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; Furujho, Sakae; Okane, Kohji; and Anezaki, Shoji, to Sumitomo Metal Industries, Ltd. Process for production of low phosphorus alloy. 4,522,650, Cl. 75-48.000.
Nakajima, Masahiro; and Hashimoto, Hiromi, to Nippon Electric Co., Ltd. Digital signal communication system for multi-level modulation including unique encoder and decoder. 4,523,323, Cl. 375-37.000.
Nakajima, Yosuke: *See*—
Hirose, Masataka; Kawajiri, Kazuhiro; and Nakajima, Yosuke, 4,523,214, Cl. 357-30.000.
Nakamura, Akira: *See*—
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,522,278, Cl. 180-79.100.
Nakamura, Kazuaki, to Aisin Seiki Kabushiki Kaisha. Stirling-cycle refrigerator. 4,522,032, Cl. 62-6.000.
Nakamura, Kazumasa: *See*—
Noda, Munetaka; Tobe, Yukio; Taga, Yutaka; Nakamura, Shinya; Nakamura, Kazumasa; Inagaki, Takafumi; and Ito, Hiroshi, 4,523,281, Cl. 364-424.100.
Nakamura, Shinya: *See*—
Noda, Munetaka; Tobe, Yukio; Taga, Yutaka; Nakamura, Shinya; Nakamura, Kazumasa; Inagaki, Takafumi; and Ito, Hiroshi, 4,523,281, Cl. 364-424.100.
Nakano, Takuo: *See*—
Katakami, Tsutomu; Fukazawa, Nobuyuki; Iizuka, Hajime; Nishina, Takashi; Kamiya, Joji; Tanaka, Yasuhito; and Nakano, Takuo, 4,523,011, Cl. 544-238.000.
Nakate, Hiroshi; Kondo, Masatoshi; and Gosho, Nobuyuki, to Sumitomo Metal Industries, Ltd. Production of electrical resistance welded steel tubes with welds having improved toughness. 4,523,072, Cl. 219-67.000.
Nakayama, Kiyoshi: *See*—
Koguchi, Toshiro; Kase, Hiroshi; Kawamoto, Isao; Kasai, Masaji; Shirahata, Kunikatsu; Okachi, Ryo; and Nakayama, Kiyoshi, 4,522,812, Cl. 514-7.000.
Namba, Masaharu: *See*—
Kina, Hideki; Iijima, Toshiyuji; Tanabe, Eizo; Kazama, Toyoki; and Namba, Masaharu, 4,522,904, Cl. 430-54.000.
Napp Systems (USA), Inc.: *See*—
Hallman, Robert W., 4,522,910, Cl. 430-157.000.
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirofumi, to Fujitsu Limited. Process for preparing electrostatic developer. 4,522,909, Cl. 430-137.000.
National Distillers and Chemical Corporation: *See*—
Fayter, Richard G., Jr.; and Harris, Eugene G., 4,522,749, Cl. 252-522.00R.
Hall, Allen L.; and Fayter, Richard G., Jr., 4,522,950, Cl. 514-471.000.
Heimberg, Manfred, 4,522,998, Cl. 526-309.000.
Heimberg, Manfred, 4,522,999, Cl. 526-309.000.
National Semiconductor Corporation: *See*—
Sauer, Don R., 4,523,156, Cl. 330-282.000.
Naylor, Peter W.: *See*—
Phillips, Richard A.; and Naylor, Peter W., 4,523,173, Cl. 337-367.000.
NCR Canada Ltd - NCR Canada Ltee: *See*—
Cain, John D., 4,523,330, Cl. 382-7.000.
Mazumder, Ali T., 4,522,122, Cl. 101-93.020.
Therrien, Roger H., 4,523,231, Cl. 358-139.000.
NCR Corporation: *See*—
Lewis, Maurice W.; and Lakes, Stephen D., 4,523,207, Cl. 346-214.000.
Schnathorst, Vernon K., 4,523,277, Cl. 364-200.000.
NEC Corporation: *See*—
Mori, Toshihiro, 4,523,332, Cl. 455-343.000.
Takahashi, Sadayuki; Yonezawa, Masatomo; Ochi, Atsushi; Yano, Takeshi; Hamatsuki, Takeshige; and Fukui, Izumu, 4,523,121, Cl. 310-334.000.
Neefe, Charles W. Vapor phase hydrogen generator. 4,522,695, Cl. 204-266.000.
Neese, Gerhard, to FAG Kugelfischer Georg Schafer, Kommanditgesellschaft auf Aktien. Roller bearing support structure with metal window cage. 4,522,516, Cl. 384-572.000.
Neff, James A., to Mac Valves, Inc. Valve spool. 4,522,374, Cl. 251-356.000.
Neilson, James M.: *See*—
Taylor, Thomas V.; and Neilson, James M., 4,522,205, Cl. 128-303.170.
Neilson, Robert H.; and Wisian-Neilson, Patty J. Polyphosphazene compounds and method of preparation. 4,523,009, Cl. 528-399.000.
Neis, Thomas W.; and Swartz, Harold L., to Sperry Corporation. Temperature stable arcuate bubble gravity sensor mount. 4,521,974, Cl. 33-379.000.
Nelson, Alexander. Toothpick dispenser. 4,522,314, Cl. 221-190.000.
Nelson, Arthur R., to Aetna Telecommunications Laboratories. Fiber optic sensors for simultaneously detecting different parameters in a single sensing tip. 4,523,092, Cl. 250-227.000.
Nelson, Dale H., to Prime Computer, Inc. AC to DC conversion system with current spreading circuit. 4,523,266, Cl. 363-26.000.
Nelson, John F., to Illinois Tool Works, Inc. Wiper motor mounting grommet. 4,522,378, Cl. 267-141.400.
Nelson, Leon F.; Montgomery, Dan T.; Wyffels, Michael K.; and Sikula, William J., Jr., to Deere & Company. Combine power boost system. 4,522,553, Cl. 414-526.000.
Nelson, Rodney C., to Bemis Company, Inc. Bag inserter machine. 4,522,012, Cl. 53-175.000.
Nemoto, Shigeru; Kitajima, Goro ; Saitou, Sinichi; and Osada, Hazime, to Olympus Optical Co., Ltd. Signal detection operating lever device of magnetic recording tape reproducing apparatus. 4,523,247, Cl. 360-137.000.
Neukam, Theo; Brauer, Wolfgang; and Korte, Siegfried, to Bayer Aktiengesellschaft. Process for the production of α, β-unsaturated carboxylic acid alkyl esters sulfonated in the α-position and compounds obtainable by this process. 4,522,764, Cl. 260-456.00R.
Neumann, Don B., to Excellon Industries. Scanning beam reference and read system. 4,523,093, Cl. 250-234.000.
Neumeier, Gunter F.: *See*—
Bull, John; Croft, Leon; DeVaney, David B.; Davis, Russell R.; Hinshaw, David L.; Jotwani, Haresh C.; Kandell, Ronald J.; Kurtz, Richard F.; Lee, Ernest O., Jr.; Neumeier, Gunter F.; Richards, Glenn L.; and Scott, Richard, 4,523,308, Cl. 370-56.000.
Neuschaffer, Karl-Heinz; Engels, Hans-Werner; Gebert, Hans-Jurgen; Laube, Robert W.; and Zoche, Gunter, to Dynamit Nobel Aktiengesellschaft. Machine base and process for manufacture thereof. 4,522,652, Cl. 106-84.000.
Neuzil, Richard W.: *See*—
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,522,761, Cl. 260-419.000.
New Draulics, Inc.: *See*—
Lind, Michael A.; and Dunn, Michael R., 4,521,963, Cl. 30-92.000.
NGK Insulators, Ltd.: *See*—
Ogawa, Yutaka; Takeuchi, Tsunezo; and Otaka, Masashi, 4,522,668, Cl. 156-89.000.
Nguyen-Dinh, Xuan: *See*—
Gigliotti, Michael F. X., Jr.; Yang, Swe-Wong; Jackson, Melvin R.; Bruch, Charles A.; and Nguyen-Dinh, Xuan, 4,522,664, Cl. 148-404.000.
Nguyen, Minh-Tri. Switching electronic ignition. 4,522,185, Cl. 123-637.000.
Nibby, Chester M., Jr.; Goldin, Reeni; and Andrews, Timothy A., to Honeywell Information Systems Inc. Partial defective chip memory support system. 4,523,313, Cl. 371-10.000.
Nicholas, David M., to Air Products and Chemicals, Inc. Nitrogen and phosphorus removal from wastewater. 4,522,722, Cl. 210-605.000.
Nicholas, John D., to Elastomer Seals, Inc. Pavement joint seal with chevron-shaped walls. 4,522,413, Cl. 277-205.000.
Nicholls, Douglas C.: *See*—
Morris, George H.; and Nicholls, Douglas C., 4,522,268, Cl. 172-518.000.
Nickel, Heinrich: *See*—
Munschenborn, Dieter; and Rautenbach, Robert, 4,522,342, Cl. 241-57.000.
Nihon Kohden Corporation: *See*—
Kurahashi, Muneshige; and Yamamori, Shinji, 4,522,204, Cl. 128-719.000.
Nihon Schumacher K.K.: *See*—
Kuwajima, Soichi; and Sakamoto, Naojiro, 4,522,719, Cl. 210-457.000.
Niida, Chiaki: *See*—
Kamifuji, Hiroshi; Ito, Tomoo; and Niida, Chiaki, 4,522,175, Cl. 123-339.000.
Niiho, Masaaki; and Itagaki, Takuo, to Asahi Kogaku K.K.K. Averaging circuit. 4,523,108, Cl. 307-353.000.
Nikolich, Milovan, to Signode Corporation. Portable gas-powered tool with linear motor. 4,522,162, Cl. 123-46.50C.
Ninomiya, Ken; Suzuki, Keizo; and Nishimatsu, Shigeru, to Hitachi, Ltd. Surface treatment apparatus. 4,522,674, Cl. 156-345.000.
Nippon Electric Co., Ltd.: *See*—
Hibiya, Taketoshi; Ohta, Yoshinori; and Matsumi, Koichi, 4,522,473, Cl. 350-377.000.
Nakajima, Masahiro; and Hashimoto, Hiromi, 4,523,323, Cl. 375-37.000.
Nippon Kogaku K. K.: *See*—
Sato, Yu, 4,523,157, Cl. 331-4.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Hasebe, Nobuhisa; Kawada, Hiroshi; Yokoyama, Naoki; and Komori, Shigeki, 4,522,540, Cl. 409-293.000.
Nippon Notion Kogyo Co., Ltd.: *See*—
Kanzaka, Yoshihiro, 4,521,943, Cl. 24-689.000.
Nippon Sheet Glass Co., Ltd.: *See*—
Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,522,966, Cl. 524-114.000.
Nippon Soken, Inc.: *See*—
Kawai, Hisasi; Ina, Toshikazu; Igashira, Toshihiko; Nomura, Ken; Yoshida, Masakazu; Komoda, Takao; and Hamanishi, Makio, 4,522,177, Cl. 123-478.000.
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,522,278, Cl. 180-79.100.
Tanaka, Hiroaki; and Akita, Shigeyuki, 4,523,195, Cl. 340-870.370.
Nippon Steel Corporation: *See*—
Shindow, Yoshio; Tsutsumi, Masaya; Hotta, Wataru; and Miyauchi, Yujiro, 4,522,892, Cl. 428-628.000.
Nippondenso Co., Ltd.: *See*—
Noda, Munetaka; Tobe, Yukio; Taga, Yutaka; Nakamura, Shinya; Nakamura, Kazumasa; Inagaki, Takafumi; and Ito, Hiroshi, 4,523,281, Cl. 364-424.100.
Takao, Mitsunori; Kimura, Takahiko; and Hirabayashi, Yuji, 4,522,176, Cl. 123-339.000.
Yano, Kiyotoshi; Suzuki, Yutaka; and Yamada, Yoshichika, 4,522,372, Cl. 251-141.000.
Nishi, Yoshio: *See*—
Konaka, Masami; Iwai, Hiroshi; and Nishi, Yoshio, 4,523,213, Cl. 357-23.700.
Nishida, Takashi: *See*—
Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,523,024, Cl. 549-407.000.
Nishikawa, Ikuo, to Kabushiki Kaisha Universal. Device for generating impact sound for slot machine. 4,522,399, Cl. 273-143.00R.
Nishikawa, Masaji; Takagi, Takeji; and Ueki, Masao, to Olympus Optical Co., Ltd. Elastomer member with non-tacky surface treating layer and method of manufacturing same. 4,522,866, Cl. 428-216.000.
Nishimatsu, Shigeru: *See*—
Ninomiya, Ken; Suzuki, Keizo; and Nishimatsu, Shigeru, 4,522,674, Cl. 156-345.000.
Nishimura, Hirofumi; Oda, Hiroyuki; Kaneko, Tadashi; Takai, Akira; and Takeuchi, Nobuo, to Mazda Motor Corporation. Engine speed detecting system for multiple-displacement engine. 4,522,179, Cl. 123-481.000.
Nishina, Takashi: *See*—
Katakami, Tsutomu; Fukazawa, Nobuyuki; Iizuka, Hajime; Nishina, Takashi; Kamiya, Joji; Tanaka, Yasuhito; and Nakano, Takuo, 4,523,011, Cl. 544-238.000.
Nishioka, Kimihiko, to Olympus Optical Co., Ltd. Adapter lens system for use with photographic cameras. 4,522,471, Cl. 350-449.000.
Nishioka, Youiti: *See*—
Katsuki, Kosuke; Nishioka, Youiti; and Nomura, Susumu, 4,521,931, Cl. 8-149.200.
Nissan Motor Company, Limited: *See*—
Hasegawa, Yoji; and Shinzawa, Motohiro, 4,522,027, Cl. 60-274.000.
Hasegawa, Yoji; and Shinzawa, Motohiro, 4,522,028, Cl. 60-277.000.
Matsuno, Yoshio, 4,522,114, Cl. 98-2.090.
Ogawa, Naoki, 4,522,165, Cl. 123-195.00C.
Yoshida, Kenji; and Sanada, Yuichi, 4,522,419, Cl. 280-96.000.
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Niven, Benjamin F., Jr., to R. J. Reynolds Tobacco Company. Dicing apparatus for sheet material. 4,522,096, Cl. 83-408.000.
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Noack, Timothy J.; and Rathie, Lester C., to Otis Engineering Corporation. Valve. 4,522,370, Cl. 251-63.500.
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Bethea, James R., 4,522,855, Cl. 428-49.000.
Nocopi Inc.: *See*—
Gardner, Norman A.; and Voticky, Michael P., 4,522,429, Cl. 283-91.000.
Noda, Munetaka; Tobe, Yukio; Taga, Yutaka; Nakamura, Shinya; Nakamura, Kazumasa; Inagaki, Takafumi; and Ito, Hiroshi, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Automatic transmission controller for automobiles. 4,523,281, Cl. 364-424.100.
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Nordin, Olof; and Forsberg, Soren, to Forsheda AB. Combination mould portion and protective element for pipe. 4,522,669, Cl. 156-157.000.
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Begg, Geoffrey S., 4,523,187, Cl. 340-661.000.
Normann, Nils A., to Baylor College of Medicine. Method and an apparatus for intra-aortic balloon monitoring and leak detection. 4,522,194, Cl. 128-1.00D.
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Liebert, Richard B.; and White, Roger P., 4,522,472, Cl. 350-362.000.
North American Systems, Inc.: *See*—
Weinberger, Royal, 4,522,298, Cl. 206-216.000.
Northern Telecom Limited: *See*—
Hogeboom, John G., 4,523,150, Cl. 328-133.000.
Shannon, Michael A., 4,522,501, Cl. 366-142.000.
Northland Aluminum Products, Inc.: *See*—
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Northrop Corporation: *See*—
Stappaerts, Eddy A., 4,523,320, Cl. 372-87.000.
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Chatterton, Robert T., Jr., 4,522,831, Cl. 514-169.000.

Norwich Eaton Pharmaceuticals, Inc.: *See—*
Fox, Charles L., Jr.; and Modak, Shanta M., 4,522,819, Cl. 514-187.000.
Novak, Vaclav; Prusek, Jaroslav; and Trojan, Vaclav, to Statni Vyzkumny Ustav Ochrany Materialu G.V. Indicator terminal for coulometric measuring devices. 4,522,699, Cl. 204-434.000.
Novy, Robert A.: *See—*
Weimer, Ralph E.; Kalowski, Thaddeus J.; and Novy, Robert A., 4,522,117, Cl. 99-348.000.
Nozue, Shigehiro; and Fukuoka, Tatsuhiko, to Taiho Kogyo Co., Ltd. Tapered-land thrust bearing device. 4,522,513, Cl. 384-368.000.
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Nussbaumer, Dietmar; Perl, Horst; and Vinh, Khuong T., to Sartorius GmbH. Apparatus for static membrane filtration. 4,522,713, Cl. 210-136.000.
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Schlom, Jeffery; Colcher, David; Nuti, Marianna; Hand, Patricia H.; and Austin, Faye, 4,522,918, Cl. 435-68.000.
Nutt, Ruth F., to Merck & Co., Inc. Cyclic hexapeptide somatostatin analogs. 4,522,813, Cl. 424-177.000.
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Octel S.A.: *See—*
Rodde, Christian; and Desarnaud, Jean, 4,522,059, Cl. 73-223.000.
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Odaka, Kentaro: *See—*
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Oehlert, James A. Interlocking building panel. 4,522,007, Cl. 52-588.000.
Oertel, Richard W., III; Richter, Reinhard H.; and Tucker, Benjamin W., to Upjohn Company, The. Diisocyanate. 4,522,762, Cl. 260-453.00A.
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Yates, Donald N., Jr.; and Oestrich, Michael, 4,522,665, Cl. 149-21.000.
Oetiker, Hans. Hose clamp. 4,521,940, Cl. 24-282.000.
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Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Method for producing crystals. 4,522,680, Cl. 156-624.000.
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo. Amorphous silicon photoconductive member with interface and rectifying layers. 4,522,905, Cl. 430-60.000.
Ogawa, Naoki, to Nissan Motor Company, Limited. Noise reducing cover for an internal combustion engine. 4,522,165, Cl. 123-195.00C.
Ogawa, Toshihisa; Miyagi, Hideo; Nagase, Masaomi; and Matsuno, Kiyotaka, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for controlling fuel-injection amount in diesel engine. 4,522,168, Cl. 123-198.00D.
Ogawa, Yuji, to Olympus Optical Co., Ltd. Sample delivering method for use in automatic chemical analysis. 4,522,921, Cl. 436-47.000.
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Ohmuro, Masaru: *See—*
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Ohta, Hiroshi: *See—*
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Oswald, Norman D.; Dean, Robert R.; and Mankey, Harry S., to Standard Manufacturing Co., Inc. Aerial weapons handling trailer. 4,522,548, Cl. 414-458.000.
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Parg, Adolf; Hamprecht, Gerhard; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Herbicidal diphenyl ethers, their preparation and their use as herbicides. 4,523,034, Cl. 564-79.000.
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Bishop, Timothy E.; and Pasternack, George, 4,522,465, Cl. 350-96.300.
Patel, Pravin K. Process of preparing a recording member having a variable thickness recording layer. 4,522,848, Cl. 427-131.000.
Patrick, James F.; Crosby, Peter A.; Kuzma, Janusz A.; and Money, David K., to Commonwealth of Australia, The. Cochlear prosthesis test system. 4,522,209, Cl. 128-419.00R.
Patton, John V.: *See—*
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Paul Rauschert GmbH & Co. KG: *See—*
Billet, Reinhard; Kober, Rainer; Mackowiak, Jerzy; and Geipel, Werner, 4,522,767, Cl. 261-94.000.
Paul Revere Corporation, The: *See—*
Rieke, David M., 4,522,296, Cl. 198-548.000.
Payne, Fred A., to R & D Associates. Optical vernier positioning for robot arm. 4,523,100, Cl. 250-561.000.
Peabody Noise Control, Inc.: *See—*
Fearon, William W.; and Macy, Arnel M., 4,522,284, Cl. 181-292.000.
Pearce, Richard M.: *See—*
Dechow, Fred J.; Mitchell, Donald H.; Pearce, Richard M.; Smith, C. Byron; and Brown, Sand T., 4,522,836, Cl. 426-271.000.

Peavey Electronics Corp.: *See—*
Peavey, Hartley D.; and Powers, Michael V., 4,522,101, Cl. 84-1.160.

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Peckham, George W. Hopper car gate opener and method of operating a hopper car gate. 4,522,545, Cl. 414-376.000.

Peddle, Darren C., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Adjustable jig assembly. 4,522,380, Cl. 269-71.000.

Pedersen, Niels C., to University of California, The Regents of the. Feline calicivirus vaccine. 4,522,810, Cl. 424-89.000.

Peery, John R.; and Eckenhoff, James B., to ALZA Corporation. Multiple fluid pulse dispenser. 4,522,622, Cl. 604-191.000.

Peiffer, Dennis G.; and Lundberg, Robert D., to Exxon Research & Engineering Co. Controlled gelation on nonaqueous solutions containing low charge density polyampholytes. 4,522,960, Cl. 523-339.000.

Pellon Corporation: *See—*
Bregatta, Ray J., 4,521,921, Cl. 2-93.000.

Pelzner, Roger B.: *See—*
Stark, Marvin M.; Soelberg, Kenneth B.; and Pelzner, Roger B., 4,522,594, Cl. 433-141.000.

Penco, Sergio: *See—*
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Pendse, Anil D.: *See—*
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Pennwalt Corporation: *See—*
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Pentel Kabushiki Kaisha: *See—*
Saito, Sigeru; Shimizu, Takahiko; and Tamura, Takasi, 4,522,525, Cl. 401-258.000.

Perkins, Thomas K., to Atlantic Richfield Company. Single well electrical oil stimulation. 4,522,262, Cl. 166-248.000.

Perl, Horst: *See—*
Nussbaumer, Dietmar; Perl, Horst; and Vinh, Khuong T., 4,522,713, Cl. 210-136.000.

Pernicone, Nicola: *See—*
Gubitosa, Giuseppe; Berton, Antonio; Pernicone, Nicola; and Vidotto, Graziano, 4,522,931, Cl. 502-150.000.

Persyk, Dennis E., to Siemens Gammasonics, Inc. Radiation detecting apparatus with reduced magnetic field sensitivity. 4,523,091, Cl. 250-213.0VT.

Peters, Edward N., to General Electric Company. Polyetherimides of di(phthalic anhydride) derivatives of di(substituted phenol) sulfones. 4,523,006, Cl. 528-172.000.

Peters, Rex B., to Sundstrand Data Control, Inc. Digital processor for use with an accelerometer based angular rate sensor. 4,522,062, Cl. 73-505.000.

Petersen, Richard W.; Pierini, John M.; and Yeo, Herbert G., to Augat Inc. Electrical connector programming tool. 4,522,053, Cl. 720-316.000.

Peterson, Gudmundur P.; and d'Anjou, Daniel, to Pratt & Whitney Canada Inc. Power/torque limiter unit for free turbine type engines. 4,522,026, Cl. 60-39.281.

Peterson, Joe W., to Motorola, Inc. Switched capacitor comparator. 4,523,107, Cl. 307-352.000.

Peterson Laboratories: *See—*
Peterson, William, 4,522,777, Cl. 264-223.000.

Peterson, William, to Peterson Laboratories. Method and apparatus for making corrected custom foot molds. 4,522,777, Cl. 264-223.000.

Petrolite Corporation: *See—*
Quinlan, Patrick M., 4,522,643, Cl. 71-67.000.

Pettibone, Donald W.: *See—*
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Pettigrew, F. Alexander; Li, Hsueh M.; and Lum, Genevieve S., to Ethyl Corporation. Halophosphazene polymers. 4,522,797, Cl. 423-300.000.

Pettigrew, F. Alexander: *See—*
Lum, Genevieve S.; Li, Hsueh M.; and Pettigrew, F. Alexander, 4,522,798, Cl. 423-300.000.

Pettigrew, Robert M.; Bradbrook, John D.; Smith, Alan M.; and Fisher, John H., to Comtech Research. Information storage and retrieval. 4,522,482, Cl. 355-3.00R.

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Pfister GmbH: *See—*
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Pfizenmaier, Heinz: *See—*
Grunwald, Werner; Pfizenmaier, Heinz; de la Prieta, Claudio; Schmid, Kurt; and Schmidt, Ewald, 4,522,671, Cl. 156-235.000.

Pfost, Dale R., to Brown University. Laser tape systems. 4,523,319, Cl. 372-54.000.

Philip Morris Incorporated: *See—*
Osmalov, Jerome S., 4,522,214, Cl. 131-79.000.

Philipak, Stanley M.: *See—*
Hoyt, Harold C., Jr.; Martinez, Danilo C.; and Philipak, Stanley M., 4,523,077, Cl. 219-137.0PS.

Phillips, James D., to J. D. Phillips Corporation. Adjustable cam bar assembly. 4,522,189, Cl. 125-11.0TP.

Phillips Petroleum Company: *See—*
Aldag, Arthur W., Jr.; and Gardner, Lloyd E., 4,522,709, Cl. 208-216.00R.
Hill, H. Wayne, Jr.; and Reed, Jerry O., 4,522,867, Cl. 428-220.000.
Kukes, Simon G.; and Battiste, David R., 4,522,702, Cl. 208-89.000.

Phillips, Richard A.; and Naylor, Peter W., to Otter Controls Limited. Electric switches. 4,523,173, Cl. 337-367.000.

Phoenix Manufacturing, Inc.: *See—*
Johnson, Edward J.; and Koble, Robert L., Jr., 4,522,558, Cl. 416-187.000.

Piasecki, Joshua; Zelinkovsky, Reuven; Segev, Aharon; and Henquin, Teodor, to Electronics Corporation of Israel, Ltd. Time assignment speech interpolation apparatus. 4,523,309, Cl. 370-81.000.

Pickens, Ralph D. Semi-automatic cartridge reloading machine. 4,522,102, Cl. 86-27.000.

Pierini, John M.: *See—*
Petersen, Richard W.; Pierini, John M.; and Yeo, Herbert G., 4,522,053, Cl. 720-316.000.

Pietro Laverda S.p.A.: *See—*
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Pike, Winthrop S.: *See—*
Jose, David L.; Pike, Winthrop S.; and Craft, Jack, 4,523,105, Cl. 307-261.000.

Pilboue, Pierre, to Trefileries et Cableries Chiers-Chatillon-Gorcy. Apparatus for winding wire net with simple twist. 4,522,345, Cl. 242-55.000.

Pilkington Brothers p.l.c.: *See—*
Shah, Ramesh C. R.; Clare, Hugh J.; and Berry, Ronald F., 4,522,544, Cl. 414-330.000.

Pinkham, Thomas A.: *See—*
Baker, Anthony C.; and Pinkham, Thomas A., 4,523,054, Cl. 174-45.00R.

Pioneer Electronic Corporation: *See—*
Ishida, Kohji; Numata, Tatsuo; and Sakamoto, Masaharu, 4,523,329, Cl. 381-3.000.

Piorr, Robert: *See—*
Schmid, Karl; Baumann, Horst; Geke, Jurgen; Germscheid, Hans-Gunther; Ludecke, Werner; Piorr, Robert; Rossmann, Christian; Scharf, Rolf; and Schlussler, Hans-Joachim, 4,522,740, Cl. 252-174.210.

Pirooz, Perry P., to Owens-Illinois, Inc. Sealing glass and method of making a Willemite filler therefor. 4,522,925, Cl. 501-15.000.

Pitel, Ira J., to Cornell Dubilier Electronics. Modular lighting control with circulating inductor. 4,523,129, Cl. 315-291.000.

Pitel, Ira J., to Cornell Dubilier Electronics Inc. Four lamp modular lighting control. 4,523,130, Cl. 315-291.000.

Pitney Bowes Inc.: *See—*
Hohl, G. Burnell; and Gasiunas, Donatas V., 4,523,055, Cl. 179-2.0DP.

Pitzele, Barnett S.: *See—*
Moormann, Alan E.; Pitzele, Barnett S.; and Jones, Peter H., 4,523,020, Cl. 548-353.000.

Plastic Specialties and Technologies, Inc.: *See—*
Elias, Moenes L.; and Burger, Walter L., 4,522,683, Cl. 156-666.000.

Platt, Herbert: *See—*
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Plessey Overseas Limited: *See—*
Whatmore, Roger W.; and Young, Iain M., 4,523,119, Cl. 310-313.00A.

Pletcher, Erwin C. Ring for orthodontic bracket. 4,522,590, Cl. 433-15.000.

Plikuhn, Keith A. Drum and drum body formed from adhered, solid blocks of wood. 4,522,006, Cl. 52-585.000.

Plough, Inc.: *See—*
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Ploussios, George. Waveguide polarizer having conductive and dielectric loading slabs to alter polarization of waves. 4,523,160, Cl. 333-21.00A.

Plude, Leo W.: *See—*
Church, Royce F.; McCaffrey, Donald B.; and Plude, Leo W., 4,522,359, Cl. 244-129.500.

Plummer, James D.: *See—*
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Podiak, Richard S.: *See—*
Lenk, Michael; and Podiak, Richard S., 4,522,170, Cl. 123-198.0DC.

Pohl, Fritz: *See—*
Klein, Joachim; Widdecke, Hartmut; Doscher, Frank; and Pohl, Fritz, 4,522,952, Cl. 521-31.000.

Pohl, Peter. Torque wrench. 4,522,075, Cl. 73-862.230.

Poister, Clarence E. Dough roller and shaper device for pie crusts and the like. 4,522,580, Cl. 425-193.000.

Polaroid Corporation: *See—*
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Polinski, Stanley F.: *See—*
Bacchiere, Daniel P.; and Polinski, Stanley F., 4,523,250, Cl. 361-145.000.

Poll, Robert F.: *See—*
Labib, Mohamed E.; Poll, Robert F.; and Wang, Chih-Chun, 4,522,747, Cl. 252-511.000.

Pollock, Charles. Stacking chair. 4,522,444, Cl. 297-239.000.

Polysar Limited: *See—*
Dunn, John R., 4,522,852, Cl. 428-36.000.

Pommez, Philippe J. Absorbent article structure and absorbent article. 4,522,874, Cl. 428-284.000.

Popescu, Micrea C.: *See—*
Lenk, Robert P.; Fountain, Michael W.; Janoff, Andrew S.; Ostro, Marc J.; and Popescu, Micrea C., 4,522,803, Cl. 424-1.100.

Popken, Jan H., to Popken Metaal B.V. Apparatus for the manufacture of profile segments. 4,523,209, Cl. 364-469.000.

Popken Metaal B.V.: *See—*
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Poss, Richard F.: *See—*
Yoo, Jin S.; Karch, John A.; Poss, Richard F.; and Burk, Emmett H., Jr., 4,522,937, Cl. 502-302.000.

Post, Martin F. M.: *See—*
Hoek, Arend; Minderhoud, Johannes K.; and Post, Martin F. M., 4,522,938, Cl. 502-307.000.
Minderhoud, Johannes K.; and Post, Martin F. M., 4,522,939, Cl. 502-242.000.

Postman, William: *See—*
Donnelly, Edward N.; Haberkorn, Wilhelm A.; Hagen, Gerry A.; McGregor, Thomas R.; and Postman, William, 4,522,774, Cl. 264-168.000.

Poth, Rainer: *See—*
Grunberg, Kurt; Poth, Rainer; Werner, Peter; Koch, Kurt; Schweppe, Friedrich; and Voigtlander, Kurt, 4,523,253, Cl. 361-335.000.

Powell, Ronald A.; and Fulks, Ronald T., to Varian Associates, Inc. Process for producing a layer of a metal silicide by applying multichromatic radiation. 4,522,845, Cl. 427-53.100.

Power Pry Corporation: *See—*
Wilson, Randall J.; and Wilson, Bruce C., 4,522,054, Cl. 72-392.000.

Powers, Michael V.: *See—*
Peavey, Hartley D.; and Powers, Michael V., 4,522,101, Cl. 84-1.160.

Poyer, David D. Outdoor lighting fixture. 4,523,263, Cl. 362-267.000.

PPG Industries, Inc.: *See—*
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Tang, Robert H., 4,522,991, Cl. 526-230.500.

Pratt & Whitney Canada Inc.: *See—*
Peterson, Gudmundur P.; and d'Anjou, Daniel, 4,522,026, Cl. 60-39.281.

Preiser, Herman S.; Ticker, Arthur; and Hatley, Kenneth J., to United States of America, Navy. Method and apparatus for coating submerged portions of floating structures. 4,522,882, Cl. 428-351.000.

Press, Irving D., to UMC Industries, Inc. Components for lined piping system with anchored liners and method of manufacture. 4,522,432, Cl. 285-55.000.

Presto Lock, Inc.: *See—*
Remington, Richard C., 4,523,167, Cl. 335-230.000.

Price, Frank C. Thermal conditioning of material in containers. 4,522,586, Cl. 432-11.000.

Primages, Inc.: *See—*
Chu, Mosi; and Kuo, Meng S., 4,522,382, Cl. 270-1.100.

Prime Computer, Inc.: *See—*
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Printing Developments, Inc.: *See—*
Sharkozy, Frank L.; and Kiesler, James A., 4,522,912, Cl. 430-278.000.

Prof. Dr.-Ing. Werner H. Bloss: *See—*
Reinhardt, Erich; and Erhardt, Rainer, 4,523,278, Cl. 364-413.000.

Progress Equities Incorporated: *See—*
Berry, W. Wess; Schmeda, Rae A.; and Kibler, Holly S., 4,522,726, Cl. 210-660.000.

Progressive Machinery Sales, Inc.: *See—*
Toffolon, Joseph F., 4,522,091, Cl. 82-38.00R.

Provost, Marcelle: *See—*
Leclercq, Lucien; and Provost, Marcelle, 4,522,708, Cl. 208-136.000.

Prusak, John J., to RCA Corporation. Method and apparatus for the manufacture of record stampers. 4,522,659, Cl. 148-11.50R.

Prusek, Jaroslav: *See—*
Novak, Vaclav; Prusek, Jaroslav; and Trojan, Vaclav, 4,522,699, Cl. 204-434.000.

Pufpaff, Frederick J.: *See—*
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Purcell, Robert F.; and Kayser, Robert B., to Angus Chemical Company. Process for recovering petroleum from a geological formation. 4,522,732, Cl. 252-8.55D.

Purdue Research Foundation: *See—*
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Pyles Division: *See—*
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Pyropower Corporation: *See—*
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Pytlewski, Louis L.; Krevitz, Kenneth; and Smith, Arthur B., to Franklin Institute, The. Reagent and method for decomposing organosulfur compounds. 4,523,043, Cl. 568-840.000.

Queener, Carl A.: *See—*
Clark, Gary A.; Johnson, Frederick W.; and Queener, Carl A., 4,522,486, Cl. 355-14.0SH.

Quinlan, Patrick M., to Petrolite Corporation. Use of quaternized derivatives of polymerized pyridines and quinolines as microbiocides. 4,522,643, Cl. 71-67.000.

R & D Associates: *See—*
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R. J. Reynolds Tobacco Company: *See—*
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Rademaker, Leo C.; Hopkinson, Philip J.; Bell, Gordon M.; and Hay, Noah D., to General Electric Company. Method for making a dry type transformer. 4,521,954, Cl. 29-605.000.

Radford, Kenneth C.: *See—*
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Raghunathan, Yegnaswami, to Pennwalt Corporation. Diuretic/antihypertensive compositions. 4,522,818, Cl. 514-155.000.

Rai-Choudhury, Prosenjit: *See—*
Rohatgi, Ajeet; Rai-Choudhury, Prosenjit; Gigante, Joseph R.; Singh, Ranbir; and Fonash, Stephen J., 4,522,657, Cl. 148-1.500.

Raineri, Giuseppe, to Pietro Laverda S.p.A. Combine harvesters. 4,522,552, Cl. 414-523.000.

Rajchman, Jan. Electronic microcopier apparatus. 4,523,235, Cl. 358-256.000.

Ramamurthy, Arakalgud V., to Union Carbide Corporation. Process for substantially eliminating surface melt fracture when extruding ethylene polymers. 4,522,776, Cl. 264-176.00R.

Ramsden, Hugh E., to J. T. Baker Chemical Company. Diazonium affinity matrixes. 4,522,724, Cl. 210-635.000.

Rancourt, James D.: *See—*
Mayer, Thomas; Boling, Norman L.; and Rancourt, James D., 4,522,846, Cl. 427-54.100.

Randall, James C.: *See—*
Hogan, John P.; Hsieh, Eric T.; and Randall, James C., 4,522,987, Cl. 526-106.000.

Rao, S. Prabhakara; Brothers, Lance E.; and Brake, Bobby G., to Halliburton Company. Salt cement dispersant and method of using same in cementing subterranean wellbore. 4,522,653, Cl. 106-90.000.

Rapp, Karl G., to United Industries Sales Organization, Inc. Closure cap for multi-compartment containers. 4,522,315, Cl. 222-142.100.

Rasmussen, David H.: *See—*
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Rathgeber, Juergen; and Ward, William W., to Southern Case, Inc. Container and associated latch structure. 4,522,312, Cl. 220-324.000.

Rathie, Lester C.: *See—*
Noack, Timothy J.; and Rathie, Lester C., 4,522,370, Cl. 251-63.500.

Rattmann, James A., to General Foods Corporation. Slicer feed mechanism. 4,522,093, Cl. 83-42.000.

Raubenheimer, Johann N., to Johann Nicolaas Raubenheimer. Random steering device for a submerged suction cleaning head. 4,521,933, Cl. 15-1.700.

Raudat, John L.: *See—*
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Rautenbach, Robert: *See—*
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Rawlins, Charles B., to Aluminum Company of America. Vibration damper. 4,523,053, Cl. 174-42.000.

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Raytheon Company: *See—*
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RCA Corporation: *See—*
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Botez, Dan, 4,523,317, Cl. 372-45.000.
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Labib, Mohamed E.; Poll, Robert F.; and Wang, Chih-Chun, 4,522,747, Cl. 252-511.000.
Megeid, Mohamed M. A., 4,523,158, Cl. 331-55.000.
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Redies, Bernd: *See—*
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Rees, Herbert: *See—*
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Regiroli, Giovanni; Caprioli, Vincenzo; and Longoni, Angelo, to Montedison S.p.A. Acaricide compositions employing synergistic mix-

tures of 1-decyloxy-4-(7-oxa-4-octinyl)-oxy-benzene and propargite. 4,522,825, Cl. 514-517.000.

Reid, Albert R.: *See—*
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Reimert, Larry E., to Dril-Quip, Inc. Self-aligning connector assembly. 4,522,431, Cl. 285-27.000.

Reinhardt, Erich; and Erhardt, Rainer, to Prof. Dr.-Ing. Werner H. Bloss. Method of automatic detection of cells and determination of cell features from cytological smear preparations. 4,523,278, Cl. 364-413.000.

Reliance Electric Company: *See—*
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Fisher, Thomas M., 4,523,056, Cl. 179-81.00R.

Remington, Richard C., to Presto Lock, Inc. Bistable electromagnetic latch. 4,523,167, Cl. 335-230.000.

Remy, David C.; and Clineschmidt, Bradley V., to Merck & Co., Inc. Anti-emetic esters of cyproheptadine-3-carboxylic acid and structurally related compounds. 4,522,821, Cl. 514-320.000.

Renold, Walter. Motion picture film gate and registration system. 4,522,476, Cl. 352-225.000.

Rensselaer Polytechnic Institute: *See—*
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Renzetti, Robin: *See—*
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Replogle, Coy E.: *See—*
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Ressel, Willi: *See—*
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Restaurant Technology, Inc.: *See—*
Weimer, Ralph E.; Kalowski, Thaddeus J.; and Novy, Robert A., 4,522,117, Cl. 99-348.000.

Reyes, Peter A.; and Finney, Robert H., to Bell Helicopter Textron, Inc. Elastomeric system for mounting a helicopter rotor. 4,522,563, Cl. 416-134.00A.

Rhone-Poulenc Chimie de Base: *See—*
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Richards, Glenn L.: *See—*
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Richardson-Vicks Inc.: *See—*
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Richter, Karl H.: *See—*
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Richter, Reinhard H.: *See—*
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Richter, Simon J., to Coca-Cola Company, The. Retention device for flow rate control tube within a discharge container. 4,522,319, Cl. 222-481.500.

Ricoh Company, Ltd.: *See—*
Imai, Chikara; and Koichi, Yasushi, 4,522,481, Cl. 355-3.0DD.
Kanmoto, Yoshiaki, 4,523,229, Cl. 358-163.000.

Rieke, David M., to Paul Revere Corporation, The. Flail auger for semi-liquid manure spreader. 4,522,296, Cl. 198-548.000.

Rigoli, Robert: *See—*
Robinson, Eric, 4,522,543, Cl. 414-9.000.

Rihs, Grety: *See—*
Hilti, Bruno; Mayer, Carl W.; and Rihs, Grety, 4,522,754, Cl. 260-239.00R.

Ringer, Karl. Container-handling system with rail/rail and road/rail transfer. 4,522,546, Cl. 414-343.000.

Ringle, Richard P.: *See—*
Connolly, John D., Jr.; Gallivan, Timothy J.; and Ringle, Richard P., 4,522,769, Cl. 264-0.500.

Ringspann Albrecht Maurer K.G.: *See—*
Giese, Emil; Maurer, Ruprecht; and Hagen, Max, 4,522,289, Cl. 192-41.00A.

RIS Irrigation Systems: *See—*
Costa, Robert B., 4,522,339, Cl. 239-272.000.

Riseman, Jacob, to International Business Machines Corporation. Method of making integrated circuits using metal silicide contacts. 4,521,952, Cl. 29-590.000.

Rius, Jean M.: *See—*
Baciu, Antoine; Rius, Jean M.; and Sivry, Bernard, 4,522,778, Cl. 264-328.700.

Rivereau, Alain: *See—*
Martin, Madeleine; Lesage, Jean; Courbin, Gerard; and Rivereau, Alain, 4,522,878, Cl. 428-313.700.

Riviana Foods Inc.: *See—*
Meinardus, Elmond F., 4,522,837, Cl. 426-482.000.

RK Chemical Company Limited: *See—*
Kerchiss, Roman R., 4,522,057, Cl. 73-150.00R.

Robert Bosch GmbH: *See—*
Babitzka, Rudolf; and Linder, Ernst, 4,522,174, Cl. 123-300.000.
Burger, Kurt; and Gruner, Heiko, 4,522,067, Cl. 73-862.650.
Falk, Gerhard, 4,522,352, Cl. 242-193.000.
Greiner, Max; and Konrath, Karl, 4,522,181, Cl. 123-502.000.
Grunwald, Werner; Pfizenmaier, Heinz; de la Prieta, Claudio; Schmid, Kurt; and Schmidt, Ewald, 4,522,671, Cl. 156-235.000.

Robich, James M.: *See—*
Thomas, Samuel J.; Robich, James M.; and Hayes, Robert L., 4,523,141, Cl. 324-54.000.

Robinson, Chris E., to Figgie International. On-board flap opener. 4,522,014, Cl. 53-382.000.

Robinson, Delmar W.; Johnson, Russell W.; and Moser, Mark D., to UOP Inc. Platinum and indium-containing catalyst for reforming hydrocarbons. 4,522,935, Cl. 502-223.000.

Robinson, Don M.: *See—*
Swenson, Robert E.; Sasscer, Lawrence D.; and Robinson, Don M., 4,523,275, Cl. 364-200.000.

Robinson, Earl F.: *See—*
Bare, Rex O.; and Robinson, Earl F., 4,522,211, Cl. 128-640.000.

Robinson, Eric, to Rigoli, Robert. Device for feeding invalids. 4,522,543, Cl. 414-9.000.

Rockwell International Corporation: *See—*
Clapper, Robert L.; Gradle, Richard J.; and Bake, Earl A., 4,522,230, Cl. 137-496.000.
Schack, Carl J.; and Flanagan, Joseph E., 4,522,756, Cl. 260-349.000.
Soclof, Sidney I., 4,522,682, Cl. 156-647.000.
Tocci, Leonard R., 4,523,300, Cl. 365-43.000.

Rodde, Christian; and Desarnaud, Jean, to Octel S.A. Flowmeter and installation for mixing an additive in a liquid. 4,522,059, Cl. 73-223.000.

Roeschlein, Rolf, to Nixdorf Computer AG. Method for the manufacture of a multi-polar contact strip. 4,521,961, Cl. 29-884.000.

Rogers, Donald G., to Sprague Electric Company. Cathode for an electrolytic capacitor. 4,523,255, Cl. 361-433.000.

Rogers, Richard B.: *See—*
Arndt, Kim E.; Rogers, Richard B.; and McCormick, Ronald W., 4,522,642, Cl. 71-11.000.

Rohatgi, Ajeet; Rai-Choudhury, Prosenjit; Gigante, Joseph R.; Singh, Ranbir; and Fonash, Stephen J., to Westinghouse Electric Corp. Low temperature process for annealing shallow implanted N+/P junctions. 4,522,657, Cl. 148-1.500.

Rohm and Haas Company: *See—*
Kelley, Everett J., 4,523,028, Cl. 560-199.000.

Rohr Industries, Inc.: *See—*
Blair, Winford, 4,522,859, Cl. 428-116.000.

Rolls-Royce Limited: *See—*
Smith, Michael J. T., 4,522,283, Cl. 181-175.000.

Romani, Gian L.: *See—*
D'Angelo, Silvano; Modena, Ivo; and Romani, Gian L., 4,523,147, Cl. 324-248.000.

Roscrow, Harold N.; Ewer, Ronald W.; and Squires, Philip H., to Sola Products Limited. Casting gasket assembly and method for casting lenses therefrom. 4,522,768, Cl. 264-2.200.

Rose, William H., to AMP Incorporated. Snap action switch. 4,523,064, Cl. 200-67.00D.

Rosemount Inc.: *See—*
Hagen, Floyd W., 4,522,070, Cl. 73-384.000.

Rosencwaig, Allan; and Opsal, Jon, to Therma-Wave, Inc. Thin film thickness measurement with thermal waves. 4,522,510, Cl. 374-7.000.

Rosin, Michael L.: *See—*
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,522,969, Cl. 524-425.000.

Ross, Alan B. Method and apparatus for adapting photographic enlargers for use with large format negatives. 4,522,490, Cl. 355-75.000.

Ross, Janet: *See—*
Barnwell, Richard; Bushnell, Dennis; Nagamatsu, Henry T.; Bahi, Lakhdar; and Ross, Janet, 4,522,360, Cl. 244-204.000.

Ross, Julian R. H.: *See—*
Sambrook, Rodney M.; and Ross, Julian R. H., 4,522,940, Cl. 502-328.000.

Rossmann, Christian: *See—*
Schmid, Karl; Baumann, Horst; Geke, Jurgen; Germscheid, Hans-Gunther; Ludecke, Werner; Piorr, Robert; Rossmann, Christian; Scharf, Rolf; and Schlussler, Hans-Joachim, 4,522,740, Cl. 252-174.210.

Rossow, Eberhard, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Evaluation device for electron-optical images. 4,523,094, Cl. 250-311.000.

Rosthauser, James W., to Mobay Chemical Corporation. Process for coating aqueous dispersion of epoxy resin and blocked polyisocyanate containing chemically incorporated anionic hydrophilic groups. 4,522,851, Cl. 427-386.000.

Rosthauser, James W.: *See—*
Chung, James Y. J.; and Rosthauser, James W., 4,522,979, Cl. 525-66.000.

Roth, Albert. Zoned intrusion display with series-connected sensors. 4,523,185, Cl. 340-524.000.

Rotondo, Philip L.; and Rotondo, Thomas J. Apparatus for making reinforced concrete products. 4,522,579, Cl. 425-126.00R.

Rotondo, Thomas J.: *See—*
Rotondo, Philip L.; and Rotondo, Thomas J., 4,522,579, Cl. 425-126.00R.

Roussel, Michel: *See—*
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Roussel Uclaf: *See—*
Delevallee , Francoise; and Deraedt, Roger, 4,522,816, Cl. 514-52.000.

Rowe, Raymond C.: *See—*
Corfield, Brian L.; and Rowe, Raymond C., 4,522,840, Cl. 427-3.000.

Ruckle, W. Thomas: *See—*
Magid, David J.; and Ruckle, W. Thomas, 4,522,738, Cl. 252-90.000.

Ruedisueli, James W.: *See—*
Wolff, James W.; Ruedisueli, James W.; and Schinke, Ralph, 4,522,136, Cl. 112-256.000.

Ruhrchemie Aktiengesellschaft: *See—*
Cornils, Boy; Hibbel, Josef; Lieder, Bernhard; Much, Joachim; Schmidt, Volkmar; Wiebus, Ernst; and Konkol, Werner, 4,523,036, Cl. 568-454.000.

Rundall, George. Exercising device. 4,522,391, Cl. 272-62.000.

Ruoff, Harald: *See—*
Dudeck, Ingo; Hipp, Ulrich; Maass, Manfred; and Ruoff, Harald, 4,523,136, Cl. 318-568.000.

Rutgerswerke Aktiengesellschaft: *See—*
Grigoleit, Georg; Oberkobusch, Rudolf; Stadelhofer, Jurgen; and Matern, Kurt, 4,523,016, Cl. 546-252.000.

Ruth, Ulrich: *See—*
Struck, Helmut; Richter, Karl H.; Klein, Michael; Ruth, Ulrich; and Ulke, Walter, 4,522,418, Cl. 280-95.00A.

Ruthardt, Rolf, to Leybold-Heraeus GmbH. Device for manufacturing powder by dividing a melt. 4,522,577, Cl. 425-6.000.

Ryang, Hong-Son, to General Electric Company. Heat curable silicone-polyimide block copolymers. 4,522,985, Cl. 525-431.000.

Ryder, James H.: *See—*
Ansite, William K.; and Ryder, James H., 4,522,639, Cl. 55-314.000.

S. C. Johnson & Son, Inc.: *See—*
Verbrugge, Calvin J., 4,522,992, Cl. 526-272.000.

S.N.E.C.M.A.: *See—*
Bouiller, Jean G.; and Delonge, Jean-Claude L., 4,522,557, Cl. 415-115.000.

Sabema Material AB: *See—*
Thim, Stig, 4,522,367, Cl. 249-86.000.

Sable, Donald E. Closure device. 4,522,368, Cl. 251-1.00B.

Sagara, Noriyasu: *See—*
Koizumi, Hajime; Ohara, Shumpei; Kouda, Kiyoshi; Nagatomo, Muneshige; Sagara, Noriyasu; Togari, Satoshi; and Izumiyama, Hiroo, 4,522,254, Cl. 165-34.000.

Saia, Richard J.: *See—*
Gorowitz, Bernard; and Saia, Richard J., 4,522,681, Cl. 156-643.000.

Saitama Kako Co., Ltd.: *See—*
Torii, Masakatsu, 4,522,392, Cl. 272-142.000.

Saito, Koetsu: *See—*
Tone, Masayuki; Yano, Tsutomu; and Saito, Koetsu, 4,523,122, Cl. 310-334.000.

Saito, Makoto: *See—*
Akihama, Shigeyuki; Koizumi, Hajime; Umeki, Yoshihiko; Saito, Makoto; Banno, Tadashi; and Tateno, Shinya, 4,522,003, Cl. 52-391.000.

Saito, Shoichi; and Miyazi, Kazumi, to Olympus Optical Co., Ltd. Magnetic head adjusting apparatus. 4,523,242, Cl. 360-109.000.

Saito, Sigeru; Shimizu, Takahiko; and Tamura, Takasi, to Pentel Kabushiki Kaisha. Writing instrument having a needle slidably mounted in a tubular tip. 4,522,525, Cl. 401-258.000.

Saito, Tatsuhiko, to Yamato Scientific Co., Ltd. Elevational operating device for a rotary evaporator. 4,522,684, Cl. 159-11.200.

Saitoh, Keishi: *See—*
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,522,905, Cl. 430-60.000.

Saitoh, Kuniyuki: *See—*
Shigeta, Masatomo; Fukuda, Hiroyuki; Saitoh, Kuniyuki; and Kaji, Hisatsugu, 4,522,895, Cl. 429-44.000.

Saitou, Sinichi: *See—*
Nemoto, Shigeru; Kitajima, Goro ; Saitou, Sinichi; and Osada, Hazime, 4,523,247, Cl. 360-137.000.

Sakai, Shinji: *See—*
Kawabata, Takashi; Shinoda, Nobuhiko; and Sakai, Shinji, 4,522,480, Cl. 354-468.000.

Sakakura, Kazuaki: *See—*
Fukushima, Nobuo; Kitagawa, Yoshihiko; Okumura, Takuzo; and Sakakura, Kazuaki, 4,522,955, Cl. 521-143.000.

Sakamoto, Masaharu: *See—*
Ishida, Kohji; Numata, Tatsuo; and Sakamoto, Masaharu, 4,523,329, Cl. 381-3.000.

Sakamoto, Naojiro: *See—*
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Sakamoto, Shinichi: *See—*
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Amano, Matsuo; Sakamoto, Shinichi; Miki, Masayuki; Sasayama, Takao; Suda, Seiji; Mouri, Yasunori; and Ishii, Toshio, 4,523,284, Cl. 364-431.120.

Sakiyama, Kazuo: *See—*
Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,522,966, Cl. 524-114.000.

Sakurai, Atsushi, to Canon Kabushiki Kaisha. Input device with a keyboard in which actuation of a key more than once may cause a different function to be performed. 4,523,298, Cl. 364-900.000.

Sakurai, Michio, to Alps Electric Co., Ltd. Dual shaft rotary electric device. 4,523,175, Cl. 338-134.000.

Sakurai, Shigeo, to Mikuni Kogyo Kabushiki Kaisha. Drive control method for stepping motors. 4,523,138, Cl. 318-685.000.

Salmon, John K.; and Hiller, Irving A., to Otis Elevator Company. Hydraulic tie-down for elevators. 4,522,285, Cl. 187-22.000.

Salomone, Teresa: *See—*
Marlettini, Maria G.; DeNovellis, Michelangelo; Labriola, Ernesto; Salomone, Teresa; and Tomassetti, Paola, 4,522,827, Cl. 514-671.000.

Salter, Keith, to Baker Perkins Holdings PLC. Mixing apparatus. 4,522,503, Cl. 366-287.000.

Sambrook, Rodney M.; and Ross, Julian R. H., to Dyson Refractories Limited. Method of preparing a catalyst and catalyst prepared by the method. 4,522,940, Cl. 502-328.000.

Samuelsson, Einar, to AB Hagglund & Soner. Hydraulic radial piston motor. 4,522,110, Cl. 91-488.000.

Sanada, Yuichi: *See—*
Yoshida, Kenji; and Sanada, Yuichi, 4,522,419, Cl. 280-96.000.

Sanders, Virgil E., to Litton Systems, Inc. Laser gyro mode locking reduction scheme. 4,522,496, Cl. 356-350.000.

Sandford, Donald L.: *See—*
Timm, Gerald W.; Sandford, Donald L.; Claude, Timothy J.; and Helms, Richard A., 4,522,198, Cl. 128-79.000.

Sangamo Weston, Inc.: *See—*
MacNamee, Richard W., 4,522,737, Cl. 252-62.200.

Sangu, Akio, to Tokyo Shibaura Denki Kabushiki Kaisha. Scanning control apparatus and method therefor. 4,523,234, Cl. 358-293.000.

Sano, Hideo: *See—*
Musumiya, Raita; Sano, Hideo; Izichi, Yasuto; Inoue, Mitsuru; and Izawa, Kenzyu, 4,522,082, Cl. 74-512.000.

Sano, Shoichi; and Furukawa, Yoshimi, to Honda Giken Kogyo Kabushiki Kaisha. Vehicular steering system. 4,522,416, Cl. 280-91.000.

Sano, Shoichi; and Furukawa, Yoshimi, to Honda Giken Kogyo Kabushiki Kaisha. Steering system for vehicles. 4,522,417, Cl. 280-91.000.

Sano, Yutaka: *See—*
Suginoya, Mitsuru; Iwasa, Koji; Kamamori, Hitoshi; Sano, Yutaka; and Terada, Yumiko, 4,522,691, Cl. 204-18.100.

Sanofi: *See—*
Wagnon, Jean; Gautier, Patrick; and Gagnol, Jean-Pierre, 4,522,824, Cl. 514-414.000.

Sanofi, S.A.: *See—*
Frehel, Daniel; and Maffrand, Jean-Pierre, 4,523,013, Cl. 544-385.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Okazaki, Masaki, 4,522,602, Cl. 440-77.000.

Santi, John D., to Briggs & Stratton Corp. Laminated wheel assembly. 4,522,080, Cl. 74-445.000.

Sanyo Electric Co., Ltd.: *See—*
Hayashi, Nobutaka; and Komori, Yoshinori, 4,523,236, Cl. 358-341.000.

Sartorius GmbH: *See—*
Nussbaumer, Dietmar; Perl, Horst; and Vinh, Khuong T., 4,522,713, Cl. 210-136.000.

Sasagawa, Katsuyoshi; Hyugaji, Akio; and Imai, Masao, to Mitsui Toatsu Chemicals, Incorporated. Resin for high-refractivity lenses and lenses made of same resin. 4,522,993, Cl. 526-292.400.

Sasaki, Mitsuru: *See—*
Kohsaka, Hideo; Sasaki, Mitsuru; and Ishiguri, Yukio, 4,522,817, Cl. 514-95.000.

Sasamoto, Nobuhiko: *See—*
Ochiai, Hideo; Nagoya, Yoshinari; Fujimoto, Ryoichi; Yamazaki, Susumu; Sasamoto, Nobuhiko; and Ishida, Shinichi, 4,522,040, Cl. 62-419.000.

Sasayama, Takao: *See—*
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Amano, Matsuo; Sakamoto, Shinichi; Miki, Masayuki; Sasayama, Takao; Suda, Seiji; Mouri, Yasunori; and Ishii, Toshio, 4,523,284, Cl. 364-431.120.

Sashiki, Takashi: *See—*
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Sasscer, Lawrence D., to Sperry Corporation. Cache/disk system with writeback regulation relative to use of cache memory. 4,523,206, Cl. 364-200.000.

Sasscer, Lawrence D.: *See—*
Swenson, Robert E.; Sasscer, Lawrence D.; and Robinson, Don M., 4,523,275, Cl. 364-200.000.

Sato, Akihiro: *See—*
Chiba, Hiromasa; Kumahara, Katsumi; Harada, Takakiyo; Oka, Takahiro; and Sato, Akihiro, 4,522,994, Cl. 526-351.000.

Sato, Hideo: *See—*
Inoue, Hiromichi; Inukai, Takashi; Goto, Yasuyuki; Sato, Hideo; and Fukui, Masahiro, 4,522,741, Cl. 252-299.630.

Sato, Jun; and Nakajima, Hideki, to Shimano Industrial Company Limited. Fishing reel having a spool rotation control mechanism. 4,522,354, Cl. 242-219.000.

Sato, Yu, to Nippon Kogaku K. K. PLL out-of-capture range detection and lock acquisition circuit. 4,523,157, Cl. 331-4.000.

Satoh, Isao; Yoshida, Tomio; Harigae, Shunji; and Koishi, Kenji, to Matsushita Electric Industrial Co., Ltd. Optical data recording and reproducing apparatus. 4,523,304, Cl. 369-32.000.

Satre, Kenneth I.: *See—*
Kallestad, Daniel R.; Kress, Bruce A.; and Satre, Kenneth I., 4,522,335, Cl. 236-44.00C.

Saturday, Kathy A.: *See—*
Hochel, Robert C.; and Saturday, Kathy A., 4,522,794, Cl. 423-251.000.

Sauer, Don R., to National Semiconductor Corporation. Anti-distortion anti-transient tone control circuit. 4,523,156, Cl. 330-282.000.
Saunders, Philip G.; and Simpson, Jack R., to Container Graphics Corporation. Hole punch for a cutting die. 4,522,095, Cl. 83-116.000.
Saur, Roland, to Behr-Thomson Dehnstoffregler GmbH. Thermostatic control device. 4,522,334, Cl. 236-34.500.
Savage, William E., to Tompkins Bros. Co. Inc. Knitting machine using combination presser raising wheel. 4,522,043, Cl. 66-80.000.
Savin Corporation: *See—*
Landa, Benzion, 4,522,484, Cl. 355-3.0DD.
Savins, Joseph G., to Mobil Oil Corporation. Method for removing ash mineral matter of coal with liquid carbon dioxide and water. 4,522,628, Cl. 44-1.0SR.
Sawyer, John M.: *See—*
Kluss, Karl K.; Allen, Terry F.; and Sawyer, John M., 4,522,235, Cl. 138-130.000.
Saxer, Ulrich P.: *See—*
Muhlemann, Hans R.; and Saxer, Ulrich P., 4,522,806, Cl. 424-52.000.
Sayer, Bertram; and Kulkaski, Bernard J., to Thermal Profiles, Inc. Window apparatus. 4,521,991, Cl. 49-161.000.
Scanditronix Inc.: *See—*
Emanuelson, Roy M.; and Lebet, David P., 4,523,168, Cl. 335-296.000.
Schaber, Scott D.: *See—*
Burns, Gary D.; and Schaber, Scott D., 4,523,314, Cl. 371-38.000.
Schack, Carl J.; and Flanagan, Joseph E., to Rockwell International Corporation. Alkyl, azido, nitro ethers and method of preparation. 4,522,756, Cl. 260-349.000.
Schad, Robert D.; and Rees, Herbert, to Husky Injection Molding Systems Ltd. System for handling partly finished workpieces. 4,522,581, Cl. 425-534.000.
Schaefer, Roland, to Kulzer & Co. GmbH. Process for the photopolymerization of vinyl compounds and photopolymerizable materials used in said process. 4,522,694, Cl. 204-159.240.
Schaeffer, Wayne G.: *See—*
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Schafer, Karl: *See—*
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Schappert, Raymond F.: *See—*
Das, Suryya K.; Boberski, William G.; Greigger, Paul P.; Jones, James E.; Schappert, Raymond F.; and Seiner, Jerome A., 4,522,958, Cl. 523-212.000.
Scharf, Rolf: *See—*
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Schartz, Charles O. Peristaltic pump apparatus.. 4,522,570, Cl. 417-475.000.
Schedele, Helmut, to Siemens Aktiengesellschaft. Contact arrangement for relays. 4,523,165, Cl. 335-106.000.
Scheffers, Richard W., to Signode Corporation. Registration of bags in a filling machine. 4,522,017, Cl. 53-570.000.
Schema, Anthony C.: *See—*
Tacheny, John C.; and Schema, Anthony C., 4,521,993, Cl. 49-325.000.
Schenk, William N.: *See—*
Minchak, Robert J.; and Schenk, William N., 4,522,902, Cl. 429-252.000.
Schering Aktiengesellschaft: *See—*
Dorow, Rainer; Horowski, Reinhard; Kehr, Wolfgang; and Wachtel, Helmut, 4,522,820, Cl. 424-288.000.
Gries, Heinz; and Mutzel, Wolfgang, 4,522,839, Cl. 426-548.000.
Schider, Siegfried: *See—*
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Schiederwerk Gunter Schmidt KG Fabrik fur Apparate der Fernmelde- und Elektrotechnik: *See—*
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Schiff, Peter. Apparatus for left heart assist. 4,522,195, Cl. 128-1.00D.
Schindler, Harvey D., to Lummus Company, The. Coal liquefaction. 4,522,700, Cl. 208-8.0LE.
Schinke, Ralph: *See—*
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Schipfer, Rudolf; and Schmolzer, Gerhard, to Vianova Kunstharz, A.G. Crosslinking component for paint binders and process for producing such components from a carbonyl compound. 4,523,007, Cl. 528-227.000.
Schiom, Jeffery; Colcher, David; Nuti, Marianna; Hand, Patricia H.; and Austin, Faye. Process for producing monoclonal antibodies reactive with human breast cancer. 4,522,918, Cl. 435-68.000.
Schluderberg, Donald C., to Babcock & Wilcox Company, The. Integral nuclear fuel element assembly. 4,522,781, Cl. 376-427.000.
Schlussler, Hans-Joachim: *See—*
Schmid, Karl; Baumann, Horst; Geke, Jurgen; Germscheid, Hans-Gunther; Ludecke, Werner; Piorr, Robert; Rossmann, Christian; Scharf, Rolf; and Schlussler, Hans-Joachim, 4,522,740, Cl. 252-174.210.
Schmale, Peter C.; and Van Buul, Marinus C. W., to U.S. Philips Corporation. Safety circuit for a detachable connecting cable. 4,523,248, Cl. 361-1.000.
Schmeda, Rae A.: *See—*
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Schmid, Karl; Baumann, Horst; Geke, Jurgen; Germscheid, Hans-Gunther; Ludecke, Werner; Piorr, Robert; Rossmann, Christian; Scharf, Rolf; and Schlussler, Hans-Joachim, to Henkel Kommanditgesellschaft. Polyglycol ethers as foam-inhibiting additives in low-foam cleaning agents. 4,522,740, Cl. 252-174.210.
Schmid, Kurt: *See—*
Grunwald, Werner; Pfizenmaier, Heinz; de la Prieta, Claudio; Schmid, Kurt; and Schmidt, Ewald, 4,522,671, Cl. 156-235.000.
Schmid, Walter: *See—*
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Schmidt, John R. Character data input keyboard arrangement having central matrix of keys. 4,522,518, Cl. 400-486.000.
Schmidt, Karl W., to Gebruder Schmidt GMBH & Co. KG. Clockwork retaining assembly. 4,522,509, Cl. 368-300.000.
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Seemuth, Paul D., to Ethyl Corporation. Diesel fuel composition. 4,522,630, Cl. 44-53.000.
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Selvidge, Leroy. Dental tool for cleaning teeth interproximally. 4,522,595, Cl. 433-142.000.
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Shannon, Michael A., to Northern Telecom Limited. Monitoring magnetically permeable particles in admixture with a fluid carrier. 4,522,501, Cl. 366-142.000.
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Casstevens, Arvil; Coble, William H.; Shields, Harper; Ferrell, Roscoe M.; and Jordan, Bobby R., 4,522,042, Cl. 66-140.00S.
Lineberry, Roger D.; and Shields, Harper, 4,522,044, Cl. 66-185.000.
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organic compositions containing such stabilizers. 4,523,024, Cl. 549-407.000.

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Siedow, Fred G.: *See—*
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Grunberg, Kurt; Poth, Rainer; Werner, Peter; Koch, Kurt; Schweppe, Friedrich; and Voigtlander, Kurt, 4,523,253, Cl. 361-335.000.
Heidegger, Peter; and Kiefer, Jakob, 4,523,219, Cl. 357-79.000.
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Luder, Rainer; and Haussmann, Wolfgang, 4,523,223, Cl. 358-27.000.
Schedele, Helmut, 4,523,165, Cl. 335-106.000.
Zirkl, Siegmar, 4,523,103, Cl. 307-141.000.

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Silvey, Elmer R. Saw chain depth gauge grinder. 4,522,087, Cl. 76-25.00A.

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Hoen, Cuyler; and Pufpaff, Frederick J., 4,522,436, Cl. 292-113.000.

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Slattery, Ian, to Spencer Wright Industries, Inc. Cut/loop hook for tufting machines. 4,522,132, Cl. 112-79.00R.

Slavin, Sidney H. Spinning optics device. 4,522,474, Cl. 351-203.000.

Slee, Roger H., to AE PLC. Valve seat inserts. 4,522,161, Cl. 123-41.850.

Small, Edward A.; and Wright, Geoff C., to British American Bank Note Inc. Printed magnetic encoding panel. 4,522,428, Cl. 283-82.000.

Small, LeRoy O. Variable position light stand. 4,523,256, Cl. 362-11.000.

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Smith, Michael J. T., to Rolls-Royce Limited. Noise measurement, 4,522,283, Cl. 181-175.000.

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Glowacki, Pierre A.; and Mandet, Gerard M. F., 4,522,562, Cl. 416-95.000.

Soclof, Sidney I., to Rockwell International Corporation. Method for producing PNP type lateral transistor separated from substrate by O.D.E. for minimal interference therefrom. 4,522,682, Cl. 156-647.000.

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Roscrow, Harold N.; Ewer, Ronald W.; and Squires, Philip H., 4,522,768, Cl. 264-2.200.

Solaja, Nikola. Grading and smoothing attachment for a loader bucket. 4,521,980, Cl. 37-117.500.

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Fukuda, Shinichi; and Odaka, Kentaro, 4,523,237, Cl. 360-8.000.
Kobayashi, Naotake; Abe, Tetsuya; and Fujiwara, Yoshio, 4,522,881, Cl. 428-336.000.
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Soodak, Charles I.: *See—*
Thompson, Robert E.; Gould, Gordon; and Soodak, Charles I., 4,522,464, Cl. 350-96.230.

Southeastern Technology, Inc.: *See—*
Gaitten, Walden M., deceased, 4,522,239, Cl. 144-2.00Z.

Southern Case, Inc.: *See—*
Rathgeber, Juergen; and Ward, William W., 4,522,312, Cl. 220-324.000.

Southern, John H.: *See—*
Menezes, Edgar V.; Southern, John H.; Ballman, Richard L.; and Chamberlin, J. M., 4,522,773, Cl. 264-167.000.

Southern Pacific Land Company: *See—*
Gallup, Darrell L.; and Featherstone, John L., 4,522,728, Cl. 210-714.000.

Southern Railway Company: *See—*
Miller, John R.; and Stubbs, John L., 4,522,127, Cl. 104-17.00R.

Southwest Research Institute: *See—*
Winn, Bryan D. C., 4,523,294, Cl. 364-900.000.

Sova, Stanley G.: *See—*
Chisvette, Dominick; Lattimore, James; and Sova, Stanley G., 4,522,654, Cl. 106-288.00Q.

Sovonics Solar Systems: *See—*
Ovshinsky, Stanford R.; and Izu, Masatsugu, 4,522,663, Cl. 148-403.000.

Spang & Company: *See—*
Huth, Joseph F., III, 4,523,170, Cl. 336-83.000.

Speers, Leonard E.; Inhofer, John D.; and Redenbarger, Philip D., to J. I. Case Company. Fan-shroud structure. 4,522,160, Cl. 123-41.490.

Spencer Wright Industries, Inc.: *See—*
Beverly, Ian, 4,522,139, Cl. 112-273.000.
Slattery, Ian, 4,522,132, Cl. 112-79.00R.

Sperinde, Johnie M.; Goldring, Stanley D.; and Miller, Dean T., to Oximetrix, Inc. Apparatus for determining oxygen saturation levels in blood. 4,523,279, Cl. 364-416.000.

Sperry Corporation: *See—*
Blakeslee, Edward A., 4,522,018, Cl. 56-181.000.
Burns, Gary D.; and Schaber, Scott D., 4,523,314, Cl. 371-38.000.
Kregness, Glen R., 4,523,210, Cl. 364-760.000.
Neis, Thomas W.; and Swartz, Harold L., 4,521,974, Cl. 33-379.000.
Sasscer, Lawrence D., 4,523,206, Cl. 364-200.000.
Swenson, Robert E.; Sasscer, Lawrence D.; and Robinson, Don M., 4,523,275, Cl. 364-200.000.

Sprague Electric Company: *See—*
Rogers, Donald G., 4,523,255, Cl. 361-433.000.

Sprenkle, George J., to Burroughs Corporation. Device for the controlled extraction of electronic circuit components. 4,521,959, Cl. 29-741.000.

Sprinter Systems Incorporated: *See—*
Stannard, Charles G., 4,522,618, Cl. 493-143.000.

Sputtered Films, Inc.: *See—*
Dimock, Jack A.; and Clarke, Peter J., 4,522,697, Cl. 204-298.000.

Squires, Philip H.: *See—*
Roscrow, Harold N.; Ewer, Ronald W.; and Squires, Philip H., 4,522,768, Cl. 264-2.200.

SSIH Equipment S.A.: *See—*
Bovay, Jean-Pierre, 4,523,204, Cl. 346-107.00B.

Staar, Marcel J. H., to Staar S. A. Record loading apparatus for a slot type record player. 4,523,306, Cl. 369-77.100.

Staar S. A.: *See—*
Staar, Marcel J. H., 4,523,306, Cl. 369-77.100.

Staats, James E., to General Electric Company. Microwave oven door seal. 4,523,069, Cl. 219-10.55D.

Stadelhofer, Jurgen: *See—*
Grigoleit, Georg; Oberkobusch, Rudolf; Stadelhofer, Jurgen; and Matern, Kurt, 4,523,016, Cl. 546-252.000.

Stahlecker, Fritz, to Stahlecker, Hans; and Stahlecker, Fritz. Open end friction spinning machine. 4,522,023, Cl. 57-401.000.

Stahlecker, Hans: *See—*
Stahlecker, Fritz, 4,522,023, Cl. 57-401.000.

Stair, Wayne H.: *See—*
Scriver, Richard M.; and Stair, Wayne H., 4,522,970, Cl. 524-447.000.

Stalder, Hans; and Sidler, Hans, to Sistag, Maschinenfabrik Sidler Stalder AG. Gate valve construction. 4,522,224, Cl. 137-242.000.

Stamm, Thomas A.; and Zansky, Zoltan, to Honeywell Inc. Remote control of dimmable electronic gas discharge lamp ballasts. 4,523,128, Cl. 315-291.000.

Standard Manufacturing Co., Inc.: *See—*
Oswald, Norman D.; Dean, Robert R.; and Mankey, Harry S., 4,522,548, Cl. 414-458.000.

Standard Societe Anonyme: *See—*
Van de Moortele, Guido, 4,522,229, Cl. 137-460.000.

Stanley Aviation Corporation: *See—*
Valentine, Gordon A.; and Gale, Edwin J., 4,522,433, Cl. 285-93.000.

Stanley Tools Limited: *See—*
Gibbs, Andrew R., 4,522,539, Cl. 408-72.00R.

Stannard, Charles G., to Sprinter Systems Incorporated. Mechanism for assembling tapered, nested containers. 4,522,618, Cl. 493-143.000.

Stappaerts, Eddy A., to Northrop Corporation. Uniform-field electrode. 4,523,320, Cl. 372-87.000.

Star Textile Research, Inc.: *See—*
Shapiro, Sumner, 4,522,556, Cl. 414-786.000.

Stark, Marvin M.; Soelberg, Kenneth B.; and Pelzner, Roger B., to Marvin M. Stark Research Foundation. Light shield for a dental handpiece. 4,522,594, Cl. 433-141.000.

Starks, Michael R.: *See—*
Lipton, Lenny; Starks, Michael R.; Stewart, James D.; and Meyer, Lawrence D., 4,523,226, Cl. 358-88.000.

Starkweather, James A.: *See—*
Brown, William H.; Starkweather, James A.; and Humphreys, Hugh M., 4,523,310, Cl. 370-112.000.

Starmax, Inc.: *See—*
Flanagan, Elaine W., 4,521,999, Cl. 52-103.000.

Starmuhler, Erwin: *See—*
Muhlberger, Heinz; Starmuhler, Erwin; Weishaupt, Walter; Flohr, Peter; and Bourauel, Fritz, 4,523,283, Cl. 364-431.010.

Starr, James A., to Atasi Corporation. Payload-protecting shipping container. 4,522,303, Cl. 206-588.000.

Stasikelis, Peter J.: *See—*
Yannas, Ioannis V.; Burke, John F.; and Stasikelis, Peter J., 4,522,753, Cl. 260-123.700.

Statni Vyzkumny Ustav Ochrany Materialu G.V.: *See—*
Novak, Vaclav; Prusek, Jaroslav; and Trojan, Vaclav, 4,522,699, Cl. 204-434.000.

Stednitz, Denis P., to ACE Orthopedic Company. Adjustable intramedullar rod. 4,522,200, Cl. 128-92.0BC.

Stefansson, Rafn, to Bell & Howell Company. Sheet feeder systems. 4,522,385, Cl. 271-10.000.

Steidle, Alfons: *See—*
Leibinger, Paul; and Steidle, Alfons, 4,523,176, Cl. 338-179.000.

Steimel, Ronald W.: *See—*
Woodcock, Sidney H.; Maes, Michel E.; and Steimel, Ronald W., 4,522,107, Cl. 89-196.000.

Steiner, Gerald E., to Anchor Hocking Corporation. Child-resistant tamper-evident closure. 4,522,307, Cl. 215-219.000.

Stephenson, Michael C. Waterbed frame construction. 4,521,928, Cl. 5-400.000.

Stereographics Corporation: *See—*
Lipton, Lenny; Starks, Michael R.; Stewart, James D.; and Meyer, Lawrence D., 4,523,226, Cl. 358-88.000.

Sterling Drug Inc.: *See—*
Paikoff, Myron, 4,522,302, Cl. 206-570.000.

Stevens, James C.; and Haynes, James R., to Uniden Corporation of America. Ringer signal wave shaping circuit. 4,523,058, Cl. 179-84.00T.

Stewart, James D.: *See—*
Lipton, Lenny; Starks, Michael R.; Stewart, James D.; and Meyer, Lawrence D., 4,523,226, Cl. 358-88.000.

Stewart, Robert D.; and Gamble, Robert L., to Foster Wheeler Energy Corporation. Method of operating a fluidized bed heat exchanger utilizing induced circulation. 4,521,976, Cl. 34-10.000.

Still, Robert D., Jr.; and Boeke, Paul J. Stampable sheets of bonded laminate of metal sheet and fiber mat reinforced poly(arylene sulfide) and method of preparation using radio frequency energy. 4,522,875, Cl. 428-285.000.

Stockbridge, Bruce W., to Eastman Kodak Company. Dowel-aligned multiple plate stuffer box crimper construction for filter tow. 4,521,944, Cl. 28-264.000.

Stockton, Thomas R., to Ford Motor Company. Steering gear control valve for variable displacement pump. 4,522,565, Cl. 417-220.000.

Stokes, Bruce G.: *See—*
Sheldon, Donald A.; Stokes, Bruce G.; Weber, Robert E.; and Greenman, Edwin G., 4,522,967, Cl. 524-377.000.

Stolz, Hermann, to Mato Maschinen-und Metallwarenfabrik Curt Matthaei GmbH & Co KG. Apparatus for pressing-in belt connectors. 4,522,329, Cl. 227-153.000.

Stone, Julian, to AT&T Bell Laboratories. Raman gain medium. 4,523,315, Cl. 372-3.000.

Stone, Richard M.: *See—*
Walczak, Thomas J.; Stone, Richard M.; and Cristiano, Gary M., 4,523,155, Cl. 330-279.000.

Stone, Selden A. Convertible boat and luggage carrier. 4,522,145, Cl. 114-352.000.

Stonner, Hans-Martin: *See—*
Hochgesand, Gerhard; Kahles, Heinz; Wiesner, Paul; and Stonner, Hans-Martin, 4,522,730, Cl. 210-750.000.

Storage Technology Corporation: *See—*
Billington, Robert L., 4,523,243, Cl. 360-113.000.

Stran Corporation: *See—*
Brazelton, Carl L., 4,522,502, Cl. 366-160.000.

Strehlow, Robert J.: *See—*
Tamura, Paul S.; and Strehlow, Robert J., 4,523,084, Cl. 219-497.000.

Stromberg-Carlson Corporation: *See—*
Bull, John; Croft, Leon; DeVaney, David B.; Davis, Russell R.; Hinshaw, David L.; Jotwani, Haresh C.; Kandell, Ronald J.; Kurtz, Richard F.; Lee, Ernest O., Jr.; Neumeier, Gunter F.; Richards, Glenn L.; and Scott, Richard, 4,523,308, Cl. 370-56.000.

Stromberg, James L., to Halliburton Company. Quick connect coupler. 4,522,430, Cl. 285-24.000.

Strout, Russell B.; and Golner, Jerold J., to Borden, Inc. Portable, manually operable dispenser for stretch film and the like, and process of applying. 4,522,348, Cl. 242-96.000.

Struck, Helmut; Richter, Karl H.; Klein, Michael; Ruth, Ulrich; and Ulke, Walter, to Daimler-Benz Aktiengesellschaft. Steerable wheel suspension arrangement. 4,522,418, Cl. 280-95.00A.

Stuart, Clifton F. Gravity self-aligning article mount. 4,522,363, Cl. 248-225.200.

Stubbmann, Albert, to Shelcore, Inc. Rockable toy with a reflecting mirror. 4,522,604, Cl. 446-219.000.

Stubbs, John L.: *See—*
Miller, John R.; and Stubbs, John L., 4,522,127, Cl. 104-17.00R.

Sturdevant, Eugene J. Electrode shield device. 4,523,082, Cl. 219-399.000.

Suda, Seiji: *See—*
Amano, Matsuo; Sakamoto, Shinichi; Miki, Masayuki; Sasayama, Takao; Suda, Seiji; Mouri, Yasunori; and Ishii, Toshio, 4,523,284, Cl. 364-431.120.

Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG.: *See—*
Nonnenmann, Manfred; Oltmanns, Heinrich; and Hohhausel, Manfred, 4,521,947, Cl. 29-157.00R.

Sueyasu, Masanobu: *See—*
Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; Furujho, Sakae; Okane, Kohji; and Anezaki, Shoji, 4,522,650, Cl. 75-48.000.

Suginoya, Mitsuru; Iwasa, Koji; Kamamori, Hitoshi; Sano, Yutaka; and Terada, Yumiko, to Seiko Instruments & Electronics Ltd. Method for manufacturing a multicolor filter and a multicolor display device. 4,522,691, Cl. 204-18.100.

Sullivan, James J. Manually mountable tamper evident oral liquid dose viral and seal assembly. 4,522,308, Cl. 215-253.000.

Sullivan, James L., to Chartered Industries of Singapore Private Limited. Gun hammer mechanism. 4,522,106, Cl. 89-140.000.

Sulouff, Robert E.; Hartin, Sam S.; Cook, Koy B.; Kerns, David V., Jr.; Davidson, Jimmy L.; and Warren, Keith O., to Insouth Microsystems, Inc. Electromechanical transducer strain sensor arrangement and construction. 4,522,072, Cl. 73-765.000.

Sumitomo Chemical Company, Limited: *See—*
Fukushima, Nobuo; Kitagawa, Yoshihiko; Okumura, Takuzo; and Sakakura, Kazuaki, 4,522,955, Cl. 521-143.000.
Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,522,966, Cl. 524-114.000.
Kohsaka, Hideo; Sasaki, Mitsuru; and Ishiguri, Yukio, 4,522,817, Cl. 514-95.000.
Kohsaka, Hideo; Mitsuru, Sasaki; and Ishiguri, Yukio, 4,522,942, Cl. 514-95.000.

Sumitomo Electric Industries, Ltd.: *See—*
Tsuno, Koichi, 4,522,113, Cl. 92-113.000.

Sumitomo Metal Industries, Ltd.: *See—*
Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; Furujho, Sakae; Okane, Kohji; and Anezaki, Shoji, 4,522,650, Cl. 75-48.000.
Nakate, Hiroshi; Kondo, Masatoshi; and Gosho, Nobuyuki, 4,523,072, Cl. 219-67.000.

Sumitomo Metal Mining Company, Ltd.: *See—*
Kato, Yoshihisa, 4,523,218, Cl. 357-70.000.

Sumrall, Calhoun W.: *See—*
Bains, William R.; and Sumrall, Calhoun W., 4,522,357, Cl. 244-3.220.

Sun Tech, Inc.: *See—*
Hsu, Chao-Yang; and Lyons, James E., 4,522,757, Cl. 260-396.00R.

Sunada, Satoshi. Gas-liquid contacting device. 4,522,766, Cl. 261-91.000.

Sundstrand Corporation: *See—*
Mehl, Byron R., 4,523,267, Cl. 363-87.000.

Sundstrand Data Control, Inc.: *See—*
Peters, Rex B., 4,522,062, Cl. 73-505.000.

Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., to Richardson-Vicks Inc. Analgesic and anti-inflammatory compositions comprising diphenhydramine and methods of using same. 4,522,826, Cl. 514-569.000.

Sutter, Leroy V., Jr.: *See—*
Bancroft, Charles F.; Brown, Thomas B.; Bullock, Peter W.; and Sutter, Leroy V., Jr., 4,523,071, Cl. 219-56.220.

Suzuki, Haruo: *See—*
Kawai, Toshikazu; Suzuki, Haruo; and Kaneda, Shouzou, 4,523,041, Cl. 568-755.000.

Suzuki, Keizo: *See—*
Ninomiya, Ken; Suzuki, Keizo; and Nishimatsu, Shigeru, 4,522,674, Cl. 156-345.000.

Suzuki, Masayoshi: *See—*
Wakamori, Fumio; Noma, Toshiyuki; Adachi, Masao; Funabashi, Motohisa; and Suzuki, Masayoshi, 4,522,534, Cl. 405-37.000.

Suzuki, Norihito: *See—*
Iwaki, Akio; Suzuki, Norihito; Yamamoto, Takeshi; and Aoki, Toru, 4,522,891, Cl. 428-626.000.

Suzuki, Takatoshi; Tachikawa, Hideo; and Moriyama, Shigeo, to Kubushiki Kaisha Toyota Chuo Kenkyusho. Process for ion nitriding of aluminum or an aluminum alloy and apparatus therefor. 4,522,660, Cl. 148-20.300.

Suzuki, Takeshi: *See—*
Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Kajiwara, Akiharu; and Ota, Kiichiro, 4,522,759, Cl. 260-404.000.

Suzuki, Toshitake; Hayashi, Ryuzo; Arai, Naoto; and Oeda, Yoshitaka, to Kanzaki Paper Mfg. Co., Ltd. Heat-sensitive recording materials. 4,523,205, Cl. 346-208.000.

Suzuki, Yutaka: *See—*
Yano, Kiyotoshi; Suzuki, Yutaka; and Yamada, Yoshichika, 4,522,372, Cl. 251-141.000.

SW Daniel, Inc.: *See—*
Atchisson, Maxwell G., 4,522,105, Cl. 89-139.000.

Swander, Robert E.: *See—*
Hyde, Rebecca A.; Krimminger, Kenneth R.; and Swander, Robert E., 4,522,616, Cl. 493-44.000.

Swartz, Franklin J.; and Anatolev, Alex. Police baton. 4,522,398, Cl. 273-84.00R.

Swartz, Harold L.: *See—*
Neis, Thomas W.; and Swartz, Harold L., 4,521,974, Cl. 33-379.000.

Swenson, Robert E.; Sasscer, Lawrence D.; and Robinson, Don M., to Sperry Corporation. Cache/disk subsystem with floating entry. 4,523,275, Cl. 364-200.000.

Swiger, Roger T.; and Hallgren, John E., to General Electric Company. Scavengers for one component alkoxy-functional RTV compositions. 4,523,001, Cl. 528-18.000.

Swisher, Steven L., to Brunswick Corporation. Drag adjustment click spring assembly. 4,522,347, Cl. 242-84.50A.

Syntex (U.S.A.) Inc.: *See—*
Eppstein, Deborah A.; Fraser-Smith, Elizabeth B.; and Matthews, Thomas R., 4,522,811, Cl. 514-2.000.
Walker, Keith A. M., 4,522,948, Cl. 514-396.000.

Syracuse University: *See—*
Heise, Michael S.; Tucker, Christopher S.; and Schwarz, James A., 4,522,941, Cl. 502-333.000.

Szonn, Bodo; Schafer, Karl; and Malskeit, Alfred, to Beiersdorf Aktiengesellschaft. Elastic diaper-pants fastening. 4,522,853, Cl. 428-40.000.

Szycher, Michael, to Thermedics, Inc. Extrudable polyurethane for prosthetic devices prepared from a diisocyanate, a polytetramethylene ether polyol, and 1,4-butane diol. 4,523,005, Cl. 528-76.000.

T. D. Williamson, Inc.: *See—*
Ver Nooy, Burton, 4,522,063, Cl. 73-579.000.

Tabares, Gilbert, to Xerox Corporation. Dual-axis positioning apparatus adjusting the angular position of an optical element. 4,522,365, Cl. 248-466.000.

Tabler, Donald C. Filtration of oil. 4,522,729, Cl. 210-727.000.

Tacheny, John C.; and Schema, Anthony C., to Truth Incorporated. Chain operator for a window. 4,521,993, Cl. 49-325.000.

Tachikawa, Hideo: *See—*
Suzuki, Takatoshi; Tachikawa, Hideo; and Moriyama, Shigeo, 4,522,660, Cl. 148-20.300.

Tachikawa Spring Co., Ltd.: *See—*
Horii, Hitoshi; and Oonishi, Yutaka, 4,523,075, Cl. 219-88.000.

Tafel, William G. Archery quiver and method. 4,522,187, Cl. 124-24.00A.

Taga, Yutaka: *See—*
Noda, Munetaka; Tobe, Yukio; Taga, Yutaka; Nakamura, Shinya; Nakamura, Kazumasa; Inagaki, Takafumi; and Ito, Hiroshi, 4,523,281, Cl. 364-424.100.

Taglieber, Volker: *See—*
Kummer, Rudolf; Schneider, Heinz-Walter; Taglieber, Volker; and Weiss, Franz-Josef, 4,523,027, Cl. 560-191.000.

Tahlmore, Claude D.: *See—*
Liebermann, Howard H.; and Tahlmore, Claude D., 4,522,331, Cl. 228-263.180.

Taiho Kogyo Co., Ltd.: *See—*
Nozue, Shigehiro; and Fukuoka, Tatsuhiko, 4,522,513, Cl. 384-368.000.

Takagi, Satoshi: *See—*
Ito, Yukio; Takai, Kazuki; and Takagi, Satoshi, 4,523,241, Cl. 360-105.000.

Takagi, Takeji: *See—*
Nishikawa, Masaji; Takagi, Takeji; and Ueki, Masao, 4,522,866, Cl. 428-216.000.

Takagi, Toshinori: *See—*
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,523,211, Cl. 357-4.000.

Takahara, Kazuhiro; Kurahashi, Keizo; Gondo, Hiroyuki; Oki, Kenichi; and Miura, Shoshin, to Fujitsu Limited. El display device. 4,523,189, Cl. 340-781.000.

Takahashi, Asao: *See—*
Yokogawa, Akira; Takahashi, Asao; Maruyama, Isao; and Hosaka, Takao, 4,522,688, Cl. 203-28.000.

Takahashi, Sadayuki; Yonezawa, Masatomo; Ochi, Atsushi; Yano, Takeshi; Hamatsuki, Takeshige; and Fukui, Izumu, to NEC Corporation. Multilayer electrostrictive element which withstands repeated application of pulses. 4,523,121, Cl. 310-334.000.

Takahashi, Shiro, to Sony Corporation. Sliding member. 4,523,245, Cl. 360-130.210.

Takahashi, Shuzou; and Toda, Hiroaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Gas-insulated bushing. 4,523,052, Cl. 174-16.0BH.

Takai, Akira: *See—*
Nishimura, Hirofumi; Oda, Hiroyuki; Kaneko, Tadashi; Takai, Akira; and Takeuchi, Nobuo, 4,522,179, Cl. 123-481.000.

Takai, Kazuki: *See—*
Ito, Yukio; Takai, Kazuki; and Takagi, Satoshi, 4,523,241, Cl. 360-105.000.

Takao, Mitsunori; Kimura, Takahiko; and Hirabayashi, Yuji, to Nippondenso Co., Ltd. Air flow control apparatus for internal combustion engine. 4,522,176, Cl. 123-339.000.

Takasago, Masahiro: *See—*
Maeda, Takeshi; Mizoguchi, Yasumitsu; Takasago, Masahiro; Kaneda, Tokuya; and Tsunoda, Yoshito, 4,523,089, Cl. 250-205.000.

Takeda Riken Co., Ltd.: *See—*
Hayashi, Mishio, 4,523,288, Cl. 364-569.000.
Takeuchi, Kunio, 4,523,312, Cl. 371-1.000.

Takenaka, Masahiko, to Honda Giken Kogyo Kabushiki Kaisha. Trunk storage system for small vehicles. 4,522,442, Cl. 296-37.100.

Takenoya, Hideaki; Fujimura, Toshiro; Hara, Masanori; and Tonomura, Yoshinobu, to Janome Sewing Machine Co. Ltd. Method of producing stitch patterns in an electronic sewing machine. 4,522,137, Cl. 112-266.100.

Takenoya, Hideaki; and Inamori, Mikio, to Janome Sewing Machine Industry Co., Ltd. Method of preparing intercharacter control data for use in sewing machines. 4,522,138, Cl. 112-266.100.

Takenoya, Hideaki; and Mishima, Fumiyuki, to Janome Sewing Machine Co. Ltd. Device for adjusting printing paper tension in a printer. 4,522,520, Cl. 400-636.100.

Takenoya, Hideaki: *See—*
Hanyu, Susumu; Takenoya, Hideaki; and Kato, Shinichi, 4,522,134, Cl. 112-453.000.

Takeuchi, Akira: *See—*
Aoyama, Youichi; Takeuchi, Akira; Ohmuro, Masaru; and Ichimura, Yasuo, 4,523,164, Cl. 335-38.000.

Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, to Nissin Kogyo Kabushiki Kaisha. Vacuum booster device. 4,522,108, Cl. 91-376.00R.

Takeuchi, Kunio, to Takeda Riken Co., Ltd. IC tester. 4,523,312, Cl. 371-1.000.

Takeuchi, Nobuo: *See—*
Nishimura, Hirofumi; Oda, Hiroyuki; Kaneko, Tadashi; Takai, Akira; and Takeuchi, Nobuo, 4,522,179, Cl. 123-481.000.

Takeuchi, Tomomitsu: *See—*
Gomi, Shimpei; Takeuchi, Tomomitsu; Matsuo, Itaru; Tsutsui, Toshio; Nakagawa, Takao; and Miwa, Shigeru, 4,522,627, Cl. 44-1.00R.

Takeuchi, Tsunezo: *See—*
Ogawa, Yutaka; Takeuchi, Tsunezo; and Otaka, Masashi, 4,522,668, Cl. 156-89.000.

Takezawa, Kuninori: *See—*
Inoue, Toshitsugu; Nakada, Akiyoshi; Kaji, Haruo; Doi, Makoto; and Takezawa, Kuninori, 4,522,555, Cl. 414-733.000.

Takimoto, Masahiro; and Ota, Satoshi, to Toyoda Gosei Co., Ltd. Steering wheel for a vehicle. 4,522,084, Cl. 74-557.000.

Tallant, James C., II, to RCA Corporation. Automatic bias control system with compensated sense point. 4,523,233, Cl. 358-242.000.

Tamagawa, Akira; and Kano, Tokio, to Olympus Optical Co., Ltd. Partial injection apparatus. 4,522,493, Cl. 356-36.000.

Tamura, Paul S.; and Strehlow, Robert J., to Oximetrix, Inc. Controller for resistive heating element. 4,523,084, Cl. 219-497.000.

Tamura, Takasi: *See—*
Saito, Sigeru; Shimizu, Takahiko; and Tamura, Takasi, 4,522,525, Cl. 401-258.000.

Tamura, Yukio; Kaminishi, Masashi; and Kato, Yutaka, to Kabushiki Kaisha Komatsu Seisakusho. Track-type vehicle undercarriage. 4,522,451, Cl. 305-18.000.

Tanabe, Eizo: *See—*
Kina, Hideki; Iijima, Toshiyuji; Tanabe, Eizo; Kazama, Toyoki; and Namba, Masaharu, 4,522,904, Cl. 430-54.000.

Tanaka, Hiroaki; and Akita, Shigeyuki, to Nippon Soken, Inc. Rotational direction and angle detecting apparatus. 4,523,195, Cl. 340-870.370.

Tanaka, Yasuhito: *See—*
Katakami, Tsutomu; Fukazawa, Nobuyuki; Iizuka, Hajime; Nishina, Takashi; Kamiya, Joji; Tanaka, Yasuhito; and Nakano, Takuo, 4,523,011, Cl. 544-238.000.

Tang, Robert H., to PPG Industries, Inc. Method for polymerizing ethylenically unsaturated monomer with novel organic percarbonates. 4,522,991, Cl. 526-230.500.

Tanino, Hiroshi; Okamoto, Tetsuhiko; Ueyama, Shinichiro; Fujikawa, Kazuhiko; and Tsumiyama, Takatoshi, to Shin Nisso Kako Co., Ltd. Process for purifying phosphonitrile chlorides. 4,522,689, Cl. 203-52.000.

Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, to Fujitsu Limited. Integrated circuit having predetermined outer to inner cell pitch ratio. 4,523,106, Cl. 307-303.000.

Tarquinio, William R. Golf practice game. 4,522,406, Cl. 273-197.00A.

Tartaglino, Jerry J. Selective zone isolation for HVAC system. 4,522,116, Cl. 98-39.100.

Tateno, Shinya: *See—*
Akihama, Shigeyuki; Koizumi, Hajime; Umeki, Yoshihiko; Saito, Makoto; Banno, Tadashi; and Tateno, Shinya, 4,522,003, Cl. 52-391.000.

Taylor, Edward S.; and Bengtsson, Leif W., to Pyropower Corporation. Fluidized bed combustion boiler. 4,522,154, Cl. 122-4.00D.

Taylor, John H., to McGard, Inc. Venting fuel valve for diesel engine fuel supply system. 4,522,569, Cl. 417-434.000.

Taylor, Lloyd D., to Polaroid Corporation. β-eliminating polymers for diffusion control in photographic products. 4,522,996, Cl. 526-256.000.

Taylor, Thomas V.; and Neilson, James M., to University of Edinburgh, The University Court of The. Therapeutic device and method of inducing thrombosis in a blood vessel. 4,522,205, Cl. 128-303.170.

Tazaki, Saburo; and Ide, Akifumi, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for producing a binary information for an information transmission. 4,523,181, Cl. 340-347.0DD.

TechMark Corporation: *See—*
Dyer, David; and Wise, James L., 4,522,035, Cl. 62-79.000.

Tektronix, Inc.: *See—*
Miles, Frank, 4,523,161, Cl. 333-81.00R.

Teleflora, Inc.: *See—*
Murray, John F., 4,521,990, Cl. 47-41.120.

Tennent, David L.; and Sharma, Bhavender P., to Corning Glass Works. Immobilized enzyme composite/process using a mica carrier. 4,522,924, Cl. 501-2.000.

Terada, Yasuo: *See—*
Tomita, Takao; Akiba, Masahiro; Toyota, Hideki; and Terada, Yasuo, 4,522,029, Cl. 60-314.000.

Terada, Yumiko: *See—*
Suginoya, Mitsuru; Iwasa, Koji; Kamamori, Hitoshi; Sano, Yutaka; and Terada, Yumiko, 4,522,691, Cl. 204-18.100.

Tetra Pak Developpement SA: *See—*
Jacobsson, Kenth, 4,522,305, Cl. 206-632.000.

Texaco Inc.: *See—*
Cuscurida, Michael; and Klein, Howard P., 4,523,025, Cl. 560-26.000.
Mourao, Antonio M.; and Faist, Clifford H., 4,522,631, Cl. 44-57.000.

Texas Instruments Incorporated: *See—*
Westphal, Glenn H.; and Sherer, Jimmie B., 4,522,791, Cl. 422-249.000.

Thacker, Gary W. Self aligning crop spraying apparatus. 4,521,988, Cl. 47-1.700.

Thakoor, Anilkumar P.: *See—*
Khanna, Satish K.; Thakoor, Anilkumar P.; and Williams, Roger M., 4,522,844, Cl. 427-38.000.

Therma-Wave, Inc.: *See—*
Rosencwaig, Allan; and Opsal, Jon, 4,522,510, Cl. 374-7.000.

Thermal Profiles, Inc.: *See—*
Sayer, Bertram; and Kulkaski, Bernard J., 4,521,991, Cl. 49-161.000.

Thermedics, Inc.: *See—*
Szycher, Michael, 4,523,005, Cl. 528-76.000.

Therrien, Roger H., to NCR Canada Ltd - NCR Canada Ltee. Method and system for automatically detecting camera picture element failure. 4,523,231, Cl. 358-139.000.

Thim, Stig, to A-Betong AB; and Sabema Material AB. Matrix array for manufacturing concrete sleeper blocks. 4,522,367, Cl. 249-86.000.

Thissen, Christopher P., to Walker Process Corporation. Water treatment apparatus. 4,522,714, Cl. 210-150.000.

Thomas & Betts Corporation: *See—*
Greenwood, William S., 4,521,969, Cl. 33-180.00R.

Thomas, John E., to Tippins Machinery Company, Inc. Three stand mini mill method and apparatus. 4,522,050, Cl. 72-229.000.

Thomas, Richard C., to Upjohn Company, The. Analogs of the antibiotic spectinomycin. 4,523,022, Cl. 549-354.000.

Thomas, Samuel J.; Robich, James M.; and Hayes, Robert L., to Kendall Company, The. Pipe coating. 4,523,141, Cl. 324-54.000.

Thompson, Philip A.: *See—*
Meier, Gerd E. A.; and Thompson, Philip A., 4,522,183, Cl. 123-558.000.

Thompson, R. Bruce, to United States of America, Energy. Method and apparatus for measuring stress. 4,522,071, Cl. 73-597.000.

Thompson, Robert E.; Gould, Gordon; and Soodak, Charles I., to Chevron Research Company. Armored cable containing a hermetically sealed tube incorporating an optical fiber. 4,522,464, Cl. 350-96.230.

Thompson, Timothy H.: *See—*
Bauers, Barton M.; Raudat, John L.; Ehlers, Raymond C.; and Thompson, Timothy H., 4,522,011, Cl. 53-55.000.

Thomsen, Bernard D.; and Thomsen, Kenneth L. Transverse joint cell for concrete structures. 4,522,531, Cl. 404-2.000.

Thomsen, Kenneth L.: *See—*
Thomsen, Bernard D.; and Thomsen, Kenneth L., 4,522,531, Cl. 404-2.000.

Thomson-CSF: *See—*
Croset, Michel; and Mercandalli, Louis, 4,521,951, Cl. 29-571.000.
Houdart, Michel; Arruberrenal, Edouard; and Maurette, Frederic, 4,523,163, Cl. 333-218.000.

Thomson-Leeds Company, Inc.: *See—*
Silver, William, 4,522,306, Cl. 211-49.100.

Thorsson, Conny R.; and Viira, Indrek J., to Alfa-Laval AB. Production of ethanol. 4,522,920, Cl. 435-161.000.

Tiberend, Harvey L. Hay bale cover. 4,521,997, Cl. 52-3.000.

Ticker, Arthur: *See—*
Preiser, Herman S.; Ticker, Arthur; and Hatley, Kenneth J., 4,522,882, Cl. 428-351.000.

Tillotson, Harry T.: *See—*
Mackin, Steven J.; and Tillotson, Harry T., 4,522,081, Cl. 74-473.00R.

Timm, Gerald W.; Sandford, Donald L.; Claude, Timothy J.; and Helms, Richard A., to Dacomed Corporation. Penile prosthesis. 4,522,198, Cl. 128-79.000.

Tippins Machinery Company, Inc.: *See—*
Thomas, John E., 4,522,050, Cl. 72-229.000.

Tischer, James C.; and Utter, Robert E., to American Standard Inc. Scroll machine using discharge pressure for axial sealing. 4,522,575, Cl. 418-55.000.

Tobe, Yukio: *See—*
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Tocci, Leonard R., to Rockwell International Corporation. Chevron detector expander for magnetic bubble domain system. 4,523,300, Cl. 365-43.000.

Toda, Hiroaki: *See—*
Takahashi, Shuzou; and Toda, Hiroaki, 4,523,052, Cl. 174-16.0BH.

Toda, Yoshihide: *See—*
Miki, Toshio; Toda, Yoshihide; and Horii, Kenichi, 4,522,515, Cl. 384-571.000.

Todd, Julian B.; and Webb, Roger J. Heat regenerator. 4,522,588, Cl. 432-181.000.

Toffolon, Joseph F., to Progressive Machinery Sales, Inc. Bar puller. 4,522,091, Cl. 82-38.00R.

Toga, Yuzo: *See—*
Kanno, Tatsuya; and Toga, Yuzo, 4,522,913, Cl. 430-285.000.

Togari, Satoshi: *See—*
Koizumi, Hajime; Ohara, Shumpei; Kouda, Kiyoshi; Nagatomo, Muneshige; Sagara, Noriyasu; Togari, Satoshi; and Izumiyama, Hiroo, 4,522,254, Cl. 165-34.000.

Toho Beslon Co., Ltd.: *See—*
Yoshinari, Osamu; Kawakatsu, Yoshifumi; and Fukuizumi, Hideaki, 4,522,801, Cl. 423-447.400.

Toivio, Ilkka; and Toivio, Terttu. Device for the improving of the starting of an engine. 4,522,166, Cl. 123-196.00A.

Toivio, Terttu: *See—*
Toivio, Ilkka; and Toivio, Terttu, 4,522,166, Cl. 123-196.00A.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ikeda, Yoshio, 4,522,311, Cl. 220-254.000.
Matsumoto, Hiroshi; and Watanabe, Junji, 4,522,483, Cl. 355-3.00R.
Misawa, Norio, 4,522,487, Cl. 355-15.000.
Noma, Akira, 4,523,098, Cl. 250-492.200.
Ozu, Masao, 4,522,038, Cl. 62-228.500.
Sangu, Akio, 4,523,234, Cl. 358-293.000.
Shiotari, Yoshihisa, 4,523,216, Cl. 357-42.000.
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Tokyo Tatsuno Co., Ltd.: *See—*
Endo, Keizo; Matsumura, Hiroshi; Hasunuma, Yoshifumi; Masai, Siro; and Oguma, Noboru, 4,522,237, Cl. 141-95.000.

Tomassetti, Paola: *See—*
Marlettini, Maria G.; DeNovellis, Michelangelo; Labriola, Ernesto; Salomone, Teresa; and Tomassetti, Paola, 4,522,827, Cl. 514-671.000.

Tomita, Takao; Akiba, Masahiro; Toyota, Hideki; and Terada, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Control system of exhaust for internal combustion engine. 4,522,029, Cl. 60-314.000.

Tompkins Bros. Co. Inc.: *See—*
Savage, William E., 4,522,043, Cl. 66-80.000.

Tompkins, Terry C.: *See—*
Clecak, Nicholas J.; McKean, Dennis R.; Miller, Robert D.; Tompkins, Terry C.; and Willson, Carlton G., 4,522,911, Cl. 430-192.000.

Tompkins, Thomas M.: *See—*
Korthoff, Herbert W.; and Tompkins, Thomas M., 4,522,327, Cl. 227-19.000.

Tomuro, Noboru: *See—*
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Tomy Kogyo Company, Incorporated: *See—*
Kobayashi, Nobuo, 4,522,409, Cl. 273-316.000.

Tone, Masayuki; Yano, Tsutomu; and Saito, Koetsu, to Matsushita Electric Industrial Co., Ltd. Piezoelectric ultrasonic transducers having acoustic impedance-matching layers. 4,523,122, Cl. 310-334.000.

Tongue, John R. Orthopedic surgery drill guide apparatus. 4,522,201, Cl. 128-92.0EB.

Tonomura, Yoshinobu: *See—*
Takenoya, Hideaki; Fujimura, Toshiro; Hara, Masanori; and Tonomura, Yoshinobu, 4,522,137, Cl. 112-266.100.

Toray Industries, Inc.: *See—*
Katsuki, Kosuke; Nishioka, Youiti; and Nomura, Susumu, 4,521,931, Cl. 8-149.200.
Koebisu, Mamoru; Shinzawa, Masayuki; and Murakami, Masatsugi, 4,522,887, Cl. 428-461.000.
Murakami, Yukihiro; Murakami, Shigeomi; and Maeda, Katsunosuke, 4,523,321, Cl. 373-110.000.
Ohuchi, Shigehiro; and Kataoka, Masao, 4,522,868, Cl. 428-224.000.

Torii, Masakatsu, to Saitama Kako Co., Ltd. Spring type leg exercising device. 4,522,392, Cl. 272-142.000.

Toshimitsu, Naohiko; and Fujimura, Masayuki, to Canon Denshi Kabushiki Kaisha. Magnetic head. 4,523,244, Cl. 360-129.000.

Toudo, Kenzi; and Miyanaka, Motoshi, to Hitachi, Ltd. Digital control circuit. 4,522,337, Cl. 236-46.00F.

Townsend, D. Ronald: *See—*
Campbell, R. Clark; and Townsend, D. Ronald, 4,522,533, Cl. 405-36.000.

Toyo Element Kogyo Kabushiki Kaisha: *See—*
Kuwajima, Soichi; and Sakamoto, Naojiro, 4,522,719, Cl. 210-457.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Koyama, Kenji; Ohno, Syotaro; and Fukuda, Mitsutoshi, 4,522,725, Cl. 210-639.000.

Toyoda Gosei Co., Ltd.: *See—*
Takimoto, Masahiro; and Ota, Satoshi, 4,522,084, Cl. 74-557.000.

Toyota, Hideki: *See—*
Tomita, Takao; Akiba, Masahiro; Toyota, Hideki; and Terada, Yasuo, 4,522,029, Cl. 60-314.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Fukuta, Kinsho, 4,522,078, Cl. 74-89.150.
Kawai, Hisasi; Ina, Toshikazu; Igashira, Toshihiko; Nomura, Ken; Yoshida, Masakazu; Komoda, Takao; and Hamanishi, Makio, 4,522,177, Cl. 123-478.000.
Matsuoka, Hiroki; and Murai, Toshimi, 4,522,180, Cl. 123-489.000.
Noda, Munetaka; Tobe, Yukio; Taga, Yutaka; Nakamura, Shinya; Nakamura, Kazumasa; Inagaki, Takafumi; and Ito, Hiroshi, 4,523,281, Cl. 364-424.100.
Ogawa, Toshihisa; Miyagi, Hideo; Nagase, Masaomi; and Matsuno, Kiyotaka, 4,522,168, Cl. 123-198.00D.
Shinkai, Hiroaki, 4,523,262, Cl. 362-214.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,522,278, Cl. 180-79.100.

Trabert, Ludwig: *See—*
Lindner, Christian; Uerdingen, Walter; Hinz, Jurgen; and Trabert, Ludwig, 4,522,964, Cl. 524-71.000.

Tragatschnig, Jorg: *See—*
Hochreuther, Karl; and Tragatschnig, Jorg, 4,522,061, Cl. 73-431.000.

Transformatoren Union AG: *See—*
Altmann, Gerhard; Alber, Friedrich; and Brzuska, Lothar, 4,523,171, Cl. 336-96.000.

TransFRESH Corporation: *See—*
Woodruff, Richard E.; and Silliker, John H., 4,522,835, Cl. 426-264.000.

Trapanese, Salvatore P.: *See—*
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Trefileries et Cableries Chiers-Chatillon-Gorcy: *See—*
Pilboue, Pierre, 4,522,345, Cl. 242-55.000.

Trilli, Pat. Conveyor system and method for randomly transporting card racks to gambling tables. 4,522,400, Cl. 273-148.00A.

Trojan, Vaclav: *See—*
Novak, Vaclav; Prusek, Jaroslav; and Trojan, Vaclav, 4,522,699, Cl. 204-434.000.

Troxell, Lillian H.: *See—*
Johnston, Howard; and Troxell, Lillian H., 4,523,017, Cl. 546-302.000.

Truth Incorporated: *See—*
Tacheny, John C.; and Schema, Anthony C., 4,521,993, Cl. 49-325.000.

TRW, Inc.: *See—*
Hyde, Robert L., 4,523,194, Cl. 340-856.000.

Tsao, Chi-Wing: *See—*
Bradbury, Donald R.; Tsao, Chi-Wing; and Kamins, Theodore I., 4,522,662, Cl. 148-175.000.

Tsumiyama, Takatoshi: *See—*
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Tsunekawa, Tokuichi, to Canon Kabushiki Kaisha. Image scanning system with signal integration time control. 4,523,101, Cl. 250-578.000.

Tsuno, Koichi, to Sumitomo Electric Industries, Ltd. Device for accommodating bending of a cable. 4,522,113, Cl. 92-113.000.

Tsunoda, Yoshito: *See—*
Maeda, Takeshi; Mizoguchi, Yasumitsu; Takasago, Masahiro; Kaneda, Tokuya; and Tsunoda, Yoshito, 4,523,089, Cl. 250-205.000.

Tsutsui, Toshio: *See—*
Gomi, Shimpei; Takeuchi, Tomomitsu; Matsuo, Itaru; Tsutsui, Toshio; Nakagawa, Takao; and Miwa, Shigeru, 4,522,627, Cl. 44-1.00R.

Tsutsumi, Masaya: *See—*
Shindow, Yoshio; Tsutsumi, Masaya; Hotta, Wataru; and Miyauchi, Yujiro, 4,522,892, Cl. 428-628.000.

Tucker, Benjamin W.: *See—*
Oertel, Richard W., III; Richter, Reinhard H.; and Tucker, Benjamin W., 4,522,762, Cl. 260-453.00A.

Tucker, Christopher S.: *See—*
Heise, Michael S.; Tucker, Christopher S.; and Schwarz, James A., 4,522,941, Cl. 502-333.000.

Tuohy, Dennis J., III. Rolling tool box. 4,522,326, Cl. 224-310.000.

Turbyfill, Rueben M.: *See—*
Kelly, Timothy A.; and Turbyfill, Rueben M., 4,522,115, Cl. 98-2.140.

Turko, John W.: *See—*
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Turner, Jan R.: *See—*
Shreve, Barbara B.; and Turner, Jan R., 4,522,919, Cl. 435-119.000.

Tusinski, Joseph, to Coburn Optical Industries. Polisher-finer apparatus. 4,521,994, Cl. 51-58.000.

Uchino, Kenju, to Mitutoyo Mfg. Co., Ltd. Height gauge. 4,521,967, Cl. 33-169.00R.

Ueda, Minoru: *See—*
Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; Yamamoto, Keisuke; and Yasumoto, Yoshio, 4,523,225, Cl. 358-56.000.

Ueda, Tsunehiro: *See—*
Koshikawa, Takao; Ueda, Tsunehiro; and Ozeki, Tadao, 4,522,251, Cl. 164-491.000.

Ueki, Masao: *See—*
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Uerdingen, Walter: *See—*
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Ueyama, Shinichiro: *See—*
Tanino, Hiroshi; Okamoto, Tetsuhiko; Ueyama, Shinichiro; Fujikawa, Kazuhiko; and Tsumiyama, Takatoshi, 4,522,689, Cl. 203-52.000.

Ugon, Michel; and Nonat, Jean-Pierre, to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull. Hand-held processor with two-way dialog between microprocessor in case and microprocessor on carrier insertable into casing slot. 4,523,297, Cl. 364-900.000.

Ulke, Walter: *See—*
Struck, Helmut; Richter, Karl H.; Klein, Michael; Ruth, Ulrich; and Ulke, Walter, 4,522,418, Cl. 280-95.00A.

Ullrich, Martin: *See—*
Bayer, Erich; Beckerbauer, Anton; Flatscher, Georg; and Ullrich, Martin, 4,522,862, Cl. 428-195.000.

UMC Industries, Inc.: *See—*
Hendrickson, William W.; and Boerding, Theodore B., 4,523,285, Cl. 364-479.000.
Press, Irving D., 4,522,432, Cl. 285-55.000.

Umeki, Yoshihiko: *See—*
Akihama, Shigeyuki; Koizumi, Hajime; Umeki, Yoshihiko; Saito, Makoto; Banno, Tadashi; and Tateno, Shinya, 4,522,003, Cl. 52-391.000.

Ungarean, Gary L.; and Yarwood, John C., to Olin Corporation. Infrared imaging for electromagnetic casting. 4,522,247, Cl. 164-150.000.

Uniden Corporation of America: *See—*
Stevens, James C.; and Haynes, James R., 4,523,058, Cl. 179-84.00T.

Union Carbide Corporation: *See—*
Abatjoglou, Anthony G.; and Billig, Ernst, 4,522,933, Cl. 502-161.000.
Gardner, Hugh C., 4,522,977, Cl. 525-48.000.
Gardner, Hugh C., 4,522,978, Cl. 525-48.000.
Kupcikevicius, Vytautas, 4,521,938, Cl. 17-49.000.
Ramamurthy, Arakalgud V., 4,522,776, Cl. 264-176.00R.

Union Oil Company of California: *See—*
Gallup, Darrell L.; and Featherstone, John L., 4,522,728, Cl. 210-714.000.
Young, Donald C., 4,522,644, Cl. 71-78.000.

Union Special Corporation: *See—*
Wolff, James W.; Ruedisueli, James W.; and Schinke, Ralph, 4,522,136, Cl. 112-256.000.

Unisearch Limited: *See—*
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United Industries Sales Organization, Inc.: *See—*
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Administrator, National Aeronautics and Space Administration: *See—*
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Agriculture: *See—*
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Air Force: *See—*
Auld, Bert A.; Pettibone, Donald W.; and Plummer, James D., 4,523,293, Cl. 364-821.000.
Clapp, Roger E., 4,523,198, Cl. 343-754.000.
Eversole, Jay D., 4,523,327, Cl. 378-124.000.
Hawrylo, Frank Z., 4,523,212, Cl. 357-17.000.
Justus, Jimmie J., 4,523,325, Cl. 377-44.000.
Norris, Frank A.; and Krile, David J., 4,523,104, Cl. 307-247.00A.
Wallace, Gary A.; and Zimmer, James E., 4,522,883, Cl. 428-365.000.

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Hochel, Robert C.; and Saturday, Kathy A., 4,522,794, Cl. 423-251.000.
Knapp, Furn F., Jr.; and Goodman, Mark M., 4,523,033, Cl. 562-496.000.
Thompson, R. Bruce, 4,522,071, Cl. 73-597.000.

Health and Human Services: *See—*
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National Aeronautics and Space Administration: *See—*
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Koda, N. John, 4,522,469, Cl. 350-342.000.
Morrison, Andrew D.; and Daud, Taher, 4,522,661, Cl. 148-33.200.
Vogl, Otto; and Borsig, Eberhard, 4,523,008, Cl. 528-288.000.

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Assard, Gerald L.; and Moorcroft, Arthur L., 4,523,120, Cl. 310-323.000.
Moran, Robert D., 4,522,355, Cl. 244-3.200.
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Shajenko, Peter, 4,522,495, Cl. 356-345.000.

U.S. Philips Corporation: *See—*
Blanken, Jacob; and Van Rijswijck, Paul J., 4,523,124, Cl. 313-446.000.
Bouwer, Adrianus G., 4,522,489, Cl. 355-73.000.
Goscianski, Michel, 4,522,468, Cl. 350-332.000.
Kasperkovitz, Wolfdietrich G., 4,523,328, Cl. 381-3.000.
Mannschke, Lothar, 4,522,461, Cl. 350-96.180.
Marshall, Christopher B., 4,523,324, Cl. 375-91.000.
Overall, Colin D.; and Francis, Leslie H., 4,522,309, Cl. 220-2.10A.
Schmale, Peter C.; and Van Buul, Marinus C. W., 4,523,248, Cl. 361-1.000.
Van Roessel, Frederik J., 4,523,109, Cl. 307-520.000.

United States Steel Corporation: *See—*
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United States Surgical Corporation: *See—*
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United Technologies Corporation: *See—*
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Setzer, Herbert J.; Bett, John A. S.; and Lesieur, Roger R., 4,522,802, Cl. 423-652.000.

University of California, The Regents of the: *See—*
Pedersen, Niels C., 4,522,810, Cl. 424-89.000.

University of Cincinnati: *See—*
Kuhn, William E.; Hu, Kwoh H.; and Black, Stanley A., 4,522,190, Cl. 126-263.000.

University of Edinburgh, The University Court of The: *See—*
Taylor, Thomas V.; and Neilson, James M., 4,522,205, Cl. 128-303.170.

University of Minnesota, Regents of the: *See—*
Anderson, J. Edward, 4,522,128, Cl. 104-130.000.

University of Oklahoma, The Board of Regents for the: *See—*
McInerney, Michael J.; Jenneman, Gary E.; Knapp, Roy M.; and Menzie, Donald E., 4,522,261, Cl. 166-246.000.

University of Ottawa, The: *See—*
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Braun, Frank D.; Witt, Walter; and Putra, Stanislav, 4,522,591, Cl. 433-60.000.
Wittwer, Fritz, to Warner-Lambert Company. Apparatus and method for sealing capsules by application of vacuum and steam thereto. 4,522,666, Cl. 156-69.000.
Wohlford, William P., to Deere & Company. Endless track embodying track sections including flexors. 4,522,452, Cl. 305-43.000.
Wojnarowski, Robert J.: *See*—
Eichelberger, Charles W.; and Wojnarowski, Robert J., 4,522,888, Cl. 428-546.000.
Wolcott, Herbert B., Jr., to Atlantic Richfield Company. Method for creating a zone of increased permeability in hydrocarbon-containing subterranean formation penetrated by a plurality of wellbores. 4,522,260, Cl. 166-245.000.
Wolf, Gerhard D.: *See*—
Ebneth, Harold; Wolf, Gerhard D.; and Giesecke, Henning, 4,522,889, Cl. 428-614.000.
Wolff, James W.; Ruedisueli, James W.; and Schinke, Ralph, to Union Special Corporation. Method and apparatus for retarding oil leakage in a sewing machine. 4,522,136, Cl. 112-256.000.
Wolfseder, Alfons, to Anton Steinecker Maschinenfabrik GmbH. Apparatus for the extraction of vapor from a mash and/or wort tub. 4,522,256, Cl. 165-103.000.
Wolfseder, Alfons, to Anton Steinecker Maschinenfabrik GmbH. Tub vapor condenser. 4,522,257, Cl. 165-113.000.
Wong, Harvey C., to Mechatron Systems, Inc. Dual mode printer servo with improved velocity signal generator. 4,523,137, Cl. 318-604.000.
Wood, Robin: *See*—
Brittain, David R.; and Wood, Robin, 4,523,021, Cl. 548-410.000.
Woodcock, Sidney H.; Maes, Michel E.; and Steimel, Ronald W., to Detonics Pistol Accessories Ltd. Shock-absorbing recoil mechanism. 4,522,107, Cl. 89-196.000.
Woodruff, Richard E.; and Silliker, John H., to TransFRESH Corporation. Process and composition for producing and maintaining good color in fresh meat, fresh poultry and fresh fish. 4,522,835, Cl. 426-264.000.
World Color Press, Inc.: *See*—
Beckley, Robert A., 4,522,384, Cl. 270-54.000.
Worthington, Paul A., to Imperial Chemical Industries PLC. 1,3-Bis(-triazolyl)propan-2-one. 4,523,019, Cl. 548-262.000.
Worthington, Roy. Collapsible tea cart. 4,522,130, Cl. 108-159.000.
Wright, Geoff C.: *See*—
Small, Edward A.; and Wright, Geoff C., 4,522,428, Cl. 283-82.000.
Wuerzer, Bruno: *See*—
Markert, Jurgen; Hagen, Helmut; and Wuerzer, Bruno, 4,522,646, Cl. 71-94.000.
Parg, Adolf; Hamprecht, Gerhard; and Wuerzer, Bruno, 4,523,034, Cl. 564-79.000.
Wujcik, Steven E.: *See*—
Grace, Oscar M.; Wujcik, Steven E.; and Heyman, Duane A., 4,522,976, Cl. 524-722.000.
Wunder, Friedrich: *See*—
Baltes, Herbert; Litterer, Heinz; Leupold, Ernst I.; and Wunder, Friedrich, 4,522,800, Cl. 423-329.000.
Wyffels, Michael K.: *See*—
Nelson, Leon F.; Montgomery, Dan T.; Wyffels, Michael K.; and Sikula, William J., Jr., 4,522,553, Cl. 414-526.000.
Xerox Corporation: *See*—
Donohue, James M.; Markle, Robert E.; and Mager, George E., 4,523,299, Cl. 364-900.000.
Fisher, Almon P., 4,522,488, Cl. 355-15.000.
Tabares, Gilbert, 4,522,365, Cl. 248-466.000.
Yanus, John F., 4,523,035, Cl. 564-307.000.
Yagishita, Teruo: *See*—
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirofumi, 4,522,909, Cl. 430-137.000.
Yamada, Masanori; and Yoshikawa, Ryoichi, to Canon Kabushiki Kaisha. Flash apparatus with power supply control device. 4,522,479, Cl. 354-413.000.
Yamada, Yoshichika: *See*—
Yano, Kiyotoshi; Suzuki, Yutaka; and Yamada, Yoshichika, 4,522,372, Cl. 251-141.000.
Yamagiwa, Tamio, to Hi-Sonic Co., Ltd. Valve for automatic stoppage of water supply. 4,522,226, Cl. 137-390.000.
Yamaguchi, Shinji: *See*—
Akagi, Takao; Yamaguchi, Shinji; and Kubotsu, Akira, 4,522,873, Cl. 428-283.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Okazaki, Masaki, 4,522,602, Cl. 440-77.000.
Yamamoto, Hiroshi, 4,522,282, Cl. 180-219.000.
Yamamori, Shinji: *See*—
Kurahashi, Muneshige; and Yamamori, Shinji, 4,522,204, Cl. 128-719.000.
Yamamoto, Hiroshi, to Yamaha Hatsudoki Kabushiki Kaisha. Exhaust system for motorcycle. 4,522,282, Cl. 180-219.000.
Yamamoto, Ichiro: *See*—
Asao, Yasuzi; and Yamamoto, Ichiro, 4,522,906, Cl. 430-60.000.
Yamamoto Kagaku Gosei Co., Ltd.: *See*—
Kumagae, Yojiro; and Iwasaki, Yasuhisa, 4,523,018, Cl. 546-315.000.
Yamamoto, Keisuke: *See*—
Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; Yamamoto, Keisuke; and Yasumoto, Yoshio, 4,523,225, Cl. 358-56.000.
Yamamoto, Takeshi: *See*—
Iwaki, Akio; Suzuki, Norihito; Yamamoto, Takeshi; and Aoki, Toru, 4,522,891, Cl. 428-626.000.
Yamamoto, Taku: *See*—
Kato, Kimio; Kobayashi, Hisao; Mukai, Takamitsu; Kono, Hiroya; and Yamamoto, Taku, 4,522,567, Cl. 417-270.000.
Yamato Scale Company, Limited: *See*—
Kinoshita, Kinjiro, 4,522,321, Cl. 222-504.000.
Yamato Scientific Co., Ltd.: *See*—
Saito, Tatsuhiko, 4,522,684, Cl. 159-11.200.
Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Kajiwara, Akiharu; and Ota, Kiichiro, to Eisai Co., Ltd. Polyprenylcarboxylic acid amides. 4,522,759, Cl. 260-404.000.
Yamazaki, Susumu: *See*—
Ochiai, Hideo; Nagoya, Yoshinari; Fujimoto, Ryoichi; Yamazaki, Susumu; Sasamoto, Nobuhiko; and Ishida, Shinichi, 4,522,040, Cl. 62-419.000.
Yan, Tsoung Y.; and Chen, Nai Y., to Mobil Oil Corporation. Thermal treatment of heavy hydrocarbon oil. 4,522,703, Cl. 208-106.000.
Yang, Swe-Wong: *See*—
Gigliotti, Michael F. X., Jr.; Yang, Swe-Wong; Jackson, Melvin R.; Bruch, Charles A.; and Nguyen-Dinh, Xuan, 4,522,664, Cl. 148-404.000.
Yannas, Ioannis V.; Burke, John F.; and Stasikelis, Peter J., to Massachusetts Institute of Technology. Method for preserving porosity in porous materials. 4,522,753, Cl. 260-123.700.
Yano, Kiyotoshi; Suzuki, Yutaka; and Yamada, Yoshichika, to Nippondenso Co., Ltd. Electromagnetic valve. 4,522,372, Cl. 251-141.000.
Yano, Takeshi: *See*—
Takahashi, Sadayuki; Yonezawa, Masatomo; Ochi, Atsushi; Yano, Takeshi; Hamatsuki, Takeshige; and Fukui, Izumu, 4,523,121, Cl. 310-334.000.
Yano, Tsutomu: *See*—
Tone, Masayuki; Yano, Tsutomu; and Saito, Koetsu, 4,523,122, Cl. 310-334.000.
Yanus, John F., to Xerox Corporation. Process for synthesizing squaraine compositions. 4,523,035, Cl. 564-307.000.
Yarrington, Robert M.: *See*—
Hwang, Herng-Shinn; Heck, Ronald M.; and Yarrington, Robert M., 4,522,894, Cl. 429-17.000.
Yarwood, John C.: *See*—
Ungarean, Gary L.; and Yarwood, John C., 4,522,247, Cl. 164-150.000.
Yasuda, Makoto; and Murayama, Seiichi, to Hitachi, Ltd. Liquid chromatography apparatus. 4,523,096, Cl. 250-373.000.
Yasuda, Yoshiko: *See*—
Kazufumi, Ogawa; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,523,102, Cl. 250-578.000.
Yasui, Taro. Slips. 4,522,427, Cl. 281-5.000.
Yasumoto, Yoshio: *See*—
Masuda, Mitsuya; Iyehara, Sadahiro; Inohara, Shizuo; Ueda, Minoru; Yamamoto, Keisuke; and Yasumoto, Yoshio, 4,523,225, Cl. 358-56.000.
Yates, Donald N., Jr.; and Oestrich, Michael, to GEO Vann, Inc. Primer mix, percussion primer and method for initiating combustion. 4,522,665, Cl. 149-21.000.
Yeh, Chun T. Automatic cassette ejecting device. 4,522,353, Cl. 242-198.000.
Yen, Teh F.; and Chan, Mankin, to University of Southern California. Method for fracturing of oil shale. 4,522,265, Cl. 166-307.000.
Yeo, Herbert G.: *See*—
Petersen, Richard W.; Pierini, John M.; and Yeo, Herbert G., 4,522,053, Cl. 720-316.000.
Yessian, Richard J.; and Oetting, William A., to Lockheed Electronics Company, Inc. Motor differential drive reel tensioning system. 4,522,351, Cl. 242-189.000.
Yokogawa, Akira; Takahashi, Asao; Maruyama, Isao; and Hosaka, Takao, to Maruzen Petrochemical Co., Ltd. Process for recovery of cyclopentadienes. 4,522,688, Cl. 203-28.000.
Yokoyama, Naoki: *See*—
Hasebe, Nobuhisa; Kawada, Hiroshi; Yokoyama, Naoki; and Komori, Shigeki, 4,522,540, Cl. 409-293.000.
Yokoyama, Nobuaki: *See*—
Imazeki, Kazuyoshi; and Yokoyama, Nobuaki, 4,523,197, Cl. 343-702.000.
Yonezawa, Masatomo: *See*—
Takahashi, Sadayuki; Yonezawa, Masatomo; Ochi, Atsushi; Yano, Takeshi; Hamatsuki, Takeshige; and Fukui, Izumu, 4,523,121, Cl. 310-334.000.
Yonezawa, Taketoshi: *See*—
Kazufumi, Ogawa; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,523,102, Cl. 250-578.000.

Yoo, Byung E. Boat. 4,522,601, Cl. 440-11.000.
Yoo, Jin S.; Karch, John A.; Poss, Richard F.; and Burk, Emmett H., Jr., to Atlantic Richfield Company. Preparative process for alkaline earth metal, aluminum-containing spinels. 4,522,937, Cl. 502-302.000.
Yoshida, Kenji; and Sanada, Yuichi, to Nissan Motor Company, Limited. Rack and pinion type steering device. 4,522,419, Cl. 280-96.000.
Yoshida Kogyo K. K.: *See*—
Oda, Kiyoshi, 4,521,942, Cl. 24-419.000.
Yoshida, Masakazu: *See*—
Kawai, Hisasi; Ina, Toshikazu; Igashira, Toshihiko; Nomura, Ken; Yoshida, Masakazu; Komoda, Takao; and Hamanishi, Makio, 4,522,177, Cl. 123-478.000.
Yoshida, Motoaki: *See*—
Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,522,966, Cl. 524-114.000.
Yoshida, Tomio: *See*—
Satoh, Isao; Yoshida, Tomio; Harigae, Shunji; and Koishi, Kenji, 4,523,304, Cl. 369-32.000.
Yoshikawa, Ryoichi: *See*—
Yamada, Masanori; and Yoshikawa, Ryoichi, 4,522,479, Cl. 354-413.000.
Yoshimitsu, Yasuro: *See*—
Okubo, Masao; and Yoshimitsu, Yasuro, 4,523,144, Cl. 324-158.00P.
Yoshinari, Osamu; Kawakatsu, Yoshifumi; and Fukuizumi, Hideaki, to Toho Beslon Co., Ltd. Process for producing carbon fiber or graphite fiber. 4,522,801, Cl. 423-447.400.
Yoshitake, Hideki: *See*—
Kinoshita, Hisashi; Yoshitake, Hideki; and Kake, Nin, 4,523,134, Cl. 318-313.000.
Young, Donald C., to Union Oil Company of California. Method for selectively controlling plant suckers. 4,522,644, Cl. 71-78.000.
Young, Iain M.: *See*—
Whatmore, Roger W.; and Young, Iain M., 4,523,119, Cl. 310-313.00A.
Yurchak, Sergei: *See*—
Gould, Ronald M.; and Yurchak, Sergei, 4,523,046, Cl. 585-322.000.
Zansky, Zoltan, to Honeywell Inc. Dimmable electronic gas discharge lamp ballast. 4,523,131, Cl. 315-307.000.
Zansky, Zoltan: *See*—
Stamm, Thomas A.; and Zansky, Zoltan, 4,523,128, Cl. 315-291.000.
Zato, Thomas J., to Zenith Electronics Corporation. Power loss compensation for programmable memory control system. 4,523,295, Cl. 364-900.000.
Zaugg, Paul, to BBC Brown, Boveri & Company, Limited. Method for reducing the amount of nox and for raising the output of a gas turbine power station of the type utilizing an air reservoir, and a gas turbine power station, of this type, operating in accordance with this method. 4,522,024, Cl. 60-39.050.
Zeigler, Theodore R. Clip for self-locking collapsible/expandable structures. 4,522,008, Cl. 52-646.000.
Zeitelhack, Arthur R. Pencil holder. 4,522,522, Cl. 401-88.000.
Zelinkovsky, Reuven: *See*—
Piasecki, Joshua; Zelinkovsky, Reuven; Segev, Aharon; and Henquin, Teodor, 4,523,309, Cl. 370-81.000.
Zemco, Inc.: *See*—
Blaney, Peter G., 4,522,280, Cl. 180-175.000.
Zendler, Richard: *See*—
Maack, Werner; and Zendler, Richard, 4,521,960, Cl. 29-749.000.
Zengel, Hans: *See*—
Klostermeier, Werner; Lasher, Jeffery D.; Meyer, Gerhard; and Zengel, Hans, 4,522,880, Cl. 428-332.000.
Zenith Electronics Corporation: *See*—
Dobrovolny, Pierre, 4,523,159, Cl. 331-99.000.
Zato, Thomas J., 4,523,295, Cl. 364-900.000.
Zieke, Larry M., to Dow Chemical Company, The. Transversely adjustable profile die block. 4,522,678, Cl. 156-501.000.
Ziemiak, John J.: *See*—
McVicker, Gary B.; Carter, James L.; Murrell, Lawrence L.; and Ziemiak, John J., 4,522,928, Cl. 502-26.000.
Zimmer, James E.: *See*—
Wallace, Gary A.; and Zimmer, James E., 4,522,883, Cl. 428-365.000.
Zimmerer, Robert W., to Scientech, Inc. Method and apparatus for measuring radiant energy. 4,522,511, Cl. 374-32.000.
Zirkl, Siegmar, to Siemens Aktiengesellschaft. Electronic time switch. 4,523,103, Cl. 307-141.000.
Zoche, Gunter: *See*—
Neuschaffer, Karl-Heinz; Engels, Hans-Werner; Gebert, Hans-Jurgen; Laube, Robert W.; and Zoche, Gunter, 4,522,652, Cl. 106-84.000.
Zoecon Corporation: *See*—
Anderson, Richard J.; and Lee, Shy-Fuh, 4,522,647, Cl. 71-94.000.
434743 Ontario Inc.: *See*—
Clark, George W.; and Keene, Christopher B., 4,522,299, Cl. 206-315.300.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF JUNE, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barger, William M., to French Oil Mill Machinery Company, The. Apparatus for the continuous extraction of oils and soluble substances from solid materials. Re. 31,913, Cl. 422-267.000.

Cosden Technology, Inc.: *See—*
Fortuna, Vincent E.; and MacLaughlin, Donald N., Re. 31,912, Cl. 156-494.000.

Fortuna, Vincent E.; and MacLaughlin, Donald N., to Cosden Technology, Inc. Inertial spin welding of thermoplastic and thermoplastic coated container parts. Re. 31,912, Cl. 156-494.000.

French Oil Mill Machinery Company, The: *See—*
Barger, William M., Re. 31,913, Cl. 422-267.000.

Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Refrigerated display case having ambient air defrost. Re. 31,909, Cl. 62-82.000.

Jidosha Kiki Co., Ltd.: *See—*
Ohta, Ryuji; and Kobayashi, Michio, Re. 31,911, Cl. 92-98.00D.

Kobayashi, Michio: *See—*
Ohta, Ryuji; and Kobayashi, Michio, Re. 31,911, Cl. 92-98.00D.

MacLaughlin, Donald N.: *See—*
Fortuna, Vincent E.; and MacLaughlin, Donald N., Re. 31,912, Cl. 156-494.000.

Medeco Security Locks, Inc.: *See—*
Oliver, Roy N., Re. 31,910, Cl. 70-369.000.

Ohta, Ryuji; and Kobayashi, Michio, to Jidosha Kiki Co., Ltd. Coupled shells for vacuum power servo booster. Re. 31,911, Cl. 92-98.00D.

Oliver, Roy N., to Medeco Security Locks, Inc. Removable core cylinder lock. Re. 31,910, Cl. 70-369.000.

Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F., Re. 31,909, Cl. 62-82.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Ateliers des Charmilles, S.A.: *See—*
Convers, Danielle; Balleys, Francois; and Pfau, Jean, B1 4,287,404, Cl. 219-69.00W.

Balleys, Francois: *See—*
Convers, Danielle; Balleys, Francois; and Pfau, Jean, B1 4,287,404, Cl. 219-69.00W.

Convers, Danielle; Balleys, Francois; and Pfau, Jean, to Ateliers des Charmilles, S.A. Electrode for electrical discharge machining. B1 4,287,404, 6-11-85, Cl. 219-69.00W.

Data Display Systems, Inc.: *See—*
Levitt, Joseph R., B1 3,602,706, Cl. 364-551.000.

Gulistan, Bulent, to VSI Corporation. Panel fastener. B1 4,285,380, 6-11-85, Cl. 411-103.000.

Levitt, Joseph R., to Data Display Systems, Inc. Data-processing method and means for classifying signals in a first or second state. B1 3,602,706, 6-11-85, Cl. 364-551.000.

Pfau, Jean: *See—*
Convers, Danielle; Balleys, Francois; and Pfau, Jean, B1 4,287,404, Cl. 219-69.00W.

VSI Corporation: *See—*
Gulistan, Bulent, B1 4,285,380, Cl. 411-103.000.

LIST OF DESIGN PATENTEES

Allen, James H., to 'totes', incorporated. Expandable hang-up garment bag. 279,144, 6-11-85, Cl. D3-71.000.

American Tourister, Inc.: *See—*
Pulichino, John; Bomes, Harvey J.; Migliore, John J.; Smith, Lonnie M.; and Schmitt, Wayne, 279,142, Cl. D3-71.000.

Aronowitz, Robert J.; and Katzanek, Bernard D., to Samsonite Corporation. Armrest. 279,153, 6-11-85, Cl. D6-501.000.

Aronowitz, Robert J.; and Katzanek, Bernard D., to Samsonite Corporation. Combined seat and backrest unit. 279,154, 6-11-85, Cl. D6-501.000.

Aronowitz, Robert J.; and Katzanek, Bernard D., to Samsonite Corporation. Combined seat and backrest unit. 279,155, 6-11-85, Cl. D6-501.000.

Artsana S.P.A.: *See—*
Catelli, Pietro, 279,204, Cl. D21-124.000.
Catelli, Pietro, 279,205, Cl. D21-127.000.

Asaji, Toshio: *See—*
Tsumura, Tomoki; Maruoka, Hiroshi; Asaji, Toshio; and Yamamoto, Mitsuru, 279,187, Cl. D14-100.000.
Tsumura, Tomoki; Maruoka, Hiroshi; Asaji, Toshio; and Yamamoto, Mitsuru, 279,189, Cl. D14-113.000.

AT&T Bell Laboratories: *See—*
Felix, Christian J.; Gates, Frank V.; and Sylvester, Gordon E., 279,185, Cl. D14-60.000.

Avon Tyres Limited: *See—*
Walker, Peter J., 279,177, Cl. D12-136.000.

Banasik, Wayne R. Dispensing closure. 279,169, 6-11-85, Cl. D9-447.000.

Belotta, Anthony S., to Warner-Lambert Company. Combined display rack and shelf unit. 279,150, 6-11-85, Cl. D6-462.000.

Bomes, Harvey J.: *See—*
Pulichino, John; Bomes, Harvey J.; Migliore, John J.; Smith, Lonnie M.; and Schmitt, Wayne, 279,142, Cl. D3-71.000.

Bounds, William E. Condiment dispenser. 279,158, 6-11-85, Cl. D7-54.000.

Bounds, William E. Condiment dispenser. 279,159, 6-11-85, Cl. D7-57.000.

Brian Davis and Company Proprietary Limited: *See—*
Carlson, Arthur R., 279,210, Cl. D23-11.000.
Carlson, Arthur R., 279,211, Cl. D23-11.000.
Carlson, Arthur R., 279,212, Cl. D23-11.000.

Bridgestone Tire Co., Ltd.: *See—*
Nakamura, Masao; Kojima, Hiroshi; and Nishio, Hideaki, 279,178, Cl. D12-151.000.

Canyon Corporation: *See—*
Tada, Tetsuya, 279,166, Cl. D9-300.000.

Carlson, Arthur R., to Brian Davis and Company Proprietary Limited. Watering can. 279,210, 6-11-85, Cl. D23-11.000.

Carlson, Arthur R., to Brian Davis and Company Proprietary Limited. Watering can. 279,211, 6-11-85, Cl. D23-11.000.

Carlson, Arthur R., to Brian Davis and Company Proprietary Limited. Watering can. 279,212, 6-11-85, Cl. D23-11.000.

Carpel, Emmett F. Multiple nipple pacifier. 279,218, 6-11-85, Cl. D24-46.000.

Catelli, Pietro, to Artsana S.P.A. Toy cash register. 279,204, 6-11-85, Cl. D21-124.000.

Catelli, Pietro, to Artsana S.P.A. Toy typewriter. 279,205, 6-11-85, Cl. D21-127.000.

Chevassus, Alain, to Lefebure Isolants Reunis. Cosmetic box. 279,225, 6-11-85, Cl. D28-83.000.

Chi Hung, Danny C., to Dah Sun Electronics Company Limited. Calculator clip. 279,197, 6-11-85, Cl. D18-2.000.

Claxton, Bruce A.; and Ramos, Sylvia, to Motorola, Inc. Portable battery charger or similar article. 279,181, 6-11-85, Cl. D13-5.000.

Coats & Clark, Inc.: *See—*
Dunn, James R., 279,200, Cl. D19-91.000.

Command Concept Company: *See—*
Florsek, Mary E., 279,147, Cl. D6-422.000.
Florsek, Mary E., 279,148, Cl. D6-432.000.
Florsek, Mary E., 279,149, Cl. D6-444.000.

Cox, Clifford C.: *See—*
Truitt, Robert B.; Cox, Clifford C.; and Manno, Joseph J., 279,217, Cl. D24-17.000.

Dah Sun Electronics Company Limited: *See—*
Chi Hung, Danny C., 279,197, Cl. D18-2.000.

Dole, Charles M.: *See—*
Schosser, John F.; Dole, Charles M.; and Koda, Walter P., 279,221, Cl. D26-44.000.

Drane, John H., to Duracell Inc. Portable light. 279,222, 6-11-85, Cl. D26-44.000.

Dunn, James R., to Coats & Clark, Inc. Recipe memo holder. 279,200, 6-11-85, Cl. D19-91.000.

Duracell Inc.: *See—*
Drane, John H., 279,222, Cl. D26-44.000.
Schosser, John F.; Dole, Charles M.; and Koda, Walter P., 279,221, Cl. D26-44.000.

Eastern Electrical Equipment Co., Inc.: *See—*
Shuman, Bernard E., 279,201, Cl. D20-43.000.

Eklof, Krister. Water reservoir for potted plants. 279,175, 6-11-85, Cl. D11-164.000.

Erica Goldsmith Trust: *See—*
Goldsmith, David, 279,168, Cl. D9-429.000.

Esselte Dymo N V: *See—*
Pedersen, Dane, 279,198, Cl. D18-19.000.

Evan Goldsmith Trust: *See—*
Goldsmith, David, 279,168, Cl. D9-429.000.

F.lli Guzzini S.p.A.: *See—*
Gecchelin, Bruno, 279,157, Cl. D7-48.000.

Felix, Christian J.; Gates, Frank V.; and Sylvester, Gordon E., to AT&T Bell Laboratories. Stand for a telephone or similar article. 279,185, 6-11-85, Cl. D14-60.000.

Fletcher, Robert, to Paramount Pictures Corporation. Costume. 279,135, 6-11-85, Cl. D2-30.000.

Florsek, Mary E., to Command Concept Company. Receptionist desk. 279,147, 6-11-85, Cl. D6-422.000.

Florsek, Mary E., to Command Concept Company. Hair care unit. 279,148, 6-11-85, Cl. D6-432.000.

Florsek, Mary E., to Command Concept Company. Hair care unit. 279,149, 6-11-85, Cl. D6-444.000.

Ford Motor Company: *See—*
Shenk, William B., Jr., 279,182, Cl. D14-1.000.

Freeman, Jack A. Swimming pool. 279,220, 6-11-85, Cl. D25-2.000.

Fuji Co., Ltd.: *See—*
Ueda, Taichi, 279,143, Cl. D3-71.000.

Fujitsu Limited: *See—*
Nakamura, Tadashi; and Nakano, Yutaka, 279,191, Cl. D14-100.000.

G. R. Marketing, Inc.: *See—*
Wolfberg, Gary R., 279,174, Cl. D11-47.000.

Gamm, Robert J., to Kangaroos U.S.A., Inc. Athletic shoe with pocket. 279,138, 6-11-85, Cl. D2-309.000.

Gamm, Robert J., to Kangaroos U.S.A. Inc. Athletic shoe. 279,139, 6-11-85, Cl. D2-310.000.

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Felix, Christian J.; Gates, Frank V.; and Sylvester, Gordon E., 279,185, Cl. D14-60.000.

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1 4,522,150
3 4,522,151
56 R 4,522,152
109 4,522,153

CLASS 122
4 D 4,522,154
7 R 4,522,155
34 4,522,156
510 4,522,157

CLASS 123
1 A 4,522,158
4,522,159
41.49 4,522,160
41.85 4,522,161
46.5 C 4,522,162
73 F 4,522,163
180 R 4,522,164
195 C 4,522,165
196 A 4,522,166
196 S 4,522,167
198 D 4,522,168
198 DC 4,522,170
198 F 4,522,169
270 4,522,171
276 4,522,172
4,522,173
300 4,522,174
339 4,522,175
4,522,176
478 4,522,177
4,522,178
481 4,522,179
489 4,522,180
502 4,522,181
509 4,522,182
558 4,522,183
599 4,522,184
637 4,522,185
643 4,522,186

CLASS 124
24 A 4,522,187

CLASS 125
11 CC 4,522,188
11 TP 4,522,189

CLASS 126
263 4,522,190
307 R 4,522,191
343.5 A 4,522,192
438 4,522,193

CLASS 128
1 D 4,522,194
4,522,195
4 4,522,196
26 4,522,197
79 4,522,198
80 G 4,522,199
92 BC 4,522,200
4,522,202
92 EB 4,522,201
132 D 4,522,203
303.17 4,522,205
312 4,522,206
325 4,522,207
419 PT 4,522,208
419 R 4,522,209
421 4,522,210
640 4,522,211
642 4,522,212
716 4,522,213
719 4,522,204

CLASS 131
79 4,522,214

CLASS 132
11 R 4,522,215
92 R 4,522,216

CLASS 134
75 4,522,217

CLASS 136
260 4,523,051

CLASS 137
3 4,522,218
62 4,522,219
85 4,522,220
118 4,522,221
240 4,522,222
4,522,223
242 4,522,224
351 4,522,225
390 4,522,226
393 4,522,227
4,522,228
460 4,522,229
496 4,522,230
625.17 4,522,231
625.32 4,522,232
625.47 4,522,233

CLASS 138
108 4,522,234
130 4,522,235

CLASS 139
353 4,522,236

CLASS 141
95 4,522,237
142 4,522,238

CLASS 144
2 Z 4,522,239
193 A 4,522,241
193 E 4,522,240
208 E 4,522,242

CLASS 148
1.5 4,522,656
4,522,657
6.14 R 4,522,658
11.5 R 4,522,659
20.3 4,522,660
33.2 4,522,661
175 4,522,662
403 4,522,663
404 4,522,664

CLASS 149
21 4,522,665

CLASS 152
528 4,522,243

CLASS 156
69 4,522,666
87 4,522,667
89 4,522,668
157 4,522,669
220 4,522,670
235 4,522,671
238 4,522,672
244.11 4,522,675
307.3 4,522,673
345 4,522,674
443 4,522,676
467 4,522,677
494 Re.31,912
501 4,522,678
510 4,522,679
624 4,522,680
643 4,522,681
647 4,522,682
666 4,522,683

CLASS 159
11.2 4,522,684

CLASS 160
170 4,522,244
177 4,522,245
223 4,522,246

CLASS 162
30.11 4,522,685
158 4,522,686
336 4,522,687

CLASS 164
150 4,522,247
394 4,522,248
466 4,522,249
472 4,522,250

491 4,522,251

CLASS 165

1 4,522,252
18 4,522,253
34 4,522,254
48 R 4,522,255
103 4,522,256
113 4,522,257

CLASS 166

57 4,522,258
237 4,522,259
245 4,522,260
246 4,522,261
248 4,522,262
272 4,522,263
278 4,522,264
307 4,522,265
330 4,522,266

CLASS 172

28 4,522,267
518 4,522,268

CLASS 173

12 4,522,269
163 4,522,270

CLASS 174

16 BH 4,523,052
42 4,523,053
45 R 4,523,054

CLASS 175

56 4,522,271
74 4,522,272
133 4,522,273

CLASS 177

25 4,522,274
4,522,275
145 4,522,276
250 4,522,277

CLASS 179

2 DP 4,523,055
81 B 4,523,057
81 R 4,523,056
84 T 4,523,058

CLASS 180

79.1 4,522,278
143 4,522,279
175 4,522,280
206 4,522,281
219 4,522,282

CLASS 181

175 4,522,283
292 4,522,284

CLASS 187

22 4,522,285

CLASS 188

72.7 4,522,286
73.35 4,522,287

CLASS 190

106 4,522,288

CLASS 191

6 4,523,059

CLASS 192

41 A 4,522,289
107 M 4,522,290

CLASS 193

23 4,522,291

CLASS 198

374 4,522,292
377 4,522,293
429 4,522,294
493 4,522,295
548 4,522,296
774 4,522,297

CLASS 200

5 A 4,523,060
17 R 4,523,061
35 R 4,523,062
61.41 4,523,063
67 D 4,523,064
83 S 4,523,066
157 4,523,065

CLASS 203

28 4,522,688
52 4,522,689

CLASS 204

1 T 4,522,690
18.1 4,522,691
129.5 4,522,692
159.15 4,522,693
159.24 4,522,694
266 4,522,695

297 W 4,522,696
298 4,522,697
301 4,522,698
434 4,522,699

CLASS 206

216 4,522,298
315.3 4,522,299
315.4 4,522,300
507 4,522,301
570 4,522,302
588 4,522,303
591 4,522,304
632 4,522,305

CLASS 208

8 LE 4,522,700
40 4,522,701
89 4,522,702
106 4,522,703
113 4,522,704
120 4,522,705
121 4,522,706
136 4,522,708
180 4,522,707
216 R 4,522,709
349 4,522,710

CLASS 209

298 4,522,711

CLASS 210

86 4,522,712
136 4,522,713
150 4,522,714
198.2 4,522,715
210 4,522,716
238 4,522,717
371 4,522,718
457 4,522,719
512.1 4,522,720
603 4,522,721
605 4,522,722
611 4,522,723
635 4,522,724
639 4,522,725
660 4,522,726
673 4,522,727
714 4,522,728
727 4,522,729
750 4,522,730

CLASS 211

49.1 4,522,306

CLASS 215

219 4,522,307
253 4,522,308

CLASS 219

10.49 R 4,523,067
10.53 4,523,068
10.55 D 4,523,069
10.55 F 4,523,070
56.22 4,523,071
67 4,523,072
69 W 4,523,073
4,523,074
B1 4,287,404
88 4,523,075
125.1 4,523,076
137 PS 4,523,077
202 4,523,078
251 4,523,079
362 4,523,080
370 4,523,081
399 4,523,082
433 4,523,083
497 4,523,084
528 4,523,085
549 4,523,086

CLASS 220

2.1 A 4,522,309
4 R 4,522,310
254 4,522,311
324 4,522,312

CLASS 221

1 4,522,313
190 4,522,314

CLASS 222

142.1 4,522,315
327 4,522,316
391 4,522,317
402.24 4,522,318
481.5 4,522,319
484 4,522,320
504 4,522,321
597 4,522,322

CLASS 223

102 4,522,324

CLASS 224

42.21 4,522,325

310 4,522,326

CLASS 225

2 4,522,323

CLASS 227

19 4,522,327
153 4,522,329

CLASS 228

182 4,522,330
263.18 4,522,331

CLASS 229

43 4,522,332

CLASS 235

379 4,523,087
487 4,523,088

CLASS 236

20 R 4,522,333
34.5 4,522,334
44 C 4,522,335
46 F 4,522,337
46 R 4,522,336

CLASS 239

177.2 4,522,338
272 4,522,339
654 4,522,340
672 4,522,341

CLASS 241

57 4,522,342
58 4,522,343
79 4,522,344

CLASS 242

55 4,522,345
55.3 4,522,346
84.5 A 4,522,347
96 4,522,348
4,522,349
107.4 A 4,522,350
189 4,522,351
193 4,522,352
198 4,522,353
219 4,522,354

CLASS 244

3.15 4,522,356
3.2 4,522,355
3.22 4,522,357
110 B 4,522,358
129.5 4,522,359
204 4,522,360

CLASS 248

188.8 4,522,361
207 4,522,362
225.2 4,522,363
460 4,522,364
466 4,522,365
551 4,522,366

CLASS 249

86 4,522,367

CLASS 250

205 4,523,089
211 K 4,523,090
213 VT 4,523,091
227 4,523,092
234 4,523,093
311 4,523,094
349 4,523,095
373 4,523,096
458.1 4,523,097
492.2 4,523,098
551 4,523,099
561 4,523,100
578 4,523,101
4,523,102

CLASS 251

1 B 4,522,368
61.5 4,522,369
63.5 4,522,370
139 4,522,371
141 4,522,372
297 4,522,373
356 4,522,374

CLASS 252

8.55 D 4,522,732
8.55 R 4,522,731
49.3 4,522,733
49.6 4,522,734
49.9 4,522,735
51.5 A 4,522,736
62.2 4,522,737
90 4,522,738
95 4,522,739
174.21 4,522,740
299.63 4,522,741
301.16 4,522,742
311 4,522,743
478 4,522,744

500 4,522,745
4,522,746
511 4,522,747
522 R 4,522,748
4,522,749

CLASS 254

425 4,522,375

CLASS 260

112 B 4,522,751
112 R 4,522,750
112.5 R 4,522,752
123.7 4,522,753
239 R 4,522,754
245.75 4,522,755
349 4,522,756
396 R 4,522,757
397.5 4,522,758
404 4,522,759
410.9 R 4,522,760
419 4,522,761
453 A 4,522,762
455 A 4,522,763
456 R 4,522,764
463 4,522,765

CLASS 261

91 4,522,766
94 4,522,767

CLASS 264

0.5 4,522,769
2.2 4,522,768
36 4,522,770
61 4,522,771
71 4,522,772
167 4,522,773
168 4,522,774
173 4,522,775
176 R 4,522,776
223 4,522,777
328.7 4,522,778
530 4,522,779

CLASS 266

47 4,522,376
196 4,522,377

CLASS 267

141.4 4,522,378

CLASS 269

47 4,522,379
71 4,522,380
328 4,522,381

CLASS 270

1.1 4,522,382
53 4,522,383
54 4,522,384

CLASS 271

10 4,522,385
147 4,522,386
187 4,522,387
245 4,522,388

CLASS 272

4 4,522,389
29 4,522,390
62 4,522,391
142 4,522,392

CLASS 273

1 GF 4,522,393
1.5 R 4,522,394
30 4,522,395
58 K 4,522,396
63 D 4,522,397
84 R 4,522,398
143 R 4,522,399
148 A 4,522,400
153 S 4,522,401
4,522,402
154 4,522,403
157 R 4,522,404
167 A 4,522,405
197 A 4,522,406
256 4,522,407
271 4,522,408
316 4,522,409

CLASS 277

47 4,522,328
56 4,522,410
134 4,522,411
138 4,522,412
205 4,522,413
212 R 4,522,414
216 4,522,415

CLASS 280

91 4,522,416
4,522,417
95 A 4,522,418
96 4,522,419
289 A 4,522,420

511 4,522,421
617 4,522,422
624 4,522,423
633 4,522,424
656 4,522,425
808 4,522,426

CLASS 281

5 4,522,427

CLASS 283

82 4,522,428
91 4,522,429

CLASS 285

24 4,522,430
27 4,522,431
55 4,522,432
93 4,522,433
112 4,522,434
256 4,522,435

CLASS 292

113 4,522,436

CLASS 294

9 4,522,437
19.2 4,522,438
110.1 4,522,439

CLASS 296

37.1 4,522,442
100 4,522,440
160 4,522,441

CLASS 297

157 4,522,443
239 4,522,444
284 4,522,445
377 4,522,446
452 4,522,447

CLASS 299

13 4,522,448

CLASS 303

9 4,522,450

CLASS 305

18 4,522,451
43 4,522,452

CLASS 307

141 4,523,103
247 A 4,523,104
261 4,523,105
303 4,523,106
352 4,523,107
353 4,523,108
520 4,523,109
530 4,523,110
574 4,523,111

CLASS 308

3 R 4,522,453
4,522,454

CLASS 310

10 4,523,112
11 4,523,113
24 4,523,114
50 4,523,115
71 4,523,116
4,523,117
90 4,523,118
313 A 4,523,119
323 4,523,120
334 4,523,121
4,523,122

CLASS 313

412 4,523,123
446 4,523,124
491 4,523,125
594 4,523,126

CLASS 315

4 4,523,127
291 4,523,128
4,523,129
307 4,523,131
321 4,523,132

CLASS 318

7 4,523,133
313 4,523,134
565 4,523,135
568 4,523,136
604 4,523,137
685 4,523,138

CLASS 320

40 4,523,139

CLASS 323

315 4,523,140

CLASS 324

54 4,523,141

65 R 4,523,142
133 4,523,143
158 F 4,523,145
158 P 4,523,144
204 4,523,146
248 4,523,147
351 4,523,148
377 4,523,149

CLASS 328

133 4,523,150

CLASS 329

124 4,523,151

CLASS 330

151 4,523,152
254 4,523,153
266 4,523,154
279 4,523,155
282 4,523,156

CLASS 331

4 4,523,157
55 4,523,158
99 4,523,159

CLASS 333

21 A 4,523,160
81 R 4,523,161
202 4,523,162
218 4,523,163

CLASS 335

38 4,523,164
106 4,523,165
216 4,523,166
230 4,523,167
296 4,523,168

CLASS 336

60 4,523,169
83 4,523,170
96 4,523,171

CLASS 337

164 4,523,172
367 4,523,173

CLASS 338

119 4,523,174
134 4,523,175
179 4,523,176
303 4,523,177

CLASS 339

14 R 4,522,455
17 R 4,522,456
30 4,522,457
45 M 4,522,458
98 4,522,459
99 R 4,522,460

CLASS 340

64 4,523,178
347 AD 4,523,180
347 DA 4,523,179
4,523,182
347 DD 4,523,181
507 4,523,183
524 4,523,185
539 4,523,184
555 4,523,186
661 4,523,187
734 4,523,188
781 4,523,189
825.03 4,523,190
825.52 4,523,191
825.57 4,523,192
825.69 4,523,193
856 4,523,194
870.37 4,523,195

CLASS 343

17.7 4,523,196
702 4,523,197
754 4,523,198

CLASS 346

1.1 4,523,199
4,523,200
4,523,201
75 4,523,202
76 PH 4,523,203
107 B 4,523,204
208 4,523,205
214 4,523,207
4,523,208

CLASS 350

96.18 4,522,461
96.19 4,522,462
96.21 4,522,463
96.23 4,522,464
96.30 4,522,465
162.12 4,522,466
263 4,522,467

332 4,522,468
342 4,522,469
350 R 4,522,470
362 4,522,472
377 4,522,473
449 4,522,471

CLASS 351

203 4,522,474

CLASS 352

39 4,522,475
225 4,522,476

CLASS 354

173.1 4,522,477
288 4,522,478
413 4,522,479
468 4,522,480

CLASS 355

3 DD 4,522,481
4,522,484
3 R 4,522,482
4,522,483
11 4,522,485
14 SH 4,522,486
15 4,522,487
4,522,488
73 4,522,489
75 4,522,490
77 4,522,491

CLASS 356

1 4,522,492
36 4,522,493
39 4,522,494
345 4,522,495
350 4,522,496
431 4,522,497

CLASS 357

4 4,523,211
17 4,523,212
23.7 4,523,213
30 4,523,214
40 4,523,215
42 4,523,216
43 4,523,217
70 4,523,218
79 4,523,219

CLASS 358

12 4,523,220
21 R 4,523,221
27 4,523,222
4,523,223
42 4,523,224
56 4,523,225
88 4,523,226
105 4,523,227
120 4,523,228
139 4,523,231
163 4,523,229
167 4,523,230
236 4,523,232
242 4,523,233
256 4,523,235
293 4,523,234
341 4,523,236

CLASS 360

8 4,523,237
46 4,523,238
74.1 4,523,239
99 4,523,240
105 4,523,241
109 4,523,242
113 4,523,243
129 4,523,244
130.21 4,523,245
133 4,523,246
137 4,523,247

CLASS 361

1 4,523,248
58 4,523,249
145 4,523,250
152 4,523,251
212 4,523,252
335 4,523,253
391 4,523,254
407 4,522,449
433 4,523,255

CLASS 362

11 4,523,256
32 4,523,257
108 4,523,258
120 4,523,259
121 4,523,260
192 4,523,261
214 4,523,262
267 4,523,263
396 4,523,264

CLASS 363

21 4,523,265

26 4,523,266
87 4,523,267
98 4,523,268
138 4,523,269

CLASS 364

191 4,523,270
200 4,523,206
4,523,271
4,523,272
4,523,273
4,523,274
4,523,275
4,523,276
4,523,277
413 4,523,278
416 4,523,279
424 4,523,280
424.1 4,523,281
426 4,523,282
431.01 4,523,283
431.12 4,523,284
469 4,523,209
479 4,523,285
494 4,523,286
513 4,523,287
551 B1 3,602,706
569 4,523,288
4,523,289
602 4,523,290
724 4,523,291
760 4,523,210
786 4,523,292
821 4,523,293
900 4,523,294
4,523,295
4,523,296
4,523,297
4,523,298
4,523,299

CLASS 365

43 4,523,300
49 4,523,301
195 4,523,302

CLASS 366

4 4,522,498
56 4,522,499
113 4,522,500
142 4,522,501
160 4,522,502
287 4,522,503
339 4,522,504
343 4,522,505

CLASS 367

20 4,523,303

CLASS 368

75 4,522,506
157 4,522,507
276 4,522,508
300 4,522,509

CLASS 369

32 4,523,304
33 4,523,305
77.1 4,523,306

CLASS 370

30 4,523,307
56 4,523,308
69.1 4,523,311
81 4,523,309
112 4,523,310

CLASS 371

1 4,523,312
10 4,523,313
38 4,523,314

CLASS 372

3 4,523,315
45 4,523,316
4,523,317
48 4,523,318
54 4,523,319
87 4,523,320

CLASS 373

110 4,523,321

CLASS 374

7 4,522,510
32 4,522,511
44 4,522,512

CLASS 375

36 4,523,322
37 4,523,323
91 4,523,324

CLASS 376

260 4,522,780
427 4,522,781
438 4,522,782

CLASS 377

44 4,523,325
58 4,523,326

CLASS 378

124 4,523,327

CLASS 381

3 4,523,328
4,523,329

CLASS 382

7 4,523,330
18 4,523,331

CLASS 384

368 4,522,513
569 4,522,514
571 4,522,515
572 4,522,516

CLASS 400

322 4,522,517
486 4,522,518
624 4,522,519
636.1 4,522,520
691 4,522,521

CLASS 401

88 4,522,522
126 4,522,523
183 4,522,524
258 4,522,525

CLASS 402

37 4,522,526

CLASS 403

49 4,522,527
61 4,522,528
343 4,522,529

CLASS 404

2 4,522,531
10 4,522,530

CLASS 405

11 4,522,532
36 4,522,533
37 4,522,534
79 4,522,535
168 4,522,536
288 4,522,537

CLASS 407

35 4,522,538

CLASS 408

72 R 4,522,539

CLASS 409

293 4,522,540

CLASS 411

103 B1 4,285,380
554 4,522,541

CLASS 412

25 4,522,542

CLASS 414

9 4,522,543
330 4,522,544
343 4,522,546
376 4,522,545
391 4,522,547
458 4,522,548
474 4,522,549
498 4,522,550
517 4,522,551
523 4,522,552
526 4,522,553
686 4,522,554
733 4,522,555
786 4,522,556

CLASS 415

115 4,522,557
196 4,522,559
210 4,522,560

CLASS 416

11 4,522,561
95 4,522,562
134 A 4,522,563
140 4,522,564
187 4,522,558

CLASS 417

220 4,522,565
222 4,522,566
270 4,522,567
307 4,522,568
434 4,522,569
475 4,522,570
476 4,522,571

CLASS 418

23 4,522,573

55 4,522,574
4,522,575
194 4,522,576

CLASS 420

503 4,522,783
590 4,522,784

CLASS 422

12 4,522,785
56 4,522,786
78 4,522,787
4,522,788
133 4,522,789
246 4,522,790
249 4,522,791
267 Re.31,913

CLASS 423

213.5 4,522,792
230 4,522,793
251 4,522,794
300 4,522,795
4,522,796
4,522,797
4,522,798
306 4,522,799
329 4,522,800
447.4 4,522,801
652 4,522,802

CLASS 424

1.1 4,522,803
19 4,522,804
52 4,522,805
4,522,806
59 4,522,807
4,522,808
89 4,522,809
4,522,810
177 4,522,813
288 4,522,820

CLASS 425

6 4,522,577
110 4,522,578
126 R 4,522,579
193 4,522,580
534 4,522,581

CLASS 426

20 4,522,832
93 4,522,833
231 4,522,834
264 4,522,835
271 4,522,836
482 4,522,837
537 4,522,838
548 4,522,839

CLASS 427

3 4,522,840
4 4,522,841
8 4,522,842
27 4,522,843
38 4,522,844
53.1 4,522,845
54.1 4,522,846
55 4,522,847
131 4,522,848
237 4,522,849
304 4,522,850
386 4,522,851

CLASS 428

36 4,522,852
40 4,522,853
43 4,522,854
49 4,522,855
64 4,522,856
95 4,522,857
96 4,522,858
116 4,522,859
132 4,522,860
192 4,522,861
195 4,522,862
196 4,522,863
201 4,522,864
212 4,522,865
216 4,522,866
220 4,522,867
224 4,522,868
245 4,522,869
252 4,522,870
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257 4,522,872
283 4,522,873
284 4,522,874
285 4,522,875
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304.4 4,522,877
313.7 4,522,878
323 4,522,879
332 4,522,880
336 4,522,881
351 4,522,882
365 4,522,883

400 4,522,884
422 4,522,885
446 4,522,886
461 4,522,887
546 4,522,888
614 4,522,889
624 4,522,890
626 4,522,891
628 4,522,892
641 4,522,893

CLASS 429

17 4,522,894
44 4,522,895
63 4,522,896
119 4,522,897
120 4,522,898
181 4,522,899
4,522,900
194 4,522,901
252 4,522,902

CLASS 430

22 4,522,903
54 4,522,904
60 4,522,905
4,522,906
102 4,522,907
114 4,522,908
137 4,522,909
157 4,522,910
192 4,522,911
278 4,522,912
285 4,522,913
320 4,522,914
505 4,522,915
548 4,522,916
564 4,522,917

CLASS 431

123 4,522,582
125 4,522,583
253 4,522,584
344 4,522,585

CLASS 432

11 4,522,586
114 4,522,587
181 4,522,588
239 4,522,589

CLASS 433

15 4,522,590
60 4,522,591
95 4,522,592
136 4,522,593
141 4,522,594
142 4,522,595
173 4,522,596
216 4,522,597

CLASS 434

259 4,522,598
339 4,522,599

CLASS 435

68 4,522,918
119 4,522,919
161 4,522,920

CLASS 436

47 4,522,921
500 4,522,922
536 4,522,923

CLASS 440

8 4,522,600
11 4,522,601
77 4,522,602

CLASS 441

70 4,522,603

CLASS 446

219 4,522,604
228 4,522,605
433 4,522,606
447 4,522,607

CLASS 455

343 4,523,332

CLASS 464

134 4,522,608

CLASS 474

62 4,522,609
141 4,522,610
162 4,522,611
168 4,522,612
245 4,522,613
260 4,522,614

CLASS 493

37 4,522,615
44 4,522,616
126 4,522,617
143 4,522,618

415 4,522,619

CLASS 494

10 4,522,620

CLASS 501

2 4,522,924
15 4,522,925
127 4,522,926
139 4,522,927

CLASS 502

26 4,522,928
77 4,522,929
124 4,522,930
150 4,522,931
153 4,522,932
161 4,522,933
209 4,522,934
223 4,522,935
242 4,522,939
249 4,522,936
302 4,522,937
307 4,522,938
328 4,522,940
333 4,522,941

CLASS 514

1 4,522,811
7 4,522,812
34 4,522,815
52 4,522,816
54 4,522,814
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155 4,522,818
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517 4,522,825
569 4,522,826
646 4,522,828
652 4,522,829
671 4,522,827
690 4,522,830

CLASS 521

28 4,522,951
31 4,522,952
64 4,522,953
78 4,522,954
143 4,522,955

CLASS 523

120 4,522,956
212 4,522,957
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335 4,522,959
339 4,522,960
407 4,522,961
410 4,522,962
510 4,522,963

CLASS 524

71 4,522,964
109 4,522,965
114 4,522,966
377 4,522,967
388 4,522,968
425 4,522,969
447 4,522,970
547 4,522,971
548 4,522,972
555 4,522,973
605 4,522,974
702 4,522,975
722 4,522,976

CLASS 525

48 4,522,977
4,522,978
66 4,522,979
67 4,522,980
124 4,522,981
240 4,522,982
285 4,522,983
415 4,522,984
431 4,522,985
458 4,522,986

CLASS 526

106 4,522,987
133 4,522,988
4,522,989
180 4,522,990
230.5 4,522,991

CLASSIFICATION OF PATENTS

243	4,522,995		4,523,005		CLASS 546		CLASS 560	307	4,523,035	322	4,523,046
256	4,522,996	172	4,523,006	252	4,523,016	26	4,523,025		CLASS 568		4,523,047
264	4,522,997	227	4,523,007	302	4,523,017	163	4,523,026	442	4,523,037	323	4,523,048
272	4,522,992	288	4,523,008	315	4,523,018	191	4,523,027	454	4,523,036	500	4,523,049
292.4	4,522,993	399	4,523,009		CLASS 548	199	4,523,028	492	4,523,038		4,523,050
309	4,522,998		CLASS 536	262	4,523,019	204	4,523,029	615	4,523,039		CLASS 604
	4,522,999	91	4,523,010	353	4,523,020		CLASS 562	671	4,523,040	140	4,522,621
336	4,523,000		CLASS 544	410	4,523,021	460	4,523,030	755	4,523,041	191	4,522,622
351	4,522,994	238	4,523,011		CLASS 549	475	4,523,031	824	4,523,042	319	4,522,623
	CLASS 528	316	4,523,012	354	4,523,022	478	4,523,032	840	4,523,043	385 R	4,522,624
18	4,523,001	320	4,523,015	385	4,523,023	496	4,523,033		CLASS 585	892	4,522,625
26	4,523,002	385	4,523,013	407	4,523,024		CLASS 564	11	4,523,044		CLASS 720
58	4,523,003	386	4,523,014			79	4,523,034	254	4,523,045	316	4,522,053
76	4,523,004										

CLASSIFICATION OF DESIGNS

D2—	30	279,135		491	279,151		378	279,167		30	279,183		30	279,199		146	279,215
	223	279,136		501	279,152		429	279,168		57	279,184	D19—	91	279,200		148	279,216
	248	279,137			279,153		447	279,169		60	279,185	D20—	43	279,201	D24—	17	279,217
	309	279,138			279,154		456	279,170		68	279,186	D21—	48	279,202		46	279,218
	310	279,139			279,155	D10—	9	279,171		100	279,187			279,203		62	279,219
	361	279,140	D7—	43	279,156		32	279,172			279,188		124	279,204	D25—	2	279,220
	385	279,141		48	279,157		40	279,173			279,190		127	279,205	D26—	44	279,221
D3—	71	279,142		54	279,158	D11—	47	279,174			279,191		194	279,206			279,222
		279,143		57	279,159		164	279,175		113	279,189		207	279,207		60	279,223
		279,144		76	279,160	D12—	112	279,176	D15—	13	279,192		234	279,208	D28—	7	279,224
	75	279,145		393	279,161		136	279,177	D16—	132	279,193	D22—	28	279,209		83	279,225
D6—	309	279,146		412	279,162		151	279,178			279,194	D23—	11	279,210	D32—	1	279,226
	422	279,147	D8—	25	279,163		162	279,179	D17—	15	279,195			279,211		31	279,227
	432	279,148		354	279,164		211	279,180	D18—	2	279,196			279,212		49	279,228
	444	279,149			279,165	D13—	5	279,181			279,197		25	279,213		70	279,229
	462	279,150	D9—	300	279,166	D14—	1	279,182		19	279,198		72	279,214			

CLASSIFICATION OF PLANTS

P.—	50	5,488		69	5,489		74	5,490		5,491		86	5,492		

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,522,035	4,522,357	4,522,911	4,522,011	4,522,319		4,523,295
	4,522,072	4,522,362	4,522,948	4,522,091	4,522,856	18 :	4,521,954
	4,522,222	4,522,365	4,522,985	4,522,247	4,522,857		4,521,955
	4,522,239	4,522,381	4,523,017	4,522,285	4,522,863		4,521,956
	4,522,242	4,522,385	4,523,029	4,522,327	4,523,228		4,521,984
	4,522,612	4,522,386	4,523,040	4,522,472	4,523,258		4,522,031
	4,523,057	4,522,391	4,523,061	4,522,495	16 :	4,522,083		4,522,160
04 :	4,521,974	4,522,401	4,523,065	4,522,519	4,522,517		4,522,651
	4,521,988	4,522,425	4,523,067	4,522,579	4,523,060		4,522,659
	4,522,088	4,522,457	4,523,071	4,522,618	17 :	4,521,934		4,522,750
	4,522,420	4,522,469	4,523,080	4,522,692	4,521,938		4,522,758
	4,522,537	4,522,476	4,523,084	4,522,762	4,521,948		4,522,799
	4,522,558	4,522,490	4,523,093	4,522,790	4,521,997		4,522,914
	4,522,619	4,522,496	4,523,100	4,522,802	4,522,006		4,522,919
05 :	4,522,255	4,522,510	4,523,127	4,522,819	4,522,017		4,522,980
06 :	Re.31,912	4,522,530	4,523,137	4,522,956	4,522,090		4,523,058
	4,521,970	4,522,532	4,523,156	4,522,969	4,522,117		4,523,118
	4,521,979	4,522,586	4,523,178	4,522,973	4,522,136		4,523,146
	4,521,982	4,522,590	4,523,179	4,522,975	4,522,162		4,523,169
	4,521,990	4,522,592	4,523,182	4,523,055	4,522,320		4,523,233
	4,521,992	4,522,594	4,523,185	4,523,079	4,522,336		4,523,259
	4,522,000	4,522,598	4,523,206	4,523,120	4,522,361		4,523,273
	4,522,056	4,522,606	4,523,226	4,523,199	4,522,371	19 :	4,522,071
	4,522,089	4,522,607	4,523,240	4,523,200	4,522,378		4,522,109
	4,522,103	4,522,622	4,523,279	4,523,201	4,522,384		4,522,267
	4,522,106	4,522,625	4,523,290	4,523,331	4,522,403		4,522,452
	4,522,119	4,522,639	4,523,293	10 :	4,522,645	4,522,411		4,522,505
	4,522,141	4,522,642	4,523,299	4,522,686	4,522,441		4,522,553
	4,522,146	4,522,644	4,523,300	4,522,786	4,522,454		4,522,715
	4,522,150	4,522,647	4,523,302	4,522,971	4,522,465	20 :	4,522,098
	4,522,154	4,522,661	4,523,305	4,522,990	4,522,732		4,522,191
	4,522,185	4,522,662	4,523,311	4,522,995	4,522,761		4,522,211
	4,522,193	4,522,673	4,523,319	4,523,010	4,522,775		4,522,233
	4,522,196	4,522,682	4,523,320	4,523,082	4,522,785		4,522,248
	4,522,200	4,522,697	4,523,325	11 :	4,522,494	4,522,789		4,522,396
	4,522,207	4,522,698	4,523,326	12 :	4,522,002	4,522,792		4,522,545
	4,522,221	4,522,711	4,523,327	4,522,145	4,522,831		4,522,570
	4,522,227	4,522,728	4,285,380	4,522,366	4,522,890		4,522,580
	4,522,232	4,522,745	08 :	4,521,975	4,522,421	4,522,935		4,522,582
	4,522,238	4,522,756	4,522,085	4,522,437	4,522,937		4,523,114
	4,522,241	4,522,810	4,522,099	4,522,726	4,523,020	21 :	4,522,190
	4,522,265	4,522,811	4,522,433	4,522,830	4,523,045		4,522,245
	4,522,271	4,522,814	4,522,486	4,522,877	4,523,048		4,523,069
	4,522,275	4,522,835	4,522,572	4,522,900	4,523,062	22 :	4,521,965
	4,522,277	4,522,838	4,522,578	4,522,922	4,523,066		4,522,258
	4,522,280	4,522,844	4,522,804	4,523,087	4,523,091		4,522,264
	4,522,303	4,522,845	4,523,140	4,523,263	4,523,128		4,522,536
	4,522,308	4,522,846	4,523,183	4,523,264	4,523,155		4,522,630
	4,522,313	4,522,848	4,523,203	4,523,308	4,523,159		4,522,704
	4,522,325	4,522,859	4,523,243	4,523,310	4,523,193		4,522,706
	4,522,333	4,522,864	4,523,254	13 :	4,521,957	4,523,250		4,522,795
	4,522,339	4,522,883	4,523,277	4,521,962	4,523,267		4,522,796
	4,522,356	4,522,910	09 :	4,521,981	4,522,105	4,523,280		4,522,797

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23 : 4,521,998
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24 : 4,521,929
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26 : Re.31,909
4,521,953
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37 : 4,521,935
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38 : 4,522,373
39 : Re.31,913
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17 : 5,490

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OFFICIAL GAZETTE

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PATENTS

June 18, 1985

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Donald J. Quigg, *Acting Commissioner*

oute to:

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June 18, 1985 Volume 1055 Number 3

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of May 7, 1985 and was published in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

International PCT fees were changed effective May 28, 1985 and were announced in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International fees	
Basic fee (first 30 pages)	230.00
Basic Supplemental fee (for each page over 30)	4.00
Designation fee (for the first 10 national or regional offices)	55.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

May 7, 1985.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on June 15, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,334,325 through 4,335,470

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,381,346, Re. S.N. 727,807, Filed Apr. 26, 1985, Cl. 435/215, ISOLATION OF PLASMINOGEN ACTIVATORS USEFUL AS THERAPEUTIC AND DIAGNOSTIC AGENTS, Syed S. Husain, et al., Owner of Record: *Vascular Laboratory, Inc., Boston, Mass.*, Attorney or Agent: John N. Williams, Ex. Gp.: 127

4,381,934, Re. S.N. 729,596, Filed May 2, 1985, Cl. 065/135, GLASS BATCH LIQUEFACTION, Gerald E. Kunkle, et al., Owner of Record: *PPG Industries, Inc., Pittsburgh, Pa.*, Attorney or Agent: Dennis G. Millman, Ex. Gp.: 133

4,428,007, Re. S.N. 729,880, Filed May 2, 1985, Cl. 360/044, METHOD AND APPARATUS FOR DECODING DIGITAL DATA, Masato Tanaka, et al., Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: Lewis H. Eslinger, et al., Ex. Gp.: 255

4,454,255, Re. S.N. 730,085, Filed May 3, 1985, Cl. 521/137, PROCESS FOR THE PREPARATION OF WHITE GRAFT POLYMER DISPERSIONS AND FLAME-RETARDANT POLYURETHANE FOAMS, Gerhard G. Ramlow, et al., Owner of Record: *BASF Wyandotte Corp., Wyandotte, Mich.,* Attorney or Agent: Norbert M. Lisicki, et al., Ex. Gp.: 153

4,454,942, Re. S.N. 730,133, Filed May 3, 1985, Cl. 198/424, SYSTEM FOR CONVEYING CONICAL ARTICLES, Yoshio Oizumi, Owner of Record: *Yamakyu Automatics Co., Ltd., Osaka, Japan,* Attorney or Agent: James E. Armstrong, et al., Ex. Gp.: 317

4,459,790, Re. S.N. 730,347, Filed May 3, 1985, Cl. 052/764, WALL PANEL LOCKING MECHANISM, Eugene F. Vermillion, Owner of Record: *The Columbus Show Case Co., Columbus, Ohio,* Attorney or Agent: Gerald L. Smith, et al., Ex. Gp.: 354

4,465,203, Re. S.N. 730,072, Filed May 1, 1985, Cl. 220/268, CAN LID WITH PUSH IN TEAR TAB, G. Steven Lambert, et al., Owner of Record: *Inventor,* Attorney or Agent: Robert A. Cesari, et al., Ex. Gp.: 241

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Erratum

"All reference to Patent No. 4,513,949 to Tomoyuki Ueda, et al. of Japan for 'VALVE ASSEMBLY' appearing in the Official Gazette of Apr. 30, 1985, should be deleted since no patent was granted."

United States Patent and Trademark Office
Before the Commissioner of Patents and Trademarks

Joseph F. Nakamura,

Solicitor, U.S. Patent and Trademark Office,
v.
Proceeding No. 84-2
Horace S. Harper, Jr.,
Respondent.

Notice by Publication

Notice is hereby given to the above named respondent, that proceedings under 35 U.S.C. §32 have been instituted against him. A copy of the *NOTICE OF PROCEEDINGS UNDER 35 U.S.C. §32,* including the charges against respondent, was twice mailed to the respondent's address of record. The notice was twice returned by the U.S. Postal Service.

Respondent may obtain of copy of the above-mentioned notice from:

Richard E. Schafer
Associate Solicitor
U.S. Patent and Trademark Office
P.O. Box 15667
Arlington, Va. 22215
(703) 557-4035

This notice will appear in the Official Gazette for four consecutive weeks beginning with the issue of June 11, 1985. Respondent has thirty days from the date of the last notice to file an answer to the charges against him. Failure to file an answer will be taken as an admission of the charges. 37 CFR §1.348 (c).

JOSEPH F. NAKAMURA,
Solicitor

By: RICHARD E. SCHAFER
Associate Solicitor.

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Federal Patent Licensing
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Office of Federal Patent Licensing
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-385,674 (4,508,781). FLUORINATION BY INORGANIC FLUORIDES IN GLOW DISCHARGE.

SN 6-423,404 (4,508,736). METHOD FOR PREPARING IMPROVED QUALITY RICE-CONTAINING BAKED PRODUCTS.

SN 6-676,147. A PORTABLE, SELF-POWERED ADJUSTABLE HERBICIDE DISPENSING SYSTEM.

SN 6-708,613. MONOCLONAL ANTIBODIES TO EPIZOOTIC HEMORRHAGIC DISEASE VIRUS ANTIGEN.

SN 6-713,733. PREPARATION OF PELLETS CONTAINING FUNGI FOR CONTROL OF SOIL-BORNE DISEASES.

SN 6-716,798. SYNTHETIC PHEROMONE 5-HYDROXY-4-METHYL-3-HEPTANONE AND ITS USE IN CONTROLLING GRAIN WEEVILS.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-446,408 (4,501,151). ULTRASONIC THERAPY APPLICATOR THAT MEASURES DOSAGE.

SN 6-582,862 (4,508,820). METHOD FOR SIMULTANEOUSLY MONITORING TURNOVER RATE IN MULTIPLE PROTEINS.

SN 6-706,622. USE OF PARAMAGNETIC METALLOPORPHYRINS AS CONTRAST AGENTS FOR TUMORS IN NMR IMAGING.

SN 6-712,102. NON-AQUEOUS DENTAL CEMENTS BASED ON DIMER AND TRIMER ACIDS.
SN 6-712,236. ADENO-ASSOCIATED VIRUS AS EUKARYOTIC EXPRESSION VECTOR.
SN 6-724,897. SOLUBLE INTERLEUKIN-2 RECEPTOR AS A DISEASE INDICATOR AND A METHOD OF ASSAYING THE SAME.

DEPARTMENT OF THE AIR FORCE

SN 6-256,880 (4,500,255). SPACER STRUCTURE.
SN 6-370,234 (4,499,468). RANGE-ONLY MULTISTATIC RADAR SYSTEM.
SN 6-398,134 (4,505,582). SELF-DETECTING OPTICAL SENSORS.
SN 6-407,985 (4,507,602). MEASUREMENT OF PERMITTIVITY AND PERMABILITY OF MICROWAVE MATERIALS.
SN 6-434,671 (4,500,206). OPTICAL SYSTEM FOR MEASURING SHADOWGRAPH DATA.
SN 6-442,494 (4,499,761). SNOW SCALE/RATE METER.
SN 6-477,793 (4,499,156). TITANIUM METAL-MATRIX COMPOSITES.
SN 6-484,327 (4,498,184). JINC-TRAP RESONATOR.
SN 6-484,390 (4,503,668). STRUTLESS DIFFUSER FOR GAS TURBINE.
SN 6-498,336 (4,499,395). CUT ANGLES FOR QUARTZ CRYSTAL RESONATORS.
SN 6-564,547 (4,499,334). HEAT RESISTANT SHEATHED INSULATED ELECTRICAL CONDUCTORS.
SN 6-566,444 (4,501,636). APPARATUS FOR ETCHING VERTICAL JUNCTION SOLAR CELL WAFERS.
SN 6-578,304 (4,499,735). SEGMENTED ZONED FUEL INJECTION SYSTEM FOR USE WITH A COMBUSTOR.
SN 6-586,953 (4,501,929). MULTICONDUCTOR FLAT CABLE.
SN 6-615,507 (4,499,258). POLYAROMATIC ETHER-SULFONE-KEYTONES WITH FLUORO-SUBSTITUTED-P-CYCLOPHANE UNITS AS CROSS-LINKED SITES.
SN 6-675,115. CORROSION INHIBITOR FORMULATION FOR MOLYBDENUM, TUNGSTEN AND OTHER METALS.
SN 6-679,327. PARALLEL PROGRAMMABLE CHARGE DOMAIN DEVICE.
SN 6-679,332. PIPELINED PROGRAMMABLE CHARGE DOMAIN.
SN 6-688,944. NIGHT VISION COMPATIBLE ILLUMINATION FOR VEHICLE CREWMEMBER WORKSPACE.
SN 6-690,541. TECHNIQUE TO REDUCE SCATTERED LIGHT IN OPTICAL SYSTEMS.
SN 6-696,679. GENERATION AND DISPLAY APPARATUS.
SN 6-696,680. SYNTHESIS OF GEMINAL DINITRO COMPOUNDS.
SN 6-698,721. MODE DEPENDENT, OPTICAL TIME DELAY SYSTEM FOR ELECTRICAL SIGNALS.
SN 6-698,725. ADCCP COMMUNICATION PROCESSOR.
SN 6-698,726. PRINTED WIRING BOARD CIRCUIT ISOLATOR TOOL.
SN 6-698,957. HEAT PIPE AND METHOD OF MAKING SAME.
SN 6-698,963. STABILIZING FORCE FEEDBACK IN BIO-ACTUATED CONTROL SYSTEM.
SN 6-698,977. LENGTH DEPENDENT, OPTICAL TIME DELAY/FILTER DEVICE FOR ELECTRICAL SIGNALS.
SN 6-704,109. SYSTEM OF WHITE-LIGHT DENSITY PSEUDOCOLOR ENCODING WITH THREE PRIMARY COLORS.
SN 6-705,816. TELESCOPING LOW VIBRATION PULLING MECHANISM FOR CZOCHRALSKI CRYSTAL GROWTH.
SN 6-705,827. SURVIVABLE GROUND BASE SENSOR.
SN 6-708,926. SPATIAL LIGHT MODULATOR HAVING A CAPACITIVELY COUPLED PHOTOCONDUCTOR.

DEPARTMENT OF THE ARMY

SN 6-047,456 (4,280,767). PRINTING APPARATUS.
SN 6-086,504 (4,344,010). ACCELERATION RESISTANT COMBINATION OF OPPOSITE-HANDED PIEZOELECTRIC CRYSTALS.
SN 6-196,508 (4,356,182). METHOD OF FABRICATING ACCELERATION RESISTANT CRYSTAL RESONATORS AND ACCELERATION RESISTANT CRYSTAL RESONATORS SO FORMED.
SN 6-253,874 (4,395,148). POSITIONING OF A MULTICOLOR RIBBON.
SN 6-343,644 (4,453,141). SUPPRESSION OF VIBRATION EFFECTS ON PIEZOELECTRIC CRYSTAL RESONATORS.
SN 6-389,315 (4,410,822). ACCELERATION-RESISTANT CRYSTAL RESONATOR.
SN 6-434,998 (4,451,755). ACCELERATION SENSITIVITY REDUCTION METHOD.
SN 6-467,337 (4,426,168). SERIAL IMPACT PRINTER FOR MULTICOLOR PRINTING.
SN 6-631,936 (4,073,371). APPARATUS AND CIRCUITS FOR TWO-COLOR PRINTING IN ELECTRONIC IMPACT PRINTERS.
SN 6-699,282. A NONDESTRUCTIVE NONCONTACT DEVICE TO CHARACTERIZE SEMICONDUCTOR MATERIALS.
SN 6-702,114. TOPICAL PROPHYLAXIS AGAINST SCHISTOSOMAL INFECTIONS.
SN 6-702,294. A SIMPLE POWER METER FOR HIGH ENERGY PULSED LASERS.
SN 6-712,943. GROUND SLOT WAVEGUIDE LASER.
SN 6-714,602. A METHOD AND APPARATUS FOR THE PRESSING AND ALIGNMENT OF RADIALLY ORIENTED TOROIDAL MAGNETS.
SN 6-714,784. DOT MATRIX COLOR PRINTER.
SN 6-715,215. METHOD OF PREPARING NONLAMINATING ANISOTROPIC BORON NITRIDE.
SN 6-715,808. METHOD OF PRETREATING CARBON BLACK POWDER TO IMPROVE CATHODE PERFORMANCE AND LITHIUM SULFURYL CHLORIDE CELL INCLUDING THE PRETREATED CARBON BLACK POWDER.
SN 6-715,862. ACCELERATION INSENSITIVE OSCILLATOR.
SN 6-717,990. MULTI-TRACK OPTICAL SHAFT POSITION AND TIMING CYLINDER.
SN 6-721,096. OPTICALLY CONTROLLED MULTI-COLOR IMPACT PRINTER.

DEPARTMENT OF THE INTERIOR

SN 6-455,187 (4,501,448). UNIVERSAL RIPPER MINER.

TENNESSEE VALLEY AUTHORITY

SN 6-584,285 (4,511,388). PRODUCTION OF HIGH-ANALYSIS AMMONIUM ORTHOPHOSPHATE SUSPENSION FERTILIZERS BY A NEW BATCH-TYPE PROCESS.
SN 6-605,345 (4,512,793). GRANULATION OF UREA PHOSPHATE FROM UREA AND MERCHANT-GRADE PHOSPHORIC ACID.

PATENT NOTICES

Certificates of Correction for the Week of June 18, 1985

Re. 31,587	4,464,371	4,484,652	4,495,893
Re. 31,684	4,464,662	4,484,883	4,495,945
D. 277,064	4,464,789	4,485,038	4,496,201
3,997,209	4,465,150	4,485,234	4,497,361
4,178,072	4,467,105	4,485,398	4,497,734
4,301,720	4,469,517	4,485,420	4,497,908
4,314,908	4,472,996	4,485,512	4,498,272
4,322,304	4,473,877	4,485,829	4,498,501
4,354,145	4,473,937	4,485,892	4,498,799
4,354,848	4,474,955	4,485,941	4,498,828
4,377,671	4,475,148	4,485,968	4,499,006
4,381,358	4,476,302	4,486,119	4,499,015
4,382,882	4,476,520	4,486,132	4,499,383
4,393,156	4,476,553	4,486,286	4,499,446
4,400,409	4,477,032	4,486,406	4,499,469
4,403,005	4,477,050	4,486,813	4,499,511
4,424,389	4,477,624	4,487,048	4,499,549
4,425,112	4,477,658	4,487,355	4,499,925
4,426,072	4,477,697	4,488,008	4,499,931
4,427,591	4,478,065	4,488,750	4,499,961
4,431,463	4,478,171	4,489,160	4,500,089
4,432,498	4,478,205	4,489,798	4,500,418
4,436,925	4,478,243	4,490,689	4,500,431
4,441,113	4,478,271	4,491,387	4,500,586
4,442,130	4,478,283	4,491,807	4,501,122
4,442,637	4,478,353	4,492,103	4,501,578
4,445,279	4,478,394	4,492,254	4,501,603
4,447,525	4,478,418	4,492,271	4,501,799
4,448,866	4,478,601	4,492,390	4,501,855
4,449,352	4,478,806	4,492,578	4,502,197
4,449,539	4,478,954	4,492,701	4,502,301
4,450,227	4,479,007	4,492,820	4,502,956
4,451,484	4,479,719	4,492,891	4,503,326
4,452,049	4,481,616	4,493,130	4,503,435
4,452,221	4,482,847	4,494,064	4,503,555
4,456,897	4,482,931	4,494,227	4,504,786
4,459,088	4,483,128	4,494,395	4,504,909
4,459,241	4,483,861	4,495,058	4,507,179
4,459,674	4,483,952	4,495,088	
4,460,597	4,484,429	4,495,339	

Disclaimers

4,073,943.—*Karl Arvid Johannes Wretlind,* Stockholm; *Stellan Ljungberg,* Lidingo; *Ivan Hakansson,* Huddinge and *Bengt Magnus Ajaxon,* Uppsala, Sweden. METHOD OF ENHANCING THE ADMINISTRATION OF PHARMALOGICALLY ACTIVE AGENTS. Patent dated Feb. 14, 1978. Disclaimer filed May 29, 1984, by the assignee, *KabiVitrum AB.*

Hereby enters this disclaimer to the remaining term of said patent.

4,371,863.—*George H. Fritzinger,* Edison, N.J. TRAFFIC-ACTUATED CONTROL SYSTEMS PROVIDING AN ADVANCE SIGNAL TO INDICATE WHEN THE DIRECTION OF TRAFFIC WILL CHANGE. Patent dated Feb. 1, 1983. Disclaimer filed Aug. 9, 1984, by the inventor.

The term of this patent subsequent to October 1, 1998 has been disclaimed.

4,430,421.—*Christian C. Van de Sande,* Belsele; *Jan J. Vandewalle,* Mortsel; *Raphael K. Van Poucke,* Berchem and *Andre K. Claes,* Oevel, Belgium. METHOD OF DISPERSING PHOTOGRAPHIC ADJUVANTS IN HYDROPHILIC COLLOID COMPOSITIONS. Patent dated Feb. 7, 1984. Disclaimer filed Apr. 1, 1985, by the assignee, *Agfa-Gevaert.*

Hereby enters this disclaimer to all claims of said patent.

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Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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	Miami–Dade Public Library	(305) 579-5001
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Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
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	Boston Public Library	(617) 536-5400 Ext. 265
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	Detroit Public Library	(313) 833-1450
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 11, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	3-08-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	11-05-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	1-04-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	5-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-23-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	4-30-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-03-83
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	5-26-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-08-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-14-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-17-83

Expiration of patents: The patents within the range of numbers indicated below expire during May 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,381,303 to 3,386,102, inclusive

Plant Patents . . . . . Numbers 2,811 to 2,813 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,914

ELECTROCHEMICAL GAS DETECTION METHOD

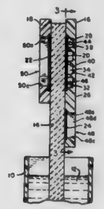
Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossining, both of N.Y., assignors to Becton Dickinson & Company, Paramus, N.J.

Original No. 3,992,267, dated Nov. 16, 1976, Ser. No. 569,851, Apr. 21, 1975. Continuation of Ser. No. 402,733, Oct. 2, 1973, abandoned, which is a division of Ser. No. 88,267, Nov. 10, 1970, Pat. No. 3,776,832. Application for reissue Apr. 29, 1981, Ser. No. 258,879

Int. Cl.[3] G01N *27/46*

U.S. Cl. 204—1 T

6 Claims



1. The method of quantitatively detecting a gaseous noxious atmospheric pollutant selected from the group consisting of carbon monoxide, nitric oxide, hydrocarbons, ethanol and methanol in air in an electrochemical cell comprising an anode *having a catalyst bonded to a polytetrafluoethylene membrane to provide a porous diffusion electrode*, a cathode, a reference electrode through which no substantial current flows, *each of said anode, cathode and reference electrodes having a catalyst surface the catalyst of* said anode *catalyst surface* being selected from the group consisting of platinum, rhodium, iridium, ruthenium, palladium, osmium, tungsten oxide, tungsten carbide, molybdenum oxide, molybdenum sulfide, and alloys or mixtures thereof, and an aqueous electrolyte *within an electrolyte container* in contact with *the catalyst surface of* said anode, cathode, and reference electrode*said reference electrode contacting air; said anode being positioned in said cell so that one surface of said anode contacts ambient air containing said pollutant to be detected and the opposite surface contacts said electrolyte whereby the noxious pollutant to be detected migrates from the surface contacting said ambient air to the internal catalytic surface of said anode to interface with said electrolyte for electrochemical reaction in the presence of said catalyst* including the steps of (1) feeding an air sample containing the noxious gas to be detected to the anode of said cell, said sample being substantially free of other noxious gases; (2) maintaining said anode *by means of a potentiostat* at a fixed potential of from about 0.9 to 1.5 volts with respect to the reversible hydrogen couple in the electrolyte of said cell relative to said reference electrode to oxidize said noxious gaseous substance and simultaneously insure that current due to oxygen reduction or water oxidation within said electrochemical cell is not discernible relative to the level of current produced by said oxidation of gaseous substance; and (3) measuring the current flowing between said anode and cathode of said cell to quantitatively determine the amount of said gaseous substance to be detected in said gaseous sample, *said measured current being an indication of the concentration of the gas being detected.*

Re. 31,915

GAS DETECTING AND MEASURING DEVICE

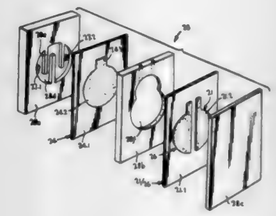
Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossining, both of N.Y., assignors to Becton Dickinson & Company, Paramus, N.J.

Original No. 3,824,167, dated Jul. 16, 1974, Ser. No. 172,486, Aug. 17, 1871. Continuation-in-part of Ser. No. 88,267, Nov. 10, 1970, Pat. No. 3,776,832. Application for reissue Apr. 29, 1981, Ser. No. 258,753

Int. Cl.[3] G01N *27/46*

U.S. Cl. 204—412

16 Claims



1. A gas *device for continuously, quantitatively* detecting and measuring [unit] *a noxious gas in the presence of air,* comprising in combination intake means, an electrochemical cell, means for drawing a gas through said intake means and into said electrochemical cell at a controlled flow rate, [and read-out means for reading the quantity of said detected gas,] said electrochemical cell comprising *a housing,* an anode *comprising catalyst bonded to a hydrophobic fluorocarbon membrane to provide a diffusion electrode,* a cathode, a reference electrode at which substantially no current flows, *all positioned within said housing,* and an aqueous electrolyte in an electrolyte chamber, [said electrolyte being in contact with] *each of* said anode, cathode, and reference [electrode,] *electrodes having a catalyst surface containing said electrolyte and said reference electrode contacting air,* means for exposing said anode to a gas to be detected *in the presence of air, potentiostat* means [for] maintaining said anode at a fixed potential relative to the reference electrode of from about 0.7 to 1.5 volts with respect to a reversible hydrogen electrode potential in said electrolyte of said cell, within which range oxygen reduction or oxidation of water to oxygen does not occur, [said anode comprising a catalyst bonded to a hydrophobic fluorocarbon to provide a d.ffusion electrode and] said catalyst *of said anode catalyst surface* catalyzing an electrochemical reaction with a gas selected from the group consisting of CO, hydrocarbons, alcohols, NO, NO_2 and SO_2 at said fixed potential, *said anode being arranged in said cell so that one surface of said anode contacts said gas exposing means and the opposite surface contacts said electrolyte whereby the noxious gas to be detected migrates from the surface contacting said exposing means to the internal surface of said anode to interface with the electrolyte for electrochemical reaction in the presence of said catalyst, means for continuously measuring said current flowing between said anode and cathode of said cell, said measured current being a measure of the concentration of the gas being detected, and read-out means for continuously reading said concentration of gas being detected.*

Re. 31,916

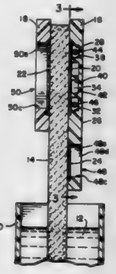
ELECTROCHEMICAL DETECTION CELL

Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossining, both of N.Y., assignors to Becton Dickinson & Company, Paramus, N.J.

Original No. 3,776,832, dated Dec. 4, 1973, Ser. No. 88,267, Nov. 10, 1970. Application for reissue Apr. 29, 1981, Ser. No. 258,752

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—412 **9 Claims**



1. An electrochemical cell for quantitatively detecting a *noxious* gas *in the presence of air* comprising an anode having catalyst bonded to polytetrafluoroethylene to provide a diffusion electrode, a cathode, a reference electrode *at which substantially no current flow*, and an aqueous electrolyte [in contact with] *within an electrolyte container, each of said anode, cathode and reference electrode having a catalytic surface contacting* said [anode, cathode and reference electrode;] *electrolyte, and said reference electrode contacting air,* means for exposing said anode to a [gaseous substance] *gas containing a noxious gas* to be detected; *said anode being arranged in said cell so that one surface of said anode contacts said gas exposing means and the opposite surface contacts said electrolyte whereby the noxious gas to be detected migrates from the surface contacting said gas exposing means to the internal surface of said anode to interface with the electrolyte for reaction in the presence of the catalyst,* means connecting said anode and reference electrode, said latter means being a potentiostat [for] maintaining a fixed potential on said anode relative to said reference electrode of from about 0.9 to 1.5 volts with respect to the potential of the reversible hydrogen couple in the electrolyte of said cell which potential is independent of the concentration of the *noxious* gas to be detected and means for measuring said current flowing between sad anode and cathode of said cell, said measured current being a measure of the concentration of the gas being detected.

Re. 31,917

VALVE TIMING MECHANISMS

Stephen W. Mitchell, 93 Lowercroft Rd., Starling, Bury, Lancashire, England

Original No. 4,131,096, dated Dec. 26, 1978, Ser. No. 779,877, Mar. 21, 1977. Application for reissue Dec. 16, 1982, Ser. No. 450,343

Claims priority, application United Kingdom, Apr. 2, 1976, 13370/76

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.15 **18 Claims**

18. A valve timing mechanism for an internal combustion engine including

a crankshaft;

at least one cylinder;

an inlet valve and an outlet valve for said cylinder;

means defining first and second axes of rotation;

an inlet camshaft mounted to rotate about said first axis of rotation and carrying an inlet valve cam to operate said inlet valve, and an exhaust camshaft mounted to rotate about said second axis of rotation and carrying an exhaust valve cam to operate said exhaust valve;

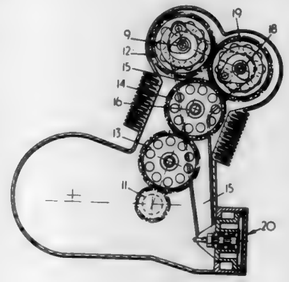
a member movable in dependence upon an engine operating condition;

a driving mechanism driven from said crankshaft and mounted on said movable member;

means defining third and fourth axes of rotation;

said driving mechanism comprising

a first rotary member, mounted to rotate about said third axis and eccentrically-connected to said inlet camshaft, said third axis being parallel to but displaceable relative to said first axis, and



a second rotary member, mounted to rotate about said fourth axis and eccentrically-connected to said exhaust camshaft, said fourth axis being parallel to but displaceable relative to said second axis;

said third and fourth axes being fixed to said movable member and relative to each other, whereby said movement of said movable member varies the said eccentricity of said connections between said first rotary member and said inlet camshaft and said second rotary member and said exhaust camshaft, thereby varying the rate of angular movement of said camshafts relative to the angular movement of said crankshaft and so varying the timing of said inlet and exhaust valves.

Re. 31,918

PHOTOGRAPHIC COLOR SEPARATION EQUIPMENT

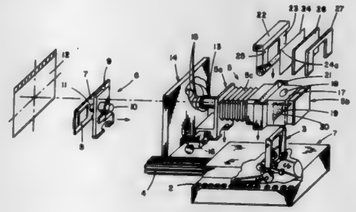
Emile A. H. Guillaume, Ballaigues, Switzerland, assignor to Zelacolor Systems Establishment, Vaduz, Liechtenstein

Original No. 3,984,849, dated Oct. 5, 1976, Ser. No. 501,187, Aug. 27, 1974. Application for reissue Feb. 21, 1978, Ser. No. 879,731

Claims priority, application Switzerland, Aug. 28, 1975, 12337

Int. Cl.³ G03B *33/00*

U.S. Cl. 354—100 **43 Claims**



17. In a photographic apparatus, a mechanism for feeding photographic film, comprising:

a first film transport member; moving means for moving said film transport member in a first direction across an optical axis of the apparatus and for moving said film transport member in a second direction opposite to said first direction; said motions in said first and second directions of said film transport member being relative motions with respect to a first film transport means;

guide means supported by and movable with said film transport member and over which the film is passed;

the film being fed from a first side of said film transport member over said guide means to the opposite second side of said film transport member;

said first film transport means being located at said second side of said film transport member; and

retaining means for holding film that is in engagement with said first film transport means relatively stationary with respect to said first film transport means as said film transport member moves in said first and in said second directions whereby the film is moved past said guide means as said film transport member moves in said first and said second directions thereof, said film transport member being moved in said first direction before each exposure of a portion of said film and in said second direction after each exposure.

Re. 31,919

AROMATICS PROCESSING CATALYSTS

Stephen A. Butter, and Arthur W. Chester, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Original No. 4,312,790, dated Jan. 26, 1982, Ser. No. 140,343, Apr. 14, 1980. Application for reissue Aug. 25, 1983, Ser. No. 526,257

Int. Cl.³ B01J *29/32*

U.S. Cl. 502—66 **31 Claims**

1. A method for preparing a noble metal-containing zeolite catalyst which comprises incorporating a noble metal in a cationic form with a zeolite after crystallization of the zeolite, prior to final catalyst particle formation and prior to any calcination or steaming of said zeolite, said zeolite being characterized by a silica to alumina mole ratio of at least 12 and a Constraint Index in the approximate range of 1 to 12.

26. An improved method for preparing a composite zeolite-alumina catalyst wherein a crystalline zeolite having a silica to alumina mole ratio of at least 200 and a Constraint Index of about 1 to 12 has controlled acid activity by utilizing said zeolite in combination with alumina binder and steam treatment at elevated temperature;

which comprises incorporating a noble metal in a cationic form with the zeolite after crystallization of the zeolite, prior to final composite catalyst formation and prior to any calcination or steaming of the zeolite.

29. In the method for preparing a composite zeolite-alumina catalyst wherein a crystalline zeolite having a silica to alumina mole ratio of at least 200 and a Constraint Index of about 1 to 12 has controlled acid activity by utilizing said zeolite in combination with alumina binder and steam treatment at elevated temperature; the improvement which comprises mulling alumina binder with the zeolite and water to form an extrudable mass; forming the composite catalyst by extrusion of the zeolite-alumina mixture, calcining the extrudate composite, and steam treating the calcined composite.

PLANT PATENTS

GRANTED JUNE 18, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,493

AFRICAN VIOLET PLANT NAMED ELLEN

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,261
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Ellen, as described and illustrated, and particularly characterized by its intensive pink flowers which do not fade under high temperatures, upright flower stems which carry the flower bouquet centrally above the foliage, vigorous compact growth habit, and by its very long lasting flowers that are non-dropping.

5,494

AFRICAN VIOLET PLANT NAMED SABRINA

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Hafen, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,395
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Sabrina, as described and illustrated, and particularly characterized by its red-purple flowers carried on upright flower stems, with the bouquet being compact and positioned centrally above the foliage, its compact growth habit, and its continuous flowering habit.

5,495

CHRYSANTHEMUM PLANT NAMED EXCEL

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 18, 1983, Ser. No. 468,034
Int. Cl.[3] A01H *1/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., named Excel, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; lavender ray floret color; diameter across face of capitulum ranging from 55 to 70 mm. at maturity; uniform eight week flowering response; tall plant height, and spreading branching pattern.

5,496

CHRYSANTHEMUM PLANT DIANA

Margot J. Persoon, and Johannes A. Persoon, both of 4998 Foothill Rd., Carpinteria, Calif. 93013

Filed May 17, 1983, Ser. No. 495,473
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinctive cultivar of chrysanthemum plant, substantially as herein described, and distinguished from its parent by a darker flower color and increased "rolled" or "spoon shaped" petals.

5,497

POINSETTIA PLANT NAMED V-14 HOT PINK

Dennis Deibel, Crestwood, Ky., assignor to Paul Ecke, Jr., Encinitas, Calif.

Filed Jul. 1, 1983, Ser. No. 510,423
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinctive poinsettia cultivar, substantially as herein shown and described, distinguished by the warm and deep pink coloration of its bracts which are tightly centered and present a very compact display.

PATENTS

GRANTED JUN. 18, 1985

ERRATA

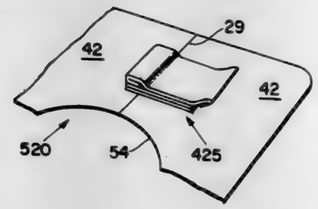
For CLASS	See PATENT NO.
227–008	4,523,695
211–175	4,523,722
384–604	4,523,793
098–002	4,523,870
514–023	4,524,066
514–033	4,524,067
514–058	4,524,068
514–171	4,524,069
514–230	4,524,070
514–272	4,524,071
514–280	4,524,072
514–080	4,524,073
514–321	4,524,074
514–451	4,524,075
514–472	4,524,076
514–557	4,524,077
536–079	4,524,193
365–154	4,524,429

PATENTS

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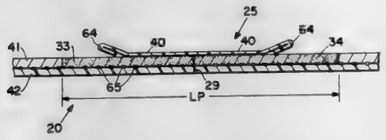
GENERAL AND MECHANICAL

4,523,333
DISPOSABLE BIB HAVING TAPE-TAB FASTENER
Richard A. Spangler, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Nov. 4, 1983, Ser. No. 549,370
Int. Cl.³ A41B *13/10*; A41D *13/04*
U.S. Cl. 2—49 R **9 Claims**



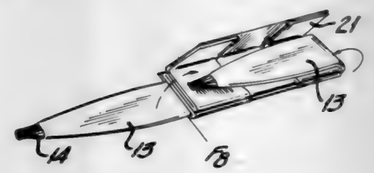
1. A disposable bib comprising a body panel having a neck-accommodating aperture, means defining a predetermined manually partable line-of-parting extending between the edge of said aperture and an adjacent outer edge of said body panel, and a tape-tab fastener, said line-of-parting being disposed and configured to, when parted, enable the portions of said bib disposed adjacent the opposite sides of said line-of-parting to be spread apart to enable fitting said bib about the neck of the user, said fastener comprising a factory-bond end and a mother's-bond end, said factory-bond end being adhered by adhesive thereon to the back surface of said bib adjacent said line-of-parting, said fastener being configured and disposed to enable extending said mother's-bond end across said line-of-parting when parted and adhering it by adhesive thereon to a mother's-bond area of the front surface of said bib, said line-of-parting being an unbroken line-of-severance through said body panel, and said factory-bond end of said fastener comprising a distal portion and a proximal portion, said fastener being so disposed prior to parting said line-of-parting, that said proximal portion and said distal portion are disposed on opposite sides of said line-of-parting, said bib further comprising means for said proximal portion to be peelable from said back surface of said bib whereby said line-of-parting may be parted by peeling said proximal portion from said back surface of said bib.

4,523,334
DISPOSABLE BIB HAVING FIBROUS TOPSHEET WHEREIN MOTHER'S-BOND ZONE IS IMPREGNATED WITH BONDING MATERIAL
Bruce W. Lavash, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Nov. 4, 1983, Ser. No. 549,371
Int. Cl.³ A41B *13/10*; A41D *13/04*
U.S. Cl. 2—49 R **3 Claims**



1. A disposable bib comprising a fibrous topsheet, a liquid impervious backsheet, means bonding said topsheet and said backsheet together in laminated relation, a neck accommodating aperture disposed adjacent one end of said bib, a line-of-parting extending from the edge of said neck accommodating aperture to an adjacent outer edge of said bib, and securement means for bridging said line-of-parting after parting to secure said bib on a wearer for use, said securement means comprising a mother's-bond area of said topsheet disposed adjacent said line-of-parting, and a tape-tab fastener disposed and configured to bridge said line-of-parting when parted with a first end of said tape-tab fastener secured by pressure sensitive adhesive thereon to the front surface of said mother's-bond area, said fibrous topsheet having an insufficient inherent strength property to enable operative association with said first end of said tape-tab fastener, said mother's-bond area being a zone of said topsheet which is sufficiently impregnated with bonding material to provide a tensile-force-transmitting continuum of said bonding material between the front surface of said mother's-bond area of said topsheet and the front surface of underlying portions of said backsheet so that said sheets are united whereby the strength property of said portions of said backsheet lamina is added to the strength of said impregnated zone of said topsheet, and to effect sufficient interfiber bonding in said zone that said zone has sufficient strength to enable said first end of said tape fastener to be and remain operatively secured thereto during normal use of said bib.

4,523,335
SURGICAL GOWN
George W. Scrivens, Arlington, Tex., assignor to Surgikos, Inc., Arlington, Tex.
Filed Sep. 15, 1983, Ser. No. 532,348
Int. Cl.³ A41B *13/10*; A41H *33/00*
U.S. Cl. 2—51 **2 Claims**



1. A surgical gown comprising a main sheet and sleeves integrally attached thereto, said main sheet having a closed front portion and an open back portion, said back portion being folded along longitudinal fold lines extending the length of said gown to form folds laying along the side edges of the gown, said gown being fan folded along transverse fold lines from the bottom of the gown toward the top of the gown to form a series of overlapping folds, the sleeves of said gown being folded over the main body of the gown between the lowermost fold of said gown and the fold adjacent the lowermost fold, the gown then being folded along the longitudinal fold lines to form a compactly folded gown presenting the interior surface of the gown to the wearer.

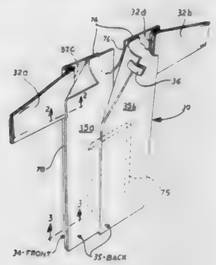
4,523,336
METHOD FOR MANUFACTURE OF SLEEVED GARMENTS OUTSIDE OUT
Charles L. Truman, Hendersonville, N.C., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Sep. 7, 1982, Ser. No. 415,659
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—69 **5 Claims**

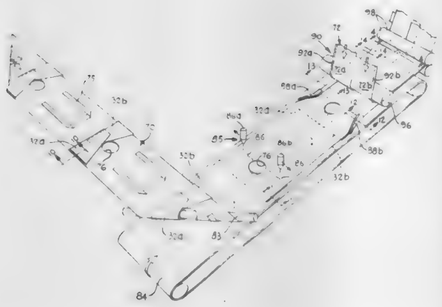
1. A method for the series manufacture of garments outside out comprising the steps of:

providing a moving, lengthwise continuous first fabric web having, at successive intervals, sets of left and right pairs of flattened tubular sleeves extending transversely in-

wardly from the lateral edges of said first web, said sleeves having one layer of each flattened sleeve attached at the arm hole portion to one surface of said web;

folding lateral edge portions of said moving first web inwardly on itself, including a strip of the arm hole end of each sleeve adhered thereto, on the other surface of said first web to provide inwardly folded edge portions of said first web and longitudinally contiguous strips of said sleeves adjacent the lateral edges of said first web;





attaching said inwardly folded portions of said moving first web and said longitudinally contiguous strips of said sleeve to a moving lengthwise continuous second fabric web to provide side seams joining said webs and said sleeves;

attaching said first and second webs along transverse lines adjacent said sets of sleeves to provide shoulder seams at successive intervals; and

cutting said moving continuous webs transversely successively adjacent said shoulder seams to provide finished garments.

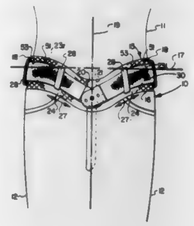
4,523,337

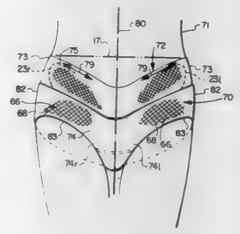
CONTOURED APPAREL

Martin N. Leibowitz, 1155 Hillsboro Mile, Ste. 602, Hillsboro Beach, Fla. 33062

Filed May 2, 1983, Ser. No. 490,586
Int. Cl.³ A41F *9/02*
U.S. Cl. 2—237 **8 Claims**

1. A garment constructed to cover at least a lower portion of the human torso, said garment including means forming a waistband having opposed side portions extending in an upward curvature over the wearer's iliums when worn and generally downwardly across the wearer's lower front abdominal wall to a generally central depression situated below the wearer's waistline, and said opposed side portions also extending generally downwardly across the wearer's back toward a generally central depression situated below the wearer's waistline and above the coccyx, said opposed side portions being secured to each other at said central depressions, respectively, and said side portions being formed so as to have at least a first layer of woven fabric wherein the warp and fill threads are directed so as to intersect opposed converging lines of force exerted by said waistband which extend from the top edges of respective ones of the wearer's iliums generally downwardly at an acute angle and converging toward the longitudinal vertical





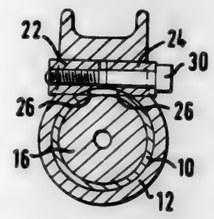
centerline of said torso at said respective central depressions, said means forming said waistband being adapted to exert stretch and recovery forces along said converging lines whereby said garment is retained on said torso in supportive relationship thereto by said forces acting solely along said converging lines on said waistband.

4,523,338

DEMOUNTABLE JOINT

Denis R. W. May, London, England, assignor to J. E. Hanger & Company Limited, London, England

Continuation-in-part of Ser. No. 386,454, Jun. 8, 1982, abandoned. This application Jan. 31, 1983, Ser. No. 462,244
Claims priority, application United Kingdom, Jun. 9, 1981, 8117573; Jun. 9, 1981, 8117574
Int. Cl.³ A61F *1/08*
U.S. Cl. 3—21 **4 Claims**



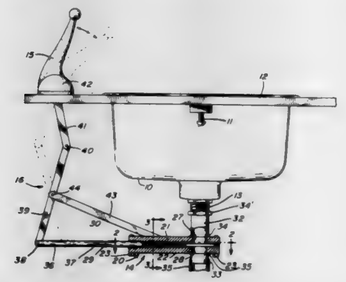
1. A demountable joint comprising a socket having a blind main bore, a tubular member of soft metal one end of which is inserted into said main bore, an auxiliary bore in the socket directed perpendicular to the axis of said main bore and intersecting it over a small arc, first and second collets which each fit in said auxiliary bore and have at their respective inner ends part cylindrical bearing faces conforming to the curvature of said tubular member, clamping bolt means for urging said first and second collets together so that they press on said tubular member and functionally retain said tubular member in said socket, and a reinforcing insert that is a push fit in said tubular member and has a flange that butts against the end of said main bore and seats on the end of said tubular member that is within the socket to locate said reinforcing insert axially in said tubular member so that it registers with said collets to resist compressive loads on said tubular member.

4,523,339

SINK DRAIN VALVE

Gérard Lavoie, 467 Principale St., Ville Dègelés, Quebec, Canada (G0L 1H0)

Filed Jun. 24, 1983, Ser. No. 507,485
Int. Cl.³ E03C *1/00*
U.S. Cl. 4—191 **1 Claim**



1. The combination of a liquid-containing basin having a downwardly-extending outlet tube, of the vertical portion of a lower drain pipe, said vertical portion co-axial with and vertically spaced from said outlet tube, with a closing mechanism controlling the flow of liquid from said basin between said outlet tube and said vertical drain pipe portion; said mechanism including top and bottom plates, each having a transverse small hole and removably secured one to the other in face-to-face relation, a gasket installed between the peripheral edge portions of said plates and defining an inner chamber in conjunction with said plates, said plate holes being in register and opening into said chamber; top and bottom drain nipples fixedly and permanently secured to said top and bottom plates, respectively, in registry with said plate holes and in co-axial arrangement, the outer ends of said top and bottom drain nipples being removably secured co-axially to said outlet tube and to said vertical drain pipe portion, respectively; a gate valve plate movable in said chamber transversely of said plate holes, a rod secured to said valve plate, co-planar therewith and protruding from one end of said top and bottom plates; an operating handle pivotally mounted adjacent said basin, and a multi-lever arrangement operatively interconnecting said handle to said rod, whereby operation of said handle will move said valve plate within said chamber between a position across said plate holes and a position clearing said plate holes.

4,523,340

MEANS PROVIDING MOVING WATER STREAM EJECTING INTO SPA TANK

Jonathan Watkins, San Marcos, Calif., assignor to Watkins Manufacturing Co., Carlsbad, Calif.

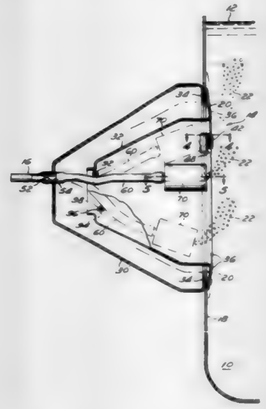
Filed Dec. 20, 1982, Ser. No. 451,030
Int. Cl.³ A67H *33/02*
U.S. Cl. 4—542 **17 Claims**

1. The improvement in a spa or the like that includes a tank containing water for body immersion and a flexible exhaust tube directed to exhaust water into said tank from a side thereof and a source of pressurized water connected to said exhaust tube, said exhaust tube having a free end adapted to whip by reaction to water exhausting therefrom and guide means guiding said exhaust tube to swing substantially in a single vertical plane, the improvement, comprising:

(a) a nozzle secured to said free end of said exhaust tube and an air line secured to said nozzle and extending generally parallel to said exhaust tube,

(b) said nozzle being formed by a larger rigid tube and end plugs for said larger tube, a smaller tube extending through said larger tube and openings in said plugs to pass said smaller tube, the free end of said exhaust tube being secured to said smaller tube, said air line connecting to said larger rigid tube at a location alongside said smaller tube and said smaller tube having side ports whereby the inside of said larger tube forms a floatation chamber receiving air from said air tube and exhausting air from said chamber in a Venturi manner through said ports into the water stream passing through said smaller tube during exhaust of pressurized water through said exhaust tube,

(c) housing means for said tube including opposite sidewalls forming said guide means for said tube,



(d) said tube having a fixed portion secured to said housing means with said free end extending inwardly therefrom towards the inside of said tank and means forming a pair of upper and lower abutments above and below said tube and spaced from said fixed portion of said tube in a direction toward the inside of said tank and said abutments forming bend points in undulating reversal movement of said tube at each end of the path of travel of said tube,

(e) said abutments being formed by a pair of rollers,

(f) said housing means including an outer housing for said tube to which said tube is secured with said free end extending inwardly therefrom towards the inside of said tank and an inner housing inside of said outer housing having opposite sidewalls forming said guide means for said tube, and

(g) said housings being mounted for relative vertical adjustment therebetween to adjust for the path of travel of said free end of said tube.

4,523,341

BATHING CABINET WITH TRANSPORTER CART

Carl J. Queen, 8408 Kelso Dr., Lake Park, Fla. 33410

Filed Dec. 12, 1983, Ser. No. 560,381
Int. Cl.³ A47K *3/022*
U.S. Cl. 4—555 **5 Claims**

1. A bathing system comprising:

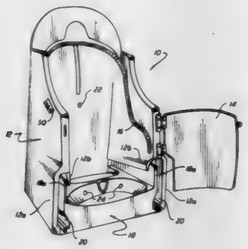
a bathing enclosure;

a patient transporter cart;

means for rolling said cart connected to said cart; said cart and means for rolling being positionable inside said enclosure;

means disposed in said bathing enclosure for providing a fluid spray inside said enclosure;

said bathing enclosure including means for shielding said



cart rolling means from fluids sprayed inside said enclosure by said means for providing a fluid spray during a bathing operation with said cart and means for rolling inside said enclosure.

4,523,342

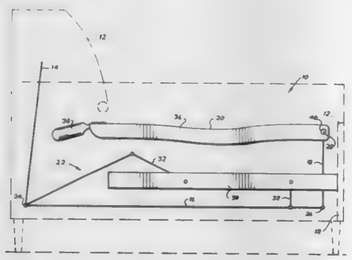
FOLDING BED FRAME STRUCTURE FOR SOFA BEDS OR THE LIKE

Homer F. Poovey, Newton, N.C., assignor to Hickory Springs Manufacturing Company, Hickory, N.C.

Filed May 9, 1983, Ser. No. 492,898

Int. Cl.³ A47C *23/02*

U.S. Cl. 5—250 **9 Claims**



1. A folding bed frame structure for sofa beds or the like comprising a plurality of bed sections pivotally connected in end-to-end relation and linkage means adapted for affixation to a sofa frame or the like and operably associated with said bed sections for supporting said bed sections on said frame and controlling relative movement thereof in a predetermined pattern between a retracted position in which said bed sections are folded within said frame relative to one another with one said bed section disposed uppermost in horizontal disposition for user seating thereon and an extended position in which said bed sections are horizontally aligned for user sleeping thereon, non-sinuous link fabric means extending along and across each said bed section except said one bed section for providing firm resilient sleeping support in said extended position, said one bed section having two cross-members extending transversely thereof and fixed thereto at each longitudinal end thereof to be movable with said one bed section, and sinuous spring fabric means affixed to each said cross-member to extend longitudinally therebetween and across said one bed section for providing firm resilient seating support in said retracted position and firm resilient sleeping support in said extended position, said sinuous spring fabric means being curved in its extent longitudinally and outwardly of said one bed section to be generally convex in said retracted position for enhanced firmness and strength of seating support.

4,523,343

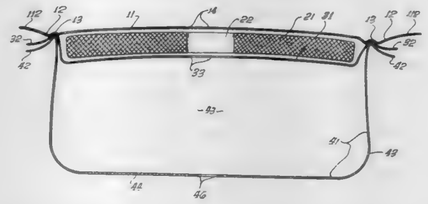
BUOYANT FIBER PRODUCT USED IN IMPROVED WATERBED FLOAT WITH HANGING BAFFLE

Richard Fraige, 11005 Hwy. 50 East, Carson City, Nev. 89701

Continuation-in-part of Ser. No. 337,122, Jan. 5, 1982, Pat. No. 4,481,248. This application Sep. 26, 1983, Ser. No. 535,619

Int. Cl.³ A47C *27/08*

U.S. Cl. 5—450 **20 Claims**



1. In combination, for use within a waterbed mattress or the like to reduce wave motion of water therein:

a bouyant, readily water-permeable and therefore heat-convection-transparent fibrous product comprising:

a large multiplicity of noncelliform, interbonded fibers in the form of a lofted matting that is readily water-permeable throughout, and

a large multiplicity of expanded foam beads secured to and among the fibers, and spaced apart singly or in clusters among the fibers to maintain the lofted matting readily water-permeable throughout;

a sheeting structure that forms a baffle for use in reducing such wave motion; and

means for constraining the fibrous product in close proximity to the baffle, so that the fibrous product can by its buoyancy support the baffle.

4,523,344

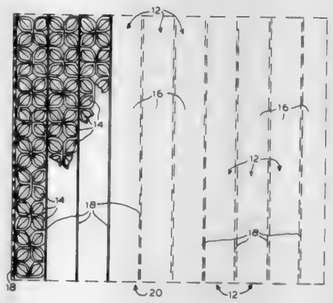
INDEPENDENT BLOCK ASSEMBLY OF SPRINGS

Walter Stumpf, and Paul Dillon, both of Dunwoody, Ga., assignors to Simmons U.S.A. Corporation, Atlanta, Ga.

Filed Sep. 17, 1982, Ser. No. 419,369

Int. Cl.³ A47C *27/09*

U.S. Cl. 5—477 **8 Claims**



1. A flexible spring assembly comprising a plurality of interconnected parallel blocks having respective top and bottom surfaces, each of said blocks including first and second substantially parallel strips of interconnected pocketed coil springs, said strips each being defined by a plurality of coil springs encased between plies of a fabric strip, said plies being attached to each other between each coil spring to define individual compartments for each spring, said strips being connected to each other so as to form a non-nested arrangement of said pocketed springs, and a flexible cover wrapped about and tightly encasing said connected strips; said blocks being hingedly attached to each other by longitudinal lines of connection connecting adjacent flexible covers to each other, said lines of connection being in a plane substantially perpendicular to the axes of each of said coil springs of an adjacent block; there being no connections between said blocks other than said longitudinal lines of connection.

4,523,345

LAST WITH A REPLACEABLE TIP

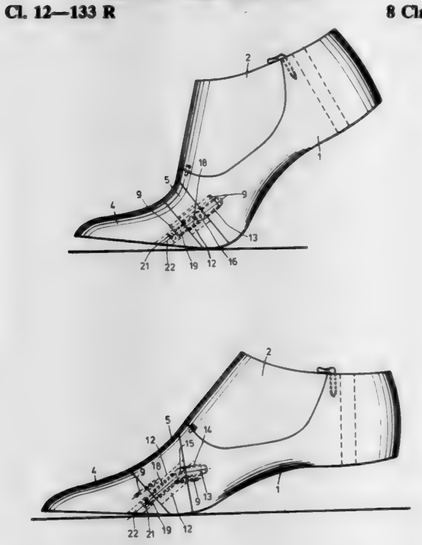
Fernando Orea Mateo, Madrid, Spain, assignor to Ingenieria del Calzado, S.A. (I.C.A.S.A.), Madrid, Spain

Filed Oct. 7, 1983, Ser. No. 539,957

Claims priority, application Spain, Oct. 7, 1982, 267.684

Int. Cl.³ A43D *3/02, 3/00*

U.S. Cl. 12—133 R **8 Claims**



1. In a last structure of the type including a main body portion provided with an unmolding block, and a plurality of toe portions selectively joinable to said main body portion, the improvement of means for adjusting the last structure to various heel heights of shoes to be formed thereon, said adjusting means comprising:

a plurality of interchangeable intermediate members adapted to be selectively connected between said main body portion and a selected said toe portion;

each said intermediate member having a rear surface to abut a complementary shaped forward surface of said main body portion and a forward surface to abut a complementary shaped rear surface of said selected toe portion;

said rear and forward surfaces of each said intermediate member extending at a relative orientation different from that of other said intermediate members, whereby connection of respective said intermediate members between said main body portion and said selected toe portion will result in corresponding changes of the orientation of said main body portion with respect to said selected toe portion; and

means for connecting a respective said intermediate member between said main body portion and said selected toe portion, said connecting means being adjustable to said changes of orientation to accommodate and be employable with all of said intermediate members.

4,523,346

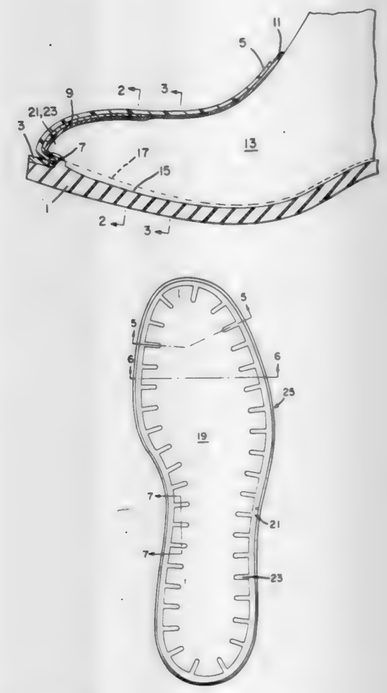
METHOD AND DEVICE FOR THE MANUFACTURE OF FOOTWEAR

Horace Auberry; Anton Liebscher, and Sven Oberg, all of Waynesville, N.C., assignors to Ro-Search, Incorporated (Ro-Search), Waynesville, N.C.

Filed Aug. 11, 1983, Ser. No. 522,333

Int. Cl.³ A43D *3/00, 65/02, 65/00*

U.S. Cl. 12—133 R **20 Claims**



1. A method for making footwear with elastomeric soles lasted without a structural insole, comprising:

(a) providing an upper with a welt stitched thereto,

(b) providing a last with grooves on the last bottom substantially tracking said stitches,

(c) placing said last within said upper with said grooves closely adjacent said stitches; and

(d) forming a sole secured to said upper which includes said groove and the region between said grooves and said stitches.

4,523,347

DISPOSABLE FLOOR MOP

Esther R. Tames, 1279 E. 17th St., Brooklyn, N.Y. 11230

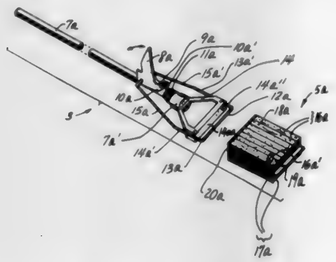
Filed Nov. 14, 1983, Ser. No. 550,878

Int. Cl.³ A47L *13/20*

U.S. Cl. 15—104.94 **10 Claims**

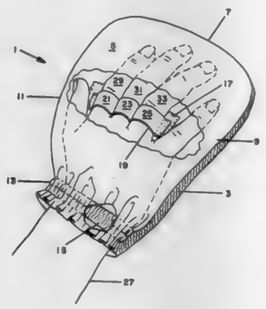
1. A floor wetable-type mop device of disposable nature, consisting essentially of, in combination: at least two flexible first and second water-absorbent materials separated by a flexible third water-impervious material, one of said first and second water-absorbent materials including thereon a water-miscible cleansing agent, and the remaining one of the first and second water-absorbent materials being free of any water-miscible cleansing agent, said first and second water absorbent materials and said third water-impervious material being

adapted for mounting on a mop handle to dangle therefrom such that optionally alternate ones of said first and second



water-absorbent materials may be utilized in mopping for alternately applying and removing cleaning agent from a floor surface to be mopped.

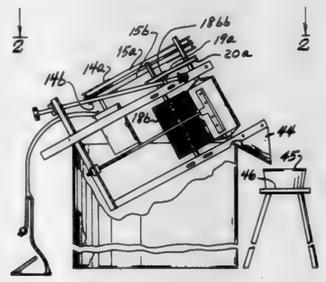
4,523,348
NURSE'S MITT
Colleen Y. Petrie, Box 267, Palatine Bridge, N.Y. 13428
Filed Apr. 30, 1984, Ser. No. 605,224
Int. Cl.[3] A47K *7/02*
U.S. Cl. 15—227 **1 Claim**



1. A nurse's mitt of cloth-like material for washing purposes, said nurse's mitt comprising a palm portion, a back portion, a wrist portion having first elastic means, said palm portion having second elastic means, said palm and back portions being similarly configured, said palm and back portions having common tops and sides, said palm and back portions being joined together at their respective common tops and sides, said wrist portion having said first elastic means for retention of said nurse's mitt on the wrist of a human operator, said palm portion having an interior mid portion, said second elastic means being suitably affixed to said interior mid portion to define finger loops for insertion in and retention by said finger loops of the proximal phalanges of the index, middle and ring fingers of the human operator's hand.

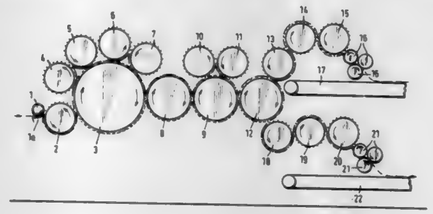
4,523,349
CRAB MEAT EXTRACTOR AND METHOD OF EXTRACTION
Wiley W. Warren, Rte. 4, Box 571, Washington, N.C. 27889
Filed Aug. 23, 1983, Ser. No. 525,742
Int. Cl.[3] A22C *29/02*
U.S. Cl. 17—46 **25 Claims**

22. A method of extracting whole meat from crab undershell severed into severed half-undershells, comprising in combination: (1) removing a crab's outer upper-shell to leave an undershell; (2) thereafter, causing opposing pincher rolls positioned to form a forward elongated bite extending forwardly downwardly along an inclined line of contact between the opposing pincher rolls such that extracted meat is caused to move downwardly in a direction of a forward feed-location while meatless residual crab severed half-undershell is dragged through the rolls and is directed in a rearward direction away from said feed-location; (3) causing the rolls to revolve in a direction to form said forward elongated bite; (4) halving the undershell to



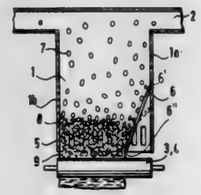
form separate severed half-undershells each having a severed edge and an opposite edge from which legs extend; (5) feeding the opposite edge into the forward elongated bite such that crab meat is extruded from said severed edge in said direction of said forward feed-location apart from meatless residual crab severed half-undershell dragged through the rolls; (6) thereafter steaming said extracted meat.

4,523,350
CARDER FOR MANUFACTURING NON-WOVEN, FORMED FABRIC FROM FIBROUS SUBSTANCES
Hans Schmiedgen; Siegfried Bernhardt; Otto Strobl, and Dietrich Menzel, all of Bremen, Fed. Rep. of Germany, assignors to Spinnbau GmbH, Fed. Rep. of Germany
Filed Jun. 28, 1983, Ser. No. 508,876
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224118
Int. Cl.[3] D01G *15/40*
U.S. Cl. 19—98 **5 Claims**



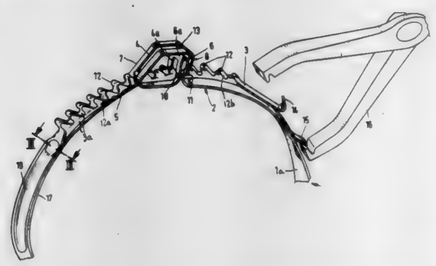
1. In an improved carder for fleece manufacture from fibrous material comprising at least one draw-in roller, a licker-in roller running oppositely to said draw-in roller, at least one master roller, and including worker roller means and clearer roller means cooperating therewith, the improvement wherein each master roller is followed by a fleece matting means, each fleece matting means comprising a matting roller means running in the same direction as the associated said master roller, said matting roller means producing a fleece drawing between 1 and 2 times compared to the associated said master roller a fleece draw-in depression cooperatively formed with said draw-in roller, whereby a fleece drawing of from about 100 and 200 times is provided between said draw-in roller and said licker-in roller with said licker-in roller running in the same direction; and a fleece drawing of from about 1 to 2 times exists between said licker-in roller and said associated master roller.

4,523,351
FIBER LAP PRODUCING APPARATUS WITH LAP WIDTH VARYING DEVICE
Ferdinand Leifeld, Kempen, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany
Filed Dec. 16, 1982, Ser. No. 450,421
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3149965
Int. Cl.[3] D01G *15/40*
U.S. Cl. 19—105 **16 Claims**



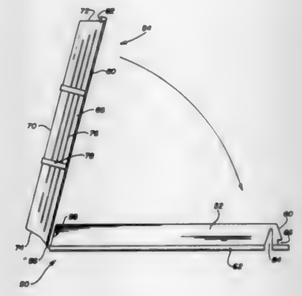
1. In an apparatus for producing a fiber lap, including a generally vertically oriented feed chute having a width, means for introducing fiber tufts into said feed chute at an upper portion thereof; and means for discharging a continuous fiber lap of predetermined width at a lower portion of said feed chute; the improvement comprising a movable wall element for varying an effective width of said feed chute for altering the width of the fiber lap produced by said apparatus; at least one portion of said movable wall element being situated at said lower portion of said feed chute.

4,523,352
HOSE CLIP
Gerhard Wachter, Büdingen, Fed. Rep. of Germany, assignor to Rasmussen GmbH, Maintal, Fed. Rep. of Germany
Filed Sep. 13, 1983, Ser. No. 531,929
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235329
Int. Cl.[3] B65D *63/02*
U.S. Cl. 24—20 TT **13 Claims**



1. An annular hose clip, comprising an elongated flexible band having an inner side arranged to surround a portion of an elastically deformable component, a first end section and a second end section, said first end section having an end portion, a slot and an outwardly looped intermediate portion integral with said end portion and defining a substantially radially outwardly extending back support in the region of said end portion and said slot, said second end section extending through said slot and having detent means engaged by said end portion and urging the latter against said back support in response to the tendency of the surrounded component to expand the band when the latter is tightly applied therearound, said end portion of said first end section extending substantially radially inwardly toward said detent means and said back support having a substantially radially extending exposed surface abutting against said end portion when the latter engages with and is urged by the detent means against said back support.

4,523,353
SMALL ICE PACKS AND METHOD OF MANUFACTURING THE SAME
Vance M. Hubbard, Euless, and Welton K. Brunson, Bedford, both of Tex., assignors to Tecnol, Inc., Fort Worth, Tex.
Division of Ser. No. 184,466, Sep. 5, 1980,. This application Aug. 16, 1982, Ser. No. 408,638
Int. Cl.[3] B65D *63/00*
U.S. Cl. 24—30.5 R **2 Claims**



1. A closure member for an ice pack comprising:

a substantially planar elongate blade-like member having inwardly tapered end surfaces and a rib extending substantially the length thereof along the base, one of said tapered end surfaces having a notch formed internally thereof and having a cut formed in the base thereof proximate said notched end surface such that said end surface is flexible inwardly of the blade member;

a sheath member, dimensioned to receive the blade member, having two substantially parallel sidewalls connected by a roof portion, said sidewalls having a plurality of longitudinal ribs extending the length thereof and integral therewith, said sidewalls having open, outwardly tapered end surfaces dimensioned to conform substantially to the end surfaces of said blade-like member, the length of said sheath member being slightly less than said blade-like member;

a flexible member connecting one end surface of said sheath member to the unnotched end surface of said blade-like member, said hinge dimensioned to permit said blade-like member to be selectively moved into and out of registration with said sheath member; and

said sheath member having a flange disposed along the base thereof extending outwardly of said end surfaces and dimensioned to engage said notched end surface of said blade-like member such that the notched end surface of said blade-like member is compressed inwardly of the blade member when said blade member is forced into said sheath member to lock said blade-like member into registration with said sheath member.

4,523,354

CLIP FOR SHEET MATERIAL

Tatuzo Tsukamoto, 2570, Ohaza Mukaizima, Chiyodamachi, Kanzakigun, Saga 842, Japan

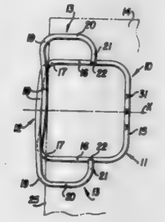
PCT No. PCT/JP82/00249, § 371 Date Feb. 28, 1983, § 102(e) Date Feb. 28, 1983, PCT Pub. No. WO83/00119, PCT Pub. Date Jan. 20, 1983

PCT Filed Jun. 28, 1982, Ser. No. 486,287

Claims priority, application Japan, Jul. 1, 1981, 56-103674; Mar. 25, 1982, 57-48233

Int. Cl.³ B42F *1/02;* A44B *21/00*

U.S. Cl. 24—67.9 **18 Claims**



1. A clip comprising a generally planar back unit which is generally symmetrical about a symmetrical axis, said back unit having a pair of shaft portions disposed on opposite sides of said symmetrical axis, said shaft portions each being spaced from said symmetrical axis at a first distance, crossing arms extending from said shaft portions and extending generally transversely of said symmetrical axis, and a pair of pressing units disposed on opposite sides of said symmetrical axis, said pressing units being connected to a respective crossing arm, said pressing units extending on opposite sides of said symmetrical axis to a second distance which is greater than said first distance, each of said pressing units having a terminating end section juxtaposed to a respective intermediate section of said shaft portion, said pressing units being movable relative to said back unit from a relaxed state to an open position such that in said open position a space is provided between said back unit and said pressing units for disposing sheets therebetween, said pressing units being movable to said open position by the torsional twist of said shaft portions, said terminating end sections engaging and contacting said sheets when said pressing units are in said open position such that said sheets are thereby clipped and retained between said pressing units and said back unit.

4,523,355

FITTING FOR JOINING AN ELONGATE BODY TO A SUPPORT

Aristheu A. Rosa, Boacava, Brazil, assignor to Preformed Line Products Company, Cleveland, Ohio

PCT No. PCT/BR82/00017, § 371 Date Jun. 14, 1983, § 102(e) Date Jun. 14, 1983, PCT Pub. No. WO83/01869, PCT Pub. Date May 26, 1983

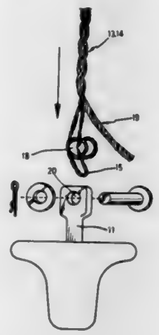
PCT Filed Nov. 11, 1982, Ser. No. 514,806

Claims priority, application Brazil, Nov. 11, 1981, 8107318

Int. Cl.³ F16G *11/12*

U.S. Cl. 24—115 N **1 Claim**

1. Apparatus for coupling an elongate body to a support comprising: a generally U-shaped fitting having a midportion extending transversely between two substantially parallel legs, said fitting having a central portion inwardly of the extremities of said legs which includes said midportion, said fitting being bent to form a pair of coaxial rings disposed one at either end of said midportion and extending generally at 90° to the plane containing said legs, said midportion being of generally planar curved configuration and lying in a plane inclined to the plane containing said legs, said fitting being formed of a plurality of resilient strands twisted together, said strands in said central portion having a greater degree of twist than the extremities of said legs so as to have a rope-like appearance, said strands in the extremities of said legs being twisted together in an open helical configuration with the helix on one leg being axially out of phase with the helix on the other leg by approximately



one-half their pitch, and the extremities of said legs being grippingly twinable around an elongate body to define the sole means for attaching the elongate body to the fitting and thereby coupling the elongate body to a support to which the fitting is attachable by said rings.

4,523,356

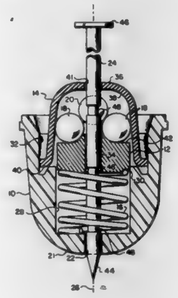
BALL CLUTCH MECHANISM WITH TWO SETS OF BALLS IN SEPARATE RADIAL PLANES

Lincoln H. Charlot, Jr., Tampa, Fla., assignor to Security Tag Systems, Inc., St. Petersburg, Fla.

Filed Feb. 27, 1984, Ser. No. 584,121

Int. Cl.³ A44B *9/00;* G08B *13/00*

U.S. Cl. 24—155 BR **18 Claims**



1. A ball clutch mechanism for restraining a pin from longitudinal movement, comprising

an anvil having an axial bore for axially receiving a pin;

a radially symmetrical cup having a confining end, a tapered interior wall and a predominantly open end covering the anvil and axially aligned with the anvil for axially receiving a said pin that is axially received by the bore of the anvil, wherein the anvil is longitudinally movable along its bore axis with respect to the cup;

biasing mean for forcing the anvil toward the confining end of the cup;

a first set of a given number of uniformly dimensioned balls in the cup, engaging the anvil and forced by the anvil toward the confining end of the cup when the anvil is forced toward the confining end of the cup by the biasing means; and

a second set of the given number of uniformly dimensioned balls in the extreme confining end of the cup for clutching a said pin axially received by the cup and the bore of the anvil, wherein the interior wall of the cup is dimensioned and tapered with respect to the balls to cause the balls of the first and second sets to be in different radial planes and to cause the balls of the second set to contact the pin and wherein when the balls of the first set are forced toward the confining end of the cup, the balls of the first set wedge the balls of the second set between the tapered interior wall of the cup and the pin and uniformly space the balls of the second set to apply symmetrical radial pressure against said pin to firmly clutch the pin and thereby restrain said pin from longitudinal movement.

4,523,358

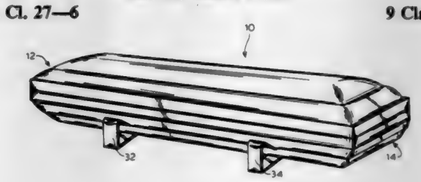
STAMPED CASKET

William J. Semon, Dalton, Pa., assignor to Casket Shells, Inc., Eynon, Pa.

Filed Feb. 23, 1983, Ser. No. 468,899

Int. Cl.³ A61G *17/00*

U.S. Cl. 27—6 **9 Claims**



1. A casket comprising a one-piece pre-formed generally rectangular stamped body to be used as a base having an integrally formed bottom, sides and ends, and a one-piece preformed stamped cap having an integrally formed top, sides and ends to be used as a top, an integral generally horizontal flange extending inwardly from the periphery of the top and bottom sections in adjacent opposed relationship, hinges pivotally coupling the cap to the body and closing means for closing the cap to the body, said base and said cap being of substantially identical size and configuration and the cap being slightly larger in plan than the body to accommodate the hinges and closing means.

4,523,357

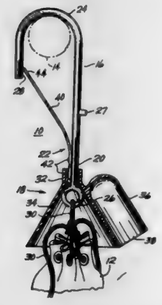
HOOK ASSEMBLY

H. Robert Widditsch, 3233 NE. 105th, Seattle, Wash. 98125

Filed Sep. 15, 1983, Ser. No. 532,541

Int. Cl.³ A43C *11/08;* A01K *39/00*

U.S. Cl. 24—230.5 R **10 Claims**



1. A hook assembly for attaching a container, line or other object to a support member, said hook assembly comprising:

a hood having an arcuate upper end section and an elongate shank section extending downwardly from said arcuate upper end section;

a hood having a central opening for slidably receiving said shank section to enable said hood to slide along said shank section, said hood being open in the downwardly direction;

upper hood stop means for limiting the upward sliding movement of said hood toward said hook arcuate upper end section;

lower hood stop means for preventing said hood from downwardly disengaging from said hook shank section;

connecting means for connecting the lower end portion of said hook shank section to the container, line or other object; and,

wherein said hood includes:

a central collar having an inside opening of a width slightly larger than the width of said hook shank section;

a skirt flaring outwardly from said central collar in the downward direction,

said skirt extending longitudinally downward beyond said hook shank section when said hood is restrained by said lower hood stop means; and,

a socket member extending along said hood skirt, said socket having an opening in the direction opposite said hook curved end section for receiving the end of a pole, stick or similar member thereby to slide said hood upwardly along said shank section to abut against said upper stop means to enable said hook assembly to be lifted upwardly and to be engaged with a remotely located support member.

4,523,359

MACHINE WITH AN INTERMITTENTLY ROTATING TABLE FOR THE PREFORMANCE OF WORK OPERATIONS

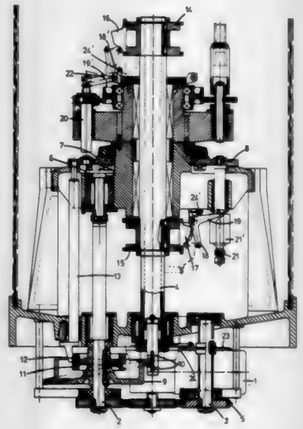
Michelangelo Gippa, Chiasso, Switzerland, assignor to Azypatent AG, Vaduz, Liechtenstein

Filed Dec. 28, 1982, Ser. No. 454,081

Claims priority, application Switzerland, Dec. 28, 1981, 8302/81; Dec. 29, 1981, 8319/81

Int. Cl.³ B23B *9/12, 13/04*

U.S. Cl. 29—38 A **4 Claims**



1. A machine for performing work operations on workpieces, comprising a work table for supporting said workpieces, said table being rotatable about a vertical axis, means for intermittently rotating said table about said vertical axis, a plurality of operating units disposed peripherally about the table and mounted for movement toward and away from workpieces carried by the table, a central shaft lying on the

axis of rotation of the work table and movable both axially and rotatably relative to the work table, means responsive to axial movement of the shaft to move said operating units toward workpieces on the table, said responsive means comprising cams carried by the shaft and engageable with cam followers whose movement moves the operating units, indexing means engageable with the table to fix the rotated position of the table so that when the table is stationary, the workpieces will be in registration with the operating units, means for engaging said indexing means with and disengaging said indexing means from the work table whereby the work table undergoes its rotary movement when said indexing means are disengaged, and means to rotate the shaft when the indexing means are disengaged thereby to permit return axial movement of said shaft in the rotated position thereof with said cams out of contact with said cam followers.

4,523,360

PIECE-HOLDER TABLE REVOLVING INTERMITTENTLY IN MACHINE TOOLS

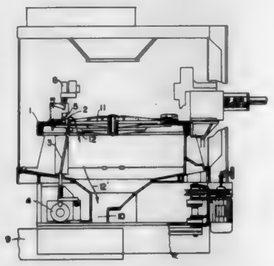
Massimo Giovanola, Lugano, Switzerland, assignor to Albe S.A., Agno, Switzerland

Filed Nov. 22, 1983, Ser. No. 554,342

Claims priority, application Switzerland, Jun. 7, 1983, 3109/83

Int. Cl.³ B23Q *11/00, 39/04*

U.S. Cl. 29—38 C **1 Claim**



1. In a machine tool having a multiplicity of work stations arranged about the periphery of an intermittently rotating work-holding table; the improvement in which the table comprises a peripheral circular crown, a central hub, a plurality of spokes interconnecting the crown and the hub and leaving spaces between the spokes, a plurality of work-holders on the crown radially outwardly of said spokes and spaces, and nozzles adjacent the periphery of the table so arranged as to direct jets of fluid radially inwardly across the upper surface of said crown to force material removed from work pieces radially inwardly to be discharged downwardly by gravity through said spaces.

4,523,361

PORTABLE SURFACE PROCESSING APPARATUS

Paul Dummermuth, Zunzgen, Switzerland, assignor to Von Arx A.G. Maschinenfabrik, Sissach, Switzerland

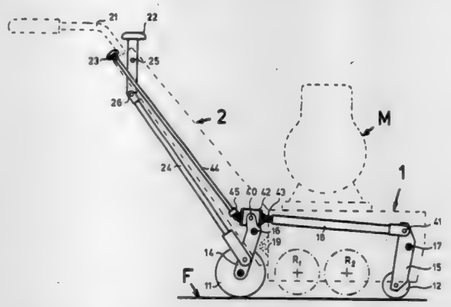
Filed Jul. 6, 1983, Ser. No. 511,389

Claims priority, application Switzerland, Jul. 6, 1982, 4108/82

Int. Cl.³ B23D *79/02;* **B24B** *7/18*

U.S. Cl. 29—81 J **4 Claims**

1. Portable surface processing apparatus with two rotor cages driven by a motor in opposite directions with horizontal axes, cage bars in the rotor cages, and a plurality of processing elements mounted on the cage bars, and having elevationally adjustable wheels in front and behind the rotor cages, characterized in that the two rotor cages (R_1, R_2) are turnably borne in a chassis (**1**) which is provided with wheels (**11, 12**) which are each arranged on the lower end of a two-armed swinging lever (**14, 15**), the upper ends of the swinging levers (**14, 15**) are connected by a connecting rod (**18**), and the two-armed swinging levers (**14, 15**) together with the connecting rod (**18**) and the connecting line of the swinging axes (**16, 17**) form an angle-adjustable parallelogram, in which the angle adjustment brings about a change of the relative height of the chassis (**1**) with respect to the surface (F) to be treated, said connecting rod (**18**) including a front connection (**41**) and a rear connection (**40**) which includes a sleeve (**42**), in which a screw pin (**43**) is



borne axially fixed but turnable, the screw pin (**43**) having a threaded part which is screwed into a female portion of the connecting rod (**18**), so that through rotation of the screw pin (**43**) the spacing between the connections (**40, 41**) is increased or decreased and the height of the chassis from the surface to be treated can be adjusted forward in the apparatus independently of the height of the back

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4,523,362

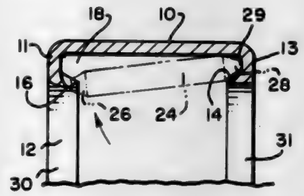
METHOD OF MAKING A ROLLER BEARING ASSEMBLY

Anthony Cuozzo, and John D. Achee, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Sep. 1, 1983, Ser. No. 528,455

Int. Cl.³ B21D *53/12*

U.S. Cl. 29—148.4 A **4 Claims**



4. The method of making a roller bearing assembly comprising: shaping a small circumferential portion of a lip extending axially from a radially extending end flange of an outer race member into a roller end receiving portion to permit the passing of only are reduced end of a roller at a time into the annular trough defined by said end flange and said lip; filling the annular trough with reduced end rollers by passing the reduced ends of the rollers through the roller end receiving portion; and closing the roller end receiving portion to form a full complement bearing.

4,523,363

BUSH MOUNTING EQUIPMENT WITH LUBRICATING OIL APPLYING MECHANISM

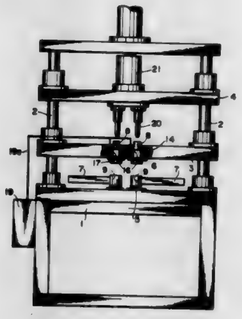
Shinichi Mizutani, and Harumi Ajiki, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Feb. 15, 1983, Ser. No. 466,644

Claims priority, application Japan, Feb. 16, 1982, 57-020452[U]

Int. Cl.³ B23P *19/02*

U.S. Cl. 29—235 **10 Claims**



1. A bush mounting device with a lubricating oil applying mechanism, comprising:

a work holder for holding a workpiece, said work holder having a bush insertion hole with a diameter equal to the diameter of a bush mounting hole formed in said workpiece;

a guide holder having a tapered hole including a reduced-diameter portion, the diameter of said reduced-diameter portion being equal to that of said bush mounting hole of said workpiece, said guide holder being disposed in a position adjacent to said work holder so that said tapered hole is aligned with said bush insertion hole of said work holder; and

a lubricating oil feed gap formed in the circumference of a smaller-diameter end of said tapered hole.

4,523,364

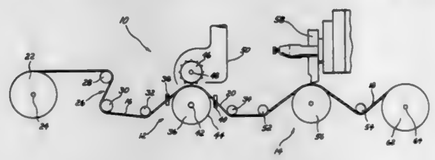
HIGH SPEED PRODUCTION OF MULTIPLE GAUGE STRIP

Harold H. Laws, East Alton, Ill.; Bart P. Caruso, Florissant, Mo., and James G. Hascall, Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 5, 1983, Ser. No. 455,764

Int. Cl.³ B23P *13/02;* **B23D** *1/10*

U.S. Cl. 29—33 S **20 Claims**



1. An apparatus for the high speed production of a multiple gauge metal strip product having a configuration with a transverse variable thickness, comprising:

milling means for cutting away at least about 75% of the total volume of metal to be removed from the surface of an initial strip of said metal to form a pattern corresponding to the multiple gauge surface desired in said strip product; and

means for shaving of a maximum of about 25% of the initial total volume of metal to be removed from the surface of milled strip in a single shaving pass to substantially form said desired configuration of the strip product, said shaving means located in axial alignment with said milling means whereby said strip exiting from said milling means passes directly into said shaving means.

4,523,365

METHOD OF MANUFACTURING BEARING BLOCKS

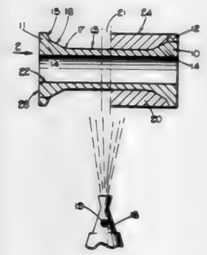
Anthony J. C. Richmond, Solihull, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Aug. 3, 1982, Ser. No. 404,866

Claims priority, application United Kingdom, Aug. 5, 1981, 8123921; Mar. 16, 1982, 8207634

Int. Cl.³ B21D *53/10*

U.S. Cl. 29—527.4 **3 Claims**



1. A method of manufacturing a bearing block for a gear pump, comprising forming an antifriction bush of a lead-bronze material having a lead content of between 27% and 37%, said bush having an outer surface which includes a cylindrical portion, an outwardly extending flange whose radial dimension is at least equal to that of the required block, and a fillet extending from said cylindrical portion to adjacent the periphery of said flange, electroplating a nickel layer on said outer surface and flame spraying light alloy over said nickel layer to build up said light alloy to the radial dimension of said flange.

4,523,366

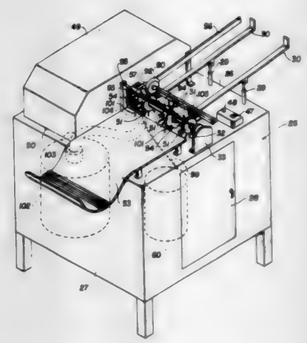
AUTOMATED PIPET PLUGGING MACHINE

Daniel A. Lodge, Bridgeton, and Donald D. Wheeler, Landisville, both of N.J., assignors to Meteor Manufacturing & Machinery Co., Vineland, N.J.

Filed Jan. 20, 1984, Ser. No. 572,525

Int. Cl.³ B23Q *7/00*

U.S. Cl. 29—564.6 **17 Claims**



1. A pipet plugging machine comprising a base, an intermittently driven rotational pipet transport shaft on the base, axially spaced coaxial pipet transport and locator wheels fixed on the transport shaft, a cotton roving transport wheel fixed on

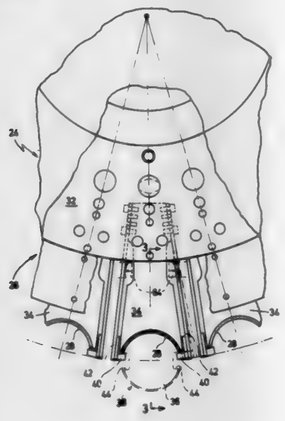
the transport shaft near one pipet locator wheel, inclined pipet delivery rails on the base extending from one side of the transport shaft at right angles thereto, a pipet collection apron on the base and extending from the opposite side of said transport shaft, a continuously driven rotational shaft on said base extending at right angles to the transport shaft and carrying a rotational cam element, said roving transport wheel having a peripheral roving groove, circumferentially spaced radial slots intersecting said groove, and a corresponding number of circumferentially spaced axial through openings between said slots intersecting said groove, a reciprocating horizontal axis needle device defining a pipet plugging station disposed coaxially of each through opening of the roving transport wheel when the latter is dwelling at the plugging station, scissor blades defining a cotton roving severing station disposed radially of the roving transport wheel and adapted to sever a roving in the groove of such wheel by entering each radial slot of such wheel at the severing station while such wheel is dwelling, and mechanism on said base actuated by said rotational cam element and being operatively connected to said needle device and scissor blades to operate the same in timed relationship with dwell periods of the intermittently driven rotational pipet transport shaft.

4,523,367

LOCKING DEVICE FOR TOOLS IN TOOL MAGAZINES

Fritz Burkhardt, Brunnenweilerstrasse 13, D-7332 Eislingen/-Fils, and Otto Antel, Freibadweg 16, D-7325 Bad Boll, both of Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,795
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **5 Claims**



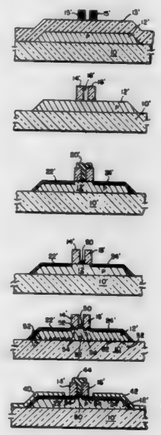
1. A locking device for releasably securing tools or tool holders provided on their circumference with opposed recesses, in tool pockets open at one side, along an edge of a rotatable magazine disc for a machine tool comprising locking members movable into and out of the recesses in pairs, leaf spring members each having an end fixed to the disc radially inwardly of the tool pockets and each having a free end radially outwardly of the tool pockets, each of the locking members being located on the free end of each of said leaf spring members, said leaf spring members arranged substantially tangentially with respect to the circumference of the tool or tool holder to be secured, and actuating means for deflecting said leaf spring members to engage and disengage said locking members.

4,523,368

SEMICONDUCTOR DEVICES AND MANUFACTURING METHODS

Wolfgang M. Feist, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 126,787, Mar. 3, 1980,. This application Apr. 24, 1984, Ser. No. 602,280
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **5 Claims**



1. A method of forming a field effect device comprising the steps of:
(a) forming a pair of spaced insulating members on the surface of a semiconductor;
(b) forming a masking layer over a region of the surface of the semiconductor between the pair of spaced insulating members;
(c) introducing particles to establish source and drain contact regions through portions of the surface of the semiconductor exposed by the masking layer;
(d) removing the masking layer;
(e) forming a gate electrode over the region between the pair of spaced insulating members.

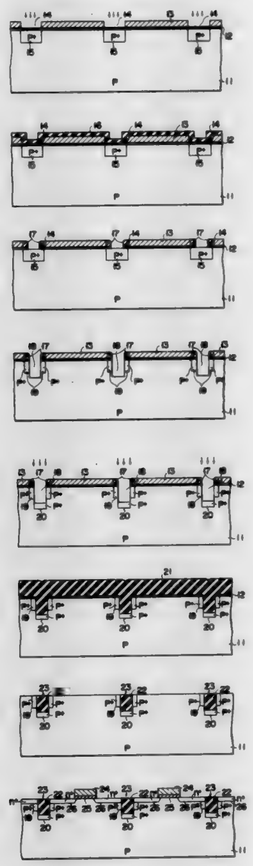
4,523,369

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Yoshihide Nagakubo, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 24, 1982, Ser. No. 423,107
Claims priority, application Japan, Mar. 31, 1982, 57-53530
Int. Cl.³ H01L *21/76, 21/265*
U.S. Cl. 29—576 W **7 Claims**

1. A method for manufacturing a semiconductor device comprising the steps of (a) forming a first mask member which has an opening to expose a desired portion of a major surface of a semiconductor substrate; (b) ion-implanting an impurity of the same conductivity type as that of said semiconductor substrate through said opening of said first mask member to form an impurity region of a high concentration in a surface layer of said semiconductor substrate; (c) substantially forming a second mask member only on a side surface of said opening of said first mask member while said first mask member is left as it is; (d) forming a groove by selectively etching said semiconductor substrate by using said first and second mask members, while at the same time leaving the impurity region of the high



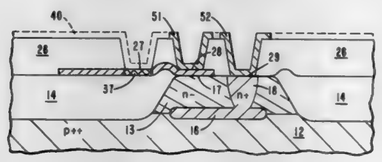
concentration at least on a side surface of said groove; and (e) burying an insulating isolation member in said groove.

4,523,370

PROCESS FOR FABRICATING A BIPOLAR TRANSISTOR WITH A THIN BASE AND AN ABRUPT BASE-COLLECTOR JUNCTION

Paul A. Sullivan, and George J. Collins, both of Fort Collins, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 5, 1983, Ser. No. 558,252
Int. Cl.³ H01L *21/322*
U.S. Cl. 29—576 B **8 Claims**



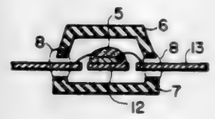
1. In a process for fabrication of an npn bipolar junction transistor wherein the transistor utilizes: p-type polysilicon deposited on a single crystal n-type collector region to form a base region, n^+ doped polysilicon deposited on a portion of the base to form an emitter, and n^+ doped polysilicon deposited on the collector to form a contact for the collector, the process comprising the steps of:
depositing a layer of polycrystalline or amorphous silicon onto the collector by low-pressure chemical vapor deposition at a temperature in the range of approximately 600° C. to 700° C. while in-situ doping the deposited silicon with boron atoms to lay down the base region;
thermal annealing the base region in an inert environment at temperature high enough to recrystallize the base region into single epitaxial crystal but low enough to avoid migration of dopants from the deposited polycrystalline or amorphous silicon layer into the collector;
forming a p^+ base contact region in the base region by implantation of boron ions;
depositing a subsequent layer of polysilicon in contact with the base contact region, the base region and the collector while doping the polysilicon with n^+ impurities;
etching the subsequent layer of n^+ doped polysilicon with a selective etchant to remove the subsequent layer of polysilicon from the p^+ base contact region and to separate the portions thereof in contact with the collector and base regions, so as to form the emitter, to expose the base contact and to form both the emitter and collector contact; and
thermal annealing the subsequent layer of polysilicon to increase the number of active donors while simultaneously annealing the p^+ base contact region.

4,523,371

METHOD OF FABRICATING A RESIN MOLD TYPE SEMICONDUCTOR DEVICE

Yoshiaki Wakashima, 1-3-1, Hosoyama, Tama-ku, Kawasaki-shi, Kanagawa, Japan

Division of Ser. No. 162,089, Jun. 23, 1980, abandoned. This application Dec. 15, 1982, Ser. No. 449,874
Claims priority, application Japan, Aug. 1, 1979, 54-97286
Int. Cl.³ H01L *21/52, 21/56*
U.S. Cl. 29—588 **11 Claims**

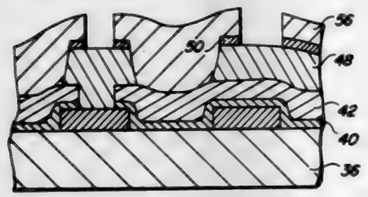


1. A fabrication method of a semiconductor device comprising the steps of:
preparing a lead frame having a central pad and leads surrounding said central pad;
securing a semiconductor element on said central pad and electrically connecting said semiconductor element to said leads by means of metallic wires;
preparing molded upper and lower sealing articles of a thermoplastic resin material, said molded upper and lower sealing articles each having a bottom portion and a wall portion standing at the periphery of said bottom portion;
locating said molded upper and lower sealing articles opposite to each other in relation to said lead frame so as to interpose said lead frame therebetween and to cover said semiconductor element and said metallic wires;
preheating said molded upper and lower sealing articles to a first temperature; and
sealing said molded upper and lower sealing articles by heating the resin material of said wall portions thereof to a second temperature higher than said first temperature.

4,523,372
PROCESS FOR FABRICATING SEMICONDUCTOR DEVICE

Raymond J. Balda; Yefim Bukhman, both of Tempe, and Willis R. Goodner, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 7, 1984, Ser. No. 607,868
Int. Cl.³ H01L *21/312*
U.S. Cl. 29—590 13 Claims

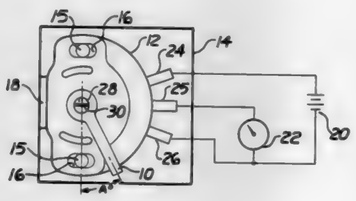


1. A process for fabricating a semiconductor device which comprises the steps of: providing a semiconductor substrate having a first layer of organic material thereon; providing a second layer of first metallization overlying said substrate; forming a third layer of a first insulating material overlying said second layer of first metallization; patterning said third layer; patterning said second layer of first metallization, leaving said third layer overlying remaining portions of said second layer; forming a fourth layer of organic material overlying said third layer; forming a fifth layer of said first insulating material overlying said fourth layer of organic material; forming openings in said fifth layer to expose portions of said fourth layer of organic material; reactive ion etching said fourth layer of organic material through said openings in said fifth layer to expose portions of said third layer; and simultaneously etching said fifth layer and portions of said third layer exposed through said fourth layer of organic material to expose portions of said second layer first metallization.

4,523,373
METHOD OF ASSEMBLING AN ACTUATING LEVER TO A POTENTIOMETER

Bertice E. Walker, Jr., Williamsburg, and Richard J. Hyder, Newport News, both of Va., assignors to Allied Corporation, Morristown, N.J.

Filed Jul. 19, 1982, Ser. No. 399,539
Int. Cl.³ G05G *1/00*
U.S. Cl. 29—593 1 Claim



1. A method of assembling an actuating lever to the moveable contact means of a potentiometer, having at least one mounting aperture, to establish a known voltage ratio between the position of the moveable contact means and one end of the resistance track in the potentiometer, said method comprising the steps of:

locating the potentiometer in a fixed position relative to the at least one mounting aperture thereof;

electrically coupling a known, regulated power source across the resistance track in the potentiometer and an electric voltmeter between the moveable contact means and the one end of the resistance track in the potentiometer;

moving the moveable contact means intermediate the ends of the resistance track to position the voltmeter reading at a predetermined voltage value representing an effective ratio between the voltage drop from the moveable contact to the one end of the resistance track and the total voltage drop across the resistance track;

holding the moveable contact means in the moved position;

securely attaching the actuating lever to the moveable contact means in the moved position at an accurately predetermined relationship (A°) with the at least one mounting aperture of the potentiometer;

releasing the moveable contact means.

4,523,374
COMMUTATOR FOR FLAT MOTOR

Mitsuo Sawabe, Narita, and Kouichi Imai, Kawasaki, both of Japan, assignors to Nihon Radiotor Co., Ltd. and Toho Tekko Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 368,501, Apr. 14, 1982, Pat. No. 4,453,102.
This application Feb. 27, 1984, Ser. No. 583,774
Claims priority, application Japan, Apr. 14, 1981, 56-55134
Int. Cl.³ H01R *43/08*
U.S. Cl. 29—597 4 Claims



1. Process for manufacturing a commutator for a flat motor comprising the steps of:

punching out a central part of a hat-shaped member made of superior conductive material having a flange part at a lower portion thereof, bending the top end part of said hat-shaped member inwardly so as to form an annular projection of inverted U-shape;

making slits in a specified spaced apart relation in said annular projection from its top end down to a surface of the flange so as to form an odd number of connection pieces separated by the slits, respectively;

while keeping both the bottom surface of the flange in said connection piece and said annular projection exposed, burying the bent leading end of said annular projection in a molding in an annular form with insulation resin material which insulates said slits and overlies said flange;

cutting the flange part of the molded components in a radial form in a specified spaced apart relation in response to said slots so as to form some radial slits as well as to make a plurality of fan-shaped divided contact pieces; and

forming some wire connection slits at the top ends of said connection pieces.

4,523,375
METHOD OF MANUFACTURE FOR A MAGNETIC TACHOMETER FOR DISK DRIVES

Patrick L. Hearn, Acton, and Edward Courtney, Jr., Pepperell, both of Mass., assignors to Digital Equipment Corp., Maynard, Mass.

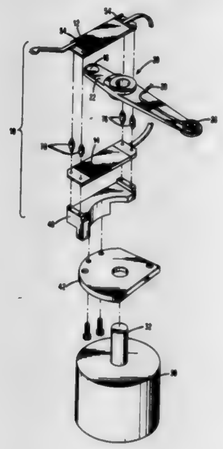
Filed Jun. 16, 1983, Ser. No. 505,048
Int. Cl.³ H01F *41/10*
U.S. Cl. 29—605 6 Claims

1. A method of manufacturing a tachometer comprising the steps of:

providing a unitary non-magnetic insert having first and second portions separated by a central breakable region;

placing a first and second armature member on, respectively, said first and second portions; and

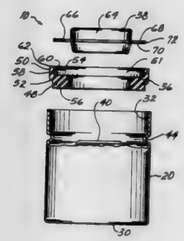
simultaneously winding an insulated electrical wire over said first and second portions and the respective first and second armature member to form first and second coil assembly.



4,523,376
METHOD FOR SEALING A RECHARGABLE CELL

William C. Thibault, Melrose, and Paul E. Pate, Branford, both of Fla., assignors to General Electric Company, Gainesville, Fla.

Filed Jun. 17, 1983, Ser. No. 505,159
Int. Cl.³ H01M *6/00*
U.S. Cl. 29—623.2 4 Claims



1. A method for sealing a rechargeable electrochemical cell having a hollow cylindrical container having a first and second end and comprised of a cylindrical axially and circumferentially extending wall portion having a radially inwardly facing sealing surface disposed thereon, said container further having a bottom portion formed integrally with said wall portion, said bottom portion closing said first end of said cylindrical container, said cell further having a spirally wound electrode assembly disposed within said container, said assembly comprised of a pair of electrode plates of opposite polartiy separated from each other by an electrolyte absorbant separator, said cell further having a cover assembly disposed in said container proximate said second end opposite said bottom portion, said method comprising the steps of:

providing said cylindrical container;

inserting said spirally wound electrode assembly into said cell container axially adjacent said bottom portion;

deforming said wall portion to form a stiffening rib in said wall portion, said rib extending radially toward and circumferentially about said axis and disposed axially adjacent said electrode assembly so that said electrode assembly is disposed in said container between said rib and said bottom portion;

inserting an annular seal member into said container axially immediate adjacent to said rib, said seal member comprised of an amorphous polymer and having a first circumferentially extending radially outwardly facing sealing surface disposed radially adjacent to and radially inwardly of said sealing surface on said wall portion, said seal member having a second circumferentially extending radially inwardly facing sealing surface coaxial with said first sealing surface on said seal member;

inserting said cell cover assembly into said container, said cover assembly having a circumferentially extending radially outwardly facing edge face, said cover assembly inserting step including the step of disposing said cover assembly into said container such that said edge face is disposed radially inwardly of and radially adjacent to said second sealing surface on said annular seal member;

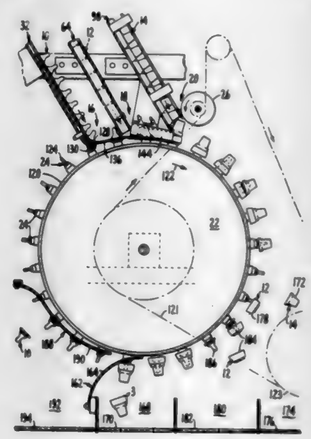
applying a radially inwardly directed force to said wall portion adjacent said radially inwardly facing sealing surface on said wall portion so as to permanently reduce the diameter of said wall portion adjacent said sealing surface on said wall portion and radially compress said annular seal member between said radially inwardly facing sealing surface on said wall and said radially outwardly facing edge face on said cover member; and

reducing the radially outward spring back of said wall portion by deforming said container wall portion at said second end of said container toward said cover assembly to provide a lip projecting radially inwardly, said spring-back reducing step occuring contemporaneously with said force applying step.

4,523,377
BABY BOTTLE CAP ASSEMBLER

Barry Spletzer, Lansing; George J. Swiatlowski, and Maurice W. Brandt, both of Fremont, all of Mich., assignors to Gerber Products Company, Fremont, Mich.

Filed Nov. 22, 1983, Ser. No. 554,626
Int. Cl.³ B23P *21/00, 19/00*
U.S. Cl. 29—773 23 Claims



1. A baby bottle cap component assembler for use in assembling a baby bottle cap of the type including a nipple, a collar sized to fit over the nipple, and a hood mounted to the collar and adapted to fit over an end of the nipple extending through the collar, the assembler comprising:

a plurality of pickup pins sized for insertion into the hollow interior of the nipples;

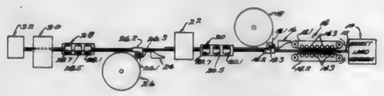
a pickup pin carrier for movement of said pick-up pins along a pickup pin path;
means for driving said pickup pin carrier;
feed means for serially supplying nipples, collars and hoods to respective nipple, collar and hood pickup points near said pickup pin path, said collar pickup point being downstream of said nipple pickup point and said hood pickup point being downstream of said collar pickup point;
said nipple, collar and hood pickup points positioned and said feed means arranged and adapted so as said pickup pin carrier is driven by said driving means, one said pickup pin engages the interior of a nipple at said nipple pickup point and strips the nipple from said nipple feed means, the nipple carried by said pickup pin engages the interior of a collar at said collar pickup point and strips the collar from said collar feed means, and the nipple carried by said pickup pin engages the interior of a hood at said hood pickup point and strips the hood from said hood feed means so a nipple/collar/hood combination is carried by the pickup pin; and
means, located downstream from said hood pickup point, for locking said nipple/collar/hood combination together.

4,523,378

METHOD AND APPARATUS FOR ASSEMBLING ELECTRICAL CONTACT ELEMENTS IN AN ELECTRICALLY INSULATIVE BODY

Thomas E. Evans, Rehoboth, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 16, 1983, Ser. No. 475,778
Int. Cl.³ H01R *43/04*; B23P *23/00*
U.S. Cl. 29—881 **21 Claims**



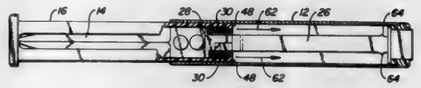
1. A method for assembling a plurality of electrically conductive elongated elements in an electrically insulative body having element receiving apertures therein comprising the steps of
forming a track along a first path,
disposing spaced, movable surfaces on opposite sides of at least a portion of the path,
feeding a plurality of bodies sequentially onto the track between the movable surfaces,
biasing the movable surfaces against opposite sides of the bodies,
moving the movable surfaces so as to impart movement of the bodies along the track,
directing a continuous carrier strip having a plurality of elongated elements depending therefrom along a second path which meets tangentially with the first path, the elongated elements received in the element receiving apertures of the body as the first and second paths meet,
biasing the elongated elements disposed in the element receiving apertures so that they are fully seated in the aperture,
staking the body contiguous to each elongated element to secure said element to the body and
severing the elongated elements from the carrier strip,
motion being transferred to the carrier strip from the movable surfaces through the bodies and elongated elements assembled therein prior to severing of the elongated elements from the carrier strip.

4,523,379

KNIFE WITH RETRACTABLE SHEATH

Ralph F. Osterhout, San Francisco; John D. Burr, Redwood City, and Eric R. Larson, San Francisco, all of Calif., assignors to Tekna, Belmont, Calif.

Filed May 2, 1984, Ser. No. 606,317
Int. Cl.³ B26B *29/02*
U.S. Cl. 30—151 **19 Claims**



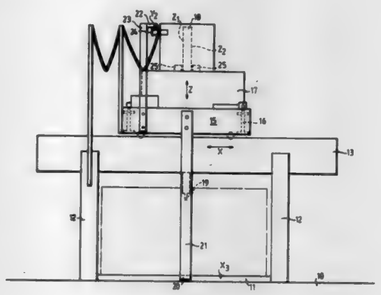
1. An implement comprising:
a handle having a hollow interior with an opening at one end;
a tool fixedly attached to the handle at the opening;
a sheath slidably mounted within the hollow interior of the handle to reciprocate between an extended position where said sheath covers the tool and a retracted position where the tool is exposed;
a compressible elastic member disposed between the sheath and the tool so that said elastic member is relaxed when the sheath is fully retracted and compressed when the sheath is extended; and
means for releasably securing the sheath in its fully extended position, whereby when the sheath is released, the elastic member will extend and impel the sheath into the interior of the handle.

4,523,380

MEASURING APPARATUS

David A. Wright, 11 Carnethy Ave., Edinburgh, Scotland

Continuation-in-part of Ser. No. 249,953, Apr. 1, 1981, which is a continuation-in-part of Ser. No. 104,850, Dec. 18, 1979, abandoned. This application Aug. 19, 1983, Ser. No. 524,670
Claims priority, application United Kingdom, Dec. 27, 1978, 50002/78
Int. Cl.³ G01B *11/03*
U.S. Cl. 33—1 M **2 Claims**



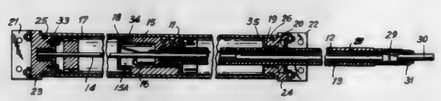
1. Apparatus for determining the volume of an object comprising a platform upon which the object whose volume is to be measured rests; a first pair of horizontal rails mounted above the platform, a first carriage or frame mounted to horizontally move in a first x-axis direction on said horizontal rails, a second set of spaced rails horizontally mounted on said first carriage with the longitudinal axis of the second set of rails normal to the first pair of horizontal rails, a second carriage mounted to move horizontally in a second y-axis direction on said second set of spaced rails, a measuring probe, a vertically mounted probe support member mounted on the second carriage, means mounting the measuring probe for vertical movement in a third z-axis direction to the support member, three measuring scales x_1, x_2, and x_3 on the x-axis, scales x_1 and x_2 secured to faces of the first rails, co-operating reading heads carried on the first carriage, scale x_3 carried on the platform, a reading head for scale x_3 supported from the first carriage for movement therewith, three measuring scales y_1, y_2 and y_3 for the y-axis, scales y_1 and y_3 secured to faces of the second rails, co-operating reading heads carried on the second carriage for scales y_1 and y_3, the y_2 scale carried by a bar extending across the first carriage, a reading head for the y_2 scale carried on the second carriage, two scales z_1 and z_2 provided for the z-axis, said z_1 and z_2 scales carried on opposite sides of the probe support, two reading heads carried on the second carriage co-operating with the z_1 and z_2 scales, and circuit means for each x-, y- and z-axis to combine the outputs of the reading heads to provide a single corrected output.

4,523,381

SCALING DEVICE

Akihisa Narimatsu, and Hiroyuki Ohkubo, both of Tokyo, Japan, assignors to Sony Magnescale Incorporation, Tokyo, Japan

Filed Oct. 15, 1982, Ser. No. 434,576
Claims priority, application Japan, Oct. 15, 1981, 56-152247[U]
The portion of the term of this patent subsequent to Nov. 27, 2001, has been disclaimed.
Int. Cl.³ G01B *7/02*
U.S. Cl. 33—125 C **10 Claims**



1. Scaling device comprising a first cylinder having first and second ends and an inner diameter; end cover means disposed in said first end of said first cylinder to close off the same; a longitudinal scale having detectable indicia thereon and affixed on said end cover means to be axially fixed relative to said first cylinder and disposed coaxial therewithin, the longitudinal scale having a predetermined radial extent; a second cylinder having an inside diameter greater than the radial extent of said scale and an outside diameter less than the inner diameter of said first cylinder, the second cylinder being disposed coaxially with said first cylinder and said scale; sealing fitting means disposed in said second end of said first cylinder and journalling said second cylinder for axial longitudinal movement thereof with respect to said first cylinder, said second cylinder extending through said fitting means within said first cylinder and over said scale; and scale detector means disposed to move with said second cylinder to detect said indicia on said scale and to generate scale signals in response to longitudinal relative displacement of said first and second cylinders.

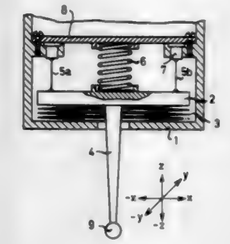
4,523,382

WORK-CONTACT PROBE HEAD FOR COORDINATE-MEASURING INSTRUMENTS

Walter Werner, Konigsbronn; Klaus Herzog, Oberkochen, and Franz Szenger, Konigsbronn, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Mar. 31, 1983, Ser. No. 480,822
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3215878
Int. Cl.³ G01B *7/02*
U.S. Cl. 33—169 R **20 Claims**

1. A probe head for use in making work-contacting coordinate measurements, comprising a cylindrical housing having an opening at one end and a base-reference member within said housing and spaced from and facing said open end, an elongate probe element having a work-contacting end and a circular base plate at its other end, said base plate being received with clearance in the housing with the work-contacting end of said probe projecting outwardly beyond said open end, at least three substantially parallel flexible tension wires fixed at one end at equal angular spacing with respect to said base-reference member and fixed at the other end at equal angular spacing with respect to said base plate, yieldable loading means



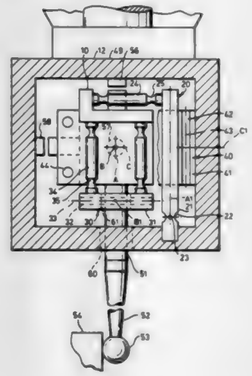
continuously reacting axially between said base-reference member and said base plate and placing said wires in tension, and torsion-resistant axially compliant means establishing a probe-centering connection between said housing and said base plate, whereby in the absence of work contact, said probe extends and is displaceable in one direction (Z) relative to said base-reference member and can be tilted in all directions away from said one direction.

4,523,383

POSITION SENSING APPARATUS

Michael J. Rogers, San Jose, Calif., and David R. McMurtry, Wotton-under-Edge, England, assignors to Renishaw Electrical Limited, Wotton-under-Edge, England

Filed Jul. 27, 1983, Ser. No. 517,627
Claims priority, application United Kingdom, Jul. 28, 1982, 8221820
Int. Cl.³ G01B *7/28*
U.S. Cl. 33—558 **8 Claims**



1. Apparatus for sensing the position of an object comprising
a fixed member;
a moveable member including a stylus;
three support units connected to said fixed and moveable members in position therebetween and aligned to respective directions any one of which is at an angle to the other two, said support units cooperating to constrain said moveable member for three dimensional parallel movement relative to the fixed member; and
sensing means for sensing said movement;

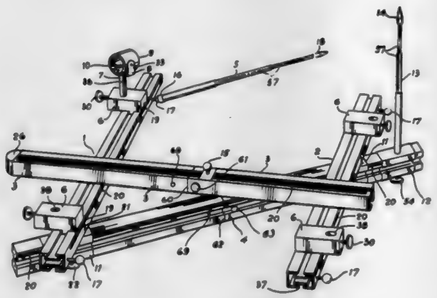
wherein the improvement resides in that said support units are each connected to said fixed and moveable members in positions therebetween to constitute parallel connections between the members; and each support unit comprises rigid means constraining the moveable member against rotation about the direction pertaining to the unit, and flexible means permitting said relative movement in said directions.

4,523,384

METHOD AND APPARATUS FOR MEASURING DEVIATIONS IN VEHICLE BODIES OR FRAMES

Gian F. Giacomini, Örebro, Sweden, assignor to Applied Power Inc., Milwaukee, Wis.

Filed Mar. 22, 1984, Ser. No. 592,250
Int. Cl.³ G01B 5/25
U.S. Cl. 33—180 AT **12 Claims**



3. A measuring frame for measuring deformations of vehicle frames or bodies characterized in that the measuring frame comprises: two transverse beams which at each end are provided with a gripping means which is adjustably attached in a groove on said beams so that these can be attached prependicularly to the longitudinal axis of the vehicle at four reference points; a longitudinal center beam which can be coupled to said transverse beams so that an H-shaped measuring frame is formed; and a measuring beam attached adjustably on the transverse beams with attachments, and which can be pushed and locked under the H-shaped frame so that the measuring beam can assume an arbitrary angle to the longitudinal direction of the vehicle in a plane parallel to the measuring frame, whereby the measuring beam is provided with a measuring tip for vertical measurement and a measuring rod is adapted to at least one of the transverse beams for direct or cross measurement.

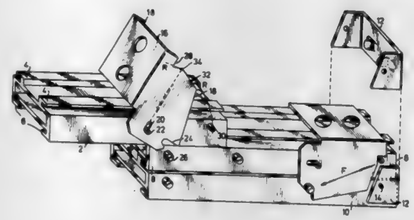
4,523,385

LATCH

Allan F. Robinson, Sydney, and Warwick A. Hunter, Grose Wold, both of Australia, assignors to Napintas Pty. Ltd., New South Wales, Australia

PCT No. PCT/AU82/00173, § 371 Date Jun. 27, 1983, § 102(e) Date Jun. 27, 1983, PCT Pub. No. WO83/01493, PCT Pub. Date Apr. 28, 1983
PCT Filed Oct. 26, 1982, Ser. No. 514,830
Claims priority, application Australia, Oct. 26, 1981, PF1306
Int. Cl.³ G01C 15/00
U.S. Cl. 33—296 **30 Claims**

1. A latch of the over centre type adapted to mutually lock first and second interengaged, axially slidable members in an axially overlapping disposition by utilizing a first pivot axis on the first member and a second parallel pivot axis on the second member, characterised in that the latch straddles the two members, a pair of pin and slot connections connects the latch to the first member at the first pivot axis, fulcrum means is adapted for engagement with the latch at a second axis in the second member, and the latch extends from the zone of the two axes like a lever whereby the latch is tiltable between a release position wherein the members are slidable and a locked position where the distance between the two axes changes and in doing so locks the members together, and a latch arrester holds the latch closed.

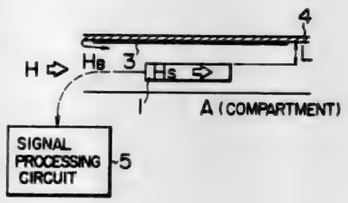


4,523,386

HEADING DETECTING APPARATUS

Muneaki Matsumoto, Okazaki; Akira Kuno, Oobu, and Koji Numata, Toyokawa, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 24, 1981, Ser. No. 334,378
Claims priority, application Japan, Dec. 26, 1980, 55-186268; Apr. 22, 1981, 56-61826
Int. Cl.³ G01C 17/38
U.S. Cl. 33—357 **11 Claims**



1. In a heading detecting apparatus for detecting the forward heading of a vehicle having a magnetic member extending generally parallel to the ground and being capable of having a remanence, the improvement in said apparatus comprising the combination of:

a heading sensor for detecting the terrestrial magnetism and providing an output signal representing the direction thereof,

said sensor being adapted for disposition spacedly adjacent said magnetic member and therefore due to said remanence being subject to error in detecting said direction accurately;

means for magnetically shielding said heading sensor from said magnetic member including a permeability member disposed adjacent said sensor for disposition between and parallel to said magnetic member and said heading sensor for causing a portion of said remanence to pass through said permeability member thereby reducing the amount of said remanence which passes through said heading sensor so that said heading sensor more accurately detects the terrestrial magnetism direction; and

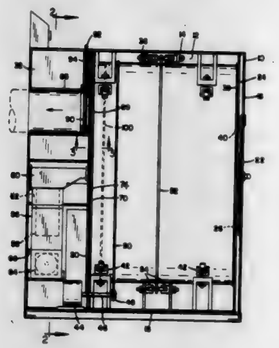
signal processing means connected to receive said output signal for developing there from an accurate indication of the heading direction of said vehicle.

4,523,387

MICROWAVE TREATING MECHANISM

Douglas P. Mahan, 4300 SW. 188th Ave., Aloha, Oreg. 97007

Filed Dec. 8, 1983, Ser. No. 559,497
Int. Cl.³ F26B 23/08
U.S. Cl. 34—1 **5 Claims**



1. Microwave treating mechanism for removing moisture from articles comprising

a housing including front and rear walls,

a hollow tumbler-type microwave opaque drum having front and rear ends and also having an inner cavity arranged to receive articles from which moisture is to be removed,

said housing and drum having an opening for loading and unloading articles,

support means supporting said drum on substantially a horizontal axis,

drive means arranged to rotate said drum whereby articles being treated tumble laterally across the interior of said drum,

microwave power means disposed with the output thereof directed axially through said drum into said cavity for engaging articles tumbling laterally across said rotating drum for removing moisture therefrom,

a microwave energy insulating layer on the inner surface of said cavity arranged to allow reflection of microwave energy waves from said opaque drum but reducing arcing of said energy waves between metal objects tumbling in said cavity and said opaque drum,

an electric circuit for said power means,

and control means in said circuit for said power means.

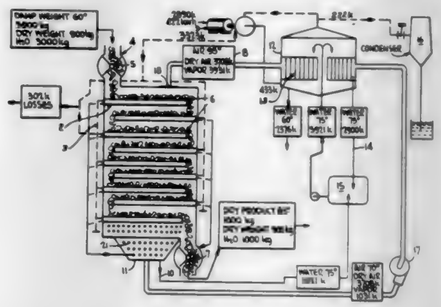
4,523,388

METHOD FOR DRYING BY VAPOR RECOMPRESSION

Jacques Cuel, Paris, France, assignor to Beghin-Say S.A., Paris, France

PCT No. PCT/FR82/00119, § 371 Date Mar. 28, 1983, § 102(e) Date Mar. 28, 1983, PCT Pub. No. WO83/00547, PCT Pub. Date Feb. 17, 1983
PCT Filed Jul. 16, 1982, Ser. No. 480,950
Claims priority, application France, Jul. 28, 1981, 81 14670
Int. Cl.³ F26B 3/20
U.S. Cl. 34—35 **7 Claims**

1. A drying process for drying a damp material in a closed vertical dryer having upper and lower ends and having a plurality of horizontally and vertically spaced heating plates positioned therein comprising the steps of feeding a damp material into the upper end of said closed vertical dryer, causing said damp material to pass continuously over and in contact with one surface of said heating plates in order that said damp material proceeds through said dryer to an exit point at the lower end of said vertical dryer, simultaneously feeding into the said lower end of said vertical dryer a mixture of dry air and water vapor under conditions which will provide saturated feed air at a temperature between 60° C. and 100° C.; removing from the upper end of said vertical dryer a mixture of dry air and water vapor at a temperature above the temperature of said saturated feed air; cooling said removed mixture to the temperature of said saturated feed air to provide saturated air and water vapor separately, compressing said vapor to raise the temperature thereof to be above the temperature of said saturated air, and refeeding said saturated air to the bottom of said vertical dryer and said heated vapor to said heating plates to heat said plates.

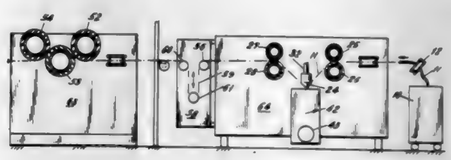


4,523,389

APPARATUS FOR DRYING TUBULAR KNITTED FABRIC

Edmund A. Diggle, Jr., Oradell, and John Krajcovic, Ridgefield Park, both of N.J., assignors to Samcoe Holding Corporation, Woodside, N.Y.

Division of Ser. No. 489,960, Apr. 29, 1983, Pat. No. 4,484,369.
This application Sep. 10, 1984, Ser. No. 648,540
Int. Cl.³ F26B 13/08, 13/24
U.S. Cl. 34—105 **3 Claims**



1. Apparatus for the processing of wet tubular knitted fabric, which comprises

(a) first stage internal spreader means for receiving wet-processed tubular knitted fabric and spreading it to flat form,

(b) means for controlling the speed of advance of the incoming wet fabric,

(c) a nozzle disposed transversely of the path of fabric movement and on the downstream side of said first stage spreader means,

(d) means to supply said nozzle with gaseous drying medium under pressure,

(e) said nozzle and said means to supply being so related as to provided for the discharge of drying medium from the nozzle at approximately sonic velocities,

(f) means for guiding the fabric around and in contact with said nozzle whereby said drying medium may be discharged through the fabric,

(g) said means for guiding including an exit side drive roll engaging the tubular knitted fabric across its width,

(h) controllable drive means for driving said first stage spreader and said exit side drive roll, whereby said fabric is elongated and maintained under tension between said first stage spreader and said exit side drive roll,

(i) second stage spreader means located downstream of said

exit side drive roll for laterally distending the fabric to predetermined width, and

(j) means for further processing said fabric.

4,523,390

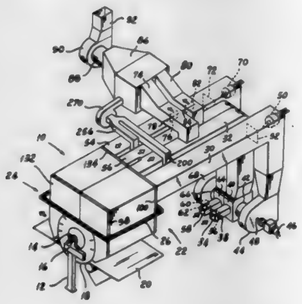
PERIPHERAL EXHAUST SYSTEM FOR HIGH VELOCITY DRYER

Richard A. McCarthy, Ramsey, N.J., assignor to Aer-Overly Corporation, Ramsey, N.J.

Filed Dec. 13, 1982, Ser. No. 449,545

Int. Cl.³ F26B *13/08*

U.S. Cl. 34—115 **3 Claims**



1. A dryer section for drying a web of material including in combination a recirculating drying air system comprising means for supplying heated drying air to an area of said web bounded by the effective periphery of said dryer section, means for removing moisture laden air from said area within said periphery, and means for balancing said supplying and removing means to provide an excess of air tending to flow outwardly of said periphery and means including duct means independent of said recirculating system for carrying said excess air away to a location remote from the working space surrounding said dryer section.

4,523,391

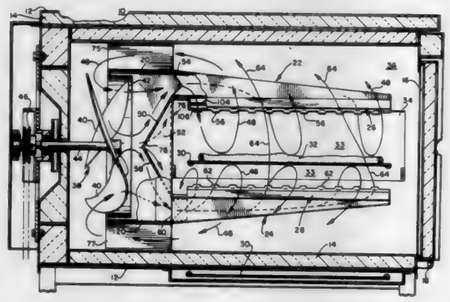
HIGH EFFICIENCY IMPINGEMENT HEATING AND COOLING APPARATUS

Donald P. Smith, 4530 Woodfin Dr., Dallas, Tex. 75220, and William W. Plumb, Dallas, Tex., assignors to Donald P. Smith, Dallas, Tex.

Filed Sep. 27, 1982, Ser. No. 424,595

Int. Cl.³ F26B *15/18*

U.S. Cl. 34—225 **9 Claims**



1. Apparatus for controlling the flow of a temperature-controlled gas to the surface of a food product, said apparatus comprising a cabinet; at least one thermal treatment zone disposed within said cabinet; means for supporting said food product within said thermal treatment zone; columnating means extending transversely across said thermal treatment zone adapted to receive a temperature-controlled gas and thereafter direct a plurality of columnated jets of said gas against a surface of said food product; duct means communicating with said columnating means adapted to receive said gas from a plenum means and thereafter discharge said gas into said columnating means; plenum means communicating with said duct means and adapted to direct a flow of said gas into said duct means, said plenum means comprising a back wall adapted to receive a pressurized flow of said gas into said plenum means, and further comprising a front wall, said front wall comprising elongated plenum outlet ports disposed adjacent to the top and bottom edges of said front wall, said plenum outlet ports being adapted to provide fluid communication between said plenum means and said duct means, said front wall of said plenum means further comprising upper and lower inclined front wall sections and proximal and distal side inclined front wall sections, said inclined front wall sections being adapted to direct said gas away from said back wall and through said plenum outlet ports.

4,523,392

INNER LINING FOR SPORTS FOOTWEAR HAVING A RIGID OR SEMI-RIGID SHELL STRUCTURE

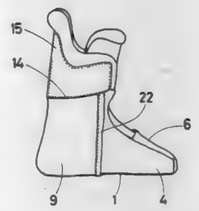
Andrea Gabrielli, Predazzo, Italy, assignor to Lange International S.A., Fribourg, Switzerland

Filed Jan. 26, 1983, Ser. No. 461,020

Claims priority, application Switzerland, Feb. 22, 1982, 1072/82

Int. Cl.³ A43B *19/00*

U.S. Cl. 36—10 **3 Claims**



1. An inner lining, for use in sports footwear of the type having a rigid or semi-rigid shell structure, said lining comprising an upper and a sole that are formed from a plurality of flexible panels assembled with one another, said sole including a heel portion and said upper comprising:

an inner liner having a front portion, a lower rear portion, and upper rear portion forming, along with said sole, a kind of slipper;

an outer liner disposed over the front portion of said inner liner to form a pair of lateral pockets extending on either side of said front portion, each pocket having a substantially vertical opening at the rear thereof; and

a sheathing covering the lower rear portion of the upper, the heel portion of said sole and lateral portions of the upper behind the front lateral pockets, the sheathing having an upper edge and being fastened permanently to said upper at said upper edge, said sheathing further having vertical edges and means for detachably securing said vertical edges to said outer liner for covering said vertical openings; wherein said sheathing and lateral pockets define a space adapted to receive a padding member extending from one pocket, behind the upper, and into the other pocket; and wherein such a one piece padding member may be detachably inserted under said sheathing and into said lateral pockets to be retained thereby.

4,523,393

SPORT SHOE SOLE

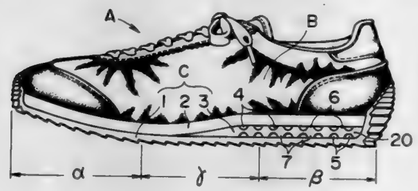
Masanobu Inohara, Akashi, Japan, assignor to Asics Corporation, Akashi, Japan

Division of Ser. No. 174,848, Aug. 4, 1980, Pat. No. 4,359,830, which is a division of Ser. No. 896,477, Apr. 14, 1978, Pat. No. 4,236,326. This application Apr. 5, 1982, Ser. No. 365,144

The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.

Int. Cl.³ A43B *13/20, 21/28*

U.S. Cl. 36—29 **4 Claims**



1. A sole for use with sport shoes comprising a rigid abrasion-resistant ground sole, the ground sole having a heel portion, an arch portion, and a toe portion, a resilient and elastic interlayer body bonded to said ground sole, and a resilient and elastic interlayer sole bonded to said interlayer body, said interlayer body being extended over and bonded to the heel portion and the shoe arch portion of the ground sole and having uniform thickness at the heel portion and decreasing into a wedge shape toward the top of the shoe arch portion, the interlayer body being provided with a plurality of parallel grooves on the surface of said interlayer body which extend transversely all the way from one side to the other side and are open to the air at the side wall of the interlayer body, the cross section of each groove being semicircular.

4,523,394

ANKLE LIGAMENT PROTECTIVE DEVICE

Kjell E. Lindh, Kardvägen 13, S-752 57 Uppsala, and Kjell H. Sundin, Vårliden 6, S-791 32 Falun, both of Sweden

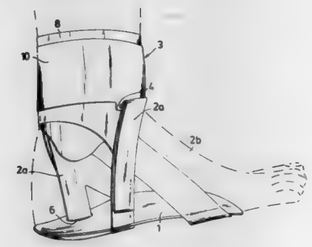
PCT No. PCT/SE81/00332, § 371 Date Jun. 30, 1982, § 102(e) Date Jun. 30, 1982, PCT Pub. No. WO82/01659, PCT Pub. Date May 27, 1982

PCT Filed Nov. 11, 1981, Ser. No. 394,925

Claims priority, application Sweden, Nov. 12, 1980, 8007953

Int. Cl.³ A43B *7/20*

U.S. Cl. 36—89 **9 Claims**



1. An ankle ligament protective device adapted for use in an with a shoe, comprising:

a foot plate adapted to be placed under a foot and extending from the heel portion to and under the arch of the foot, the shoe, when worn, forming means for securing the foot plate to the foot;

an ankle sleeve having fastening means for attachment of the sleeve around and over the ankle portion of the lower leg, particularly above the prominence areas of the ankle; and,

flexible, lengthwise non-extensible connecting members attaching the foot plate to the ankle sleeve, said members extending on each side of the ankle sleeve from a single point of attachment over a prominence area of the ankle to at least a rear part of the foot plate, the connecting members permitting foot movements through a normally full range of non-injurious positions, but preventing excessive sideways movements into positions likely to cause ligament injury, whereby said ankle ligament protective device can be worn with normal shoes which need not be specially adapted for use with said device.

4,523,395

ADJUSTING DEVICE PARTICULARLY FOR SKI BOOTS

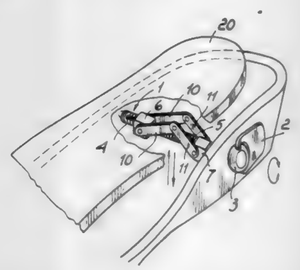
Bruno Borsoi, Conegliano Veneto, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Aug. 16, 1982, Ser. No. 408,539

Claims priority, application Italy, Aug. 31, 1981, 22770/81[U]

Int. Cl.³ A43B *5/04*

U.S. Cl. 36—119 **4 Claims**



1. An adjusting device for ski boots comprising:

a bar carried rotatably on a ski boot and operable from outside said ski boot;

a cap rigidly connected to one end of said bar externally to said ski boot;

a gripping element being articulated to said cap for hand rotating said bar about its own axis;

said bar having first and second oppositely threaded portions;

a first and second block having in the inside thereof a threaded though hole having a thread matching the portion of said bar, which they engage said first and second blocks travelling along said bar, in opposite direction;

said first and second blocks respectively engaging rotatably with said oppositely threaded portions during the rotation of said bar about its own axis;

a first pair of connecting rods arranged laterally to said bar;

a second pair of connecting rods arranged laterally to said bar in opposed positions with respect to said first pair, and located on said boot to the foot heel region;

each of said connecting rods having one end articulated to said blocks respectively;

an adjuster including the sole of said ski boot and engaging the other ends of said connecting rods;

said first and second pair of connecting rods being articulated to each other at the end engaging with said adjuster;

said first and second pair of connecting rods respectively lying in a plane perpendicular to said adjuster and substantially coincident with the plane coinciding with the sides of said first and second blocks;

said first and second blocks translating along said bar for moving said adjuster in a perpendicular direction to the axial direction of said bar by rotation of said bar about its own axis;

each of said connecting rods having a first portion, including said one end articulated to one of said blocks, which is

bent so as to be out-of-alignment with respect to the second portion including the other end of each of said connecting rods;

said connecting rods being arranged for rotating parallel plane with respect to the axis of said bar and said plane which is perpendicular to the axis of the articulations of said other ends of said connecting rods.

4,523,396

ATHLETIC SHOE HAVING SPIKE OR STUD-SHAPED CLEATS EXCHANGEABLY ARRANGED AT THE RUNNING SOLE

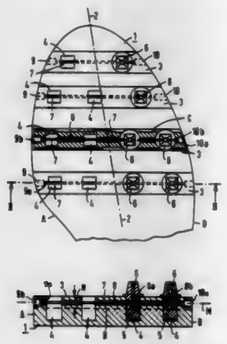
Armin A. Dassler, Herzogenaurach, Fed. Rep. of Germany, assignor to Puma-Sportschuhfabriken Rudolf Dassler KG, Fed. Rep. of Germany

Filed Aug. 16, 1983, Ser. No. 523,790

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232604

Int. Cl.³ A43B *5/00*; A43C *15/00*

U.S. Cl. 36—134 **17 Claims**



1. An athletic shoe having a running sole in which spike- or stud-shaped cleats are exchangeably mounted, said running sole having rows of openings and said cleats having base parts which are received in said rows of openings of the running sole, each row of cleats being fastened to the sole by means of a single holding means that is insertable and lockable on a side of the running sole, wherein the base parts of the cleats are fastened in the openings of the running sole in a manner so that they cannot be twisted about their longitudinal axis, and wherein base parts of the cleats have at least one borehole that is alignable with lateral boreholes in the running sole in each row of cleats for form a continuous borehole, a shaft being provided a a fastening means for each of said row of cleats, so that, by means of the insertion of a single said shaft into said continuous borehole, all of the cleats of a respective row of cleats is fastened jointly to said holding means, wherein said holding means is provided with a releasable locking means, and wherein the releasable locking means is a bayonet lock comprising the shaft, being provided, at one end, with a key-bit-shaped bend and, at its other end, being supported by a resilient element, and said borehole having a pocket-shaped enlargement, whereby said bend is engageable within the pocket-shaped enlargement of the borehole by means of an axial displacement of said shaft against the resilient element followed by a rotation of the shaft about its longitudinal axis.

4,523,397

HIGH STRENGTH BUCKET

Victor A. Lucas, Yorkville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 27, 1984, Ser. No. 574,794

Int. Cl.³ E02F *3/70*

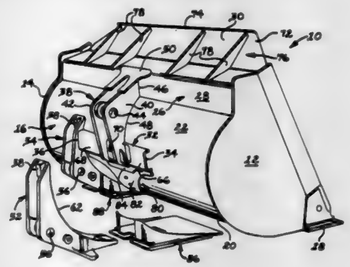
U.S. Cl. 37—118 R **9 Claims**

1. In an earthmoving bucket (**10**) having first and second end walls (**12,14**), a shell portion (**16**) defining a bottom wall portion (**20**) and a rear wall portion (**22**) and extending laterally between said end walls (**12,14**), and a cutting edge support (**18**) secured to a forward edge (**24**) of said bottom wall portion (**20**), the improvement comprising:

a first reinforcing beam assembly (**26**) having a body portion (**28**) and an outwardly extending plate portion (**30**), said beam (**26**) being connected to said rear wall portion (**22**) and extending between said end walls (**12,14**);

a second reinforcing beam assembly (**32**) having first and second ends (**34,36**) and being connected to said rear wall portion (**22**), spaced from and extending parallel to said first beam assembly (**26**), and spaced from and positioned between said end walls (**12,14**);

a first bracket assembly (**38**) having a pin receiving bore (**44**) and being connected to said rear wall portion (**22**) at a location substantially equally spaced from said end walls (**12,14**) and extending between said first and second reinforcing beam assemblies (**26,32**);



a second bracket assembly (**52**) having a pin connecting bore (**56**), a dump-stop portion (**60**), and a rack-back stop portion (**58**) and being connected to said rear wall portion (**22**) and to said first end (**34**) of said second reinforcing beam assembly (**32**); and

a third bracket assembly (**54**) having a pin connecting bore (**56**), a dump-stop portion (**60**), and a rack-back stop portion (**58**) and being connected to said rear wall portion (**22**) and to said second end (**36**) of said second reinforcing beam assembly (**32**), said second and third bracket assemblies (**52,54**) being spaced one from the other, extending beyond said second reinforcing beam assembly (**32**) and having an open pocket (**64**) defined by said second and third bracket assemblies (**52,54**), said second reinforcing beam assembly (**32**), and said rear wall portion (**22**), each of said second and third bracket assemblies (**52,54**) being of a unitary steel construction and being void of welds.

4,523,398

TRACK FORMER FOR CROSS COUNTRY SKI TRACKS WITH MEANS TO MOVE FORMER TO TRANSPORT POSITION

Horst Scheibel, Dornstadt, and Walter Haug, Blaustein, both of Fed. Rep. of Germany, assignors to Karl Kassbohrer Fahrzeugwerke GmbH, Ulm, Fed. Rep. of Germany

Filed Sep. 14, 1984, Ser. No. 650,628

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333942

Int. Cl.³ E01H *4/00*; E02F *3/12*

U.S. Cl. 37—220 **4 Claims**

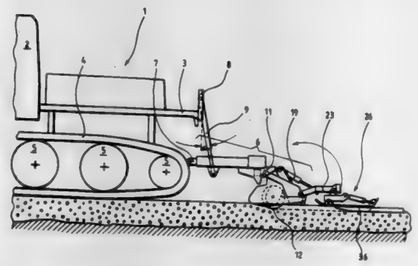
1. Apparatus for forming cross country ski tracks in a snow covered surface, comprising:

a trailer frame adapted to be connected to the rear end of a vehicle;

a lifting frame connected to said trailer frame for pivotal movement about a first horizontal axis, said lifting frame having a pair of parallel guide members extending longitudinally from said trailer frame to a transversally extending crossbar, said guide members being arranged symmetrically on opposite side of a central axis common to the lifting frame, the trailer frame, and the vehicle;

at least one cross country ski track forming device connected to said crossbar, said track forming device being pivotably movable about a second horizontal axis; and

positioning means connected between said trailer frame and said lifting frame for pivotally manipulating said lifting frame about said first horizontal axis between an operative



position at which said track forming device extends rearwardly from said trailer frame to contact and impress tracks in the snow covered surface, and an inoperative position at which said track forming device is elevated from said surface and is folded over said trailer frame.

4,523,399

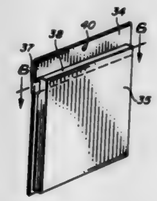
DISPLAY MOUNT APPARATUS AND METHOD

Carroll N. Cross, Rte. 2, Box 741, Maitland, Fla. 32751

Filed Dec. 20, 1983, Ser. No. 563,625

Int. Cl.³ G09D *3/00*

U.S. Cl. 40—119 **7 Claims**



1. A method of making a display mount comprising the steps of:

selecting a mounting board of predetermined width;

selecting a pad of sheet material for said mounting board having a predetermined width less than said mounting board;

positioning the selected pad of sheet material on the selected mounting board with at least one page of said pad of sheet material open;

binding said pad of sheet material to said mounting board with a polymer strip extending around said mounting board and around a portion of the pages of said pad of sheet material; and

folding each said open sheet over said polymer strip binding the remaining sheets to the mounting board.

4,523,400

PLASTIC BIASED POSTER FRAME

James R. Seely, Avon, Conn., assignor to Marketing Displays, Inc., Farmington Hills, Mich.

Continuation of Ser. No. 424,883, Sep. 27, 1982, abandoned. This application Mar. 23, 1984, Ser. No. 592,903

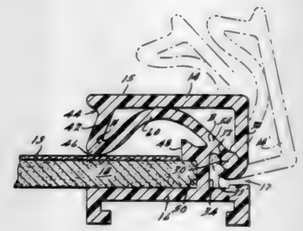
Int. Cl.³ A47G *1/06*

U.S. Cl. 40—156 **57 Claims**

1. A display holder having a plurality of elongated frame sections forming a polygonal frame structure for receiving and clamping a display piece in said display holder, the improvement comprising

each frame section having a base member, a moveable cover member, and resilient biasing means, said cover member having holding means for securing said display piece in place,

said biasing means integrally attached to both said base member and said cover member and connecting them together,



said base member, cover member and biasing means being made of an extruded plastic material and being integrally formed together at the time of extrusion,

said base member and cover member comprising a relatively rigid material and said biasing means comprising a relatively softer material and being elastic and resilient,

said biasing means providing a force holding said holding means against said display piece.

4,523,401

MULTI-CHANNEL TRANSPARENT MICROFILM JACKET

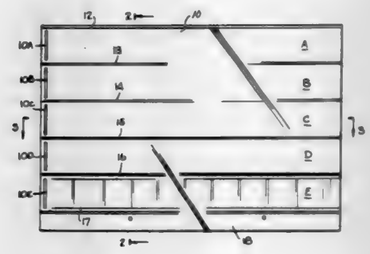
Isidore Dorman, Whitestone, N.Y., assignor to aNB Jackets de Puerto Rico, Caguas, P.R.

Continuation of Ser. No. 792,109, Apr. 29, 1977, Pat. No. 4,471,545, which is a continuation of Ser. No. 463,814, Apr. 24, 1974, abandoned. This application Jul. 9, 1984, Ser. No. 629,098

The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.

Int. Cl.³ A47G *1/06*

U.S. Cl. 40—159 **4 Claims**



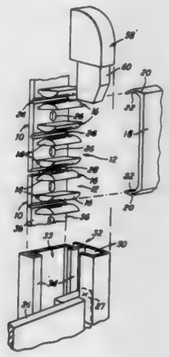
1. A multi-channel transparent jacket for accommodating microfilm strips having a predetermined thickness and a predetermined width and whose length is no greater than the length of the jacket, said jacket comprising:

(A) top and bottom rectangular panels in superposed relation formed of flexible, polyester film having predetermined polymeric properties; and

(B) a plurality of in situ ribs formed of moldable plastic material compatible with the material of said panels disposed along parallel lines between said panels and integrally bonded thereto to form a unitary structure free of adhesive or other bonding agents and in which the properties of said panels are unimpaired, said ribs maintaining

said panels in parallel planes to define open-end channels whose width is substantially equal to the width of said strips, said ribs having a thickness substantially equal to the thickness of said strips, each channel having an entry slot cut into said bottom panel adjacent the front end of the jacket.

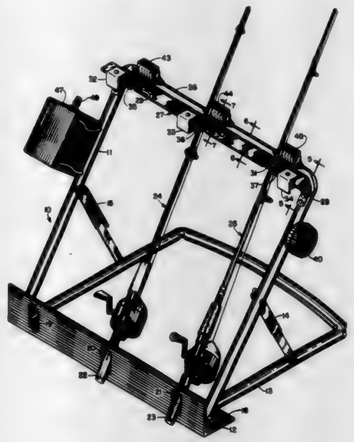
4,523,402
SIGN CONSTRUCTION
Charles E. Dobson, Rambles, Knole Park, Almondsbury, Bristol, England
Filed Nov. 2, 1982, Ser. No. 438,709
Claims priority, application United Kingdom, Nov. 9, 1981, 8133783; Japan, Dec. 4, 1981, 56-181370
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—606 **5 Claims**



1. A sign construction comprising:
a plurality of elongated indicia-bearing generally rectangular plates arranged edge-to-edge;
a pair of mounting bars located at the ends of said plates and extending transversely to the length thereof;
means attaching said plate ends to said bars;
each mounting bar comprising a generally L-shaped portion in cross-section formed with a rear limb lying behind said plates and adapted to be secured to a support, and a side limb extending over and effectively concealing said plate ends;
the plates at the ends of said bars being provided with extensions which project rearwardly and at least largely conceal said rear limbs and said attaching means.

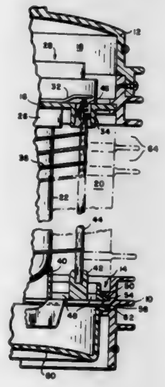
4,523,403
FISHING DEVICE
Jim S. Ivy, 1135 Bates, SE., Grand Rapids, Mich. 49506, and Willie C. Gray, 506 Storrs, SE., Grand Rapids, Mich. 49507
Filed Feb. 21, 1984, Ser. No. 581,616
Int. Cl.³ A01K *97/10*
U.S. Cl. 43—17 **6 Claims**

1. A fisherman's signalling device, comprising:
a frame having a receptacle for receiving the butt of at least one fishing pole, and also having a base and a beam providing a support for a fishing pole engaging said receptacle and inclined upwardly therefrom;
an actuating bar moveably mounted on said frame;
first switch means, said first switch means being mounted on said frame, and having an operating member disposed for actuation by said bar;
first signal means mounted on said frame, and adapted to be energized by said first switch means;
second switch means, said second switch means having an operating member and being mounted on one of said beam and said bar;
locating means fixed with respect to one of said beam and said bar, and adapted to position a fishing pole on said second switch means operating member;
second signal means mounted on said frame, and adapted to be energized by said second switch means; and



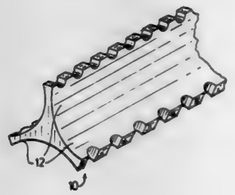
electrical circuit means providing energy for said signal means.

4,523,404
INSECT KILLING DEVICE WITH REMOVABLE ELECTRICALLY CONDUCTIVE GRID
Sal G. DeYoreo, Andover, Mass., assignor to Armatron International, Inc., Melrose, Mass.
Filed Aug. 15, 1983, Ser. No. 523,002
Int. Cl.³ A01M *1/04, 1/22*
U.S. Cl. 43—112 **8 Claims**



8. In an insect killing device of the type having an electrically powered light source surrounded by an electrically conductive grid, the said light source and grid being enclosed within a housing having a side wall surrounding and spaced outwardly from said grid, said side wall being closed at its upper end by an impervious top and defining an open port at its lower end, said light source and said grid being energizable by an electric AC power source external to said housing via electric circuit components located in said housing, said side wall having an array of openings through which insects attracted by said enrgized light source may pass to come into contact with and be electrocuted by said energized grid, the improvement comprising: said grid being supported on a dielectric carrier, said carrier having a dieletric bottom portion dimensioned and arranged to enter said port and to block access to said grid through said port when said grid is energized, a shelf internally subdividing said housing into upper and lower chambers, said electric circuit components being located in said upper chamber and said grid, carrier and light source being located in said lower chamber, first means extending through said shelf for separably connecting said grid to said electric circuit components, second means for separably connecting said light source to said electric circuit components, said grid and carrier being removable as a unit from said housing through said port, with the arrangement of said grid and the bottom portion of said carrier in relation to that of said side wall and said port being such that said grid is separated from said circuit components and thus is de-energized prior to said port being unblocked by removal of said bottom portion therefrom, said light source also being removable from said housing through said port following removal of said grid and carrier.

4,523,405
SUPPORT STAKE FOR PLANTS
Ciro Madonia, 1390 Beuafort Dr., Burlington, Ontario, Canada
Continuation-in-part of Ser. No. 320,139, Nov. 12, 1981, abandoned. This application Sep. 21, 1983, Ser. No. 534,500
Int. Cl.³ A01G *17/04;* B32B *1/00*
U.S. Cl. 47—47 **3 Claims**



1. An extruded plastic stake having a solid homogeneous cross section with a pointed end portion at one end thereof and a hollow cylindrical driving cap at the other end, the balance of the length of the stake being of substantially uniform cross section having at least three extending wing portions providing longitudinally extending solid ribs encircled by said cap, said ribs having outwardly concave surfaces extending therebetween comprising longitudinally extending recesses to receive in use an object to be secured to the stake in located relation with a said recess, said solid cross section ensuring said point section being solid, to resist damage to the stake and facilitate penetration on being driven into the ground, said wing portions including thickened longitudinally extending edge portions having substantially arcuate edge surfaces, with a series of shallow serrations extending across said edge surfaces of at least one said wing portion to provide in use longitudinal locating engagement of said grooves with a tie member when wrapped in secured relation about the stake.

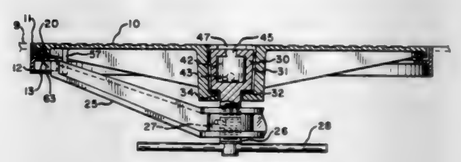
4,523,406
DOOR FRAME AND DOOR ASSEMBLY FOR A MINE STOPPING
John M. Kennedy, and William R. Kennedy, both of P.O. Box 38, Taylorville, Ill. 62568
Filed Jul. 15, 1983, Ser. No. 513,747
Int. Cl.³ E05D *15/58*
U.S. Cl. 49—254 **10 Claims**

1. A door frame and door assembly for installation in a man-door opening in a mine stopping, said assembly comprising a rectangular frame having a top, bottom and sides, a door, and hinge means for the door, the hinge means mounting the door for swinging movement on an axis extending transversely across the frame adjacent one face of the frame and adjacent the top of the frame, the hinge means also mounting the door for up and down movement of the door relative to the frame, the door being of such height as to occupy a closed position in the frame inclined down from the hinge means toward the other face of the frame with its lower edge bearing on the bottom of the frame and with the door at its top being engaga-



ble with and extending up past the top of the frame at said one face of the frame, the door being adapted to swing up from its said closed position for opening it, and being adapted to shift up relative to the frame upon distortion of the frame such as may result from pressure on the frame in a mine stopping in a mine.

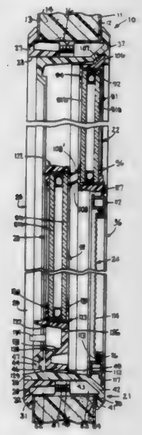
4,523,407
HATCH COVER
Fred L. B. Miller, deceased, late of Lake Oswego, Oreg. (by Dorothy W. Miller, personal representative), assignor to Dorothy W. Miller, Lake Oswego, Oreg.
Filed Sep. 23, 1983, Ser. No. 537,052
Int. Cl.³ E05C *21/02*
U.S. Cl. 49—465 **12 Claims**



1. A flush deck hatch or manhole construction having a cover with locking and clamping means, said construction comprising a supporting ring of T-shaped cross section having a continuous inwardly directed horizontal flange portion and a vertical portion extending above and below said flange, a cover plate having a peripheral gasket groove in its under side, overlying said flange portion of said supporting ring, said groove being formed by a pair of vertical walls on said cover plate having confronting horizontal flanges on their lower edges to retain a gasket in said groove between said walls, said walls having apertures in their upper portions to vent the groove on opposite lateral sides of said groove, and a resilient gasket in said groove having greater vertical thickness than the depth of the groove to support said cover plate on said horizontal flange portion of said supporting ring, the horizontal thickness of said gasket being greater than the space between said confronting horizontal flanges on said walls of said groove to retain the gasket in the groove and less than the width of the space between said walls of said groove to permit lateral expansion of said gasket in said groove and allow said vertical walls of the groove to seat on said flange portion of said supporting ring when said gasket is squeezed against said flange.

4,523,408
DOOR LIGHT
Dale K. McConnell, 597 Old Orchard Rd., Holland, Mich. 49423

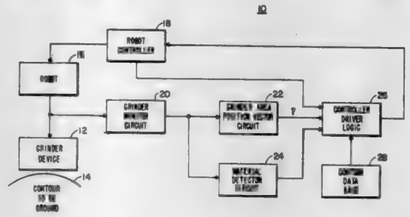
Filed Jul. 21, 1983, Ser. No. 516,162
Int. Cl.³ B60J 5/04
U.S. Cl. 49—502 **11 Claims**



1. A prefabricated door light unit for use in an opening formed in a door, said door light unit comprising:
ringlike frame means adapted to be fixedly mounted in said door opening and defining therein a window opening;
window pane means mounted on said frame means for covering said window opening;
said frame means including inner and outer ringlike frame units which mount in said door opening from respective inner and outer sides thereof, said inner and outer frame units having a slidable telescopic connection therebetween when mounted within said door opening;
said outer frame unit comprising an integral, one-piece, ringlike, preformed outer frame having a ringlike peripheral wall which is adapted for engagement with the outer face of the door in surrounding relationship to the door opening, said outer frame also including a tubular support wall structure integrally fixed to said peripheral wall and projecting substantially transversely therefrom into said door opening, said tubular wall structure defining an outer peripheral support surface thereon, said tubular wall structure also defining said window opening therein;
said outer frame having a substantially S-shaped cross section and including inner and outer approximately parallel walls which are integral with and project in opposite directions from the opposite ends of an intermediate wall, said outer wall defining said peripheral wall, and said intermediate wall defining said tubular wall structure, said intermediate wall defining said outer support surface on the outer periphery thereof with said latter surface extending substantially perpendicular to the vertical plane of the door opening, said intermediate wall defining thereon an inner peripheral surface which, at least along the bottom of said outer frame, slopes downwardly as it projects from the inner wall to said outer wall to permit drainage of water therefrom exteriorly of the door;
said inner frame unit comprising a rectangular ringlike frame having a peripheral wall which is positionable adjacent and engageable with the inner face of the door in surrounding relationship to the door opening, said inner frame also defining transverse support walls which are fixed to and project transversely from said peripheral wall into said door opening, said transverse walls defining thereon an inner support surface whereby said transverse walls project into said door opening into the region between the edge of said door opening and said tubular wall structure so that said inner and outer support surfaces are slidably engaged with one another so that the inner and outer frames can be slidably moved toward one another until the respective peripheral walls thereof respectively engage the inner and outer faces of the door; and
said frame means including fastener means extending between said inner and outer frames for fixedly connecting same together.

4,523,409
AUTOMATIC CONTOUR GRINDING SYSTEM
Thomas L. De Fazio, Watertown, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed May 19, 1983, Ser. No. 495,982
Int. Cl.³ B24B 49/00
U.S. Cl. 51—165.71 **35 Claims**



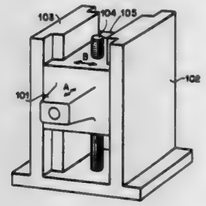
1. An automatic contour grinding system for smoothing a surface, comprising:
a robot;
a robot controller;
a grinder device mounted to said robot;
means for monitoring the grinding action of said grinder device;
means, responsive to said means for monitoring, for determining the vector position of the grinder area in contact with the contour to be smoothed with respect to the grinder spindle;
means, responsive to said means for monitoring, for detecting the material being ground;
a contour data base for providing the shape of the contour being ground; and
a controller driver unit responsive to said contour data base, said means for determining the vector position, and said means for detecting for driving said grinder device to grind until there is achieved the shape of the contour being ground.

4,523,410
COMPOSITE GUIDE MECHANISM
Junichi Yoshioka; Koichi Koizumi, both of Chiba; Akira Kanai, and Kazuo Shiba, both of Tokyo, all of Japan, assignors to Citizen Watch Co., Ltd., Japan

Continuation of Ser. No. 287,040, Jul. 27, 1981, abandoned. This application Dec. 27, 1983, Ser. No. 564,782
Claims priority, application Japan, Aug. 18, 1980, 55-113124
Int. Cl.³ B24B 41/00
U.S. Cl. 51—166 R **5 Claims**

1. A guide mechanism for a surface grinding machine including a sliding body comprising:
(a) a pair of columns disposed on the main body of said surface grinding machine opposite to each other;
(b) a feed screw provided between said columns along the same direction thereof;
(c) a housing for a grinding wheel spindle having a mounting portion which is driven by said feed screw and on which the grinding wheel is mounted in the direction perpendicular to that of said feed screw;

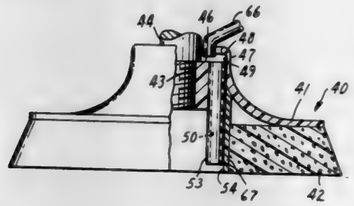
(d) a guideway plate attached to said housing for said grinding wheel spindle by means of a securing means in the reverse side of said mounting portion of the housing;
(e) the guideways of said respective elements composed of a hydrodynamic guideway and a hydrostatic guideway which are arranged in opposed relationship and vertically;
(f) said hydrodynamic guideway being continuously and intermittently supplied on the slide surface thereof with lubricant so as to wet or infiltrate the slide surface;



(g) said hydrostatic guideway provided with a plurality of hydrostatic recesses arranged in the moving direction so as to form an oil film between the guide surface and slide surface thereof by supply of oil under pressure; and
(h) means for supplying said oil under pressure to said hydrostatic recesses so as to press said sliding body toward said hydrodynamic guideway through the oil film thereon under a substantially constant pressure, said hydrodynamic guideway acting as the only master guide;
said means including restrictors for regulating the pressure in said recesses.

4,523,411
WET SURFACE TREATING DEVICE AND ELEMENT THEREFOR
Conrad T. Freerks, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

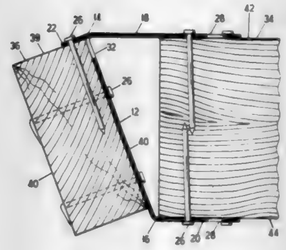
Filed Dec. 20, 1982, Ser. No. 451,281
Int. Cl.³ B24B 23/02, 55/02
U.S. Cl. 51—170 MT **1 Claim**



1. A rotatable element capable of being mounted on the end of an output shaft of a motor-driven surface treating device, said element having a first surface including a shaft mounting means for rotation of said element about an axis generally transverse to said first surface and an opposite second surface including a flexible pad for adhesively attaching a coated abrasive sheet, said first surface including a basin-like recess having a bottom surface which is generally transverse to said axis and substantially free of radial undulations and including sidewalls defining a channel opening toward and extending around said axis, said opposite second surface including a flexible pad having an opening within or adjacent to an area thereof generally centered with respect to said axis, and at least one passage through said element communicating between said channel and said opening so that liquid collected in said recess, will flow into said channel, through said passage and out of said opening when the element is stationary or rotated about said axis, said pad comprising open-celled foam and the portion of said pad surrounding said opening being lined with a sleeve of a resilient liquid-impermeable material.

4,523,412
HANGER BRACKET AND METHOD OF USING SAME
Ulrich Sielaff, Madison, Wis., assignor to United Steel Products Company, Montgomery, Minn.

Filed Nov. 4, 1982, Ser. No. 439,135
Int. Cl.³ E04B 1/32
U.S. Cl. 52—81 **10 Claims**



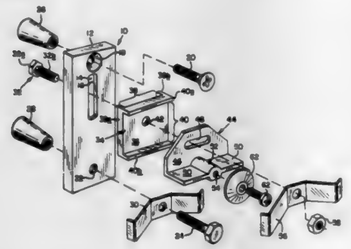
1. A hanger bracket for fastening a framing member to a strut of a geodesic building structure the struts of which define planar faces of at least part of a regular geometric shape having more than six such faces, the planes of which intersect the planes of adjacent faces, the strut having a planar mounting surface presented generally toward an adjacent strut and extending lengthwise along the strut and generally parallel to a line drawn from the center of the geometric shape through the longitudinal axis of the strut, the hanger bracket comprising:
(a) a back having top and bottom ends;
(b) a top support member extending from the top end of the back and inclining toward the bottom end at an angle to the back of substantially one-half the angle of intersection of the planes of the adjacent faces; and
(c) a bottom support member opposed to the top support member and extending parallel thereto from the bottom end of the back, the back being adapted to be fastened flat against the planar mounting surface of the strut with the top end extending generally away from the center of the geometric shape and with the support members extending into a planar face defined in part by the strut, the top and bottom support members being free of any structure extending therefrom and toward the other, thus permitting said top and bottom support members to receive therebetween the end of the framing member which is both sloped and skewed relative to said strut and to hold the framing member parallel to the top and bottom support members and in the plane of the face regardless of the angle between the longitudinal axes of the framing member and the strut.

4,523,413
HANGER FASTENER
Bruce G. Koppenberg, 9675 Mt. Baker Hwy., Deming, Wash. 98244

Filed Mar. 18, 1983, Ser. No. 476,592
Int. Cl.³ E04B 1/40
U.S. Cl. 52—139 **4 Claims**

1. A slab hanger-fastener comprising:
a frame plate,
means for mounting the frame plate against a support surface,
a guide member mounted on the frame plate for movement in a path extending between the ends of the frame plate, said guide member including means forming a rear channel on one side thereof which receives the frame plate and confines the guide member to movement in said path,

a slab support member mounted on the guide member for movement in another path extending transversely of said first-mentioned path, said guide member having means forming a front channel on the opposite side of the guide member which receives the slab support member and confines the slab support member for movement in said other path,



fastener means for securing together in fixed position said guide member and slab support member on said frame plate,

said slab support member including slab positioning means on the front thereof for positioning slab edges, and

a retainer member detachably mounted on the slab support member.

4,523,414

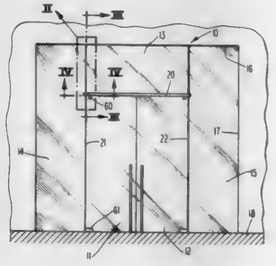
GLASS DOOR ASSEMBLY WITH TRANSOM BAR

William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.

Filed May 19, 1983, Ser. No. 496,135

Int. Cl.³ E06B *1/04*

U.S. Cl. 52—204 **17 Claims**



14. In a glass door assembly comprising at least one glass door, a glass transom above the glass door extending from the door to a building structure thereabove, and at least one glass sidelight, laterally of the door and transom, extending from the door and transom to a lateral building structure, the improvement comprising a generally horizontally disposed transom bar beneath the transom in weight-supporting engagement therewith, and with a generally vertically disposed bar support rod at at least one end of the transom, between the transom and adjacent portion of a sidelight, said rod being supportingly carried at its upper end by the building structure, and with the lower end of the rod being in supporting engagement with the transom bar, wherein said transom and adjacent sidelight portions have ends facing toward each other defining space for the rod therebetween, with said rod being thinner than the thickness of the glass of said transom and said sidelight, and with a sealant disposed in said space forming a rod-burying joint between ends of said transom and sidelight, whereby said bar presents an unsupported appearance at its rod-supported end, wherein said rod is provided at its upper end with means faciliatating vertical adjustment of the rod relative to the building structure, wherein the rod is provided at its upper end with means facilitating lateral adjustment of the rod between the transom and side light, wherein said support bar includes means at its said end adjacent said sidelight for securing said bar end to said sidelight, wherein said securing means includes a notch means in said bar, in receiving engagement with an edge portion of said sidelight, wherein said door is provided with pivot pin means protruding upwardly toward said transom, and wherein bearing means is provided carried by said transom bar, in receiving engagement with said pivot pin, wherein said bearing means is disposed in said bar, including adjustment means being provided carried by said bar, for adjusting the position of said bearing means along said bar, for adjusting the upper pivot for said door, including means for adjusting the relative vertical positions of said bar and rod relative to each other.

4,523,415

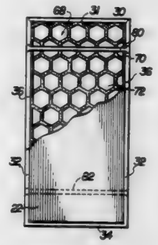
ONE-PIECE BUILDING PANEL FOR WALLS AND LIKE STRUCTURES

Milton Rosen, 800 NE. 155 St., North Miami Beach, Fla. 33162

Filed Jan. 25, 1984, Ser. No. 573,850

Int. Cl.³ E04C *2/52*

U.S. Cl. 52—220 **14 Claims**



1. A building panel of the type primarily designed for use as both interior and exterior walls, said building panel comprising:

(a) a substantially one-piece construction formed of lightweight, cementitious material and including a front face and a rear face each having outer surfaces disposed to define opposite exposed surfaces of said panel,

(b) an interior portion disposed in sandwiched relation between said front face and said rear face and comprising a planar array of apertured construction defined in part by a plurality of apertures oriented in substantially transverse relation to said front and rear faces an extending therebetween,

(c) said apertured construction further including spacer walls contiguously disposed to each of said plurality of apertures and defining the peripheral boundaries thereof, said spacer walls connected to one another and extending transversely to and in interconnecting relation between said front and rear faces,

(d) border means disposed and structured for substantially defining a periphery of said panel and comprising vertically oriented peripheral portions disposed in spaced apart and parallel relation to one another, each vertical peripheral portion including a first recess extending along the length thereof,

(e) said first recess positionable into substantially aligned, mating engagement with a correspondingly positioned first recess of a next adjacent positioned and connected building panel,

(f) channel means for maintaining utility lines therein and having a substantially closed cross-sectional configuration and defined by mating engagement of said first recesses of said adjacently positioned building panels, and

(g) conduit means mounted on said building panel for housing utility faciities therein and disposed in at least partially spaced relation to said channel means.

4,523,416

FLOORING SYSTEM WITH SERVICE TRUNKING PROVISION

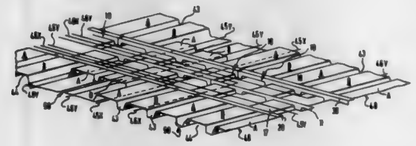
Harold J. W. Payne, and Ghislaine R. L. Payne, both of Handley, England, assignors to H. H. Robertson (U.K.) Limited, England

Filed May 16, 1983, Ser. No. 495,293

Claims priority, application United Kingdom, May 15, 1982, 8214225

Int. Cl.³ E04F *17/08*

U.S. Cl. 52—221 **20 Claims**



1. In or for flooring that includes corrugated sheeting affording channels for services at spaced intervals via channels of its corrugation and presenting between ends of successive said sheeting a gap transverse to the directions of said channels, services segregation apparatus fitting into said gap and comprising an elongate divider having an upper edge and a lower edge and being apertured at spaced intervals along its length and below its upper edge; and, associated one with each aperture of the divider, a plurality of upwardly closed elements some extending from one side of the divider and others extending from the other side of the divider in each case to different selected said channels at said edges of said sheetings; the divider then defining paths to each side thereof and separated thereby for services to pass over the said elements at the same side of the divider and further providing access for such services only to the said elements at the other side of the divider via its said apertures and thence to said channels.

4,523,417

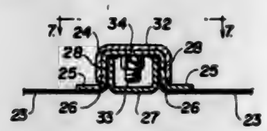
RADIANT ENERGY SHIELDED ENCLOSURES

William H. Beastall; Vernon R. Ballew; Richard D. Collier, and John T. Bagby, all of Evansville, Ind., assignors to International Steel Company, Evansville, Ind.

Filed Dec. 7, 1982, Ser. No. 447,697

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—273 **8 Claims**



1. In a radiant energy shielded enclosure of a type constructed from a plurality of taut metal sheets wherein some of the sheets occupy common planes on the enclosure and others occupy two right angular planes intersecting at corners of the enclosure, the enclosure further including compound corners formed by the intersections of sheets in a common plane with sheets in two right angular planes, and the two right angular planes also being perpendicular, the improvement comprising separable radiant energy shielding connections for the sheets of the enclosure in common planes, the sheets in right angular planes intersecting at corners and for the sheets intersecting at compound corners of the enclosure, each such connection comprising at least a main structural member extending longitudinally of the edge portions of adjacent sheets and a cooperative continuous sheet tensioner element interfitting with the main structural member and fixed thereto and binding the edge portions of the sheets between the fixed structural member and tensioner element, and radiant energy shielding splices at intervals along said connections where adjacent ends of sections of the main structural members are in abutment, and each splice including a relatively short splicing member engaging and interfitting with adjacent end portions of the main structural members and bridging the abutments of such members and being releasably secured to the main structural members of the enclosure, and the connections for sheets of the enclosure in common planes each comprising a main channel member, the legs of said main channel member having a pair of side longitudinal flanges along its length whereby the adjacent edge portions of sheets pass over the side flanges and enter the main channel member, and the continuous sheet tensioner element comprising an opposing channel element within the main channel member and engaging the edge portions of said sheets to bind them in the main channel member, releasable fastener means for the opposing channel elements within he main channel members, said releasable fastener means comprising splined nuts secured within spaced openings in the web portion of said main channel and cooperative screws received in openings formed in the web portion of the tensioning channel and threadably engaging said nuts within the space between the opposed channels, and each splice of the connection including a relatively short splicing channel member engaging over adjacent abutting end portions of sections of the main channel member, the web portion of the splicing channel member engaging the corresponding web portion of the main channel member, and the legs of the splicing channel member engaging the corresponding legs of the main channelmember substantially the full extent thereof, and separate releasable fasteners extending through the web portions of the main channel member and splicing channel member for interconnecting each short splicing channel with said abutting end portions of the sections of the main channel member, said separate releasable fasteners comprising at least a pair of threaded studs fixedly connected to the web Portion of said splicing channel member adjacent opposite ends thereof and extending inwardly of the splicing channel and extending through apertures in the web portions of the main channel members, said apertures being adjacent abutting end portions of said main channel members, and nuts within the space between the opposed channels engaging said threaded studs for tightly engaging the splicing channel member with said main channel members

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4,523,418

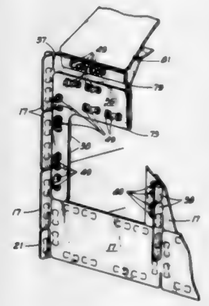
MODULAR CONSTRUCTION SYSTEM

Jon R. McLaughlin, 1 Rutherford La., St. Louis, Mo. 63131

Filed Aug. 15, 1983, Ser. No. 523,096

Int. Cl.³ E04B *1/348*; A63H *33/08*

U.S. Cl. 52—284 **19 Claims**



1. A construction system comprising modules formed of substantially stiff sheet material, each module being formed

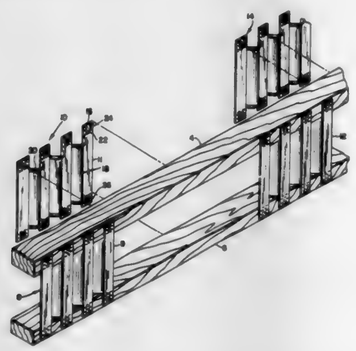
adjacent its edges with pairs of oppositely facing tabs, each pair of tabs being defined by pairs of substantially C-shaped cuts in the material of the module with the respective C-shaped cuts of each pair facing each other and spaced apart a short distance, the material being scored along parallel straight lines connecting the terminals of the respective cuts to permit the resultant tabs to be bent out of the plane of the module, corresponding tabs on all modules being similarly spaced and oriented whereby the scored lines and cuts defining the respective tabs on lapped margins of a pair of modules are in registry with each other, said modules being securable to each other by lapping margins of a pair of said modules to place pairs of said tabs of the respective modules in registry with each other and bending both tabs of each pair about the scored line in the same direction away from the respective modular sheets, whereby to lock the respective modules to each other.

4,523,419

RIBBED CONNECTOR AND JOIST STRUCTURE

Joaquin J. Palacio, and Carlos C. Cristobal, both of Miami, Fla., assignors to Gang-Nail Systems, Inc., Miami, Fla.

Filed Jun. 24, 1983, Ser. No. 507,500
Int. Cl.³ E04C *3/02*
U.S. Cl. 52—690 **32 Claims**



1. A metal ribbed connector for interconnecting two elongated wooden members used in constructing a structure, said ribbed connector comprising:

a plurality of elongated connecting members, each having a plurality of teeth struck out from both of its end sections, said teeth extending in one direction for being embedded in the wooden members to be interconnected, each elongated connecting member being formed as a continuous planar structure from one end section to the other, and said elongated connecting members being parallel and lying in the same plane; and,

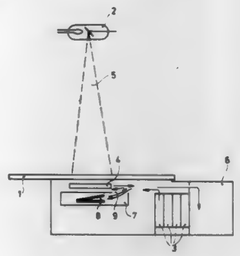
a plurality of support members connected to said elongated connecting members in an area between said end sections of said elongated connecting members, each of said support members interconnecting adjacent ones of said elongated connecting members, said support members extending from said connecting members in the same direction as said teeth and being shorter than said elongated connecting members so that when said metal ribbed connector is attached to the wooden members said support members lie between the wooden members and act as a structural support for such wooden members.

4,523,420

X-RAY EXAMINATION APPARATUS HAVING AT LEAST ONE FILM STORAGE MAGAZINE

Harald Kayser, Wedel, and Wilfried Pfeiffer, Quickborn, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 387,994, Jun. 14, 1982, abandoned. This application Aug. 24, 1984, Ser. No. 644,151
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125397
Int. Cl.³ G03B *41/16*
U.S. Cl. 53—266 R **8 Claims**



1. An X-ray examination apparatus having a light-tight film processing section comprising:

at least one film storage magazine for storing film sheets; and means for unloading film sheets, one at a time, from the film storage magazine;

a cassette loading and unloading station for accommodating a cassette; and

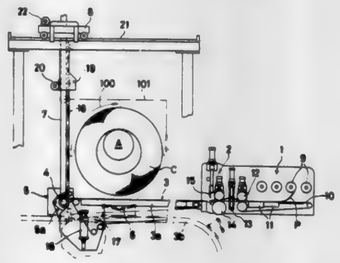
a film guide device defining a first path between the film storage magazine and an exposure station and defining a second path between the film storage magazine and the cassette loading and unloading station, said film guide device being capable of switchably transporting film either to or from the exposure station along the first path or to or from the cassette loading and unloading station along the second path.

4,523,421

METHOD AND APPARATUS FOR WRAPPING METAL COIL

Hiroshi Kataoka, 1-5-8 Asahi, Iyo-Mishima-shi, Ehime-ken, Japan

Filed May 24, 1982, Ser. No. 381,308
Int. Cl.³ B65B *13/02*
U.S. Cl. 53—399 **1 Claim**



1. A method for winding a wrapping paper on the outer periphery of a metal coil, which comprises the steps of:

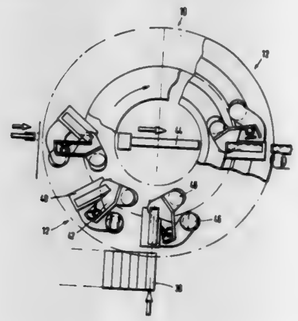
selecting from a plurality of rolls of wrapping paper having various widths in a storage one particular roll of wrapping paper of a required width, drawing the leading end of the wrapping paper out of the roll, correcting the curling tendency of the wrapping paper paid off the roll thereby stretching said wrapping paper to full length, cutting the drawn and corrected portion of wrapping paper to a length conforming to the length of the periphery of the metal coil being wrapped, forwarding by means of a conveyor the cut length of wrapping paper as stretched to full length to a position below said metal coil which is slightly lifted from the conveyor by a suspension arm, winding the cut and forwarded length of wrapping paper on a horizontally retained winding roll of a winding mechanism with a wrapping paper end winding belt disposed at a position slightly forward from the position directly below said metal coil, discontinuing the winding of wrapping paper at the time that the tail end of the cut length of wrapping paper has reached a predetermined position slightly rearward from the position directly below said metal coil, retaining said tail end of the cut length of wrapping paper at said predetermined position on said conveyor by applying suction from said conveyor to said tail end, rendering said winding roll rotatable and moving the winding roll, which has the cut length of wrapping paper wound thereon and retains its horizontal posture, upwardly, transversely and downwardly around said metal coil, thereby allowing the cut length of wrapping paper unwound from said winding roll to be draped on the lower half portion and the whole upper portion of the outer periphery of said metal coil, and manually joining the leading end of said cut length of wrapping paper separated from said winding roll and the tail end of wrapping paper to each other on the outer periphery of said metal coil.

4,523,422

APPARATUS FOR INTRODUCING TAPE CASSETTES OR THE LIKE AND SUPPLEMENTS INTO HINGED BOXES

Heino Ilsemann, Am Wehkamp 3, 2800 Bremen, Fed. Rep. of Germany

Filed Jan. 20, 1984, Ser. No. 572,422
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302112
Int. Cl.³ B65B *57/06, 43/39*
U.S. Cl. 53—566 **10 Claims**



1. In an apparatus for introducing tape cassettes or the like and supplements into hinged boxes including a turrett arranged to rotate step-by-step on a horizontal axis, a hinged box insertion station located essentially vertically below the axis of said turret and including a plurality of holding means, with means for supplying hinged boxes and inserting the same into said holding means from below, a cassette and supplement insertion station disposed essentially horizontally in the plane of the axis of rotation of said turret, with means for inserting a cassette and a supplement into an at least partially opened hinged box at said cassette and supplement insertion station, an ejection station disposed essentially horizontally in the plane of the axis of rotation of said turret and offset by about 180° from said cassette and supplement insertion station, the improvement which comprises:

said holding means comprising:

a cover flap,

a suction device on said cover flap and arranged to open and close the cover of said hinged box, and

an underside flap comprising two jaws for holding the underside of said hinged box,

both said cover flap and said underside flap being pivotable about an axis close to their longitudinal edges facing the turret axis, and

cam rollers engaging said flaps to pivot the same,

said cover flap in the hinged box insertion station being pivotable from an essentially radial closed position into an open position, while said underside flap is arranged to be brought into an essentially radial closed position,

said cover flap in the cassette and supplement insertion station being arranged to be brought to an essentially radial closed position with said underside flap being pivotable from its essentially radial closed position into an open position upon engagement with the underside of a hinged box,

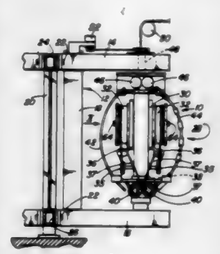
said cover flap in the ejection station being pivotable from its essentially radial closed position to an open position while releasing the cover of said hinged box, with said underside flap being arranged to be brought into its radial closed position.

4,523,423

CRADLE FOR A TWISTING MACHINE

Jean Bouffard, Lachine; André Dumoulin, Montagnes, and Edgar K. Lederhose, Chateauguay, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 27, 1983, Ser. No. 565,761
Int. Cl.³ D07B *7/06;* B60T *13/04;* B65H *59/04*
U.S. Cl. 57—59 **7 Claims**



1. A cradle for a twisting machine for filamentary material comprising:

a reel spindle for a reel of filamentary material and rotatably mounted upon a support and a tensioning device for the material as it is drawn from the reel, the tensioning device comprising:

a brake drum rotatable with the spindle and having inner and outer cylindrical brake surfaces;

first and second brake shoes disposed for braking engagement, the first shoe with the inner and the second shoe with the outer brake surface, the shoes mounted upon first and second brake arms respectively to move the shoes towards and away from their braking surfaces;

a rotatable tensioning pulley;

biassing means to urge the pulley and its axis in one direction of movement and to urge pivotal movement of the first and second brake arms to hold the shoes normally in brake engaged positions with the braking means, the pulley being movable in the opposite direction against the biassing means; and

a brake release actuator operably disposed between the pulley and the arms and comprising a brake release link

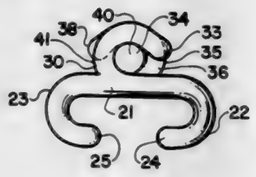
pivotally movable about either of two relatively offset axes and a brake operating link, the actuator operable when the pulley then moves in said opposite direction and with the links connected and relatively inclined to subject the release link to a component of load causing it to pivot primarily about a first of the axes to move the first brake arm and its brake shoe from its brake engaged position and then to pivot primarily about the second axis to move the second brake arm and its brake shoe from its brake engaged position.

4,523,424

UNIVERSAL RING TRAVELER

Donald R. Hoover, Rte. 3, Ratchford Rd., Gastonia, N.C. 28052

Filed Apr. 9, 1984, Ser. No. 598,198
Int. Cl.³ D01H *7/60*
U.S. Cl. 57—125 **3 Claims**



1. A traveler for use with a ring for winding yarn on a bobbin, said traveler comprising end portions with hooks slidably mounted on the ring, a spline formed integral with the end portions and extending therebetween, a first shoulder projecting from the rear surface of the spline and away from the hooks and having a first transverse passageway therethrough, the passageway being between the hooks, an access opening providing communication between the passageway and the atmosphere adjacent one end portion, a second shoulder extending from the rear surface of the spline and having a second passageway therethrough concentric with the passageway in the first shoulder, the said first and second shoulders being spaced from each other, and an access opening providing communication between the second passageway and the atmosphere adjacent the opposite end portion, whereby the medial portion of a yarn may be readily positioned in a selected passageway.

4,523,425

REINFORCEMENT CABLE FOR ELASTOMERIC CONDUITS

Franz Schild, Heinsberg, and Wolfgang Weidenhaupt, Erkelenz, both of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Filed Apr. 26, 1983, Ser. No. 488,774
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1982, 3215506
Int. Cl.³ D07B *1/06, 1/14*
U.S. Cl. 57—212 **15 Claims**

1. Reinforcement cable of metal wires for elastomeric conduits, comprising at least two cabled-together strands each having two or more wires, said strands including at least one



outerlying strand composed of two or more core wires wrapped by at least one coil-shaped strand winding wire.

4,523,426

HIGH TEMPERATURE RESISTANT SEWING THREAD AND METHOD OF MAKING

Eddie W. Scott, Mebane, and Errol N. Seltzer, Greensboro, both of N.C., assignors to Collins & Aikman Corp., New York, N.Y.

Continuation-in-part of Ser. No. 323,242, Nov. 20, 1981,. This application Feb. 10, 1984, Ser. No. 578,845
Int. Cl.³ D01H *13/26, 3/00*
U.S. Cl. 57—247 **15 Claims**

1. A synthetic sewing thread of continuous multifilament construction characterized by its ability to lessen the buildup of heat at the needle of a high speed sewing machine during the operation thereof, even during the sewing of relatively heavy weight fabrics, so as to allow the thread to be utilized as a substitute for the sewing threads conventionally required in high temperature sewing applications, such as cotton spun yarns or cotton sheathed core yarns, said thread being further characterized by a substantially uniform cross section throughout the thread devoid of alternating thick and thin areas to provide a smoother more uniform sewing thread, said thread comprising at least one yarn having a plurality of crimped texturized continuous synthetic filaments, said crimped texturized filaments having a nonlinear crimped configuration providing bulk to the thread and being entangled with one another along the length of the thread, and further bound together by twist so as to provide a thread of substantially uniform cross section throughout the thread, and said thread having a heat protective lubricant coating applied thereto and penetrating the filament bundle.

4,523,427

FILAMENT YARN

Paul L. I. Carr, Dacre Banks, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 430,911, Sep. 30, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,739
Claims priority, application United Kingdom, Oct. 26, 1981, 8132250
Int. Cl.³ D02G *3/06*
U.S. Cl. 57—248 **3 Claims**

1. A yarn of a synthetic, fibre-forming, polymeric material comprising a plurality of filaments having a substantially rectangular cross-section and having a birefringence asymmetry across the width of the filaments, each of the filaments being twisted about the longitudinal axis of the filament in such a manner that the overall lateral dimension of the twisted filament corresponds substantially with the length of the rectangular cross-section of the filament, the frequency of twist of a filament in the yarn differing from the frequency of twist of all



the other filaments in the yarn and the twist in all of the filaments reversing itself at random intervals along the length of the filaments.

4,523,428

PROCESS FOR MANUFACTURING TEXTURED MULTIFILAMENT YARN HAVING ALTERNATING TWIST

Takao Negishi; Teiryo Kojima, both of Otsu, and Kazuo Tomiita, Tokyo, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 209,217, Nov. 21, 1980, Pat. No. 4,402,178. This application Dec. 27, 1982, Ser. No. 452,998
Int. Cl.³ D02G *1/02, 3/24, 3/26*
U.S. Cl. 57—288 **16 Claims**



1. A process for manufacturing alternatingly twisted yarn, wherein a thermoplastic synthetic multifilament yarn is subjected to false twisting along a substantially stationary path in a manner to avoid ballooning, and the yarn is drawn under a draw ratio equal to or less than the natural draw ratio, by means of a false twisting device, wherein a yarn contacting member is disposed at a location downstream of said false twisting device, whereby a front end of false twisted region in said yarn is prevented from being transmitted across said yarn contacting member, wherein an over detwisted portion is generated in said yarn located between said false twisting device and said yarn contacting member, and wherein even after said yarn is passed through said false twisting device said yarn is retained in a false twisted condition at a location at least adjacent to said false twisting device.

4,523,429

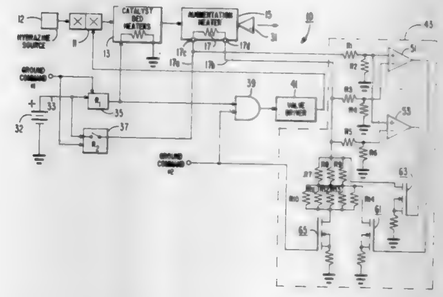
COLD START SURGE CURRENT LIMITING SYSTEM FOR A HYDRAZINE THRUSTER AUGMENTATION HEATER

John D. Bingley, Hatboro, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 1, 1983, Ser. No. 481,384
Int. Cl.³ F02K *9/68*
U.S. Cl. 60—203.1 **9 Claims**

1. A cold start surge current limiter for a thruster heater resistance element coupled to a battery bus comprising:

load resistance means coupled in series with said battery bus and said heater resistance element to limit the current through said heater resistance element at the start of said thruster; and



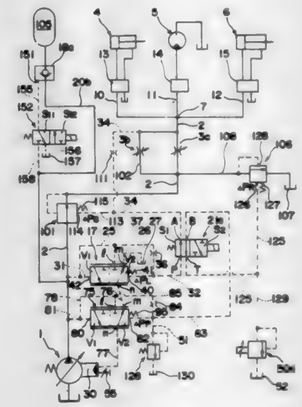
means responsive to the resistance of said heater element for bypassing said load resistance means to decrease the loss when the heater element heats up to alone provide a safe current level.

4,523,430

FLUID FLOW CONTROL SYSTEM

Kenji Masuda, Takatsuki, Japan, assignor to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 12, 1982, Ser. No. 357,753
Claims priority, application Japan, Mar. 19, 1981, 56-41067; Mar. 19, 1981, 56-41068
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—420 **12 Claims**



1. A fluid flow control system comprising means for operating selectively in a power matching mode and a maximum discharge flow mode, which comprises a variable displacement pump (1) having a discharge flow control section (30), said pump operating in a variable discharge mode in said power matching mode and in a constant discharge mode in said maximum discharge mode; at least one actuator; a main line (2) extending between the pump (1) and the actuator and having a restriction means (3, 3*a*, 3*b*, 3*c*, 3*d*) disposed therein; a load sensing valve (17) having pilot and spring chambers; a first fluid circuit including a power matching pilot line (32, 34) in selective communication with said spring chamber and a first pilot line (31) in communication with said pilot chamber, the differential pressure between the upstream and downstream sides of the restriction means (3, 3*a*, 3*b*, 3*c*, 3*d*) being supplied to the pilot and spring chambers of the load sensing valve (17) in said power matching mode to operate said load sensing

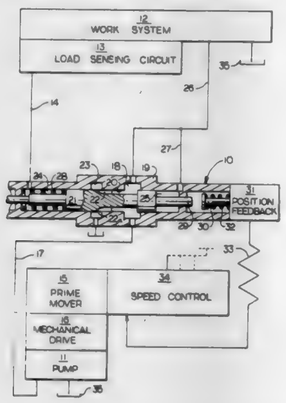
valve (17) to connect the discharge flow control section (30) selectively to one of the main line (2) and a fluid reservoir to control the discharge rate of the pump (1) such that said differential pressure upstream and downstream of said restriction can be controlled to a predetermined value in the power matching mode; a branch line (20a, 20b) extending outwards from a portion of the main line (2) upstream of the restriction means (3, 3a, 3b, 3c, 3d); a valve means (18, 18a) disposed on the branch line (20a, 20b) and operable to open when the load sensing valve (17) is rendered non-functional to control the pump and the pump (1) is operated in a maximum discharge mode; a mode selector valve (21, 21a) disposed on the power matching pilot line (32, 34) for selectively closing and opening the power matching pilot line (32, 34); and a second pilot line (37) capable of fluid-connecting the spring chamber (40) and the pilot chamber of the load sensing valve (17) to a portion of the main line (2) upstream of the restriction (3, 3a, 3b, 3c, 3d), thereby rendering the load sensing valve non-functional and selecting the maximum discharge mode; whereby the power matching mode can be established when the power matching pilot line (32, 34) is opened to operate the load sensing valve (17) and, on the other hand, the maximum discharge flow mode can be established when the power matching pilot line (32, 34) is closed and the second pilot line is opened to make the pressures respectively in the pilot and spring chambers of the load sensing valve (17) equal to each other, whereby the load sensing value (17) is rendered non-functional and held in one position by the action of a spring thereof thereby causing said pump (1) to operate at a maximum discharge rate and to simultaneously permit the valve means (18, 18a) to open.

4,523,431

LOAD RESPONSIVE SYSTEM

Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 16, 1984, Ser. No. 580,971
Int. Cl.³ F04B *49/00*; F15B *11/02, 15/18*
U.S. Cl. 60—431 **21 Claims**



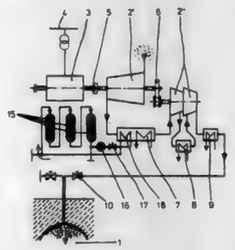
1. A fluid power and control system including load actuating means subjected to load pressure, pump means driven by a variable speed prime mover, means selectively communicating said pump means with said actuating means, and rotational speed control means of said prime mover, means operable to transmit load pressure signal from said actuating means to said rotational speed control means, means operable to transmit a pump discharge pressure signal from said pump means to said rotational speed control means, outlet flow bypass means associated with said pump means and being active to bypass flow, control means of said bypass means having means operable to vary the bypass flow to maintain a relatively constant pressure differential between said discharge pressure and said load pressure when said prime mover means works at a certain minimum rotational speed, and means in said rotational speed control means operable to vary the rotational speed of said prime mover to maintain a relatively constant pressure differential between said discharge pressure of said pump means and said load pressure, said means in said rotational speed control means being sequentially responsive to said outlet flow bypass means being inactive above said certain minimum rotational speed.

4,523,432

AIR STORAGE POWER STATION

Hans-Ulrich Frutschi, Riniken, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 30, 1982, Ser. No. 429,460
Claims priority, application Switzerland, Nov. 16, 1981, 7344/81
Int. Cl.³ F02C *1/04, 1/06*
U.S. Cl. 60—659 **1 Claim**



1. A method for operating an air storage power station having a gas turbine with an upstream combustion chamber, a compressor, an air reservoir receiving compressed air from said compressor and selectively connected to said combustion chamber for supplying compressed air to said combustion chamber, an electrical machine operatively connected to said gas turbine and said compressor, a recuperator providing heat exchange between air being supplied to said combustion chamber and gas being discharged from said gas turbine, and means for storing and selectively transferring heat from said compressor to said air being supplied to said combustion chamber at a point upstream of said recuperator, said method comprising the steps of:

initiating the supply of compressed air from said reservoir to said combustion chamber so as to begin turbine operation;

transferring stored heat from said means for storing to said supplied air; and

limiting said transfer of supplied heat to a start up period of said turbine operation.

4,523,433

COLD STORAGE BODY

Masshiro Takahashi, Shizuoka; Toshio Hagiwara, Tokyo; Takao Nishizaki, Tokyo, and Kinya Niizeki, Tokyo, all of Japan, assignors to Nippon Light Metal Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 371,060, Apr. 23, 1982, abandoned. This application Jun. 13, 1984, Ser. No. 620,156
Claims priority, application Japan, May 25, 1981, 56-78864
Int. Cl.³ B65B *63/08*
U.S. Cl. 62—60 **18 Claims**

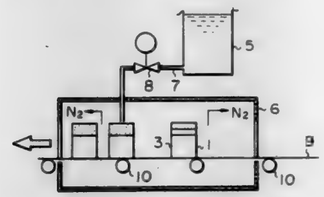
1. A method of making a cold storage body comprising the steps of:

providing a vessel consisting of a thin metallic material;

substantially filling said vessel with a liquid cold storage medium of low viscosity, so as to occupy most of the volume of said vessel;

removing air from said vessel and medium;

filling the remaining space with a vaporizable, liquified inert gas which is introduced into said vessel at a flow rate sufficient to increase the internal pressure in said remaining space to about 1.85 to about 2.15 atmospheres;



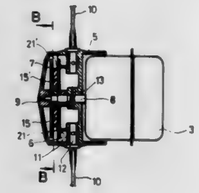
controlling the amount of vaporizable liquified inert gas by adjusting the flow rate and the pouring time to obtain an internal pressure in said vessel of 2 Kg/cm² after a cover member is sealingly applied to a trunk member which, together with said cover member, forms said vessel; and hermetically sealing said vessel.

4,523,434

AIR VENTILATOR

Byung E. Yoo, #616-5, Daemyung-dong, Nam-ku,, Daegu-si, Rep. of Korea

Filed Sep. 5, 1984, Ser. No. 647,525
Claims priority, application Rep. of Korea, Jan. 14, 1984, 84-281; Mar. 2, 1984, 84-1740
Int. Cl.³ F23J *25/08*
U.S. Cl. 62—116 **4 Claims**



1. An air ventilator for ventilating indoor air to the environment comprising

a motor provided with a shaft,

a rotor mounted on said shaft,

a plurality of fan blades pivotally attached to the rotor,

a rotating circular plate having a plurality of sliding slots and a plurality of connecting holes mounted on said shaft of the motor,

a fixed circular plate connected to the rotating circular plate with pins and mounted on the shaft of said motor,

centrifugal weight members disposed between the fixed circular plate and the rotating circular plate, and

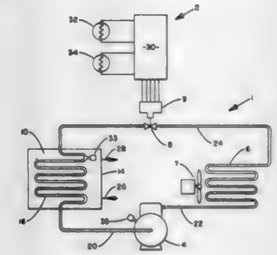
a torsion coil spring connecting the centrifugal weight member with the rotating circular plate for elastically supporting the weight member, whereby when the motor is operating, the centrifugal weight members engage the rotating circular plate, apply a circumferential directional force thereto, and angularly displace the circular plate, said displacement being transmitted to the fan blades for ventilating the inside air to the environment; and when the motor is not operating the centrifugal weight members return to their original position by the torsion coil spring, thereby closing all air-passages between the fan blades.

4,523,435

METHOD AND APPARATUS FOR CONTROLLING A REFRIGERANT EXPANSION VALVE IN A REFRIGERATION SYSTEM

Richard G. Lord, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,896
Int. Cl.³ F25B *41/00*; G05D *15/00*
U.S. Cl. 62—212 **4 Claims**



1. A refrigeration system comprising:

(A) a condenser for condensing refrigerant vapor;

(B) an evaporator for evaporating liquid refrigerant to provide cooling;

(C) compression means for compressing refrigerant vapor formed in the evaporator and for passing the compressed refrigerant vapor to the condenser;

(D) an adjustable refrigerant expansion valve for controlling the passage of refrigerant from the condenser to the evaporator;

(E) superheat temperature signal generating means for generating a superheat temperature signal which is a function of the superheat of refrigerant passing from the evaporator to the compression means;

(F) superheat rate signal generating means for generating a superheat rate signal which is a function of the rate of change of the superheat of refrigerant passing from the evaporator to the compression means;

(G) valve control signal generating means for generating a valve control signal which comprises a function of a fraction of the difference between the superheat temperature signal and a predetermined superheat temperature signal, added to a function of a multiple of the superheat rate signal;

(H) valve control means comprising an electric motor connected to the refrigerant expansion valve for adjusting the refrigerant expansion valve in response to the valve control signal provided by said microcomputer; and

(I) signal processing means for clamping the superheat temperature signal supplied to said valve control signal generating means between predetermined high and low temperature limits, thereby decreasing the sensitivity of the refrigerant expansion valve to large deviations in the superheat temperature signal from a predetermined superheat temperature.

4,523,436

INCREMENTALLY ADJUSTABLE ELECTRONIC EXPANSION VALVE

John W. Schedel, Lafayette, and Richard G. Lord, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 22, 1983, Ser. No. 564,543
Int. Cl.³ F25B *41/04*; F16K *31/02*
U.S. Cl. 62—222 **6 Claims**

1. A refrigeration system including a compressor, a condenser, and an evaporator, and including an electronic refrigerant expansion valve comprising:

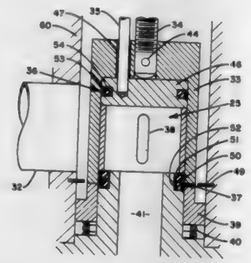
an inlet means for receiving refrigerant from the condenser;

an outlet means for discharging refrigerant to the evaporator;

an orifice means, connected between the inlet means and the outlet means, said orifice means including a generally cylindrical orifice assembly having a top end which is capped, a bottom end which is open and connected to receive refrigerant from the inlet means, and at least one orifice opening, located between the capped end and the open end of said assembly, for controlling refrigerant flow between the inlet means and the outlet means;

a sleeve member which slides over the orifice means to adjust the size of the orifice opening depending on the position of the sleeve member relative to the orifice means;

a first annular sealing means, located in an annular recess in the orifice assembly above the orifice opening and positioned between the sleeve member and the orifice assembly, for substantially preventing refrigerant flow across said first annular sealing means when the sleeve member is in a fully closed position covering over the orifice opening in the orifice assembly;



a second annular sealing means, located in another annular recess in the orifice assembly below the orifice opening and positioned between the sleeve member and the orifice assembly when the sleeve member is in its fully closed position, for substantially preventing refrigerant flow across said second annular sealing means when the sleeve member is in its fully closed position;

a spring biased follower means, positioned to follow movements of the sleeve member, for covering over the second annular sealing means to hold the second annular sealing means in its annular recess when the sleeve member moves out of contact with the second annular sealing means and for partially uncovering the second annular sealing means when the sleeve member moves into contact with the second annular sealing means; and

motor means, operatively connected to the sleeve member, for incrementally adjusting the position of the sleeve member relative to the orifice means in response to electronic digital control signals received by said motor means.

4,523,437

VEHICLE AIR CONDITIONING SYSTEM

Patrick B. Briley, Stillwater, Okla., assignor to Hybrid Energy Systems, Inc., Stillwater, Okla.

Continuation-in-part of Ser. No. 196,864, Oct. 14, 1980, Pat. No. 4,374,467, which is a continuation of Ser. No. 55,524, Jul. 9, 1979, Pat. No. 4,248,049, which is a continuation-in-part of Ser. No. 948,043, Oct. 2, 1978, abandoned. This application Jan. 21, 1982, Ser. No. 341,239

Int. Cl.³ F25B *27/02*

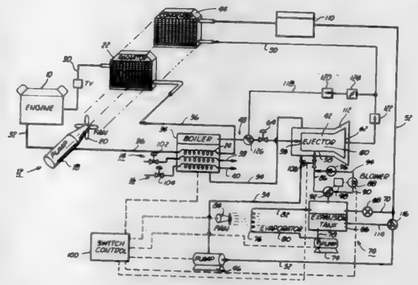
U.S. Cl. 62—238.4 **19 Claims**

1. An air conditioning system for a vehicle having an engine, an engine exhaust system, and an engine cooling system comprising:

a boiler for heating a refrigerant in a heat exchanging relationship with at least a selected one of said engine exhaust system and said engine cooling system, the boiler having an inlet portion and an outlet portion through which the refrigerant passes;

an ejector having a drive inlet portion, a suction inlet portion, and an outlet portion, the drive inlet portion being in fluid communication with the outlet of said boiler;

a load evaporator in heat exchanging relationshp for air conditioning, the load evaporator having an outlet portion connected to the suction inlet portion of the ejector; and



a blower having an inlet portion and an outlet portion, the inlet portion being in fluid communication with the outlet portion of the load evaporator and the outlet portion being in fluid communication with the suction inlet portion of the ejector.

4,523,438

APPARATUS FOR RECOVERY OF HEAT FROM FUMES IN A HEATING SYSTEM OR FROM THE AMBIENT AIR

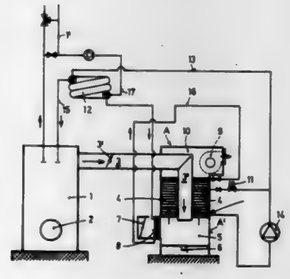
Paolo Curti, Via Belsoggiorno 7, 6500 Bellinzona, Switzerland

Filed Jul. 6, 1983, Ser. No. 511,196

Claims priority, application Switzerland, Jul. 21, 1982, 4436/82

Int. Cl.³ F25B *27/02*

U.S. Cl. 62—238.6 **2 Claims**



1. Apparatus for the recovery of heat from fumes in a heating system or from the ambient air, comprising a boiler with a burner for heating water, a flue for carrying fumes from the burner to a casing, the casing having a mixing chamber at its bottom and a collection chamber at its top and an evaporator between said mixing and collection chambers, a suction fan for removing gas from said collection chamber, said flue discharging said fumes into said mixing chamber, means to admit ambient air into said mixing chamber, a closed expansion-compression refrigeration cycle in heat exchange with said water and including said evaporator, the refrigerant in said closed refrigeration cycle passing downwardly through said evaporator in countercurrent with said fumes rising from said mixing chamber through said evaporator, and a heat exchanger through which said refrigerant passes to warm said ambient air as said ambient air enters said mixing chamber.

4,523,439

REFRIGERATED DISPLAY UNIT

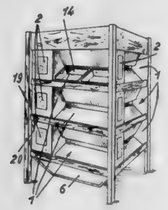
Bernard A. Denisot, Nogent-sur-Marne, France, assignor to Societe Laitiere de Veron, Savigny-le-Temple, France

Filed Dec. 14, 1983, Ser. No. 561,203

Claims priority, application France, Dec. 14, 1982, 82 20913; Nov. 14, 1983, 83 18010

Int. Cl.³ A47F *3/04*

U.S. Cl. 62—251 **21 Claims**



1. A refrigerated display case comprising:

(a) a framework comprising a plurality of first panels connected to each other to form a structure having a substantially polygonal cross-sectional area, each of said first panels being connected to an adjacent one of said first panels and having a portion extending beyond the point at which each said first panel is connected to an adjacent first panel, said framework further comprising a plurality of second panels, each of said second panels having one end which is connected to an extending portion of a respective one of said first panels, said framework defining a plurality of generally vertical refrigerated compartments, each of said compartments being defined by one of said first panels, one of said second panels, and an extended portion of a first panel other than said one first panel;

(b) a plurality of evaporators in each of said compartments, said plurality of evaporators being fluidically interconnected, at least one control valve being associated with each of said evaporators;

(c) a deflecting plate being positioned adjacent each of said evaporators;

(d) a plurality of generally vertically spaced shelves being positioned within each of said compartments; and

(e) a product container being positioned on each of said shelves and having a bottom surface spaced above each of said shelves.

4,523,440

REGULATING DEVICE FOR THE LENGTH OF THREAD ABSORBED BY A KNITTING MACHINE

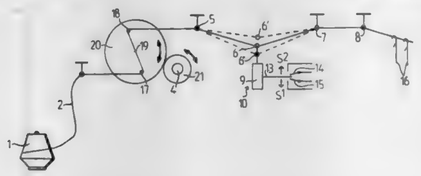
Eugène J. Voisin, Bouilly; Jean-Pierre A. Matthelié , La Chapelle St Luc, and Jacques A. Mesny, Longvilliers, all of France, assignors to Institut Textile de France, Boulogne-Billancourt, France

Filed Sep. 28, 1983, Ser. No. 536,770

Claims priority, application France, Oct. 8, 1982, 82 16934; Dec. 28, 1982, 82 21935

Int. Cl.³ D04B *15/44*

U.S. Cl. 66—146 **10 Claims**



1. A device for regulating the absorbed length of thread per mesh of a knitting machine and for correcting variations in tension of a thread supplying a textile machine comprising tensioning means comprising a movable member arranged to cause movement thereof to tension said thread, a reversible electric motor, means coupling said motor to said movable member to cause rotation of said motor to produce movement of said member, movable sensing means comprising a thread guide for receiving said thread and a mass weighing on said guide so that the thread guide exerts on the thread a force counterbalanced by the tension in the thread, variations in absorbed length of thread per mesh or in tension of said thread producing movement of said sensing means, first switch means responsive to movement of said sensing means in one way for energizing said motor to rotate in one direction and second switch means responsive to movement of said sensing means in the other way for energizing said motor to rotate in the reverse direction.

4,523,441

HANDLING OF TEXTILE YARN

George E. Braybrook, Thurmaston; David C. Corby, Cosby; Mark A. Shelton, Leicester, and William E. A. Shelton, Oadby, all of England, assignors to Alan Shelton Limited, Croft, England

Filed Nov. 22, 1983, Ser. No. 554,304

Int. Cl.³ D06B *3/06, 23/04*

U.S. Cl. 68—5 C **7 Claims**



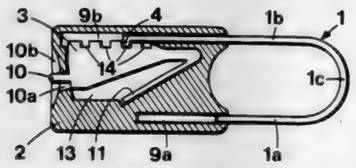
1. Yarn handling apparatus comprising a plurality of bobbin support rods with a yarn bobbin mounted upon each bobbin support rod, each yarn bobbin having an axial center line and yarn wound thereabout, enclosure means surrounding the plurality of bobbin support rods, means defining an air flow path through the enclosure means for directing air flowing along said air flow path to impinge on the yarn of said bobbins, means for introducing humidity into said air flow path so that the yarn being wound on said bobbins and being unwound therefrom is subjected to humidified air flow, said humidity introducing means including a sleeve member of fabric for providing a passageway for a portion of the air flow path, and water supply means supplying water to the fabric of the sleeve member to maintain the fabric in a moist condition despite evaporation therefrom into the air flowing along the air flow path, said bobbin support rods being mounted in pairs, said pairs of bobbin support rods being superimposed to form a number of side-by-side columns; said pair of bobbin support rods being arranged so that the axial center line of each bobbin of the apir of bobbins converges at a single yarn-receiving point, and so that a columnar space is formed between a bobbin of one pair of bobbins and a bobbin of an adjacent pair of bobbins, wherein the sleeve member is arranged so as to at least partially occupy said columnar space, said sleeve member having apertures therein, each of said apertures being located at least substantially adjacent to an appropriate one of said bobbins, and air supply means for providing air under pressure to the interior of the sleeve member so that air is forced through the apertures therein to impinge upon the bobbins.

4,523,442

KEY-HOLDER

Jack Martin, Geneva, Switzerland, assignor to Attilio Brentini, Ecublens, Switzerland

PCT No. PCT/CH81/00098, § 371 Date Apr. 22, 1982, § 102(e) Date Apr. 22, 1982, PCT Pub. No. WO82/00751, PCT Pub. Date Mar. 18, 1982
PCT Filed Aug. 28, 1981, Ser. No. 375,121
Claims priority, application France, Aug. 29, 1980, 80 18948
Int. Cl.³ A47G *29/10*
U.S. Cl. 70—459 **8 Claims**



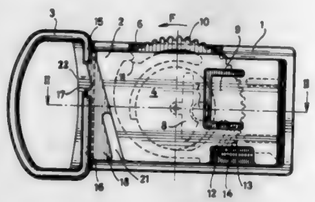
1. Key-holder, comprising a casing (2, 7, 7*a*) and a ring (1, 5, 6) for receiving the keys, characterized in that the ring (1) is mounted movable on the casing (2) between an open position and various closed positions where its length outside the casing is adjustable between a maximum and a minimum, and in that it comprises a mechanism (3, 11, 14, 4 FIG. 2; 15*a*, 15*b*, 16) for locking the ring on the casing in the one of those closed positions where it has been brought and for which its portion outside of the casing has a length appropriate to the number of the keys received, the key ring (1) is formed by a U-shaped part having two parallel branches (1*a*, 1*b*) of unequal length adapted to slide in corresponding grooves (9*a*, 9*b*) of the casing (2).

4,523,443

KEY KEEPER

Wilhelmus M. A. Momemers, 9 Bisschop Schrijnenstraat, 6041 XK Roermond, Netherlands

Filed Jun. 14, 1983, Ser. No. 504,329
Claims priority, application Netherlands, Jun. 21, 1982, 8202497
Int. Cl.³ A44B *15/00*; A47G *29/10*
U.S. Cl. 70—459 **7 Claims**



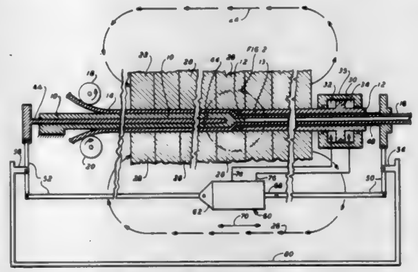
1. Key keeper comprising: a key-retaining loop with an opening for the receipt of keys, said loop being connected to a loop holder slideably mounted within a housing, the loop being closed in case the holder is slid into the housing, whereas said loop can be opened in case the holder is partially slid out of the housing, means for locking the holder in its slid-in position in the housing, the locking means comprising a locking member moveably disposed in the housing and which can be locked in said housing by at lease one snap connection, and means operatively connecting said loop holder and said locking member for sliding movement of said loop holder out of said housing upon movement of said locking member.

4,523,444

METHODS OF AND APPARATUS FOR CONTROLLING THE GAP BETWEEN A MANDREL AND DIE DURING EXTRUSION

Francis J. Fuchs, Jr., 593 104th Ave., Naples, Fla. 33940

Filed Dec. 13, 1982, Ser. No. 449,561
Int. Cl.³ B21C *31/00, 33/00, 51/00*
U.S. Cl. 72—21 **8 Claims**



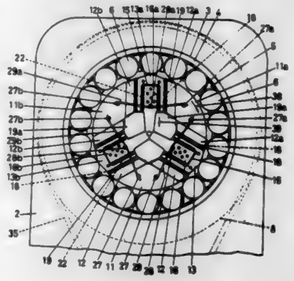
8. Method of controlling the gap between a mandrel and an extrusion die during extrusion, comprising the steps of:
detecting that the actual gap between the mandrel and die during extrusion is larger than a predetermined gap and causing relative movement between the mandrel and die to close the actual gap and establish the predetermined gap, and detecting that the actual gap between the mandrel and die during extrusion is smaller than the predetermined gap and causing relative movement between the mandrel and die to open the actual gap and establish the predetermined gap.

4,523,445

HOT WORKING METHOD AND APPARATUS IN THE SWAGING WORKING TECHNOLOGY

Keiichiro Yoshida, 641, Mobara, Mobara City, Chiba Prefecture, Japan

Filed Jan. 19, 1983, Ser. No. 459,243
Claims priority, application Japan, Jan. 26, 1982, 57-10472
Int. Cl.³ B21D *37/16*; B21J *7/16, 13/02*
U.S. Cl. 72—69 **10 Claims**



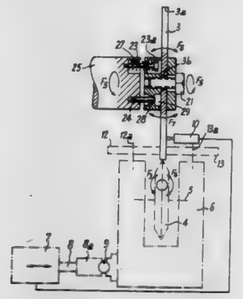
1. A swaging machine for carrying out hot working, comprising:
a housing having a central opening therethrough;
rollers rotatably mounted in said housing around the periphery of said central opening for rotation around their respective axes;
a rotor rotatably mounted in said opening and having a plurality of guide means with radially extending guide surfaces thereon;
a plurality of radially extending buckers on said rotor and having ball bearings between said buckers and said guide surfaces forming the only contact between said buckers and said guide surfaces, said buckers having cam surfaces on the radially outer ends for engagement with said rollers for periodically urging said buckers radially inwardly when said rotor is rotated;
a plurality of die members, one mounted on each of said buckers for radial movement therewith and having ball bearings between said bucker and said die member forming the only contact between said die member and said bucker, the ends of said die members protruding beyond the inner ends of said buckers and being exposed in the center of said opening;
biasing means for urging said die member and the corresponding bucker radially outwardly;
means connected to said rotor for rotating said rotor; and
heater means adjacent the inner ends of said die members for heating the inner ends of said die members.

4,523,446

MACHINE FOR THE DEEP SLITTING OF THE PERIPHERY OF NON PLANAR DISCS USED FOR PROVIDING WHEELS HAVING A PNEUMATIC TIRE

Roger Müller, Neuilly sur Seine, France, assignor to Elermetal, Paris, France

Filed Sep. 30, 1982, Ser. No. 432,092
Claims priority, application France, Dec. 29, 1981, 81 24389; Mar. 18, 1982, 82 04599
Int. Cl.³ B21H *1/02*
U.S. Cl. 72—71 **8 Claims**



1. A machine permitting deep slitting in the periphery of a non-planar disc to obtain a wheel provided for mounting a pneumatic tire thereon, comprising:
support means for rotatively supporting the disc;
slitting roller means positioned at the disc periphery for the deep slitting of the disc, said roller means having an axis of rotation; and
means for driving the slitting roller means, at least one of said support means and said driving means being carried by means for automatically compenstating for flatness irregularities of the disc said compensating means including means for oscillatably supporting said roller means about an axis normal to said axis of rotation.

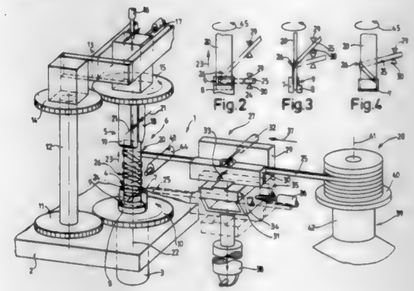
4,523,447

WIRE COILER

Walter Sticht, and Gerhard Schwankhart, both of Attnang, Austria, assignors to Stiwa-Fertigungstechnik Sticht Gesellschaft m.b.H., Attnang, Austria

Filed Sep. 13, 1983, Ser. No. 531,902
Claims priority, application Austria, Sep. 30, 1982, 3614/82
Int. Cl.³ B21F *3/04*
U.S. Cl. 72—144 **20 Claims**

1. A wire coiler comprising
(a) an elongated coil support,
(b) a gripping device holding the coil support for rotation therewith, the gripping device comprising
(1) two gripping elements spaced from each other in the direction of elongation of the coil support,
(c) a drive connected to the gripping device and common to the two gripping elements for rotating the gripping device, the drive having an axis extending parallel to the direction of elongation of the coil support,
(d) a control for the drive,
(e) a device for guiding and feeding the wire to the coil support,



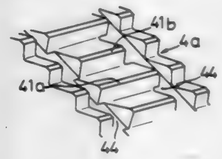
(f) an adjustment drive connected and responsive to the rotating drive control, the adjustment drive cooperating with the wire guiding and feeding device for adjustably positioning the same in directions parallel to the direction of elongation of the coil support and relative thereto, and
(g) another adjustment drive for adjustably positioning one of the gripping elements in relation to the other gripping element transversely said direction.

4,523,448

METHOD AND APPARATUS FOR CONTINUOUSLY PRODUCING A CORE MEMBER OF A TRIM

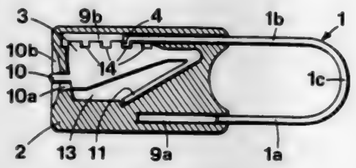
Hiromu Sakai, Aichi; Sazo Ezaki, Bisai, and Atsuo Kikuchi, Ichinomiya, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 495,492, May 17, 1983, abandoned, which is a continuation of Ser. No. 220,716, Dec. 29, 1980, abandoned. This application Oct. 11, 1983, Ser. No. 540,850
Claims priority, application Japan, Dec. 27, 1979, 54-172383
Int. Cl.³ B21D *31/02*
U.S. Cl. 72—185 **5 Claims**



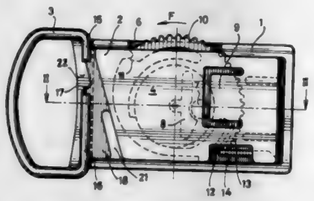
1. An apparatus for continuously producing a core member to be embedded within a trim, comprising:
a pair of slitting rolls for forming transversely extending slits in a band-shaped metallic plate at predetermined intervals in the longitudinal direction thereof, leaving at least one longitudinal extending unslit portion;
each of said slitting rolls having a plurality of teeth which are formed in the outer peripheral surface thereof at predetermined intervals in the longitudinal direction of said outer peripheral surface so as to extend in the width direction of said slitting rolls, leaving at least one predetermined untoothed portion;
each of said teeth being comprised of a land formed in a top

4,523,442
KEY-HOLDER
Jack Martin, Geneva, Switzerland, assignor to Attilio Brentini, Ecublens, Switzerland
PCT No. PCT/CH81/00098, § 371 Date Apr. 22, 1982, § 102(e) Date Apr. 22, 1982, PCT Pub. No. WO82/00751, PCT Pub. Date Mar. 18, 1982
PCT Filed Aug. 28, 1981, Ser. No. 375,121
Claims priority, application France, Aug. 29, 1980, 80 18948
Int. Cl.³ A47G *29/10*
U.S. Cl. 70—459 **8 Claims**



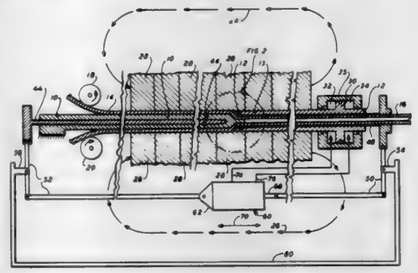
1. Key-holder, comprising a casing (2, 7, 7*a*) and a ring (1, 5, 6) for receiving the keys, characterized in that the ring (1) is mounted movable on the casing (2) between an open position and various closed positions where its length outside the casing is adjustable between a maximum and a minimum, and in that it comprises a mechanism (3, 11, 14, 4 FIG. 2; 15*a*, 15*b*, 16) for locking the ring on the casing in the one of those closed positions where it has been brought and for which its portion outside of the casing has a length appropriate to the number of the keys received, the key ring (1) is formed by a U-shaped part having two parallel branches (1*a*, 1*b*) of unequal length adapted to slide in corresponding grooves (9*a*, 9*b*) of the casing (2).

4,523,443
KEY KEEPER
Wilhelmus M. A. Momemers, 9 Bisschop Schrijnenstraat, 6041 XK Roermond, Netherlands
Filed Jun. 14, 1983, Ser. No. 504,329
Claims priority, application Netherlands, Jun. 21, 1982, 8202497
Int. Cl.³ A44B *15/00*; A47G *29/10*
U.S. Cl. 70—459 **7 Claims**



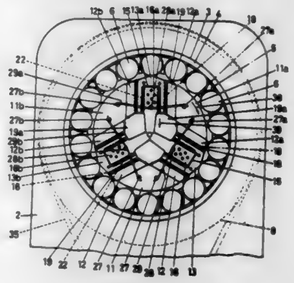
1. Key keeper comprising: a key-retaining loop with an opening for the receipt of keys, said loop being connected to a loop holder slideably mounted within a housing, the loop being closed in case the holder is slid into the housing, whereas said loop can be opened in case the holder is partially slid out of the housing, means for locking the holder in its slid-in position in the housing, the locking means comprising a locking member moveably disposed in the housing and which can be locked in said housing by at lease one snap connection, and means operatively connecting said loop holder and said locking member for sliding movement of said loop holder out of said housing upon movement of said locking member.

4,523,444
METHODS OF AND APPARATUS FOR CONTROLLING THE GAP BETWEEN A MANDREL AND DIE DURING EXTRUSION
Francis J. Fuchs, Jr., 593 104th Ave., Naples, Fla. 33940
Filed Dec. 13, 1982, Ser. No. 449,561
Int. Cl.³ B21C *31/00, 33/00, 51/00*
U.S. Cl. 72—21 **8 Claims**



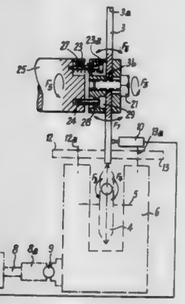
8. Method of controlling the gap between a mandrel and an extrusion die during extrusion, comprising the steps of:
detecting that the actual gap between the mandrel and die during extrusion is larger than a predetermined gap and causing relative movement between the mandrel and die to close the actual gap and establish the predetermined gap, and detecting that the actual gap between the mandrel and die during extrusion is smaller than the predetermined gap and causing relative movement between the mandrel and die to open the actual gap and establish the predetermined gap.

4,523,445
HOT WORKING METHOD AND APPARATUS IN THE SWAGING WORKING TECHNOLOGY
Keiichiro Yoshida, 641, Mobara, Mobara City, Chiba Prefecture, Japan
Filed Jan. 19, 1983, Ser. No. 459,243
Claims priority, application Japan, Jan. 26, 1982, 57-10472
Int. Cl.³ B21D *37/16*; B21J *7/16, 13/02*
U.S. Cl. 72—69 **10 Claims**



1. A swaging machine for carrying out hot working, comprising:
a housing having a central opening therethrough;
rollers rotatably mounted in said housing around the periphery of said central opening for rotation around their respective axes;
a rotor rotatably mounted in said opening and having a plurality of guide means with radially extending guide surfaces thereon;
a plurality of radially extending buckers on said rotor and having ball bearings between said buckers and said guide surfaces forming the only contact between said buckers and said guide surfaces, said buckers having cam surfaces on the radially outer ends for engagement with said rollers for periodically urging said buckers radially inwardly when said rotor is rotated;
a plurality of die members, one mounted on each of said buckers for radial movement therewith and having ball bearings between said bucker and said die member forming the only contact between said die member and said bucker, the ends of said die members protruding beyond the inner ends of said buckers and being exposed in the center of said opening;
biasing means for urging said die member and the corresponding bucker radially outwardly;
means connected to said rotor for rotating said rotor; and
heater means adjacent the inner ends of said die members for heating the inner ends of said die members.

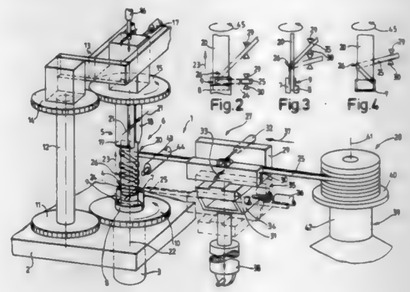
4,523,446
MACHINE FOR THE DEEP SLITTING OF THE PERIPHERY OF NON PLANAR DISCS USED FOR PROVIDING WHEELS HAVING A PNEUMATIC TIRE
Roger Müller, Neuilly sur Seine, France, assignor to Elermetal, Paris, France
Filed Sep. 30, 1982, Ser. No. 432,092
Claims priority, application France, Dec. 29, 1981, 81 24389; Mar. 18, 1982, 82 04599
Int. Cl.³ B21H *1/02*
U.S. Cl. 72—71 **8 Claims**



1. A machine permitting deep slitting in the periphery of a non-planar disc to obtain a wheel provided for mounting a pneumatic tire thereon, comprising:
support means for rotatively supporting the disc;
slitting roller means positioned at the disc periphery for the deep slitting of the disc, said roller means having an axis of rotation; and
means for driving the slitting roller means, at least one of said support means and said driving means being carried by means for automatically compenstating for flatness irregularities of the disc said compensating means including means for oscillatably supporting said roller means about an axis normal to said axis of rotation.

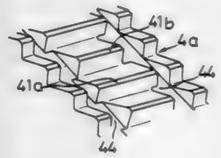
4,523,447
WIRE COILER
Walter Sticht, and Gerhard Schwankhart, both of Attnang, Austria, assignors to Stiwa-Fertigungstechnik Sticht Gesellschaft m.b.H., Attnang, Austria
Filed Sep. 13, 1983, Ser. No. 531,902
Claims priority, application Austria, Sep. 30, 1982, 3614/82
Int. Cl.³ B21F *3/04*
U.S. Cl. 72—144 **20 Claims**

1. A wire coiler comprising
(a) an elongated coil support,
(b) a gripping device holding the coil support for rotation therewith, the gripping device comprising
(1) two gripping elements spaced from each other in the direction of elongation of the coil support,
(c) a drive connected to the gripping device and common to the two gripping elements for rotating the gripping device, the drive having an axis extending parallel to the direction of elongation of the coil support,
(d) a control for the drive,
(e) a device for guiding and feeding the wire to the coil support,



(f) an adjustment drive connected and responsive to the rotating drive control, the adjustment drive cooperating with the wire guiding and feeding device for adjustably positioning the same in directions parallel to the direction of elongation of the coil support and relative thereto, and
(g) another adjustment drive for adjustably positioning one of the gripping elements in relation to the other gripping element transversely said direction.

4,523,448
METHOD AND APPARATUS FOR CONTINUOUSLY PRODUCING A CORE MEMBER OF A TRIM
Hiromu Sakai, Aichi; Sazo Ezaki, Bisai, and Atsuo Kikuchi, Ichinomiya, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan
Continuation of Ser. No. 495,492, May 17, 1983, abandoned, which is a continuation of Ser. No. 220,716, Dec. 29, 1980, abandoned. This application Oct. 11, 1983, Ser. No. 540,850
Claims priority, application Japan, Dec. 27, 1979, 54-172383
Int. Cl.³ B21D *31/02*
U.S. Cl. 72—185 **5 Claims**



1. An apparatus for continuously producing a core member to be embedded within a trim, comprising:
a pair of slitting rolls for forming transversely extending slits in a band-shaped metallic plate at predetermined intervals in the longitudinal direction thereof, leaving at least one longitudinal extending unslit portion;
each of said slitting rolls having a plurality of teeth which are formed in the outer peripheral surface thereof at predetermined intervals in the longitudinal direction of said outer peripheral surface so as to extend in the width direction of said slitting rolls, leaving at least one predetermined untoothed portion;
each of said teeth being comprised of a land formed in a top

surface thereof, a cutting edge formed in one end of said land and a heel formed in the other end of said land; and

one of said slitting rolls being positioned to rotate in such a direction that said heel on each of said teeth precedes said cutting edge and being shaped so that the cutting edge strikes against said band-shaped metallic plate in advance of said heel, the angle formed by said cutting edge and said land ranging from 60 degrees to 90 degrees and wherein said cutting edge deviates from the line connecting said cutting edge and the center of said slitting roll in a direction opposite to the rotating direction of said slitting roll;

a pair of elongating rolls for elongating said slit metallic plate in the longitudinal direction to form transversely extending slots from said slits;

at least one of said elongating rolls having at least one projection which is formed in the outer peripheral surface thereof in the longitudinal direction of said outer peripheral surface so as to be opposed to said unslit portion; and

a pair of finishing rolls for pressing said elongated metallic plate into a flat plate;

said finishing rolls having a smooth pressing surface, respectively.

4,523,449

GRIP-FEED MACHINES USED WITH STAMPING AND BENDING MACHINES

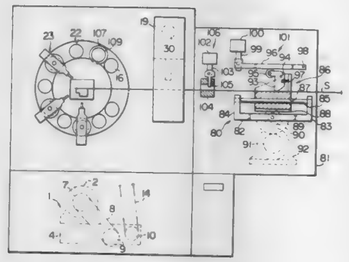
Yukinori Moriyama, and Tsukasa Ozaki, both of Iwakuni, Japan, assignors to Teijin Seiki Company Limited, Osaka, Japan

Filed Jul. 14, 1983, Ser. No. 513,862

Claims priority, application Japan, Jul. 19, 1982, 57-110027

Int. Cl.³ B21D *43/11, 43/13*

U.S. Cl. 72—421 **4 Claims**



1. A bending and grip-feed machine for gripping material in the form of strip, wire or the like and feeding the gripped material to said bending machine having a sun gear, comprising:

a guide bracket having a guide shaft received therein;

a cradle member movable axially forwardly and backwardly on and along said guide shaft and formed with a rack gear in parallel to said guide shaft;

a movable gripping mechanism cooperating with said cradle member for gripping the material and feeding the gripped material, in conjunction with said cradle member, while said cradle member is moving forwardly on and along said guide shaft;

a fixed gripping mechanism positioned along the path of travel of the material for gipping the material while said cradle member is moving backwardly on and along said guide shaft;

a pinion gear held in mesh with said rack gear of said cradle member;

a direct current servomotor connected to said pinion gear for driving said pinion gear;

control means for controlling numerically said servomotor to adjust movement of said cradle member and operating said movable gripping mechanism and said fixed gripping mechanism to controllably feed the material to the bending machine; and

an angular position detector having mounted thereon a detecting gear which is held in mesh with the sun gear of the bending machine for detecting the angular position of said detecting gear to produce a pulse signal indicative of the angular position of said detecting gear, said control means controlling numerically said servomotor to adjust movement of said cradle member and operating said movable gripping mechanism and said fixed gripping mechanism on the basis of said pulse signal.

4,523,450

METHOD OF CALIBRATING PROBE PINS ON MULTICOORDINATE MEASUREMENT MACHINES

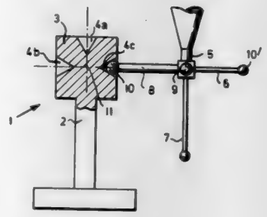
Klaus Herzog, Oberkochen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 420,104

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 8132664

Int. Cl.³ G01C *25/00*

U.S. Cl. 73—1 J **11 Claims**



1. A method of calibrating a probe having several probe pins with a probe ball at the end of each pin, wherein the probe is mounted to a self-centering probe-measurement system of a multicoordinate measurement machine, characterized by the fact that:

(a) a calibration standard which has several centering elements formed of surfaces which converge towards each other is fastened to the measurement machine, said centering elements being distributed over the standard and facing in different directions,

(b) the geometry of the centering elements (shape and distances apart) as determined by measurement is stored in the computer of the coordinate measurement machine, each centering element being imparted an identifier,

(c) the orientation of the calibration standard is determined relative to the coordinate system of the measurement machine,

(d) each of the balls of the various probe pins is introduced once in self-centering manner into a selected one of the centering elements,

(e) the diameters or identifiers of the probe balls or ball used and the identifiers of the associated centering elements are fed into the computer, and that thereupon,

(f) a program is called up which, on basis of the data and measurement values fed, computes the relative position of the center points of the probe balls with respect to each other.

4,523,451

HYDRAULIC PROXIMITY PROBE

Clark S. Boster, Whittier, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 17, 1983, Ser. No. 552,882

Int. Cl.³ G01B *13/12*

U.S. Cl. 73—37.6 **3 Claims**

1. Apparatus for detecting anomalies in the spacing of a surface of a rotatable body from a stationary part when said body rotates in a fluid medium surrounding said body, comprising:

at least a pair of probes circumferentially spaced from each other around the rotatable body, each probe being a hollow tube with at least a terminal end extending into said fluid medium and having said terminal end spaced a predetermined equal distance from the surface of said rotatable body;

said probes being free of connection with external fluid medium sources;

said rotatable body having a plurality of surface irregularities of like size and shape which are equally spaced from each other around the periphery thereof, said surface irregularities being located in a plane generally passing through the terminal ends of said probes;

said surface irregularities generating pressure change pulsations in said fluid medium surrounding said body as the body rotates therein;

said probes picking up said generated fluid medium pressure change pulsations which vary in amplitude depending upon the spacing of the surface of the rotating body and the adjacent end of a probe; and

means to translate said pulsations into signals indicitive of the spacing of the surface of the rotating body from the probes;

said probes transmitting said pulsations to said translating means.

4,523,452

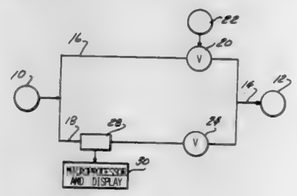
METHOD OF MEASURING LEAK RATES

Semyon Brayman, 28023 Berkshire, Southfield, Mich. 48076

Filed Apr. 23, 1984, Ser. No. 602,711

Int. Cl.³ G01M *3/26*

U.S. Cl. 73—40 **5 Claims**



1. A method of measuring leak rates from a cavity in test pieces of the same configuration, comprising the steps of:

placing the cavity of each of a series of sample test pieces in communication with a fluid pressure source to initiate a test cycle;

monitoring the flow rate to each of said cavities after placing each of said cavities in communication with said fluid pressure source;

determining the time after initiation of said test cycle when said flow rates become repeatable for successive test pieces;

measuring the flow rate from said fluid pressure source to said cavity at a predetermined time after initiating of said test cycle, after said time determined to produce repeatable flow rates, but prior to the achievement of steady state flow conditions, for two sample test pieces having differing effective leak rates;

determining the corresponding steady state flow rates for said two sample test pieces;

generating a calibration function of the form:

$$y = A + Bx$$

where y is the steady state flow rate to a test piece cavity placed in communication with a fluid pressure source, x is the flow rate measured at an earlier time in the test cycle, and A and B are constants calculated from the testing of the two sample test pieces;

placing the cavities of successive test pieces in communication with said fluid pressure source;

measuring the flow rate to said cavities at said predetermined time in said test cycle;

converting said measured flow rates into corresponding steady state flow rates by application of said calibration function to determine the leak rates from said cavities, whereby said test cycle for determining said leak rates is shortened by measuring said flow rates at said predetermined time.

4,523,453

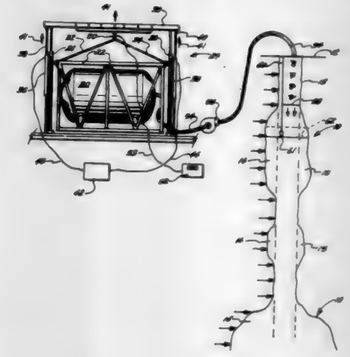
METHOD FOR DETERMINING BOREHOLE OR CAVITY CONFIGURATION THROUGH INERT GAS INTERFACE

Donald Faul, Sunset; Paul P. Broussard, Lafayette, and Donald W. Granger, Lake Charles, all of La., assignors to Testrac, Inc., Lake Charles, La.

Continuation-in-part of Ser. No. 390,321, Jun. 21, 1982, Pat. No. 4,455,869. This application Apr. 11, 1984, Ser. No. 599,290

Int. Cl.³ G01M *3/00*

U.S. Cl. 73—40.7 **12 Claims**



1. A method of detecting leakage within a borehole or cavity, comprising the following steps:

a. providing a first fluid in said borehole;

b. providing a second relatively inert fluid;

c. delivering a known weight of said second fluid under a known pressure and temperature down the borehole or cavity wherein leakage can be detected;

d. monitoring the change of weight of said measured fluid between certain measured intervals within said cavity;

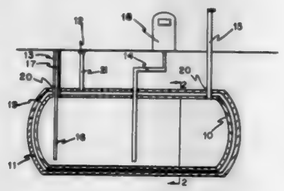
e. determining the area occupied by said fluid within each of said intervals as a function of said weight change within each of said intervals;

f. establishing the static position of the inert gas interface within the borehole;

g. monitoring the movement of said interface over a given period of time; and

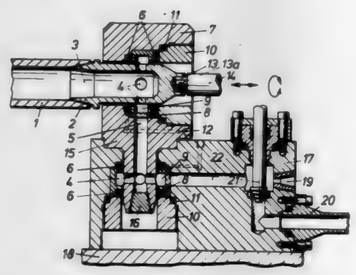
h. determining the amount and location of leakage of said second fluid from the relative movement of said interface within one or more measured intervals.

4,523,454
EXTERNAL JACKET SYSTEM AS SECONDARY CONTAINMENT FOR STORAGE TANKS
Bruce R. Sharp, 4090 Rose Hill Ave., Cincinnati, Ohio 45229
Filed Oct. 21, 1983, Ser. No. 544,013
Int. Cl.³ G01M *3/32*
U.S. Cl. 73—49.2 **21 Claims**



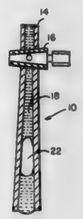
1. An underground storage tank system for liquids having secondary containment capability and leakage detection capability utilizing detecting fluid, comprising:
(a) a rigid inner tank for storing the liquid, having fill pipe and dispensing line;
(b) a flexible jacket encasing the inner tank so as to form a closed space between the tank and the jacket; and
(c) detecting means associated with the closed space between the inner tank and the flexible jacket for detecting leakage into or from either of said tank and jacket wherein the detecting means comprises a standpipe which extends from the flexible jacket to a point of observation and detecting fluid which fills the space between the tank and jacket such that any change in the level or color of the fluid occupying the closed space is readily observed through a sight glass associated with the standpipe.

4,523,455
TUBE TESTING PRESSES
Theodor Zacharias, Meerbusch, Fed. Rep. of Germany, assignor to Kocks Technik GmbH & Co., Hilden, Fed. Rep. of Germany
Filed Sep. 12, 1983, Ser. No. 530,963
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243201
Int. Cl.³ G01M *3/28*
U.S. Cl. 73—49.5 **5 Claims**



1. Press for testing tubes provided with threaded ends by means of internal pressure comprising end pieces having threads at one end adapted to be screwed pressure medium-tight on the tube ends, a press body, sealing heads on the press body, said end pieces having outer surfaces at the end opposite the threaded end on which axially spaced seals inserted in the sealing head lie in a pressure medium-tight manner, the end pieces having cap-like axial boreholes closed on the end opposite the threaded end and having at least one essentially radial connecting borehole in said end opposite the threaded end connected to the axial borehole, said radial bore hole empties between two seals arranged with an axial spacing in the sealing heads in the zone of a pressure medium feed or drain line.

4,523,456
DETERMINATION OF SURFACE AND INTERFACIAL TENSION
Malcolm H. I. Baird, Dundas, and Inderjit Nirdosh, Thunder Bay, both of Canada, assignors to University of Waterloo, Waterloo, Canada
Filed May 28, 1982, Ser. No. 383,287
Int. Cl.³ G01N *13/02*
U.S. Cl. 73—64.4 **10 Claims**



1. A method of determining the surface tension of a test liquid, which comprises:
(a) calibrating a narrow elongate tube which has a bore which tapers uniformly from an open lower end to a closable upper end to determine a calibration constant (K) for that tube based on a liquid of known surface tension value by effecting the following sequence of steps (b) to (e) for said liquid of known surface tension value in place of the test liquid;
(b) filling said tube with a continuous phase of the test liquid and closing the upper end of the tube to prevent the test liquid from draining from the lower open end of the tube;
(c) injecting a bubble of air into the lower end of the tube;
(d) permitting said bubble to rise under the influence of capillary forces to an equilibrium point above which the bubble does not rise as a result of a balance of gravitational and capillary forces thereon; and
(e) calculating the surface tension of the test liquid from the relationship:

$$\sigma = \frac{\rho g d_o^2}{K} \quad (I)$$

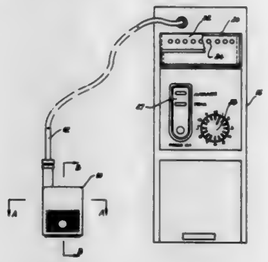
wherein σ is the surface tension of the test liquid, ρ is the density of the test liquid, g is the gravitational constant, d_o is the diameter of the tube at the equilibrium point and K is the calibration constant.

4,523,457
ROTATIONAL SPEED MEASURING DEVICE WITH ECONOMY FIELD
Ulrich Bayer, Stuttgart, and Siegfried Ochs, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Filed Aug. 2, 1983, Ser. No. 519,740
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1982, 3229065
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—114 **2 Claims**
1. An installation for indicating fuel consumption, comprising sensor means for the position of a drive pedal and storage means in which are stored a set of characteristic fuel consumption-engine rotational speed curves dependent on drive pedal position,
said installation including a tachometer means having a predetermined number of at least single-color light means, each of which is coordinated to a predetermined engine



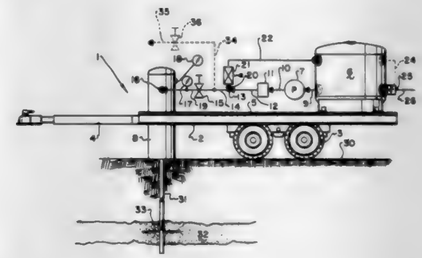
rotational speed-partial range for indicating information about the specific fuel consumption as a function of the drive pedal position within this engine rotational speed-partial range corresponding to the stored characteristic curves, said light means being integrated into a dial of the tachometer means in a manner corresponding with the coordination thereof to the predetermined engine rotational speed-partial ranges.

4,523,458
INJECTOR TESTER
Kelvin J. Daniel, Gladesville, Australia, assignor to Keldan Industries Limited, New South Wales, Australia
PCT No. PCT/AU82/00192, § 371 Date Jul. 25, 1983, § 102(e) Date Jul. 25, 1983, PCT Pub. No. WO83/01814, PCT Pub. Date May 26, 1983
PCT Filed Nov. 22, 1982, Ser. No. 522,167
Claims priority, application Australia, Nov. 26, 1981, PF/1712; Nov. 26, 1981, PF/1713
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 A **8 Claims**



1. Apparatus for testing a fuel injector, said apparatus comprising a transducer adapted to be placed on said fuel injector to convert mechanical impulses to electrical signals, electronic processing means connected to the output of said transducer and comprising an amplitude detecting circuit for detecting the amplitude of the received electrical signals, and display means connected to the output of said amplitude detecting circuit providing a display proportional to the detected amplitude, wherein the transducer comprises a piezo-electric crystal sandwiched between two magnetic members.

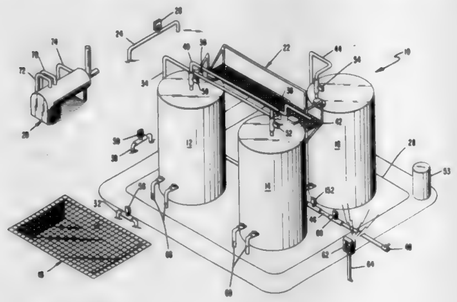
4,523,459
METHOD FOR PERFORMING STEP RATE TESTS ON INJECTION WELLS
Joe R. Hastings, Midland, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Mar. 9, 1984, Ser. No. 588,023
Int. Cl.³ E21B *47/10, 43/26*
U.S. Cl. 73—155 **4 Claims**



1. In a method for performing a step rate test on an injection well, wherein water from a water supply conduit is injected into said injection well to drive petroleum materials through a subterranean geologic formation toward a production well, and wherein said step rate test comprises connecting a portable pumping unit having a pump and water storage tank into said water supply conduit so that injection water from said supply conduit can be collected in said tank and the pressure of the injection water supplied to said injection well from said tank can be increased as desired by operation of said portable pump in order to carry out said step rate test, the improvement comprising collecting injection water from said supply conduit in said tank, withdrawing water from said tank through said portable pump to increase the pressure of said water to a first predetermined level, delivering the thus pressurized water outflow from said portable pump into said injection well for injection into said geologic formation while monitoring the flow rate and injection pressure of said pressurized water until the flow rate and injection pressure become essentially constant, maintaining said pressurized water at said first predetermined level while continuously separating a portion of said portable pump pressurized water outflow from the main stream thereof and returning said separated portion to said tank, repeating the above-described water pressurization and injection procedure at different predetermined pressure levels below and above the fracture pressure of said formation and determining the fracture pressure of said formation therefrom.

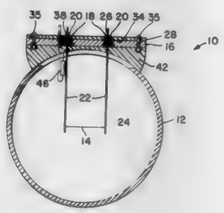
4,523,460
FLUID MEASURING, TESTING AND ACCOUNTING SYSTEM
Steven E. Strickler, Jamestown; Jerry C. Simmons, Broomfield, both of Colo.; James Golladay, Jackson, Wyo., and Andrew D. Goldstein, Boulder, Colo., assignors to Montech Systems Incorporated, Boulder, Colo.
Filed Dec. 6, 1983, Ser. No. 558,594
Int. Cl.³ G01F *15/02, 15/06, 15/08, 23/00*
U.S. Cl. 73—200 **28 Claims**
1. A measuring, testing and accounting system for use in conjunction with a tank battery, said tank battery including:
(a) a liquid separator for separating a liquid mixture into at least two constituent liquids;
(b) at least one tank for one of the constituent liquids;
(c) conduit means connecting said liquid separator with said at least one tank;
(d) outlet pipe means extending from said at least one tank; and
(e) valve means in said outlet pipe means for controlling fluid flow through said outlet pipe means; said system comprising:

(a) level sensor means located in said at least one tank for detecting the level of fluid therein;
(b) temperature sensor means located in said outlet pipe means for determining the temperature of fluid in said outlet pipe means;
(c) basic sediments and water sensor means located in said



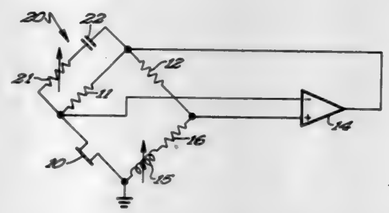
outlet pipe means for determining the purity of fluid in said outlet pipe means; and
(d) self-powered master control unit means operable on a real time basis and connected to said level, temperature and basic sediments and water sensor means and receiving signals therefrom so as to enable the monitoring of said tank battery on site.

4,523,461
HOT WIRE ANEMOMETER
Dennis W. Watkins, King County, Wash., assignor to Air Sensors, Inc., Seattle, Wash.
Filed May 2, 1983, Ser. No. 490,560
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **11 Claims**



9. An electronic anemometer for measuring air mass flow in a conduit, comprising:
a length of temperature-dependent resistive wire;
a circuit board for holding at least a portion of the anemometer electronic circuitry;
a rigid support member, said circuit board being attached to said member and mountable on the exterior of the conduit; and
a pair of electrically conductive, resilient posts capable of withstanding the elevated operating temperatures encountered when the anemometer is operating, each of said posts having a wire-supporting end portion fixedly connected to said wire, said end portions being spaced apart and positionable in the conduit, and biased away from each other to hold said wire under tension, each of said posts further having a remote end portion extendable through an opening in the conduit wall and fixedly held by said support member, said remote end portions being electrically connected to the electronic circuitry.

4,523,462
CONSTANT TEMPERATURE ANEMOMETER HAVING AN ENHANCED FREQUENCY RESPONSE
Kenneth J. Kolodjski, Minneapolis, Minn., assignor to TSI Incorporated, St. Paul, Minn.
Filed May 16, 1983, Ser. No. 495,087
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **7 Claims**



1. In a constant temperature anemometer of the type having bridge circuit means, including sensor element means in one leg thereof, and having feedback circuit means operatively connected to said bridge circuit means, the improvement for enhancing anemometer frequency response which comprises means connected in shunt across a leg of said bridge circuit means for providing a frequency dependent impedance of the leg shunted by said means.

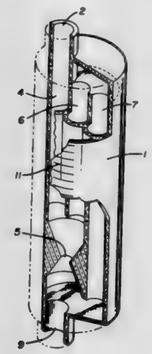
4,523,463
ELECTRONIC AIR FILTERING APPARATUS
George H. Fathauer, Mesa, Ariz.; James M. Fowler, Jr., Houston, Tex.; Edward J. Rylicki, Powell, and Edwin E. Mason, Rockbridge, both of Ohio, assignors to Masco Corporation of Indiana, Taylor, Mich.
Division of Ser. No. 285,417, Jul. 22, 1981, Pat. No. 4,410,934.
This application Aug. 12, 1983, Ser. No. 522,819
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **3 Claims**



1. An air flow sensing probe for use with apparatus including air treating means installed adjacent an end of an air flow duct and electrical control means for control of said air treating means, comprising: sensing means for developing an electrical signal proportional to air flow and including a first thermistor element having lead wires extending therefrom and forming a first sensor element having an electrical characteristic changeable as a function of air flow velocity, a probe housing including an elongated tubular sensor element support portion, a plug inserted into one end of said support portion and forming support means supporting said first sensor element to project through said lead wires from said one end of said support portion, said housing further including a base portion at the opposite end of said tubular support portion, said tubular portion with said first sensor element supported therein being arranged for insertion through an opening in a wall of said duct to engage said base portion with an outer surface portion of

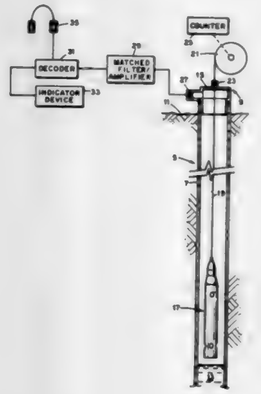
said wall about said opening and support said first sensor element in the path of air flow in said duct at a position spaced inwardly a substantial distance from the inner surface of said duct wall and also spaced a substantial distance from said end of said duct and from said air treating means, said sensing means further including a second thermistor element forming a second sensor element having characteristics like those of the first sensor element, said second sensor element being supported at a protected position within said elongated tubular portion to be insensitive to air flow velocity within said duct, a cable connected to said base portion at said opposite end of said probe housing for connection of said sensing means to said electrical control means, mating connectors supported within said plug and connected to said lead wires, and wires within said tubular portion connected to said cable and to said second sensor element and through said mating connectors to said first sensor element with said first and second sensor elements being connected in a bridge configuration to produce an electrical signal which changes as a function of air flow velocity and which is substantially independent of changes in variables other than air flow velocity.

4,523,464
FLOWMETER WITH NO MOVING PARTS
David R. Pedersen, and Curtis M. Tong, both of Antioch, Calif., assignors to The Dow Chemical Company, Midland, Mich.
Filed Oct. 13, 1983, Ser. No. 541,499
Int. Cl.³ G01F *1/20*
U.S. Cl. 73—216 **9 Claims**



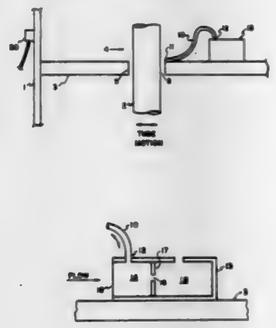
1. A device for measuring the flow of liquid through a pipe or conduit normally partially full of the liquid comprising:
(a) a housing;
(b) a liquid inlet into the housing communicating with the upper portion of a first, generally vertically-disposed chamber, said inlet being connected to a pipe or conduit normally partially full of liquid;
(c) said first chamber communicating in its lower region with a constricted orifice communicating in turn wit a liquid outlet;
(d) said first chamber also communicating with a second chamber in a region above the orifice;
(e) said orifice and first and second chambers being sized and disposed so that the height of liquid in the second chamber is proportional to the rate of flow of the liquid through the pipe or conduit;
(f) said second chamber having at least one generally vertical section below the point at which theliquid inlet communicates with the first chamber but above the orifice, said section constituting a flow measurement zone;
(g) said second chamber communicating with an outlet from the housing at a point above the flow measurement zone;
(h) a means for determining the height of the liquid in the flow measurement zone; and
(i) a means for relating the height of liquid in the flow measurment zone to the liquid flow rate through the pipe or conduit.

4,523,465
WIRELESS REMOTE LIQUID LEVEL DETECTOR AND INDICATOR FOR WELL TESTING
George E. Fasching, Morgantown, W. Va.; Donald M. Evans, Point Marion, Pa., and John H. Ernest, Morgantown, W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jan. 9, 1984, Ser. No. 569,087
Int. Cl.³ G01F *23/22*; G08B *21/00*
U.S. Cl. 73—290 V **5 Claims**



1. A liquid level measuring system for use in measuring the liquid level in a well including a bore hole extending from a well head at the earth's surface to a subterranean liquid reservoir and a casing in said bore hole, comprising:
an electrically conductive sensing probe housing adapted to be lowered into said well, said housing including a sealed chamber;
a conductivity sensing probe insulatably carried by said housing to sense electrical conduction through said liquid between said probe and said housing when said probe housing is lowered to the liquid level in said well;
a pulse generating means disposed in said sealed chamber for generating excitation pulses of a preselected pattern;
a gate circuit means disposed in said sealed chamber and responsive to conduction through said sensing probe for gating said excitation pulses to an output thereof at the onset of conduction through said probe;
an acoustic transmitter means carried by said housing for generating acoustic signals which propagate up said well in response to said excitation pulses;
an acoustic receiver means disposed at said well head for receiving said acoustic signals and generating an indicating signal in response to the reception of said acoustic signals; and
a wire line reel assembly including a footage indicator and having a wire line attached to said sensing probe housing for lowering said sensing probe housing into said well to provide a depth indication of said liquid level at the indication of reception of said acoustic signal by said receiving means.

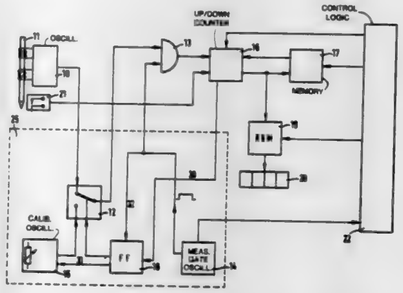
4,523,466
ACOUSTIC MONITORING OF TUBE VIBRATION
Barry T. Lubin, Hartford, and James P. Thompson, Suffield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Oct. 31, 1983, Ser. No. 546,773
Int. Cl.³ G05D *19/00*
U.S. Cl. 73—579 **5 Claims**



1. A system for detecting a predetermined frequency of vibration by a tube subjected to fluid forces, including,
a tube,
a fluid flowing over the external surface of the tube at a velocity which forces the tube to vibrate at a predetermined frequency,
a support structure for the tube extending generally transverse the tube axis and providing a hole through which the tube extends with a space between the external wall of the tube and the sides of the hole through the support structure,
a leakage flow of the fluid through the space between the external wall of the tube and the hole sides,
a tube-conduit mounted to extend its first open end to the leakage space and receiving the fluid pressure variations through the first opening and up the length of the tube-conduit,
an acoustic generator communicating with the second end of the tube-conduit to receive the fluid pressure variations and transduce the pressure variations into an acoustic signal output, and
a detector-receiver mounted external the tube environment and positioned to receive the acoustic signal as representative of the predetermined vibration frequency of the tube.

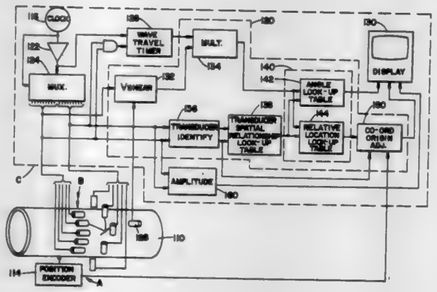
4,523,467
METHOD AND APPARATUS FOR RESONANT SENSING DEVICE
Rolf Diederichs, Erftstadt-Blisesheim, and Klaus Volkmann, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Krautkramer-Branson, Inc., Lewistown, Pa.
Filed Jun. 6, 1984, Ser. No. 617,921
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329690
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—573 **5 Claims**

1. A method for testing the hardness of a workpiece by the contact impedance method using an oscillating rod excited at its natural resonant frequency wherein the oscillations of the not-constrained rod are counted during a first time interval and the oscillations of the constrained rod, when in forced contact with the workpiece, are counted during a second time interval having the same duration as said first interval and the difference in counts is converted to a corresponding hardness value, the improvement comprising:
counting the oscillations of said rod when coupled to the workpiece beginning with the start of said second time interval only until the difference between the count during said second time interval and the count of the oscillations of the not-constrained rod during said first time interval becomes zero, and



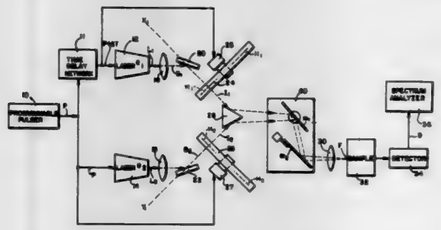
during the remainder of said second time interval counting the number of oscillations obtained from an adjustable frequency oscillator.

4,523,468
PHASED ARRAY INSPECTION OF CYLINDRICAL OBJECTS
Thomas Derkacs, Mayfield Village; Istvan M. Matay, North Royalton; Stephan D. Murphy, East Cleveland, and John Touhalisky, Eastlake, all of Ohio, assignors to TRW Inc., Cleveland, Ohio
Filed Oct. 3, 1983, Ser. No. 538,627
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—598 **16 Claims**



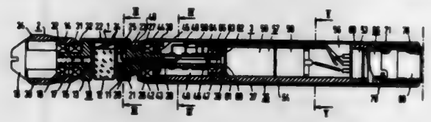
1. A method of ultrasonically locating defects in an examined object with a first transducer array including a plurality of transducers for generating ultrasonic shear waves along the examined object in a first transmission direction and for receiving reflected ultrasonic wave components from the examined object and a second transducer array for transmitting ultrasonic shear waves along the examined object in a second transmission direction and receiving reflected ultrasonic wave components from the examined object, the method comprising:
(a) actuating at least one transducer of the first and second arrays to transmit an ultrasonic shear wave along the examined object and causing the remaining transducers of the first and second arrays to assume a reflected component receiving mode;
(b) measuring an ultrasonic wave travel time between transmission of an ultrasonic wave by a transmitting transducer and receipt of a reflected component by a receiving transducer;
(c) determining the spatial relationship between the transmitting transducer and the receiving transducer;
(d) determining the location of the defect flaw from the measured travel time and the relative spatial relationship of the transmitting and receiving transducers; and,
(e) repeating steps (a)–(d) with other transducers of the first and second arrays.

4,523,469
LASER GENERATION OF ULTRASONIC WAVEFORM RECONSTRUCTIONS
William R. Scott, Doylestown, Pa., and Charles S. Ih, Newark, Del., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 19, 1983, Ser. No. 459,073
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—603 **7 Claims**



1. Apparatus for nondestructive testing of a material by ultrasonic signal reconstructions comprising:
a signal generator for providing pulses of programmable width, rise time, amplitude and repetition rate;
first laser means connected to receive the pulse for providing a first holographic beam;
second laser means connected to receive the pulses for providing a second holographic beam, the first beam being delayed a predetermined increment of time after the second beam;
focus means positioned to receive the first and second beams for producing a coincident image of the first and second beams on the surface of the material; and
output means positioned to detect the ultrasonic signal eminating from the material in response to the image and provide a frequency spectrum of the signal indicative of the defect geometry of the material.

4,523,470
PROBE FOR THE NONDESTRUCTIVE TESTING OF CYLINDRICAL CAVITIES, ESPECIALLY OF STEAM GENERATOR TUBES
Thomas Müller; Günter Lehner, both of Erlangen, and Georg Gugel, Kalchreuth, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany
Filed Jan. 28, 1983, Ser. No. 462,047
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202931; Jan. 29, 1982, 3202877; Jan. 29, 1982, 8202241[U]; Jan. 29, 1982, 3202977; Jan. 29, 1982, 8202128[U]
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—623 **10 Claims**



1. Probe for the nondestructive testing of cylindrical cavities, comprising a rotatable testing head, an outwardly cylindrical housing supporting said testing head, a motor disposed in said housing for driving said testing head, a shell body being surrounded by said housing and being in the form of a semi-cylindrical part with a relatively smaller diameter portion in vicinity of said motor, a tube sealing said shell body in vicinity of said motor, a shaft for said motor, a housing for said motor having a stub surrounding said motor shaft, and a cross piece extending transversely to said cylindrical housing being integral with said shell body, said cross piece having a cylindrical bore hole formed therein, and said stub being inserted into said bore hole for securing said motor in a definite position.

4,523,471
COMPOSITE TRANSDUCER STRUCTURE
Paul P. Lee, Littleton, Colo., assignor to Biosound, Inc., Indianapolis, Ind.
Filed Sep. 28, 1982, Ser. No. 425,216
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—626 **5 Claims**

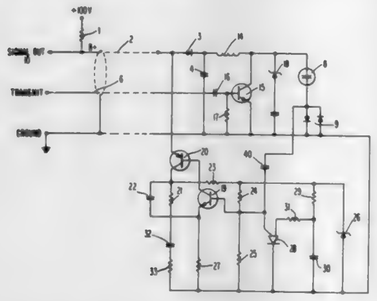


1. An ultrasonic transducer comprising:
means for transmitting an ultrasonic energy pulse beam into an object region, said transmitting means including a first plurality of transducer elements, each of which is constructed of a material which is sensitive to ultrasonic energy and is higher in transmit sensitivity than receive sensitivity;
means for receiving an echo pulse beam produced by said transmitting means and reflected from said object region, said receiving means including a second plurality of transducer elements, each of which is constructed of a material which is sensitive to ultrasonic energy and is higher in receive sensitivity than transmit sensitivity;
means mounting transducer elements for the first plurality alternately with and laterally arranged relative to the transducer elements of the second plurality; and
said transducer elements of said first plurality of transducer elements being fabricated of a material which is about fifty-three percent lead zirconate and about forty-seven percent lead titinate doped with lanthanum oxide and said transducer elements of said second plurality of transducer elements is fabricated of a material which is about sixty-five percent lead zirconate and about thirty-five percent lead titinate doped with niobium oxide.

4,523,472
ULTRASONIC TRANSCEIVER CIRCUIT
Frederick K. Blades, Boulder, Colo., assignor to PureCycle Corporation
Division of Ser. No. 165,253, Jul. 2, 1980, Pat. No. 4,400,976. This application Aug. 8, 1983, Ser. No. 521,444
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—632 **13 Claims**

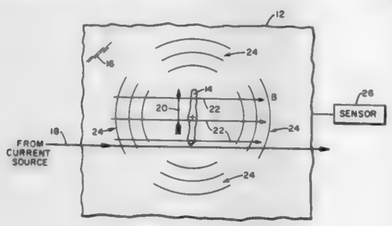
1. A transceiver comprising:
receiver means for receiving a signal;
means for emitting an ultrasonic pulse in response to a received signal;
electrostatic transducer means for detecting a reflected ultrasonic pulse;

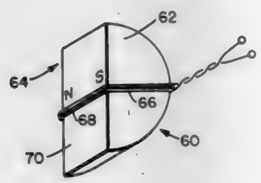
amplifier means for amplifying a detected pulse;
transmitter means for transmitting the amplified pulse;
means adapted to be connected to a power supply line for storing energy;
means for disconnecting said means for storing energy from said power supply line such that said stored energy may be supplied in a substantially noise-free manner to said electrostatic transducer for biasing said electrostatic transducer for detecting said pulse;



means for operating said transceiver in a first quiescent mode during which energy is stored in said means for storing energy and in a second active mode during which said stored energy is supplied to said electrostatic transducer for biasing it; and
means for making the transition between said first and second modes of operation upon receipt of said signal by receiver means.

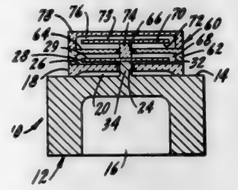
4,523,473
MAGNETO-ELASTIC MATERIAL DEFECT DETECTOR
Jacques R. Chamuel, Framingham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.
Filed Aug. 8, 1983, Ser. No. 521,327
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—643 **26 Claims**





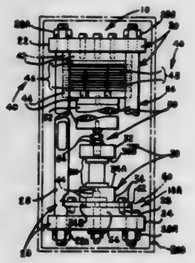
1. Apparatus for dark-field electromagnetic-acoustic detection of defects in a conductive material, comprising:
means for creating an electric current along a path in said material that diverts from said path in the vicinity of any defect present in said material along said path;
means for generating an acoustic wave within said material only in response to said current that diverts from said path in the vicinity of a material defect in such a way that the acoustic wave originates exclusively in the vicinity of the material defect but not in regions of the material free from defects; and
means for detecting the acoustic wave to provide an indication of the presence of said defect.

4,523,474
CAPACITIVE PRESSURE SENSOR
Vance d'A Browne, Arlington Heights, and George E. Kochanek, Glen Ellyn, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Aug. 12, 1983, Ser. No. 522,776
Int. Cl.³ G01L *7/08, 9/12;* H01G *7/00*
U.S. Cl. 73—724 **2 Claims**



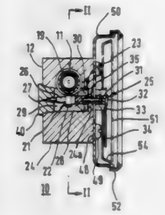
2. A capacitive sensor for use in the measurement of pressure in a fluid medium, comprising:
a flexible diaphragm defining a reference surface, side walls and a pressure chamber, which reference surface is deflectable in response to a force acting in said pressure chamber;
a first fixed plate having outer leg portions or an annular ring and defining a port and an outer surface which outer leg portions are mounted on said side walls at said reference surface;
said first fixed plate and said diaphragm reference surface cooperating to define a cavity to accommodate any deformation of the diaphragm reference surface;
a second fixed plate having second plate outer leg portions or second plate annular ring to contact said first fixed plate outer leg portions or annular ring, which first fixed plate and second fixed plate cooperate to define a second cavity, and further said second fixed plate defining a rod port and a top surface;
a final fixed plate having an annular ring to contact said second fixed plate outer leg portion or annular ring which final fixed plate and said second fixed plate cooperate to define a sealed cavity therebetween;
a first movable plate positioned and operable in said second cavity and having a wall with a lower surface substantially parallel with said first fixed plate outer surface;
a second movable plate positioned and operable in said sealed cavity and having a wall with a bottom surface substantially parallel with said second plate top surface;
a rod member extending through said first fixed plate port to contact both said first movable plate and said flexible diaphragm reference surface and operable to displace said first movable plate as the diaphragm reference surface is displaced;
a second rod member extending through said second fixed plate rod port to contact both said first movable plate and said second movable plate and operable to displace said second movable plate as said first movable plate is displaced;
a capacitive member with electrode means including a first electrode affixed to both said first fixed plate outer surface and a similar first electrode positioned on said second fixed plate top surface, and a second electrode affixed to said first movable plate lower surface and a similar second electrode affixed to said second movable plate bottom surface, which first and second electrode pairs respectively, cooperate to effect a change in capacitance of the capacitive member as the diaphragm reference surface deflects to move said first and second movable plates.

4,523,475
SIMULTANEOUS INCREMENTAL STRAIN/INCREMENTAL TEMPERATURE ANALOG DEVICE FOR, AND METHOD, OF TESTING FOR STRESS RESPONSE
Kenneth W. Bills, Jr., Sacramento, and Gerald J. Svob, Fair Oaks, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Sep. 19, 1983, Ser. No. 533,330
Int. Cl.³ G01N *3/00*
U.S. Cl. 73—781 **22 Claims**



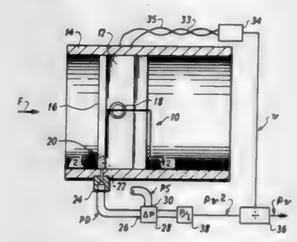
1. A simultaneous incremental strain/incremental temperature analog device for use with a test specimen, and for use with a means for subjecting said analog device, with said test specimen mounted therein, to a preselected temperature, said analog device comprising:
a. a frame assembly, said frame assembly including a top support plate-like member, a bottom support plate-like member, means, interposed between said top and bottom support plate-like members, for maintaining said support plate-like members in an aligned, spaced-apart, parallel relationship;
b. means, operably associated with and disposed within said frame assembly, for mounting said test specimen;
c. means, operably associated with and disposed within said frame assembly, for permitting the application of a thermally induced axial compressive or tensile load to said test specimen when said specimen is mounted, whereby said mounted specimen can be loaded, stressed, and strained; and
d. means, operably associated with said test specimen when said specimen is mounted, for measuring said thermally induced axial compressive or tensile load applied to said mounted specimen;
whereby, when said test specimen is mounted in said analog device, and when said analog device and said test specimen mounted therein are subjected to said preselected temperature, the stress response of said mounted test specimen to the thermally induced axial compressive or tensile load conditions caused by said preselected temperature, can be ascertained and evaluated.

4,523,476
PRESSURE TRANSDUCER
Donald A. Larner, Kingston-Upon-Thames, England, assignor to Fluid Devices Limited, England
Filed Mar. 1, 1984, Ser. No. 585,143
Claims priority, application United Kingdom, Mar. 3, 1983, 8305927
Int. Cl.³ G01L *7/16*
U.S. Cl. 73—744 **9 Claims**



1. A pressure transducer comprising a housing provided with a cylindrical passage therein and a pressure connection at one end of the passage, a substantially cylindrical member arranged in said passage so as to be longitudinally slidable therein, with sealing means between said member and the passage, so that pressure applied at said one end of the passage via said pressure connection biases said member away therefrom, a spring for biasing said member towards said one end against said pressure, and rack and pinion means within the housing for converting linear displacement of said member into rotary displacement of the pinion, the rack being formed by grooves in the member itself, characterised in that the pressure transducer is a differential pressure transducer having another pressure connection at the other end of the passage, so that a possibly different pressure applied at said other end of the passage via said other pressure connection biases said member away from said other end, and in that sealing means between said member and the passage is formed by virtue of a closely fitting, yet freely sliding, hard-surface-to-hard-surface engagement between a substantial (total) hard surface area at any one time of said passage and a substantial (total) hard surface area at any one time of said member, including regions of the surface area of said member intermediate mutually adjacent ones of said grooves.

4,523,477
PLANAR-MEASURING VORTEX-SHEDDING MASS FLOWMETER
Richard W. Miller, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Filed Aug. 4, 1983, Ser. No. 520,359
Int. Cl.³ G01F *1/32, 1/88*
U.S. Cl. 73—861.02 **12 Claims**



1. A vortex-shedding flowmetering apparatus comprising:
a conduit adapted for passing therethrough a flowing fluid;

a vortex-shedding element being fixedly mounted in said conduit and having a surface for producing vortices;

a measuring plane that includes said surface and is disposed transversely to the direction of motion of said flowing fluid;

vortex-responsive means for generating a velocity signal that is representative of the shedding rate of said vortices and is thereby proportional to the volumetric flow rate of said fluid in said measuring plane;

sensor means for detecting in said measuring plane a moving fluid characteristic that is dependent upon the product of fluid density and the square of said volumetric flow rate; said sensor means comprising a pitot device which includes at least a first intake located on said surface for sensing fluid dynamic pressure, a second intake for sensing fluid static pressure, said second intake being disposed substantially at the intersection of said measuring plane with the inner wall of the conduit, and means coupled to said first and second intakes and arranged to be responsive to said dynamic and static pressures for producing a sensor signal corresponding to said moving fluid characteristic; and

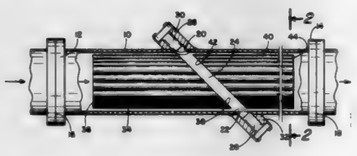
means for receiving both said sensor and velocity signals and combining these signals in accordance with a prescribed relationship so as to produce a flow signal proportional to the rate of mass flow of the fluid passing through the conduit.

4,523,478

SONIC FLOW METER HAVING IMPROVED FLOW STRAIGHTENERS

Ellis M. Zacharias, Jr., Tulsa, Okla., assignor to Nusonics, Inc., Tulsa, Okla.

Filed Aug. 18, 1983, Ser. No. 524,375
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.28 **13 Claims**



1. A sonic flowmeter comprising:

a conduit having an inlet end and an outlet end, and providing a linear fluid flow path therebetween;

a first and a second opening in said conduit, the openings being in a plane of the conduit longitudinal axis and on opposite sides of the conduit, the openings being displaced in an upstream-downstream relationship providing a sonic path through the interior of the conduit, the sonic path being at a preselected angle to the conduit linear fluid flow path;

first and second spaced apart transducer elements positioned to transmit and receive sound energy traveling through fluid as it traverses said conduit;

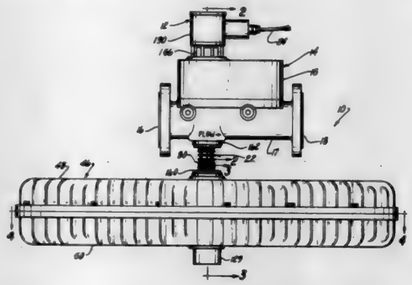
an upstream flow straightener within said conduit fluid flow path for separating the fluid stream into a plurality of reduced-crossectional area streams, each providing a separate linear fluid flow path, the flow straightener having a forward end and rearward end, the rearward end being contiguous to and in substantial conformity with said sonic path.

4,523,479

FLUID FLOW MEASURING DEVICE

Horace J. Johnson, Port Townsend, Wash., assignor to Cadillac Meter Company, Port Townsend, Wash.

Filed Aug. 22, 1983, Ser. No. 525,053
Int. Cl.³ G01F *1/78*
U.S. Cl. 73—861.35 **16 Claims**



1. A meter for providing to a readout device a signal proportional to the mass flow of a fluid passing therethrough comprising:

a turbine housing having a fluid inlet and a fluid outlet,

a turbine in said turbine housing including a driving impeller interposed between said fluid inlet and said fluid outlet whereby fluid passing through said turbine imparts a driving torque to said driving impeller,

a balancing housing forming an internal cavity containing a damping fluid,

an impeller shaft fastened to said driving impeller and rotatable therewith, said shaft extending into said balancing housing cavity,

a balancing impeller rotatably mounted within said damping fluid in said cavity and fastened to said impeller shaft such that said driving impeller and said balancing impeller rotate simultaneously, said balancing impeller causing pumping of said damping fluid resulting in a resisting torque which is proportional to the speed of rotation of said driving impeller, and

pickup means for sensing said rotation and for providing a signal to said readout device, characterized in that the size and configurations of said turbine and said balancing impeller and the characteristics of said damping fluid are so proportioned and related to each other that the tangential speed of the outermost radial portion of said driving impeller does not exceed 0.007 times the velocity of fluid passing through said driving turbine, whereby the rate of rotation of said impellers and said impeller shaft and said signal to said readout device are closely proportional to said mass flow rate of said fluid.

4,523,480

MASS FLOW ROTAMETER

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation of Ser. No. 345,541, Feb. 3, 1982, abandoned. This application Jun. 8, 1984, Ser. No. 618,757
Claims priority, application Japan, Feb. 5, 1981, 56-16536; Nov. 9, 1981, 56-178458; Nov. 18, 1981, 56-183663
Int. Cl.³ G01F *1/24*
U.S. Cl. 73—861.56 **3 Claims**

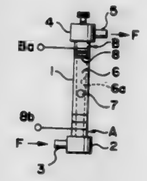
1. A device for measuring mass flow rate of a fluid, comprising:

an upright tubular housing having a cylindrical out periphery and an upwardly diverging tapered frustoconical flow chamber for accommodating a fluid;

an inlet fitting at a lower end of said housing for introducing said fluid to said chamber at a lower end thereof;

an outlet fitting at an upper end of said housing for discharging fluid from an upper end of said flow chamber whereby said fluid flows through said flow chamber vertically upward;

a fluid-responsive solid member constituted by a high-magnetic-permeability ferrite spherical ball coated with a uniform layer of at least one substance selected from the group which consists of synthetic resin, ceramic and carbon, said member being disposed movably within said flow chamber and propellable upwardly against gravity by the upwardly flowing fluid to a level substantially linearly dependent on the rate of flow of said fluid through said flow chamber;



a multi-turn electrical coil on said cylindrical periphery of said housing and having an interturn pitch progressively decreasing from said lower end of said housing to said upper end thereof;

a periodic power supply having a high frequency output connected across said coil; and

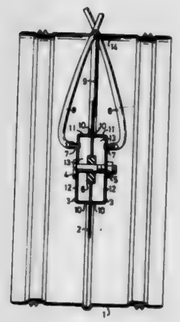
circuit means responsive to the effective inductance of said coil coupled thereto for indicating the rate of flow of said fluid through said chamber.

4,523,481

MEASUREMENT UNIT FOR DETERMINING GAS FLOW THROUGH A CONDUIT AND MEASURING MEANS DESIGNED TO BE INCLUDED IN SUCH A MEASURING UNIT

Gunnar Steen, Tomelilla, Sweden, assignor to Stifab AB, Jonkoping, Sweden

PCT No. PCT/SE83/00155, § 371 Date Nov. 29, 1983, § 102(e) Date Nov. 29, 1983, PCT Pub. No. WO83/03896, PCT Pub. Date Nov. 10, 1983
PCT Filed Apr. 22, 1983, Ser. No. 558,417
Claims priority, application Sweden, Apr. 23, 1982, 8202562
Int. Cl.³ G01F *1/42*
U.S. Cl. 73—861.61 **10 Claims**



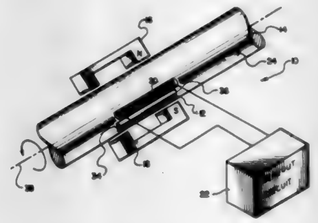
10. Measuring means designed to be placed in a fluid flow in a conduit or a pipe, for measuring pressure differential over the means, characterized in that the means comprises a flat, circular disc (2) designed to be disposed transversely to the directional flow and that on each side of the disc (2) there is arranged, coaxially to the disc, a rotationally symmetrical pressure measurement box (3), the lateral wall (11) of which pointing towards the disc being arranged with its edge portion in close proximity to the surface of the disc, between said edge portion and the surface there being aperture means (10, 10') through which a pressure measurement chamber (13) inside the box and defined by the box wall (11, 12) and the disc surface is in communication with the space in close proximity to the disc but outside the lateral wall (11) of the box, and that in the wall of each box (3) there is a pressure lead-through means (7) to the portion of which outside the box a pressure lead-off line (8) can be connected.

4,523,482

LIGHTWEIGHT TORQUEMETER AND TORQUE-MEASURING METHOD

Sarkis Barkhoudarian, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 2, 1983, Ser. No. 528,915
Int. Cl.³ G01L *3/10*
U.S. Cl. 73—862.36 **20 Claims**



1. A method for measuring levels of torque in a rotating member comprising the steps of:

forming onto said rotating member a magnetostrictive element comprising a core constructed from material of low magnetic coercivity and a jacket about said core constructed from material of high magnetic coercivity;

resetting the magnetic polarity of said core from a triggered state wherein said core polarity is unidirectional with respect to the magnetic polarity of said jacket to a reset state wherein said core polarity is oppositely directed with respect to said jacket polarity;

triggering an avalanche Barkhausen reversal of said core polarity from said reset state to said triggered state;

generating a signal responsive to said avalanche Barkhausen reversal; and

correlating said responsive signal to an indication of the level of torque in said rotating member.

20. An apparatus for measuring levels of torque in a rotating member comprising:

a magnetostrictive element formed onto said member capable of producing avalanche Barkhasuen reversals;

means for successively triggering avalanche Barkhausen reversals in said magnetostrictive element and for resetting said magnetostrictive element after each reversal;

means for generating a signal responsive to said avalanche Barkhausen reversals; and

means for correlating said responsive signal to an indication of the level of torque in said member.

4,523,483

PRESS APPARATUS FOR DETECTING A FORCE OCCURRING BETWEEN TWO OPPOSITELY MOVABLE MACHINE PARTS

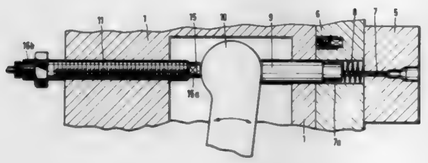
Klaus Brankamp, Sperberweg 10,, 4006 Erkrath 1, and Heinz B. Bongartz, Düsseldorf, both of Fed. Rep. of Germany, assignors to Klaus Brankamp, Erkrath 1, Fed. Rep. of Germany

Filed May 10, 1983, Ser. No. 493,371

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1982, 3244171

Int. Cl.³ G01L *5/00*

U.S. Cl. 73—862.54 **8 Claims**



1. A cold-solid deformation press in which, for monitoring the production process thereof, a force which occurs between two machine parts which are movable relative to one another is detected, said press comprising:

a machine support;

a tool including a punch part and a matrix part, as well as an ejector pin;

an ejector lever for actuating said ejector pin;

an adjusting screw for adjusting said ejector pin;

a carriage associated with said machine support for moving one of said tool parts relative to the other;

a machine element for supporting at least one of said tool parts relative to one of said machine support and said carriage; and

at least two force-measuring elements for effecting said force detection of force absorbed by said tool parts; with one of said force-measuring elements being arranged in said adjusting screw, and with at least one force-measuring element being arranged in said machine element.

4,523,484

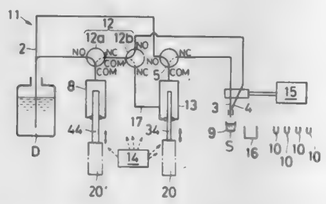
DILUTION PIPETTER

Toshimi Kadota, Uji; Jugoro Suzuki, and Shigeki Matsui, both of Kyoto, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Sep. 26, 1983, Ser. No. 535,671

Int. Cl.³ G01N *1/10;* **B01L** *3/02*

U.S. Cl. 73—864.12 **8 Claims**



1. A dilution pipetter comprising a diluent sucking probe, a sample probe for sucking and discharging a liquid sample, a diluent discharging probe disposed adjacent to the sample probe, a plunger pump of relatively small plunger diameter communicating selectively with said diluent sucking probe or said sample probe by a first switching means, a plunger pump of relatively large plunger diameter, and a second switching means which selectively allows the plunger pump of large diameter to communicate with the diluent sucking probe, the diluent discharging probe, or the sample probe by way of the plunger pump of small diameter.

4,523,485

CROSS-ARM MECHANISM IN A PUSHBUTTON TUNER

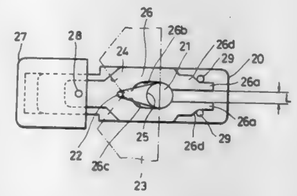
Takao Chaki, and Mamoru Mogi, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,557

Claims priority, application Japan, Dec. 14, 1981, 56-200083; Dec. 15, 1981, 56-185697[U]; Dec. 16, 1981, 56-186296[U]

Int. Cl.³ H03J *5/12*

U.S. Cl. 74—10.33 **6 Claims**



1. Cross arm mechanism in a pushbutton tuner which comprises:

a setting plate pivotally mounted on a cross arm of said pushbutton tuner;

a plate spring disposed on said cross arm so as to be able to hold said setting plate from both sides;

a pushbutton provided at one end of said cross arm and engaged with said plate spring;

an urging protuberance provided at one end of said setting plate for engagement with a memory slide of said pushbutton tuner;

said plate spring being opened at one end thereof nearer to the front end of said cross arm and movable simultaneously with said pushbutton along said cross arm in the length direction of said cross arm when said pushbutton is pushed in; and

tightening protuberances provided at the front end of said cross arm for narrowing the distance between the opened ends of said plate spring upon advancement of said plate spring to thereby tighten and fix said setting plate.

4,523,486

VIBRATORY DEVICE

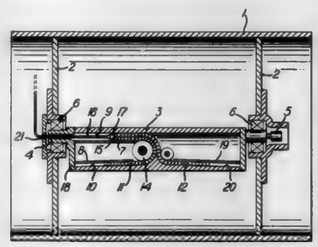
Alfredo Bueno, Sao Paulo, Brazil, assignor to Dynapac Maskin AB, Solna, Sweden

Filed Feb. 7, 1983, Ser. No. 464,465

Claims priority, application Sweden, Feb. 15, 1982, 8200893

Int. Cl.³ B06B *1/16;* **E01C** *19/28*

U.S. Cl. 74—87 **13 Claims**



1. Apparatus for continuous adjustability of the vibration amplitude of a vibration generator, comprising a tubular shaft rotatably supportable about an axis by a member to be vibrated; at least one eccentric mass element; guide means supported by the tubular shaft and having surfaces for supporting the eccentric mass element for movement therealong, the surfaces being substantially parallel to said axis and being oriented to cause at least a portion of the eccentric mass element to be urged by centrifugal force away from the axis of the tubular shaft along the surfaces when the shaft is rotating, and adjustment means coupled for moving the eccentric element along the surfaces to control the position of the eccentric element, wherein movement of said eccentric mass element along said surfaces changes the vibration amplitude of the rotating tubular shaft.

4,523,487

DEVICE FOR POSITIONING AND POSITION STABILIZING

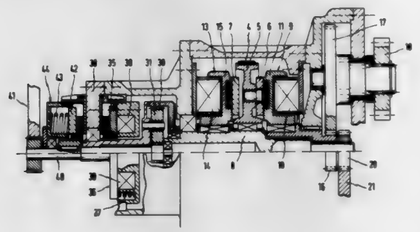
Ludwig Pietzsch, Karlsruhe; Harald Kauer, Ettlingen; Johannes Düren, Karlsruhe, and Hugo Kühn, Marxzell-Pfaffenrot, all of Fed. Rep. of Germany, assignors to IBP Pietzsch GmbH, Ettlingen, Fed. Rep. of Germany

Filed Aug. 16, 1983, Ser. No. 523,617

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3328031

Int. Cl.³ F41G *5/24*

U.S. Cl. 74—378 **18 Claims**



1. A device for positioning and position stabilizing an inert mass, such as a barrelled weapon supported for sluing on a base, such as a vehicle body, comprising two driven portions adapted to be driven by one motor by way of a rotor each and a controllable friction clutch each so as to slue the mass selectively in one of its two sluing directions into a predetermined pivot position, characterized in that only a single rotor (**5**) is provided, in that the two friction clutches (**9,13**) are so arranged with respect to the rotor (**5**) that the rotor transmits equidirectional torques to the driven portions (**11,15**) of both friction clutches, and in that the driven portions (**11,15**) of the two friction clutches act on the inert mass by a separate power transmission each (**16–18,20–23**) one of which effects reversal of the direction of rotation.

4,523,488

SINGLE LEVER CONTROL DEVICE FOR MULTIPLE FUNCTIONS

Donald A. Ahrendt, Chicago Heights, Ill., assignor to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Nov. 5, 1982, Ser. No. 439,363

Int. Cl.³ G05G *9/00;* **E03B** *7/07*

U.S. Cl. 74—471 XY **4 Claims**

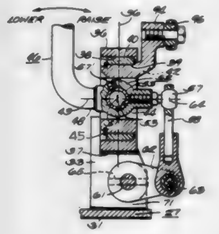
1. A single lever control device for operating two separate controls comprising:

a single upstanding support wall of predetermined thickness having laterally opposite sides and a radially inward facing cylindrical bearing surface extending axially between said sides defining a single cylindrical opening through said support wall generally transverse to said opposite sides,

a control member having a main part disposed within said single cylindrical opening, said main part having a radially outward facing cylindrical bearing surface in cooperative pivotal bearing engagement exclusively with said inward facing cylindrical bearing surface for rotation about a bearing axis transverse to said wall, said main part of said control member having radially inward facing surfaces defining a central opening through which said bearing axis passes,

a control lever including an upstanding hand grip portion at one side of said wall and a horizontal leg extending from the lower end of said hand grip portion and through and beyond said central opening,

pivot means within said central opening pivotally connecting an intermediate portion of said leg to said main part of said control member for pivotal movement about a pivot axis disposed transverse to said bearing axis and between



said opposite sides of said single support wall, said leg and control member pivoting relative to one another only about said pivot axis,

an arm on said main part of said control member extending from the side of said main part at said other side of said support wall,

a first control pivotally connected to said arm at a first point spaced from said bearing axis, said first control being actuated when said lever is pivoted about said bearing axis and

a second control pivotally connected to said leg of said control lever at a second point at said other side of said support wall and spaced from said first point, said second control being actuated when said lever is pivoted about said pivot axis.

4,523,489

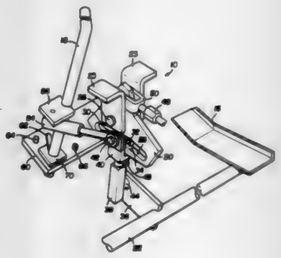
GROUND DRIVE CONTROL

Roger T. Gault, Wild Rose, Wis., assignor to Ingersoll Equipment Company, Winnecone, Wis.

Filed Jun. 7, 1982, Ser. No. 386,123

Int. Cl.³ G05G *11/00, 1/14*

U.S. Cl. 74—474 **1 Claim**



1. A ground drive control assembly for a machine having a transmission control means which is shiftable through positions corresponding to various drive modes including forward, reverse and neutral, said ground drive control assembly comprising:

a rotatable control lever operably connected to a rotatable

selector means for setting the direction of machine movement and a depressable foot pedal means operably connected to said selector means for controlling the speed of machine movement in a selected direction, said rotatable control lever including a stop pin extending therefrom which is movable into engagement with stop abutments when said control lever is rotated to a position corresponding to either forward or reverse directional control;

said rotatable selector means connected to said transmission control means and including a slot having directional positions for forward, neutral and reverse directional control, and pin means slidably movable within said slot;

said foot pedal means connected to said pin means by an actuating linkage, said actuating linkage including a first link which is secured to a member that is rotatable in response to depression of said foot pedal means, first universal joint means connecting one end of a second link to said first link for universal movement of said second link relative to said first link, said second link connected at its other end to said pin means, and spring means connected between said first link and said rotatable selector means;

said control lever connected to said pin means by a coupling element, second universal joint means connecting one end of said coupling element to said control lever for universal movement of said coupling element relative to said rotatable control lever, and said coupling element connected at its other end to said pin means; and

a movable joint being formed by the connection between said pin means, said other end of said coupling element, and said other end of said second link, said joint being shifted within said slot in response to rotation of said control lever to a selected directional position and thereafter, depression of said foot pedal means causing said selector means to rotate while said joint moves along a portion of said slot without affecting the position of said control lever.

4,523,490

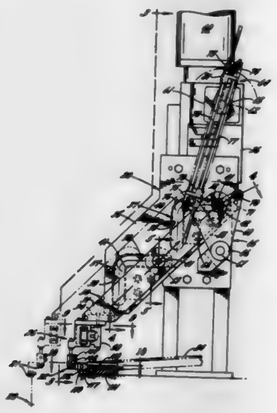
MACHINE FOR HANDLING PARTS

Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.

Division of Ser. No. 305,912, Sep. 28, 1981, Pat. No. 4,487,541. This application Jan. 20, 1984, Ser. No. 572,512

Int. Cl.³ G05G *1/00*; F16B *7/10*

U.S. Cl. 74—582 **5 Claims**



1. The combination of, a driving member, a spaced driven member and mechanism for causing the driving member to move the driven member back and forth while allowing the driving member to yield in either direction relative to the driven member if the latter is stopped, said driving and driven members having inboard sides facing toward one another and having outboard sides facing away from one another, said mechanism comprising first and second side-by-side rods spanning the space between said members, each of said rods being movable back and forth relative to each of said members and each extending beyond the outboard side of each of said members, first and second stop means located between said members, said first stop means being secured rigidly to said first rod and slidably receiving said second rod, said second stop means being secured rigidly to said second rod and slidably receiving said first rod, first and second side-by-side springs telescoped over said first and second rods, respectively, and each compressed between said first and second stop means, said first and second stop means normally being pressed against the inboard side of said driving and driven members, respectively, by said springs, third stop means on one end portion of said first rod and normally engaging the outboard side of said driving member to limit movement of said driving member away from said driven member, and fourth stop means on the opposite end portion of said second rod and normally engaging the outboard side of said driven member to limit movement of said driven member away from said driving member.

4,523,491

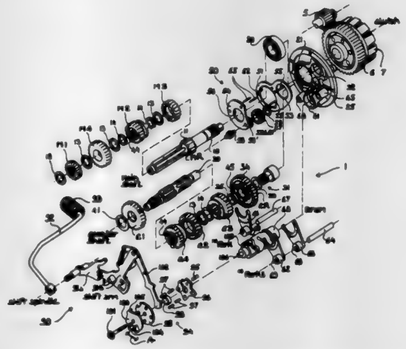
MOTORCYCLE TRANSMISSION FEATURING REVERSE GEAR

Fred M. Dittmann, Jr., Lake Zurich, Ill., assignor to Municipal Industries, Inc., Chicago, Ill.

Filed Jul. 9, 1982, Ser. No. 396,642

Int. Cl.³ F16H *3/08*

U.S. Cl. 74—360 **26 Claims**



1. In a constant mesh gear train assembly for a motorcycle type engine having a main shaft and a countershaft with a plurality of alternate internally splined and freely rotating forward gears, the improvement which comprises in operative combination:

(a) a main shaft reverse gear having means for engagement with said main shaft to permit transfer of power between said main shaft and said main shaft reverse gear;

(b) a countershaft reverse gear mounted to freely rotate on said countershaft, disposed with its gear teeth spaced from the gear teeth of said main shaft reverse gear;

(c) said countershaft reverse gear having means for engagement with at least one adjacent gear mounted on said countershaft;

(d) said countershaft adjacent gear having means for engagement with said countershaft to permit transfer of power between said countershaft and said adjacent gear;

(e) means for selectively shifting said countershaft adjacent gear into engagement with said countershaft reverse gear;

(f) a reverse idler gear having means for maintaining the teeth thereof in continuous rotatable mesh with the teeth of both said main and countershaft reverse gears to transfer power therebetween so that both said main and countershaft reverse gears rotate in the same direction; thereby providing reverse gearing throughout the full range of engine power.

4,523,492

PEDAL FOR A BICYCLE

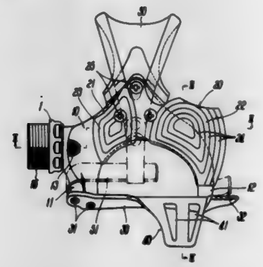
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Continuation of Ser. No. 333,170, Dec. 21, 1981, abandoned. This application Jan. 30, 1984, Ser. No. 574,945

Claims priority, application Japan, Dec. 28, 1980, 55-188819[U]

Int. Cl.³ G05G *1/14*

U.S. Cl. 74—594.4 **7 Claims**



1. A pedal for a bicycle for use with a cyclist's foot having bones therein known as metatarsi, phalanges, and tarsus said pedal comprising a pedal body having a pedal shaft, said pedal body having upper and lower surfaces, and having at said upper surface a main foot bearing surface said main foot bearing surface including upwardly projecting first and second foot bearing portions separated by a gap from one another and located to contact with all head portions of metatarsi of a cyclist's foot, each of said first and second foot bearing portions being located in the vicinity of an axis of said pedal shaft, said first and second foot bearing portions being located axially along said pedal shaft with said first foot bearing portion being axially closest to a base portion of said pedal shaft and said second foot bearing portion located axially outwardly of said pedal shaft relative to said first foot bearing portion, said second foot bearing portion extending rearwardly of said pedal body with respect to said first foot bearing portion, and at a rear side of said main foot bearing surface, an auxiliary foot bearing surface located to be contactable with only third through fifth metatarsi of a cyclist's foot at a side thereof of the tarsus when the head portion of all metatarsi are contacted by said main foot bearing surface.

4,523,493

TRANSMISSION GEAR FOR TRANSVERSE MOUNTING AND MOTOR VEHICLE WITH TRANSMISSION GEAR MOUNTED THEREIN

Heinz Weiß, Bensheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Sep. 16, 1982, Ser. No. 419,091

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137805

Int. Cl.³ F16H *37/00, 37/08, 1/42, 57/02*

U.S. Cl. 74—695 **8 Claims**

2. In a vehicle having an in-line engine, a transverse gear box comprising:

a longitudinal engine-driven shaft;

an input shaft lying on a first transverse shaft line;

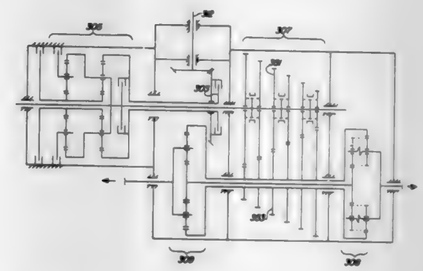
bevel gear means for coupling the engine-driven shaft to the input shaft;

an output shaft lying on a second transverse shaft line parallel to the first transverse shaft line;

a change-speed gear coupled between the input shaft and the output shaft;

an epicyclic range gear on one of the shaft lines, the epicyclic range gear driving the input shaft;

a pair of half-shafts on the second shaft line;



a differential gear between the output shaft and the pair of half-shafts; and

a hollow shaft driven by the bevel gear means, the hollow shaft driving the epicyclic range gear, the input shaft extending through the hollow shaft from the epicyclic range gear to the change-speed gear.

4,523,494

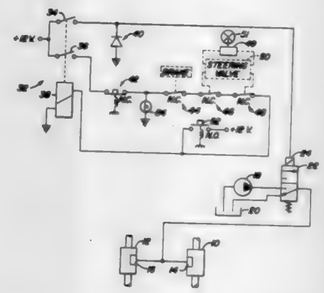
STEERING PRESSURE RESPONSIVE DIFFERENTIAL LOCK CONTROL SYSTEM

Gregory E. Sparks, Waterloo, and David A. Larson, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 13, 1983, Ser. No. 503,967

Int. Cl.³ F16H *1/445*

U.S. Cl. 74—710.5 **5 Claims**



1. In a vehicle having an hydraulic steering system including a pilot pressure-operated steering valve, a differential and a steering-responsive differential lock control system, including locking means for locking and unlocking the differential, the improvement wherein the steering-responsive differential lock control system comprises:

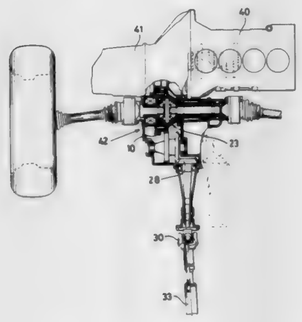
a pressure-operated normally closed switch mounted at an end of a housing of the steering valve and acted upon by a pilot pressure which acts upon an end of a valve spool of the steering valve, the pressure-operated switch open to unlock the differential when the pilot pressure exceeds a predetermined pressure.

4,523,495

DIFFERENTIAL ASSEMBLY FOR DISTRIBUTION OF TORQUE BETWEEN THE FRONT AND REAR AXLES OF AN AUTOMOTIVE VEHICLE

Silvio Sala, Milan, Italy, assignor to S.I.R.P. Studi Industriali Realizzazione Prototipi S.p.A., Moncalieri, Italy

Filed Mar. 29, 1983, Ser. No. 480,134
Claims priority, application Italy, Jun. 11, 1982, 21821 A/82
Int. Cl.³ F16H *1/42, 37/08*
U.S. Cl. 74—714 **3 Claims**



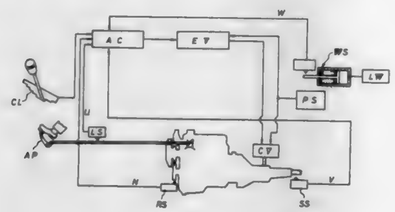
1. A differential assembly for the distribution of drive between a first differential of a first axle and a second differential of a second axle, comprising a crown wheel (**10**) in driving engagement with a gearbox output wheel (**13**), cylindrical spur gears (**16, 17**) rotatably mounted on said crown wheel, said spur gears meshing with each other and each meshing with one of two coaxial spur wheels (**19, 20**), one of said spur wheels being connected with the first differential and the second spur wheel being connected with the second differential.

4,523,496

AUTOMATIC CONTROLLING METHOD OF TRANSMISSION

Takao Fukunaga, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Oct. 19, 1982, Ser. No. 435,246
Claims priority, application Japan, Oct. 30, 1981, 56-174727
Int. Cl.³ B60K *41/08, 28/00*
U.S. Cl. 74—866 **4 Claims**



1. A method of automatically controlling the transmission ratio and gear shifting operation of a stepped transmission in a vehicle, where engine power is transmitted to the clutch and the driving wheels via said stepped transmission, said gear shifting operation being effected in dependence of vehicle speed, engine load and engine speed as control factors, comprising:

inputting into a comparator circuit a ratio of the vehicle speed to the engine load as well as a signal corresponding to the loaded weight of the vehicle, for automatically controlling the transmission and gear shifting operation from a high speed position to a next lower speed position;

expanding the high speed area in each selected speed change position corresponding to an increase in loaded weight;

inputting the output of said comparator circuit to a logic circuit; and

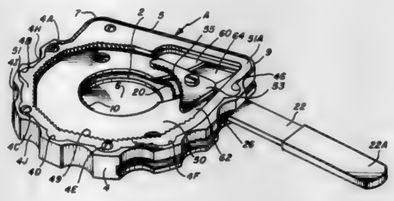
controlling the speed change position in response to an output signal from said logic circuit.

4,523,497

APPARATUS FOR REMOVING CONTAINER CAPS

Carl H. Rosberg, and Hazel N. Rosberg, both of 111 Airport Rd., Hyannis, Mass. 02601

Filed May 19, 1983, Ser. No. 496,231
Int. Cl.³ B67B *7/00*
U.S. Cl. 81—3.44 **9 Claims**



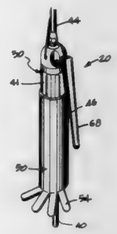
1. Apparatus for removing a container cap, said apparatus comprising a housing, inner and outer cap gripper jaw means fixed in the housing in spaced apart relationship, a handle element rotatably mounted in the housing and having separated gripper jaw portions movable with the handle toward and away from respective fixed jaw means said outer fixed jaw means being supported on spacer and divider plate means and the seperated jaws portion associated with said outer fixed jaw means being supported on a bolt fastened to the handle, the bolt being guided through slot means formed in the divider plate.

4,523,498

ERGONOMICAL IN-LINE TOOL

Ivan B. Chapman, Jr., Baltimore, Md., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Feb. 2, 1983, Ser. No. 463,189
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—177.1 **6 Claims**



1. An in-line tool which is adapted to be moved vertically between a rest position and a work position, said tool comprising:

a barrel;

a working portion which extends from said barrel and which is adapted to engage a workpiece; and

a jacket having at least a portion which covers and which is attached releasably to said barrel to allow said jacket to be in a predetermined position along said tool barrel with respect to said working portion, said jacket conforming to the contour of said barrel and including:

a length of relatively flexible substrate material; and

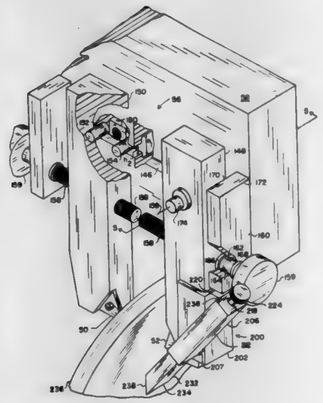
a plurality of ribs which are attached to an outer surface of said substrate material and which extend along said barrel parallel to a longitudinal axis thereof with an end of each of said ribs being adjacent to said working portion, each said rib including a laterally extending tab which is disposed in a predetermined position adjacent to said working portion and which is adapted to be engaged by the ulnar side of a user's hand to facilitate the application of forces to said tool to move said tool downwardly from the rest position to the work position, said jacket having a portion which extends beyond said barrel to position said tabs adjacent to said working portion.

4,523,499

DISC BRAKE LATHE

R. Warren Aldridge, Jr., Huntsville, Ala., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Continuation-in-part of Ser. No. 474,531, Mar. 11, 1983,. This application Mar. 9, 1984, Ser. No. 588,010
Int. Cl.³ B23B *5/02*
U.S. Cl. 82—4 A **17 Claims**



1. A disc brake lathe comprising: a machine base;

a support stand on said base

vertical guide means supported by said stand for providing a stationary planar way means;

a cross arm assembly having guide surfaces interfacing with said way means and configured to enable aligned and confined movement of said cross arm assembly along said way means;

at least one disc brake tool assembly secured to said cross arm assembly, and wherein said disc brake tool assembly comprises a pair of caliper arms, and a cutting tool being attached to each tool arm, and each said cutting tool being oriented to face an oppositely positioned cutting tool;

a shaft rotatably supported by said machine base having means to rotably support at least one disc brake rotor at a selected position;

drive means including an electrical motor rotating said shaft about its longitudinal axis; and

an antichatter assembly supported by said tool assembly and positioned to engage a single side of the disk brake rotor comprising:

a frame including a hollow tube-like housing mounted on said arm and extending toward a single side of the disc brake rotor when the rotor is supported on said shaft,

a block contoured to engage and move along within said tube-like housing and having an end surface contoured planarly to engage a generally flat side region of a disc rotor mounted on said shaft, said block being positioned to engage at least a radially outer region of the rotor, and

spring bias means on said tube-like housing for resiliently applying a bias force to said block and thereby applying a dampening force to said rotor; and

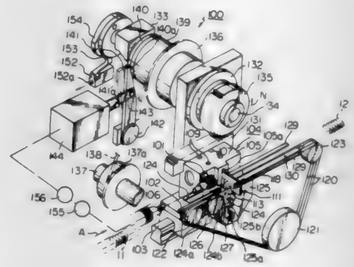
feed means moving said tool assembly and antichatter assembly into engagement with said rotor.

4,523,500

METHOD AND APPARATUS FOR CUTTING CONTINUOUS CORRUGATED MEMBER

Kimio Maruyama, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 14, 1983, Ser. No. 484,991
Claims priority, application Japan, Apr. 14, 1982, 57-60864
Int. Cl.³ B26D *1/56*
U.S. Cl. 83—37 **20 Claims**



1. A method for cutting a continuous corrugated member into a predetermined length, said corrugated member having on each side face thereof a plurality of crest portions and trough portions extending in a direction perpendicular to a longitudinal direction thereof, comprising the steps of:

conveying said corrugated member in its longitudinal direction at a constant speed;

providing a movable cutter blade having thereon a sharpened edge which extends in a direction perpendicular to the longitudinal direction of said corrugated member and is located near one side face thereof;

moving said cutter blade forward from a predetermined rest position thereof in the conveying direction of said corrugated member at the same speed as the conveying speed thereof when a predeterminated length of said corrugated member passes in front of said sharpened edge of said cutter blade;

reciprocating said cutter blade in a direction perpendicular to the conveying direction of said corrugated member and perpendicular to the extending direction of said crest portions for cutting said corrugated member when said cutter blade is moved forward; and

returning said cutter blade to said rest position;

said method further comprising the steps of:

providing a movable cutter receiver having thereon a rounded edge which is located near the other side face of said corrugated member and extends in a direction perpendicular to the longitudinal direction of said corrugated member, said rounded edge being provided thereon with a slit for receiving said sharpened edge of said cutter blade;

moving said cutter receiver forward from a predetermined rest position thereof together with said cutter blade;

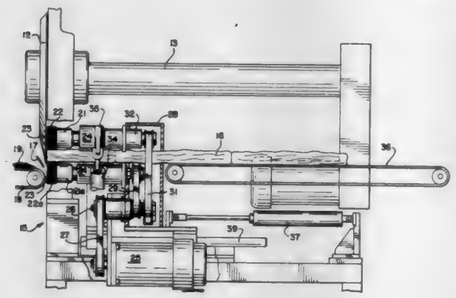
reciprocating said cutter receiver in a direction aligned with the reciprocating direction of said cutter blade for helping the cutting operation of said cutter blade when said cutter receiver is moved forward; and

returning said cutter receiver to said rest position thereof together with said cutter blade;

said reciprocating of said cutter blade comprises advancing it toward the crest portion located on the one side face of said corrugated member for cutting the crest portion thereof;

said reciprocating of said cutter receiver comprises advancing it toward the trough portion before said cutter blade is advanced toward the corresponding crest portion and maintaining it in a position in which said rounded edge of said cutter receiver stays in the trough portion when said cutter blade is advanced through said corrugated member.

4,523,501
SLICER FEED MECHANISM
Ronald E. Mengel, Madison, Wis., assignor to Oscar Mayer Foods Corporation, Madison, Wis.
Filed Sep. 19, 1983, Ser. No. 533,517
Int. Cl.³ B26D *1/15*
U.S. Cl. 83—42 **25 Claims**



1. An apparatus for feeding product to a slicer assembly having a blade for slicing an elongated product that is fed to the blade by a product supporting and conveying assembly, wherein the product supporting and conveying assembly includes a supplemental product supporting assembly and a controlled feed assembly downstream of and generally coextensive with the product supporting assembly, said controlled feed assembly comprising:

a plurality of augers, said augers being rotatably mounted along respective axes that are generally parallel to the feed path of said product supporting and conveying assembly;

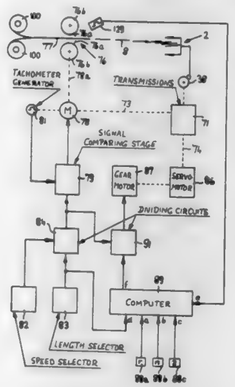
a leading edge on each of said augers, said auger leading edges being closely spaced from the blade of the slicer;

said augers are sized and positioned for engaging the product along a leading length of longitudinal surface, said leading length of longitudinal surface of the product being along that portion of the product which is closest to the slicing blade, and said auger leading edges define a leading end of the product leading portion, whereby rotation of said augers in a respective feed direction of each auger pulls said product into slicing engagement with said blade; and

said controlled feed assembly includes means for controlling the rotational movement, rotational speed and direction of rotation of said augers to thereby control longitudinal movement of the leading length of the product and the speed and direction of product feed relative to said blade.

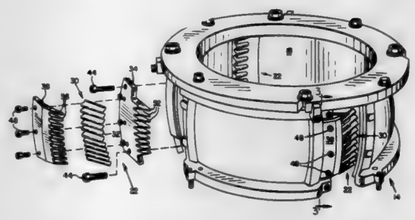
4,523,502
APPARATUS FOR ACCUMULATING STACKS OF PAPER SHEETS OR THE LIKE
Alfred Besemann, Hamburg, Fed. Rep. of Germany, assignor to E.C.H. Will (GmbH & Co.), Nedderfeld, Fed. Rep. of Germany
Filed Feb. 22, 1984, Ser. No. 582,333
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1983, 3306066
Int. Cl.³ B65H *31/30, 35/08*
U.S. Cl. 83—71 **17 Claims**

1. Apparatus for forming stacks from sheets consisting of paper or a like flexible material, comprising a first station and a second station; mobile severing means for repatedly severing plural running webs of flexible material so as to form a series of groups of sheets; means for supplying successive groups of said series to said first station; means for gathering groups at said first station into a succession of layers; transfer means for transporting successive layers from said first station toward said second station at a variable frequency so that the number



of groups per layer is a function of said frequency; a prime mover; means for transmitting motion from said prime mover to said transfer means, including a transmission arrangement with a whole-number step-down transmission ratio; and regulating means for varying said frequency in accordance with a predetermined program through the medium of said transmission arrangement.

4,523,503
APPARATUS FOR MAKING WAFFLE-CUT POTATO
John C. Julian, Tualatin; Jerry L. Sloan, and Lee A. Wheeler, both of Tigard, all of Oreg., assignors to Lamb-Weston, Inc., Portland, Oreg.
Filed Aug. 22, 1983, Ser. No. 525,115
Int. Cl.³ B26D *3/28*
U.S. Cl. 83—403 **5 Claims**



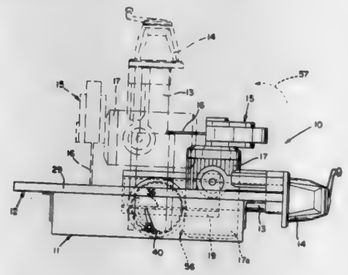
1. In a machine for slicing potatoes including a rotatable carriage having a plurality of radial guides, and stationary cutting assembly surrounding the carriage to slice potatoes fed outwardly by the guides, a knife assembly carried by the cutting assembly comprising:

an elongated knife including a corrugated cutting edge and opposed inner and outer sides, the sides each having a plurality of spaced longitudinal ridge portions extending perpendicularly to the cutting edge and longitudinal groove portions therebetween said grooves each defined by two sides and a bottom; and

knife holding means for rigidly mounting the knife to the cutting assembly;

the knife holding means having a plurality of spaced fingers extending toward the cutting edge and contacting the bottoms of the groove portions to support the knife.

4,523,504
PORTABLE MACHINE TOOL HAVING AN OPERATING UNIT MOUNTED ON A COLUMN
Lorenzo E. Alessio, Lecco, Italy, assignor to Black & Decker Inc., Newark, Del.
Filed Nov. 22, 1983, Ser. No. 554,284
Claims priority, application Italy, Nov. 30, 1982, 23584/82[U]
Int. Cl.³ B27B *5/20*
U.S. Cl. 83—471.3 **14 Claims**



1. A portable radial arm saw, comprising:

a base frame having a rear and a front;

a work surface supported by said base frame, said work surface comprising a front portion fixed to said base frame, and a rear portion removably held in place by releasable clamps;

a column having one end telescopically secured within a two part sleeve, the two parts of the sleeve being clamped together;

one of the parts of said sleeve having a first pivot plate rigidly secured thereto, said plate having therein a central bore and an arcuate slot concentric with said bore;

a second pivot plate mounted on the rear of said base frame and with which said first pivot plate cooperates;

a pivot engaged through said bore and pivotally connecting said first plate to said second plate, whereby said column is pivotally attached to said base frame said column being pivotal between an upright operative position in which the column extends upwardly above said work surface and a lateral inoperative position in which the column extends along and behind the rear of said base frame;

a bracket attached to said one of said sleeve parts for locating said column in a vertical upright position;

a rod engaged through said arcuate slot for releasably securing said column in any selected pivotal position;

an arm extending transversely from the other end of said column and having a circular saw unit slidably suspended therefrom, said unit including an electric motor; and

said base frame having a space therein below said removable rear portion, said motor entering and being at least partially housed in said space when said rear portion of said work surface is removed and said column pivoted to said lateral inoperative position.

4,523,505
FOOD FEED CHUTE APPARATUS
Steven S. Polson, 1502 E. Lincoln Dr., Ambler, Pa. 19002
Filed Oct. 28, 1983, Ser. No. 546,753
Int. Cl.³ B26D *3/30*
U.S. Cl. 83—713 **11 Claims**

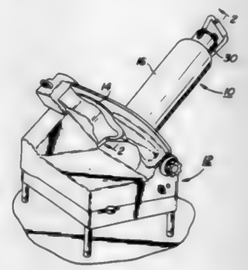
1. A food feed chute apparatus adapted for mounting upon a rotary cutting machine comprising

a base adapted to be mounted to the cutting machine,

a tube having first and second ends and being attached to the base at a location proximate the first end of the tube,

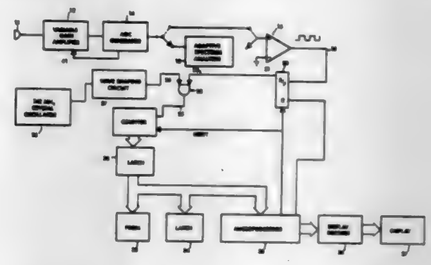
a weighted pushing means disposable within the tube adapted for pushing food products to be fed through the tube toward the first end of the tube, and

attaching means for pivotably attaching the pushing means to the tube proximate the second end of the tube, the attaching means comprising a fixed member fixedly attached to the tube, a movable member, means for pivotably attaching the movable member to the fixed member, and a guide rod attached at its ends to the pushing means,



the guide rod having an elongated portion which is spaced from the pushing means and having an axis parallel to the axis of the pushing means, the elongated portion of the guide rod extending through an orifice in the movable member.

4,523,506
ELECTRONIC TUNING AID
Marshall H. Hollimon, 11155 La Paloma Dr., Cupertino, Calif. 95014
Filed Jan. 23, 1984, Ser. No. 572,883
Int. Cl.³ G10G *1/00*; G09B *15/00*; G01R *23/10*
U.S. Cl. 84—454 **2 Claims**



1. An electronic, tempered scale tuning aid for identifying and displaying the pitch of an unknown sounded tone in terms of its absolute pitch and its departure from correct nominal intonation comprising:

an oscillator having an output signal;

detection means for determining the period of the sounded tone;

a gate having a first input which is responsive to the oscillator output signal and a second input which is responsive to the detection means and having an output which is enabled when the second input is enabled;

a digital counter responsive to the output of the gate, said counter having at least sufficient number of bits to provide for the desired resolution of the accumulated count;

first digital logic means for determining when a sufficient number of counts has been accumulated in the counter;

second digital logic means for determining the relative frequency, in octaves, represented by the accumulated count, and for producing a digital word which corresponds uniquely to each frequency increment within an octave which is it desired to display;

a digital decoder having inputs responsive to the output of

the second digital logic means and having outputs which uniquely correspond to the digital word inputs;

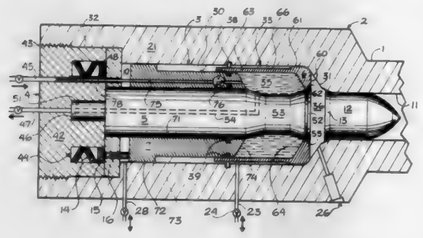
display means responsive to the outputs of the digital decoder said display having an indicator pattern which uniquely corresponds to the outputs of the digital decoder.

4,523,507

IN-LINE ANNULAR PISTON FIXED BOLT REGENERATIVE LIQUID PROPELLANT GUN

Inder K. Magoon, Pittsfield, Mass., assignor to General Electric Company, Fairfield, Conn.

Filed Nov. 2, 1983, Ser. No. 547,958
Int. Cl.³ F41F *1/04*
U.S. Cl. 89—7 **11 Claims**



7. In a regenerative injection liquid propellant gun structure in which injection of liquid propellant from a reservoir (**35**) to a combustion chamber (**36**) requires the movement of a differential area piston (**6**) relative to a fixed structural element (**5**) to permit the flow of such propellant through a valved orifice defined by said piston and said fixed element, and such movement and the opening of said orifice is initially precluded by resistance to pressure of such propellant contained in said reservoir, the improvement comprising:

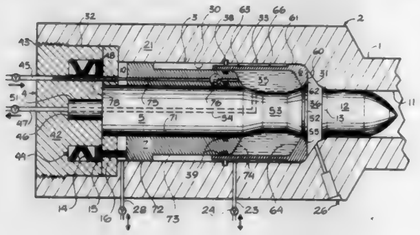
spring means (**44**) biasing said piston (**6**) fixed relative to said fixed element (**5**) to maintain closed said valved orifice until said piston is subjected to a pressure generated in said combustion chamber which is greater than a predetermined incremental pressure to thereby move said piston (**6**) relative to said fixed element (**5**) to open said valved orifice to permit the flow of such propellant through said valved orifice.

4,523,508

IN-LINE ANNULAR PISTON FIXED BOLT REGENERATIVE LIQUID PROPELLANT GUN

Robert E. Mayer, Williamstown; Inder K. Magoon, and Herbert J. West, both of Pittsfield, all of Mass., assignors to General Electric Company, Fairfield, Conn.

Filed Nov. 2, 1983, Ser. No. 547,959
Int. Cl.³ F41F *1/04*
U.S. Cl. 89—7 **35 Claims**



31. In a direct injection regenerative liquid propellant gun structure in which a differential area annular piston journaled in a breech bore in a casing is forced away from the barrel end of the breech bore by pressure in a combustion chamber during firing to exert pressure on a propellant reservoir also in said bore, the improvement comprising:

material holding and dispensing means interposed between said piston and said casing for injecting a material into the combustion chamber responsive to movement of the piston during firing; and

said material holding and dispensing means comprising:

a first mechanical means on the interior surface of said casing;

a second mechanical means on the exterior of said piston;

a space between said piston and said bore between said mechanical means defining a variable capacity container; and

conduit means for introducing a fluid to said container,

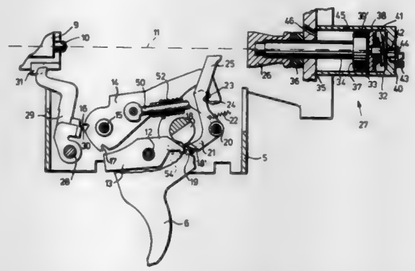
said mechanical means being separated longitudinally of said bore so that, during travel of said piston during firing, said container is substantially reduced.

4,523,509

SHOULDER ARM

Paul Thevis, Oberndorf; Helmut Danner, Sulz-Sigmarswangen, and Erich Weisser, Tennenbronn, all of Fed. Rep. of Germany, assignors to Heckler & Koch GmbH, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,268
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1981, 3130761
Int. Cl.³ F41D *11/10*
U.S. Cl. 89—129.02 **11 Claims**



1. In an automatic shoulder arm having a hammer acting on a firing pin and provision for changing between semi-automatic fire, burst and automatic fire modes, the improvement comprising a mechanism for reducing the cyclic rate of fire in the automatic fire mode including a linearly movable fluid pressure restrained deceleration member retracted for cushioning the recoil and returned after each shot, a detent for said hammer, a deceleration lever having a projection engaging said hammer detent, said deceleration lever being movable upon return of said deceleration member to disengage said projection from said detent and release said hammer to release the next shot, and a safety pin for selecting the modes of fire and engageable in the burst mode to move said deceleration lever to a burst position in which said projection does not engage said hammer detent.

4,523,510

COMBINED SELECTOR, SAFETY AND TRIGGER ASSEMBLY FOR AUTOMATIC FIREARMS

Gary Wilhelm, Hamden, Conn., assignor to Demro Products, Inc., Manchester, Conn.

Filed Oct. 15, 1982, Ser. No. 434,580
Int. Cl.³ F41D *11/02*
U.S. Cl. 89—141 **19 Claims**

1. In a firearm, the combination comprising:

A. a receiver having an aperture in its bottom wall;

B. a bolt which reciprocates within said receiver,

C. a housing affixed at its upper end to the bottom of said receiver and having spaced sidewalls depending therefrom and defining a cavity therewithin, said receiver aperture communicating with the upper portion of said housing cavity;

D. an elongated trigger member;

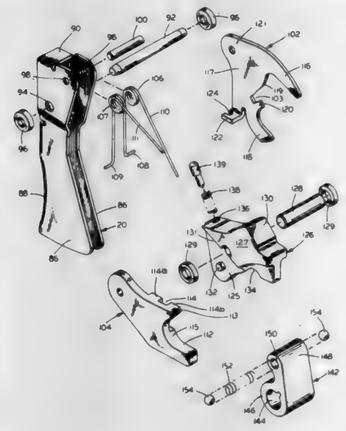
E. pivot means pivotally mounting said trigger member between said sidewalls of said housing for movement between a first and second position;

F. a sear member having a sear projection on its upper surface;

G. means pivotally mounting said sear member between said sidewalls of said housing for pivotal movement from a first position wherein said sear portion extends upwardly through said receiver aperture into said receiver for engagement with said bolt and to a second position wherein said sear portion is disposed below said receiver and not engageable with said bolt;

H. a semi-automatic bar in said cavity on one side of said sear member and having a cam surface on its upper edge portion;

I. means pivotally mounting said semi-automatic bar in said cavity for movement between a first position in which said semi-automatic bar extends through said aperture to locate said cam surface in said receiver for engagement by



said bolt and a second position in which said bar is disposed below said receiver and is not engageable with said bolt;

J. an automatic bar in said cavity on the other side of said sear member;

K. means pivotally mounting said automatic bar in said cavity for movement between a first position and a second position;

L. cooperating engagement means on said sear member and on said automatic bar, said engagement means engaging said sear member in the second position of said automatic bar;

M. cooperating means on said sear member and on said semi-automatic bar for effecting engagement therebetween and concurrent movement of said sear member with said semi-automatic bar during initial movement of said semi-automatic bar from said one position thereof to said second position thereof, said cooperating means disengaging during said movement to release said sear member for return to its first position;

N. means engaging said bars with said trigger member for movement of said bars from said first and second positions thereof by pulling of said trigger;

O. a selector member in said cavity having a body and a cam portion;

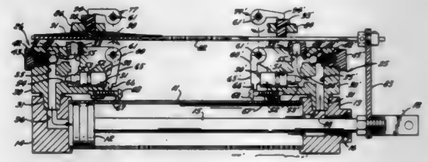
P. means pivotally mounting said body of said selector member in said housing cavity for rotation about an axis among three positions, one of said positions being a safe position wherein said cam portion is disposed in close proximity to said sear member to prevent its pivoting from said first position to said second position thereof; a second pivoted position being one in which said cam portion is pivoted into a position free from operative engagement with said sear member, said semi-automatic bar and said automatic bar thereby permitting said sear member to pivot into said second position thereof in response to movement of said trigger to said second position thereof and thereby allowing said firearm to fire semi-automatically with said semi-automatic bar being cammed downwardly by forward movement of said bolt and releasing said sear member to pivot to its said first position to engage said bolt upon its recoil; and a third position in which said cam portion engages said semi-automatic bar and said automatic bar to pivot them into their respective second positions in which position thereof pivoting of said trigger to its said second position pivots said sear member into the second position by its engagement with said automatic bar to permit continuous reciprocation of said bolt so long as said trigger is retained in said second position thereof.

4,523,511

RECIPROCATING FLUID-OPERATED ACTUATOR WITH DECELERATION CONTROL

Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.

Filed Feb. 17, 1984, Ser. No. 581,241
Int. Cl.³ F15B *15/22*
U.S. Cl. 91—24 **7 Claims**



1. An actuator comprising an elongated cylinder member, a piston member telescoped into said cylinder member, one of said members moving in one direction relative to the other member when pressure fluid is exhausted out of one end of said cylinder member, a valve for controlling the flow of pressure fluid out of said one end of said cylinder member, said valve comprising a valve housing having a first port communicating with said one end of said cylinder member, said valve housing having a second port adapted to be alternately pressurized and de-pressurized to admit pressure fluid into and to exhaust pressure fluid from said housing, a primary flow passage in said valve housing and extending between said ports, means in said primary passage for permitting pressure fluid to flow from said second port into said one end of said cylinder through said primary passage while preventing pressure fluid from flowing reversely out of said one end of said cylinder to said second port through said primary passage, a secondary passage in said housing and extending between said ports, a valve member mounted in said housing, said valve member being movable toward a closed position to restrict the flow of pressure fluid through said secondary passage from said first port to said second port and being movable toward an open position to enable an increase in such flow, said valve member being exposed to the pressure fluid in said primary passage and being biased toward said open position by such pressure fluid, and means for moving said valve member toward said closed position at a controlled rate as an incident to said one member moving through a predetermined distance in said one direction whereby said valve member restricts the flow of pressure fluid out of said one end of said cylinder member and thereby re-

stricts the rate of travel of said one member in said one direction, said moving means comprising a cam movable with said one member, a cam follower operably connected to said valve member and engageable with said cam when said one member moves through said predetermined distance in said one direction, a first lever pivotally mounted on said housing and having a pair of arms, said cam follower being operably associated with one of said arms, means on the other of said arms for moving said valve member toward said closed position in response to pivoting of said lever in one direction, a second lever pivotally mounted on said housing and free to turn in at least one direction independently of said first lever, said second lever being interposed between said valve member and said second arm of said first lever.

4,523,512

TELESCOPIC SUPPORT PROPS FOR MINERAL MINING

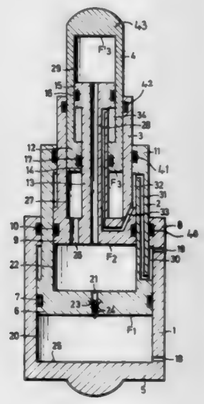
Heinz Hessel, Flaesheim, and Karl Heinz Plester, Lunen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,611

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150643

Int. Cl.³ F15B *11/18*

U.S. Cl. 91—168 **6 Claims**



1. In or for a mine roof support, a telescopic prop comprising an outer member (**1**), a first inner member (**2**) disposed within said outer member and mounted for longitudinal displacement relative thereto, a second inner member (**3**) disposed within the first inner member and mounted for longitudinal displacement relative thereto, a third inner member (**4**) disposed within the second inner member and mounted for longitudinal displacement relative thereto, a first working chamber (**20**) formed within the outer member and connectible to a source of hydraulic pressure fluid to effect prop extension, a piston (**6**) of the first inner member with a first working face (**F1**) which is acted on by hydraulic pressure fluid in the first working chamber to effect initial extension of the first inner member and of the second and third inner members therewith, a second working chamber (**22**) formed within the first inner member, a piston (**9**) of the second inner member with a second working face (**F2**) which is acted on by pressure fluid admitted into the second working chamber after extension of the first inner member to effect secondary extension of the second inner member and of the third inner member therewith, a third working chamber (**27**) formed within said second member, a piston (**12**) of the third inner member with a third working face (**F3**) which is acted on by pressure fluid in the third working chamber, a further working chamber (**29**) formed within the third inner member which has a further working face (**F'3**) which can be acted upon by pressure fluid in said further chamber, a further auxiliary piston (**15**) confronting the working face in the third inner member and connected via a rod (**13**) with said second member piston to move therewith, the rod passing through the third member piston and being sealed with respect thereto, stop means (**8, 11, 15**) for limiting the extension of each of the inner members, means (**26, 28**) establishing hydraulic communication between the second, third and further working chambers to permit pressure fluid to enter the third and further working chambers from the second working chamber after extension of the second inner member to act on the third and further working faces to effect tertiary extension of the third inner member; a first annular chamber (**30**) between the outer member and the first inner member, a second annular chamber (**32**) between the first inner member and the second inner member and a third annular chamber (**34**) within the third inner member between the third and the further auxiliary pistons, and means (**31, 33**) establishing hydraulic communication between said annular chambers at least one of which is connectible to a source of hydraulic pressure fluid in order to effect forceable retraction of the first, second and third inner members, wherein the first piston is provided with a non-return valve (**23**) which operates to block connection between the first and second working chambers, said valve being opened by pressure in the first working chamber when the first inner member has been initially extended to allow fluid to enter the second working chamber and cause the secondary extension, and being opened by associated actuating means (**24**) when the first inner member is almost completely retracted within the outer member, and wherein the effective area of the first working face of the piston of the first inner member is larger than the effective area of the working faces of the other pistons, and the effective area of the working face of the piston of the second inner member is approximately equal to the sum of the effective areas of the third and further working faces.

4,523,513

PNEUMATIC DOOR-OPERATING ARRANGEMENT

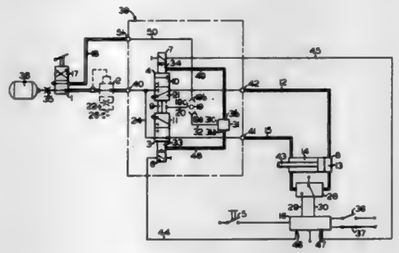
Wolfgang Gudat, Hanover; Alfred Klatt, Wathlingen, and Gunter Sebesta, Hemmingen, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 27, 1983, Ser. No. 507,820

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1982, 3225536

Int. Cl.³ F15B *11/10, 13/043;* **E05F** *15/02*

U.S. Cl. 91—427 **18 Claims**



1. In combination a pneumatic door control arrangement and a door drive with a control chambers which move a door between an open and a closed position, comprising:

(a) a control valve having an opening solenoid-operated pilot valve and a closing solenoid-operated pilot valve selectively actuating respective opening and closing spool members to venting and operating positions such that fluid pressure can flow to said door drive to open and close a door, said spool members each having a pressure responsive surface associated therewith;

(b) safety switch means for sensing the occurrence of a differential operating pressure in said door drive;

(c) switching means for selectively energizing one of said solenoid-operated pilot valves in response to an operator-initiated control, and, for deenergizing said one solenoid-operated pilot valve and energizing the other of said solenoid-operated pilot valve in response to an output from said safety switching means while said door drive is closing a door, and for simultaneously energizing both of said solenoid-operated pilot valves in response to an output from said safety switching means while said door drive is opening a door; and

(d) said control valve having a non-return valve means in communication with said opening and closing solenoid-operated pilot valves and operable to a center, open position upon simultaneous energization of said opening and closing solenoid-operated pilot valves for passing fluid pressure to said pressure responsive surfaces of said opening and closing spool members and actuating the one of said end opening and closing spool members in its operating position to its venting position to effect simultaneous venting by the spool members.

4,523,514

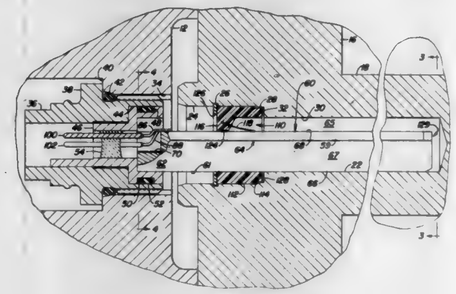
POSITION SENSING CYLINDER

Ronnie F. Burk, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 300,331, Sep. 8, 1981, abandoned. This application Mar. 29, 1984, Ser. No. 594,425

Int. Cl.³ F01B *25/26*

U.S. Cl. 92—5 R **6 Claims**



1. A position-sensing hydraulic cylinder comprising:

a hollow cylindrical housing;

a piston and rod assembly reciprocal in the housing;

a walled bore extending longitudinally into the piston and rod assembly;

a support fixed with respect to the housing and reciprocally received by the bore, the support including a planar support surface on one side thereof;

a potentiometer assembly including a potentiometer element disposed on the planar support surface, and an electrically conductive wiper means slidably and resiliently engaging the potentiometer element for maintaining electrical continuity therewith; and

a wiper carrier coupled for movement with the piston and rod assembly for moving the wiper means relative to the potentiometer assembly, the wiper carrier having means cooperating with the support and the wall of the rod bore for permitting fluid flow past the wiper carrier and for substantially preventing fluid flow past the wiper carrier in the vicinity of the wiper means, the potentiometer assembly generating signals representing relative positions of the wiper means and the potentiometer element.

4,523,515

VALVE OPERATING CYLINDER UNIT

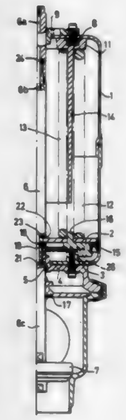
David A. Smith, Horsham, England, assignor to APV Company Limited, England

Filed Dec. 14, 1982, Ser. No. 449,587

Claims priority, application United Kingdom, Dec. 31, 1981, 8139164

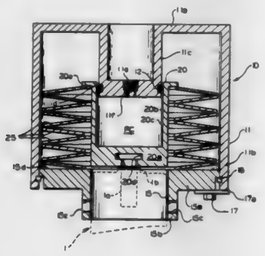
Int. Cl.³ F01B *29/04*

U.S. Cl. 92—59 **7 Claims**



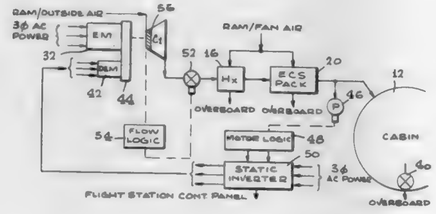
1. In a single-acting piston/cylinder unit comprising a cylinder having first and second end walls, a piston within the cylinder for reciprocating between the first and second end walls and an operating shaft which has a hollow portion and an operating fluid connection in communication with the hollow portion and with a chamber in the interior of the cylinder defined between one side of the piston and the first end wall to supply operating fluid which drives the piston; the improvement being in that said operating shaft is made up of three portions, namely a fluid inlet end portion having a fluid inlet therethrough for supplying the operating fluid, an intermediate portion anchored to the piston, said intermediate portion including the hollow portion in communication with said fluid inlet and the operating fluid connection in communication with the interior of the cylinder to said one side of said piston, and an operating end portion to be connected to a valve member or other element to be actuated by the operating shaft, said three portions being threadedly connected together end to end and each end of the intermediate portion being attached sealingly to either the fluid inlet end portion or the operating end portion such that the orientation of the intermediate portion relative to the fluid inlet end portion and the operating end portion can be reversed while maintaining communication between said fluid inlet and said hollow portion to reverse orientation of the operating fluid connection relative to said piston, the fluid connection then being in communication with a second chamber in the interior of the cylinder defined between said one side of the piston and the second end wall such that the direction in which said piston is driven by the operating fluid introduced to the chamber through said operating fluid connection is reversed.

4,523,516
ACTUATOR HAVING BELLEVILLE WASHER CONFIGURATION OPERATING IN CONCERT WITH A PISTON CYLINDER MEMBER
Stephen R. Foster, Gretna, and Peter W. Austin, New Orleans, both of La., assignors to Baker CAC, Inc., Belle Chasse, La.
Division of Ser. No. 307,713, Oct. 2, 1981, Pat. No. 4,445,424.
This application Feb. 27, 1984, Ser. No. 583,689
Int. Cl.[3] F16J *10/02;* **F01B** *31/00*
U.S. Cl. 92—130 B **1 Claim**



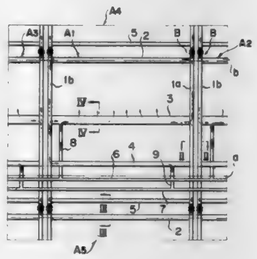
1. A fluid pressure actuator for a valve having a housing and an actuating stem, comprising: an annular housing having a closed end and an opposed open end; an annular connecting member secured to said open end of said annular housing, said annular connecting member having a radial flange portion connectable to said open end of said annular housing and an axially extending portion connectable to the valve housing; means for securing said radial flange portion to said open end of said annular housing comprising an annular groove in the bore of said annular housing, and a C-ring engaged in said groove; a cylindrical piston element concentrically formed on said closed end and extending into the interior of said annular housing toward said open end; a cup-shaped cylinder slidably and sealably mounted on the exterior of said cylindrical piston element and defining an annular space between its exterior surface and the interior bore of said annular housing; a radially outwardly projecting shoulder on the open end of said cup-shaped cylinder; conduit means in said cylindrical piston element for supplying pressured fluid to the interior of said cylinder to urge same toward the valve; resilient means mounted in said annular space between said radial flange portion and said shoulder to oppose the fluid pressure produced movement of said cylinder; and means on said cylinder for connection to the actuating stem of the valve.

4,523,517
ALL ELECTRIC ENVIRONMENTAL CONTROL SYSTEM FOR ADVANCED TRANSPORT AIRCRAFT
Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockhead Corporation, Burbank, Calif.
Continuation of Ser. No. 183,609, Sep. 2, 1980, abandoned. This application May 13, 1983, Ser. No. 494,229
Int. Cl.[3] B64D *13/00*
U.S. Cl. 98—1.5 **3 Claims**



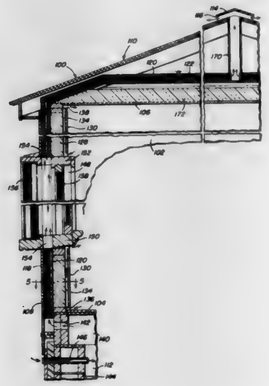
1. In an aircraft environmental control system for providing a desired amount of conditioned air to the aircraft cabin, said system including at least one compressor for producing a primary supply of high pressure air within said system, the improvement comprising:
an electric motor;
a planetary gearbox;
a "makeup"/"subtract" differential electric motor, said electric motor being arranged to drive said compressor through said planetary gearbox and said differential electric motor being mounted to said planetary gearbox and being adapted to speed up or slow down said compressor in a continuous manner during different segments of the flight of said aircraft, when the pressure of said conditioned air varies from certain preselected desired values; and
means for monitoring the pressure of said conditioned air entering said cabin and for sending a signal representative of the monitored value thereof, and further including means for comparing said monitoring pressure value with said preselected desired values and for activating said differential electric motor to speed up or slow down said compressor when said monitored pressure value falls below or exceeds said desired value.

4,523,518
APPARATUS FOR CONTROLLING TEMPERATURE IN A UNIT TYPE CURTAIN WALL
Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Aug. 1, 1983, Ser. No. 519,200
Claims priority, application Japan, Aug. 2, 1982, 57-133764
Int. Cl.[3] F24F *7/10*
U.S. Cl. 98—31 **8 Claims**



1. An apparatus for controlling temperature in a unit type curtain wall, the said curtain wall being formed with a plurality of curtain wall units each having a substantially square skeleton in which a plurality of horizontal frame members are horizontally connected between left and right vertical frame members, and the said curtain wall units being arranged at top and bottom and to left and right, characterized in that the said vertical frame members and the said horizontal frame members have hollow portions, respectively, which are air flowing passages through which conditioned air is made to flow so as to blow said conditioned air into a room through air blow-off openings formed in said horizontal frame members, and that respective hollow portions of the vertical frame members adjacent to left and right and opposite to top and bottom at their respective one ends are respectively arranged at opposed top and bottom ends in such a manner of allowing them to communicate with each other only in relation to top and bottom by the interposition of flexible cylindrical connecting members thereby forming vertically communicating air flowing ducts, respectively, which are independent of each other to left and right, said pair of vertical frame members adjacent to left and right are connected with each other through packing band means fitted between and into recesses respectively formed in the said pair of vertical frame members in such a manner of opposing to each other, thereby enabling to absorb a relative displacement caused between curtain wall units adjacent to left and right.

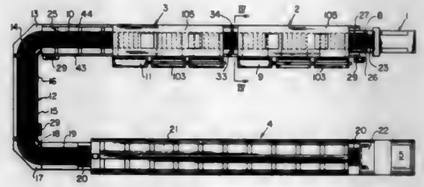
4,523,519
HEATING AND COOLING SYSTEM USING GROUND AIR
Wilfred B. Johnson, 3289 Star Rte., Manistique, Mich. 49854
Filed Sep. 2, 1983, Ser. No. 528,853
Int. Cl.[3] F24H *7/00*
U.S. Cl. 98—31 **7 Claims**



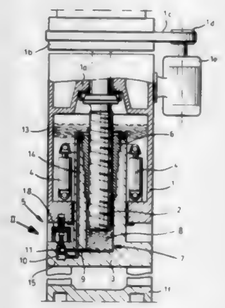
1. A heating and cooling system for buildings comprising a building structure having a peripheral wall, a roof and below ground enclosed basement space, an enclosed space above the basement space, a floor separating the basement space from the enclosed space above the basement space, said peripheral wall including a plurality of vertical air ducts in communication with the basement space, said air ducts in the peripheral wall terminating in inwardly extending air ducts below the roof communicating with a discharge adjacent the roof to provide flow of air between the basement space and the discharge adjacent the roof for vertical flow of air through the walls of the enclosed space above the basement space, said vertical air ducts covering substantially the entire peripheral wall of the enclosed space above the basement space to heat or cool the peripheral wall and the enclosed space above the basement space and prevent migration of ambient air between the outer and inner surfaces of the wall, the inner surface of said wall including means providing a vertical air passage between a point adjacent the floor and a point spaced substantially above the floor, said air ducts in the peripheral wall each including a plurality of spaced sheets defining a plurality of thin vertical air passages extending throughout the peripheral wall and inwardly to the air discharge adjacent the roof.

4,523,520
MEAT PROCESSING EQUIPMENT
Richard E. Hofmann, Pittsburgh, and Robert G. Hofmann, Jr., Allison Park, both of Pa., assignors to North Side Packing Company, Pittsburgh, Pa.
Filed Jan. 17, 1984, Ser. No. 571,563
Int. Cl.[3] A47J *37/06*
U.S. Cl. 99—352 **30 Claims**

1. In a continuous meat processing line having inlet and outlet ends, a patty-forming machine at the inlet end, a cooking portion, a transfer section having at least one conveyor belt, a freeze section and a packing section at the outlet end, the improvement comprising said cooking portion having a first cooking section aligned with said patty-forming machine and a second cooking section aligned with said first cooking section, said first cooking section having a conveyor belt with a discharge end and a receiving end for receiving patties from said patty-forming machine, means supporting said conveyor belt for movement in said first cooking section, means for driving said conveyor belt, at least one heating unit in said first cooking section located above said conveyor belt, said heating unit having a plurality of individual radiant heaters, a water tray located below said conveyor belt and said heating unit, said second cooking section having a conveyor belt with a discharge end and a receiving end for receiving patties from said discharge end of said conveyor belt in said first cooking section, means supporting said conveyor belt for movement in said second cooking section, means for driving said conveyor belt, at least one heating unit in said second cooking section located above said conveyor belt, said heating unit having a plurality of individual radiant heaters, a water tray located below said conveyor belt in said second heating section and said heating unit, said discharge end of said conveyor belt in said second cooking section discharging patties onto said conveyor belt in said transfer section for transfer to said freezer section, and means to drain said water trays.



4,523,521
SPINDLE PRESS
Eduard J. C. Huydts, Düsseldorf, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany
Filed Sep. 16, 1983, Ser. No. 533,198
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234520
Int. Cl.[3] B30B *1/18*
U.S. Cl. 100—259 **4 Claims**



1. A spindle press comprising:
an upright press support;
a ram mounted on said support for vertical movement thereon;
a spindle threadedly engaging said ram for displacing same on said support in one direction upon driven rotation of said spindle, said support being hollow and formed with a lubricant-containing internal compartment, said spindle extending into said compartment; and
at least one return jack connecting said ram with said support for displacing said ram in the opposite direction in a

return stroke, said ram having a lubricant passage through which lubricant is displaced into and out of said compartment by relative movement of said spindle and said ram, a throttle being connected with said passage for restricting flow therealong, said throttle being disposed on a lower portion of said ram and including a piston for blocking said passage upon said ram approaching a deadpoint position in a return stroke, whereby lubricant trapped between said spindle and said ram damps the termination of said return stroke, said passage being formed with a throttle cylinder receiving said piston and said piston being provided with a bypass passage, a lubricant bore communicating between said cylinder and said compartment and a further bore communicating between said cylinder and a reservoir for said lubricant, said piston being positioned to block at least one of said bores upon movement of said ram into a position close to said deadpoint position, said pistpn projecting upwardly from said portion of said ram toward a portion of said support, said portion of said support being provided with an adjustable abutment engaging said piston as said ram spproaches its deadpoint position.

4,523,522

ROTARY PRINTING MACHINE WITH WEB TEAR CLEARING SYSTEM

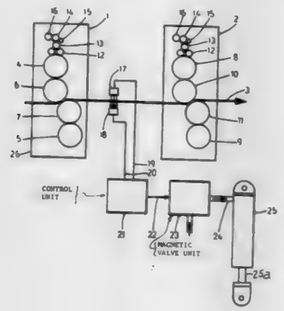
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

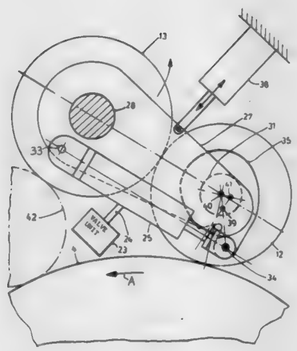
Filed Nov. 17, 1983, Ser. No. 552,730

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 3244045

Int. Cl.³ B41F *5/04, 13/28, 13/32, 13/34*

U.S. Cl. 101—219 **13 Claims**





1. Rotary printing machine having a plate cylinder (**4**);
an inker (**12–16**) applying ink to the plate cylinder including an ink roller train (**14–16**);
an ink supply roller (**13**), and
an ink application roller (**12**) in surface contact with the plate cylinder (**4**) and the ink supply roller (**13**);
and means (**17–24**) sensing tearing of paper being supplied to the printing machine and, upon detecting torn paper, providing a "torn paper" signal,
comprising, in accordance with the invention,
means for preventing damage to the printing machine and transport of torn paper into the ink roller train in case of tearing of paper being supplied to the printing machine, including separating means (**25, 30, 35**) coupled to the ink application roller (**12**), controlled by and responsive to a "torn paper" signal from the paper tearing sensing means for removing the ink application roller (**12**) from contact with the ink supply roller (**13**) while maintaining resilient yielding engagement with the plate cylinder (**4**) so as to permit the broken web to wrap around the ink application roller.

4,523,523

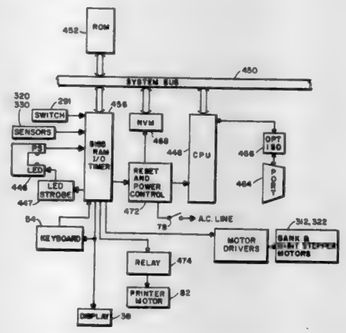
MAILING MACHINE WITH ENVELOPE INSERTION SENSING APPARATUS

Jovito N. Abellana, Trumbull, Conn., and Easwaran C. N. Nambudiri, Hicksville, N.Y., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 8, 1982, Ser. No. 447,917

Int. Cl.³ B41F *13/24, 33/08*

U.S. Cl. 101—235 **6 Claims**



1. An electronically controlled mailing machine comprising: a housing having a slot into which an envelope may be inserted, a platen movably mounted within the housing, a print head movably mounted within the housing and overhanging said platen, a single revolution clutch coupled to said platen and to said print head for movement of said platen and said print head toward each other for urging an envelope inserted into the slot into imprinting engagement with said print head, a motor coupled to said clutch for actuation thereof, computer means for controlling said motor to actuate said clutch, said computer means including a microprocessor and a system bus, said computer means including a ROM connected to said microprocessor through said system bus, said ROM including a program stored therein for controlling said microprocessor, switch means including a member movably mounted within said housing and extending into said slot for movement by an envelope inserted thereinto, said switch means including optical sensing means mounted within the housing, said optical sensing means including an LED and a photosensor spaced apart from each other to permit movement of said member therebetween, said optical sensing means electrically connected to said computer means, said computer means including strobe means electrically connected to said microprocessor and to said optical sensing means, said microprocessor causing said strobe means under the control of said program to intermittently energize said LED whereby said photosensor is normally caused to intermittently signal said microprocessor said photosensor responsive to movement of said member between said LED and said photosensor for interrupting said intermittent signal, and said microprocessor operating under the control of said program for responding to the interruption of said signal for causing said motor to actuate said clutch, whereby when an envelope is inserted into said slot said print head and said platen move toward each other for urging an inserted envelope into printing engagement with said print head.

4,523,524

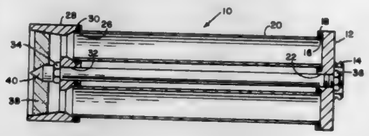
LOW COST ANTITANK ROCKET MOTOR STRUCTURE

Bernie J. Cobb, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 31, 1983, Ser. No. 462,509

Int. Cl.³ F42B *13/28*

U.S. Cl. 102—374 **4 Claims**



1. A rocket motor structure comprising a forward head closure having means on one side for attaching a warhead and openings on the opposite side for receiving a multiplicity of rocket tubes, an aft nozzle structure having a multiplicity of openings at one end, and a multiplicity of rocket tubes mounted at their opposite ends in said openings of said aft nozzle structure and said forward head closure, and a bolt securing means extending between said aft nozzle structure and said head closure and clamping said tubes between said forward head closure and said aft nozzle structure, and said multiplicity of tubes each having a solid propellant mounted therein.

4,523,525

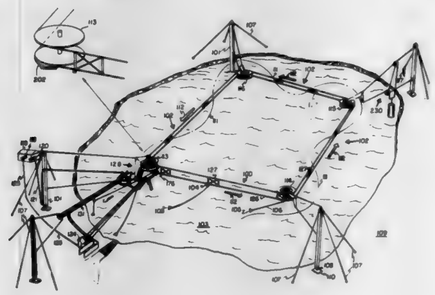
WATER SKIING TOW SYSTEM

Richard L. Foster, Albuquerque, N. Mex., assignor to C & I Joint Venture, Albuquerque, N. Mex.

Filed Nov. 30, 1981, Ser. No. 325,858

Int. Cl.³ B61B *7/04, 11/00;* **E01B** *25/14*

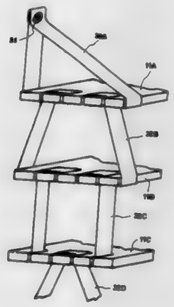
U.S. Cl. 104—173 ST **9 Claims**



1. Traction apparatus useful in a system for towing water skiers which comprises:
(a) a plurality of cables, each of which is formed into a single, open-ended loop, and
(b) a plurality of means for connecting the cable loops end to end to produce an endless, closed sequence of said loops, said means for connecting said cable loops end to end comprising means for holding the open end of a first cable loop in fixed spaced relationship to the base of the next adjoining loop and including means for holding the ends of said first cable loop in fixed parallel relationship and sheave means permitting the base of said adjoining loop to move therethrough to equalize the length of cable in the arms of this loop, said sheave means being adapted to ensure that the arms of said loop engaged therewith are in the same spaced relationship as the ends of said first cable loop, said means for holding the ends of said first cable loop in fixed parallel relationship including first and second spacer means extending between the arms of said first cable loop and cable clamping means on each end of said spacer means secured to a corresponding arm of said first cable loop, said first and second spacer means having a pair of crossed compensating cables connected between them with the means for connecting said crossed compensating cables to said first spacer means being rotatable about the axis of said first spacer means and maintained under sufficient tension to ensure that said compensating cable remain taut regardless of the spacing between said first and second spacing means.

6. A system for towing water skiers which comprises:
(a) sets of drive and idler pulley pairs,
(b) means for supporting said sets of drive and idler pulley pairs at a desired elevation and in a desired spaced relationship corresponding generally to an intended towing path,
(c) traction apparatus comprising a plurality of openended cable loops and a plurality of means for connecting said cable loops end to end to produce an endless, closed sequence in which the arms of each loop are substantially parallel and trained over the pulleys of each pulley pair, said means for connecting said cable loops end to end comprising means for holding the open end of a first cable loop in fixed spaced relationship to the base of the next adjoining loop including means for holding the ends of said first cable loop in fixed parallel relationship and sheave means permitting the base of said adjoining loop to move therethrough to equalize the length of cable in the arms of this loop, said sheave means being adapted to ensure that the arms of said loop engaged therewith are in the same spaced relationship as the ends of the said first cable loop, said means for holding the ends of said first cable loop in fixed parallel relationship including first and second spacer means extending between the arms of said first cable loop and cable clamping means on each end of said first spacer means secured to a corresponding arm of said first cable loop, said first and second spacer means having a pair of crossed compensating cables connected between them with the means for connecting said crossed compensating cables to said first spacer means being rotatable about the axis of said first spacer means and maintained under sufficient tension to ensure that said compensating cables remain taut regardless of the distance between said first and second spacing means,
(d) means for driving said traction apparatus at a desired speed,
(e) a plurality of tow lines, and
(f) means for coupling and releasing said tow lines to and from said traction apparatus.

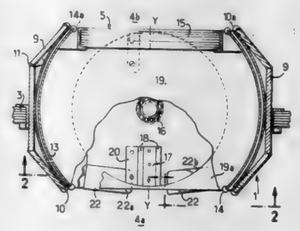
4,523,526
HANGING STRAPPED SHELVES
Hugh O'Neill, Mississauga, Canada, assignor to Sling-All Ltd., Mississauga, Canada
Filed Mar. 14, 1983, Ser. No. 475,087
Int. Cl.³ A47B *5/02*
U.S. Cl. 108—149 **6 Claims**



1. Shelf assembly, comprising:
an upper shelf and a lower shelf, both of rectangular shape;
a left shelf-strap and a right shelf-strap;
where each shelf has respective left and right strap attachment locations;
where the two shelf-straps are formed as substantially identical endless loops of webbing;
where, at each strap attachment location, the shelf is provided with slots which pass right through the shelf from its top surface to its bottom surface;
where the material of the shelf is divided by the slots into separate tongues;
where each shelf-strap is attached to both shelves at respective strap attachment locations;
where, at each strap attachment location, the webbing passes through the slots and passes alternately over and under the tongues at that location, in such a manner that a portion of the length of the webbing lies tightly flat against the top surface of one tongue, and another portion of the length lies tightly flat against the bottom surface of another tongue at that location;
and where each slot is open to an edge of the shelf in such a manner that webbing is insertable into and removable from the slot in a direction in the plane of the shelf.

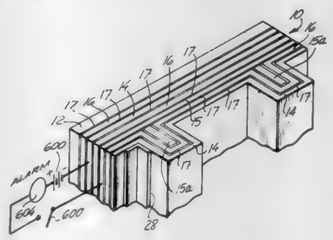
4,523,527
SECURITY APPARATUS FOR THE PASSAGE OF OBJECTS
Claude P. Bourlier, 3 rue J.F. Belbeoch, 94410 Saint Maurice, and Louis E. Sallot, 9 rue du Général Leclerc, 92270 Bois Colombes, both of France
Filed Jan. 28, 1981, Ser. No. 229,230
Claims priority, application France, Feb. 15, 1980, 80 03400
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.
Int. Cl.³ E06B *7/32*
U.S. Cl. 109—19 **15 Claims**

1. Apparatus for rotary transfer of objects, of the kind comprising a fixed frame and a rotary element mounted for rotation relative to said frame about a vertical axis, said rotary element comprising a cavity for receiving the objects to be transferred, means for stopping and locking the rotary element relative to the frame in two diametrically opposite stop positions, said rotary element defining an opening for access to said cavity, and said frame defining corresponding diametrically opposite openings which are respectively juxtaposed with said opening of the rotary element in said two stop positions, whereby said cavity is accessible for the transfer of an object alternatively from opposite sides of said frame, said stop and locking means comprising at least one abutment on the end of the rotary element and, projecting into the circular path of this abutment, at least one abutment on the corresponding end of the frame, characterised in that the means for stopping and locking **20**, **20***a*, **17**, **23**, **22** the rotary element **5** relative to the frame **(1)** comprise leaf spring means **22**, also projecting into the circular path of said at least one abutment **20**, **20***a* of the rotary element **(5)** and mounted on the end **8** of the frame **(1)**, said leaf spring



means presenting at least one locking edge for engaging said at least one abutment of the rotary element whereby to lock said rotary element in said stop positions, and at least one ramp surface inclined to the horizontal whereby said at least one abutment can ride over said leaf spring means as said rotary element rotates towards said stop positions, and damper means for damping rotation of said rotary element towards said stop positions.

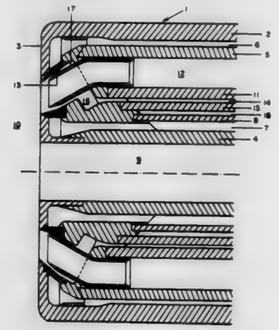
4,523,528
INSULATING APPARATUS AND COMPOSITE LAMINATES EMPLOYED THEREIN
Otis H. Hastings, and Otis M. Hastings, both of Mahwah, N.J., assignors to Transaction Security, Inc., Montvale, N.J.
Continuation-in-part of Ser. No. 102,552, Dec. 11, 1979, Pat. No. 4,381,716, which is a continuation-in-part of Ser. No. 912,974, Jun. 5, 1978,. This application Jul. 13, 1981, Ser. No. 282,709
Int. Cl.³ E04B *2/02;* **E05G** *1/024*
U.S. Cl. 109—42 **18 Claims**



1. A transaction processing enclosure for housing electronic data processing equipment, banking payout and receiving apparatus, documentation and the like, that comprises a housing; at least one access means in said housing to the interior of said enclosure; closure means having outer surface conformance in size and shape, and registrable, with said access means to effect the opening and closing thereof, said housing and closure means comprising a laminate of integrally bonded components including at least two electrically conductive plies; at least one structural element and at least one radiant heat reflective ply; said at least one structural element and said at least one radiant reflective ply being incorporated in or separated from said electrically conductive plies; each of said electrically conductive plies and said radiant heat-reflective ply where present independently and said structural element being isolated from each other by an electrically insulating,

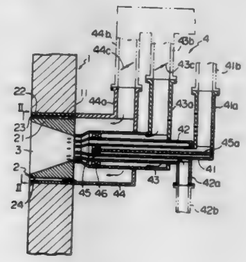
fibrous, refractory, ceramic ply attached thereto by means of an adhesive ply.

4,523,529
PROCESS AND BURNER FOR THE PARTIAL COMBUSTION OF SOLID FUEL
Ian Poll, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.
Filed Oct. 6, 1983, Ser. No. 539,457
Claims priority, application United Kingdom, Oct. 19, 1982, 8229811
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—263 **5 Claims**



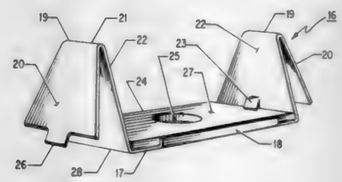
1. A burner for the partial combustion of a finely divided solid fuel comprising:
a burner housing having a central passageway terminating in a central fuel outlet;
a plurality of oxygen outlets substantially equal spaced and surrounding said fuel outlet;
a plurality of annular outlets, one said annular outlet surrounding each of said oxygen outlets, said annular outlets being coaxial with said oxygen outlets and both said oxygen and annular outlets being inclined at an angle to the axis of the fuel outlet;
a first conduit means, said first conduit means being coupled to said oxygen outlets; and
a second conduit means, said second conduit means being coupled to said annular outlets.

4,523,530
POWDERY COAL BURNER
Motofumi Kaminaka, Wakayama; Hiroyuki Takashima, Ibaragi, and Katsuhiko Kaburagi, Wakayama, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan
Filed Feb. 22, 1983, Ser. No. 468,317
Claims priority, application Japan, Feb. 26, 1982, 57-28169
Int. Cl.³ F23D *1/02*
U.S. Cl. 110—264 **10 Claims**



1. A powdery coal burner which comprises a burner nozzle having an opening at the end of the burner body for injecting a combustionassisting gaseous fuel medium into a combustion area, means for supplying a combustion-assisting gaseous fuel medium to said burner nozzle, means for providing a swirling motion to said combustion-assisting gaseous fuel medium which is injected through said burner nozzle to said combustion area in a swirled state, an injection nozzle having an opening surrounding said burner nozzle opening for injecting coal toward said combustion area, means for supplying coal to said injection nozzle, a primary air outlet nozzle for forwardly injecting primary combustion air, said primary air outlet nozzle having an opening surrounding said opening of said injection nozzle for the powdery coal, means for supplying primary combustion air to said primary air outlet nozzle, and means for providing a swirling motion to said primary combustion air.

4,523,531
MODULAR FURNACE LINING HAVING MECHANICALLY INTERLOCKING ATTACHMENT MEANS
William Bishara, Niagara Falls, N.Y., assignor to Kennecott Corporation, Cleveland, Ohio
Filed Feb. 22, 1984, Ser. No. 582,402
Int. Cl.³ F23M *5/00*
U.S. Cl. 110—336 **7 Claims**



1. A modular furnace lining comprising:
a. a clip having a centrally located base portion adapted to be fastened to a surface of a furnace, the clip including a pair of major resilient projections which extend away from its base portion and the interior surface of the furnace toward the interior of the furnace when the clip is installed;
b. a module including a hot face adapted to be presented to the interior of a furnace and a cold face adapted to be presented to an interior surface of a furnace, the module being formed of ceramic fiber insulation mat secured to a tray adjacent to the cold face of the module; said tray including a bottom portion having a plurality of openings of such size and arrangement that they are capable of interlocking engagement with the major projections of the clip;
c. resilient means for interlocking engagement included between the tray and the clip which is actuated solely by positioning the tray of the module over the projections of the clip and forcing the tray of the module towards the base portion of the clip; said major projections being elastically flexed as the tray is forced thereover.

4,523,532
COMBUSTION METHOD
Michael P. Moriarty, Simi Valley, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Division of Ser. No. 344,067, Feb. 2, 1982, which is a continuation-in-part of Ser. No. 239,943, Mar. 3, 1981, abandoned. This application Jan. 17, 1984, Ser. No. 571,963
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—347 **5 Claims**

1. A method for the entrained-flow combustion of a carbon-, nitrogen- and sulfur-containing fuel for substantially reducing

emission of gaseous sulfur compounds and nitrogenous compounds formed during the combustion of the fuel with a substoichiometric amount of oxygen-comprising;

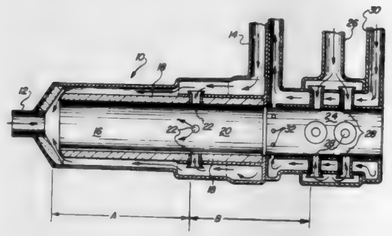
introducing said fuel, an inorganic alkaline absorbent and an oxygen-containing gas into a first combustion sulfur capture zone of an entrained-flow combustor to form a fluent mixture therein of fuel and absorbent entrained in said gas,

the oxygen being present in said zone in an amount to provide from about 25%–40% of the total stoichiometric amount required for the complete combustion of the fuel,

the inorganic alkaline absorbent being present in an amount to provide a molar ratio of alkaline absorbent to sulfur compounds of from about 1.0:1 to 3.0:1, said ratio including any alkaline absorbents contained in the fuel;

reacting said fuel and absorbent entrained in said oxygen-containing gas by maintaining them in said zone at a temperature from about 1000°–1800° K. for a time sufficient

(a) to gasify at least about 75% of the carbon content of the fuel and substantially all of the sulfur in a fuel,



(b) to combust the gasified fuel and oxygen to produce a fuel-rich stoichiometry in the gas-phase, and

(c) to react in excess of about 70% of the fuel sulfur with the inorganic alkaline absorbent to form a solid alkaline sulfide compound

introducing the resultant combustion mixture into a second combustion zone;

maintaining said mixture at a temperature in the range of 1800° K.–2500° K. in said second combustion zone while introducing additional air in an amount to provide about 45%–75% of the total stoichiometric amount of air required for complete combustion of the fuel;

maintaining said mixture including said alkaline sulfide compound, at said temperature for a time sufficient to reduce said nitrogenous compound content to a desired level; and

discharging said mixture having a substantially reduced gaseous sulfur compound and nitrogenous compound content.

4,523,533

FORCE TRANSFER MEANS

George M. Toman, Chicago, Ill., assignor to Union Special Corporation, Chicago, Ill.

Continuation of Ser. No. 904,203, May 9, 1978, abandoned. This application Jun. 8, 1982, Ser. No. 386,366

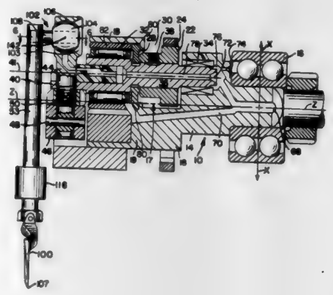
The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.

Int. Cl.³ D05B *57/32*

U.S. Cl. 112—199 **6 Claims**

5. A sewing machine having in combination looper means, a Cardan gear mechanism means having an output centerpoint movable in two dimensions, a ring gear, a pinion gear operatively associated with said ring gear and a lever means arranged for circular swinging movement about the center axis of the pinion gear with said output centerpoint being located thereon, wherein the improvement comprises:

means operative for drivingly connecting the Cardan gear mechanism means and said looper means, said means operative being adapted to transmute the movement of the



output centerpoint movable in two dimensions to three dimensional movement at the tip of the looper means.

4,523,534

LOOPTAKER MECHANISM

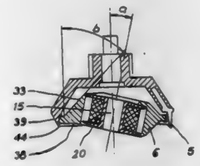
Leif U. Larsen, Huskvarna, Sweden, assignor to Husqvarna Aktiebolag, Huskvarna, Sweden

Filed Mar. 18, 1983, Ser. No. 476,537

Claims priority, application Sweden, Mar. 26, 1982, 8201950

Int. Cl.³ D05B *57/08, 57/26*

U.S. Cl. 112—231 **7 Claims**



1. In a looptaker mechanism for a zig-zag sewing machine having a hook ring supported on a shaft a sewing machine needle having an eye, the hook ring having a hook tip mounted to cooperate with the sewing machine needle, the hook tip being arranged to take an upper thread from the needle, and a bobbin holder for an under thread bobbin journalled in the hook ring; the improvement wherein the bobbin is mounted in the bobbin holder with its axis forming an angle greater than 0 to the axis of said shaft, said hook ring having a bearing surface in a plane perpendicular to said shaft, said bobbin holder having a bearing flange journalled in said bearing surface, the axis of said bobbin being parallel to a plane normal to said needle.

4,523,535

STITCH CHAIN CUTTER FOR SEWING MACHINES

James Blackburn, Rte. 1, Box 476, Boomer, N.C. 28606

Filed Jul. 30, 1984, Ser. No. 635,811

Int. Cl.³ D05B *65/02, 65/06*

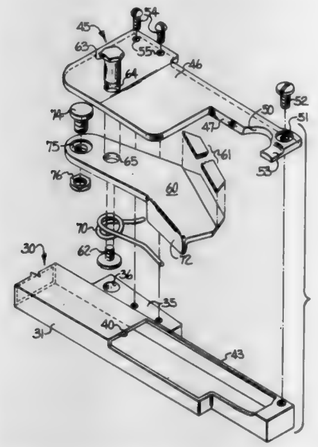
U.S. Cl. 112—288 **7 Claims**

1. A stitch chain cutting device for a sewing machine including needle means for forming stitches in fabric and forming a stitch chain between successive pieces of fabric, and feed dog means reciprocating in timed relationship with said needle means for moving the fabric in a horizontal plane and past said needle means, said stitch chain cutting device comprising

a. suction housing means including a forward end having a suction inlet positioned downstream of said needle and feed dog means for drawing the stitch chain into said suction inlet,

b. fixed knife blade means disposed adjacent said suction inlet and downstream of said needle and feed dog means, said fixed knife blade means being disposed in a horizontal plane and including a horizontal blade support plate fixed on the forward upper surface of the forward end portion of said suction housing means, said fixed knife blade plate further including a portion extending outwardly beyond one side of said suction housing means,

c. movable knife blade means disposed in parallel relationship with said fixed knife blade means and including a sharpened first end portion cooperating with said fixed knife blade means, and an opposite free end,



d. pivot means supporting the medial portion of said movable knife blade means on said outwardly extending portion of said fixed knife blade plate,

e. adjustable biasing means positioned between said free end of said movable knife blade means and said fixed knife blade means and being operable for biasing said sharpened end portion of said movable knife blade means into cutting engagement with said fixed knife blade means, and

f. cam means supported on said feed dog means for engaging and moving said movable knife blade means in a cutting movement relative to said fixed knife blade means with each reciprocation of said feed dog means.

4,523,536

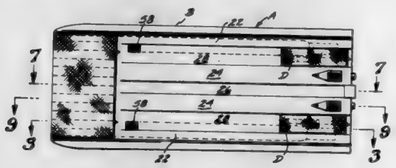
ENERGY EFFICIENT POWER DRIVEN MARINE VESSEL BOAT

Mark H. Smoot, 1900 E. Ocean Blvd., Apt. 1607, Long Beach, Calif. 90802

Filed Jul. 1, 1983, Ser. No. 510,000

Int. Cl.³ B63B *1/34, 1/38*

U.S. Cl. 114—67 R **8 Claims**



1. A water jet propelled boat that has a rigid elongate rectangular shape that is defined by a downwardly and rearwardly curving bow of substantially the width of said hull that merges into a flat bottom, a transom, a pair of side walls that extend below said bottom and outwardly from said bow to define a pair of keel members; a pair of outer and inner laterally spaced parallel sponsons that project downwardly from said bottom and originate rearwardly from said bow and terminate adjacent said transom, with each of said otuer and inner sponsons cooperating to define an outer longitudinal channel therebetween and said inner pair of sponsons defining a central longitudinal channel therebetween, with said boat capable of being operated in a first mode in which the wetted area of said hull is in a configuration substantially defined by the shape of said bow, bottom, pair of sidewalls and said pairs of outer and inner sponsons, and said boat capable of being operated in additional modes in which the configuration of the portion of said hull that is wetted is altered by the operator of said boat relative to the wave condition of the body of water on which the boat is traveling as well as the rate of travel to optimize the effeciency of the operation of said boat, said boat being characterized by:

a. first inflatable bag means secured to said hull to extend downwardly and rearwardly over said bow in a flat configuration when not inflated as occurs when said boat is operated in said first mode;

b. second inflatable bag means secured to said hull and disposed within said pair of outer channels adjacent said transom that are in a flat configuration when not inflated as occurs when said boat is operated at said first mode;

c. pressurized air generated means on said boat;

d. first, second and third air ducts in communication with said first and second inflatable means and at least one opening in said bottom adjacent said bow that communicates with said central channel, with pressurized air discharged into said central channel flowing rearwardly therein as a cushion of air bubble to lessen the friction of said hull with the body of water in which it is moving;

e. vertically adjustable means adjacent said transom and in longitudinal alignment with said central channel for selectively increasing or decreasing the resistance encountered by sad air bubbles in flowing rearwardly from said central channel to vary the draft of said boat; and

f. first valve means for varying the rates of flow of pressurized air from said pressurized air generating means to expand said first and second inflatable bag means and alter the contour of the portion of said hull that is wetted by the water on which said boat is traveling, with said altered contour being one that permits said boat to move forwardly through said body of water on which it floats on said bubbles of air with increased fuel effeciency.

4,523,537

TWIN OR FORKED BOOM FOR A SAILING SURFBOARD

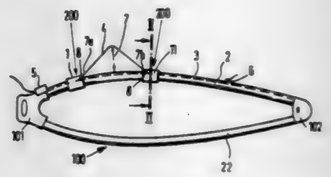
Adelheid Kowol, Gravensteinstrasse 8, D-2400 Lübeck 1, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 462,099

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228929; Nov. 25, 1982, 3243539

Int. Cl.³ B63B *15/00*

U.S. Cl. 114—97 **3 Claims**



1. An apparatus adapted to connect first and second portions of a substantially trapezoidal member to at least one twin tube of a twin boom, said trapezoidal member having a normally slack portion spaced at an adjustable spacing from said at least

one twin tube, and including first and second end portions, the twin boom being used in connection with a sailing surfboard, comprising in combination

first and second trapezoidal member engagement means slideably connected to said first and second trapezoidal member portions, respectively, each trapezoidal member engagement means including a sleeve, at least one of the sleeves being shaped as an approximately U-shaped clamping profile body defining profile member legs, and, accompanied by the formation of a trapezoidal member passage opening is adapted to be closed by means of a screw holding together the profile member legs, said trapezoidal member engagement means being adapted to slideably engage said at least one twin tube,

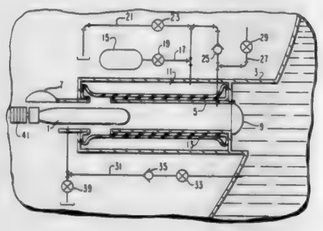
a wedge-formed clip connected to said first end portion, and adapted to be disposed on said at least one twin tube, said second end portion being adapted to be connected to said at least one twin tube at a distance from said clip,

whereby said clip serves to adjust and fix the spacing of said normally slack portion from said at least one twin tube.

4,523,538
TORPEDO LAUNCHER

Martin Hollmann, Cupertino, Calif., and Francis J. Waclawik, Bristol, R.I., assignors to Westinghouse Electric Corp., Pittsburgh, Pa. and The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 7, 1983, Ser. No. 456,476
Int. Cl.³ F41F *3/08*
U.S. Cl. 114—238 **7 Claims**



1. A torpedo launcher comprising:

a torpedo tube into which a torpedo is inserted;

an enclosure adjacent said torpedo tube;

a sack disposed in said enclosure and disposed in fluid communication with said torpedo tube;

means for filling said torpedo tube and sack with water; and

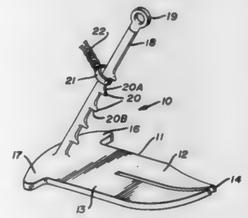
means for rapidly supplying pressurized fluid to said enclosure to compress said sack and eject said torpedo from said torpedo tube.

4,523,539
BOAT ANCHOR

Gerald M. Granger, 3203 Hermosa Dr., Youngstown, Ohio 44511

Filed Dec. 15, 1983, Ser. No. 561,821
Int. Cl.³ B63B *21/46*
U.S. Cl. 114—299 **3 Claims**

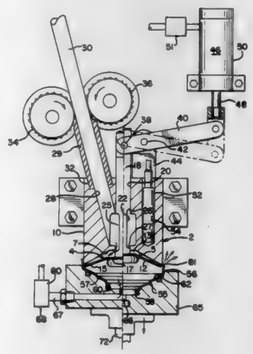
1. An improvement in a boat anchor assembly, the improvement comprising means for selectively engaging a shank of said anchor in a predetermined manner with an anchor line, said boat anchor assembly comprising the combination of said anchor line, a sleeve of a known length movably positioned on said shank, said line attached to said sleeve, said shank extending at an obtuse angle from the base of said anchor, said base defining a pair of flukes, said means for selectively engaging said shank including said sleeve and line and a plurality of configurations spaced longitudinally on said shank and extending outwardly therefrom and toward said flukes, said configurations defining right angular surfaces in opposed relation to said base and a plurality of curved surfaces in oppositely disposed relation thereto, and means on said shank preventing disengagement of said sleeve therefrom.



4,523,540
ADHESIVE APPLICATOR

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Apr. 12, 1982, Ser. No. 367,507
Int. Cl.³ B05C *7/02, 5/02*
U.S. Cl. 118—63 **5 Claims**



1. A mechanism for applying adhesive to the interior of an axially extending surface of a can component comprising:

a valve body having a lower end with concave cavity bounded by a sharp peripheral edge,

a flexible valve plate aligned with said end of said body having a peripheral lip disposed in closing relation to said edge,

said plate and body defining a metering chamber, inlet means in said body communicating with said chamber,

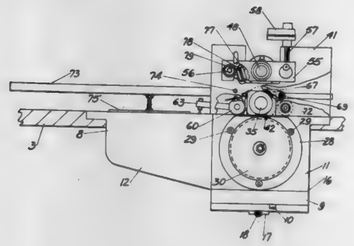
means for providing a source of flowable adhesive to flow through said inlet means into said chamber, and

means for flexing said plate for said adhesive into said metering chamber and for compressing the adhesive within said chamber to exhaust the adhesive from between said edge and lip radially onto said surface.

4,523,541
APPARATUS FOR APPLYING THERMOPLASTIC ADHESIVE TO FLEXIBLE DIE-CUT PARTS

D. Bruce Freeman; Bernard G. Kesse, both of Cincinnati, Ohio, and Philip P. Thiel, Ft. Mitchell, Ky., assignors to The Louis G. Freeman Company, Erlanger, Ky.

Division of Ser. No. 464,156, Feb. 7, 1983, Pat. No. 4,468,418.
This application Jul. 23, 1984, Ser. No. 614,745
Int. Cl.³ B05C *1/00*
U.S. Cl. 118—202 **15 Claims**



1. An apparatus for applying thermoplastic adhesive to a die-cut part comprising:

a frame having an enlarged, closed cavity which serves as a reservoir for the adhesive;

heater means associated with the frame for melting the adhesive and maintaining the adhesive in a molten state;

a mixing roll rotatably attached to the frame and located, at least partially, within the cavity of the frame;

an applicator roll rotatably mounted above and parallel to the mixing roll such that the applicator roll can pick up adhesive from the surface of the mixing roll, the applicator roll having a pattern of indentations and a series of spaced, narrow circumferential grooves in its surface;

primary wiper means adjacent the applicator roll for removing excess adhesive from the outer surface and grooves of the applicator roll;

a pressure roll rotatably mounted above the applicator roll;

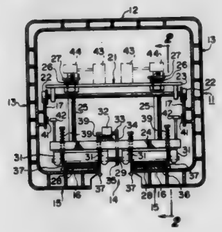
stripping means associated with the grooves in the applicator roll for guiding the part away from the applicator roll after the adhesive has been applied; and

drive means for rotating the mixing roll, applicator roll and pressure roll.

4,523,542
PAVING APPARATUS FOR A TRAVELLING PATH FOR VEHICLES OF GUIDE RAIL SYSTEM

Jumpei Imahori, and Yutaka Sugie, both of Kobe, Japan, assignors to Sumitomo Gomu Kogyo Kabushiki Kaisha, Kobe, Japan

Filed Jan. 28, 1983, Ser. No. 462,035
Claims priority, application Japan, Jan. 29, 1982, 57-13120
Int. Cl.³ B05C *11/02*
U.S. Cl. 118—663 **16 Claims**

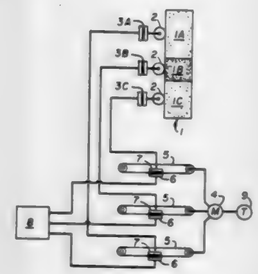


1. A paving apparatus for paving pavement materials on left and right travelling paths of a rail for a guiding system vehicle of the type having driving wheels which travel on surfaces of the left and right travelling paths and guide wheels which travel along a pair of guide rails, the apparatus comprising: a bogie for travelling along the upper edges of the pair of guide rails, a base plate adjustably suspended from said bogie so that the height thereof may be adjusted, a pair of paving means supported on the base plate so as to oppose the surfaces of the left and right travelling paths, and level detecting means for detecting the height of the base plate comprising means indicative of an execution reference line provided on at least one guide rail and means cooperating with said indicating means to detect the height of the base plate, whereby the pavement materials can be simultaneously paved on the respective travelling road surfaces by the pair of left and right paving means while the bogie moves along the upper edges of the guide rails.

4,523,543
ASPHALT SHINGLES - COLOR BLEND DROP SEQUENCE RANDOMIZED BY DEPOSITION MEANS CONTROLLED BY RANDOM SIGNAL GENERATOR TO OBVIATE STRIPES ON ROOF

Thomas R. Brady, and Lester C. Benner, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 3, 1984, Ser. No. 567,589
Int. Cl.³ B05B *12/02*
U.S. Cl. 118—697 **4 Claims**



1. Apparatus for depositing granules onto a moving substrate comprising:

(a) a random signal generator;

(b) a signal emitter actuated by said random signal generator;

(c) a sensor receptive to signals emitted by said signal emitter;

(d) a granule container;

(e) discharging means for discharging granules from said granule container; and

(f) means for actuating said discharging means responsive to signals from said sensor.

4,523,544
APPARATUS FOR GLOW DISCHARGE DEPOSITION OF A THIN FILM

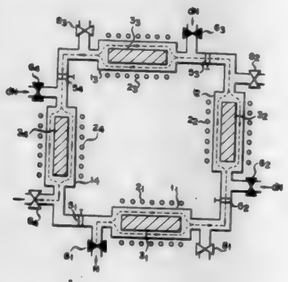
Nozomu Harada, Yokohama; Hiroshi Ito, Tokyo, and Toshikazu Adachi, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 5, 1984, Ser. No. 586,450
Claims priority, application Japan, Mar. 10, 1983, 58-39545
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—702 **6 Claims**

1. An apparatus for forming a thin film on a substrate by the decomposition of a compound gas, containing a target thin film component, by means of glow discharge, which further comprises:

a main body having a plurality of discharge unit chambers, each provided with a glow discharge generating means

and a space for housing the substrate and connected in a loop via chamber-connecting portions, sets of gas supply valves and gas discharge valves being connected to the chamber-connecting portions; and



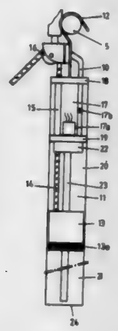
means for sequentially switching on and off said gas supply valves and said gas discharge valves every time a predetermined period of time has elapsed.

4,523,545

APPARATUS FOR REMOVING A MILKING SET OF A MILKING MACHINE, PARTICULARLY FOR A COW-SHED

Jan Kummer, Leeuwarden, Netherlands, assignor to Kummer Electronics B.V., Leeuwarden, Netherlands

Filed Jun. 17, 1983, Ser. No. 505,211
Claims priority, application Netherlands, Jun. 17, 1982, 8202453
Int. Cl.³ A01J *7/00*
U.S. Cl. 119—14.08 **9 Claims**



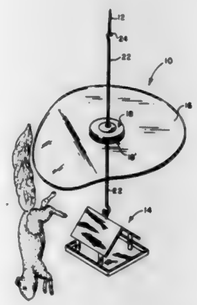
1. Apparatus for removing a milking cluster from a milking cow, said cluster being connected to the milk line and the vacuum line of an automatic milking machine, comprising a cylinder suspended at one end in a substantial vertical direction and closed at its bottom end, a piston dividing said cylinder into an upper space and a lower space, a lifting cord having one end attached to the upper face of said piston and extending axially outward of the one end of cylinder and thence downwardly over at least one guide means and connected at the other end to said milking cluster, a vacuum tube connectable to said vacuum line and extending axially into said cylinder and sealingly past said upper space into communication with said lower space, electronic control means responsive to the flow of milk through said milk line, and valve means operable by said electronic control means to place said lower space under vacuum, said valve and said electronic control means being located in said cylinder outside of said upper and lower spaces.

4,523,546

SQUIRREL-PROOF BIRD FEEDER

Peter A. Latham, Rye, N.H., assignor to Opus, Inc., Framingham, Mass.

Filed Jan. 4, 1983, Ser. No. 455,605
Int. Cl.³ A01K *39/01*
U.S. Cl. 119—51 R **10 Claims**



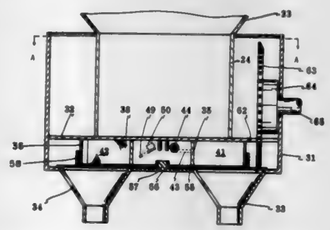
1. A predator-resistant bird feeder comprising:
a bird feeder having at least one feeder station;
a substantially horizontal flexible sheet free of any grippable portions and substantially larger in horizontal plan than the feeder so as to extend laterally beyond the feeder,
means for supporting the flexible sheet above the feeder station of the feeder for providing an overhead shield for the feeder;
said flexible sheet being constructed so as to be flexible under the influence of the weight of a predator applied to the sheet whereby the sheet will flex downwardly and define a downwardly extending surface for causing the predator to slide off the sheet and fall beyond the feeder.

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DEVICE SUPPLYING CONSTANT AMOUNT OF FEED

Shingo Ogasawara, Kitakyushu, and Hideo Nakajima, Nagano, both of Japan, assignors to Kabushiki Kaisha Nakajima Seisakujo, Nagano, Japan

PCT No. PCT/JP83/00021, § 371 Date Sep. 22, 1983, § 102(e) Date Sep. 22, 1983, PCT Pub. No. WO83/02541, PCT Pub. Date Aug. 4, 1983
PCT Filed Jan. 25, 1983, Ser. No. 552,136
Claims priority, application Japan, Jan. 25, 1982, 57-9798
Int. Cl.³ A01K *5/00, 39/01*
U.S. Cl. 119—52 B **9 Claims**



1. A constant feed supplying device comprising:
a feed hopper;
an outlet opening in communication with said feed hopper;
a substantially horizontal partition mounted adjacent to said outlet opening and forming a closure therefor, said substantially horizontal partition includes a predetermined number of ports therein;

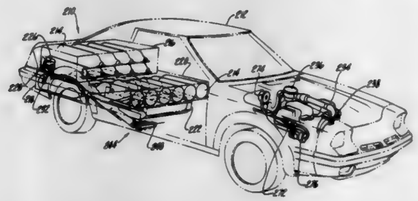
a rotary disk spaced a predetermined distance from said substantially horizontal partition, said rotary disk includes a plurality of through holes disposed therein;
at least one control plate positioned adjacent to said rotary disk for maintaining the level of feed on said rotary disk at a predetermined thickness; and
at least one discharge port in communication with a predetermined number of through holes in said rotary disk for discharging feed.

4,523,548

GASEOUS HYDROCARBON FUEL STORAGE SYSTEM AND POWER PLANT FOR VEHICLES

Larry J. Engel, Rochester, and John W. Turko, River Rouge, both of Mich., assignors to Michigan Consolidated Gas Company, Detroit, Mich.

Filed Apr. 13, 1983, Ser. No. 484,520
Int. Cl.³ F02B *43/00*
U.S. Cl. 123—1 A **45 Claims**



1. A low-pressure gaseous hydrocarbon fuel powered vehicle comprising:
means for storing a self-contained supply of a gaseous hydrocarbon fuel, said storing means containing a predetermined sorbent material for reducing the pressure at which a given amount of said gaseous hydrocarbon fuel is stored, said gaseous hydrocarbon fuel being stored at a maximum pressure less than approximately 500 psig (3450 kPa);
a prime mover having means for combining said gaseous hydrocarbon fuel with air to produce the mechanical energy therefrom necessary to move said vehicle;
means for conveying said gaseous hydrocarbon fuel to said storing means from a stationary source of said gaseous hydrocarbon fuel and for conveying said gaseous hydrocarbon fuel from said storing means to said combining means of said prime mover;
sorbent filter means associated with said conveying means for sorptively removing at least a portion of predetermined constituents from the flow of said gaseous hydrocarbon fuel to said storing means and for desorptively re-introducing at least a portion of said predetermined constituents to the flow of said gaseous hydrocarbon fuel from said storing means to said combining means of said prime mover; and
means associated with said conveying means for controlling the flow of said gaseous hydrocarbon fuel from said storing means to said combining means of said prime mover.

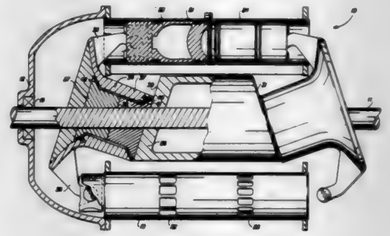
4,523,549

INTERNAL COMBUSTION ENGINE

James W. Lacy, Rte. 3, Box 436, Sanford, Fla. 32771

Filed Mar. 21, 1984, Ser. No. 591,800
Int. Cl.³ F02B *75/26*
U.S. Cl. 123—58 BC **15 Claims**

1. An internal combustion engine comprising:
an engine block having a plurality of extruded aluminum alloy modules. each module having a cylinder bore disposed therein;
a shaft defining an axis of rotation and disposed in said engine block;
a unitary stiffener having a substantially higher stiffness modulus than the shaft, coaxially attached to the shaft so that an interior portion of the shaft will remain substantially rigid under bending loads;
a wobbler slug attached to said shaft stiffener and mounted at an angle to said shaft;
a pair of pistons slidably mounted in said engine block cylinder bore; and
a spider arm assembly having at least one single piece spider



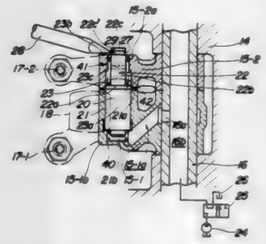
arm connected to at least one portion, said spider arm assembly being operatively coupled to said wobbler slug; whereby movement of said piston will move said spider arm assembly against said wobbler slug to rotate said shaft in a wobbler engine.

4,523,550

VALVE DISABLING DEVICE FOR INTERNAL COMBUSTION ENGINES

Shoichi Hondo, Tokyo; Yoshikatsu Nakano Kawagoe; Hirano Makoto, Asaka, and Masaaki Matsuura, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1984, Ser. No. 652,816
Claims priority, application Japan, Sep. 22, 1983, 58-174262; Sep. 22, 1983, 58-174263
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.16 **11 Claims**



1. In a valve disabling device for use in a valve actuating mechanism of an internal combustion engine, said valve actuating mechanism having cam means, inlet valve means and exhaust valve means, at least one of which comprises a pair of valves, and first and second rocker arm means juxtaposed with each other and engaging said at least one of said inlet valve means and said exhaust valve means, one of said first and second rocker arm means engaging said cam means, said valve disabling device including an engaging member slidably disposed within a first axial bore formed in said first rocker arm means, said engaging member being projectable into and retractable from a second axial bore formed in said second rocker arm means in alignment with said first axial bore, an urging member slidably disposed within said second axial bore, urging means urging said urging member against said engaging member, and pressure applying means for hydraulically forcing said engaging member into said second axial bore against the urging force of said urging means, whereby said first and second rocker arm means are drivingly coupled together to cause said

at least one of said inlet valve means and said exhaust valve means to make valving motions in unison with each other, while when said pressure applying means is inoperative, said urging means causes said engaging member to recede from said second axial bore through said urging member to thereby disconnect said first and second rocker arm means from each other; the improvement comprising: biasing means for biasing said engaging member into said second axial bore to drivingly couple said first and second rocker arm means together irrespective of whether said pressure applying means is operative or inoperative, said urging member being adapted to assume a predetermined position where a portion thereof is projected out of said second axial bore for access from outside, when said engaging member is biased by said biasing means; and retaining means for retaining said urging member in said predetermined position.

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VALVE ACTUATING DEVICE

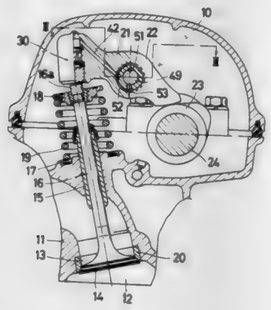
Fuminao Arai, Chiryu; Hisashi Kodama, Nagoya, and Takuro Ono, Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 11, 1984, Ser. No. 609,248

Claims priority, application Japan, May 11, 1983, 58-070063[U]

Int. Cl.³ F01L *1/18*

U.S. Cl. 123—90.46 **3 Claims**



1. A valve actuating device for an internal combustion engine having cam and a valve stem, said device comprising:

a rocker arm receiving a load from said cam at one end and actuating said valve stem at the other end thereof;

a hydraulic valve lifter disposed in said rocker arm, said valve lifter including a cylinder formed in said rocker arm, a plunger member disposed in said cylinder and engaging one of said valve stem and said cam at one end thereof, a pressure chamber defined by the other end of said plunger member, a reservoir chamber formed in said rocker arm and a check valve allowing the flow of hydraulic fluid between said pressure chamber and said reservoir; and

a hollow rocker arm shaft pivotally supporting said rocker arm and having a first fluid supply passage therein, an air hole formed adjacent an upper portion of said hollow rocker arm shaft so as to communicate the interior of said hollow rocker arm shaft with the ambient atmosphere wherein said air hole is formed in a plug closing one end of said first fluid supply passage, and a fluid hole formed in said hollow rocker arm shaft on the side thereof opposite to said air hole;

said rocker arm being provided with an annular fluid passage which communicates with said first fluid supply passage through said fluid hole and a second fluid supply passage communicating said annular fluid passage with said reservoir chamber.

4,523,552

IGNITION SYSTEM FOR ENGINE

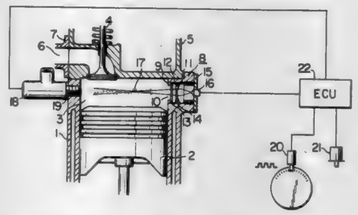
Shinichi Mukainakano; Tadashi Hattori; Minoru Nishida, all of Okazaki; Toru Mizuno, Aichi, and Tukasa Goto, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Apr. 28, 1983, Ser. No. 489,382

Claims priority, application Japan, Apr. 29, 1982, 57-71732

Int. Cl.³ F02P *23/04*

U.S. Cl. 123—143 B **8 Claims**



1. An ignition device for use with internal combustion engines and adapted for conducting a light beam into a combustion chamber of the engine and igniting a mixture of fuel and air, said device comprising a light emission means opened to the combustion chamber for emitting the light beam and a particle supply means disposed in opposed relation with the light emission means for supplying particles of a high light absorption index separately from said fuel, said particle supply means being adapted to emit the particles along the optical axis of the light beam into the combustion chamber, thereby permitting the particles to be heated at a suitable position within the combustion chamber and the heated particles to serve as an ignition source for igniting the mixture.

4,523,553

COMBUSTION ENGINE WITH BALANCING DEVICE

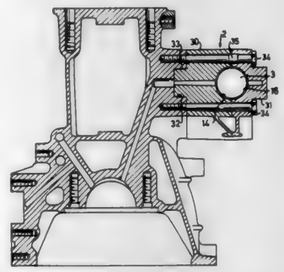
Ove Backlund, Västra Frölunda, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Jun. 15, 1982, Ser. No. 388,714

Claims priority, application Sweden, Jun. 17, 1981, 8103814

Int. Cl.³ F16F *15/14*

U.S. Cl. 123—192 B **3 Claims**



1. In a combustion engine of the piston type having an engine block and a crankshaft and at least one balancer shaft driven by the engine and arranged parallel to the crankshaft; the improvement comprising a separate housing in which the balancer shaft is mounted, the housing containing at least two axially-spaced bearings for the balancer shaft, and screws directly attaching the housing to the engine block at spaced locations adjacent said bearings, the cylinder block and the housing having a projection on one that extends into a mating recess on the other in a direction parallel to the screws and transverse to the balancer shaft.

4,523,554

METAL AND CERAMIC ASSEMBLY

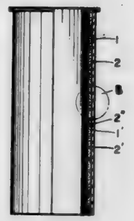
Hideo Ryu, Tagata, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Shizuoka, Japan

Filed Oct. 14, 1983, Ser. No. 542,105

Claims priority, application Japan, Oct. 22, 1982, 57-185882

Int. Cl.³ F02F *1/00*; F02B *77/02*

U.S. Cl. 123—193 C **13 Claims**



1. A metal and ceramic assembly comprising:

a first layer comprising a ceramic material;

a second layer on a surface of and unitary with said first layer, said second layer comprising said ceramic material having in addition contained therein an impregnant selected from the group consisting of (a) chromium oxide and (b) a mixture of silica, chromium oxide and fused alumina; and

a third layer comprising a metal material, said third layer being adjacent said second layer and being secured thereto by said impregnant.

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RECIPROCATING INTERNAL COMBUSTION ENGINE WITH A WET CYLINDER SLEEVE INSERTED INTO A CYLINDER CRANK HOUSING

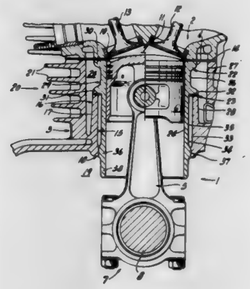
Hans Mezger, Freiberg, and Reinhard Konneker, Monsheim, both of Fed. Rep. of Germany, assignors to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.

Filed Jul. 13, 1984, Ser. No. 630,515

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326320

Int. Cl.³ F01P *9/04*

U.S. Cl. 123—193 C **9 Claims**



1. An internal combustion engine comprising a cylinder crank housing, a cylinder head and a cylindrical receptacle disposed inside of said crank housing, a wet cylinder sleeve having an upper portion, said upper portion being clamped between said cylinder head and said receptacle, said cylinder sleeve also having a lower portion extending in said receptacle, a coolant space between the upper portion of said sleeve and said receptacle having a broad cross-sectional area and wherein said area is formed at least in part by a reduced wall thickness of said sleeve at a location in said upper portion, and a gas tight air space located between said lower portion of said sleeve and said cylindrical receptacle.

4,523,556

FOUR-STROKE INTERNAL COMBUSTION ENGINE FOR OUTBOARD MOTORS

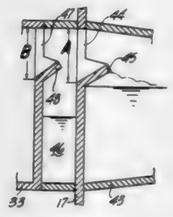
Masayuki Suzuki, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Jul. 16, 1984, Ser. No. 630,978

Claims priority, application Japan, Jul. 18, 1983, 58-129349

Int. Cl.³ F01M *1/00*

U.S. Cl. 123—196 W **9 Claims**



1. In a lubricating system for an outboard motor or the like having a power head containing an internal combustion engine, a lubricant sump positioned below said engine and adapted to contain lubricant for said engine, and a drain opening communicating said sump with the lubricating system of the engine for return of lubricant from said engine lubricating system to said sump by gravity when said outboard motor is operating in a normal, vertical position, the improvement comprising means defining a buffer volume for receiving lubricant from said lubricant sump when said engine is disposed in a non-vertical position for flow of lubricant from said lubricant sump to said buffer volume for return to said lubricant sump from said buffer volume when the engine is disposed in its normal vertical position.

4,523,557

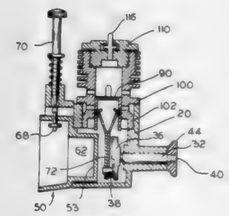
MODEL AIRPLANE ENGINE

Duke Fox, 5305 Towson Ave., Ft. Smith, Ark. 72901

Filed May 4, 1984, Ser. No. 606,990

Int. Cl.³ F02B *61/04*

U.S. Cl. 123—197 AB **12 Claims**



1. An internal combustion engine comprising a crankcase and a fuel tank made of two casted pieceparts which nest together to form a closed crankcase housing and a fuel tank and also form matching openings formed in said two pieceparts to provide an air intake and a manifold leading from external air, past the fuel tank, and into the interior of said crankcase; a crankshaft journaled to rotate within said crankcase; a piston and connecting rod assembly consisting of two pieces, one of said two pieces being a connecting rod made from a generally "Y" shaped leaf spring rotatably mounted near the end of the stem of the "Y" on a throw on said crankshaft for undertaking a reciprocal motion within a cylinder responsive to a rotation

of said crankshaft; and the other of said two pieces being a piston having diametrically opposed connectors for snapping onto connectors at the top members of said "Y" shaped leaf spring each of said connectors being a projection and a recess.

4,523,558

INTERNAL COMBUSTION ENGINE AND CLUTCH THEREFOR

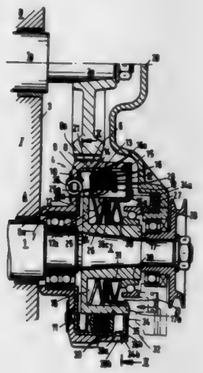
Paul Maucher, Sasbach, and Oswald Friedmann, Lichtenau, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Dec. 8, 1983, Ser. No. 559,232

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1982, 3245361

Int. Cl.³ F02D *25/04*

U.S. Cl. 123—198 F **21 Claims**



1. A split combustion engine, comprising a first engine unit having a first rotary member; a second engine unit having a second rotary member; and an accelerating clutch interposed between said units and arranged to transmit torque from said first to said second rotary member to thus accelerate said second rotary member, said clutch comprising coaxial first and second rotary components one of which is arranged to accelerate the other when the clutch is engaged, locking means including a pair of locking elements provided on and coaxial with said first component, said locking elements being angularly movable relative to one another and having first entraining means, said first component having second entraining means engageable with said first entraining means to prevent rotation of said locking elements with reference to said first component, said locking elements further having first protuberances and said second component having control means including complementary second protuberances engageable with said first protuberances for direct transmission of torque between said components, and means for moving said first protuberances axially of said components into engagement with said second protuberances, at least one of said entraining means and/or protuberances being arranged to change the angular positions of said locking elements relative to one another in response to axial movement of said first protuberances into engagement with said second protuberances.

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INTERNAL COMBUSTION ENGINE

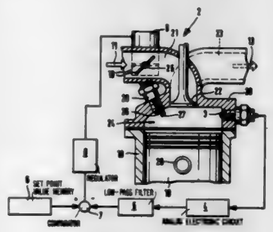
Reinhard Latsch, Vaihingen; Ernst Linder, Mühlacker, and Winfried Moser, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 5, 1984, Ser. No. 628,054

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1983, 3331115

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—306 **13 Claims**



1. An internal combustion engine comprising at least one combustion chamber, at least one inlet conduit leading to said combustion chamber and having an adjustable means associated with said inlet conduit for varying charge flow patterns which act inside said combustion chamber to vary the combustion flame-propagation, an adjusting motor means adjusting said adjustable means, a regulator means acting upon said adjusting motor means, a set-point value transducer and an actual-value transducer associated with said regulator means, said actual-value transducer including a sensor connected to said combustion chamber for ascertaining combustion phenomena taking place in said combustion chamber, said set-point value transducer prescribing the instants for the occurrence of said phenomena, and said regulator means controlling said adjusting motor in accordance with the outputs of aid actual value transducer and said set-point value transducer.

4,523,560

INTAKE DEVICE OF AN INTERNAL COMBUSTION ENGINE

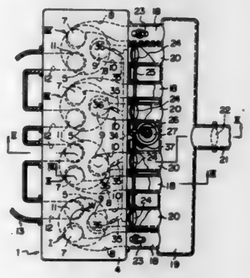
Katsuhiko Motosugi, and Yoshio Sasaki, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 326,264, Dec. 1, 1981, abandoned. This application Feb. 17, 1984, Ser. No. 580,288

Claims priority, application Japan, Dec. 2, 1980, 55-169048

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—308 **12 Claims**



1. A multi-cylinder internal combustion engine having a cylinder head and a plurality of cylinders, each cylinder having a combustion chamber, a first intake valve arranged in the combustion chamber, a first intake passage having an inlet and an outlet which is connected to the combustion chamber via the first intake valve, a second intake valve arranged in the combustion chamber, a second intake passage having an inlet and an outlet which is connected to the combustion chamber via the second intake valve, a common intake passage connected to the inlets of the first intake passage and the second intake passage, a first throttle valve arranged in the common intake passage, and a normally closed second throttle valve arranged in the second intake passage and opened when the engine load or the engine speed is increased beyond a predetermined level, wherein the improvement comprises a blind common connecting passage, a plurality of branch passages extending from the blind common connecting passage, each branch passage being open to said second intake passage of a corresponding cylinder at a location downstream of said second throttle valve of the corresponding cylinder, each of said branch passages having an opening arranged in the vicinity of a valve head of a corresponding second intake valve, directed to a gap formed between said valve head and a valve seat of said corresponding second intake valve, and directed tangentially to a circumferential wall of the corresponding combustion chamber, the second throttle valve of each cylidner being closed when a selectable one of the speed and load of the engine is below a predetermined level.

4,523,561

APPARATUS AND METHOD FOR CONTROLLING AIR AMOUNT UPON ENGINE START

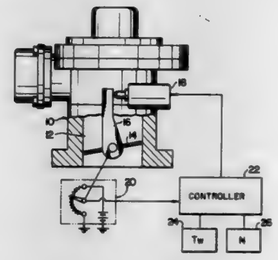
Tokuo Kosuge, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 21, 1983, Ser. No. 515,967

Claims priority, application Japan, Jul. 26, 1982, 57-128953

Int. Cl.³ F02D *33/02*

U.S. Cl. 123—339 **7 Claims**



1. An apparatus for controlling air amount during cranking of an engine to start said engine comprising:

an air intake conduit for supply of air to an internal combustion engine;

air amount control means for regulating amounts of air to be supplied to said internal combustion engine;

memory means stored with control data represensitive of predetermined amounts of air required during cranking to start said engine and corresponding to temperatures of said engine;

temperature detection means for detecting temperatures of said internal combustion engine and generating temperature signals;

opening detection means for detecting the opening of said air amount control means to produce an opening signal;

control means for reading a control data from said memory means on the basis of a temperature signal from said temperature detection means and examining the read out control data and said opening signal from said opening detection means to produce a drive signal on the basis of said control data when the opening signal from said opening detection means coincides with said control data under a predetermined relationship and to produce a drive signal on the basis of a correction signal for bringing the opening signal into coincidence with the control data under the predetermined relationship when said opening signal does not coincide with said control data under the predetermined relationship; and

drive means driven by the drive signal from said control means, for driving said air amount control means so as to supply to said internal combustion engine an amount of air required during cranking to start said engine.

4,523,562

METHOD FOR CONTROLLING THE FUEL METERING FOR AN INTERNAL COMBUSTION ENGINE

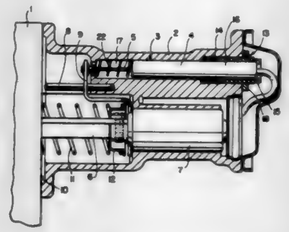
Martin Schnapper, and Ernst W. Hufendiek, both of Stuttgart, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 27, 1983, Ser. No. 508,239

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1982, 3225085

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—357 **5 Claims**



1. A process for adjusting the actual fuel delivery volumes determined at a fuel injection pump for a Diesel internal-combustion engine having an electronic control unit for the control of the fuel injection, by means of a characteristic delivery volume line, to the fuel delivery volumes indicated by the control unit, said fuel delivery volumes, in each case, being proportional to the control path changes generated by the control unit by actuating signals at the actuating drive of the control rod of the injection pump and being detected by an electric displacement transducer coupled with the control rod and led to the control unit as electric signals, wherein

the control rod is adjusted to a gauge point (E) located on the characteristic delivery volume line, said gauge point (E) preferably being located in the area of the maximum fuel delivery volume, wherein

the output signal of the electric displacement transducer corresponding to the adjusted control rod position is compared with a desired voltage level fed in the control unit for the fuel delivery volume supplied in gauge point (E), and wherein,

in the case of a divergence between the output signal and the desired voltage level, the displacement transducer is adjusted relative to the control rod until the output signal of the displacement transducer coincides with the desired voltage level.

4,523,563

ELECTRONIC CONTROL SYSTEM FOR A FUEL PUMP

John H. Moore, Kingscote, and Ian J. Harvey, Cricklade, both of England, assignors to Lucas Industries public limited company, Birmingham, England

Filed Apr. 6, 1984, Ser. No. 597,257

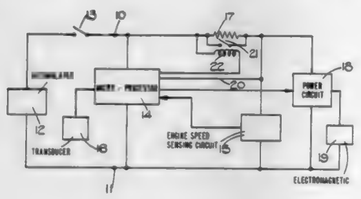
Claims priority, application United Kingdom, Apr. 30, 1983, 8311917

Int. Cl.³ F02D *1/12*

U.S. Cl. 123—359 **2 Claims**

1. An electronic control system for a fuel pump of an internal

combustion engine, the pump being of the type including an electromagnetically operable device which when energised ensures that the pump supplies fuel to the associated engine, the control system including a power circuit which controls the flow of current in the device and a control unit responsive to demanded and actual engine operating parameters for providing a control signal to said power circuit, the control system further comprising first and second terminals for connection to a source of electric supply by way of a manually operable switch, a resistor connected in series with one of said terminals and the power circuit, a relay having contacts connected in parallel with said resistor, said relay including a winding which is energised under the control of said control unit, to close said



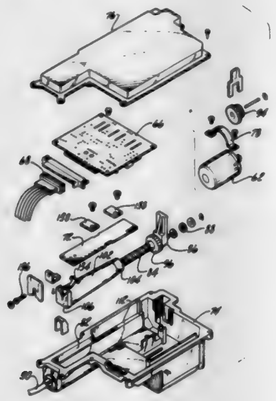
contacts, an engine speed sensing circuit which receives power from the end of the resistor remote from the supply terminal and which supplies an engine speed signal to the control unit, said control unit including means for checking the demand signal and the engine speed signal and acting when the engine speed signal exceeds a predetermined value while the demand signal is substantially zero, to deenergise said relay so that the voltage applied to the power circuit and the speed sensing circuit is reduced by said resistor, said voltage if reduced to below a stand-by level by a fault in the power circuit, causing the speed signal to become insufficient whereby the control unit acts to prevent reenergisation of the relay, the reduced current available when said contacts are open, being insufficient to maintain said valve closed.

4,523,564

ROAD AND ENGINE SPEED GOVERNOR

Harry D. Sturdy, Wilmington, N.C., assignor to Sturdy Truck Equipment, Inc., Wilmington, N.C.

Filed Jan. 20, 1983, Ser. No. 459,345
Int. Cl.³ F02D *11/10*
U.S. Cl. 123—361 **12 Claims**



1. The method of operating a governor for an internal combustion engine which has a throttle movable between an open throttle position and a close throttle position for regulating the flow of fuel to the engine, said governor being of the type comprising an overriding throttle closing means for limiting the movement of the throttle in the open throttle direction, said engine being drivingly coupled with a device which is to be governed at a predetermined governed speed and having a speed with a known relationship to the speed of the engine, said method comprising the steps of:

moving the overriding throttle limiting means to a reference position when the measured speed exceeds a predetermined value, said overriding throttle limiting means limiting the throttle position to a predetermined throttle position when in the reference position,

moving the overriding throttle limiting means at a predetermined slow speed in the close throttle direction when the speed is greater than the governed speed,

moving the overriding throttle limiting means at said slow speed in the open throttle direction when the speed is less than the governed speed,

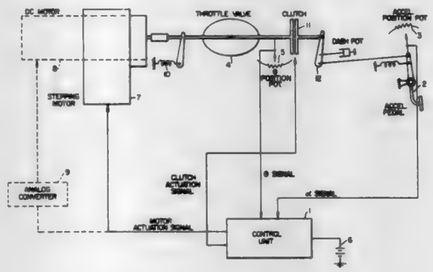
said slow speed being slow enough that the overriding throttle limiting means will move from its position at the time of speed measurement to a new position in a time interval at least as great as that required for the measured speed to change from its value corresponding to the position of the overriding throttle limiting means at the time of speed measurement to a new value corresponding to said new position of the overriding throttle limiting means.

4,523,565

CONTROL SYSTEM AND METHOD FOR A FUEL DELIVERY SYSTEM

Takashi Omitsu, Madison, Wis., assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Mar. 30, 1984, Ser. No. 595,508
Int. Cl.³ F02D *11/10*
U.S. Cl. 123—399 **16 Claims**



1. A system for effecting either automatic or manual control of a fuel delivery system for delivering a variable quantity of fuel to the engine of a power delivery system, said system comprising:

command means for commanding a desired output power or torque from said engine;

measuring means for measuring the state of the fuel delivery system;

automatic control means operatively coupled to said command means and said measuring means for controlling the operation of said fuel delivery system as a function of the desired output power or torque commanded by said command means and the measured state of the fuel delivery system;

manual control means operatively coupled to said command means for manually controlling the operation of said fuel delivery system as a function of the desired output power or torque commanded by said command means; and

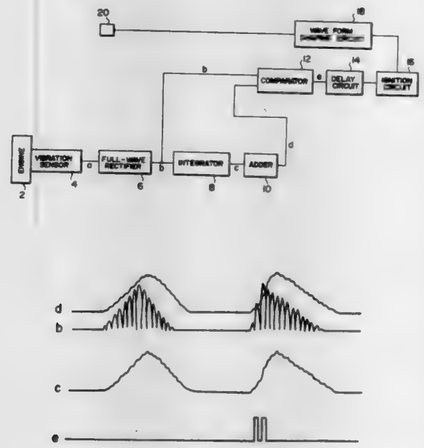
switching means for switching the control of said fuel delivery system from said automatic control to said manual control when both a first predetermined condition is detected and the state of the fuel delivery system as measured by said measuring means corresponds to an actual output power or torque which is substantially equal to the desired output power or torque commanded by said command means.

4,523,566

KNOCKING CONTROL SYSTEM IN ENGINE

Tatsuo Kobayashi, Shizuoka, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 17, 1983, Ser. No. 476,338
Claims priority, application Japan, Aug. 24, 1982, 57-127865[U]
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—425 **8 Claims**



1. A knocking control apparatus for a spark-ignition internal combustion engine, the apparatus comprising:

a vibration sensor responsive to engine vibrations, including vibrations due to knocking, for producing an alternating voltage engine vibration signal;

a rectifier, having an input connected to the vibration sensor and an output, for providing a rectified engine vibration signal from the sensor at the output of the rectifier;

an integrator having an input connected to the output of the rectifier, and an output for delivering an integrated value of the rectified engine vibration signal, the integrator having a charge time constant less than substantially five times the period from inception to maximum value of vibrations due to knocking and a discharge time constant short enough to reduce the integrator output substantially to zero between succesive ignition cycles;

an adder having an input connected to the output of the integrator and an output, the adder providing an offset voltage signal and summing said offset signal with the integrated engine vibration signal to produce a reference signal at the output of the adder;

a comparator having a first input connected directly to the output of the rectifier, a second input connected to the output of the adder, and an output, for comparing said rectified engine vibration signal with said reference signal, and for producing a knocking control pulse at the output of the comparator whenever the instantaneous level of said rectified engine vibration signal exceeds the reference signal; and

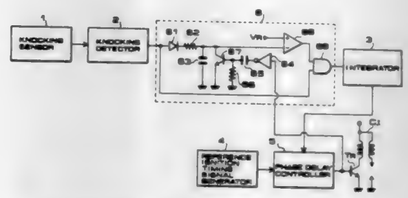
a delay circuit having an input connected to the output of the comparator and an output for delivering an ignition control signal to an ignition circuit of the engine for causing a delay in a spark ignition signal that is a function of the number of knocking control pulses per ignition cycle.

4,523,567

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL-COMBUSTION ENGINE

Toshio Iwata, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,289
Claims priority, application Japan, May 14, 1982, 57-82597
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—425 **3 Claims**



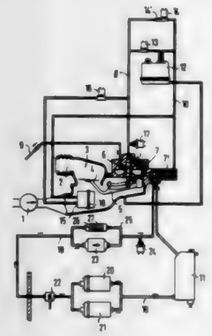
1. An ignition timing control system for an internal-combustion engine, comprising a knocking detector capable of providing a knocking detection signal having pulses proportional to the magnitude of the knocking of the internal-combustion engine; a phase delay limiter which integrates the pulses of said knocking detection signal in every ignition period to produce said knocking detection signal at the output terminal thereof when the integral of said knocking detection signal is smaller than a predetermined set value or to interrupt said knocking detection signal when said integral reaches said set value; an integrator which integrates the pulses of said knocking detection signal produced at the output terminal of the phase delay limiter; means to generate a reference ignition timing signal; and a phase delay controller for delaying the phase of said reference ignition timing signal in proportion to the output of the integrator.

4,523,568

CONTINUOUSLY OPERATING FUEL INJECTION SYSTEM

Heinz Dorsch, Weissach; August Hofbauer, Pforzheim, and Herbert Steinbeck, Hemmingen, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche A.G., Fed. Rep. of Germany

Filed Oct. 13, 1983, Ser. No. 541,434
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3237963
Int. Cl.³ F02M *39/00*
U.S. Cl. 123—453 **18 Claims**



1. A continuously operating fuel injection installation, comprising a suction pipe, air quantity measuring means for the through-flowing air quantity arranged in the suction pipe, a fuel quantity distributor means including a control piston

means for distributing the fuel to injection valve means, said air quantity measuring means acting on one end face of the control piston means, the other end face of the control piston means being acted upon by a control pressure line whose pressure is controlled by a warm-up regulator means, a return line leading from said warm-up regulator means to a fuel tank, height control pressure regulator means connected between said control pressure line and said return line in parallel to the warm-up regulator means electromagnetic valve means operatively connected with the warm-up regulator means and the height control pressure regulator means, said electromagnetic valve means being disposed in the return line upstream of the warm-up regulator means and the height control pressure regulator means.

4,523,569

LIQUID FUEL PUMPING APPARATUS

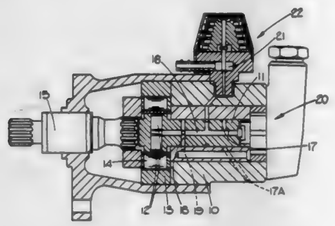
Alec H. Seilly, North Wembley, and Andrew E. Murray, London, both of England, assignors to Lucas Industries public limited company, Birmingham, England

Filed Oct. 11, 1983, Ser. No. 540,558

Claims priority, application United Kingdom, Oct. 21, 1982, 8230045

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—458 **4 Claims**



1. A liquid fuel pumping apparatus for supplying fuel to an internal combustion engine, the apparatus comprising a plunger reciprocable within a bore, an outlet from said bore and through which fuel can flow during inward movement of the plunger, an electromagnetically operable spill valve which controls fuel flow through a passage connected to said bore and which during inward movement of the plunger can be closed to cause fuel flow through the outlet, and means responsive to the movement of the spill valve for providing signals indicative of the state of the valve, and a control circuit to which said signals are supplied, said control circuit controlling the operation of said valve.

4,523,570

FUEL INJECTION CONTROL IN INTERNAL COMBUSTION ENGINE

Yukio Suzuki; Kunihiko Sato, and Motoyasu Muramatsu, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 6, 1983, Ser. No. 482,710

Claims priority, application Japan, Apr. 7, 1982, 57-56739

Int. Cl.³ F02M *51/00*

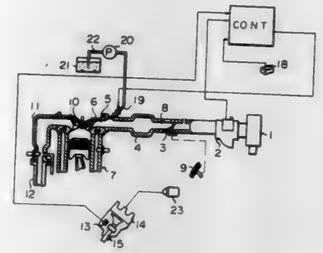
U.S. Cl. 123—478 **5 Claims**

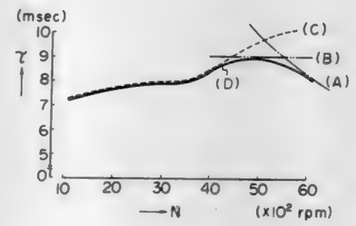
1. A method for controlling fuel injection in an internal combustion engine comprising the steps of:

using a control circuit for calculating a pulse width of a fuel injection signal on the basis of engine rotational speed, intake air amount measured by an air flow meter, and other engine running conditions;

establishing an upper limit value for the pulse width of the fuel injection signal on the basis of a maximum intake air amount and that amount per rotation multiplied by a predetermined constant;

generating fuel injection signals having a pulse width within said upper limit; and carrying out fuel injection by supplying said generated fuel injection signals to the internal





combustion engine, thereby preventing an over-rich air-fuel mixture.

4,523,571

FUEL SUPPLY CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES AT ACCELERATION

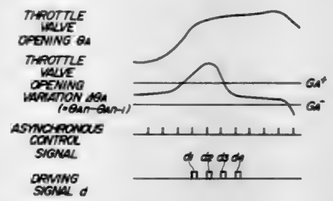
Akihiro Yamato, Shiki, and Noriyuki Kishi, Itabashi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,758

Claims priority, application Japan, Jun. 16, 1982, 57-103408

Int. Cl.³ F02M *51/02*

U.S. Cl. 123—492 **17 Claims**



1. A method for electronically controlling a fuel injection device for injecting fuel into an internal combustion engine, so as to supply a required quantity of fuel to said engine when it is accelerating, the method comprising the steps of:

(1) determining whether or not said engine is operating in a predetermined accelerating condition, each time a pulse of a control signal is generated with a predetermined constant pulse repetition period and independently of rotation of said engine;

(2) determining whether or not said engine is operating in a predetermined decelerating condition each time a pulse of said control signal is generated;

(3) determining whether or not said engine is in an operating condition requiring cutting off the fuel supply to said engine and also whether or not said engine is in an operating condition requiring interruption of said cutting-off of the fuel supply;

(4) determining whether or not a predetermined period of time has elapsed from the time said engine is determined to be in said operating condition requiring interruption of said cutting-off of the fuel supply;

(5) actuating said fuel injection device to effect fuel injections consecutively into said engine a predetermined number of times in synchronism with generation of pulses of said control signal, when it is determined in said step (1) that said engine is operating in said predetermined accelerating condition;

(6) setting the value of said predetermined number of times in said step (5) to different values between before the lapse of said predetermined period of time and after the lapse thereof; and

(7) interrupting said consecutive fuel injections of said step (5), when it is determined in said step (2) that said engine is operating in said predetermined decelerating condition before said predetermined number of times of consecutive fuel injections are completed, while continuing said consecutive fuel injections of said step (5) until said predetermined number of times are reached, so long at it is determined in said step (2) that said engine is not operating in said predetermined decelerating condition.

4,523,572

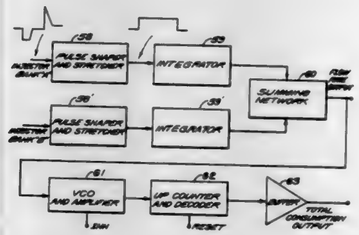
FUEL FLOW MONITOR FOR AN ELECTRONIC FUEL INJECTION CIRCUIT

Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 414,881, Sep. 3, 1982, abandoned. This application Aug. 10, 1984, Ser. No. 639,386

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—494 **5 Claims**



1. In a multi-cylinder internal-combustion engine having an electronically controlled fuel-injection system wherein a pulse generator provides fuel-injection control pulses of time duration proportioned to engine speed and to other factors including desired throttle setting, the pulses each having a duration which is at all times a small fraction of the duration of a full cycle of operation of a given cylinder of the engine, and wherein an electronic fuel flow rate monitor provides indications of fuel flow rate and total engine fuel consumption, the electronic fuel flow rate monitor comprising: pulse shaper means responsive to the fuel injection control pulses for generating an output pulse having a constant amplitude and a predetermined duration for each of the fuel injection control pulses, accumulator means responsive to said output pulses for providing a first signal having an amplitude which is indicative of fuel flow rate, means responsive to said first signal for generating a second signal having a frequency which is dependent on the amplitude of said first signal, and means responsive to said frequency-dependent second signal for providing a third signal having an amplitude which is indicative of total engine fuel consumption.

4,523,573

APPARATUS FOR PROPELLING AN INFLATED BALL

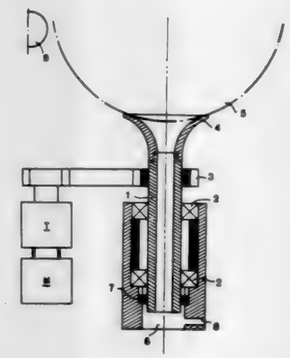
Georges Defosse, Barchon, and Joseph Hensenne, Haccourt, both of Belgium, assignors to Ateliers de Constructions Electriques de Charleroi, Charleroi, Belgium

Continuation-in-part of Ser. No. 147,597, May 7, 1980, abandoned. This application Jul. 9, 1981, Ser. No. 281,863

Claims priority, application European Pat. Off., May 7, 1979, 79200221.4

Int. Cl.³ F41B *3/00*

U.S. Cl. 124—41 R **14 Claims**



1. An apparatus for propelling inflated balls by elastic impact, comprising:

a striking mass for travelling through a predetermined elongated path and striking a ball to propell a ball;

a ball support for holding a ball in the path of said striking mass;

means for imparting rotational motion to a ball when propelled by producing relative rotation between said ball support and said mass prior to said mass striking a ball, thereby causing a ball to travel in an arced trajectory; and

control means for selecting the direction of rotation and rotational velocity imparted to a ball by said rotational motion imparting means.

4,523,574

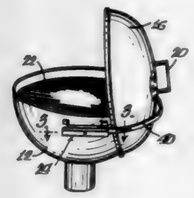
SUPPORT STRUCTURE FOR GRILL COVER

Erich J. Schlosser, Lindenhurst, Ill., assignor to Weber-Stephen Products Co., Palatine, Ill.

Filed Aug. 11, 1983, Ser. No. 522,109

Int. Cl.³ A47J *37/00*

U.S. Cl. 126—25 R **5 Claims**



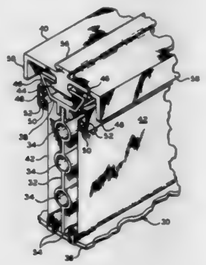
1. In combination with an outdoor cooking kettle having a generally hemispherical lower portion and a removable cover with said lower portion having diametrically-opposed handles extending from an outer surface thereof and each handle having a gripping portion spaced from said outer surface, the improvement of a cover support on said lower portion, said cover support comprising an arcuate member connected to said handles and extending between said gripping portions and spaced from said outer surface to define a slot for receiving

said cover, the weight of said cover producing a wedging action with said hemispherical lower portion and said cover support so that said cover is retained in an upright position.

4,523,575
COLLECTOR MEANS FOR SOLAR ENERGY COLLECTING SYSTEM

Ronnie D. Nikkel, and Paul M. L'Esperance, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Division of Ser. No. 507,397, Jun. 24, 1983, Pat. No. 4,465,057. This application Jun. 11, 1984, Ser. No. 619,660
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—418 **9 Claims**



1. In a solar energy collector system, including; a receiving means, having an extended surface area and adapted to receive solar radiation and focus the same to a substantially smaller area, and a collector plate, having a substantially smaller surface area than said receiving means, having one edge mounted on said receiving means in a position to have at least one side exposed to and receive the thus focused solar radiation and adapted to absorb said focused solar radiation, the improved means for insulating the thus exposed surface of said absorber plate, comprising:

(a) a supply roll of a transparent, flexible glazing sheet material;

(b) cap means mounted on the other edge of said absorber plate, opposite the edge thus mounted on said receiving means, and extending beyond said exposed surface of said absorber plate;

(c) means for rotatably mounting said supply roll on one of (1) the thus extended cap means and (2) the receiving means adjacent one edge of said absorber plate and spaced therefrom; and

(d) means for detachably coupling the free end of said glazing sheet material on the other of (1) the thus extended cap means and (2) the receiving means adjacent the other edge of said absorber plate and spaced therefrom;

(e) whereby an exposed portion of said glazing sheet material is mounted parallel to and spaced from said exposed surface of said absorber plate in the path of said focused solar radiation; and

(f) said exposed portion of said glazing sheet material can be removed and a fresh portion of said glazing sheet material can be withdrawn from said supply roll and mounted parallel to said absorber plate to replace the thus removed, exposed portion of said glazing sheet material.

4,523,576
SOLAR HEATING APPARATUS WITH SOLAR HEAT RECEIVING MEANS AND HEAT STORAGE AND DISTRIBUTION MEANS

Dale T. Waschow, Rte. 2, Box 79 B, Eagle, Wis. 53119

Filed Sep. 6, 1983, Ser. No. 529,340
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—422 **12 Claims**

1. A solar heating system comprising

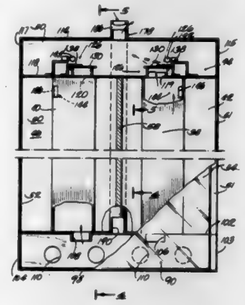
solar heating means for solar heating air flowing therethrough, said solar heating means including

means defining plurality of separate, elongated heating chambers in side-by-side relationship for receiving solar energy, a separate air inlet chamber adjacent one end of said heating chambers and having an opening for admitting fresh air into said inlet chamber, and a separate air outlet chamber adjacent the opposite end of said heating chambers,

at least one air heating tube extending through each of said heating chambers with one end communicating with said inlet chamber and the opposite end communicating with said outlet chamber,

valve means for each of said heating tubes and movable between open and closed positions to respectively permit and prevent air flow through the respective heating tube,

means for moving each of said valve means to the open and closed positions in response to the temperature inside the



respective heating tube being respectively above and below a predetermined level; and

heat storage and distribution means for storing and distributing heated air to a room including

a heat storage container having an inlet communicating with said outlet chamber and a return outlet communicating with said inlet chamber,

heat storage medium disposed inside said container,

means for defining a first flow path through said container from said inlet to said return outlet for causing heated air from said outlet chamber to pass in contact with and heat said medium,

first air circulating means for circulating heated air from said outlet chamber through said first flow path, and

means for energizing and de-energizing said first air circulating means in response to the air temperature in said outlet chamber being respectively above and below a predetermined level.

4,523,577
SEMI-TRANSPARENT SOLAR ENERGY THERMAL STORAGE DEVICE

John F. McClelland, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Aug. 4, 1982, Ser. No. 405,067
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—430 **1 Claim**

1. A visually transmitting solar energy thermal storage device comprising,

a visually transmitting exterior panel having interior and exterior surfaces,

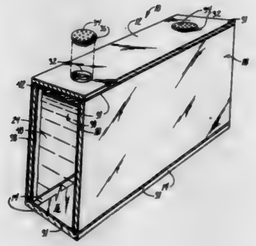
a visually transmitting solar absorber panel located interiorly of said exterior panel and substantially parallel thereto,

sealing means between the exterior panel and absorber panel for forming a liquid-tight containment chamber therebetween,

a visually transmitting thermal storage liquid substantially filling said containment chamber,

a low vapor pressure liquid layer that floats on and seals the top surface of the thermal storage liquid,

a heat mirror substantially covering a surface of said exterior panel for reducing radiative heat transfer through said device,



said sealing means comprising peripheral containment walls having a filler hole in an upper portion thereof, and further comprising a porous filter plug in said hole for preventing the introduction of contaminants into the containment chamber,

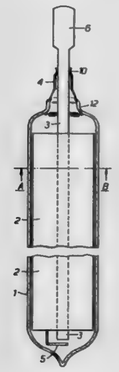
said thermal storage liquid including an algicide, and

said thermal storage liquid including a chelating compound for keeping metal ions in solution.

4,523,578
SOLAR RADIATION COLLECTOR

Faramarz Mahdjuri Sabet, via S. Sebastiano 33, I-24100 Bergamo, Italy

Filed Jul. 30, 1982, Ser. No. 403,421
Claims priority, application United Kingdom, Aug. 4, 1981, 81283829; Apr. 14, 1982, 8210819
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **8 Claims**

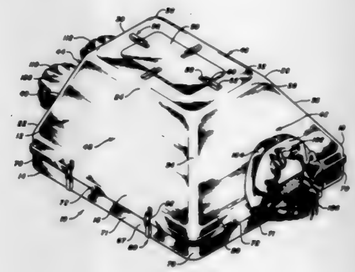


1. A solar collector which comprises a radiation-absorbing plate and a tube assembly having at least one metal tube for containing a heat transfer medium, the plate being in thermal contact with the tube and being enclosed within a radiation-transparent glass envelope sealed in vacuum-tight fashion, through a metal collar, to said tube assembly; wherein the collar includes a portion of truncated conical shape, the smaller diameter end being sealed around the periphery of the metal tube assembly by a cylindrical portion, and the large diameter end being sealed to the glass envelope, and wherein the thickness of the collar reduces at the larger diameter end portion to terminate in a knife edge and the glass is sealed to the inside of said larger diameter end portion and not to the outside of the larger diameter end portion.

4,523,579
LIGHTWEIGHT BODY RESPIRATOR HAVING FLEXIBLE WALLS

Edward R. Barry, 46 Woodlawn Cir., Whitman, Mass. 02382

Filed Jun. 24, 1983, Ser. No. 507,806
Int. Cl.³ A61H *31/00*
U.S. Cl. 128—30.2 **18 Claims**



1. A lightweight body respirator having flexible walls, comprising:

an integral molded-thermoplastic cover member having an open, substantially rectangular, bottom portion defining vertices and a first preselected cross-sectional area, a vertically spaced substantially planar top portion defining vertices and a second preselected cross-sectional area substantially less than said first cross-sectional area, a vertically inclined support rib extending from each of the vertices of the bottom portion to the corresponding confronting vertice of the top portion, and an integral sloping flexible wall extending between adjacent support ribs and defining a bottom end;

an integral molded-thermoplastic base member having upstanding walls having top ends closed on themselves defining an open rectanguloid box having a preselected cross-sectional area selected to be substantially equal to said cross-sectional area of said bottom portion of said cover member and defining a conformal mattress receiving cavity;

one of said sloping flexible walls of said cover member having a passage therethrough formed along its bottom end;

a first longitudinally extending flange integrally formed on said one of said sloping flexible walls of said cover member peripherally around said passage of said cover member;

one of said upstanding walls of said base member that confronts said one of said sloping walls of said cover member having a passage therethrough formed along its top end;

a second longitudinally extending flange formed on said one of the upstanding walls of said base member peripherally around said passage of said base member;

said first and second longitudinally extending flanges being mateable such that said passages are cooperative to provide a neck receiving aperture;

a flexible, elongated, adjustable, air-tight collar slideably mounted in air-tight sealing engagement peripherally around said first and second longitudinally extending flanges; and

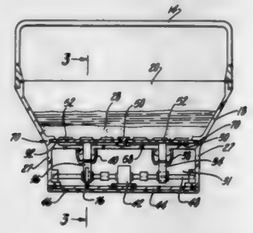
means for removably attaching said cover member and said base member in air-tight sealing engagement.

4,523,580

APPARATUS FOR TREATING HUMAN FEET

Aloysius K. Tureaud, 213 E. Washington, Ann Arbor, Mich. 48104

Filed May 3, 1982, Ser. No. 373,905
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—52 **2 Claims**



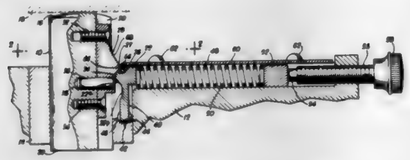
1. Apparatus for treating human feet comprising:
a container to hold a quantity of liquid into which said feet may be immersed;
a pair of horizontally disposed support plates within said container and each adapted to individually support a human foot thereon;
fin means on the upper surface of each of said support plates for massaging engagement with the bottom of said feet;
means mounting said support plates for reciprocating movement relative to each other within said liquid;
a quantity of particulates within said container and circulated by displacement of said liquid for colliding with said feet; and
drive means connected with said support plates for causing said plates to relatively reciprocate whereby said feet are relatively reciprocated in said container on said plates and said liquid and particulates are turbulized by the mutually reciprocal movement of said feet and said fins so that said fins massage the bottoms of said feet and the turbulized liquid and particulates massage and abrade the upper regions of said feet to provide total foot massage and total abrasive cleansing of said feet.

4,523,581

CHIROPRACTIC TABLE CUSHION DROP RELEASE MECHANISM

Carl R. Ekholm, Elgin, Ill., assignor to Standex International Corporation, Salem, N.H.

Filed Oct. 12, 1983, Ser. No. 541,364
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—70 **8 Claims**



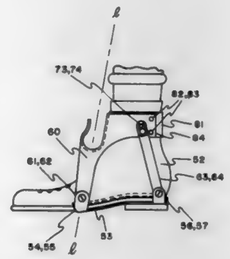
1. An adjustable support mechanism for a chiropractic table cushion comprising a support, a post mounted in said support for movement in a vertical axis, a cushion supported at least in part on the upper end of said post, a latch means mounted in said support for movement toward and away from said axis, said post having detent means cooperating with said latch means for holding said cushion in an elevated position, said detent means comprising a shoulder portion adapted to be seated on said latch means and an inwardly recessed portion above said shoulder portion, adjustable spring means for urging said latch means into engagement with said shoulder portion of said detent means so that a predetermined downward force on said cushion is required to release said detent means from said latch means and permit said cushion to drop from said elevated position, and stop means for limiting movement of said latch means toward said axis as said latch means moves into said recessed portion of said detent means, said stop means being effective to prevent said latch means from engaging said post as said latch means moves into said recessed portion after release of said detent means so that said cushion can freely drop to a desired lower position.

4,523,582

DEVICE FOR SUSPENDING THE HUMAN BODY IN AN INVERTED POSITION

S. Morgan Barber, 1417 La Habra, Lake San Marcos, Calif. 92069

Filed Jun. 7, 1982, Ser. No. 386,011
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—71 **10 Claims**



1. A device for suspending a human body in an inverted position with respect to a horizontally extending supporting structure, comprising in combination:
(a) shoe means adapted for receiving and securing the foot of the human body, said shoe means including re-enforcing means in the heel-arch area of said shoe means, said shoe means with re-enforcing means being of sufficient strength for holding the human body in an inverted position;
(b) a rigid, inverted U-shaped member positioned above the top of said shoe means, said inverted U-shaped member spanning the width of said shoe means from the left to the right side, said inverted U-shaped member having left and right lower ends pivotally attached to said re-enforcing means for movement about a pivot axis extending from the left to the right sides of said shoe means; and
(c) a rigid, U-shaped hook means attached to the apex of and forming a part of said rigid, inverted U-shaped member, said U-shaped hook means and said inverted U-shaped member being pivotally movable over the top portion of said shoe means about said pivot axis, said U-shaped hook means being adapted for removable attachment to a horizontally extending supporting structure for suspending said shoe means and the human body in an inverted position.

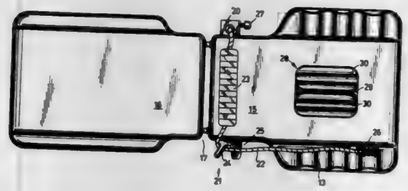
4,523,583

BACK EXERCISING DEVICE

James R. Noble, Mountain Rd., Henderson R.D. 1., Auckland, New Zealand

Filed Apr. 8, 1983, Ser. No. 485,465
Claims priority, application New Zealand, Apr. 30, 1982, 200465
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—71 **3 Claims**

1. A lightweight portable back exercising device which is substantially planar on both sides, including a flat support that lies flat on the floor for supporting at least part of a patient's body substantially horizontally with the patient lying on his stomach, the support including pressure portions at opposite sides of the support at one end thereof, and restraining means comprising a back strap that extends across the support with slack for restraining the midportion of the patient's body, so that a prone patient lying on his stomach can push on said



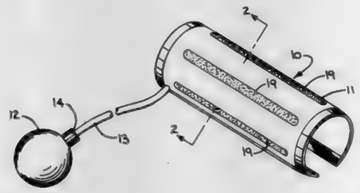
pressure portions to extend his upper lumbar segments whilst movement of the midportion of his body is restrained by said back strap, said pressure portions being flat and padded and elongated in the direction of the length of the patient's body and resting flat on the floor.

4,523,584

PENILE ERECTILE SYSTEM

Daniel Yachia, Ramat Efal, Israel, and Henry W. Lynch, Racine, Wis., assignors to Medical Engineering Corporation, Racine, Wis.

Filed Mar. 4, 1983, Ser. No. 472,155
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **11 Claims**



1. A penile erectile system for treating impotency in man, said system comprising:
(a) a sleeve of biocompatible material for implanting about a penile shaft beneath the penile skin, between the shaft and the skin, said sleeve having at least one pressurizable chamber;
(b) pressurizing means for pressurizing said chamber to make it rigid, said means comprising a fluid reservoir for pressurizing fluid and a pump;
(c) valve means for controlling the flow of fluid between the pressurizing means and the pressurizable chamber; and
(d) tubing connecting the pressurizing means to the pressurizable chamber.

4,523,585

ANATOMIC FRACTURE BRACE FOR THE KNEE

Steve R. Lamb, 2772 Sydney Way, Castro Valley, Calif. 94546, and Robert R. Moore, 4010 East Ave., Hayward, Calif. 94542

Filed Oct. 3, 1983, Ser. No. 538,120
Int. Cl.³ A61F *3/00*
U.S. Cl. 128—80 C **10 Claims**

1. A brace mechanism having a four-bar linkage for use in a paired arrangement on each side of a user's leg in an anatomic knee brace comprising:
a. a first extension link with an upward extension portion adapted and constructed to align with a user's leg on above the knee, and with a lower portion, having first and second spaced pivots;
b. a second extension link with a downward extension portion adapted and constructed to align with a user's leg below the knee and with an upper end portion having spaced third and fourth pivots, said distance between said third and fourth pivots being greater than said first and second pivots;
c. a third connecting link having a first end connected to said first pivot on said first link and a second end connected to said fourth pivot on said second link;
d. a fourth connecting link having a first end connected to said second pivot or said first link and a second end connected to said third pivot on said second link, said fourth link crossing said third link; wherein upon vertical alignment of said extension portions, said first pivot is located on said end portion of said first link proximate said extension portion and said second pivot is displaced from said first pivot in a downward angled direction and, said third pivot is located on said end portion of said second link proximate said extension portion and said fourth pivot is displaced from said third pivot in an upward angled direction toward said second pivot, whereby said four-bar linkage is constructed and arranged to generate a polycentric motion with dual centers progressing from a common center point when said extension portions are aligned against a user's straight leg and diverging with asymmetric trajectories when said extensions portions are angled conforming to a user's bent leg, the asymmetric trajectories of the four-bar linkage approximately the asymmetric trajectories of the polycentric motion of user's knee.

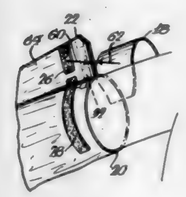


4,523,586

PROTECTIVE COVER FOR A LIMB OR A CAST

Mark S. Couri, East Peoria, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 12, 1983, Ser. No. 560,855
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—82 **9 Claims**



1. A protective cover for a limb, cast, or the like comprising:
(a) a bag of flexible material substantially impervious to an

element to be protected against, said bag having an opening through which the limb or cast to be protected may be inserted into the bag;

(b) the interior of said bag, adjacent said opening, being provided with a series of mating fasteners for fastening the internal sides of said bag together to thereby decrease the effective size of said opening to cause the size and shape of the opening to conform snugly to the size and shape of a limb or cast at its point of entry into the bag;

(c) the exterior of said bag opposite said internal sides, when said internal sides are fastened together defining a flap;

(d) a first flap fastener carried by said flap on the exterior of said bag adjacent said opening; and

(e) a second flap fasteners engageable with said first flap fastener carried by said bag on its exterior adjacent said opening and remote from said flap;

(f) whereby said opening may be substantially sealed about a limb or a cast by engaging said mating fasteners and folding the resulting said flap about the bag to engage said first and second flap fasteners.

4,523,587

RETENTION DEVICE FOR CENTERING AN ENDOPROSTHESIS SHANK IN A BONE

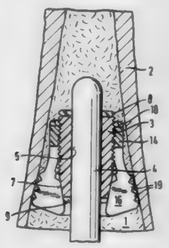
Otto Frey, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jan. 24, 1983, Ser. No. 460,366

Claims priority, application Switzerland, Feb. 23, 1982, 1093/82

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—92 C **16 Claims**



1. A retention device for centering an endoprosthesis shank in a bone, said retention device comprising

a guide piece having a cavity extending therethrough for slidably receiving the shank in slide fit relation, and

an expandable anchoring element receiving said guide piece therein in wedge-like relationship.

4,523,588

PROTECTIVE PILLOW ASSEMBLY

Thomas P. Dolsky, Topeka, Kans., assignor to Life Products, Inc., Topeka, Kans.

Filed Apr. 27, 1982, Ser. No. 372,124

Int. Cl.³ A62B *7/00*

U.S. Cl. 128—201.25 **10 Claims**

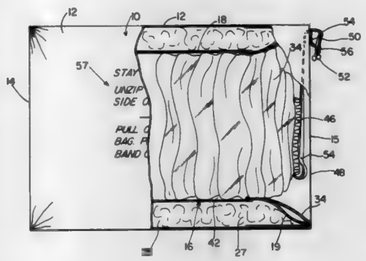
1. Apparatus for protecting a person caught in a fire emergency from smoke inhalation, comprising:

a. a first sleeve closed at one end and formed of air-pervious fabric;

b. a transparent sleeve formed of a flexible air-impervious material having one end connected completely about its periphery to the other end of said first sleeve, said transparent sleeve having means at the opposite end thereof adapted to engage the head and surround the breathing passages of said person when in said fire emergency;

c. pillow batting; and

d. means for supporting said pillow batting within said first sleeve in such a manner that said pillow batting will serve



as a smoke filter when said transparent sleeve is engaged with said head of said person in said fire emergency.

4,523,589

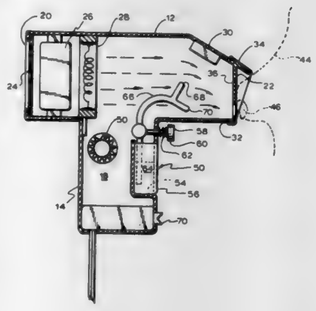
METHOD AND APPARATUS FOR TREATING AILMENTS

Robert S. Krauser, 444 Taconic Rd., Greenwich, Conn. 06830

Continuation-in-part of Ser. No. 509,172, Jun. 29, 1983, abandoned. This application Dec. 22, 1983, Ser. No. 564,306

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—203.27 **8 Claims**



1. A method for alleviating symptoms of a viral and/or bacterial infection comprising the steps of:

warming air to a temperature above 105° F. so it is relatively dry,

directing a stream of the warmed and relatively dry air to the nasal passages of a person to be treated, and

spraying a measured quantity of a misted microbicidal agent for inhalation into the nasal passages thereby to coat the membranes within the warmed nasal passages with said microbicidal agent.

4,523,590

METHOD AND DEVICE FOR REVERSIBLE STERILIZATION IN MAMMALS

Wilfred Roth, 185 S. Cove Rd., Burlington, Vt. 05401, and C. Irving Meeker, 196 Winn Rd., Falmouth, Me. 04105

Filed Oct. 25, 1982, Ser. No. 436,292

Int. Cl.³ A61B *17/12*

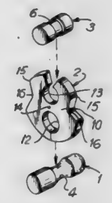
U.S. Cl. 128—325 **13 Claims**

1. A device for effecting reversible sterilization in female mammals by means of occlusion of the fallopian tubes which comprises:

(a) blocking means for insertion into a fallopian tube, said blocking means comprising at least one notched or grooved portion between two end portions, said at least one notched or grooved portion being smaller in diameter

than the diameter of said end portions, which end portions, in turn, are smaller in diameter than the inside diameter of said fallopian tube;

(b) flexible retaining means comprising a body portion having at least two apertures, at least one slit portion, and opening means for opening one of said at least two apertures and said slit portion for reception of the mesosalpinx and the portion of said fallopian tube which surrounds said blocking means; and



(c) locking means configured and dimensioned to fit into a second aperture of said flexible retaining means and apply force to close said first aperture of said flexible retaining means around said notched or grooved portion of said blocking means so as to hold and maintain said blocking means within said fallopian tube to provide occlusion of said fallopian tube over time;

said blocking means, flexible retaining means, and locking means designed for easy installation and removal without damaging said mesosalpinx or said fallopian tube.

4,523,591

POLYMERS FOR INJECTION MOLDING OF ABSORBABLE SURGICAL DEVICES

Donald S. Kaplan, 7 White Oak La., Weston, Conn. 06883, and Ross R. Muth, 97 Clearview Dr., R.D. 2, Conn. 06804

Filed Oct. 22, 1982, Ser. No. 436,056

Int. Cl.³ A61L *15/04, 17/00*

U.S. Cl. 128—334 R **24 Claims**

1. A method for making an absorbable surgical fastener of a copolymer made from 70–85% m lactide and 15–30% glycolide, said fastener retaining its strength in vivo for a sufficient amount of time and having a crystallinity of not more than about 5%, said method comprising the steps:

(a) copolymerizing lactide and glycolide;

(b) purifying the resulting crude product by removing the unreacted monomers sufficiently to raise the glass transition temperature to at least 56° C. when measured by differential scanning calorimetry at 20° C./min and maintaining the inherent viscosity at at least 1.3 when measured in chloroform at 30° C. at a concentration of 0.25 g/dl;

(c) drying the copolymer;

(d) forming the fastener from the purified dry copolymer; and

(e) maintaining the crystallinity of the fastener at not more than about 5%.

14. An absorbable surgical fastener that retains in vivo strength for a sufficient period of time comprising a copolymer made from 70–85% m lactide and 15–30% m glycolide, said fastener having a glass transition temperature of at least 54° C. when measured by differential scanning calorimetry at 20° C./min, an inherent viscosity of at least 0.9 when measured in chloroform at 30° C. at a concentration of 0.25 g/dl, and a crystallinity of not more than 5%.

4,523,592

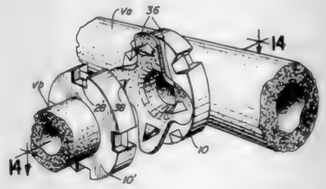
ANASTOMOTIC COUPLING MEANS CAPABLE OF END-TO-END AND END-TO-SIDE ANASTOMOSIS

Rollin K. Daniel, Birmingham, Ala., assignor to Rollin K. Daniel P.S.C., Louisville, Ky.

Filed Apr. 25, 1983, Ser. No. 488,182

Int. Cl.³ A61B *17/04*

U.S. Cl. 128—334 C **7 Claims**



1. A two piece anastomotic coupling device for either end-to-end or end-to-side anastomosis of tubular tissue vessels, comprising:

a. a pair of disc-like coupling members, each having an outer radial face, a pair of oppositely disposed planar axial faces, and an axial bore through said axial faces communicating with said axial faces, and dimensioned to receive a vessel therein;

b. a plurality of integral coupling projections extending from a first axial face of each said member, each of said projections comprising a shoulder and an anchoring means for everted purchase thereon of a vessel passing through said bore;

c. receptor means for each coupling projection located on the other said member, said receptor means comprising a plurality of recesses in the outer radial face and the adjacent portion of at least said first axial face of said member, said recesses projecting radially inwardly from said outer radial face, the number of said recesses being at least equal to the number of coupling projections on the other said member, each said recess carrying a shoulder on at least one surface thereof which shoulder is dimensioned to receive the shoulder of said projection in coupling relationship;

whereby placement of said members in an aligned first axial face-to-first axial face relationship results in coupling of each said projection with a receptor means, and maintains the everted vessel parts in contact between said first axial faces.

4,523,593

CONSTANT A-A INTERVAL CONTROL FOR DVI AND DDD CARDIAC PACEMAKERS

John C. Rueter, Shoreview, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 15, 1983, Ser. No. 504,709

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PG **2 Claims**

1. An implantable cardiac pacer operable in a DVI or DDD mode of pacing comprising:

means for sensing an atrial pacing pulse or a P-wave pulse sensed from a patient;

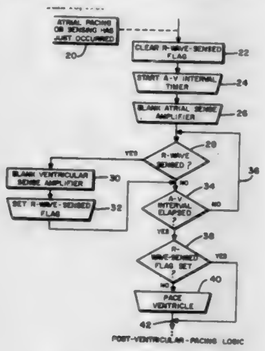
means for providing a predetermined atrial-ventricular timing interval;

means for sensing the occurrence of an R-wave pulse from the patient;

means for pacing the ventricular chamber of the patient in the absence of a sensed R-wave during the atrial-ventricular time interval;

means for providing a predetermined ventricular-atrial timing interval immediately upon the termination of the atrial-ventricular timing interval;

means for issuing an atrial pacing pulse at the end of the ventricular-atrial timing interval;
means for determining if an R-wave was sensed during the atrial-ventricular timing interval; and
means for inhibiting the generation of the ventricular pacing pulse until the end of the atrial-ventricular timing interval



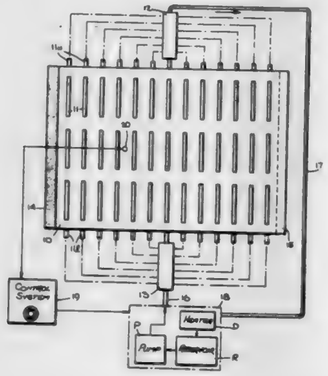
in the event that said R-wave was sensed during the atrial-ventricular interval, and for allowing said means for providing a predetermined atrial-ventricular timing interval to provide the entire atrial-ventricular timing interval regardless of whether or not an R-wave was sensed during said atrial-ventricular timing interval.

4,523,594

STRETCHABLE TEXTILE HEAT-EXCHANGE JACKET

Lawrence Kuznetz, 66 Joyce Rd., Plainview, N.Y.

Filed Feb. 12, 1982, Ser. No. 348,223
Int. Cl.³ A61F *7/00*
U.S. Cl. 128—402 **7 Claims**



1. A heat-exchange system including stretchable textile heat-exchange jacket which is adapted to be wrapped about a body member such as a knee and which functions therapeutically to heat or cool the member embraced thereby, the system comprising:

A. a stretchable fabric sheet having two sides, said fabric sheet being fabricated of elastic fibers and being provided with releasable means to hold the sheet in place to form a jacket when it is wrapped about a body member, whereby when the body member is bent the sheet assumes the same form;

B. a parallel array of flexible pipes secured to the stretchable sheet whereby the sheet may then be stretched in a direction normal to the direction of the pipes, said pipes being in heat exchange relation to the body member and following the form assumed by the sheet, each pipe having an inlet end and an outlet end extending beyond said sheet; and

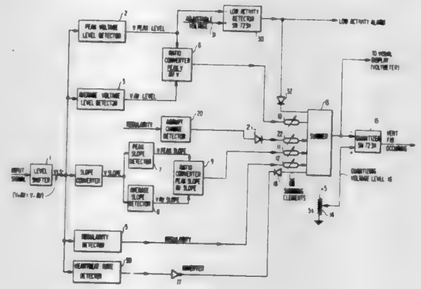
C. means to conduct a fluid through the pipes in the array at a temperature level at which heat transfer takes place between the jacket and the member to effect the desired therapeutic action, said means including a source of pressurized fluid, a mainfold distributor couple to the inlet ends of said pipes to supply fluid thereto in parallel paths, and a manifold collector coupled to the outlet ends of the pipes to collect the fluid therefrom, said distributor and said collector being external to said fabric sheet; said jacket being included in a closed loop system having said pressurized fluid source whose output is coupled to said distributor, the collector being coupled to the input of the source whereby the fluid recirculates in parallel paths through the pipes.

4,523,595

METHOD AND APPARATUS FOR AUTOMATIC DETECTION AND TREATMENT OF VENTRICULAR FIBRILLATION

J. Scott Zibell, 40 Brittany Ct., Charlotte, N.C. 28226

Filed Nov. 25, 1981, Ser. No. 325,061
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 D **13 Claims**



1. Ventricular fibrillation detector comprising, electrode means for application to a patient's chest,

means coupled to said electrodes for producing an electrocardioggram waveform of the patient's heart,

electrical circuit means forming a library of features of known electrocardiogram waveform characteristics of various heart conditions,

electrical circuit means for comparing the electrocardiogram waveform of said patient against said library of features of known known electrocardiogram waveform characteristic of various heart conditions, and

indicator means for indicating the absence of all of said stored characteristics in said electrocardiogram of the patient's heart as ventricular fibrillation.

4,523,596

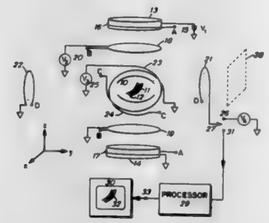
BLOOD VESSEL PROJECTION IMAGING SYSTEM USING NUCLEAR MAGNETIC RESONANCE

Albert Macovski, 2505 Alpine Rd., Menlo Park, Calif. 94025

Continuation of Ser. No. 332,925, Dec. 21, 1984,. This application Sep. 10, 1984, Ser. No. 648,469
Int. Cl.³ A61B *5/05*
U.S. Cl. 128—653 **17 Claims**

1. In a method for imaging moving material in a volume the steps of addressing the magnetic spins in the volume so that static material will produce no net received signal and moving material will produce a signal including

exciting the magnetic spins in the volume during a first time interval when the material is moving at a first velocity;
exciting the magnetic spins in the volume during a second time interval when the material is moving at a second velocity different than that of the first velocity; and



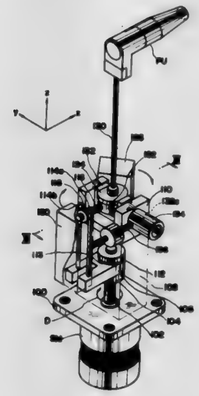
subtracting the received signals derived from the first and second excitations, and
processing the resultant received signals to form a two-dimensional projection image of the moving material in the volume.

4,523,597

APPARATUS AND METHOD FOR MEASURING THE INTRAOCULAR PRESSURE OF AN EYEBALL AND AUXILIARY DEVICE FOR USING THEREWITH

Seiji Sawa, Sakai, and Nobuyuki Kita, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 29, 1983, Ser. No. 566,485
Claims priority, application Japan, Dec. 29, 1982, 57-228557; Apr. 8, 1983, 58-62778; Nov. 21, 1983, 58-219767; Nov. 22, 1983, 58-220066; Dec. 22, 1983, 58-243575
Int. Cl.³ A61B *3/16*
U.S. Cl. 128—652 **39 Claims**



1. An apparatus for measuring the intraocular pressure of an eyeball into which fluorescent liquid has been instilled, comprising

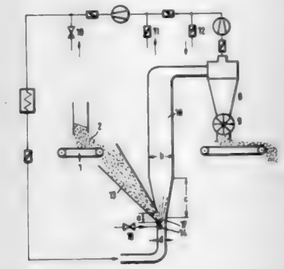
an applanation pickup having a flat applanation surface;
means for pressing the eyeball with said applanation pickup in order to flatten the front surface of the eyeball by said applanation surface, said pressing means being capable of varying the pressure against the eyeball;
means for illuminating the flattened surface of the eyeball in order to excite a fluorescent ring formed around the flattened surface;
means for forming an image of said fluorescent ring;
means for receiving said image of said fluorescent ring to produce an image signal corresponding to the shape and size of said image, said receiving means including an area image sensor capable of receiving a two-dimensional image to convert it to electrical signals;
means for detecting the pressure against the eyeball by said pressing means to produce a pressure detecting signal representative of said detected pressure;
means for measuring the area surrounded by said image, based on the electrical signals from said image sensor, to produce an area signal representative of said measured area;
means for calculating the intraocular pressure of the eyeball in accordance with said pressure detecting signal and said area signal to produce an intraocular pressure signal representative of said calculated intraocular pressure; and
means for indicating the intraocular pressure in accordance with said intraocular pressure signal.

4,523,598

PROCESS FOR IMPROVING THE FILLING CAPACITY OF TOBACCO MATERIAL

Arno Weiss, Delingsdorf, and Jörn Ulrich, Bönningstedt, both of Fed. Rep. of Germany, assignors to B.A.T. Cigarettenfabriken GmbH, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,753
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135283; Dec. 3, 1981, 3147846
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—291 **24 Claims**



1. A process for improving the filling capacity of tobacco material by expanding the moist tobacco material in an acceleration zone comprising: introducing said moist tobacco material into a gaseous medium; accelerating said moist tobacco material to a velocity of at least 20 meters per second by means of said gaseous medium, said acceleration reducing the ambient pressure causing said moist tobacco material to expand while in the acceleration zone; decelerating said tobacco material; and drying said tobacco material.

4,523,599

ATTACHABLE TOOTHBRUSH

Georges Collet, P.O. Box 19.000, Caracas, Venezuela

Filed Jan. 31, 1983, Ser. No. 462,619
Int. Cl.³ A45D *44/18*
U.S. Cl. 132—84 D **6 Claims**

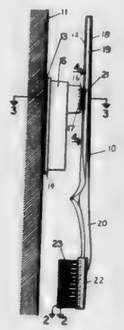
1. A toothbrush and holder comprising:

(a) said toothbrush including a rigid elongate member and said holder including an attachment member, both said elongate member and said attachment member cooperatively structured for releasable attachment to one another,

(b) said elongate member including a handle portion and a brush portion interconnected to one another and a first and a second side substantially extending along the length of both said handle and brush portions,

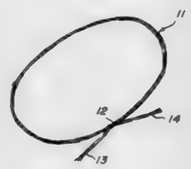
(c) a metallic insert mounted within said handle portion and including a front surface disposed in exposed, accessible relation to said first side of said handle portion,

(d) said brush portion comprising bristle means extending outwardly from said first side of said brush portion a first distance and being sized for the mouth,
(e) said attachment member having a first and a second attachment surface being spaced apart a second distance, said first attachment surface including mounting means thereon disposed for engagement with a fixed surface,
(f) said second attachment surface disposed substantially parallel to said first attachment surface and including a plate affixed thereto, said plate structured and disposed to



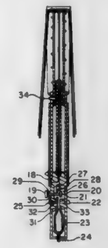
magnetically attract and mate with said front surface of said insert,
(g) said plate and said insert being cooperatively disposed, when mated, to support said elongate member in a plane substantially parallel to said second attachment surface,
(h) said attachment member being structured cooperatively with said elongate member such that said second distance of said attachment member is greater than said first distance of said brush portion and said bristle means is confrontingly disposed and spaced from the plane of said first attachment surface.

4,523,600
DENTAL FLOSSING PRODUCT
Marion Donovan, 850 Park Ave., New York, N.Y. 10021
Continuation of Ser. No. 153,907, May 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 92,969, Nov. 9, 1979, abandoned. This application Jul. 1, 1983, Ser. No. 510,271
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—89 **9 Claims**



1. A floss type plaque removal implement comprising a continuous loop of multifiliment thread having at least one joint region wherein overlapping portions of the thread are connected together securely, and at least one tail which is formed as an integral extension of said multifiliment thread from said joint region, the loop being so sized that it may be trained about fingers on opposite hands of the user and extend therebetween in a taut state through interdental spaces.

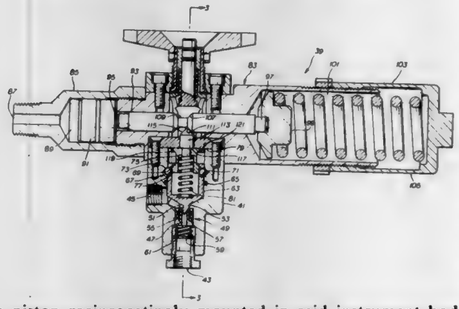
4,523,601
DOUBLE ACTION UMBRELLA
Clyde C. Grady, Lonoke County, Ark., and Clyde C. Grady, II, Baytown, Tex., assignors to Christianson Manufacturing Corporation, Baytown, Tex.
Filed May 8, 1983, Ser. No. 475,770
Int. Cl.³ A45B *25/14, 25/16*
U.S. Cl. 135—22 **2 Claims**



1. An umbrella having a canopy and a frame of interconnected ribs and a means for the automatic opening and closing of the aforesaid ribs and canopy comprising:
a hollow outer cylinder;
a hollow inner cylinder located concentrically within the aforesaid outer cylinder wherein the inner cylinder slidably moves within the aforesaid hollow outer cylinder;
a sleeve which slidably moves on the exterior of the aforesaid hollow outer cylinder;
a hollow inner tube located concentrically within the aforesaid hollow inner cylinder;
a handle attached to the aforesaid hollow outer cylinder and hollow inner tube wherein said handle contains an ampule of compressed gas and said ampule is connected by passageways to the aforesaid hollow inner tube;
an extension spring attached at one end to the aforesaid inner cylinder and at its alternate end attached to the aforesaid outer cylinder;
a latching mechanism preventing the movement of the inner cylinder with respect to the outer cylinder wherein said mechanism is released by the movement of the aforesaid sleeve;
a shaft which fits snugly within the aforesaid inner tube;
a valve disposed within said handle which either stops or allows flow of gas from the aforesaid ampule through passageways to the aforesaid inner tube;
a vent port communicating with said passageways which permits communication of said passageways with the atmosphere upon the movement of the aforesaid sleeve;
movement in one direction of said sleeve simultaneously releasing said latching mechanism and opening said vent port to atmosphere, movement of said sleeve in a direction reverse of the aforesaid direction allowing said latching mechanism to engage while sealing said vent so that fluid pressure from said ampule may impinge against said shaft.

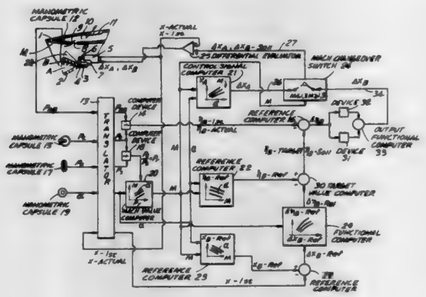
4,523,602
PRESSURE CONTROLLER
David E. Snyder, Longview, Tex., assignor to Axelson, Inc., Longview, Tex.
Filed Jul. 22, 1983, Ser. No. 516,360
Int. Cl.³ F16K *17/00*
U.S. Cl. 137—467 **21 Claims**

1. A pressure controller for controlling control pressure in response to a change in a service pressure, which comprises:
a valve body including a control inlet and a bleed outlet with a passage intercommunicating said control inlet and said bleed outlet;
a first valve seat within said passage between said control inlet and said bleed outlet;
a first valve member reciprocatingly mounted in said passage for movement between a closed position in engagement with said first valve seat to block communication between said control inlet and said bleed outlet and an open position out of engagement with said first valve seat;
means for releasably latching said valve member in said closed position, said latching means including:
(a) a detent recess formed in said valve body;
(b) a detent movably carried with said first valve member;
(c) and a trigger reciprocatingly mounted in said valve body, said trigger including means for urging said detent into engagement with said detent recess when said valve member is in said closed position;
an instrument body mounted adjacent said valve body, said instrument control body including a sense inlet;



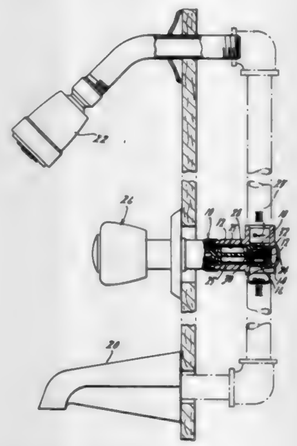
a piston reciprocatingly mounted in said instrument body and having a face adapted to be exposed to service pressure received at said sense inlet;
an elongated operator mounted in said instrument body and longitudinally movable with said piston, said operator including a cam portion;
means for urging said operator in the direction opposite the force due to said service pressure acting on said piston;
and a cam follower engaging said cam portion and operably connected to said trigger for releasing said latching means to allow said first valve member to move to said open position.

4,523,603
AIR INTAKE CONTROL FOR AN ADJUSTABLE AIR INLET, PARTICULARLY TWO-DIMENSIONAL OBLIQUE SHOCK DIFFUSER FOR GAS TURBINE JET ENGINES FOR THE PROPULSION OF HIGH PERFORMANCE AIRCRAFT
Jürgen Peikert, Johann Houis Str. 34, 8 München 70, Fed. Rep. of Germany
Filed Dec. 10, 1980, Ser. No. 222,267
Int. Cl.³ F41C *7/042*
U.S. Cl. 137—15.2 **6 Claims**



1. An air intake control for a variable air inlet, such as for a two-dimensional oblique shock diffuser for gas turbine engines for the propulsion of high performance aircraft, comprising an axially extending air intake duct having an inlet end and comprising upper ramps located at the inlet end, an air inlet bottom spaced below said upper ramps and spaced in the axial direction of said air intake duct from the inlet end, a movable air scoop lip pivotally connected to said air inlet bottom about an axis extending transversely of the axial direction of said air intake duct and extending from said axis located at the end of said air inlet bottom closer to the inlet end toward said inlet end, drive means for moving said air scoop lip in a lower subsonic/transconic, wider-angular operating range (A) between a lower set point (a) with a maximum set angle of δ_A-max more remote from said upper ramps and a mean set point (b) closer to said upper ramps, and a smaller angular range (B) between said mean set point (b) and an upper mean set point (c) closer to said upper ramps than said mean set point (b) and said smaller angular range (B) having a maximum set angle of δ_B-max, first control means for producing a first electrical control demand signal for driving said drive means and moving said air scoop lip in the wider-angular operating range (A) in response to flight machnumber (M) and the the aircraft angle of attack (α) according to the functional control law $\delta_A = f(1/M)$, α, and second control means for producing a second electrical control demand signal for driving said drive means and moving said air scoop lip in the upper smaller angular range (B) in response to a variable demand pressure ratio between the static pressure above said upper ramps and the free stream total pressure said variable demand pressure ratio being a function of the actual air scoop lip position.

4,523,604
DIVERTER VALVE
Joe D. Hutto, Indianapolis, Ind., assignor to Masco Corporation of Indiana, Taylor, Mich.
Filed Mar. 14, 1983, Ser. No. 474,804
Int. Cl.³ F16K *11/02*
U.S. Cl. 137—102 **13 Claims**



1. A diverter valve characterized by:
a housing having a cavity with a first outlet, a second outlet, and an inlet;
a valve element movably mounted in said cavity between a first position and second position;
said valve element being an elastomeric sleeve rotatably mounted about a valve seat;
said valve seat being operably rotatable within said cavity;
said outlets being through the side wall of said cavity and said inlet being at an end thereof;
said valve member when in said first position being adjacent said first outlet and being pressure responsive to fluid

pressure in said cavity such that over a predetermined pressure in said cavity, said sleeve seals said first outlet and fluid is directed through said second outlet from said inlet; and

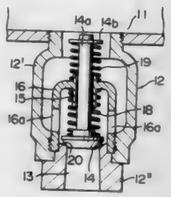
said first outlet being lower than said second outlet such that when fluid pressure in said cavity is below a predetermined amount, said valve element breaks its seal with said first outlet and allows fluid to drain from said second outlet to said first outlet.

4,523,605

FREEZE PREVENTING VALVE

Ichizo Ohkata, Yokohama, Japan, assignor to Kato Hatsujo Kaisha Ltd., Yokohama, Japan

Filed Apr. 25, 1984, Ser. No. 603,769
Claims priority, application Japan, Dec. 31, 1983, 58-251423
Int. Cl.³ E03B *7/12*
U.S. Cl. 137—62 **4 Claims**



1. A freeze preventing valve comprising:

a valve cage body longitudinally provided with a cylindrical guide at the upper part thereof in a hollow valve housing connected to a steam feed pipe,

a valve element having a shaft disposed through the guide of said valve body to be able to open an exhaust port opened at the lower end of the housing and to be elevationally guided within the guide of the housing,

a spring of shape memory alloy interposed within the valve cage body between an upper interior surface of said valve body and said valve element for urging said valve element downwardly to close said valve element,

a bias spring mounted between an upper exterior surface of said valve body and an upper end of the shaft protruding through the guide of said valve element for urging said valve element upwardly to open said valve element,

said valve body being formed with a plurality of holes the exhaust port being closed by said valve element when steam is introduced from the pipe through the hollow valve housing into said valve cage body to heat and elongate said spring of shape memory alloy and to contact said bias spring, and the exhaust port being open by said valve element when the condensed water from the pipe is introduced through the housing into said valve body to contract said spring of shape memory alloy and elongate said bias spring by the tension of said bias spring.

4,523,606

DISTRIBUTION VALVE

Charles M. Gould, Glendale, and Andy F. Blake, Phoenix, both of Ariz., assignors to Shasta Industries, Inc., Phoenix, Ariz.

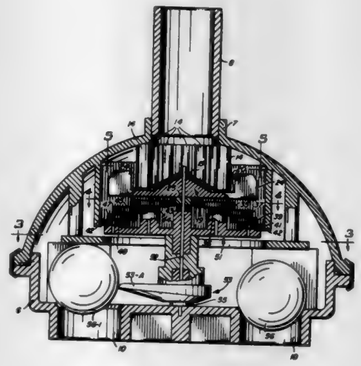
Filed Apr. 22, 1983, Ser. No. 487,758
Int. Cl.³ F16K *31/16*
U.S. Cl. 137—119 **8 Claims**

1. A fluid distribution valve having an inlet port for receiving fluid under pressure and also having a plurality of outlet ports through which the received fluid is sequentially expelled under pressure, said fluid distribution valve comprising in combination:

(a) a housing having said inlet port and said plurality of outlet ports therein, said housing bounding an interior chamber, said inlet port being located at the top of said housing and directing flow of said fluid downward into said chamber;

(b) a rotary impeller disposed beneath said inlet port in said chamber, and having a rotary star-shaped plate and a plurality of vertical vanes each supported along an edge of a respective broad extension of said star-shaped plate for rotating in response to flow of fluid into said chamber through said inlet port, said impeller having a first gear attached rigidly thereto, said star-shaped plate having an upper surface;

(c) a plurality of stationary, substantially vertical baffles disposed in said chamber between said inlet port and said impeller, each of said baffles extending nearly to the upper surface of said star-shaped plate, each of said vertical baffles constraining said fluid to flow against said vertical vanes and the upper surfaces of said broad extensions of said impeller as it rotates, said stationary baffles cooperating with said broad extensions of said star-shaped plate adjacent to said vertical vanes to constrain a substantial portion of the incoming fluid to flow directly against said vertical vanes of said impeller and then to allow that fluid to pass unimpeded through gaps between said broad extensions in said star-shaped plate and lower into said chamber as said impeller continues to rotate;



(d) a planetary gear attached in stationary relationship to said housing in the interior thereof;

(e) gear reduction means having a second gear for meshing with said first gear and a third gear responsive to rotation of said second gear in geared-down relationship thereto for meshing with said planetary gear, said gear reduction means including a rotary base for supporting said second and third gears, said rotary base rotating in geared-down relationship to said impeller in response to rotation of said impeller, said first, second, and third gears being disposed immediately beneath said impeller whereby a high level of turbulence of fluid received from said impeller effects continual flushing and cleaning of the gears in said gear reduction means to prevent build-up of deposits thereon;

(f) a plurality of spherical valve balls each seated in a circular seating surface of a respective one of said outlet ports; and

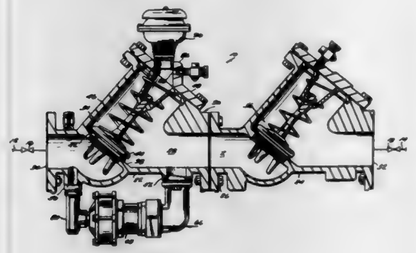
(g) a foot-shaped cam rigidly attached in fixed relationship to said rotary base for rotation in response to rotation of said impeller and in geared-down relationship to said impeller, for sequentially unseating respective ones of said valve balls to allow water to be ejected from said chamber through unseated outlet ports.

4,523,607

BACKFLOW PREVENTER APPARATUS

Joseph L. Daghe, Decatur; Robert E. Sands, Shelbyville, and Dennis W. Humes, Decatur, all of Ill., assignors to Mueller Co., Decatur, Ill.

Division of Ser. No. 383,305, May 28, 1982, Pat. No. 4,489,746.
This application Aug. 21, 1984, Ser. No. 642,937
Int. Cl.³ F16K *15/06*
U.S. Cl. 137—218 **4 Claims**



1. A poppet-type check valve for use in a backflow preventer assembly positioned between a supply pipe and a service pipe, said check valve comprising:

a body member having a passage therethrough for the flow of liquid;

a valve seat ring in said passage and lying in a plane at an acute angle to the longitudinal axis of said passage;

a valve element cooperating with said valve seat ring, said valve element being spring urged to a closed position on said valve seat ring and pressure urged to an open position, said valve seat ring having an annular interior wall; and

a guide member for said valve element, said guide member including a disc fixedly attached to said valve element and having a diameter substantially equal the diameter of the wall of said valve seat ring whereby it can be received in the same, said disc having a plurality of guide fingers extending from its periphery, each of said fingers having an outer circumferential surface cooperating with the side wall of said seat ring, said fingers being configured to provide a minimum loss in pressure through said check valve when said check valve is open and liquid is flowing therethrough, each of said fingers being tapered in an upstream direction, both circumferentially and radially whereby when said valve begins to open, the area of opening progressively increases for each unit of movement of said disc and the amount of restriction to flow upstream of the ring decreases, said fingers each having a rounded configuration on an interior surface from edges of said circumferential surface whereby turbulence in reduced.

4,523,608

ROTARY BALL VALVE ASSEMBLY

Ivan O. Miller, Fullerton, Calif., assignor to Shafco Industries Inc., Buena Park, Calif.

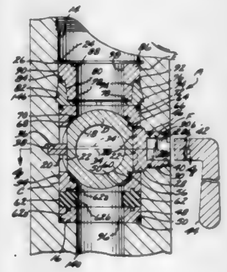
Filed Apr. 15, 1982, Ser. No. 368,753
Int. Cl.³ F16K *5/20*
U.S. Cl. 137—315 **2 Claims**

1. A high pressure valve of the type that includes an elongate valve body that has first and second passages extending longitudinally therethrough from an upper first end and a lower second end that is their junction define a circular body shoulder, a lower valve seat assembly in said first passage that rests on said body shoulder and is partially defined by a resilient member; a ball member in said valve body, said ball member having a diametrical passage therein that may be aligned with said first and second passages when said ball member is rotated from a first to a second position, said ball member when in said first position being longitudinally movable relative to said valve body, means for rotating said valve member between said first and second positions, said high pressure valve being characterized by including an upper valve seat assembly in said first passage that distributes an upwardly directed longitudinal force exerted by high pressure fluid in said second passage on said ball member both longitudinally and tranversely to said valve body, when said ball member is in said first position, said upper valve seat assembly including:

a. a rigid ring slidably mounted in said first passage, said rigid ring having a concave surface in abutting contact with said ball member, with the internal diameter of said ring greater than the diameter of said second passage, said concave surface having a first circular recess therein, and said rigid ring including a cylindrical side surface and a top surface;

b. a first resilient ring mounted in said first recess and projecting therefrom that slidably and sealingly engages said ball member;

c. a rigid segmented ring in said first passage that rests on said top surface of said rigid ring, said segmented ring including an upwardly and inwardly tapered external side surface and an upwardly and outwardly tapered internal side, said external surface in abutting contact with a circular upwardly and inwardly tapered recess defined in said valve body adjacent said first passage with said segmented ring when it attempts to move longitudinally toward said first passage by a longitudinal force exerted thereon transferring a position of said longitudinal force transversely to said valve body said segmented ring defined by a plurality of rigid segments that have lower portions and a plurality of flat bottomed flanges that extend inwardly towards one another from said lower portions, with said flat bottomed flanges resting on said top surface of said rigid ring;



d. a rigid locking ring that includes an upper cylindrical portion slidably mounted in said first passage and a second portion that extends downwardly therefrom, said second portion having an external upwardly and outwardly tapered side surface that is in abutting contact with said internal side surface of said segmented ring, said cylindrical portion including a top surface; and

e. a snap ring that removably engages a recess in said valve body in said first passage, said snap ring in abutting contact with said locking ring to prevent movement of said locking ring towards said first passage, with an upward force on said ball member when the latter is in said first position being transferred through said rigid ring to said segmented ring, with said segmented ring as said tapered external side surface attempts to move upwardly relative to said tapered recess transforming a portion of said upward force to a transverse outwardly directed force on said valve body, and said internal tapered side surface of said segmented ring as it attempts to move upwardly relative to said upwardly and outwardly tapered surface of said second portion of said locking ring transforming a portion of said upward longitudinal force to a transverse inwardly directed force on said second portion.

4,523,609

VOLUME FLOW OR PRESSURE REGULATING DEVICE

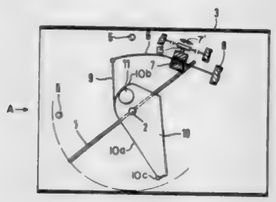
Franz Weck, Wuerselen, Fed. Rep. of Germany, assignor to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 513,039

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1982, 3227882

Int. Cl.[3] G05D *7/01*; F24F *13/10*

U.S. Cl. 137—499 13 Claims



1. A volume flow or pressure regulating device for installation in a flow channel, comprising a shaft extending through said channel, bearing means rotatably supporting said shaft, control flap means rigidly secured to said shaft for rotation with the shaft in said channel, cam means rigidly secured to said shaft, said cam means having a cam surface, a tension or pulling cable, bending spring means including a leaf spring having one end secured to a fixed point having a variable position, said pulling cable being secured with one end thereof to a point on said cam surface, said pulling cable being secured with its other end to a free end of said bending spring means, said pulling cable, said bending spring means, and said cam surface being located relative to each other so that a variable portion of the length of the cable rests against and along the cam surface in response to the angular position of said flap means for maintaining a controlled flow condition and adjusting means (7) forming said fixed point shiftably connected to said leaf spring and including means for shifting said fixed point along said leaf spring for adjusting an effective length of said bending leaf spring for providing a two branch torque moment characteristic.

4,523,610

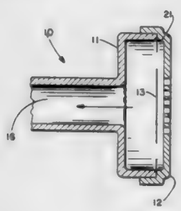
CHECK VALVE

Mario M. V. Orrico, Chicago, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 380,967, May 24, 1982, abandoned. This application Aug. 22, 1984, Ser. No. 643,098

Int. Cl.[3] F16K *15/14*

U.S. Cl. 137—512.15 10 Claims



1. A check valve comprising:

a housing having first and second sides, said first side having an opening and said second side having a substantially flat surface containing an inner portion and an outer portion with opening means within said inner portion; and,

a thin membrane, comprised of a carbon filled polycarbonate film, within said housing and having an inner portion and an outer portion with holes within said outer portion of said thin membrane and cooperating with said opening means of said second side of said housing such that, for air flows from said first side of said housing to said second side, said membrane will be pushed against said second side wherein said inner portion of said membrane will seal said opening means of said second side to check flow from said first side of said housing to said second side and, for air flows from said second side of said housing to said first side, said membrane will be pushed away from said second side to allow air flow through said opening means of said second side and said holes of said membrane and then through said opening of said first side, said housing supporting said thin membrane such that said thin membrane has slack so that when said membrane is pushed against said second side of said housing, said membrane will move without appreciable stretching, said membrane and said housing being dimensioned to respond to pressure differentials of much less than 1 inch of water.

4,523,611

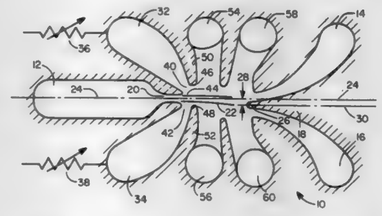
FLUIDIC ABSOLUTE-TO-DIFFERENTIAL PRESSURE CONVERTER

Tadeusz Drzewiecki, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 6, 1983, Ser. No. 492,120

Int. Cl.[3] F15C *1/06, 4/00*

U.S. Cl. 137—804 12 Claims



1. An absolute-to-differential pressure converter for converting the absolute pressure of a pressurized fluid to a differential pressure indicating the pressure of the pressurized fluid relative to a predetermined reference pressure, comprising:

input means, connected to receive said pressurized fluid, for directing a jet of fluid along a first centerline at a velocity determined by said absolute pressure;

output means, disposed downstream from said input means, including first and second outlets separated by a splitter which is disposed asymmetrical to said first centerline such that at least a greater portion of said jet directed along said first centerline is received at the first outlet; and

control means for deflecting said jet towards said second outlet in accordance with said jet velocity such that the differential pressure generated by the jet between the first and second outlets is zero when said absolute pressure is equal to said predetermined reference pressure.

4,523,612

APPARATUS AND METHOD FOR SUPPRESSING VIBRATION AND DISPLACEMENT OF A BELLOWS

Thomas C. Kuklo, Ripon, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 15, 1983, Ser. No. 485,155

Int. Cl.[3] F16L *55/04*

U.S. Cl. 138—30 8 Claims

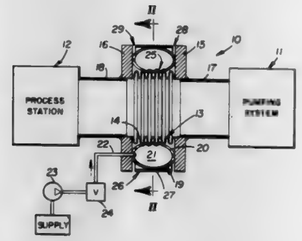
1. An integrated system (**10**) comprising:

a first system (**11**) including a first radially disposed member (**15**);

a second system (**12**) including a second radially disposed member (**16**);

said first and second radially disposed members (**15** and **16**) positioned on a respective side of inflatable damping means (**19**) and in contact therewith;

means (**13**) for communicating fluid between said first system (**11**) and said second system (**12**), including at least one flexible bellows (**14**), said bellows including therein a plurality of convolutions, interconnected therebetween



and secured between said first and second radially disposed members (**15** and **16**); and

said inflatable damping means (**19**) surrounding said bellows (**14**) in flexing relationship therewith for suppressing vibration and displacement thereof to substantially isolate said first (**11**) and said second (**12**) systems from each other.

4,523,613

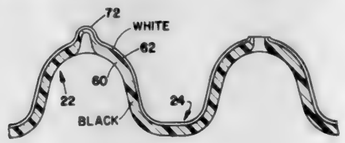
MULTI-LAYERED CORRUGATED CONDUIT WITH "BLACK-EYE" LIKE APERTURES

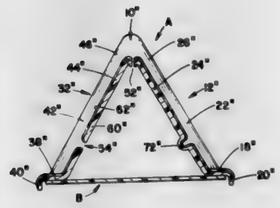
James L. Fouss; John J. Parker; James L. Child, Jr., all of Findlay, Ohio, and Donald W. Sting, New Canaan, Conn., assignors to Hancor, Inc., Findlay, Ohio

Continuation-in-part of Ser. No. 164,969, Jul. 1, 1980, Pat. No. 4,360,042, which is a continuation-in-part of Ser. No. 967,514, Dec. 7, 1978, Pat. No. 4,245,924. This application Nov. 6, 1981, Ser. No. 318,740

Int. Cl.[3] F16L *11/11*; E02B *11/00*

U.S. Cl. 138—121 7 Claims





1. A multi-layered corrugated plastic conduit comprising:

at least a first longitudinally extending side wall, the side wall comprising an inner layer of a first plastic material and an outer layer of a second material, the side wall having a plurality of transversely extending alternating peaks and valleys;

the side wall defining a plurality of apertures therein, each aperture being defined by an opening in the outer layer which has a peripheral ring of the first material extending therethrough, the aperture being defined in and surrounded completely by the first material.

4,523,614

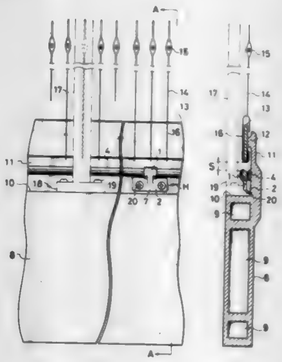
APPARATUS FOR DETECTION OF END BREAKAGE IN HEDDLE FRAME

Yoichi Shimizu, Izumishi, Japan, assignor to Kabushiki Kaisha Maruyama Seisakucho, Sakaishi, Japan

Filed Oct. 12, 1983, Ser. No. 541,040

Int. Cl.[3] D03D *51/32*

U.S. Cl. 139—355 6 Claims



1. For use in a vertically reciprocable heddle frame having a heddle bar and at least one heddle, the heddle having a yarn warp hole and an electrically conductive engaging part loosely mounted on the heddle bar with a vertical play, a device for detecting breakage of yarn passing through the yarn warp hole in the heddle, said device comprising:

(a) an electrically conductive detecting element extending parallel to the heddle bar, said electrically conductive detecting element being positioned immediately below the electrically conductive engaging part of the heddle by a distance not greater than the vertical play of the electrically conductive engaging part of the heddle;

(b) a non-electrically conductive holder for supporting said electrically conductive detecting element in position to contact the electrically conductive engaging part of the heddle when the yarn passing through the yarn warp hole in the heddle breaks, said holder comprising:

(i) a resilient holding element having a through hole size, shaped, and positioned to receive and position said electrically conductive detecting element and a top opening sized and shaped so that said electrically conductive detecting element can pass therethrough when the top opening is opened against the resiliency of said resilient holding element, said top opening also being sized, shaped, and positioned so that the electrically conductive engaging part of the heddle can contact said electrically conductive detecting element through said opening while said electrically conductive detecting element is received in said through hole and

(ii) a holder body secured to said resilient holding element; and

(c) means for securing said non-electrically conductive holder on the heddle frame,

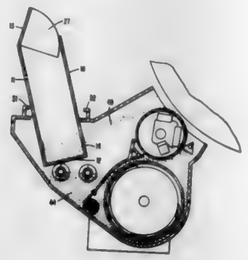
whereby, if an electric current is applied to said electrically conductive detecting element during downward movement of the heddle frame, the breakage of yarn passing through the yarn warp hole in the heddle can be detected because the breakage of the yarn permits the heddle to drop until the electrically conductive engaging part of the heddle makes contact with said electrically conductive detecting element, completing an alarm circuit.

4,523,615

METHOD AND APPARATUS FOR IN SITU PURGING A XEROGRAPHIC DEVELOPER

David D. Feenstra, Larimer County; Robert L. Fey, and Cheryl A. Goin, both of Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1983, Ser. No. 476,005
Int. Cl.³ B65B *1/06*
U.S. Cl. 141—1 **9 Claims**



7. A method for removing used developer mix from a xerographic developer, and replacing the used mix with new mix, comprising the steps of:

packaging said new mix in an inner container which is protected for shipment by a combined overpack and mix removal tool, said overpack having a manually removable portion thereof which, when removed, exposes the interior cavity of said overpack;

opening an exterior surface of said xerographic developer in order to expose a portion of the mix-flow path of said developer;

removing said inner container from said overpack;

removing said portion from said overpack to thereby leave an opening;

inserting the now-empty overpack into said xerographic developer, in a position such that said opening intercepts said mix-flow path;

operating said developer to thereby cause the developer's used mix to pass through said opening as it enters the cavity of said overpack;

removing said overpack from within said xerographic developer;

placing the contents of said inner container within said xerographic developer; and

closing said developer's exterior surface.

4,523,616

APPARATUS FOR CONTROLLING THE FILLING OF CONTAINERS

Edith Kleinophorst Geb. Schädel, Kronprinzenstrasse 9, 4130 Moers, 1, Fed. Rep. of Germany, and Gerhard Grosskreuz, Volksdorfer Weg 174, 2000 Hamburg 65, Fed. Rep. of Germany

Filed Sep. 6, 1983, Ser. No. 529,825
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1982, 3233093; Aug. 24, 1983, 3330446
Int. Cl.³ B65B *3/32*
U.S. Cl. 141—83 **6 Claims**

2. Apparatus for the simultaneous filling of a medium into several containers, such as tanks, drums, or packs, comprising:

(a) a main pipe line,

(b) a feed pump in the main pipe line for supplying the medium therethrough,

(c) at least two branch supply lines each having one end connected to the main pipe line for receipt of the medium therefrom,

(d) at least two valves, one valve in each branch supply line,

(e) at least two volume chambers, one volume chamber arranged in each branch supply line upstream of the valve, with an impeller with a bearing shaft arranged in the interior of each volume chamber to be rotated by the medium flowing therethrough to the valve,

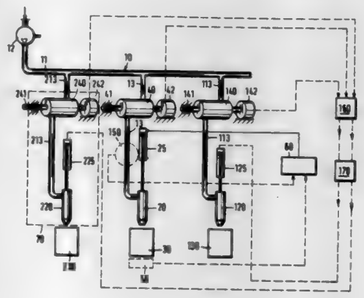
(f) means associated with one of the valves for determining the amount of the medium passing therethrough,

(g) a two-stage control cylinder directly connected to said one of the valves,

(h) a control element coupled to the last-named means and to the two-stage control cylinder and responding to the determined amount of the medium for controlling the two-stage control cylinder to control said one of the valves,

(i) at least one pneumatic two-stage control cylinder, each pneumatic two-stage control cylinder connected to one of the remaining ones of the valves,

(j) a plurality of flow recorders, one flow recorder connected to each of the volume chambers,



(k) a flow data storage device,

(l) means connecting the flow recorder of the volume chamber having the valve controlled by the determining means to the flow data storage device for storage, as a desired value, of the throughflowing medium quantity described by the last-named flow recorder,

(m) means connecting the flow data storage device of the other volume chambers for comparison of the desired value with the actual values of the other flow recorders, and

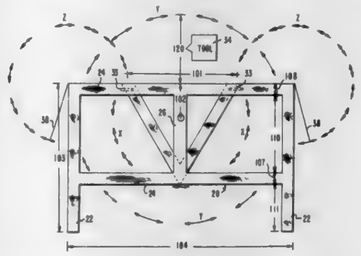
(n) means responsive to such comparison for controlling the other values so that on reaching the desired values for the volume chambers, the valves associated therewith are disconnected.

4,523,617

THREE-IN-ONE WORK STATION

George V. Tiedemann, RD #3, Box 706, Howell, N.J.

Filed Mar. 2, 1984, Ser. No. 585,364
Int. Cl.³ B25H *1/00*
U.S. Cl. 144—286 A **11 Claims**



1. Apparatus comprising:

a workbench frame having;

(a) four vertically extending support members;

(b) four horizontally extending members joining corresponding upper most portions of said support members together in forming a top frame structure

(c) two horizontally extending, oppositely positioned, members joining corresponding intermediate portions of adjacent support members together;

(d) two vertically extending, oppositely positioned, members joining said two horizontally extending members to the two of said four horizontally extending members positioned thereabove in forming a pair of side frame structures; and

(e) with each of said two vertically extending members being apertured at corresponding locations thereon;

a worktable in the form of a triangular solid presenting;

(a) three major surfaces, to each of which a desired electrically powered or manually operable worktool is securable; and

(b) two oppositely positioned side surfaces joining said three major surfaces together; and

(c) with each of said two side surfaces being apertured at corresponding locations thereon;

a transverse rod serially extending through one of said apertures of said two vertically extending members of said workbench frame, through said apertures of said two side surfaces of said worktable, and through said other aperture of said two vertically extending members in forming a fulcrum about which said worktable is rotatable within said workbench frame;

and means detachably coupling at least one selected location along said worktable surfaces to at least one selected location along said workbench frame for controllably locking said worktable in place once a desired worktool is rotated into desired position.

4,523,618

BRANCHED POLYMER, PROCESS FOR THE PREPARATION THEREOF, TIRE TREAD RUBBER COMPOSITION AND TIRE

Keisaku Yamamoto; Nobuyuki Yoshida; Yasushi Okamoto; Akio Imai; Tomoaki Seki, all of Ichihara; Hiroshi Furukawa, Ashiya, and Yuichi Saito, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka and Sumitomo Rubber Industries, Ltd., Kobe, both of, Japan

Filed Mar. 30, 1983, Ser. No. 480,348
Claims priority, application Japan, Mar. 30, 1982, 57-53387
Int. Cl.³ B60C *11/00*
U.S. Cl. 152—209 R **8 Claims**

1. A branched polymer which is a butadiene homopolymer or a copolymer of butadiene and an aromatic vinyl compound and has a glass transition temperature of not less than −50° C., an intrinsic viscosity in toluene, at 30° C., of 1.0 to 6.0 dl./g, and of which at least 70% by weight of the polymer chains has a branched structure of R_4Si, $R_3Si(CH_3)$ or R_4Sn in which R is a polymer radical.

4,523,619

PROTECTIVE PLY FOR TIRE CROWN OF THREE-DIMENSIONAL STRUCTURE

Jacques Gouttebessis, Volvic, France, assignor to Compagnie Generale Des Etablissements Michelin, Clermont-Ferrand, France

Filed Oct. 4, 1983, Ser. No. 538,978
Claims priority, application France, Oct. 22, 1982, 82 17963
Int. Cl.³ B60C *9/18*
U.S. Cl. 152—527 **8 Claims**

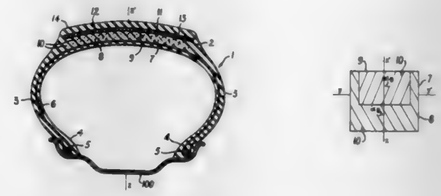
1. A tire with a crown comprising a strengthening reinforcement and at least one protective play arranged above the strengthening reinforcement, characterized by the fact that the protective play has the following features:

(a) it comprises a three-dimensional fabric impregnated with rubber, said fabric having two principal faces;

(b) the fabric comprises warp threads and woof threads;

(c) the warp threads and the woof threads undulate;

(d) when the general orientation of the fabric is flat, the principal faces of the fabric being then assumed flat, each warp thread undulates in a warp thread plane perpendicular to the principal faces of the fabric, each warp thread being alternately tangent to one of the principal faces of the fabric and then to the other, and the woof threads are



arranged between the warp threads in several woof thread planes in the thickness of the fabric, the woof thread planes being parallel to the principal faces of the fabric, each woof thread undulates in a woof thread plane;

(e) the warp threads and the woof threads are made with one or more materials whose rupture stress is less than 140 kg/mm^2; and

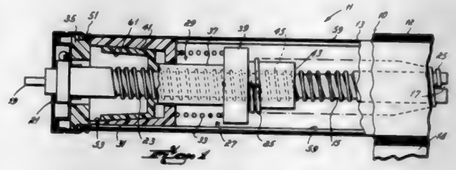
(f) the porosity of the fabric before impregnation with rubber varies from 60% to 90%.

4,523,620

WINDOW SHADE CLUTCH ASSEMBLY

Robert M. Mortellite, Hamilton, Ohio, assignor to Clopay Corporation, Cincinnati, Ohio

Filed Jan. 17, 1983, Ser. No. 458,439
Int. Cl.³ E06B *9/208*
U.S. Cl. 160—315 **7 Claims**



1. A tube assembly for preventing over-tensioning of a spring motor means in a window shade comprising:

a fixed shaft;

a housing rotatable relative to said fixed shaft;

spring motor means contained within said housing, said spring motor means being connected to said fixed shaft;

spool means axially movable along said fixed shaft, said spool means being connected to said spring motor means;

cup means rotatable with said housing;

clutch means including a first tapered surface formed in said spool means and a second tapered surface formed in said cup means, said first and second tapered surfaces of said clutch means being adapted to mate to permit rotation of said spool means with said cup means and housing;

said spool means being movable in a first axial direction along said shaft while rotating with said cup means and housing to effect increased tensioning of said spring motor means, said first and second tapered surfaces of said clutch means being operable to disengage said spool means from said cup means at a predetermined point of axial movement of said spool means in said first direction to prevent further tensioning of said spring motor means.

4,523,621

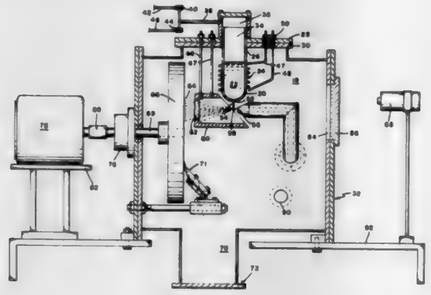
METHOD FOR MAKING METALLIC GLASS POWDER

Ranjan Ray, Randolph, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 349,807, Feb. 18, 1982, Pat. No. 4,386,896, which is a continuation of Ser. No. 23,413, Mar. 23, 1979, abandoned. This application Mar. 17, 1983, Ser. No. 476,004

Int. Cl.³ B22D *23/00*

U.S. Cl. 164—46 **12 Claims**



1. A method for making metallic glass powder, comprising the steps of:

(a) generating a jet of molten glass forming alloy;

(b) atomizing said jet into a stream of discrete molten metal droplets;

(c) directing the stream of atomized molten metal droplets against a moving chill surface to effect impingement and rapid solidification of the droplets thereon; and

(d) controlling the surface velocity of said chill surface, the velocity of said molten metal droplets and the shape of said stream to minimize overlap of the droplets during said impingement.

4,523,622

METHOD OF MANUFACTURING HOLLOW METAL INGOTS

Heinrich Faste, Grossenkneten, and Ali Bindernagel, Wermelskirchen, both of Fed. Rep. of Germany, assignors to Kocks Technik GmbH & Co., Hilden, Fed. Rep. of Germany

Continuation of Ser. No. 396,845, Jul. 9, 1982, abandoned. This application Mar. 14, 1984, Ser. No. 589,514

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134758

Int. Cl.³ B22D *7/04, 13/02*

U.S. Cl. 164—66.1 **6 Claims**

1. A method of manufacturing hollow metal ingots comprising the steps of:

(a) rapidly pouring a liquid metal melt into an upright or slightly inclined chill mould, the quantity of liquid metal poured into the mould corresponding to the total volume of the chill mould plus the shrinkage volume minus the volume of the desired axial hole in the final casting;

(b) closing said chill mould;

(c) tilting the closed chill mould into a substantially horizontal axial position;

(d) slowly rotating the chill mould about its longitudinal axis at a speed sufficiently low to avoid any appreciable centrifugal forces; and

(e) progressively cooling and solidifying the metal inwardly from the walls of the rotating chill mould during said slow rotation to form a hollow casting having the length and form of the chill mould and the desired axial passage



whereby the casting is substantially free from centrifugally created effects.

4,523,623

PLATE MOULD FOR CONTINUOUS CASTING

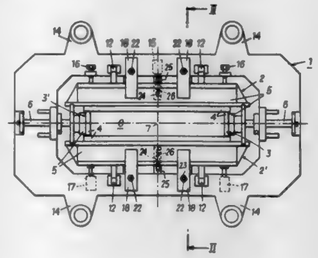
Günter Holleis, and Horst Wiesinger, both of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Sep. 24, 1982, Ser. No. 422,873

Claims priority, application Austria, Oct. 9, 1981, 4340/81

Int. Cl.³ B22D *11/12, 33/04*

U.S. Cl. 164—436 **7 Claims**



1. In a plate mould for continuous casting, in particular for continuously casting steel slabs, and of the type including

a carrying frame,

broad-side walls supported in said carrying frame,

end walls arranged between said broad-side walls, said broad-side walls and said end walls defining a mould cavity,

an adjustment means for displacing said broad-side walls normal to a longitudinal axis of said mould cavity, and

clamping means for fixing said broad-side walls relative to each other with said end walls interposed therebetween, the improvement wherein

said carrying frame comprises holding plate means arranged below and supporting said broad-side walls,

at least one clamp strap is provided for each broad-side wall for clamping said broad-side wall against said holding plate means for restraining vertical movement of said broad-side wall relative to said holding plate means and said carrying frame while permitting movement of said broad-side walls in the direction normal to said longitudinal axis, said clamp strap having a first end supported on said broad-side wall and a second end supported on said carrying frame, said improvement further comprising

a tensioning means for each of said clamp straps for clamping said clamp strap against said carrying frame, said tensioning means being accessible from above said mould.

4,523,624

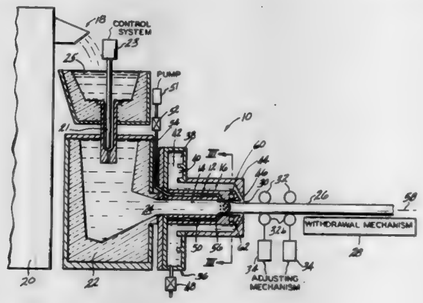
CAST INGOT POSITION CONTROL PROCESS AND APPARATUS

Jonathan A. Dantzig, Hamden; Peter E. Sevier, and Gary L. Ungarean, both of Woodbridge, all of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 22, 1981, Ser. No. 313,885

Int. Cl.³ B22D *11/16*

U.S. Cl. 164—454 **9 Claims**



6. A process for casting molten metal comprising:

providing a mold having inner and outer walls, a thickness defined by said inner and outer walls, a longitudinal axis, and an exit;

surrounding said molten metal with said mold and forming a casting having an outer periphery by transferring heat away from said molten metal and through said mold;

passing said casting through said exit; and

maintaining said casting within said mold so that said casting outer periphery is substantially uniformly spaced from said inner wall, said step of maintaining comprising:

providing means for supporting said casting adjacent said mold exit;

providing first and second non-thermal detecting means adjacent the exit of said mold and within the mold wall;

measuring a first distance between a first point on said casting outer periphery and a first point on said inner wall of said mold with said first non-thermal detecting means and generating a first signal indicative of said first sensed distance;

measuring a second distance between a second point on said casting outer periphery and a second point on said inner wall of said mold with said second non-thermal detecting means and generating a second signal indicative of said second sensed distance;

comparing said first and second signal and generating a control signal for operating said supporting means to position said casting so that said first and second distances are substantially equal, unwanted distortions of said casting are substantially avoided and substantially uniform heat transfer occurs about the casting periphery.

4,523,625

METHOD OF MAKING STRIPS OF METALLIC GLASSES HAVING UNIFORMLY DISTRIBUTED EMBEDDED PARTICULATE MATTER

Dieter G. Ast, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Feb. 7, 1983, Ser. No. 464,256

Int. Cl.³ B22D *11/06, 19/14*

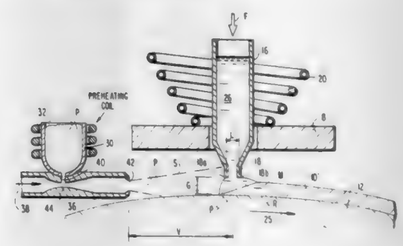
U.S. Cl. 164—461 **4 Claims**

1. A method of forming a continuous strip of amorphous or polycrystalline metal containing embedded particulate matter, said method comprising:

moving a chill body contact surface in a generally longitudinal direction at a constant predetermined velocity past the orifice of a slotted nozzle defined by a pair of generally parallel lips located proximate to said surface with a narrow gap therebetween and with said surface orifice generally perpendicular to the direction of movement of the surface of the chill body, and

forcing a stream of molten base metal through said nozzle orifice into contact with the surface of the moving chill body to form a melt puddle therebetween and to permit the metal to solidify thereon during movement away from the nozzle orifice to form a continuous metal strip,

the improvement comprising:



blowing second phase particles into the melt puddle from the exterior of said nozzle just prior to solidification on the chill body to effect a homogeneous distribution of high volume fractions of second phase particles within the strip with minimal contact time between the molten base metal and the second phase particles prior to solidification thereof;

whereby, said particulate matter is distributed spatially homogeneously in the ribbon, eliminating possible adverse chemical reactions between the particulate matter and said base metal, or melting of the particulate matter within the base metal prior to solidification thereof.

4,523,626

AMORPHOUS METAL FILAMENTS AND PROCESS FOR PRODUCING THE SAME

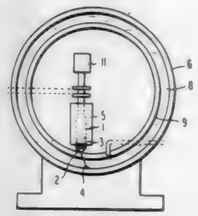
Tsuyoshi Masumoto, No. 3-8-22, Uesugi Sendai-shi, Miyagi; Akihisa Inoue, Miyagi, and Michiaki Hagiwara, Kyoto, all of Japan, assignors to Tsuyoshi Masumoto and Unitika, Limited, both of, Japan

Continuation of Ser. No. 254,714, Apr. 16, 1981, abandoned. This application Apr. 9, 1984, Ser. No. 597,576

Claims priority, application Japan, Apr. 17, 1980, 55-50998; Sep. 16, 1980, 55-128219; Feb. 10, 1981, 56-18589

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—463 **7 Claims**



1. A process for producing an amorphous metal alloy filament containing Fe as a main component and having a round cross-section which comprises jetting a molten alloy having amorphism-forming ability and containing Fe as a main component into a revolving body containing a cooling liquid from a spinning nozzle to form a solidified filament by cooling, and continuously winding the filament on the inner wall of said

revolving body by means of the centrifugal force of said revolving body, wherein the circumferential rate of revolution of said revolving body is equal to or higher than the rate of jetting of the molten metal from the spinning nozzle.

4,523,627

PROCESS FOR HIGH-SPEED VERTICAL CONTINUOUS CASTING OF ALUMINIUM AND ALLOYS THEREOF

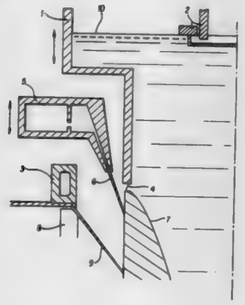
Yves Cans, Saint Egreve; Richard Gonda, Le Grand Lemps, and Marc Tavernier, Voiron, all of France, assignors to Societe de Vente de L'Aluminium Pechiney, Paris, France

PCT No. PCT/FR82/00115, § 371 Date Mar. 7, 1983, § 102(e) Date Mar. 7, 1983, PCT Pub. No. WO83/00107, PCT Pub. Date Jan. 20, 1983

PCT Filed Jul. 7, 1982, Ser. No. 474,669

Int. Cl.³ B22D *27/02*

U.S. Cl. 164—467 **6 Claims**



1. A process for the vertical continuous casting of aluminum and alloys thereof in the form of billets or plates, the smallest dimension of which does not exceed 150 mm, at a speed greater than 500 mm/minute, comprising:

(a) feeding liquid metal into a moulding zone by means of a top feeder head;

(b) shaping said liquid metal discharged from said feeder head by applying an electromagnetic field generated by an induction means;

(c) cooling said liquid metal by an annular cooling means disposed around said feeder head, thereby initiating solidification of said liquid metal by forming an outer shell in the periphery region, wherein the base plane of said top feeder head and the solidification front are separated by liquid metal;

(d) continuing the shaping of said liquid metal by spraying water onto the outer surface of said outer shell by said annular cooling means, wherein the distance between the base plane of said top feeder head and the plane passing through the solidification front at the periphery region of the solidified product is kept constant by vertically controlling the position of said top feeder head with respect to said induction means; and

(e) recovering a cast product therefrom.

4,523,628

PROCESS FOR CASTING METALS IN WHICH MAGNETIC FIELDS ARE EMPLOYED

Charles Vives, Chateaurenard, France, assignor to Aluminium Pechiney, Paris, France

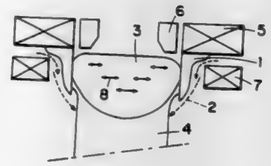
Filed Jul. 7, 1983, Ser. No. 511,398

Claims priority, application France, Jul. 23, 1982, 82 1319

Int. Cl.³ B22D *11/10, 27/02*

U.S. Cl. 164—468 **9 Claims**

1. In a method for continuously and semi-continuously casting metals where the molten metal to be cast is poured into a mold to be solidified progressively into dendrites and solid mass, the improvement comprising applying a stationary magnetic field to the molten metal in the mold, and simultaneously applying a variable magnetic field to the molten metal in the mold, said fields being applied to act in the same direction on



the molten metal in order to generate radial vibrations in the metal in the course of solidification, thereby improving the structure and surface condition of the cast metal.

4,523,629

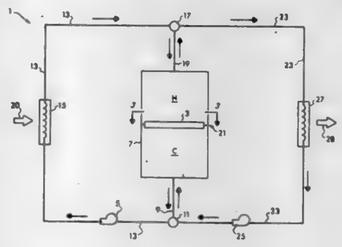
METHOD AND APPARATUS FOR OPERATING AN IMPROVED THERMOCLINE STORAGE UNIT

Robert J. Copeland, Lakewood, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 429,740

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—1 **35 Claims**



1. An improved method for operating a thermocline storage unit, said method comprising the steps of:

(a) providing a tank containing a first fluid at a first density and a second fluid at a second density, said first density being less than said second density wherein said fluids stratify within said tank with said first fluid above the second fluid and forming a natural interface region therebetween extending substantially horizontally,

(b) maintaining said first fluid at a first temperature and maintaining said second fluid at a second temperature, said first temperature being higher than said second temperature,

(c) using a barrier member to substantially separate said first and second fluids from each other substantially at said horizontally extending interface region,

(d) selectively increasing and decreasing the respective volumes of the first and second fluids in said tank wherein said horizontally extending interface region therebetween moves substantially vertically relative to said tank,

(e) maintaining a difference in temperature between said first fluid of said first tank and said second fluid of said second tank, and maintaining such separation of said step (c) as said horizontally extending interface region moves vertically relative to said tank, and

(f) adapting said barrier member to float between said first and second fluids substantially at said interface region as said interface region moves relative to said tank to maintain such separation of step (c) and providing said barrier member with a plurality of nodules, said nodules being situate at said barrier member such that said barrier member is enabled to remain substantially centered relative to said tank while permitting relatively small portions of said fluids to freely pass by said barrier member.

4,523,630

ROOM VENTILATOR

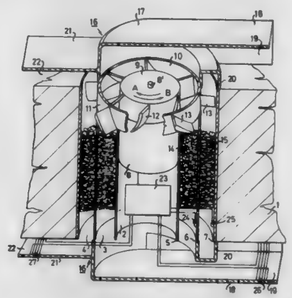
Klas R. Wiklund, Täby, Sweden, assignor to Wirab System A.B., Täby, Sweden

Filed Mar. 6, 1984, Ser. No. 586,817

Claims priority, application Sweden, Mar. 16, 1983, 8301447

Int. Cl.³ F24D *11/00*

U.S. Cl. 165—18 **10 Claims**



1. Ventilator adapted to be located in a wall for providing air exchange through the wall, said ventilator including:

(a) a double-acting, controllable, axial-flow fan means having an impeller with an inner blade ring and an outer impeller blade ring, the blades in said two rings being set to transport air in mutually different directions through said blade rings during rotation of said impeller;

(b) a coaxial duct having an inner channel in communication with said inner blade ring of said impeller, and an outer channel in communication with said outer impeller blade ring of said impeller;

(c) reversing means, connected to said fan means, for controlling said fan means to reverse the direction of said impeller so that said impeller alternately rotates in one or the other direction; and

(d) regenerating means, located in both said inner channel and said outer channel for alternately absorbing and emitting heat, and absorbing and desorbing moisture;

(e) said ducts and said blade rings being mutually dimensioned such that the air flow provided in one of said ducts in one direction when the impeller is rotating in a first direction is essentially the same as the air flow provided in the other of said ducts in the same direction when said impeller is rotating in the opposite direction.

4,523,631

VEHICLE AIR CONDITIONING AND HEATING SYSTEM

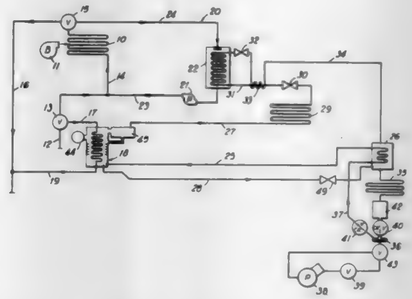
David A. McKinney, 6754 Tara Blvd. - J2, Jonesboro, Ga. 30236

Filed May 11, 1983, Ser. No. 493,716

Int. Cl.³ B60H *3/00*

U.S. Cl. 165—43 **5 Claims**

1. A unified heating and air conditioning system for automotive vehicles and the like comprising a circulating loop for hot vehicle engine coolant under the influence of an engine operated coolant pump, a heating-cooling coil connected in said circulating loop and being at least partly in the passenger compartment of a vehicle having a blower means to direct an air stream over the heating-cooling coil, an independent engine coolant circulating loop including a common branch with the first-named circulating loop, the common branch containing said heating-cooling coil, pumping means to circulate engine coolant through the independent loop, an absorption refrigeration system external to the passenger compartment of a vehicle including a refrigerant evaporator connected in said independent loop to chill the engine coolant being pumped through such loop and a generator, and a second circulating loop for hot engine coolant under influence of said coolant pump connected into the first-named circulating loop and including said generator, whereby normally wasted heat in the hot engine coolant is utilized by the generator as thermal energy to operate the absorption refrigeration system, and valving connected between the first-named, independent and said second circulating loops to selectively control the flow of engine coolant



therethrough at required times, and the absorption refrigeration system further comprising a refrigerant condenser connected between said generator and said refrigerant evaporator, an absorber connected between the evaporator and said generator, a solution condenser connected with the absorber, solution pumping means connected between the solution condenser and the absorber, and restrictor valve means connected between the refrigerant condenser and evaporator and between the evaporator and the absorber.

4,523,632

COOLING SYSTEM OF ROTARY FLUID PRESSURE CYLINDER FOR CHUCKING IN MACHINE TOOLS

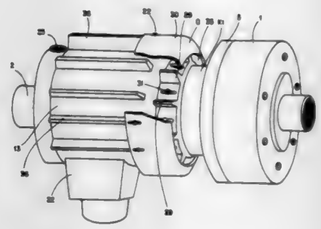
Akira Nobukawa, and Tatsue Sawaguchi, both of Hiroshima, Japan, assignors to Kitagawa Iron Works Co. Ltd., Japan

Filed Apr. 28, 1980, Ser. No. 144,008

Claims priority, application Japan, Apr. 26, 1979, 54-52299

Int. Cl.³ F24H *3/00*

U.S. Cl. 165—47 **3 Claims**



1. A rotary hydraulic cylinder device, for mounting on a spindle of a machine tool for operating a workpiece chuck, comprising:

(i) an oil supply unit

(ii) a rotor having an axial portion disposed within said oil supply unit, said axial portion having a first outer circumferential surface, and a second outer circumferential surface of smaller diameter than said first surface, said axial portion including oil flow passages,

(iii) first and second bearing means disposed between said oil supply unit and said axial portion and respectively positioned axially beyond each end of said second circumfer-

ential surface, whereby said rotor may rotate about an axis relative to said oil supply unit,

(iv) fan means mounted on said axial portion at said first circumferential surface

(v) a plurality of cooling fins disposed externally on said oil supply unit, said fins being elongated and positioned extending along said supply unit parallel to the axis of rotation of the rotor,

(vi) a cylindrical cover element on said oil supply unit, said cover element overlying part of each of said cooling fins and extending axially over said fan means and having a flange which extends inwardly towards said second circumferential surface so as to bound therewith an air gap, whereby upon rotation of said rotor and said fans means, external air is drawn by said fan means in through said air gap in contact with said first circumferential surface and is thereafter propelled outwardly from said cover past said cooling fins.

4,523,633

HEATER UNIT FOR AUTOMOTIVE VEHICLES, PERMITTING EASY REMOVAL AND FITTING OF HEATER CORE FROM AND INTO CASING

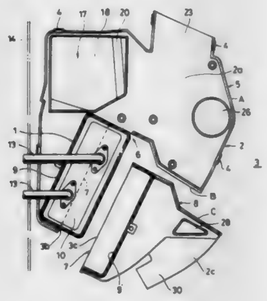
Kenji Furukawa, and Shinji Wakabayashi, both of Saitama, Japan, assignors to Diesel Kiki Co., Ltd., Saitama, Japan

Filed Apr. 13, 1983, Ser. No. 484,570

Claims priority, application Japan, Apr. 30, 1982, 57-63958[U]

Int. Cl.³ F28F *7/00*

U.S. Cl. 165—76 **3 Claims**



1. A heater unit for an automative vehicle, comprising:

a heater core;

a casing accommodating said heater core therein,

said casing comprising first, second and third casing elements joined together at peripheral edges thereof, said first and second casing elements cooperating to form a main body of said casing, said third casing element having at least one hot air outlet formed therein, said third casing element being detachable from said first and second casing elements, said peripheral edges of said first and second casing elements having part thereof forming in cooperation an opening for removal and fitting of said heater core from and into said main body of said casing therethrough, and said third casing element having a peripheral edge joined in part with said part of said peripheral edges of said first and second casing elements forming said opening;

a passage formed in said main body of said casing for heating intake air, said heater core being arranged across said passage;

an air mixing chamber formed in said main body of said casing for mixing intake air with hot air from said passage;

a first damper disposed in said main body of said casing for adjusting the ratio in amount between intake air guided into said passage and one guided into said air mixing chamber;

at least one air outlet opening formed in said main body of said casing, said at least one air outlet opening being other than said at least one hot air outlet of said third casing element; and

a second damper disposed in said main body of said casing for selectively guiding air from said air mixing chamber into said at least one air outlet opening and said at least one hot air outlet; and

said third casing element has substantially solely said at least one hot air outlet formed therein.

4,523,634

DEVICES FOR SEPARATING THE CLEANING BODIES OF TUBE EXCHANGERS FROM THE FLUIDS WHICH TRANSPORT THEM

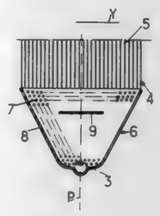
André Bizard, Paris, France, assignor to Societe En Nom Collectif, Paris, France

Filed May 24, 1983, Ser. No. 497,718

Claims priority, application France, Jun. 9, 1982, 82 10055

Int. Cl.³ F28G *13/00*; B01D *35/02*

U.S. Cl. 165—95 **14 Claims**



1. A device for separating cleaning bodies exiting from a tube type heat exchanger from a fluid which carries the cleaning bodies after the bodies have served in cleaning the tubes of the heat exchanger, said device comprising first and second successive separator stages including a grid mounted in a duct section having a longitudinal axis Z, connected to the outlet of the heat exchanger and intended to gather together the cleaning bodies in two directions X and Y which are perpendicular to each other and transverse to said duct section, and a collector connected to the output of the second separator stage and arranged to receive the cleaning bodies separated from the main current of the fluid and to discharge the cleaning bodies from the duct, said grid being located in said first stage and being formed from parallel equispaced bars whose spacing is less than the smallest overall dimension of the cleaning bodies, said grid being mounted obliquely across the duct section with the bars thereof parallel to the plane containing the direction X and the axis Z of the duct section, so that the fluid passes through said grid but the cleaning bodies are stopped by the grid and are guided along the bars of the grid as far as the downstream end thereof while being deflected by the bars in direction X, the second stage comprising a hopper converging in the downstream direction and in the direction Y, said hopper being mounted so as to receive the cleaning bodies coming from the downstream end of the first stage, the cross section of said hopper being elongate in the direction Y, at least one of the walls of said hopper extending in the direction Y being permeable to the fluid and impermeable to the cleaning bodies, and at least one of the walls of the hopper extending parallel to the direction X forming a deflector for deflecting the cleaning bodies, in the direction Y, as far as the downstream collector, said deflector comprising a bridge extending across the channel defining the current of fluid charged with cleaning bodies, at a level between the downstream region of the two separator stages, these regions included, from a wall of said channel as far as the opposite wall in the direction X, but not in the direction Y, the bridge creating swirls in the fluid current downstream of the bridge and the downstream collector being disposed so that an upstream orifice thereof opens opposite one of the swirls created by the presence of said bridge in said current downstream of said bridge.

4,523,635

METAL HYDRIDE HEAT PUMP SYSTEM

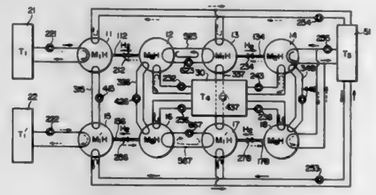
Tomoyoshi Nishizaki, Suita; Minoru Miyamoto, Kusatsu; Kazuaki Miyamoto, Amagasaki; Ken Yoshida, Ibaraki; Katsuhiko Yamaji, and Yasushi Nakata, both of Osaka, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,877

Claims priority, application Japan, Jul. 31, 1981, 56-120995; Apr. 5, 1982, 57-56821

Int. Cl.³ F25B *15/00*; F28D *21/00*

U.S. Cl. 165—104.12 **13 Claims**



1. A metal hydride heat pump system comprising: a plurality of operating units, each operating unit comprising a combination of a first metal hydride having a lower equilibrium dissociation pressure at an operating temperature and a second metal hydride having a higher equilibrium dissociation pressure at said operating temperature and means for causing hydrogen to flow freely only between the two metal hydrides in the respective operating units, the equilibrium dissociation pressure characteristics of at least one of the first and second metal hydrides in a given operating unit differ from those of at least one of the first and second metal hydrides in at least one other operating unit; each of said operating units having high temperature heat transfer medium source means, medium temperature heat transfer medium source means and a low temperature heat transfer medium source means, said first metal hydride being switchably connected in heat transfer relation to said high-temperature heat transfer medium source means and said medium temperature heat transfer medium source means, and the second metal hydride being switchably connected in heat transfer relation to said medium temperature heat transfer medium source means and said low temperature heat transfer medium source means, at least one of said heat transfer medium source means being common to at least two operating units, whereby when each of the operating units is operated such that in one cycle hydrogen is released from the first metal hydride after the first metal hydride has been heated to the temperature of the high temperature heat transfer medium, the released hydrogen is exothermally occluded by the second metal hydride after the second metal hydride has been heated to the temperature of the medium temperature heat transfer medium, and then hydrogen is endothermally released from the second metal hydride after the second metal hydride has been heated to the temperature of the low temperature heat transfer medium, and the released hydrogen is exothermally occluded by the first metal hydride after the first metal hydride has been heated to the temperature of the medium temperature heat transfer medium, heat absorption by the second metal hydride during release of hydrogen at said low temperature can be used for cooling and heat generated by the first metal hydride during occlusion at said medium temperature and/or heat generated by said second metal hydride during occlusion at said medium temperature can be used for heating.

4,523,636

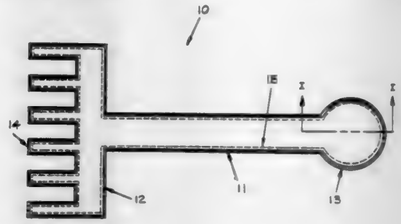
HEAT PIPE

Roelf J. Meijer, and Benjamin Ziph, both of Ann Arbor, Mich., assignors to Stirling Thermal Motors, Inc., Ann Arbor, Mich.

Filed Sep. 20, 1982, Ser. No. 420,047

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.26 **7 Claims**



1. A heat pipe including a duct having at opposing ends an evaporator and a condenser; a wick capable of transporting liquid with capillary action lining internal surfaces of said duct; and a heat transport medium contained by said duct for transporting heat between said evaporator and said condenser, wherein the improvement comprises: a plurality of hollow fins lined with said wick and with a lining of coarse porous material capable of supporting compressive load thereby increasing structural stiffness of said fins with the inside width of said hollow fin being defined by twice the thickness of the coarse porous material added to twice the wick thickness and located at the evaporator end of said duct in fluid communication with the interior of said duct, said fins having substantially flat parallel sides and being arranged in a generally parallel spaced relation with each other to enable heating of the interiors of said fins from a heat source passing heat through and by said flat sides thereof, and the spaces within said hollow fins being open to said duct to allow liquid and vaporous forms of said heat transfer medium to communicate therebetween.

4,523,637

SYSTEM FOR THE REFRIGERATION OF LIQUIDS AND/OR GASES

Carlos A. D. Abramo, Av. Almirante Ari Parreiras 337-ap 201, Niteroi, Rio de Janeiro-24230, Brazil

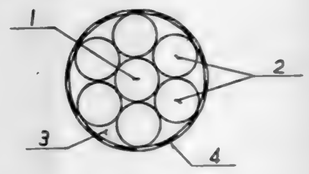
PCT No. PCT/BR81/00010, § 371 Date Jun. 29, 1982, § 102(e) Date Jun. 29, 1982, PCT Pub. No. WO82/01937, PCT Pub. Date Jun. 10, 1982

PCT Filed Nov. 25, 1981, Ser. No. 396,916

Claims priority, application Brazil, Nov. 26, 1980, 8007709

Int. Cl.³ F28D *7/00*

U.S. Cl. 165—104.34 **7 Claims**



1. Heat exchange system comprising a central internal tube through which a refrigerating medium passes,

a plurality of external heat exchanger tubes completely surrounding the periphery of said central internal tube, each and every heat exchanger tube in surface to surface contact with the periphery of said central internal tube through which the medium to be refrigerated passes,

each and every said heat exchanger tube in surface to surface contact with two adjacent ones of said heat exchanger

tubes as well as in surface to surface contact with the periphery of said central internal tube and

an outer insulating tube surrounding and engaging all said external heat exchanger tubes and maintaining them in contact with each other and in contact with said central internal tube thereby creating a cold chamber enclosing all of said tubes.

4,523,638

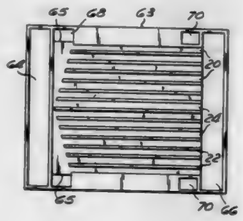
INTERNALLY MANIFOLDED UNIBODY PLATE FOR A PLATE/FIN-TYPE HEAT EXCHANGER

Irwin E. Rosman, Woodland Hills, and William R. Wagner, Los Angeles, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 80,877, Oct. 1, 1979, Pat. No. 4,347,896. This application Apr. 30, 1982, Ser. No. 375,510

Int. Cl.³ F28F *3/04*

U.S. Cl. 165—167 **22 Claims**



1. A plate for plate/fin-type heat exchanger comprising:

an open-faced plate, for channeling a fluid;

at least one interior inlet oriented transversely to said plate, said plate having a top, said interior inlet oriented through the top of said open-faced plate;

one pair of diagonally positioned integral interior side manifolds for each of said interior inlets wherein each pair comprises one integral interior side open manifold positioned at said interior inlet and an integral interior side closed manifold diagonally positioned in the opposite side wall;

means for internally manifolding, wherein said means extends the full width of said plate and are contiguous with said interior inlet;

a closed end lateral with and adjacent to said means for internally manifolding;

a closed end external integral manifold integral with and sealably separated form said closed end;

a plurality of contact fins and channels for directing fluid flow and for enhancing heat transfer, and wherein said contact fins and channels are contiguous with and transverse to said means for internally manifolding;

an open end port contiguous with said contact fins and channels;

an open end external integral manifold opposite said closed end integral external manifold for collecting and directing fluids; and

a bottom for mating with said fins and said open face of an adjacent plate.

4,523,639

RAM TYPE BLOWOUT PREVENTERS

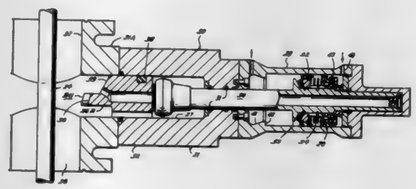
Roland M. Howard, Jr., Houston, Tex., assignor to Koomey Blowout Preventers, Inc., Houston, Tex.

Filed Nov. 21, 1983, Ser. No. 553,529

Int. Cl.³ E21B *33/06*

U.S. Cl. 166—55 **16 Claims**

1. A blowout preventer, comprising a housing having a bore therethrough and chambers therein intersecting the bore, a ram movable inwardly and outwardly within each chamber toward and away from the other ram or rams, said rams having cutting edges on their inner ends which cooperate with one another to shear a pipe within the bore, as the rams move inwardly toward one another, and means for sealing with respect to one another and with the chambers to close the bore, upon shearing of the pipe and continued inward movement of the rams, and an actuator for so moving each of the rams, comprising a cylinder having an inwardly facing locking shoulder near its inner end and an outwardly facing stop shoulder outwardly of the locking shoulder, an axially reciprocable rod extending from the cylinder into the chamber for connecting with the ram therein, a pair of pistons sealably reciprocable along the rod within the cylinder, respectively, and with respect to one another, means providing a lost motion connection between the pistons, means for alternately supplying operating fluid to and exhausting operating fluid from the cylinder on opposite sides of the pistons in order to move the pistons inwardly and outwardly, locking elements disposed about the rod, means mounting the locking elements on the rods for movement inwardly and outwardly therewith and for radial expansion and contraction between contracted positions in which they



may move with the rod past the stop shoulder into and out of positions opposite the locking shoulder and expanded positions in which they are engageable with the locking shoulder to lock the rams in closed position, means engageable with the stop shoulder to stop inward movement of one of the pistons when the pipe has been sheared, and holding said locking elements in contracted position, as they move axially inwardly with the rod and other piston beyond the shoulder, and then releasing said locking elements for radial expansion into locking engagement with the locking shoulder, as the rod continues to move inwardly with the other piston to move the ram connected to the rod to closed position, and means responsive to inward movement of the other piston with respect to the rod for expanding the locking elements into engagement with the locking shoulder, when released, and to outward movement of the other piston with respect to the rod for releasing the locking elements from locking engagement whereby they may be contracted and moved outwardly with the rod and other piston beyond the stop shoulder as the rams are withdrawn to open position.

4,523,640

ARM RELEASE SYSTEM FOR WELL LOGGING APPARATUS

Herbert C. Wilson, Houston, and Perumalagaram S. Sankaran, Katy, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 23, 1984, Ser. No. 573,263

Int. Cl.³ E21B *23/00, 17/10*

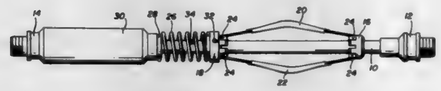
U.S. Cl. 166—64 **17 Claims**

1. A well logging apparatus, comprising:

an elongated body member adopted to traverse a borehole;

at least one arm member pivotally attached to said body member;

means for biasing said arm member outwardly with respect to said body member; and



temperature responsive means for restraining said arm member in a closed position during entry into said borehole.

4,523,641

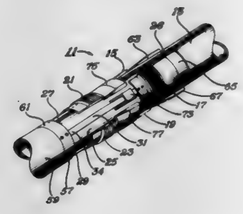
LINER HANGER WITH CHANNEL GUIDES

Phillip H. Manderscheid, Cypress, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jan. 27, 1984, Ser. No. 574,428

Int. Cl.³ E21B *23/00, 23/04*

U.S. Cl. 166—208 **5 Claims**



1. A liner hanger of the type used to hang a well liner in a surrounding well bore, comprising:

a tubular mandrel connectible into a liner string;

a set of circumferentially-spaced, gripping slips mounted about said mandrel, each of said gripping slips having a spring arm extending therefrom in axial alignment with said mandrel;

a tapered, slip expander cone mounted on said mandrel exterior above each of said slips for expanding said slips radially outwardly in the direction of the surrounding well bore responsive to opposite relative movement of said slips and cones;

at least one channel guide formed on the exterior of said mandrel in longitudinal alignment with one of said expander cones, said channel guide including a slot portion for slidably receiving the spring arm of one of said gripping slips for supporting said slip on the exterior of said mandrel; and

setting means for sliding said spring arms within said channel guides to thereby urge said slips in the direction of said cones to effect the outward, radial expansion of said slips to thereby hang said mandrel and, in turn, said liner within the well bore.

4,523,642

OIL RECOVERY PROCESS EMPLOYING CO_2 PRODUCED IN SITU

Valadi N. Venkatesan, Arlington, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 9, 1984, Ser. No. 598,137

Int. Cl.³ E21B *43/22, 43/24*

U.S. Cl. 166—272 **15 Claims**

1. A method for the recovery of oil from a subterranean, permeable, viscous oil-containing formation penetrated by at least one injection well and at least one spaced-apart production well, said wells being in fluid communication with a substantial portion of the formation, comprising:

(a) injecting a predetermined amount of steam into the formation via said injection well;

(b) injecting a sufficient amount of a mixture of sodium bicarbonate and citric acid into the formation via said injection well that react in the formation to form a predetermined amount of carbon dioxide;

(c) injecting a driving fluid into the formation via said injection well to force said carbon dioxide through said formation to displace said oil; and

(d) recovering fluid including oil from said formation via said production well.

4,523,643

WELL PERFORATING AND COMPLETION APPARATUS AND ASSOCIATED METHOD

Jody R. McGlothen, Garland, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 15, 1983, Ser. No. 561,849

Int. Cl.³ E21B *43/112*

U.S. Cl. 166—297 **21 Claims**



1. A perforating and completing apparatus, including:

(a) a packer connectable to the lower end portion of a tubing string in a well bore providing fluid communication for well fluids through an inner passageway;

(b) a disconnectable hollow coupling connected in fluid communication with said tubing string and below said packer;

(c) a tubing vent assembly connected in fluid communication with said tubing string and mounted in depending relation to said disconnectable coupling;

(d) a well perforating gun assembly mounted in the depending relation with said tubing vent assembly and including a hydraulically operable detonator mounted with a perforating gun thereof; and

(e) an auxiliary hydraulic fluid path connectable to a source of fluid pressure at an earth surface location at a well to said hydraulically operable detonator in order to communicate hydraulic fluid pressure to said detonator for actuating said detonator.

4,523,644

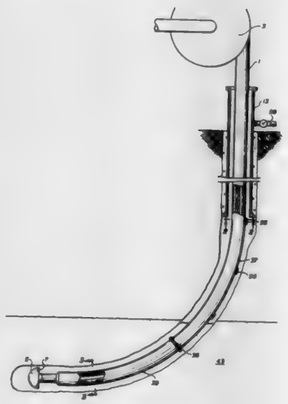
THERMAL OIL RECOVERY METHOD

Newton B. Dismukes, 2952 Buttonwood Dr., Carrollton, Tex. 75006

Continuation-in-part of Ser. No. 933,272, Aug. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 829,810, Dec. 23, 1977, abandoned. This application Oct. 27, 1983, Ser. No. 546,018

Int. Cl.³ E21B *43/24, 36/00*

U.S. Cl. 166—302 **29 Claims**



1. A system for recovering petroleum from a petroleum containing formation penetrated by a well bore having a substantially horizontal portion within the petroleum containing formation and extending to the earth's surface comprising:

a. a steam generator located at the earth's surface;

b. a power source at the earth's surface;

c. a flexible conduit extending from the earth's surface through a substantial length of the horizontal portion of the well bore, said conduit including:

(i) a pair of tubular members forming a closed loop for the circulating of steam from the steam generator to the vicinity of the lower terminal end of the conduit and return of aqueous condensate;

(ii) a separate tubular member extending to the vicinity of the lower terminal end of the conduit for conducting petroleum produced from the formation to the earth's surface; and

(iii) a means for conducting power from the power source to the lower terminal end of said conduit;

d. means affixed to t end of the conduit for generating forward thrust upon the application of power thereto carried by said conduit; and

e. at least one flow path interconnecting the exterior of the conduit within the petroleum containing formation and the separate tubular member.

10. A method for producing a desired substance, having a viscosity which is decreased by an increase in temperature, from a subsurface stratum; said method comprising:

a. forming a bore hole into said stratum;

b. filling at least a portion of said bore hole with liquid;

c. inserting into said bore hole a flexible conduit neutrally buoyant in said liquid, said conduit comprising a fluid conveying means and means for increasing the temperature of said desired substance;

d. heating said desired substance by closed circulation of heated fluid through said flexible conduit; and

e. producing said desired substance.

4,523,645

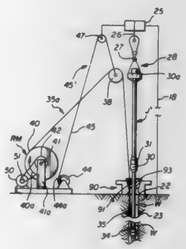
METHOD OF AND APPARATUS FOR MOVING REELED MATERIAL INTO AND RETRIEVING IT FROM THE UPPER END OF A WELL BORE IN THE EARTH'S SURFACE

Boyd B. Moore, 427 Mignon, Houston, Tex. 77024

Continuation of Ser. No. 267,087, May 26, 1981. This application Feb. 3, 1984, Ser. No. 576,888

Int. Cl.³ E21B *19/22*

U.S. Cl. 166—385 **49 Claims**



1. Apparatus for running a well string composed of tubular joints into the upper end of a well bore in the earth's surface while simultaneously lowering material connected to the well string into the upper end of the well bore including:

a. engaging means engageable with a tubular joint to lower it into the well bore;

b. first support means connected to said engaging means to lower said engaging means relative to the well bore upper end;

c. reel means on which the material is reeved;

d. movable means supporting the material which extends between its connection to the well string and said reel means; and

e. means to enable the material to be pulled into the well bore along with the well string to which it is connected without rotating said reel means on which the material is reeved, said means including:

second support means connected to said movable means to position it in elevated position in relation to the well bore upper end and to accommodate lowering of said movable means relative to the well bore upper end as a length of the material is pulled into the well bore upper end when the well string tubular joint is lowered into the well bore by said support means.

19. A method of simultaneously lowering a well string formed of a plurality of end-to-end connected tubular joints into the upper end of a well bore along with a portion of material which extends from reel means and which reeled material has one end connected to the well string comprising the steps of:

a. supporting the well string in the well bore in an initial predetermined position with an upright tubular joint thereof extending above the upper end of the well bore;

b. supporting the material portion extending between its connection to the well string and the reel means in a predetermined elevated position relative to the well bore upper end to accommodate downward movement thereof;

c. locking against rotation the reel means which supports the reeled material; and

d. lowering the well string including the upright tubular joint into the well bore to pull into the well a portion of the elevated material and extending between the reel means and the connection thereof with the well string.

4,523,646

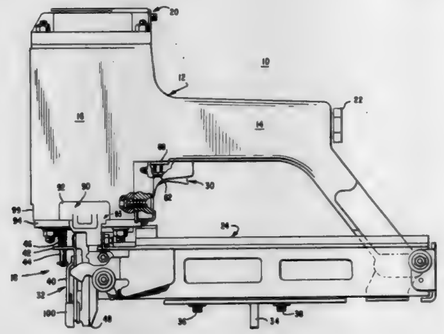
FASTENER DRIVING TOOL

Richard H. Doyle, Mt. Prospect, and Lee B. Fiori, Melrose Park, both of Ill., assignors to Duo-Fast Corporation, Melrose Park, Ill.

Continuation of Ser. No. 155,767, Jun. 2, 1980, abandoned. This application Jul. 22, 1983, Ser. No. 516,194

Int. Cl.³ B25C *5/13*

U.S. Cl. 173—15 **13 Claims**



8. An apparatus for controlling the driving of fasteners by a fluid actuated drive tool wherein said tool is of the type including a housing, a cylindrical sleeve movably mounted in said housing, a sleeve seal mounted in said housing and engaged by said sleeve during static and return modes of said tool and spaced from said seal during the drive mode, means for moving said sleeve into and out of engagement with said seal, a piston reciprocally mounted in said sleeve, a driver secured to said piston, means for driving said piston and driver through said drive mode, and for returning said piston and driver to said static mode, means for selectively operating said driving means, said apparatus comprising a control member, means for allowing manual positioning of said control member in either a first location at least partially encircling said sleeve spaced from said seal to allow fluid flow between said sleeve and said seal and a second location at least partially encircling said sleeve and said seal during said drive mode to inhibit by a predetermined amount the fluid flow therebetween.

4,523,647

POWER HAMMER

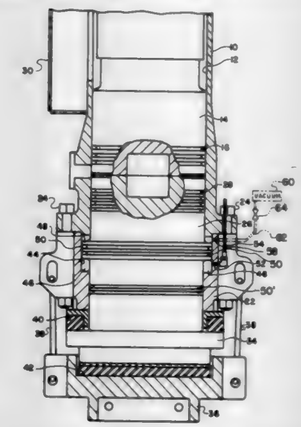
Anthony E. W. Last, Charlotte, N.C., assignor to International Construction Equipment, Inc., Matthews, N.C.

Filed Mar. 16, 1983, Ser. No. 475,762

Int. Cl.³ B25D *9/00*

U.S. Cl. 173—133 **6 Claims**

1. A power hammer device for driving piles and the like including a housing in which a ram is arranged for reciprocating vertical movement to strike, during its downward movement, an anvil slidably carried within the lower portion of said housing, and including combustion means operative upon said ram striking said anvil to propel said ram upwardly and a compression cylinder associated with said housing in communication with the portion thereof above said ram to receive and compress air within said compression cylinder during upward movement of said ram, the improvement comprising an enclosed air chamber defined cooperatively by said housing and said anvil with at least a portion of said enclosed chamber disposed beneath a portion of said anvil, and conduit means providing direct fluid communication between said compression cylinder and said enclosed chamber for admitting said compressed air from said compression cylinder to said enclosed chamber whenever the pressure in said compression cylinder is greater than the pressure in said enclosed chamber



to impose an upwardly directed force on said anvil during upward movement of said ram.

4,523,648

SHEATHED, MULTI-CORE, OIL FILLED, ELECTRIC CABLE WITH OIL DUCT EXTERIOR TO THE CORES

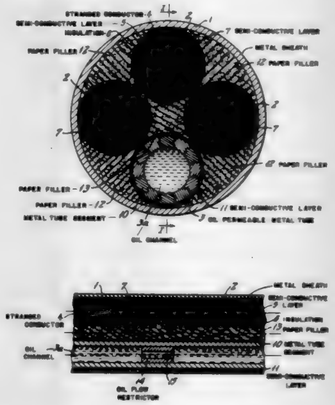
Francesco Strada, Scaldasole, and Giuseppe Bazzi, Milan, both of Italy, assignors to Societa Cavi Pirelli S.p.A., Milan, Italy

Filed Feb. 9, 1984, Ser. No. 578,411

Claims priority, application Italy, Feb. 14, 1983, 19572 A/83

Int. Cl.³ H01B *9/06*

U.S. Cl. 174—26 R **10 Claims**



1. A multi-core, oil-filled, electric cable comprising:

a tubular metal sheath;

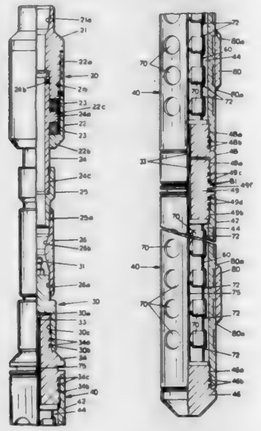
a plurality of cores arranged in side-by-side relation within said sheath with the outer surfaces of said cores contacting the inner surface of said sheath and with the outer surface of each core contacting the outer surface of at least one adjacent core, each said core comprising a conductor covered by insulation impregnated with and permeable to an insulating oil; and

a tubular body within said sheath and contacting the inner surface of said sheath and the outer surfaces of at least two of said cores, said body having an inner, longitudinally extending, oil conduit and being oil permeable to permit oil to flow from said conduit to said insulation and vice-versa and said body having an outer diameter of the same order in size as the outer diameter of one of said cores and having a resistance to radial deformation at least equal to the resistance of said sheath to radial deformation.

4,523,649
ROTATIONAL ALIGNMENT METHOD AND APPARATUS FOR TUBING CONVEYED PERFORATING GUNS

Gregg W. Stout, Montgomery, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed May 25, 1983, Ser. No. 497,834
Int. Cl.³ E21B *43/118*
U.S. Cl. 175—4.51 **2 Claims**



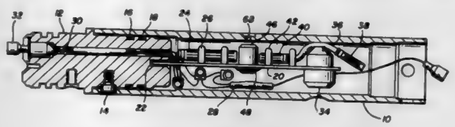
1. Well perforating apparatus for use with a tubular conduit extending from the well head to a point above the casing zone to be perforated, said conduit being capable of carrying fluid, comprising: an axially concentric perforating gun assembly including a plurality of angularly and axially spaced explosive charge containers; the angular spacing of said containers being 120 degrees and said containers being aligned in three axially extending rows; a swivel unit connecting said perforating gun assembly to the end of the tubular conduit, said swivel unit comprising an annular thrust bearing thereby permitting rotation of said perforating assembly relative to the conduit; and an axially extending narrow rib on the exterior of said perforating gun assembly aligned with and overlying a portion of one said row of containers, the containers overlaid by said rib being blank, which shifts the center of gravity to cause said perforating gun assembly to gravitationally rotate in any non-vertical section of the well casing to position said rib in engagement with the upper wall portion of the non-vertical casing section; said rib being angularly positioned relative to all the explosive charge containers so that no explosive charge is directed vertically upward.

4,523,650
EXPLOSIVE SAFE/ARM SYSTEM FOR OIL WELL PERFORATING GUNS

Steven D. Sehnert, Houston; Gerald B. McClure, Sugarland, and William A. McPhee, Houston, all of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 12, 1983, Ser. No. 560,677
Int. Cl.³ E21B *43/116*
U.S. Cl. 175—4.56 **11 Claims**

1. A perforating apparatus for use in completing a subsurface well, comprising:
an elongated tubular housing member;
an elongated carrier strip retained within said housing member;
at least one shaped charge unit mounted on said carrier strip, said shaped charge having the axis of perforation directed generally laterally from said carrier strip;
a length of detonator cord having one end thereof mounted on said carrier strip and a portion thereof proximate the dorsal portion of said shaped charge;
an electrical blasting ccap mounted on said carrier strip; and
means rotatably mounted on said carrier strip intermediate said blasting cap and said one end of said detonator cord

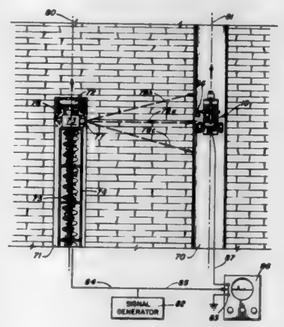


for selectively blocking an explosive detonation wave from said blasting cap to said one end of said detonator cord when rotated to a first position and passing said explosive detonation wave when rotated to a second position.

4,523,651
COAL AUGER GUIDANCE SYSTEM

Julian B. Coon, and Bobby J. Thomas, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Dec. 17, 1979, Ser. No. 104,627
Int. Cl.³ E21B *47/12*; E21C *35/08*
U.S. Cl. 175—45 **9 Claims**



1. A method for forming the axis of a borehole substantially parallel to the axis of a borehole that has already been formed comprising:
a. inserting a seismic signal generating source into one of said boreholes at a location along its axis;
b. inserting into said remaining borehole a seismic signal detecting means connected to a signal observation means;
c. spacing said detecting means away from said borehole wall so that said detecting means receives only the air wave position of said generated seismic signal;
d. operating said seismic signal source to generate a seismic signal in said borehole; and
e. positioning said detecting means opposite said seismic signal generating source by observance of the seismic wave received by said detecting means;
whereby the thickness of the material between said seismic signal source and said detector can be calculated.

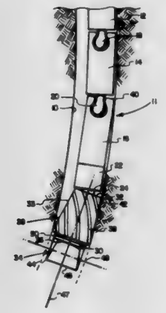
4,523,652
DRAINHOLE DRILLING ASSEMBLY AND METHOD

Frank J. Schuh, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 1, 1983, Ser. No. 510,013
Int. Cl.³ E21B *7/08*
U.S. Cl. 175—61 **5 Claims**

1. A bottom-hole assembly for drilling a curved borehole in the earth from a main bore comprising in combination:

(a) a drill bit;
(b) a generally cone-shaped reamer in fixed concentric following relation to said drill bit, said reamer having a cylindrical sidewall terminating forwardly in a perimetric cutting edge from which said sidewall tapers smoothly in a rearward direction to substantially the rearward end of said reamer along a curved path which matches the desired curvature of said borehole; and

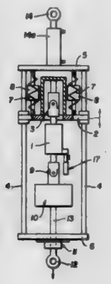


(c) a knuckle joint for interconnecting said rearward end of said reamer in torque-transmitting relation with a flexible drill shaft, whereby when an axial load is applied to said drilling shaft said tapered reamer sidewall maintains continuous stabilizing contact with the outside of said borehole.

4,523,653
LOAD CELL MASS COMPARATOR

Thomas F. Scrivener, Hagerstown, and Randall M. Schoonover, Monrovia, both of Md., assignors to Frazier Precision Instrument Company, Inc., Gaithersburg and Holometrics, Inc., Derwood, both of, Md.

Filed Mar. 8, 1984, Ser. No. 587,532
Int. Cl.³ G01G *3/14, 19/14, 21/10*
U.S. Cl. 177—147 **11 Claims**

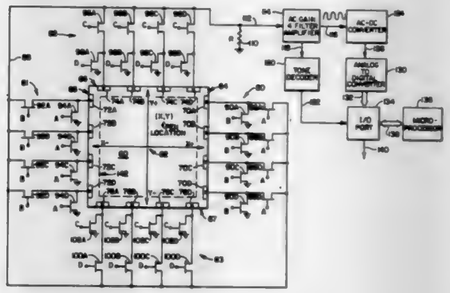


1. A load cell mass comparator comprising a fixed upper plate and a fixed lower plate, a plurality of guide rods extending between said plates, a floating plate slidably mounted on said rods, spring means connected between said upper fixed plate and said floating plate, a load cell positioned below said floating plate, first self-aligning coupling means connecting the upper end of said load cell to said floating plate, second self-aligning coupling means connected to the lower end of said load cell, thrust bearing means connected to said second self-aligning coupling means, a stem connected to said thrust bearing means, said stem extending through said fixed lower plate and adapted to be connected to the mass to be calibrated, whereby the first and second self-aligning coupling means maintain the load cell in axial alignment with the mass being calibrated, and the thrust bearing means prevents any revolving torque from being transmitted to the load cell from said mass.

4,523,654
ELECTROGRAPHIC SYSTEM

Stanley F. Quayle, and Philip A. Schlosser, both of Columbus, Ohio, assignors to Scriptel Corporation, Hilliard, Ohio

Filed Sep. 14, 1983, Ser. No. 532,191
Int. Cl.³ G08C *21/00*
U.S. Cl. 178—19 **16 Claims**

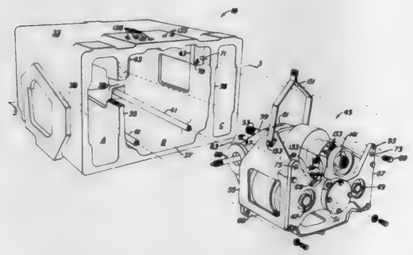


12. An electrographic system comprising:
an electrically insulative substrate;
a resistive layer exhibiting substantially uniform electrical resistance supported upon said insulative substrate and having an operational region extending in a x-coordinate sense between first and second parallel, spaced-apart border regions, and extending in a y-coordinate sense between third and fourth parallel, spaced-apart border regions;
cursor means including an electrically conductive transparent disk having a cross hair indicia formed thereon positionable adjacent said resistive layer;
means for exciting said cursor means from an a.c. source to generate localized electromagnetic radiation from said disk to effect an interaction with said resistive layer;
a plurality of first, discrete, spaced-apart contacts electrically coupled with said resistive layer at said first border region;
a plurality of second, discrete, spaced-apart contacts electrically coupled with said resistive layer at said second border region;
a plurality of third, discrete, spaced-apart contacts electrically coupled with said resistive layer at said third border region;
a plurality of fourth, discrete, spaced-apart contacts electrically coupled with said resistive layer at said fourth border region;
signal treating means having an input for selectively receiving electrical signals generated by said cursor means interaction and present at said first and second contacts to derive output signals corresponding therewith, and selectively receiving said electrical signals present at said third and fourth contacts to derive output signals corresponding therewith;
solid state switching means for coupling said first contacts in signal transferring relationship with said signal treating means input while effecting a mutual, open circuit isolation of said third and fourth contacts, for coupling said second contacts in signal transferring relationship with said signal treating means input while effecting a mutual, open circuit isolation of said third and fourth contacts, for coupling said third contacts in signal transferring relationship with said signal treating means input while effecting a mutual, open circuit isolation of said first and second contacts, and for coupling said fourth contacts in signal

transferring relationship with said signal treating means input while effecting a mutual, open circuit isolation of said first and second contacts; and

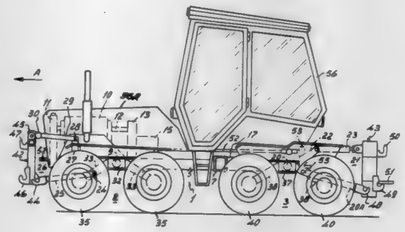
control means responsive to said output signals for deriving x-coordinate signals corresponding with the x-coordinate location of said interaction and y-coordinate signals corresponding with the y-coordinate location of said interaction.

4,523,655
VEHICLE FRAME TRANSMISSION MOUNTING ASSEMBLY
Thomas F. Keenan, and John J. Kass, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Nov. 26, 1982, Ser. No. 444,922
Int. Cl.³ B60K *17/00*
U.S. Cl. 180—9.1 **16 Claims**



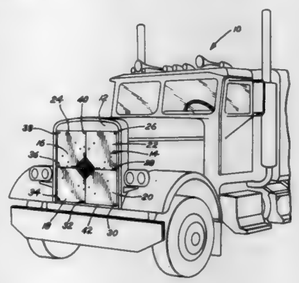
8. A frame for a crawler tractor, comprising: a front section adapted to contain a radiator, an engine, and a rear section adapted to support an operator's compartment and contains a steering drive mechanism forward of a low profile power shift transmission, said rear section including a forward wall, a top and bottom walls, and opposing sidewalls, a plurality of first mounting members fixably mounted to said bottom wall in close proximity to said forward wall in said housing, a plurality of guide rods, each of said guide rods fixably mounted to a respective one of said mounting members, a plurality of second mounting members fixably mounted to said top wall in said housing rearwardly of said first mounting members, at least one of said second mounting members having a guide pin extending rearwardly, said low profile transmission including a casing having a forward wall, rear wall and a plurality of sidewalls, an input shaft extending through said forward wall into said casing and rotatably mounted in said forward and rear wall, an output shaft extending through said forward wall into said casing and rotatably mounted in said forward and rearwalls, gear reducing means for communicating said input shaft to said output shaft, said gear reducing means being contained in said casing, said gear reducing means to have a low profiled configuration, said forward wall of said transmission casing having a lower portion extending below said casing, said lower porton of said forward wall having a plurality of apertures therein through which a respective one of said rods extend, said forward wall being slidably mounted on said rods, said rear wall of said transmission casing having an upper portion extending above said casing, said upper portion of said rear wall being fixably and detachably mounted to said second mounting members, said rear wall portion having apertures to receive said guide pin and having a plurality of ports to receive hydraulic fluid for selective activation and lubrication of said gear reducing means; said guide rods being tapered to assume mating fit in said bore of said forward wall of said casing; means for delivering hydraulic fluid to said ports in said transmission's rear wall ports.

4,523,656
TRACTOR FOR AGRICULTURAL PURPOSES
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland
Filed Feb. 22, 1983, Ser. No. 468,382
Claims priority, application Netherlands, Feb. 19, 1982, 8200663
Int. Cl.³ B62D *61/10*
U.S. Cl. 180—24 **34 Claims**



1. A tractor for agricultural purposes particularly for seedbed preparation, comprising an engine with a power of at least thirty kilowatts, a frame, eight wheels at least two of which are power driven wheels, at least one lifting device and at least one power take-off shaft, characterized in that the weight of the tractor is about forty kilograms per kilowatt engine power, the engine power being directly transferable to the power take-off shaft of the tractor, and the power output of said engine being so arranged to provide the lifting device at its coupling points with a lifting power of at least one thousand kilograms, and a cabin for the tractor's operator which has a width substantially equal to the overall width of the tractor and a horizontal length which is about one-half the overall length of the tractor and is above at least two of said wheels other than the forward or rear wheels of said wheels.

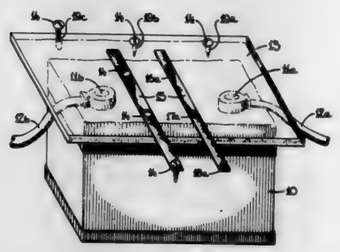
4,523,657
WINTERFRONT WITH ADJUSTABLE CENTER OPENING
Thomas A. Kooyumjian, Cook County, Ill., assignor to Belmor Manufacturing Company, Chicago, Ill.
Filed Apr. 26, 1982, Ser. No. 372,082
Int. Cl.³ F28F *13/06;* **B60K** *11/08*
U.S. Cl. 180—68.1 **4 Claims**



1. An improved winterfront of the type that is utilized to restrict the flow of ram air through an air passage on a moving truck having a cab with a single engine fan with a fan axle and fan blades extending radially outwardly from the fan axle, said fan axle being substantially parallel to the direction of the flow of ram air through the air passage during forward motion of the truck, said winterfront having a ram-air-blocking portion and means for removably attaching said ram-air-blocking portion to the truck to reduce the flow of air through the air passage, the improvement comprising:

a ram-air-blocking portion having at least a first foldable fabric portion, a second foldable fabric portion, a third foldable fabric portion, a fourth foldable fabric portion, and a center opening with a center point and a periphery formed by said first, second, third, and fourth foldable fabric portions, said periphery being symmetrical about the center point of the center opening, each of said foldable fabric portions having at least first, second, and third sides, means for connecting said first side of each foldable fabric portion to the second side of another foldable fabric portion, and means for connecting said second side of each foldable fabric portion to the first side of another foldable fabric portion, said second side of said first foldable fabric portion abutting the first side of said second foldable fabric portion, said second side of said second foldable fabric portion abutting the first side of said third foldable fabric portion, said second side of said third foldable fabric portion abutting the first side of said fourth foldable fabric portion, said second side of said fourth foldable fabric portion abutting the first side of said first foldable fabric portion, each of said foldable fabric portions being foldable into first and second folded sections and having means for connecting said first folded section to said second folded section so that the size of said center opening can be increased or decreased while remaining symmetrical about the center of the center opening whereby the center point is aligned with the axis of rotation of the fan axle when the ram-air-blocking portion is attached to the truck to reduce the flow of air through the air passage on the truck.

4,523,658
BATTERY SHIELD
Ray Maki, c/o Mrs. Don Henderson, 10649 Longrifle Rd., Boise, Id. 83709
Filed May 9, 1983, Ser. No. 493,022
Int. Cl.³ B62D *25/00*
U.S. Cl. 180—68.5 **4 Claims**



1. A battery shield and vehicle containing the battery to be shielded composed of in combination;

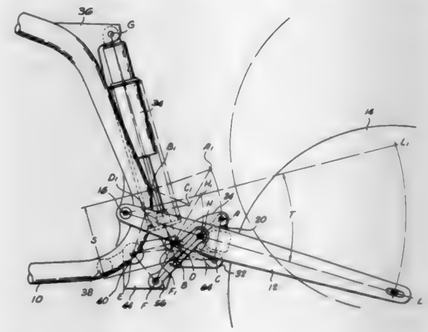
a vehicle containing a battery;

a rectangular shield means 2 inches or larger than the battery to be shielded, containing a first set of at least three holes evenly spaced along one long end;

two bracket means to assist attaching the shield means to the vehicle thus shielding the battery, said bracket means including a second set of holes, one hole within one inch of the end of the bracket means, the other two holes evenly spaced along the bracket means, said other holes matching up with a third set of holes in shield means; and

at least six $\frac{3}{4}'' \times$ #10 screws for use in attaching the shield means and bracket means to each other and to the vehicle.

4,523,659
REAR SUSPENSION FOR A MOTORCYCLE
Kazuhiro Yamamoto, Saitama, and Tokio Isono, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 24, 1983, Ser. No. 497,652
Claims priority, application Japan, Jun. 7, 1982, 57-97315
Int. Cl.³ B62K *25/04*
U.S. Cl. 180—227 **13 Claims**

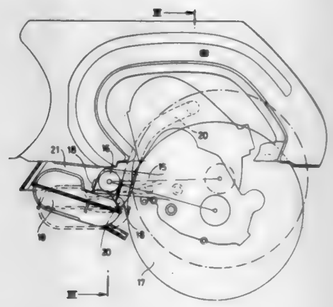


1. A rear suspension for a motorcycle having a body frame, a rear wheel support frame pivotally mounted to the body frame, and a cushion member fixed at a first end to the body frame, comprising

swing arm support linkage including a first arm and a first rod pivotally connected one to the other, said swing arm support linkage being pivotally connected to the body frame and pivotally connected to the rear wheel support frame;

cushion linkage including a second arm and a second rod pivotally connected one to the other, said cushion linkage being pivotally connected to said first arm and pivotally connected to one of the body frame and the rear wheel support frame, the cushion member being fixed at a second end of said cushion member to said second arm.

4,523,660
BEARING BODY FOR MOTORCYCLE
Bruno Gaddi, Pisa, Italy, assignor to Piaggio & C. S.p.A., Genoa, Italy
Filed Dec. 3, 1982, Ser. No. 446,617
Claims priority, application Italy, Dec. 9, 1981, 23724/81[U]
Int. Cl.³ B62K *25/02*
U.S. Cl. 180—228 **2 Claims**



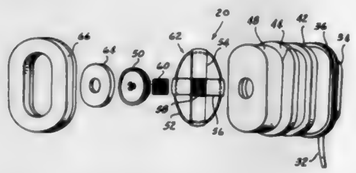
1. In a motorcycle: a support body having a longitudinal median plane; an oscillating arm fulcrummed to said body for pivoting movement about an axis transverse to said longitudinal median plane, said arm extending rearwardly of said pivot

axis; an engine/transmission assembly carried by said arm at a location rearwardly of said pivot axis and laterally of said longitudinal median plane; a rear wheel drivingly connected to said engine/transmission assembly and located generally in said longitudinal median plane; an exhaust silencer carried by said engine/transmission assembly so as to oscillate therewith, said silencer being located generally in said longitudinal plane and forward of said rear wheel and at least partially forward of said pivot axis whereby the lateral space adjacent said rear wheel on the side thereof opposite said engine/transmission assembly is not encumbered by said silencer, said body having downwardly and inwardly facing walls forming a downwardly facing cavity in which said silencer at least partially resides and oscillates.

4,523,661
EARPHONE SYSTEM FOR USE IN LARGE-CAVITY EARCUPS

John P. Scalzo, and Jackson A. Aileo, both of Carbondale, Pa., assignors to Gentex Corporation, Carbondale, Pa.

Filed May 16, 1983, Ser. No. 494,802
Int. Cl.³ A42B *3/00*; H04R *25/00*
U.S. Cl. 181—129 **5 Claims**

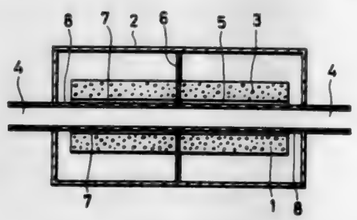


1. An earcup assembly including in combination an earcup of relatively rigid material forming a cavity for receiving the ear of a wearer, an earphone receivable in said cavity, and means for resiliently biasing said earphone outwardly of said cavity into engagement with the ear of the wearer, said biasing means comprising an elastic strap suspended across the opening of said cavity and means for securing said earphone to said strap.

4,523,662
MUFFLER FOR EXHAUST GAS FROM AN INTERNAL COMBUSTION ENGINE

Hideharu Tanaka; Mutsuo Sekiya, both of Hyogo, and Fusaoki Uchikawa, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00429, § 371 Date Jul. 5, 1983, § 102(e) Date Jul. 5, 1983, PCT Pub. No. WO83/01653, PCT Pub. Date May 11, 1983
PCT Filed Nov. 5, 1982, Ser. No. 531,894
Claims priority, application Japan, Nov. 5, 1981, 56-178570; Nov. 5, 1981, 56-178571; Nov. 5, 1981, 56-178572; Nov. 5, 1981, 56-178573; Jan. 29, 1982, 57-12863[U]; May 28, 1982, 57-91625
Int. Cl.³ F01N *1/10*
U.S. Cl. 181—249 **14 Claims**



1. A muffler for the exhaust gas of an internal combustion engine, comprising:

a casing,

a perforated sleeve disposed in said casing, said perforated sleeve having an interior through which the exhaust gas flows and a wall having a plurality of openings,

a cylindrical porous sound-absorbing body arranged coaxially with said perforated sleeve on an outer periphery of said perforated sleeve,

a cylindrical thin film made of metal, said cylindrical thin film being intimately interposed between said perforated sleeve said cylindrical porous sound-absorbing body,

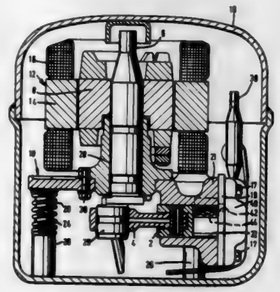
a space defined between an inner periphery of said casing and an outer periphery of said cylindrical porous sound-absorbing body, and

at least one communication passage means for providing a pressure balancing communication between the interior of said perforated sleeve and said space.

4,523,663
SILENCER OF THE RESONANCE ABSORPTION TYPE IN MOTORCOMPRESSOR FOR REFRIGERATORS

Alfredo Bar, Pavia, Italy, assignor to Necchi S.p.A., Pavia, Italy

Filed Apr. 12, 1983, Ser. No. 484,287
Claims priority, application Italy, Apr. 15, 1982, 42904 A/82
Int. Cl.³ F04B *21/08, 39/12*
U.S. Cl. 181—403 **1 Claim**



1. Resonance absorption type silencer in a motorcompressor unit for refrigerators, comprising a cylindrical block of said motorcompressor unit defining a blind cylindrical bore, a valve plate of said unit defining an opening therethrough and fitting against said cylindrical block and a cylinder head of said unit fitting against said valve plate and defining a chamber therein communicating with the interior of said unit and said bore and opening, said opening having a transverse dimension smaller than the diameter of said bore.

4,523,664
SAFETY DESCENT DEVICE

Garry V. Soubry, 6150 W. Cheyenne, Las Vegas, Nev. 89108, and James L. MacFarlane, 5848 Sinaloa Ct., Las Vegas, Nev. 89103

Continuation-in-part of Ser. No. 500,977, Jun. 8, 1983, Pat. No. 4,480,716. This application Apr. 2, 1984, Ser. No. 596,019
Int. Cl.³ A62B *1/12, 1/16*
U.S. Cl. 182—233 **14 Claims**

1. A portable descent device comprising a casing, a spool having a hollow interior rotatably mounted in the casing, a cable wound around the spool and having a portion thereof extending exteriorly of the casing through an aperture therein, a shaft extending axially through said spool, a sealed chamber

interior of the spool containing a viscous liquid, at least one non-rotatable disk extending radially from the shaft within said

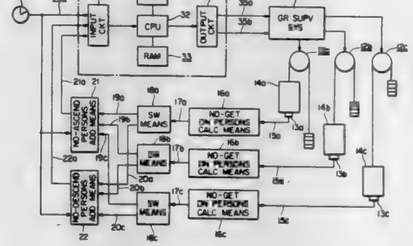


chamber, and a plurality of rotatable flat discs mounted parallel to and spaced from the non-rotatable discs.

4,523,665
CONTROL APPARATUS FOR ELEVATORS

Shintaro Tsuji, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 13, 1983, Ser. No. 560,949
Claims priority, application Japan, Dec. 18, 1982, 57-222557
Int. Cl.³ B66B *1/20*
U.S. Cl. 187—29 R **9 Claims**

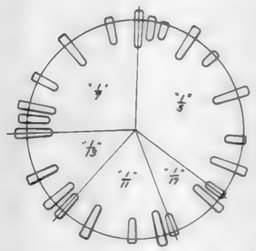


1. A control apparatus for elevators wherein a plurality of previous cycles and a present cycle of a fluctuating demand and/or service condition value are divided into a plurality of corresponding sections, wherein a first value indicative of an estimated demand and/or service condition value in at least one section of the present cycle is provided, said first value being estimated from the measured demand and/or service condition value of cycles previous to the present cycle, and wherein a second value indicative of a measured demand and/or service condition value in the one section of the present cycle is generated, said control apparatus comprising decision means for comparing the first value to the second value and determining if a reference condition is satisfied, means for supplying as an output the first value if the reference condition is satisfied and a third value different from the first value if the reference condition is not satisfied, said third value being provided by said control apparatus, and means for controlling the elevator cages in accordance with the output.

4,523,666
BRAKE ROTOR WITH VIBRATION HARMONIC SUPPRESSION, AND METHOD OF MANUFACTURE

Scott L. Murray, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Aug. 3, 1983, Ser. No. 520,064
Int. Cl.³ F16D *65/10*
U.S. Cl. 188—218 XL **51 Claims**



1. A method of manufacturing a brake rotor which includes at least one braking surface and a circumferential array of cooling fins, said method comprising the steps of:

(a) selecting a total number of fin cycles in said array, each said fin cycle consisting of a fin and a space between the said fin and the next-adjacent fin in said array,

(b) dividing said array into a plurality of unequal nominal fractional angular segments,

(c) arranging said nominal fractional angular segments in a predetermined sequence around said array,

(d) selecting the number of fin cycles in each said segment as a function of said total number of fin cycles multiplied by the ratio of the corresponding said nominal fractional segment to the numerical sum of said nominal fractional segments, and

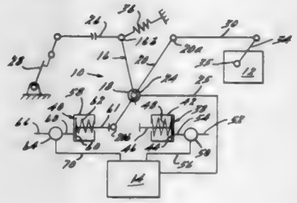
(e) selecting the angular dimension of each said fin cycle within each said segment as a predetermined function of sequence of fin cycles within the corresponding said segment.

49. In a brake rotor comprising annular brake surface means and a plurality of cooling fins disposed at preselected fin positions in a circumferential array around said rotor and coupled for heat dissipation to said means, the improvement for reducing harmonic vibration of said rotor wherein the said cooling fins at alternate ones of said positions are of progressively reduced radial dimension as compared with the remainder of said fins, which are of equal length, as a substantially exponential function of angle around said array.

4,523,667
THROTTLE MODULATION MECHANISM

Robert R. Smyth, Bloomfield Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 27, 1982, Ser. No. 453,544
Int. Cl.³ F16D *23/00, 47/00*
U.S. Cl. 192—0.092 **18 Claims**



1. A mechanism adapted to be interposed between an engine

throttle pedal and an engine fuel control device for varying fuel delivery to an engine during shifting modes of a transmission driven by the engine, the mechanism comprising:

a first member mounted for pivotal movement about an axis and adapted for slaved movement with the throttle pedal;

a second member mounted for pivotal movement relative to said first member, substantially about said axis, and adapted to be connected with the fuel control device for slaved movement therewith;

actuator means operative when actuated to move said second member independent of the first member to vary the fuel delivery; and

resilient means clamping said members into a predetermined positional relationship with a preloaded, resilient force operative to maintain said predetermined relationship during throttle pedal movement while said actuator means is unactuated and operative to allow said relative movement independent of throttle pedal position in response to actuation of said actuator means.

4,523,668

POWER CONTROLLING APPARATUS USING FRICTION MATERIAL

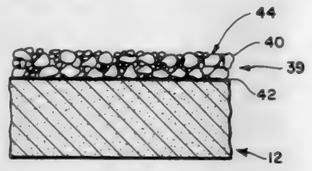
Takao Uematsu; Yoshiharu Honma; Seikichi Tanno; Ran Ito, all of Hitachi; Jun Matsubayashi, Ibaraki, and Tomio Yoshida, Takahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 4, 1982, Ser. No. 405,284

Claims priority, application Japan, Aug. 10, 1981, 56-124065

Int. Cl.³ F16D *69/02, 13/74*

U.S. Cl. 192—107 M **18 Claims**



1. In a power controlling apparatus comprising means for transferring energy by applying friction and using a friction material, the improvement comprising using as said friction material a molded cork, a friction surface of which has a lubricant layer comprising predetermined proportions of a solid lubricant having a larger average particle size and a solid lubricant having a smaller average particle size and filling vacant spaces between the larger-sized solid lubricant in dense form.

4,523,669

RETRACTABLE CONVEYOR BELT

Donald L. Smith, 14865 - 103 Ave., Surrey, British Columbia, Canada V3R 1L4

Filed Apr. 7, 1982, Ser. No. 366,145

Claims priority, application Canada, Apr. 9, 1981, 375148

Int. Cl.³ B65G *15/26*

U.S. Cl. 198—313 **16 Claims**

1. A telescopic boom and conveyor apparatus having a base component;

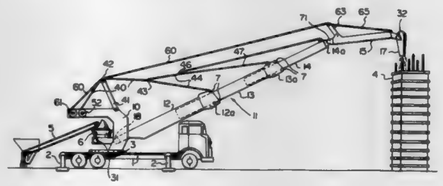
a main boom comprising first, second, and third telescopic boom sections, one end of said first section being pivotally connected to said base component for vertical movement relative thereto, an articulated boom section pivotally connected to the free end of said third section, and articulated boom support and telescopic displacement control means, extending from a position above the pivotal connection of said base with said first section to said articulated boom, for maintaining said articulated boom at a predetermined angle during telescopic displacement of said main boom;

cable means for causing telescopic displacement of said third section within said second section, uniformly with telescopic displacement of said second section within said first section between points of minimum and maximum boom extension;

an endless conveyor belt carried by the upper surface of said main boom and wherein the upper run of said belt extends from proximate the pivotal connection of the first section with the base, to at least the free end of the third section and wherein said belt overlies said first, second, and third boom sections, and said articulated boom;

means for driving said belt;

means for supporting said belt during its upper and return runs;



fixed belt take-up means on said first, second, and third boom sections co-operating with the return run of the belt for accomodating excess length in the return run of the belt at any given boom extension position;

main boom support and telescopic displacement control means, extending from a point on said base component above its pivotal connection with said main boom to at least each of the ends of said first, second and third sections remote from said base, for maintaining said boom at a predetermined angle during telescopic displacement of said main boom;

first hoist means on said base component, co-operating with said main boom support and telescopic displacement means, for raising and lowering said main boom; and

second hoist means on said base component, co-operating with said articulated boom support and telescopic displacement control means, for angulating said articulated boom relative to said main boom.

4,523,670

WORKPIECE TRANSFERRING APPARATUS

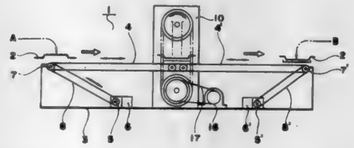
Taminori Yanagisawa, Toyota; Takaharu Yamaguchi, Toyokawa, and Hiroshi Fukatsu, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Taihoo Seiki Co., Ltd., both of Toyota, Japan

Filed Feb. 24, 1983, Ser. No. 469,512

Claims priority, application Japan, Mar. 5, 1982, 57-030342[U]

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—403 **11 Claims**



1. An apparatus for transferring a workpiece from a first conveyor device leading from one manufacturing stage to a second conveyor leading to another manufacturing stage, the apparatus comprising:

a frame having a first axis;

an elongated slide guide fixed to the frame;

a slider mounted in the slide guide for reciprocal movement parallel to said first axis between a first position and a second position spaced from the first position;

a sprocket wheel rotatably mounted in the frame;

a chain guide having a semicircular portion centered on a second axis perpendicularly intersecting the first axis at said second position;

an endless chain trained around the sprocket wheel and the semicircular portion of the chain guide, the chain extending in a path including first and second rectilinear portions between the sprocket wheel and the chain guide, the rectilinear portions being connected by a semicircular portion conforming to the semicircular portion of the chain guide;

a reversible drive device connected to the sprocket wheel for rotating the sprocket wheel selectively in one of a forward direction and a reverse direction;

a workpiece retaining arm having a base end and an outer end, the base end being pivotally connected to the slider for rotation about a third axis perpendicular to the first axis and parallel to the second axis;

means for connecting the workpiece retaining arm to the endless chain such that movement of the chain in the forward direction causes the retaining arm connecting means to follow the first rectilinear portion of the chain path and to move the slider from said first position to said second position, continued movement of the chain in the forward direction causes the retaining arm connecting means to follow the semicircular portion of the chain path and the workpiece retaining arm to pivot 180 degrees about said third axis, and still further movement of the chain in the forward direction causes the retaining arm connecting means to follow the second rectilinear portion of the chain path and the slider to return from said second position to said first position;

a workpiece clamping device connected to the workpiece retaining arm for clamping a workpiece and for inverting said workpiece when the retaining arm is pivoted 180 degrees;

means for actuating said workpiece clamping device for selectively clamping and unclamping a workpiece when the slider is at said first position;

first means for switching the reversible drive device to the forward direction when the slider is at said first position and the connecting means for the workpiece retaining arm is located on the first rectilinear portion of the chain path; and

second means for switching the reversible drive device to the reverse direction when the slider is at said first position and the connecting means for the workpiece retaining arm is located on the second rectilinear portion of the chain path.

4,523,671

APPARATUS FOR MULTIPLE LANE STACKING

James F. Campbell, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Jun. 21, 1983, Ser. No. 506,508

Int. Cl.³ B65G *57/09*

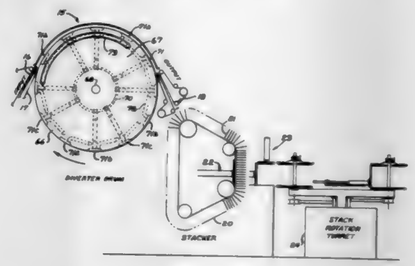
U.S. Cl. 198—422 **9 Claims**

1. An apparatus for diverting serially fed product from an input path to a plurality of output paths, said apparatus comprising:

a wheel mounted for rotation about an axis which is generally perpendicular to said input path and said output paths;

a plurality of product control means on the wheel for moving product from said input path to said output paths, at least some of said product control means being movably mounted on said wheel for transverse movement perpendicular to product flow while the path of movement of said product control means generates a portion of a cylinder;

a stationary barrel cam for moving said movable product control means transversely while said movable product control means is being moved in a curved path from said input to said output positions, the barrel cam being provided with a plurality of grooves; and



a cam follower attached to each of the movable product control means, each of said cam followers being positioned in one of said grooves of the barrel cam whereby the cam followers are moved by the grooves of the barrel cam as the wheel rotates with respect to the barrel cam.

4,523,672

METHOD FOR THE TRANSVERSE CONVEYING OF STRAND SECTIONS OF A MULTI-STRAND CONTINUOUS CASTING INSTALLATION AND TRANSVERSE CONVEYING APPARATUS FOR A MULTI-STRAND CASTING INSTALLATION

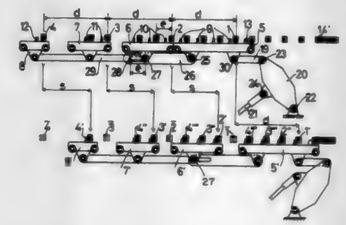
Carlos R. Navarro, Barcelona, Spain, assignor to Concast AG, Zurich, Switzerland

Filed Jun. 21, 1982, Ser. No. 390,390

Claims priority, application Switzerland, Jun. 30, 1981, 4283/81

Int. Cl.³ B65G *47/31*

U.S. Cl. 198—461 **16 Claims**



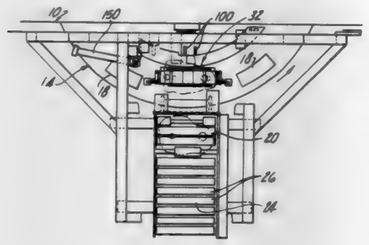
1. A method of transversely conveying strand sections especially billets, of a multi-strand continuous casting installation onto a neighboring cooling bed, comprising the steps of:

longitudinally outfeeding strand sections from the casting installation to a transverse conveying apparatus;

transversely conveying the strand sections by repeatedly advancing the strand sections located rearward of a last outfeed line, viewed in the transverse conveying direction, substantially at a right angle to the direction of longitudinal feed through a distance less than a lateral spacing of the strand sections in partial conveying displacement strokes starting from their starting position through one or a number of intermediate positions located between two neighboring outfeed lines; and

substantially simultaneously conveying at least said strand sections located in a penultimate outfeed line and rearwards thereof.

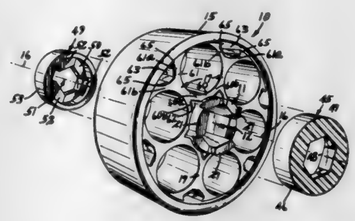
4,523,673
TRANSFER DEVICE
John R. Vessey, Linden; Chandrakant M. Patel, Flint, and Jack Armstrong, Fenton, all of Mich., assignors to Excel Corporation, Fenton, Mich.
Filed Dec. 9, 1982, Ser. No. 448,260
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—486 **9 Claims**



1. A device for transferring workpieces from an entry station and to a predetermined position on a moving conveyor comprising:
- a housing, at least a portion of said conveyor extending through said housing and movable along a predetermined path of movement,
- a carriage assembly,
- means for slidably mounting said carriage assembly to said housing along at least a portion of said path of movement so that said carriage assembly is movable from a first position, in which said carriage assembly is aligned with said entry station, and a second position spaced away from said first position along said path of movement,
- said carriage assembly comprising:
  - means for receiving and holding a workpiece from said entry station when said carriage assembly is in said first position,
  - means actuatable after receipt of a workpiece by the carriage assembly for coupling said carriage assembly to a predetermined position of said conveyor so that said carriage assembly moves in unison with said conveyor from said first position and towards said second position,
  - means for releasing said workpiece onto said conveyor when said carriage assembly is in said second position,
  - means for deactuating said coupling means following the release of said workpiece onto said conveyor,
  - means actuatable following said uncoupling of said carriage assembly from said conveyor for returning said carriage assembly to said first position, and
  - means for loading said workpiece from said entry station and to said carriage assembly comprising a pusher assembly and means for moving said pusher assembly between a retracted position and an extended position wherein in said retracted position said pusher assembly engages a workpiece in said entry station, wherein in said extended position, said pusher assembly moves said workpiece into said holding and receiving means.

4,523,674
IMPACT ROLLER STRUCTURE
Gary Haugen, and Everett Amundson, both of Minot, N. Dak., assignors to Impact Roller, Inc., Minot, N. Dak.
Filed Jun. 17, 1982, Ser. No. 389,161
Int. Cl.³ B65G *39/06*
U.S. Cl. 198—843 **23 Claims**

1. An impact roller, comprising:
(a) hub means having an opening therein;
(b) outer ring-like means interconnected with said hub means; and
(c) means for absorbing shock due to impact on said impact roller, said means including a plurality of radially extending members positioned between said hub means and said ring-like means, said means being constructed and arranged to absorb shock imparted on said impact roller,

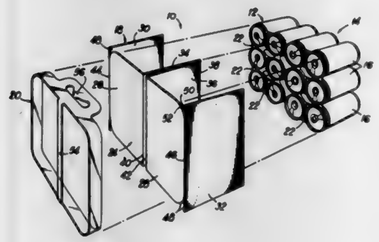


said members comprising double concave walls, each of said walls including a fork-like structure at its radially inner end and at its radially outer end, said roller being constructed of polyurethane having a durometer in the range of 80A to 70D.

4,523,675
COLLAPSIBLE DISPLAY STAND WITH ATTACHED TRAY
Stefan Schröter, Neutraubling, Fed. Rep. of Germany, assignor to Schroter + Bake GmbH & Co., KG, Neutraubling, Fed. Rep. of Germany
Filed Dec. 21, 1981, Ser. No. 332,931
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 8033787[U]; Nov. 26, 1981, 8134499[U]
Int. Cl.³ B65D *5/52*
U.S. Cl. 206—44 R **3 Claims**

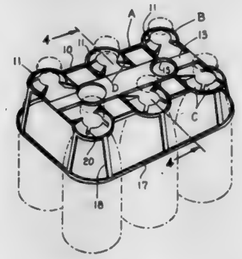
1. A display stand comprising a tray and a collapsible support stand adapted to support said tray, said display stand being movable between a first, erect position in which the support stand is substantially vertical and supports said tray and a second, collapsed position in which said support stand is folded about said tray, said tray having a generally rectangular base and a plurality of connected sidewalls extending generally upwardly from said base, said support stand having a front wall, a rear wall, an open top, and two side walls connecting said front and rear walls, each of said side walls having a vertical center fold line which is inwardly foldable, each of said front, rear and side walls of said support stand having a generally horizontal fold line, said support stand further comprising a first ceiling panel integrally hinged by a fold line to said front wall and extending generally upwardly from said front wall when said support stand is in its erect position, and a second ceiling panel which is connected to said first ceiling panel, the base of said tray being bonded to at least one of said ceiling panels, wherein when said display stand is in said second position, said vertical center fold lines are folded inwardly, said ceiling panels are positioned below the base of said tray, and said front and rear walls overlie the open top of said tray.

4,523,676
MULTI-CONTAINER PACKAGE WITH OPTIONAL COVER AND METHOD FOR MAKING THE SAME
Marshall J. Barrash, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Dec. 27, 1983, Ser. No. 565,793
Int. Cl.³ B65D *85/62, 75/56, 71/02*
U.S. Cl. 206—150 **12 Claims**



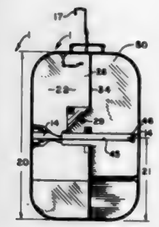
1. A multi-container package comprising:
(a) a plurality of preformed plural container assemblies;
(b) a cover over at least a portion of said multi-container package, said cover including a top panel and a pair of side panels on opposite ends of said top panel extending down from said top panel along opposite sides of said package, said top panel having a plurality of separated sections, each adjacent pair of said sections being interconnected by a pair of intermediate panels extending down into said package between a pair of adjacent ones of said assemblies; and
(c) a band encircling and securing together said plurality of assemblies and said cover, and being in contact with both of said side panels, said band including a stabilizing strap extending between each adjacent pair of said assemblies and also extending between each pair of intermediate panels.

4,523,677
BOTTLE HOLDER
Heiner J. Schürmann, Greenville, S.C., assignor to American Ka-ro Corporation, Greenville, S.C.
Filed Aug. 3, 1983, Ser. No. 519,815
Int. Cl.³ B65D *71/00, 71/04*
U.S. Cl. 206—158 **3 Claims**



1. A unitary bottle holder constructed of molded synthetic polymeric material for retaining a number of bottles having necks in a package having a longitudinal central handle section to facilitate handling comprising:
- a frame surrounding the necks of the bottles in the package extending about the handle section;
- said frame having a plurality of spaced interconnected individual rib sections each extending outwardly from said handle section and thence being connected by an arcuate portion for receiving a neck portion of a bottle;
- a plurality of segmental flexible lip members extending integrally from said rib sections along major portions thereof;
- said flexible lip members extending upwardly and inwardly terminating to form an opening receiving the neck of a bottle in a resilient gripping action;
- spaced inwardly converging slots defining said flexible lip members; and
- a pair of upstanding converging wedge shaped ribs each carried integrally by marginal portions of said lip members tapering outwardly from said rib sections terminating in an inner edge of said lips defining inwardly facing, outwardly tapering openings of lesser width than a bottle neck each accommodating a neck of a bottle for removal when a respective neck is forced between said wedge shaped ribs for removal of a bottle from the package.

4,523,678
EXTERNAL COAT POCKET FOR LUGGAGE
Paul W. Fox, 8611 Belcrest, St. John, Mo. 63114
Filed Dec. 10, 1980, Ser. No. 215,012
Int. Cl.³ A45C *3/00, 13/04*
U.S. Cl. 206—287.1 **10 Claims**



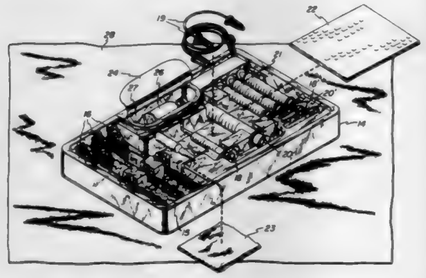
1. In a folding bag having a frame, and an enclosure supported by said frame, said enclosure including an inner side and an outer side, said enclosure defining a first article receiving area along the inner side thereof, said first article receiving means having attachment means therein, said bag having a length dimension longer in its unfolded condition than in its folded condition and greater than a width dimension of the bag, the improvement comprising an external coat accepting pocket along the outer side of said enclosure extending substantially the length of the bag, said coat accepting pocket including a cover piece interconnected with said bag so as to provide at least first expansion means at the juncture of said pocket with the outer side of said bag, said expansion means adapted to permit folding of said bag, and hook means mounted to said frame and having a portion extending through the outer side of said enclosure and positioned within said pocket for receiving garments, said coat accepting pocket being accessible by a user for insertion of articles therein in either the folded or unfolded condition of said bag.

4,523,679
PRE-STERILIZED MEDICAL PROCEDURE KIT PACKAGES
Myron Palkoff, Colonie, N.Y.; Robert W. Hain, Scotch Plains, and Frederick B. Hadtke, New Providence, both of N.J., assignors to Sterling Drug Inc., New York, N.Y.
Filed Mar. 5, 1984, Ser. No. 586,159
Int. Cl.³ A61B *19/02;* **B65D** *1/34*
U.S. Cl. 206—370 **8 Claims**

1. A medical procedure package comprising in combination:
A. a sealed, pre-sterilized outer package wrap containing therein:
B. an essentially unitary, two-compartment kit wrapped

within an inner package wrap, the first of said compartments being relatively large and comprising:

(a) a medical procedure set-up tray and associated essential medical procedure components, said outer package wrap, set-up tray, essential medical procedure components and inner package wrap being sterilized by, and



compatible with, ethylene oxide sterilization, and the second of said compartments being relatively small and comprising:

(b) a space sealed by a bacteria proof peelable barrier layer and holding a medicament containing rubber closured vial, said vial being separately sterilized by, and compatible with, heat sterilization.

4,523,680

TAPE CASSETTE STORAGE BOX COUPLING ACCESSORY

Shoichi Saito, and Hideo Shirako, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

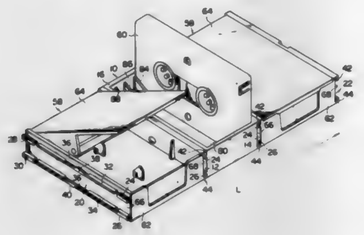
Continuation of Ser. No. 317,015, Nov. 2, 1981, abandoned. This application Dec. 19, 1983, Ser. No. 563,876

Claims priority, application Japan, Nov. 11, 1980, 55-1690967[U]

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.[3] **A47B** *81/06;* **B65D** *85/67*

U.S. Cl. 206—387 **6 Claims**



1. A tape cassette storage box coupling accessory to be coupled between first and second tape cassette storage boxes each of which comprises a storage box body for holding a micro cassette, the storage box body having first and second substantially rectangular parallel lateral faces; a cover rotatably coupled with said storage box body so as to be rotatable between a first position in which said cover houses, in cooperation with said storage box body, a micro cassette held in said storage box body and a second position in which said cover is in a position which allows said micro cassette to be removed from said storage box body; a first engaging means formed on the first parallel lateral face said storage box body, said first lateral face and said first engaging means being integrally formed of a plastic material having elasticity; and a second engaging means formed on the second parallel lateral face of said storage box body, said second lateral face and said second engaging means being integrally formed of a plastic material having elasticity;

the coupling accessory comprising:

an accessory body;

a first substantially rectangular lateral face on said acccessory body and having the same dimensions as that of the parallel lateral faces of the storage box body, said first lateral face of said accessory body comprising a first engaging means integrally formed therewith of a plastic material having elasticity and which is the same as said first engaging means of the storage box body; and

a second substantially rectangular lateral face on said accessory body which is substantially parallel to said first lateral face of said accessory body, said second lateral face of said accessory body extending in the same longitudinal direction as said first lateral face of said accessory body and having the same dimensions as said first lateral face of said accessory body, and said second lateral face of said accessory body comprising a second engaging means integrally formed therewith of a plastic material having elasticity and which is the same as said second engaging means of the storage body;

said accessory body having a width between said first and second lateral faces thereof such that the distance between said first and second lateral faces thereof is such that the distance from the first parallel lateral face of a first tape cassette storage box body to the second parallel face of a second tape cassette storage box is substantially equal to the longitudinal length of a conpact-type tape cassette storage box when the second engaging means on said second lateral face of the first tape cassette storage box and the first engaging means on said first lateral face of the second tape cassette storage box are coupled respectively to the first engaging means on said first lateral face of said accessory body and the second engaging means on said second lateral face of said accessory body to thereby connect said accessory body between the first and second tape cassette storage boxes;

said first engaging means of said storage box body and of said accessory body including first to fourth click-type engaging means formed in the four corners of said first lateral face and having the same length and the same direction for engagement, a first guide plate formed between the first click-type engaging means and the third click-type engaging means and extending in the direction of the engaging length of said first click-type engaging means and guiding to engage with said first or third click-type engaging means, and a second guide plate formed between the second click-type engaging means located in a direction to cross the direction or the engaging length of said first click-type engaging means and the fourth click-type engaging means located in the direction of the engaging length of said second click-type engaging means and guiding to engage with said second or fourth click-type engaging means;

said second engaging means of said storage box body and of said accessory body including first to fourth click-type engageable means formed in the four corners of said second lateral face and having the same length and the same direction for engagement, a third guide plate formed between the first click-type engageable means and the third click-type engageable means located in the direction of the engaging length of said first click-type engageable means, whereby said first or third click-type engageable means is guided in engagement, and a fourth guide plate formed between the second click-type engageable means located in a direction to cross the direction of the engaging length of said first click-type engageable means and the fourth click-type means located in the direction of the engaging length of said second click-type engageable means, whereby said second or fourth engaged click is guided in engagement;

said first to fourth click-type engaging means of said first engaging means and said first and second guide plates being isolated from one another;

said first and third click-type engaging means of said first engaging means protruding from said first lateral face substantially at right angles thereto and having projecting ends thereof bent away from said second and fourth click-type engaging means along a direction substantially parallel with said first lateral face;

said second and fourth click-type engaging means of said first engaging means protruding from said first lateral face substantially at right angles thereto and having projecting ends thereof bent away from said first and third click-type engaging means along a direction substantially parallel with said first lateral face;

said first and third click-type engageable means of said second engaging means protruding from said second lateral face substantially at right angles thereto and having projecting ends thereof bent toward said second and fourth click-type engageable means along a direction substantially parallel with said second lateral face;

said second and fourth click-type engageable means of said second engaging means protruding from said second lateral face substantially at right angles thereto and having projecting ends thereof bent toward said first and third click-type engageable means along a direction substantially parallel with said second lateral face; and

the respective projecting ends of said first to fourth click-type engaging means of said first engaging means and said first to fourth click-type engageable means of said second engaging means having chamfer portions formed along their respective directions for engagement, so that respective chamfer portions of said first to fourth click-type engageable means of said second engaging means of the tape cassette storage box are brought into contact with the respective chamfer portions of said first to fourth click-type engaging means of said first engaging means of said accessory when said second engaging means of said tape cassette storage box is brought into contact with said first engaging means of said accessory along a direction to cross the engaging direction of said first engaging means;

said accessory body having substantially flat upper and lower faces which are substantially parallel with each other and which are substantially coplanar with upper and lower faces of the first and second tape cassette storage boxes when connected together and when the covers of the first and second tape cassette storage boxes are in said first position;

said upper face of said accessory body including a holding means for removably holding a micro cassette in a position such that substantially flat upper and lower surfaces of the micro cassette intersect said upper and lower faces of said accessory body;

said lower face of said accessory body including at least one of said first and second engaging means; and

said holding means including a cavity formed in said upper face of said accessory body and having partition walls for holding a plurality of micro cassettes, and projections for making point contact against the insertion and departing of the micro cassettes in the cavity, the depth of said cavity being so determined that a relatively large part of the outer surface of each of said micro cassettes is projected out from said cavity.

4,523,681

MULTILEVEL STACKING CONTAINER

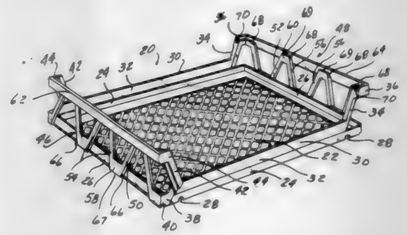
Elsmer W. Kreeger, Howell, Mich., assignor to Pinckney Molded Plastics, Inc., Pinckney, Mich.

Filed Mar. 5, 1984, Ser. No. 586,289

Int. Cl.[3] **B65D** *21/04*

U.S. Cl. 206—507 **2 Claims**

1. In a multi-level stacking container having a rectangular bottom, first and second end walls projecting upwardly from respective opposite ends of said bottom and side walls projecting upwardly from each of the opposite sides of said bottom, said end walls having complementary vertically upwardly and downwardly extending recesses whereby two like containers may be alternatively stacked in a high-level stacked relationship by resting the first and second end walls of the upper container upon the respective second and first end walls of the lower container or in a low-level stacked relationship wherein the first and second end walls and side walls of the upper container are nested within the respective first and second end walls and side walls of the lower container; the improvement wherein said end walls are of a first length and a first height, said side walls being of a second length greater than said first length and having a main central section of a length at least equal to said first length and a height approximately one-half of



said first height, relatively short end sections on each side wall of a height equal to said first height joined to the adjacent end walls, stacking rails projecting downwardly from said bottom along the respective side edges thereof, and means defining a pair of upwardly opening notches in each of said stacking rails spaced from each other by a distance equal to the spacing between said side walls whereby two like containers may be stacked one upon the other in a crosswise relationship wherein the end walls of one of the containers are parallel to the side walls of the other and with the upper edges of the central sections of the side walls of the lower container projecting upwardly into the notches in the stacking rails of the upper container to stably support the upper container in an intermediate level stacked relationship upon the lower container.

4,523,682

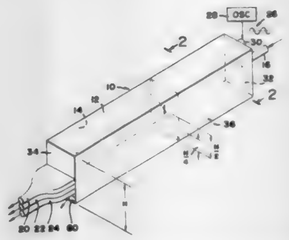
ACOUSTIC PARTICLE SEPARATION

Martin B. Barmatz, Glendale; James D. Stoneburner; Nathan Jacobi, both of Pasadena, and Taylor G. Wang, Glendale, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 19, 1982, Ser. No. 379,601

Int. Cl.[3] **B07C** *5/00*

U.S. Cl. 209—638 **5 Claims**



1. A method for separating particles comprising:

applying sinusoidal acoustic energy to a chamber, which is resonant to a chamber mode, to establish an acoustic standing wave pattern that forms a force potential well in the chamber;

positioning a plurality of particles in said chamber within said well, while a nonacoustic force field is also applied to said chamber to urge particles away from the center of said well; and

removing particles from selected positions in said force potential well, so that some particles are removed from other particles according to the positions they assumed in said well;

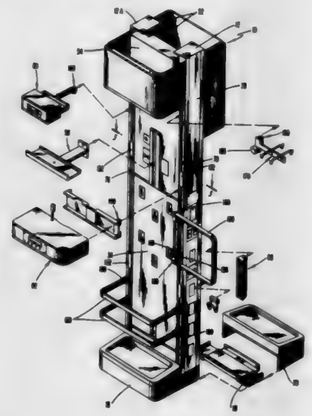
said particles include particles of a wide range of sizes including particles of a desired size range and particles larger than said desired range, and said step of applying includes applying acoustic energy of a level which is weak enough to allow particles larger than said desired size range to drop out of said well.

4,523,683

MEDICAL SERVICE COLUMN AND MOUNTING BRACKET

Eugene H. Fullenkamp, Batesville, and Cecil R. Lohrey, Brookville, both of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Jan. 31, 1983, Ser. No. 462,682
Int. Cl.³ A47B *47/00*
U.S. Cl. 211—190 **8 Claims**



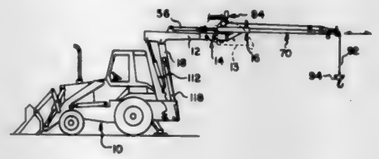
1. A medical service column in combination with a member removably attached thereto, said column is free-standing and has front and rear sides with service outlets mounted on at least said front side for connection with fluid and electrical conduits, said column being positionable adjacent a corner of the head of a patient's bed to locate medical services proximate to the patient, said column including pairs of vertically extending tracks at the front and rear sides of the column, each track extending substantially the height of said column, said member including at least one locking slide configured to be connected to a track for vertical sliding movement therealong, and a manual actuator for locking said slide at selected vertical locations along said track, wherein said member comprises a holder having a rotatable arm mounted in a bore thereof for rotation about a vertical axis, resilient means for yieldably retaining said arm in various positions of horizontal adjustment, and means for expanding said resilient means radially outwardly into engagement with a wall of said bore.

4,523,684

CRANE TOOL FOR ATTACHMENT TO A BACKHOE ARM

Jerry Baisden, 2758 Merritt St., Springfield, Ohio 45503

Filed Sep. 30, 1982, Ser. No. 431,503
Int. Cl.³ B66C *23/04*
U.S. Cl. 212—175 **4 Claims**



1. A crane tool for use with an attachment removably mounted to the arm of a backhoe machine from which the bucket has been removed, the backhoe further having a first hydraulic cylinder disposed along the arm normally for pivoting the bucket when in place on the arm and a controllable source of hydraulic fluid under pressure normally supplied to a second hydraulic cylinder on the backhoe arm, the attachment including a frame having a first end fittable on the backhoe arm and an outer end extending therebeyond, means for removably fastening the frame to the arm, a sliding member connectable with the end of the first cylinder for movement thereby along the frame, and guide means for directing the sliding member along the frame between the first and the outer ends, said crane tool comprising:

a sleeve;

means for removably mounting said sleeve to the frame such that said sleeve is directed substantially parallel to the backhoe arm;

a boom having an inner end insertable through and moveable along said sleeve and an outer end extending substantially beyond said sleeve;

means for connecting the inner end of said boom with said sliding member for movement of said boom along said sleeve in response to movement of said sliding member by the first cylinder;

a hydraulically-powered winch and a cable connected thereto, said winch being mounted to said sleeve and arranged for playing out and retracting said cable along said boom;

means for connecting said winch with the source of hydraulic fluid; and

a pulley mounted for rotation at said outer end of said boom and receiving said cable for passage therearound.

4,523,685

REVOLVING BLOCK FOR HIGH PLACE WORKING VEHICLE

Fusaji Terayama; Tetsuo Kohzai, and Naoyuki Murai, all of Osaka, Japan, assignors to Morita Fire Pump Mfg. Co., Ltd., Osaka, Japan

Filed May 22, 1984, Ser. No. 612,780
Claims priority, application Japan, Nov. 30, 1983, 58-227306
Int. Cl.³ B66C *23/78*
U.S. Cl. 212—247 **4 Claims**

1. A revolving block for a high place working vehicle comprising:

a first annular body fixed on the body of the high place working vehicle and having an axis perpendicular to the vehicle body;

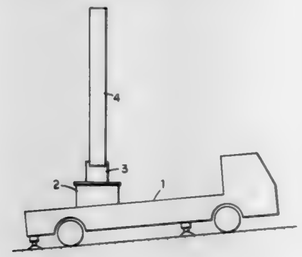
a second annular body consisting of a lower portion coaxially and relatively rotatably assembled with said first annular body and an upper portion having a rotary axis obliquely crossing the rotary axis of said lower portion;

a third annular body consisting of a lower portion coaxial and relatively rotatably assembled with the upper portion

of said second annular body and an upper portion having a rotary axis which obliquely crosses the rotary axis of said lower portion of said third annular body and which is normally aligned with the axis of said first annular body;

a fourth annular body coaxially and relatively rotatably assembled with said upper portion of the third annular body;

a table fixed to the fourth annular body;



a driving device for rotating the table relative to the third annular body;

a rotation preventing device for preventing rotation of the table relative to the vehicle during correcting operation;

a first fixing device for fixing the first and second annular bodies to each other when desired; and

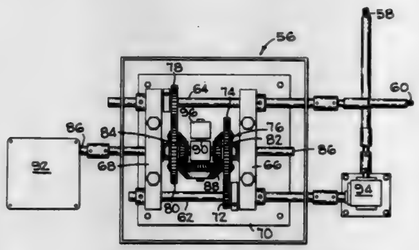
a second fixing device for fixing the second and third annular bodies to each other when desired.

4,523,686

ANTI-TWO BLOCK SYSTEM

Donald E. Moore, Marion, and David W. Olsen, Palo, both of Iowa, assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 402,517, Jul. 28, 1982, abandoned. This application Aug. 31, 1984, Ser. No. 647,851
Int. Cl.³ B66C *13/48*
U.S. Cl. 212—152 **1 Claim**



1. In a crane having a boom pivotally mounted on the crane's upper works with a first wire rope wound on a boom hoist drum and connected to the boom, the boom being raised and lowered by respectively reeling in and paying out rope on said boom hoist drum, a hook block suspended from a second wire rope trained over a sheave rotatably carried on the boom and wound on a hook block drum, the hook block being moveable toward the boom by reeling in the second wire rope and by lowering the boom; an anti-two block system for preventing the hook block from approaching within a predetermined distance of said sheave, comprising:

a differential mechanism having a pair of side gears journaled on an output shaft and a spider gear meshing with said side gears and rotatable on a cross-shaft affixed to the output shaft;

boom drive means between said boom hoist drum and one of said side gears for determining the angular orientation of said boom;

hook block drive means between said hook block drum and the other of said side gears for determining the amount of said second rope payed off of said hook block drum;

a switch connected to and closeable by said output shaft in response to the output shaft being rotated as a result of said hook block reaching said predetermined distance;

first and second hydraulic pump and motor circuits for respectively driving said boom drum and said hook block drum;

a first and second pneumatic rams for respectively controlling the first and second circuits;

a first manual valve moveable to a boom lower position to direct air pressure to said first ram to drive said boom hoist drum to pay off said first rope;

a second manual valve moveable to a hook raise position to direct air pressure to said second ram to drive said hook block drum to reel in said second rope;

a first solenoid valve interposed between said first manual valve and said first ram permitting free communication therebetween when paying out and reeling in said first rope;

a second solenoid valve interposed between said second manual valve and said second ram permitting free communication therebetween when paying out and reeling in said second rope;

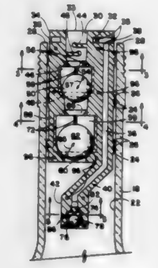
said solenoid valves being energized by the closing of said switch and thereby shifted to block communication of air pressure from said manual valves when moved to said positions.

4,523,687

NON-REFILLABLE POURER

John Hullihen, Rte. 4, Box 959, Hillsboro, Oreg. 97123

Filed Oct. 29, 1984, Ser. No. 665,762
Int. Cl.³ B65D *49/06*
U.S. Cl. 215—25 **16 Claims**



1. A non-refillable pour spout, for use in the neck of a bottle for permitting liquid to be poured through said spout from within said bottle but resisting replenishment of the liquid in said bottle, comprising:

(a) a generally cylindrical spout body member having a top and bottom and adapted to fit sealingly within the neck of a bottle;

(b) a liquid pouring duct extending through said spout body member and including discharge tube means for defining a liquid discharge opening adjacent the top of said spout body member;

(c) a first check valve located in said liquid pouring duct in said spout body member, including a first valve seat and a movable first valve closure body held within said spout body upwardly adjacent said first valve seat, said first check valve communicating with said discharge tube means;

(d) a second check valve located in said liquid pouring duct in said spout body member, including a second valve seat and a movable second valve closure body held within said spout body upwardly adjacent said second valve seat, said

second check valve being located beneath said first check valve and communicating with said first check valve;

(e) an air inlet tube attached to said spout body member and having a lower end extending downwardly therebeneath;

(f) an air inlet conduit having an open upper end located in said top of said spout body member, said air inlet conduit extending through said spout body member and said air inlet tube, from said top of said spout body member to said lower end of said air inlet tube; and

(g) a third check valve located in said air inlet conduit, including a valve seat and a movable third valve closure body held within said air inlet conduit and located upwardly adjacent said third valve seat.

4,523,688

CHILD-PROOF CLOSURE FOR A CONTAINER

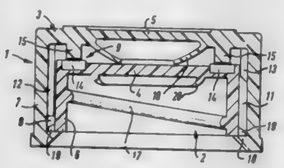
Peter J. Puresevic, 6 Neyland Close, Tonteg, Mid Glamorgan CF38 IHH, and Julian D. Taylor, 3 St. Teilo's Way, Watford Farm Estate, Caerphilly, Mid Glamorgan CF8 1EA, both of Wales

Filed Jun. 3, 1982, Ser. No. 384,559

Claims priority, application United Kingdom, Jun. 4, 1981, 8117100

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—220 **9 Claims**



1. A closure device for a container having a cylindrical opening, comprising solely;

an inner cylindrical closure member;

an outer cylindrical closure member;

the inner and outer cylindrical closure member each comprising an end member, a skirt member and first and second drive means;

means biassing the inner and outer closure members axially apart, and means retaining same against separation;

the first drive means being between the respective skirt members and being operative to rotate the inner and outer closure members in unison in one sense only, such first drive means comprising a driving dog on the inner surface of the skirt member of said outer closure member and a ratchet means on the outer surface of the skirt member of the inner closure member, and,

the second drive means being associated with said means biassing the inner and outer members axially apart and being operative to rotate the first and second closure members in unison in the opposite sense only when pressure is applied to the outer member in the axial direction sufficiently to overcome the pressure of the biassing means to move the outer member towards the inner member and the outer member is rotated in the opposite sense, such second drive means comprising a socket of one closure end member and a projection of the other closure end member and wherein the biassing means comprises a resilient member carried by one of said end members and contacting the adjacent surface of the other end member.

4,523,689

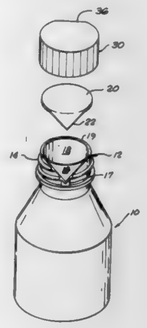
REUSABLE TAMPER-PROOF CONTAINER

Herman Laub, 622 S. Palm Ave., Alhambra, Calif. 91778

Filed Feb. 27, 1984, Ser. No. 584,245

Int. Cl.³ B65D *23/00*

U.S. Cl. 215—232 **14 Claims**



1. A sealable container comprising

a bottle having a mouth in a cylindrical discharge neck, said neck being externally threaded along its circumference and wherein said neck has a first recessed area extending from an outer perimeter on said neck closest to said mouth to an outer perimeter on said neck further from said mouth,

a flexible closure covering said mouth and affixed to said cylindrical discharge neck, said flexible closure having a pull tab, said pull tab being positioned in said first recessed area, and

a cap being adapted to be screwed onto said cylindrical discharge neck, said cap having a circular top surface and a cylindrical sidewall extending down from said top surface, wherein said sidewall is internally threaded along its circumference and wherein said sidewall has a second recessed area extending from the inner perimeter on said sidewall closest to said top surface to an inner perimeter on said sidewall further from said top surface.

4,523,690

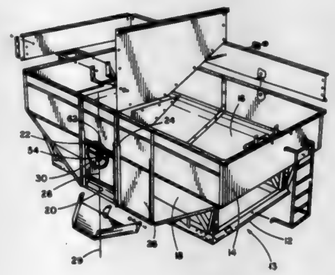
DOOR OPERATING MECHANISM FOR GRAVITY TYPE FARM WAGON

Erwin D. Cornelius, Loda, Ill., assignor to M & W Gear Company, Gibson City, Ill.

Continuation-in-part of Ser. No. 446,461, Dec. 3, 1982, abandoned. This application Aug. 1, 1984, Ser. No. 636,818

Int. Cl.³ B65D *43/26*

U.S. Cl. 220—262 **6 Claims**



1. In a gravity box of the type including a side wall with a side discharge opening, a vertically sliding door mounted for reciprocal movement in channel means on the side wall to open and close the discharge opening, the improvement comprising, in combination:

a door operating mechanism for positively raising and positively lowering the sliding door, said mechanism including

a pivot shaft with a cable spool thereon, said shaft defining a pivot axis, said shaft attached to the side wall above the maximum open travel position of the door;

a vertically projecting door support bracket connected to the door, said bracket having an end extending vertically above the shaft pivot axis when the door is in the closed position;

a flexible cable connected at one end to the door and having an intermediate section of the cable wrapped around and attached at an intermediate point to the spool and with the opposite end of the cable attached to the bracket end; and

means for rotating the spool about the axis of the shaft to wind the cable in one direction and unwind the cable in the opposite direction on the spool to thereby positively raise or lower the door.

4,523,691

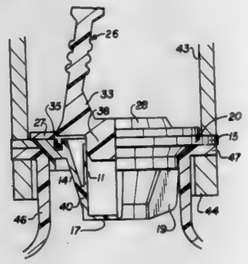
PORT STRUCTURE FOR I.V. CONTAINER

Mark E. Larkin, Lindenhurst, and Kenneth H. Knox, Vernon Hills, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 8, 1983, Ser. No. 483,392

Int. Cl.³ B65D *33/16*

U.S. Cl. 220—266 **12 Claims**



1. A port structure for a container which will permit access by a piercing member in a leak-resistant manner comprising:

a container port defined by a tubular member;

a port sealing member positioned in said port tubular member, said port sealing member including a movable tubular portion, a port connecting portion and substantially linear flexible supporting portion, said substantially linear flexible supporting portion positioned between said connection portion and said movable tubular portion, said substantially linear flexible supporting portion secured to said movable tubular portion and connected to said movable tubular portion at a point spaced from the outer end of said movable tubular portion to form an acute angle therewith and in a manner to hold said movable tubular portion in a freestanding manner away from said connecting portion, said connecting portion sealably engaged with said container port tubular member whereby movement of said movable tubular portion is provided by the flexing of said flexible supporting portion;

a pierceable diaphragm member operatively positioned in said movable tubular portion at the end of said movable tubular portion positioned innermost in said container port to seal the contents of said container from outside atmosphere;

a plurality of locating members extending outwardly from said substantially linear flexible supporting portion to position said port sealing member in said container port tubular member; and

a sealing cap operatively connected to said container port.

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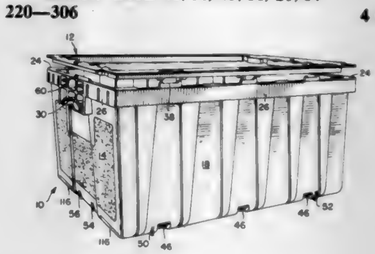
REVERSIBLE SECURITY COVER FOR STACKABLE AND NESTABLE TOTE BOX

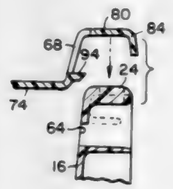
Jack Lemkin, 3945 Brookham Dr., Grove City, Ohio 43123

Filed Jun. 30, 1983, Ser. No. 509,581

Int. Cl.³ B65D *41/16, 43/10, 21/04*

U.S. Cl. 220—306 **4 Claims**





1. In combination, a tote box and a security cover therefor,

(a) said tote box comprising first and second end walls and first and second side walls, a bottom joining said end walls and said side walls together into a upwardly opening rectangular receptacle,

(b) a horizontal lip extending about the perimeter of said receptacle at the upper end thereof,

(c) a skirt depending vertically from said lip and extending about the perimeter of said receptacle,

(d) a first slot formed in said first end wall and a second slot formed in said second end wall, said slots being located below said horizontal lip and in alignment with each other,

(e) a plurality of guides projecting upwardly above said lip from said first and second side walls,

(f) said security cover comprising first and second end walls, and first and second side walls, a planar bottom joining end walls and said side walls together into a shallow, dished configuration,

(g) a continuous horizontal flange extending around the perimeter of the end walls and side walls of the security cover,

(h) a plurality of elongated slots extending through said flange of said cover,

(i) a first overhang depending vertically from said flange along the first end wall of said cover, and a second overhang depending vertically from said flange along the second end wall of said cover,

(j) a skirt depending vertically below said lip on the tote box,

(k) at least one locking tab projecting horizontally outwardly from the first end wall of said cover and at least one locking tab projecting horizontally outwardly from the second end wall of said cover,

(l) said first and second overhangs engaging said skirt to locate the locking tabs relative to said slots in the end walls of the receptacle,

(m) said cover being placed atop said receptacle so that said guides extend through said elongated slots and align said cover upon said receptacle,

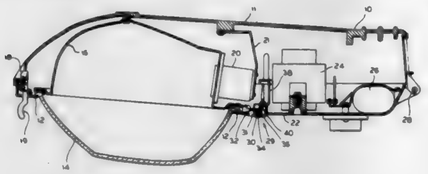
(n) said cover being executed in a resilient plastic so that said locking tabs on both of said end walls of said cover can be snapped into locking engagement with the slots in the first and second end walls of said tote box.

4,523,693

LUMINAIRE DOOR HINGE

Edward B. Bilson, Memphis, Tenn., assignor to ITT Corporation, New York, N.Y.

Filed Sep. 20, 1984, Ser. No. 652,521
Int. Cl.³ B65D *43/14, 51/04*
U.S. Cl. 220—337 **7 Claims**



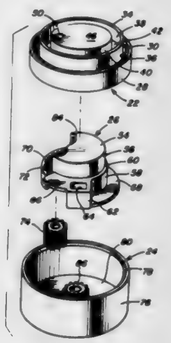
7. A luminaire comprising:
a top section;
a bezel door mounted to close against said top section by a first hinge assembly, a ballast door mounted to close against said top section by a second hinge assembly;
said first hinge assembly including a hinge bar comprising a generally cylindrical, elongated bar extending generally parallel to a hinge axis between said top section and said bezel door, and a hinge plate comprising a flat, generally hook-shaped bar having a base section extending outwardly from said top section, a middle section looped around said hinge bar and a distal end section extending back toward said top section in such manner that said bezel door is hinged to said top section but yet can be removed from said top section by swinging open said ballast door along said second hinge assembly and then lifting said bezel door such that said hinge bar is lifted out of said hinge plate.

4,523,694

DISPENSING CAP

Douglas F. Veltri, 551 Washington St., Carlstadt, N.J. 07072

Filed Dec. 16, 1983, Ser. No. 562,187
Int. Cl.³ B65G *59/00*
U.S. Cl. 221—265 **12 Claims**



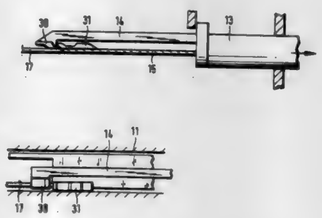
1. A dispensing cap for a container to enable a single item to be dispensed from the container, said dispensing cap comprising an inner cap adapted to be non-rotatably connected to the container, an outer cap rotatably associated with the inner cap and container, a rotor positioned between the inner cap and outer cap and rotatable in relation to each of the caps and the container, said inner cap including a discharge port, said outer cap including a discharge port, said rotor including a chamber movable between positions in alignment with and misalignment with the ports in the inner and outer caps with the chamber in the rotor being of a size to receive only a single item to be discharged, and means interconnecting the inner cap, rotor and outer cap to rotate the rotor in response to rotational movement of the outer cap with the rotating movement of the rotor being at a different speed than the rotating movement of the outer cap for moving the rotor from a position with its chamber in alignment with the port in the inner cap to a position in alignment with the port in the outer cap upon rotational movement of the outer cap through a predetermined arc.

4,523,695

SURGICAL STAPLER

Karl Braun, Talheim, and Jürgen Fetzer, Gerstetten-Dettingen, both of Fed. Rep. of Germany, assignors to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Feb. 9, 1983, Ser. No. 465,354
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 32045220
Int. Cl.³ A61B *17/04*
U.S. Cl. 227—8 **16 Claims**



1. A surgical stapler comprising a staple channel, a staple magazine for staples, means for advancing the staples in the staple magazine and delivering them to the staple channel, an anvil surface disposed at the end of the channel movable relative to the channel between an operating position and a retracted position, a driver displaceable in the channel relative to the anvil surface for deforming a staple in cooperation with the anvil surface, and a leaf spring to which the anvil surface is fastened, the leaf spring extending in the channel and having an inclined surface which cooperates with a projection on the driver for moving the anvil surface.

4,523,696

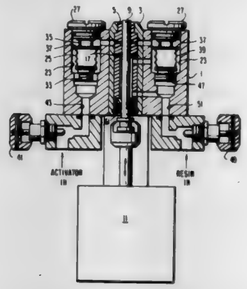
APPARATUS FOR DISPENSING A MIXTURE OF MUTUALLY REACTIVE LIQUIDS

Denis S. Commette, Mantoloking, and Eugene R. LaMonica, Bricktown, both of N.J., assignors to Gusmer Corporation, Lakewood, N.J.

Filed Apr. 13, 1984, Ser. No. 600,014
Int. Cl.³ B05B *7/04, 15/02*
U.S. Cl. 222—135 **9 Claims**

1. In apparatus for dispensing a mixture of mutually reactive liquids, comprising a gun head having a bore opening therethrough to define a cylindrical mixing chamber, means to deliver mutually reactive liquids along separate paths through said head and into said bore to mix in said bore and be dispensed through one end of said bore, a cylindrical valving rod reciprocable in the bore between a forward position in which the valving rod seals the liquid delivery means from each other and occupies the mixing chamber, and a rearward position in which the valving rod opens the mixing chamber and permits the flow of said liquids into the mixing chamber, the rod sliding in sealing relationship with the side walls of the mixing chamber in all positions of the rod in the mixing chamber; the improvement comprising means to feed one of said liquids along

the outer surface of the valving rod in said retracted position of the valving rod and along most of the length of the valving rod which was disposed in the mixing chamber in said forward position of the valving rod, the forward end of the valving rod being disposed in said bore and isolating the mixing chamber from said means to feed one of said liquids in said retracted



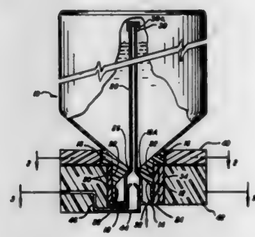
position of the valving rod, said separate path of said one liquid bypassing the forward end of the retracted valving rod so that said one liquid leaves the outer surface of the valving rod rearwardly of said forward end thereof and enters the mixing chamber forwardly of said forward end of the valving rod in said retracted position of the valving rod.

4,523,697

LIQUID DISPENSING PACKAGE

Edward L. Jeans, Ledbury, England, assignor to Cadbury Schweppes Limited, London, England

Continuation of Ser. No. 140,698, Apr. 16, 1980, abandoned. This application Oct. 9, 1981, Ser. No. 310,488
Claims priority, application United Kingdom, Jul. 11, 1979, 7924162
Int. Cl.³ B67D *1/04*
U.S. Cl. 222—185 **57 Claims**



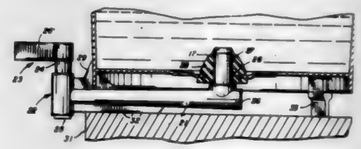
1. A container for dispensing a concentrate through air to a receptacle at a fixed and predetermined flow rate comprising:
(a) a first container part for containing a volume of the concentrate;
(b) a first valve part in communication with said volume;
(c) a second container part having a second mating valve part therein and having means forming an outlet opening, said second container part movable to selectively move said first and second valve parts with respect to each other to allow, while said first and second valve parts are moved apart, a continuous flow of said concentrate from said first part, through said valve parts and out said outlet opening;
(d) means establishing a constricted area through which concentrate must flow when being dispensed, the cross section of said constricted area being predetermined as a function of the viscosity of said concentrate;
(e) means to permit introduction of a gas from outside the container to the interior of said first container part;
(f) means to maintain an essentially constant head pressure in the interior of said first container part over a range of concentrate levels in said first container part, whereby said means establishing and said means to maintain, together will result in a controlled constant flow rate from said outlet opening;
(g) said first container part comprises a bottle with a neck and said second container part comprises a closure part including a cap disposed over said neck; and
(h) said first valve part comprising an insert in said neck, said insert having an outer part with a large bore, and an inner part with a smaller bore in communication with said bottle, and said second valve part comprising a projecting member on said cap arranged to abut against said insert, said projection having a central bore therethrough to the outside of said cap, a tube extending from said bore through said inner part of said insert, with a clearance, for connecting a source of pressure to the inside of said container.

4,523,698

BEER KEG ACCESSORIES

Kurt Kienlein, Rothenbach, and Ralph D. Reese, Schwaig, both of Fed. Rep. of Germany, assignors to W. Duncan Porter, Carefree, Ariz.

Filed Jan. 27, 1984, Ser. No. 574,531
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—185 **5 Claims**

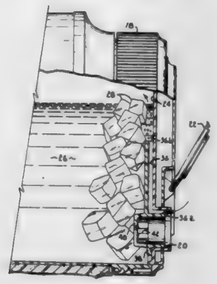


1. A cock for tapping beer kegs comprising:
an elongated hollow center piece having a length greater than the radius of an associated keg,
said center piece being open at one end and closed at its other end,
a first hollow pipe extension mounted to extend laterally of said center piece at its closed end and in communication with the hollow interior thereof,
the other end of said first pipe extension being open ended and having means for puncturing, extending into and sealing with the bung hole of a beer keg,
a second open-ended pipe extension being mounted to extend laterally of the open end of said center piece and in communication with its hollow interior,
a pet cock comprising a cylindrical sleeve mounted for rotation within said second pipe extension,
said sleeve having an opening therein for alignment with the open end of said center piece in one position and blocking the open end of said center piece when rotated to another position,
a handle mounted on said sleeve at one end thereof for closing said sleeve and for selectively rotating said sleeve to align said opening with the open end of said center piece and to block said open end of said center piece,
the other end of said sleeve being open to form with said second pipe extension a nozzle for the cock,
said center piece being provided with a bifurcated first flange mounted to extend laterally thereof in the same direction as and at a distance from said first pipe extension which substantially equals the radius of a keg on which it is to be mounted and a second flange extending diagonally outwardly from said center piece in a direction opposite to said first flange for aiding in supporting the keg when associated therewith,
the bifurcation of said first flange being provided for receiving therein the ridge of an associated beer keg.

4,523,699
COMBINATION ICE SCREEN AND AIR VENT FOR LIQUID CONTAINER

Tony E. Branscum, Cowley County, Kans., assignor to Gott Corporation, Winfield, Kans.

Filed Apr. 29, 1983, Ser. No. 489,809
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—189 **1 Claim**



1. A combination air vent and ice screen device for application to a liquid container having a top portion presenting a flat inner surface, an opening through which liquid may be poured from the container, and a spout wall extending around the opening and projecting outwardly from the top portion of the container, said device comprising:

a tubular insert having a size to fit closely within the spout wall in engagement therewith in a manner to be frictionally retained within the spout wall in registration with the opening, said insert having open opposite ends;

a planar extension rigid with said insert and projecting laterally to one side thereof, said extension having a collar projecting from the perimeter thereof and contacting the flat inner surface of the top portion of the container;

a thickened wall portion of said tubular insert on one side thereof having a greater thickness than the remainder of the insert;

an air channel formed partially in said thickened wall portion of the insert and partially in said extension to provide a vent passage extending from the outside of the container to the inside of the container, said channel having a terminal end extending through said collar and said channel permitting air to pass therethrough into the container when liquid is poured from the container through said tubular insert; and

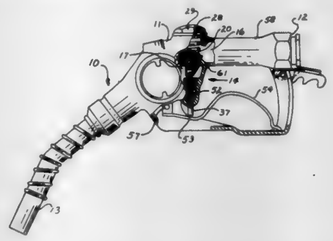
a generally cup shaped ice screen rigid with said insert and projecting therefrom into the container to prevent ice in the container from blocking the flow of liquid into the insert, said ice screen having a side wall and an end wall both exposed to the interior of the container and both presenting a plurality of openings through which liquid may pass.

4,523,700
LOW FLOW CONTROL NOZZLE

Allen M. Bower, Erie, and Gary L. Weeks, West Springfield, both of Pa., assignors to Emco Wheaton, Inc., Conneaut, Ohio

Filed Nov. 27, 1981, Ser. No. 325,296
Int. Cl.³ B67D *5/04*
U.S. Cl. 222—505 **2 Claims**

1. In a fuel dispensing nozzle including a housing, means for coupling the housing to a flexible delivery hose, an outlet spout, valve means in the housing for controlling flow from the delivery hose to the outlet spout, said valve means including a poppet and a cooperating seat, a hand lever for manually operating said control valve, the improvement comprising means responsive to movement of the hand lever to tilt open the poppet so that the poppet rocks about a point on its periphery and the forces required to crack open the valve are reduced, said poppet tilting means including means to apply a generally axially directed opening force to said poppet at a point eccentric to its central axis, said poppet tilting means including an actuator rod centered on the axis of said valve seat and disposed between said hand lever and said poppet, and a lifter carried on an end of said actuator rod adjacent said poppet, said lifter and poppet including opposed flat contacting surfaces, one of said flat contacting surfaces being disposed in a plane oblique to the axis of said seat when said poppet is in a closed position on said seat, said opposed flat surfaces being arranged to tilt said poppet to an angle of less than 25° and

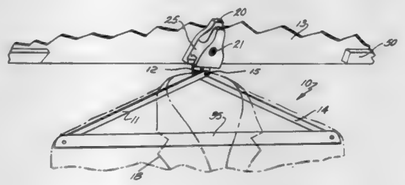


thereafter upon full abutting contact between said oblique flat surface and the opposed flat surface and further lever movement to cause said poppet to translate in straight-line motion without further tilting action away from said seat, and means for centering said poppet on said seat, said centering means including surface areas contacting said poppet, said surface areas and poppet being sufficiently loose with respect to one another to permit initial tilting of said poppet to said angle but close enough with respect to one another to thereafter restrain said poppet from moving laterally relative to said seat during straight-line translating motion.

4,523,701
COLLAPSIBLE AUTOMOTIVE CLOTHING HANGER

Curtis J. Armbruster, 2626 Groesback Ave., Lansing, Mich. 48912

Filed Sep. 30, 1982, Ser. No. 429,809
Int. Cl.³ A47J *51/10*
U.S. Cl. 223—94 **46 Claims**



1. An extensible and collapsible clothing hanger for use in automotive vehicles comprising:

a first arm mounted for pivotal motion relative to the headliner of a vehicle;

a second arm mounted for pivotal motion relative to the headliner of a vehicle,

said first and second arms being upwardly pivotable to a storage position against the headliner of the vehicle;

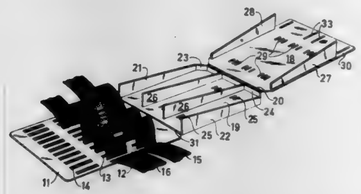
a third arm and a fourth arm both pivotally connected to the headliner, said first and second arms being pivotally connected to said third and fourth arms, respectively, said first and second arms overlapping and crossing each other; and

stop means for limiting the downward travel of said first and second arms, said first and second arms being downwardly pivotable to a use position defined by said stop means, said first and second arms providing an opposing pair of downwardly sloping surfaces in said use position which are suitable for supporting clothing thereon.

4,523,702
TOOL HOLDER

Matti Vilo, 191 51 Sollentuna, Sweden

Filed Aug. 15, 1983, Ser. No. 523,629
Claims priority, application Sweden, Aug. 17, 1982, 8204739
Int. Cl.³ A45F *5/00*
U.S. Cl. 224—101 **9 Claims**

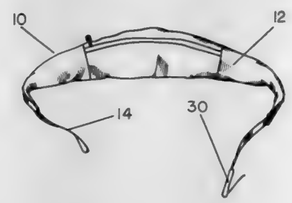


1. A tool holder comprising an upwardly open tool-supporting receptacle arranged for attachment to the clothing of a user, wherein a first side plate and a second side plate forming the receptacle are hinged together, said side plates being provided with fixed outer wall sections, wherein means are provided for detachably mounting between said fixed outer wall sections one or more partitions that form tool-receiving compartments, wherein one end of one of said side plates is foldably joined to a third plate having a plurality of vertical slots arranged therein, said slots being intended to cooperate with straps or like means in a manner to form loops of sufficient size to receive and hold additional tools, and wherein said third plate is freely pivotable about a pivot joint between said third plate and the side plate to which said third plate is foldably joined.

4,523,703
COAT PACK

George T. McKenna, 3238 Federal Cir., Broomfield, Colo. 80020

Filed Jan. 9, 1984, Ser. No. 569,387
Int. Cl.³ A45F *3/00*
U.S. Cl. 224—224 **6 Claims**



1. A torso-encircling carrier, comprising:

an elongated tubular body having a tapering tubular body portion at each longitudinal end thereof, defining a substantially full-length continuous interior compartment between the opposite longitudinal ends and defining an arm-insertion passage means to said compartment in each of said tapering tubular body portions for, in use, permitting a user's arm to reach through the compartment and draw in an object to be carried in the compartment;

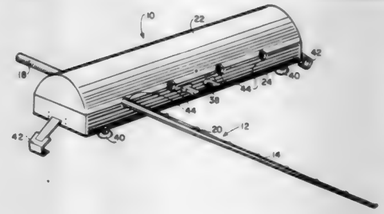
a closure means attached to each of said tapering tubular body portions for resealably opening said passages and permitting, in open condition, in use, through-passage of a carried object into said compartment between the opposite closure means; and

fastening means for releasibly attaching the opposite ends of the body to form a closed figure wearable in a torso-encircling manner.

4,523,704
CAR TOP ROD AND REEL CARRIER APPARATUS

Leonard Washington, 225 Brunswick Ave., Trenton, N.J. 08618

Filed Dec. 22, 1983, Ser. No. 564,508
Int. Cl.³ B60R *9/04;* **A01K** *97/08*
U.S. Cl. 224—328 **4 Claims**



1. A car top carrier apparatus for carrying assembled rod and reel combinations, said apparatus comprising:

a top section;

a bottom section;

hinge means for attaching said top and bottom sections together, said top and bottom sections forming the shell of carrier apparatus, said carrier apparatus having relatively long front and rear portions and relatively short side portions;

a first plurality of cut-out sections located along the front portion of said top section;

a first plurality of cut-out sections located along the front portion of said bottom section such that said first plurality of front cut-out sections in said top and bottom sections mate to form a first set of aperture means;

a second plurality of cut-out sections located along the rear portion of said top section;

a second plurality of cut-out sections located along the rear portion of said bottom section such that said second plurality of rear cut-out sections in said top and bottom sections mate to form a second set of aperture means so that the rod portion of a rod and reel combination may pass through said first set of aperture means and the butt portion of said rod and reel combination may pass through said second set of aperture means so that said reel portion of said rod and reel combination is captured between said top and bottom sections;

handle means attached to said front portion of said carrier apparatus for manual transportation of said apparatus; and,

attachment means for attaching said carrier apparatus to the roof of a car,

wherein the long axis of said rod and reel combination lies in a plane transverse to the long axis of said carrier when said rod and reel combination is captured in said carrier.

4,523,705
MECHANISM FOR GLUE GUN

Richard W. Belanger, 25 Collins St., Amesbury, Mass. 01913, and Peter S. Melendy, 11 Crestview Dr., Exeter, N.H. 03853

Filed Jan. 14, 1983, Ser. No. 458,218
Int. Cl.³ B65H *17/26*
U.S. Cl. 226—127 **5 Claims**

1. In a mechanism for gripping an element and moving it in a first direction, the combination of

(a) handle means

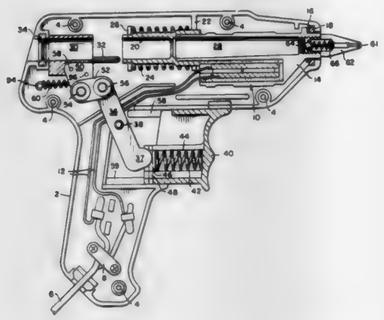
(b) housing means mounted on said handle means for contacting said element and carrying said element in said first direction,

(c) grip means pivotally mounted to said housing means at a

pivotal connection for gripping said object upon rotation about said connection,

(d) means for applying a first force to said grip means at a first location for rotation said grip means and for moving said housing in said first direction,

(e) means extending between said handle means and a second location on said grip means for applying a first torque and



a second force in a second direction opposite to said first direction to said grip means, said first torque being less than a second torque applied to said grip means by said first force, whereby said grip means rotates upon application of said first force before said housing moves in said first direction and said housing moves in a second direction opposite to said first direction upon cessation of said first force.

4,523,706

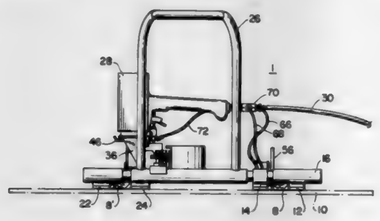
AUTOMATIC BATTEN SETTER

Norman S. Haley, P.O. Box 32, Chantilly, Va. 22021

Filed Apr. 7, 1983, Ser. No. 482,719

Int. Cl.³ B25C *5/13, 7/00;* B27F *7/09*

U.S. Cl. 227—7 **6 Claims**



1. An automatic nailer comprising:

a nailing gun having a trigger means for initiating a first supply of compressed air to said nailer for providing a nailing force; and

an air hose line for providing a second supply of compressed air and having an air outlet means at one end thereof being operatively associated with said trigger means, exiting of compressed air from said air outlet means impinging directly upon said trigger means to actuate said trigger means, thereby initiating said first supply of compressed air to said nailer for providing a nailing force.

4,523,707

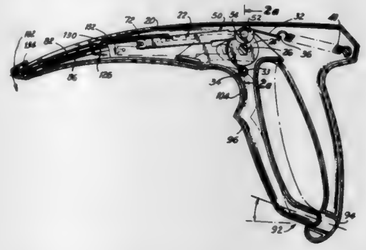
SURGICAL STAPLER

Joseph W. Blake, III, 88 Main St., New Canaan, Conn. 06840, and Jack W. Kaufman, 357 Frankel Blvd., Merrick, N.Y. 11566

Filed May 4, 1982, Ser. No. 374,692

Int. Cl.³ A61B *17/04*

U.S. Cl. 227—19 **32 Claims**



1. A surgical stapler having improved visibility at a wound or tissue site and having stored therein at least one staple for suturing tissue, comprising: frame structure means, adapted to be held by a hand, having a generally thin nose and downwardly curved section for directing the staple at the tissue site and including gripping means having first and second handle means; said frame structure means further having an anvil about when the staple is formed by a translatable driver manually actuated in a substantially translatable direction by said hand, through means embodying a substantially translatable trigger portion; a staple ejector for removing the staple from said anvil; one of said handle means being connected to said translatable driver and the other of said handle means being connected to said frame structure means; biasing means for returning said translatable driver from a staple forming position to a staple reloading position; and said actuating means comprises a toggle-like mechanism having a force transmission member linking together said driver and a connecting end portion engageable with a drum rotatable by strap means connected to said translatable trigger portion.

4,523,708

APPARATUS FOR SOLDERING THE WINDING TO THE COMMUTATOR OF AN ELECTRIC MACHINE

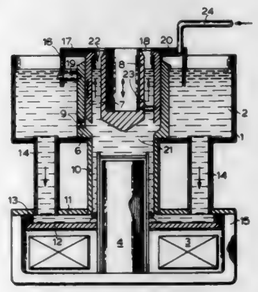
Pavel M. Minchev; Hristomir D. Hristov; Stoimen S. Balinov; Mihail H. Angelov, and Nikolay V. Yordanov, all of Sofia, Bulgaria, assignors to Institute Po Metaloznanie I Technologia Na Metalite, Sofia, Bulgaria

Filed May 19, 1983, Ser. No. 496,177

Claims priority, application Bulgaria, Jun. 2, 1982, 56866

Int. Cl.³ B23K *37/06*

U.S. Cl. 228—37 **5 Claims**



1. Apparatus for soldering the wires of the rotor winding of

an electric machine to its commutator, comprising a tank for holding a supply of molten solder, means for holding a rotor, a pump for delivering molten solder from the tank to the zone wherein the wires from the rotor winding are connected to the segments of the commutator, means for preventing the delivery of molten solder to the connection of the segments of the commutator unless a rotor is disposed within and supported by the means for holding a rotor in the apparatus, and means for the protection of the molten solder from oxidation, the means for the protection of the molten solder from oxidation comprising a hood which closes off the tank from the atmosphere when there is no rotor positioned in the rotor holding means, said hood then forming a closed space at the top of the tank, means for supplying said closed space with an oxidation-preventing gas, and means for opening said closed space and leading gas therefrom to the zone wherein the wires from the rotor winding are connected to the segments of the commutator when a rotor is positioned in and supported by the means for holding a rotor.

4,523,709

APPARATUS FOR ALIGNING AND SUPPORTING SIMILAR BODIES

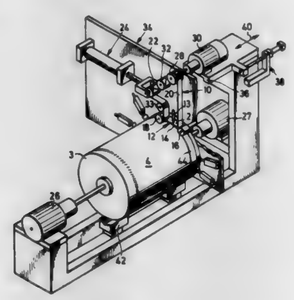
Claudio Rossi, Wetzikon, Switzerland, assignor to Rossi AG Wetzikon, Werkzeug- Und Spezialmaschinenbau, Switzerland

Filed Jun. 6, 1983, Ser. No. 501,564

Claims priority, application Switzerland, Jun. 4, 1982, 3482/82

Int. Cl.³ B23K *37/02, 37/04*

U.S. Cl. 228—48 **9 Claims**



1. An apparatus for mutually aligning and rotatably supporting at least two similarly shaped bodies for welding contiguous circumferentially extending edges of the bodies, comprising:

an axially stiff, endless belt for partially encircling and bridging the contiguous edges, said belt having a body engaging section for extending around and engaging the bodies over an arc of less than 360° and having a loop section, said body engaging section having ends defining said arc and a gap on opposite sides of said ends, said loop section extending radially away from said body engaging section at said ends, said body engaging section being parallel to a rotational axis of the bodies;

guide members engaging outer surfaces of said belt at said ends;

a tension member engaging an inner surface of said belt in said loop section; and

welding means, located in said gap and radially and axially within said belt, for welding the contiguous edges of the bodies in said gap.

4,523,710

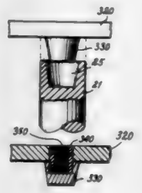
METHOD FOR FABRICATING A FASTENER PLATE

Theodore A. Renshaw, North Babylon, and Joseph A. Curatolo, Jr., Jackson Heights, both of N.Y., assignors to Fairchild Industries, Inc., Chantilly, Va.

Filed Apr. 12, 1983, Ser. No. 484,195

Int. Cl.³ B23K *20/10*

U.S. Cl. 228—111 **2 Claims**



1. A method of fabricating a fastener plate having at least one fastening element ultrasonically welded to a base plate, said method comprising the steps of ultrasonically welding to a base plate a cylindrical or truncated conical reinforcement element; forming a aperture through said base plate and a portion of said reinforcing element; and inserting a fastening element into said aperature.

4,523,711

METHOD FOR BONDING SILVER-BASED CONTACT

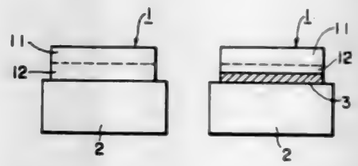
Kazuo Kondo; Seiji Imamura; Shigemasa Saito; Mamoru Akimoto, and Mitsuo Sunaga, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Sep. 14, 1981, Ser. No. 301,864

Claims priority, application Japan, Sep. 18, 1980, 55-129696; Aug. 11, 1981, 56-125485

Int. Cl.³ B23K *1/04*

U.S. Cl. 228—198 **1 Claim**



1. A method of bonding silver-based contacts comprising the steps of: disposing a silver-based contact in contact with a support at least a surface of which is made of a cupreous material with a pressure of less than 1 kgf/cm² therebetween; heating in the absence of a braze said contact and said support in a non-oxidizing atmosphere at a temperature of more than 700° C. whereby silver atoms in the contact and copper atoms in the support diffuse to form an intermediate bonding phase, and further comprising forming vent hole in said support at a position on which contact is mounted.

4,523,712

SOLDERING COMPOSITION AND METHOD OF SOLDERING THEREWITH

Frank M. Zado, Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., New York, N.Y.

Division of Ser. No. 588,634, Mar. 12, 1984, Pat. No. 4,495,007.

This application Sep. 14, 1984, Ser. No. 650,601

Int. Cl.³ B23K *35/362*

U.S. Cl. 228—207 **20 Claims**

1. A soldering composition comprising a rosin mixture which comprises:

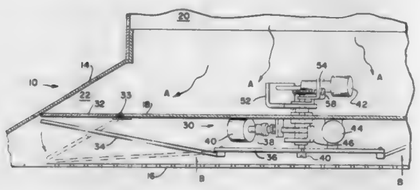
(a) rosin;

(b) an activator having at least one halogen atom and at least one destabilizing substituent selected from the group consisting of (a') the carboxyl group, (b') the aryl group, (c') the carbonyl group and (d') the halogen atom;
(c) a surfactant selected from the group consisting of (a'') a polycarboxylic acid, (b'') a hydroxyl substituent of (a''),



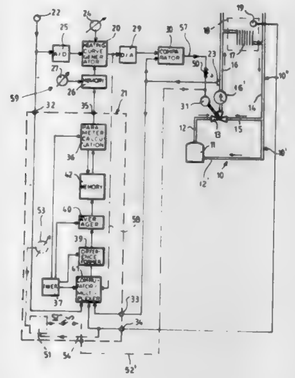
(c'') a keto acid and (d'') a mixture of any of the foregoing surfactants; and
(d) 2 to 25 weight percent of linoleic acid dimer and a metal solder alloy and wherein said activator is present in an amount of from 1 to 15 weight percent and said surfactant is present in an amount of 0 to 25 weight percent of the components (a), (b) and (c).

4,523,713
THERMALLY ACTUATED DIFFUSER
James R. Kline, Moraga, and Peter Brand, San Francisco, both of Calif., assignors to Acutherm, Ltd., Emeryville, Calif.
Filed Jan. 20, 1983, Ser. No. 459,468
Int. Cl.³ F24F *13/16*
U.S. Cl. 236—1 C **14 Claims**



12. A diffuser of a kind used to regulate the volume of flow of air from a duct to a room or other space, comprising:
flow control means for varying the size of an opening in the diffuser to regulate the volume flow of air from the duct through the diffuser and into the room or other space;
first sensor actuator means responsive to a first room air temperature and operatively associated with the flow control means for modulating the flow control means in a normally closed to open mode of operation in response to changes in room air temperature when air of one temperature is supplied through the duct;
second sensor actuator means responsive to duct air temperature and operatively associated with the flow control means for moving the flow control means to an open position in response to air of another temperature in the duct; said another temperature higher than said one temperature;
said second sensor actuator means being further formed for disassociating said first sensor actuator means from said flow control means in response to air of another temperature in the duct; and
third sensor actuator means responsive to a second room air temperature and operatively associated with the flow control means for modulating the flow control means from a normally open to closed mode of operation in response to changes in room air temperature when air of another temperature is supplied through the duct.

4,523,714
HEATING APPARATUS
Rolf Isermann, Seeheim-Jugenheim, Fed. Rep. of Germany, assignor to Centra-Bürkle GmbH & Co., Schönaich, Fed. Rep. of Germany
Filed Mar. 21, 1983, Ser. No. 477,148
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1982, 3210428
Int. Cl.³ F24D *3/00*
U.S. Cl. 236—46 R **14 Claims**

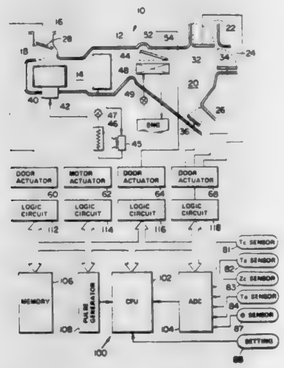


1. In a method of operating a heating system in which a heating fluid for the heating of at least one room is brought to an advance heating temperature and has a heating capability which can be represented by a value T_V before being used to heat said room and a temperature T_R representing the heating effect in terms of room temperature and resulting from use of the heating fluid is controlled in dependence upon an external temperature T_A in accordance with a heating curve, the improvement which comprises optimizing said heating curve by approximating the heating curve with a heating curve equation including at least one parameter, automatically determining a number of values for said parameter in time-spaced succession with each value being established by a statistical regression method from values at least in part determined by instantaneous values of T_A, T_V and T_R, substituting the parameter thus determined in said equation to thereby increase the precision of the heating curve with which the temperature of the room is controlled, and storing values determined by said instantaneous values, averaging the stored values, and determining the values for said parameter from the averaged stored values, the values which are stored and averaged being values $y=T_V-T_R$ and $u=T_R-T_A$ representing temperature differences, at least for initial optimization of said heating curve, the room temperature being controlled from a predetermined starting heating curve and thereafter, the room temperature being controlled by a previously optimized heating curve.

4,523,715
METHOD AND APPARATUS FOR AIR CONDITIONER CONTROL
Eiji Ohsawa, Ebina, and Shunsuke Kajita, Hiratsuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Apr. 25, 1984, Ser. No. 603,828
Claims priority, application Japan, Sep. 14, 1983, 58-168397
Int. Cl.³ F24F *7/00*
U.S. Cl. 236—49 **8 Claims**

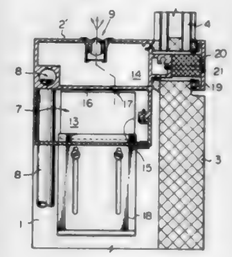
1. An apparatus for controlling an air conditioner used in a process of treating air in a compartment to regulate its temperature, said air conditioner having an air passage terminating in a plurality of outlets opening into said compartment, comprising:

outlet control means for closing each of said outlets to block air flow therethrough, said outlet control means being operable to open a selected number of outlets to permit air flow therethrough;
air-flow control means for controlling the rate of air flow through said air passage toward said compartment;
means for setting a desired value for compartment temperature and generating an electrical signal indicative of said desired compartment temperature value;
a source for generating an electrical signal indicative of an actual value for compartment temperature;
a control circuit for determining a value corresponding to a setting of said air-flow control means, said control circuit including means for selecting one of said outlets to open the same in response to a single-flow mode requirement and for selecting two of said outlets to open the same in response to a dual-flow mode requirement, said control circuit further including means for subtracting said desired value from said actual value to obtain a difference between said actual and desired compartment temperature values, said control circuit including means for comparing said difference with a first, second, third and fourth predetermined value, said second predetermined value being a negative value greater than said first predetermined value,



said third predetermined value being a positive value less than said fourth predetermined value, and said control circuit further including means responsive to a dual-flow mode requirement for determining said value for a setting of said air-flow control means as:
a first preset value when said difference is less than said first predetermined value;
a first variable value less than said first preset value when said difference is between said first and second predetermined values, said first variable value decreasing with said difference increasing;
a second preset value less than said first variable value when said difference is between said second and third predetermined values;
a second variable value greater than said second preset value when said difference is between said third and fourth predetermined values, said second variable value increasing with said difference increasing;
a third preset value greater than said second variable value when said difference is greater than said fourth predetermined value; and
a circuit coupled between said control circuit and said air-flow control means for converting said determined value into a setting of said air-flow control means for controlling the rate of air flow through said air passage.

4,523,716
COOLING AND HEATING AIR JET DEVICE IN BUILDING INTERIOR OR EXTERIOR STRUCTURE
Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Aug. 1, 1983, Ser. No. 519,372
Claims priority, application Japan, Aug. 2, 1982, 57-134895
Int. Cl.³ F24F *3/00*; F24D *5/10*
U.S. Cl. 237—56 **6 Claims**

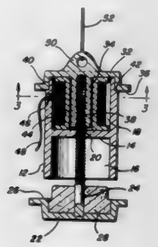


1. A cooling and heating air jet device in a building interior or exterior structure including a framework of hollow vertical and horizontal wall support members, said framework of hollow wall support members forming an air duct through which cooling or heating air is passed, a selected one of said wall support members being formed with a plurality of air jet openings spaced in the longitudinal direction of the same, the hollow interior of said selected wall support member is divided into two adjacent and parallel chambers by a partition wall having a plurality of communication holes spaced in the longitudinal direction of the same, one of said chambers forms a part of said air duct and a first pressure equalizing chamber and the other of said chambers forms a second pressure equalizing chamber, and said plurality of air jet openings are formed in the side wall of said second pressure equalizing chamber, each of said vertical and horizontal wall support members being provided in the hollow interior thereof with an air flow passage forming said air duct and a heat medium flow passage, said heat medium flow passage in said selected wall support member being integrally formed with said support member and provided in said second pressure equalizing chamber, said plurality of air jet openings positioned in the center portion of said side wall in the width direction thereof, said plurality of communication holes offset relative to said air jet openings on the exterior side of said partition wall, and said heat medium flow passage in said selected wall support member positioned near the interior side of said selected wall support member.

4,523,717
ANIMAL TRAIL MARKER AND SCENT CONTAINER
Richard J. Schwab, 120 Monroe St., Mauston, Wis. 53948
Filed Nov. 30, 1983, Ser. No. 556,591
Int. Cl.³ A01N *25/00*
U.S. Cl. 239—56 **10 Claims**

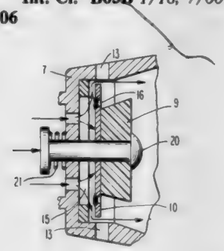
1. An animal trail marker and scent container, said container including an elongated hollow sleeve having first and second ends and a central partition dividing the interior of said sleeve into first and second opposite and outwardly opening recesses, said partition having a central threaded bore formed therethrough, first and second caps for removably closing the first and second ends of said sleeve, said first cap including a first central threaded shank projecting through said first recess, threaded through said bore and projecting into said second recess, said second cap including a second central outwardly projecting shank having a blind bore formed therein in which said threaded shank is removably threadingly engaged, a spool removably journalled on said second shank and of an axial length to be clamped between opposing surfaces of said partition and said second cap when disposed within said second

recess and said second cap is at least substantially tightly closed, said second end of said sleeve including a lateral opening formed therein opening into said second recess from the exterior of said sleeve, an elongated flexible member having



one end anchored relative to said spool and partially wound thereon, the other end of said flexible member extending outwardly through said lateral opening, and animal scent material disposed within said first recess.

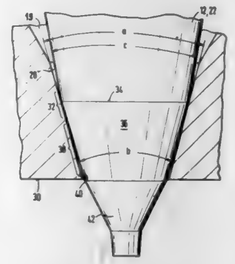
4,523,718
SHOWERHEAD
H. Alton Pearson, 125 Cedarbrook Rd., Ardmore, Pa. 19003
Filed Mar. 3, 1980, Ser. No. 126,407
Int. Cl.³ B05B *1/18, 7/00*
U.S. Cl. 239—106 **1 Claim**



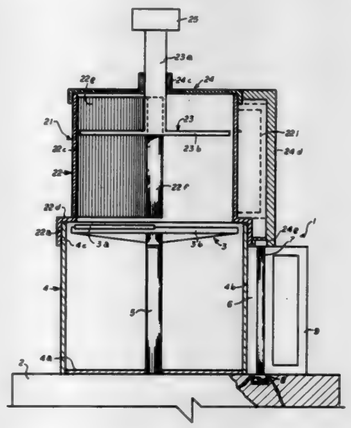
1. A showerhead for reducing water usage while providing effective shower effect comprising a body having an inlet end adapted to be connected to a source of water under pressure, a water outlet end spaced apart from said inlet end, and a bore defining a passage extending between said inlet and outlet ends, comprising:
- at least one diffusing stage within said bore comprising a disc having a plurality of orifices essentially parallel to the direction of water flow;
- a diffusing washer within said bore fixedly attached to the downstream face of said disc to deflect the water from a path essentially parallel to the axis of said bore to a path which intercepts the interior wall of said water outlet before exiting the showerhead, wherein said diffusing washer and disc are movably mounted within said bore allowing said disc and washer to move axially downstream creating an alternate path for water flow around said disc if the orifices of said disc are clogged.

4,523,719
FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES
Karl Hofmann, Remseck, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Aug. 12, 1983, Ser. No. 522,769
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3237882
Int. Cl.³ F02M *61/06*
U.S. Cl. 239—533.12 **4 Claims**

1. A fuel injection nozzle for internal combustion engines comprising a housing, a bored nozzle body in said housing which is part of said housing including a conical portion which joins with and is upstream of a conical injection port, said injection port including a valve seat, a reciprocable valve needle received in said bored nozzle body arranged to open in opposition to fuel flow and against a closing force, said valve needle having a conical segment thereof having a sealing edge cooperating with said valve seat and adjoining this edge having a conical throttling pintle extending into said injection port, said valve seat being formed on the nozzle body along said injection port, said segment of the valve needle having the sealing edge merging in a smooth angular manner with the throttling pintle, and the conical angle of the throttling pintle being greater by a maximum of 1.5 degrees than the conical angle of the injection port.

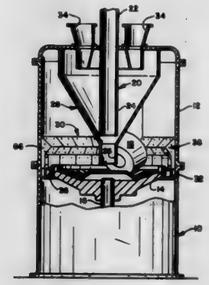


4,523,720
FOOD PROCESSOR ASSEMBLY
John Behringer, Wickford, R.I., and Pierre Martin, Paris, France, assignors to Robot-Coupe, S.A., Bagnolet, France
Continuation of Ser. No. 339,377, Jan. 15, 1982, abandoned. This application May 21, 1984, Ser. No. 613,003
Int. Cl.³ B02C *18/12*
U.S. Cl. 241—37.5 **17 Claims**



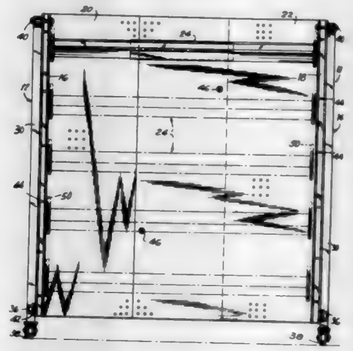
1. A food processor comprising:
- a base;
- a motor housed in said base;
- a drive shaft extending upwardly from said base and drivable by said motor;
- a bowl supportable on said base;
- a cutting tool housed in said bowl, mountable on said drive shaft, and including a cutting blade having radially outermost and innermost edges; and
- a tubular member mountable on said bowl such that an inner surface of said tubular member overlies a path swept out by the outermost edge of said cutting blade when said cutting tool is mounted on said drive shaft and said drive shaft is driven by said motor, said tubular member having a vertical boss situated substantially at the center of said tubular member such that an outer surface of said boss overlies a path swept out by the innermost edge of said cutting blade when said cutting tool is mounted on said drive shaft and said drive shaft is driven by said motor, and said tubular member further having a vertical wall extending from the inner surface of said tubular member to the outer surface of said boss.

4,523,721
BOWL MILL WITH PRIMARY CLASSIFIER ASSEMBLY
Theodore V. Maliszewski, North Canton, and David E. Kohler, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 8, 1982, Ser. No. 447,916
Int. Cl.³ B02C *23/32*
U.S. Cl. 241—61 **7 Claims**



1. In a bowl mill having a substantially closed separator body, a rotatable grinding surface mounted for rotation in a first direction within the separator body and upon which pulverization of material is effected, an annular passage formed between the separator body and the circumference of the rotatable grinding surface, the improvement of a primary classifier assembly comprising:
- a. vane means mounted on the periphery of the rotatable grinding surface for rotation therewith in the first direction, said vane means including a plurality of vane wheel segment assemblies mounted in spaced relation around the circumference of the rotatable grinding surface, said plurality of vane wheel segment assemblies each embodying vane portions mounted so as to project outwardly from the rotatable grinding surface at a predetermined angle relative to the direction of rotation of the rotatable grinding surface, said vane portions being operative as the rotatable grinding surface rotates through 360° to cause air flowing through the annular passage in surrounding relation to the rotatable grinding surface to change direction and to flow in a direction opposite to the direction of rotation of the rotatable grinding surface thereby causing larger particles of pulverized material
- b. converging/diverging orifice means mounted within the bowl mill above and in spaced relation to the rotatable grinding surface, said converging/diverging orifice means being operative to cause the air flowing through an interior of the bowl mill to be directed toward a center of the bowl mill thereby causing through this change of direction of the air larger particles of pulverized material entrained in this air to lose their momentum and separate from the air for return to the rotatable grinding surface for further pulverization, said converging/diverging orifice means comprising a plurality of intermediate liner support plates, a plurality of deflector liner support plates, a multiplicity of intermediate liners, a multiplicity of deflector liners and a plurality of deflector side liners, each of said plurality of intermediate liner support plates being mounted in spaced relation one to another around the circumference of the separator body, each of said plurality of deflector liner support plates being mounted around the circumference of the separate body in spaced relation one to another and in interposed relation between adjoining ones of said plurality of intermediate liner support plates, each of said plurality of deflector liner support plates having a first one said plurality of deflector side liners secured thereto at one end thereof and having a second one of said plurality of deflector side liners secured thereto at another end thereof, each of said intermediate liner support plates having at least one of said multiplicity of intermediate liners secured thereon in superimposed relation thereto, and each of said plurality of deflector liner support plates having at least one of said multiplicity of deflector liners mounted thereon in each of first row, a second row and a third row so as to bear a superimposed relation thereto.

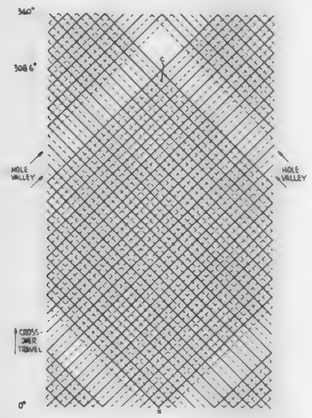
4,523,722
ADJUSTABLE DISPLAY APPARATUS
Melvin Cohen, Franklin Lake, and Fred V. Duyne, Ringwood, both of N.J., assignors to Melrose Displays, Inc., Passaic, N.J.
Filed Apr. 29, 1983, Ser. No. 490,237
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—175 **13 Claims**



13. Adjustable display apparatus comprising:
- a pair of upstanding, laterally spaced supporting elements each of which comprises an elongated front leg,
- an elongated rear leg,
- an upper section joining said front and rear legs,
- a lower section joining said front and rear legs;
- a pair of upstanding support panels disposed in overlapping relation at their inner end positions and wherein said support panels have a plurality of apertures therethrough;
- means for removably mounting said support panels at their outer end portions on said supporting elements which means comprises elongated, upstanding support bars removably connected to said supporting elements, said support bars being releasably connected to said support panels;
- laterally adjustable means for removably connecting the lower end portions of said supporting elements which means comprises telescoping sections; and
- laterally adjustable display means comprising telescoping shelves having mounting fingers at opposite ends thereof removably mounted on said support panels and extending laterally between said supporting elements and wherein a plurality of said display means are mounted in laterally

extending, vertically spaced relation on the supporting panels.

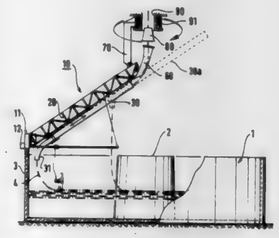
4,523,723
WINDING FLEXIBLE MATERIAL WITH LAYER SHIFTING
Frank W. Kotzur, Mahopac, N.Y., assignor to Windings, Inc., Goldens Bridge, N.Y.
Filed Sep. 14, 1983, Ser. No. 532,043
Int. Cl.³ B65H *55/04*
U.S. Cl. 242—43 R **5 Claims**



1. A method of winding a package of flexible material in a figure-8 pattern upon a mandrel by rotating the mandrel and winding the flexible material thereon from a traverse mechanism reciprocating in a direction along the axis of rotation of the mandrel and with the winding crossovers progressing around the winding to form a radial opening extending from the exterior of the winding to the interior thereof, comprising winding the flexible material with a normal gain representing a given ratio of the speed of the traverse mechanism with respect to the speed of the mandrel rotation for at least one layer of wind, adjusting the normal gain to a lower or higher gain at the last winding crossover in the first winding layer until the angular displacement of the winding crossover has been displaced a given amount, adjusting the gain to said normal gain and upon completion of at least a layer with said normal gain adjusting the gain by an amount substantially equal to the aforesaid first gain adjustment but in a direction opposite thereto until the angular displacement of the winding crossover has been displaced a given amount, adjusting the gain back to said normal gain, and upon completion of at least a layer with said normal gain repeating the aforementioned gain adjustments until the wind is complete.

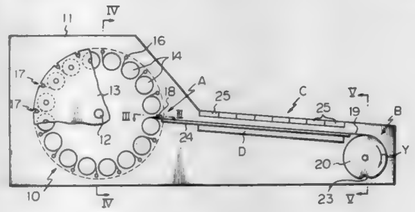
4,523,724
SEMI-AUTOMATIC FIXED POSITION MACHINE FOR COILING DOWN A CABLE
Yves Rérolle, Lyons, France, assignor to Societe Anonyme dite-les Cables de Lyon, Cedex, France
Filed Mar. 14, 1984, Ser. No. 589,370
Claims priority, application France, Mar. 15, 1983, 83 04230
Int. Cl.³ B65H *54/00;* **B21C** *47/02, 47/00*
U.S. Cl. 242—54 R **7 Claims**

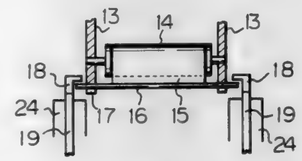
1. A semi-automatic fixed position machine for coiling-down a cable inside a tank, the tank comprising a circular outer wall delimiting internally, a coiling-down zone, and wherein the cable to be coiled down being delivered to the machine from a point vertically above the center of the tank, the improvement wherein a hollow hub is fixedly mounted above the tank at its center through which said cable passes vertically downwardly, and the machine comprises an upper support bracket mounted for rotation on said hub about the vertical axis of the tank, a sloping coiling-down arm, means connecting said arm at its upper end, to said bracket, and running means fixed to said arm, at is lower end, for supporting said arm lower end on the top of said outer wall of the tank with said running means running along said outer wall, a carriage fitted to said arm for longitudinal displacement along the arm, and said machine



including an inlet chute mounted to said bracket for receiving cable to be coiled down and for guiding the cable into said longitudinally displaceable carriage, the lower end of said carriage serving to dispense the cable into the tank, for coiling-down, with the cable passing, in operation from the inlet chute into a variable point along said carriage depending upon its longitudinal position along said arm, and then from the lower end of said carriage into said tank.

4,523,725
APPARATUS FOR DRIVING TAPES
Toshinobu Futagawa, Tokyo, Japan, assignor to Advanced Technology Business Creation, Inc., Tokyo, Japan
Filed Jan. 23, 1984, Ser. No. 572,946
Claims priority, application Japan, Jan. 28, 1983, 58-12350
Int. Cl.³ B65H *19/08;* **G11B** *15/58*
U.S. Cl. 242—58 **2 Claims**

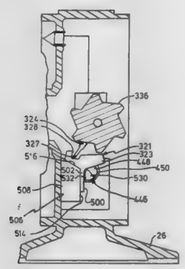




1. Tape driving apparatus comprising:
(a) a plurality of rollers,
(b) each roller having a separate length of tape wound thereon with one end of the tape being free,
(c) laterally protruding means carried by the free end of each tape,
(d) a rotatable drum having the plurality of rollers mounted thereon in circular disposition about the drum's axis of rotation, each roller being independently rotatable relative to the drum,

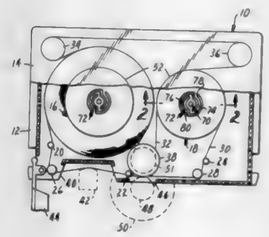
(e) selector means for causing the drum to turn whereby any of its rollers can be individually brought to a pick-up station,
(f) an inputting unit having means for reading information on the tapes, the inputting unit having a reading zone,
(g) means for engaging the means which protrude laterally from the free end of the tape on the roller at the pick-up station and drawing that tape through the reading zone to a second station, the laterally protruding means and the means with which it is engaged travelling paths on either side of the reading zone,
(h) a take-up reel disposed at the second station, the take-up reel having means for engaging the laterally protruding means on the tape drawn to the second station,
(i) means associated with the take-up reel for causing that reel to turn in the direction causing the tape to be wound on that reel,
(j) means associated with each reel in the drum for rewinding the tape on the roller, and
(k) means associated with the take-up reel for allowing that reel to rotate in the direction enabling the tape to be rewound on its roller.

4,523,726
ANTI-REVERSE MECHANISM
Steven L. Swisher, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.
Filed Oct. 5, 1983, Ser. No. 539,315
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.2 R **12 Claims**



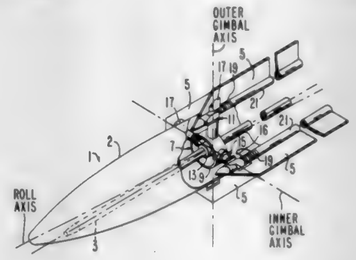
1. In a fishing reel having a housing with a deck plate, a rotatable crankshaft, a ratchet fixed on the crankshaft, a pivotable pawl movable between an engaged position with the ratchet to prevent reverse rotation of the crankshaft and a disengaged position wherein rotation of the crankshaft is uninhibited by the pawl, and a pawl actuating means frictionally carried on the crankshaft to pivot the pawl between the disengaged position upon forward rotation of the crankshaft and the engaged position upon reverse rotation of the crankshaft, the improvement comprising:
a slot defined in the deck plate for reception of the pawl; add
a rotatable anti-reverse control member extending through an opening in the housing and having a leg extending across the slot to block escape of the pawl from the slot, said leg directly engageable with the pawl,
the anti-reverse control member being rotatable between one position that holds the pawl disengaged from the ratchet and a second position that permits the pawl to be moved selectively from an engaged to a disengaged position from the ratchet.

4,523,727
NON-OSCILLATING SPOOL FOR BELT DRIVEN CARTRIDGE
Eddie T. Morioka, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 29, 1984, Ser. No. 626,136
Int. Cl.³ G03B *1/04;* **G11B** *15/32*
U.S. Cl. 242—192 **7 Claims**



1. A tape spool adapted for mounting on and rotation relative to a cylindrical pin extending perpendicular from a first wall toward a second parallel wall defining an enclosure and adapted to engage both of said walls and resist movement toward either, comprising:
a first flange adjacent said first wall;
a second flange adjacent said second wall;
a hub interconnecting said flanges and providing a cylindrical winding surface;
a bore through said first flange and into said hub which closely but freely surrounds said pin;
a tubular collar interposed between said first wall and said first flange to support said first flange out of contact with said first wall, which collar has an inner diameter allowing free passage of said pin and a thin wall to reduce the area of contact between said collar and said first wall;
a wear-button protrusion extending beyond said second flange coaxial with said hub bore to contact said second wall; and
means interposed between said spool and said wear-button protrusion for biasing said protrusion toward said second wall and said spool toward said first wall so that axial movement of said spool is resisted.

4,523,728
PASSIVE AUTO-ERECTING ALIGNMENT WINGS FOR LONG ROD PENETRATOR
Alson C. Frazer, Santa Ana, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.
Filed Mar. 7, 1983, Ser. No. 472,891
Int. Cl.³ F42B *11/06, 13/32*
U.S. Cl. 244—3.29 **10 Claims**



1. In a guided moving warhead having an elongated penetrator rod therewithin, means for aligning the rod with the veloc-

ity vector of the moving warhead, said aligning means comprising:

two pairs of wings pivotally mounted about an outer surface of the warhead, each of the first pair of wings being free to pivot about a first axis, and each of the second pair of wings being free to pivot about a second axis orthogonal to the first axis;

two-axis gimbal means for mounting the penetrator rod within the interior of the warhead, said first and second axes constituting two orthogonal axes of the gimbal means; and

means for coupling the two pairs of wings to the two orthogonal gimbal axes, respectively;

wherein aerodynamic forces created by movement of the warhead align the wings with the relative wind, thereby causing the penetrator rod to align with the warhead's velocity vector.

4,523,729

RETRIEVING AND/OR LAUNCHING SYSTEM

Heinz E. Frick, Storrington, United Kingdom, assignor to British Aerospace Public Limited Company, London, England

Filed Jun. 2, 1982, Ser. No. 384,385

Claims priority, application United Kingdom, Jun. 4, 1981, 8117085

Int. Cl.³ B64F *1/04, 1/12*

U.S. Cl. 244—115 **14 Claims**



1. The method of launching an aircraft in a system for launching and/or retrieving an aircraft, said system including:

(i) gantry means having a base portion for attachment to a surface station and a distal portion,

(ii) a longitudinally extensible member pivotally mounted on said distal portion,

(iii) first actuation means operable to effect extension and contraction of said extensible member,

(iv) second actuation means operable to effect pivotal movement of said extensible member with respect to said distal portion,

(v) first complementary engagement means provided on the end region of said extensible member remote from the distal portion,

(vi) an aircraft capable of hovering in a substantially stationary horizontal position with respect to said gantry means,

(vii) second complementary engagement means provided on the aircraft in the region of its center of gravity adjacent the normal axis of the aircraft and being adapted for releasable engagement with said first complementary engagement means,

(viii) control means for sensing the position of the second complementary engagement means when the aircraft is hovering in a predetermined acquisition region, and for operating said first and second actuation means to guide said first complementary engagement means into engagement with said second complementary engagement means, and

(ix) location means against which the aircraft is drawn for substantially rigid location subsequent to carrying engagement by the complementary engagement means:

the steps comprising:

effecting a flight controllable condition of the aircraft while carried in the gantry means and drawn against the location means;

actuating said first actuation means to cause the aircraft to be lowered to clear the location means while still maintaining the complementary engagement means engaged;

effecting a hovering thrust supported condition of the carried aircraft;

disengaging the complementary engagement means; and

subsequently causing the aircraft to fly clear of the gantry means.

4. A system for launching and/or retrieving an aircraft said system including:

(i) gantry means having a base portion for attachment to a surface station and a distal portion,

(ii) a longitudinally extensible member pivotally mounted on said distal portion,

(iii) first actuation means operable to effect extension and contraction of said extensible member,

(iv) second actuation means operable to effect pivotal movement of said extensible member with respect to said distal portion,

(v) first complementary engagement means provided on the end region of said extensible member remote from the distal portion,

(vi) an aircraft capable of hovering in a substantially stationary horizontal position with respect to said gantry means,

(vii) second complementary engagement means provided on the aircraft in the region of its center of gravity adjacent the normal axis of the aircraft and being adapted for releasable engagement with said first complementary engagement means,

(viii) control means for sensing the position of the second complementary engagement means when the aircraft is hovering in a predetermined acquisition region, and for operating said first and second actuation means to guide said first complementary engagement means into engagement with said second complementary engagement means,

whereby for retrieval of the aircraft, said first complementary engagement means may be brought into releasable aircraft-carrying complementary engagement with said second engagement means, irrespective of the location of the aircraft within said acquisition region, to support a major portion of the weight of the aircraft, and the system being arranged such that a carried aircraft when released by disengagement of the engagement means can adopt an in-flight, self-supported position.

4,523,730

ENERGY-ABSORBING SEAT ARRANGEMENT

John S. Martin, Denham, Near Uxbridge, England, assignor to Engineering Patents and Equipment Limited, St. Peter, Channel Islands

Filed Oct. 25, 1982, Ser. No. 437,361

Claims priority, application United Kingdom, Nov. 2, 1981, 8133001

Int. Cl.³ B64D *25/04*

U.S. Cl. 244—122 R **3 Claims**

1. An energy-absorbing seat arrangement, comprising:

a first structure including two parallel, generally vertical pillars, said pillars being elongated and having axes;

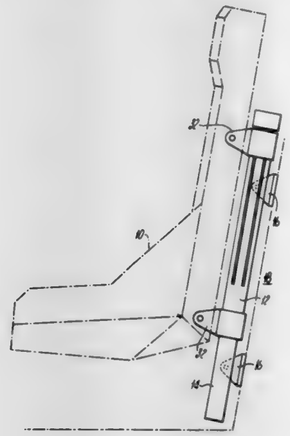
a second structure including a frame mounted for sliding movement on said pillars, said frame having, for each pillar, a respective collar embracing the pillar slidably and a respective portion embracing the pillar slidably at a position spaced apart from the respective collar;

means for affixing a seat pan to one of said structures;

means for affixing the other of said structures to a vehicle; and

connecting means for connecting said first and second structures, said connecting means including at least one plastically deformable metal member arranged to undergo controlled, predetermined plastic deformation, in the event that the force acting between said first and second structures in at least one predetermined direction exceeds a predetermined value, in such a way as to allow controlled, energy-absorbing movement to take place between said structures under action of said force,

wherein said connecting means includes, for each pillar, a respective cap mounted at the end of the pillar so that the axis of the pillar runs through the respective cap, the cap being positioned nearer the respective collar of the frame than the respective portion thereof, and a plurality of respective energy absorbing devices supportively connecting the respective cap and collar, each energy absorbing device being elongated and including a plastically



deformable metal member and a deforming member arranged to prevent sliding movement of said frame longitudinally relative to said pillars in at least one predetermined direction except by drawing of the plastically deformable metal member relative to the deforming member and consequent energy-absorbing deformation of the deformable member by the deforming member, one of said members being secured to said respective cap and the other of said members being secured to said respective collar, said plurality of respective energy absorbing devices being arranged symmetrically about the axis of the pillar and being parallel therewith, so that in the event that the force acting between the pillars and the frame in said predetermined direction parallel with the pillars exceeds a predetermined value, said frame will move slidingly along said pillars so as to draw the collars away from the respective caps and draw the deformable members relative to the deforming members.

4,523,731

EXTERNAL STORE RELEASE FOR FLIGHT VEHICLE

Alan Buitekant, Kent, and David M. Dolliver, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1983, Ser. No. 536,893

Int. Cl.³ B64D *1/12*

U.S. Cl. 244—137 R **19 Claims**

1. Apparatus for releasably securing an external store to a flight vehicle, comprising:

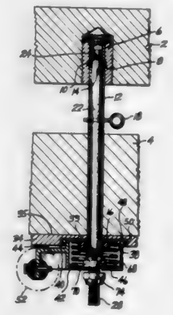
support means for supporting the external store in position relative to the flight vehicle, said support means having an inner end portion releasably attached to the flight vehicle;

a sliding member that is slidable relative to the support means to release the support means from the flight vehicle;

engaging means carried by an outer portion of the support means;

a retainer having a lock position in which a portion of the retainer interlocks with said engaging means to rotatably secure the retainer to the engaging means, and a free position in which the retainer is free to move axially away from the engaging means;

spring means for biasing the retainer axially away from the engaging means;



positioning means for preventing sliding movement of the sliding member relative to the support means when the retainer is secured to the engaging means;

shoulder means carried by the sliding member in the axial path of the retainer; and

actuating means for rotating the retainer from its lock position to its free position to allow the spring means to move the retainer axially away from the engaging means;

wherein when the spring means moves the retainer, the retainer contacts the shoulder means and moves the sliding member to release the support means and allow the support means and the external store to separate from the flight vehicle.

4,523,732

ADJUSTABLE STAND FOR OPTICAL OBSERVATION INSTRUMENTS

Klaus Biber; Karl Grünvogel, both of Aalen; Ulrich Lemcke, Heidenheim; Heinz Jakubowski, and Kurt Schulz, both of Oberkochen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Sep. 16, 1981, Ser. No. 302,710

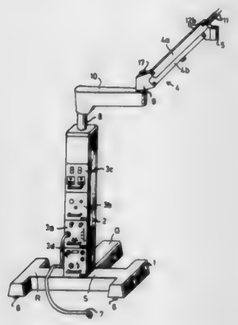
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1980, 3035165

Int. Cl.³ A47F *5/00*

U.S. Cl. 248—123.1 **10 Claims**

1. An adjustable stand having a stand base, a stand column and a support arm for supporting an operation microscope or the like observation instrument, said arm comprising a four-bar linkage establishing a parallelogram wherein (a) a first vertical bar is mounted to said column, (b) a second vertical bar is adapted to support the instrument, and (c) two vertically spaced parallel elongate bars have upper and lower pivoted connections to said vertical bars, spring-anchor means on said first vertical bar and including means for continuously adjustably positioning the same within a limited range of elevations between the elevations of elongate-bar connection thereto, and prestressed spring means connecting said spring-anchor means to said second vertical bar at one to the exclusion of the other of the points of elongate-bar connection to said second vertical bar, whereby said spring means may be essentially fully contained within the geometrical volume generally defined by and

between said elongate bars; whereby for a limited range of elongate-bar angular elevation, said spring means may apply a counterbalancing elevational moment to said linkage, such counterbalancing moment varying as a function of elevation angle; and further whereby, within a limited range of weight of an observation instrument mounted to said second vertical bar, an observation instrument of given weight may be counterbalanced by selectively varied adjustment in the elevational posi-



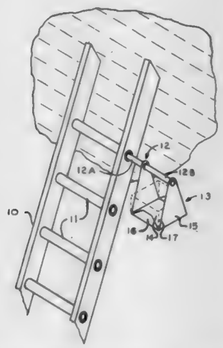
tion of said spring-anchor means, said spring-anchor means being adjustably displaceable on said first vertical bar along a straight line which forms an angle of 18° to 24° with the line connecting the upper and lower pivoted connections of said elongate bars to said first vertical bar, whereby adjustment of said spring-anchor means effects a change in moment-arm offset with accompanying relatively small change in spring force.

4,523,733

LADDER ATTACHMENT FOR USE BY PAINTERS

Charles K. Lunden, Jr., Box 34, Union, Me. 04862

Filed Sep. 3, 1982, Ser. No. 414,930
Int. Cl.³ E06C *7/14*
U.S. Cl. 248—210 **4 Claims**



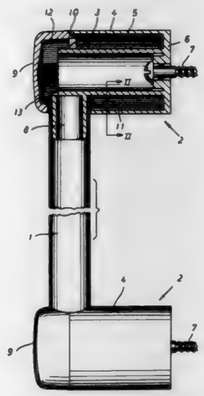
1. An attachment for connecting a container for a liquid to one side of a ladder having tubular metal rungs, said attachment including a rigid member of a length and cross sectional dimensions providing an anchor portion to be freely inserted in a selected end of a selected one of the ladder rungs and a support portion then to extend laterally of the ladder, and a container holder suspended from the support portion said holder including a base and wall structure including opposite portions and rigidly connected thereto to said support portion with the center of gravity of the holder in vertical alignment with a plane inclusive of the mid points of said opposite portions and the center of said base also incusive of the axis of said support portion whereby when a container with liquid therein is connected to the ladder by the insertion of the anchor portion in the selected rung, said anchor portion is held in frictional engagement with the rung and said plane is vertical.

4,523,734

HOLDING DEVICE FOR A SHOWER POST

Klaus Grohe, Schiltach, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co. KG, Fed. Rep. of Germany

Filed Aug. 5, 1983, Ser. No. 520,713
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 3233495
Int. Cl.³ A47H *1/14*
U.S. Cl. 248—251 **10 Claims**



1. A holding device for a shower post, comprising:
at least one support member, having means for receiving a fixing element adapted for connection to a wall, and means for receiving the shower post, the support member spacing the shower post at a distance from the wall;
a sleeve surrounding the support member and spaced from the support member, the sleeve being made from a transparent material and the sleeve having roughened inner surface, whereby the holding device appears to assume the color of the wall.

4,523,735

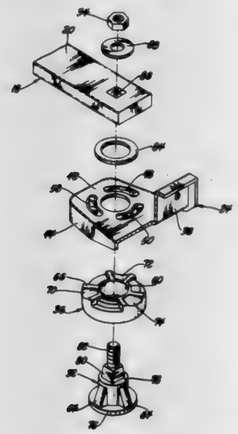
MIRROR SWING LOCK MECHANISM

Marlin E. Beck, Allentown, and Robert W. McFarland, Pennsburg, both of Pa., assignors to Delbar Products, Inc., Perkasie, Pa.

Filed Jan. 30, 1984, Ser. No. 574,981
Int. Cl.³ A47G *1/24*
U.S. Cl. 248—476 **16 Claims**

1. A mirror swing lock mechanism of the type comprising a bracket member (**24**) including a first portion (**38**) adapted to be secured to an exterior surface of a vehicle and a second portion (**42**) projecting laterally from said first portion, a mirror head supporting arm (**18**), a mirror head (**14**) adjustably supported upon said arm, pivot means (**32**) for securing one end of said arm to the second portion of said bracket member to allow said arm to swing relative to said bracket member and a detent mechanism for releasably retaining said arm in a position extending laterally outwardly from said bracket member for normal rearward viewing, the improved detent mechanism comprising:
(a) the second portion of said bracket member including
(i) an opening (**46**) formed therethrough;
(ii) first detent means (**48, 50, 52**) disposed about said opening;
(b) a spring member (**36**) including

(i) a central opening (**60**) formed therethrough;
(ii) a surface (**66**) having second detent means (**70, 72, 74**) formed therein;
(c) said pivot means including
(i) a head portion (**76**) adapted to support said spring member such that the first and second detent means are in a juxtaposed relationship;
(ii) a stud portion (**78, 80**) projecting from said head portion and extending through the openings in said spring member and the bracket member;



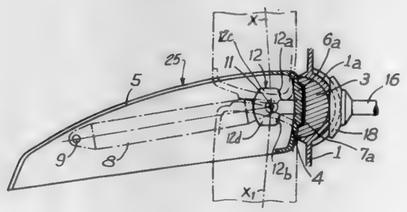
(iii) means (**80, 86**) for engaging said stud portion to said mirror head supporting arm for rotation therewith; and
(iv) means (**62, 64**) interlocking said stud portion and spring member for rotation together;
the first and second detent means being oriented such that when they are in a nesting relationship the mirror supporting arm is in its laterally outwardly extending position for normal rearward viewing, rotation of said arm from said laterally outwardly extending position imparting rotation to the stud portion to move the second detent means out of nesting engagement with the first detent means.

4,523,736

DEVICE FOR MOUNTING A REARVIEW MIRROR CASING ON A SUPPORT MEMBER

Stéphane Manzoni, Saint-Claude, France, assignor to Societe Manzoni-Bouchot, Saint-Claude, France

Filed Mar. 2, 1982, Ser. No. 354,106
Int. Cl.³ B60R *1/02*
U.S. Cl. 248—483 **20 Claims**



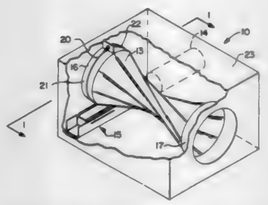
1. A rearview mirror assembly for a vehicle, said rearview assembly comprising:
a casing having a longitudinal axis and an interior cavity;
a convex face on said casing extending generally transversely relative to said longitudinal axis;
support means adapted for rigid interconnection with said vehicle;
a concave face on said support means selectively engageable with said convex face of said casing;
first mechanical engaging means on said convex face;
second mechanical engaging means on said concave face and selctively engageable with said first mechanical engaging means in a first predetermined angular position of said casing relative to said support means to inhibit relative rotation therebetween, said longitudinal axis generally extending away from said vehicle in said first predetermined angular position;
an opening in said convex face;
a fastening member fixedly interconnected with said support means and extending therefrom through said opening in said convex face into said interior cavity of said casing; and
first biasing means disposed within said interior of said casing and mechanically interposed said casing and said fastening member, said first biasing means having a first end interconnected with said fastening member and a second end extending generally along said longitudinal axis therefrom and interconnected with a portion of said casing remote from said fastening member such that said first biasing means exerts a force generally along said longitudinal axis of said casing and further such that said first biasing means biases said first and second mechanical engaging means into engagement in said first predetermined angular position such as to inhibit rotation therefrom but permit rotation therefrom in response to the application of a torque on said casing in excess of a predetermined torque level.

4,523,737

SLEEVE VALVE ACTUATOR MEANS

Milo R. Wentworth, Deerfield, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 21, 1983, Ser. No. 476,953
Int. Cl.³ F16K *7/06*
U.S. Cl. 251—4 **7 Claims**



1. Actuator means adapted to control a sleeve type of valve having a first generally round end that rotates relative to a second end to cause said valve to be operated between an open position and a closed position, including: fluid pressure operated motor means having output means including a piston driven shaft providing a linear motion; flexible cable means having a first end fixed to said first end of said valve and having a portion of said cable means lying along an outer surface of said first end of said valve; said cable means having a second end attached to said motor output means; said motor means including mounting means to mount said motor means adjacent said valve with said motor output means positioned to provide said linear motion at a generally right angle to a center line of said valve to cause said first end of said valve to rotate with respect to said second end by said cable means winding or unwinding along said outer surface of said valve; said motor output means further including two relatively moveable members; a first of said relatively moveable members having center roller means ridgedly attached thereto; a second of said relatively moveable members being moveable with respect to said first moveable member and including two idler roller means

with one each of said two idler roller means being attached to said second of said relatively moveable members on opposite sides of said center roller means; said center roller means moving differentially with respect to said idler roller means when said moveable members are moved with respect to each other; said cable means further including two cable portions; a first of said cable portions being connected to said first relatively moveable member and said first valve end after partially encircling said center roller means and a first of said two idler roller means; and a second of said cable portions being connected to said first relatively moveable member and said first valve end after partially encircling said center roller means and a second of said two idler roller means; said cable portions being arranged to cause said first valve end to rotate as said relatively moveable members are moved relative to each other by said motor means with said cable portions being differentially wound or unwound around said outer surface of said first valve end.

4,523,738

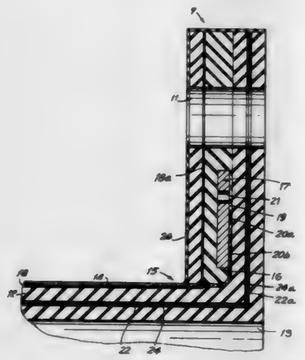
DEFORMABLE SLEEVE FOR A PINCH VALVE

Spiros G. Raftis, Pittsburgh, Pa., and George Merritt, Uniontown, Ohio, assignors to Red Valve Co. Inc., Carnegie, Pa.

Continuation-in-part of Ser. No. 354,939, Mar. 5, 1982, abandoned. This application Jun. 27, 1984, Ser. No. 624,973

Int. Cl.³ F16L *55/14*

U.S. Cl. 251—4 **13 Claims**



1. A high-pressure-resistant pinch valve sleeve for use in a pinch valve through which flowable media at relatively high pressures are conveyed, comprising:

(a) an elongated tubular body having opposite end portions, said tubular body having an elastically yieldable side wall which is radially inwardly deformable from an initial shape in response to the application of radially inwardly-directed external forces to its exterior during pinch valve operation, said side wall also being resiliently restorable to its initial shape upon removal of said external forces and in response to the conveyance of high-pressure media through the interior of the tubular body during pinch valve operation;

(b) a pair of end flanges each having a plurality of openings therethrough, each flange being integral with one of said end portions of said tubular body and extending radially outwardly therefrom;

(c) a mesh element having an elongated tubular sheath portion having opposite end portions, said tubular sheath portion being movable with and confining said tubular body between said end portions of the latter for preventing the tubular body from bulging outwardly under the influence of said high-pressure media while offering acceptable resistance to said external forces, said mesh element having a pair of anchoring portions at said opposite end portions of said tubular sheath portion, each anchoring portion having a major surface which extends at least in part radially outwardly from said tubular sheath portion; and

(d) means for anchoring said anchoring portions to said end flanges, said anchoring means including an annular disc anchoring element at each of said end flanges and rigidly attached thereto and embedded therein, each anchoring element having a major surface which extends at least in part radially outwardly from said tubular sheath portion and which respectively lies in juxtaposition with said major surface of each anchoring portion, each anchoring element being fully situated radially inwardly of said openings of the respective flange, and means including a welded connection for connecting said major surface of each anchoring portion to said respectively juxtaposed major surface of each anchoring element.

4,523,739

MAGNETIC VALVE FOR REFRIGERATION PLANT

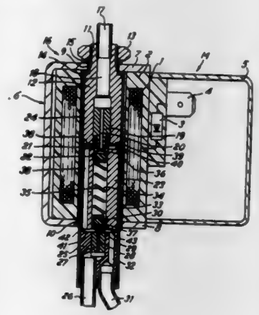
Claus J. Johansen; Jens K. Jark, both of Sonderborg, and Thorvardur S. Stefansson, Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Apr. 11, 1984, Ser. No. 598,716

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314722

Int. Cl.³ F16K *31/02*; F17D *00/00*

U.S. Cl. 251—139 **9 Claims**



1. A magnetic valve for a refrigerator plant, comprising, a magnetic coil unit having a central bore, a plug member of magnetic material projecting into said bore, a yoke, resilient means connecting said plug member to said yoke to provide for cushioned relative movement therebetween, a housing block member mounted in fixed relation to said coil unit and in spaced relation to said plug member to provide an armature space, said plug member and said housing block member having end faces bounding said armature space, a plunger type armature disposed in said bore in said armature space where its stroke is limited at both ends thereof, said armature having a first end face magnetically pulled against said plug when said coil unit is energized, return means opposing said energizing force of said coil unit, said armature having a second end face at the other end thereof which is pushed into engagement with said housing block member by said return means when said coil unit is de-energized, valve seat and valve seat closure means associated with at least one end of said armature and at least one of said members, a layer of refrigerant-proof plastics such as polytetrafluoroethylene forming one of said end faces of the engaging end faces between said plug member and said armature.

4,523,740

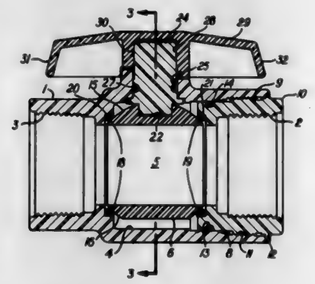
ROTATABLE UNITARY BALL VALVE

Harold Paitchell, Elizabeth, N.J., assignor to Hayward Industries, Elizabeth, N.J.

Continuation of Ser. No. 307,411, Oct. 1, 1981, abandoned. This application Apr. 12, 1983, Ser. No. 484,385

Int. Cl.³ F16K *27/06*

U.S. Cl. 251—315 **11 Claims**



1. A rotatable unitary ball valve comprising, in combination:

(1) a unitary valve housing of plastic material defining a ball valve chamber, intercommunicating first and second fluid ports and first and second fluid passages, and a threaded end connector socket in one passage;

(2) an externally threaded end connector threadably engaged in the threaded end connector socket and permanently fixed therein by fused integration of the threads thereof with the valve housing and adapted for attachment to a fluid line; and the other fluid passage being adapted for attachment to a fluid line;

(3) a ball valve having a through fluid passage intercommunicating the first and second fluid passages of the valve housing only in the open position of the valve, and disposed in the valve chamber for rotation between open and closed positions; closing off intercommunication between the first and second fluid passages via the ball valve chamber and the ball valve through fluid passages in the closed position, and making such intercommunication in the open position;

(4) at least one sealing means sealingly disposed between the ball valve and the valve chamber wall, maintining a fluid-tight seal therewith at least in the closed position of the valve; and

(5) means extending to the outside of the valve housing for rotating the valve between open and closed positions.

4,523,741

LINEAR MOTION VALVE

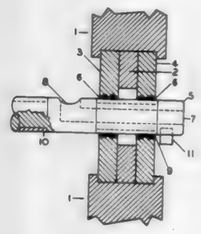
Joseph A. Chandler, Dickinson, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 31, 1984, Ser. No. 636,465

Int. Cl.³ F16K *3/24*

U.S. Cl. 251—325 **5 Claims**

1. A linear motion valve comprising, in combination, a cylindrical valve spool slideably disposed in a valve sealing assembly, said valve spool being constructed of nonmagnetic material encircled with at least two separate and axially spaced apart rings of magnetically permeable material, said valve spool being capable of being positioned such that any of said rings is in sealing relationship with the valve sealing assembly, said valve sealing assembly comprising two magnetically permeable pole pieces, one end of each being in a magnetic relationship with opposite poles of a magnet and the other end of each being in a close noncontacting relationship to a magnetically permeable ring on the valve spool so as to provide a gap between said pole pieces and said magnetically permeable ring,



and said gap containing a ferrofluid to provide an effective seal.

4,523,742

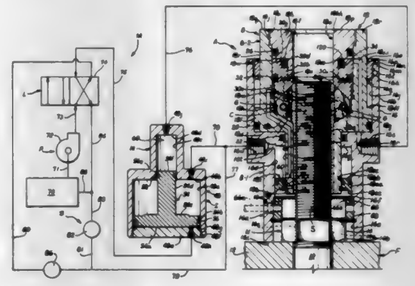
APPARATUS FOR TENSIONING A STUD AND METHOD OF DOING SAME

Bobby J. Reneau, Houston, Tex., assignor to Gripper, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 342,235, Jan. 25, 1982, Pat. No. 4,438,901. This application Jul. 19, 1983, Ser. No. 515,285

Int. Cl.³ E21B *19/00*

U.S. Cl. 254—29 A **17 Claims**



1. An apparatus for tensioning a stud extending from a surface, comprising:

a body adapted to be removably mounted about the stud extending from the surface, said body including a first body member and a second body member;

said first body member having a surface engaging end and a chamber end, said surface engaging end for engaging the surface and said chamber end for receiving said second body member;

said second body member having a stud bore therethrough adapted to receive the stud therein:

gripper means surrounding said stud bore of said second body member for gripping the stud;

low pressure force means acting within said body on said gripper means for retaining said second body member in a contracted position where said second body member is contracted into said first body member when said apparatus is mounted on a stud and for moving said gripper means to a retracted position from said stud bore thereby facilitating mounting of said tensioner on said stud;

high pressure force means acting within said body on said gripper means for overpowering the effects of said low pressure force means and moving said gripper means and said second body member, said high pressure force means moving said gripper means from said retracted position to an engaging position in engagement with the stud, and as a result of the pressure buildup when said gripper means is in the engaging position said high pressure force means

moving said second body member from a contracted position, wherein said gripper means is in said engaging position to an expanded position wherein said gripper means tensions the stud; and,

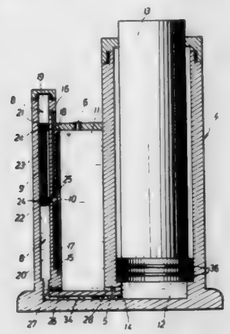
regulation means operably connected to said high and low pressure force means for automatically regulating radial movement of said gripper means into engagement with the stud prior to said second body member moving from said contracted position to said expanded position.

4,523,743

AUTOMATIC PNEUMATIC HYDRAULIC JACK

Tweng-Huang Wang, Fl. 3-1 no. 80 Hsi-Ning N. Rd., Taipei, Taiwan

Filed Jan. 19, 1983, Ser. No. 459,336
Int. Cl.³ B66F *3/24*
U.S. Cl. 254—93 H **4 Claims**



1. An automatic hydraulic jack comprising:

a large cylinder having a closed end an open end and an inner diameter;

a large piston operably slidably mounted in said large cylinder adapted to protrude at one end through said open end of said cylinder;

a first hydraulic fluid chamber at the closed end of said large cylinder;

hydraulic fluid in said first chamber;

a hydraulic fluid storage tank containing hydraulic fluid;

a first hydraulic fluid flow channel connecting said first chamber with said storage tank;

a manually operated valve in said first flow channel to close said channel during operation of the jack and open said channel after use thereof;

a small cylinder closed at both ends having an inner diameter substantially smaller than the inner diameter of said large cylinder;

a small piston slidably mounted in said small cylinder to reciprocate therein between top and bottom dead center positions comprised of a first end, a second end and a connection rod between said first and second ends holding said first and second ends in spaced relationship with respect to each other and having an outer diameter smaller than the inner diameter of said small cylinder to form an annular chamber between said ends;

an air chamber between said first end of said small piston and the respective end of said small cylinder;

a second hydraulic fluid chamber containing hydraulic fluid between said second end of said small piston and the respective end of said small cylinder;

a second hydraulic fluid flow channel connecting said second chamber to said storage tank;

a one-way valve in said second flow channel adapted to allow fluid from said storage tank to flow into said second chamber;

a third hydraulic fluid flow channel connecting said second chamber to said first chamber;

a one-way valve in said third flow channel adapted to allow hydraulic fluid to flow from said second chamber into said first chamber;

an airflow control valve means operatively mounted adjacent said small cylinder having an air inlet, a first air outlet connected to said air chamber, a second air outlet connected to said storage tank, an exhaust outlet connected to the atmosphere, a control member, a control conduit and an exhaust conduit in said control member, and shifting means on said control member extending into said annular chamber in said small cylinder operatively associated with said small piston to be engageable by said first and second ends thereof as said small piston reciprocates to alternately shift said control member between a power position wherein said air inlet is connected through said control conduit to said first air outlet and a return position wherein said air inlet is connected through said control conduit to said storage tank and said air chamber is connected through said exhaust conduit to said exhaust outlet; and

means to supply air under pressure to said air inlet;

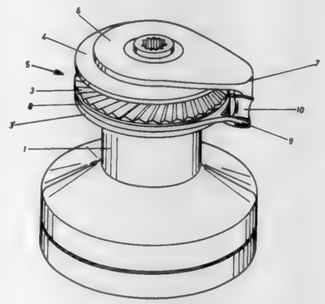
so that when said small piston is at top dead center said control member is in the power position and directs pressurized air into said air chamber to drive said small piston in a power stroke to displace hydraulic fluid from said second fluid chamber into said first fluid chamber to operate said large piston, and when said small piston is at bottom dead center said control member is shifted into the return position to direct pressurized air into said storage tank to drive said small piston in a return stroke toward top dead center where said control member is again shifted into a raising position to again operate said large piston.

4,523,744

WINCH FOR SHEET WINDING ON SEACRAFTS

Luciano Bonassi, Via Filippo Reina 33, 21047 Saronno, Italy

Filed Sep. 29, 1982, Ser. No. 427,269
Claims priority, application Italy, Oct. 15, 1981, 23224/81[U]
Int. Cl.³ B66D *1/74*
U.S. Cl. 254—371 **4 Claims**



1. A winch for sheet winding on seacrafts, comprising,

a fixed mount;

a drum for sheet winding;

means including a rotatable shaft for operationally rotating said drum;

a pair of blocking rings operationally connected to said drum, said pair of blocking rings forming therebetween a groove having an axis extending in a predetermined plane and arranged to grasp and grab the sheet into rotation when the sheet is under stress;

a roller for passing thereover the sheet coming from said drum and directed to said groove or vice versa, said roller having an axis which extends in a plane substantially corresponding to said plane of said axis of said groove and is slanted to said plane of said axis of said groove at a small angle, so that when the sheet passes from said groove to said roller the sheet reaches the roller in direction almost perpendicular to said plane of said axis of said roller;

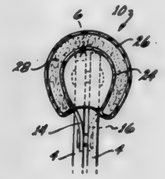
and means for supporting said roller including an upper and a lower annular plate each respectively containing a jutting portion having a hole, said upper annular plate being disposed in an upper part of said groove and said lower annular plate being disposed below said groove, said supporting means further including a plug-pin having a pin axis and a nose retained in said hole of said jutting portion of said upper annular plate, said upper jutting portion having a plane surface disposed perpendicular to said pin axis of said plug-pin, said roller being turnable around said plug-pin.

4,523,745

PROTECTOR FOR LAZY-TONG FENCE

David L. Killman, Atascadero, and Loraine C. Killman, both of 10685 Colorado Rd., Atascadero, Calif. 93422

Filed Jan. 27, 1983, Ser. No. 461,558
Int. Cl.³ E04H *17/00*
U.S. Cl. 256—1 **12 Claims**



1. An article for protecting a child from accidental injurious contact with an upwardly pointing vertex formed by two legs of a lazy-tong fence, comprising in combination:

(a) pocket-shaped means resilient enough to yield when bumped and to return to its original shape after being bumped and shaped to fit loosely over and to cover the vertex of the lazy-tong fence; and,

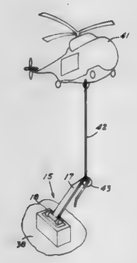
(b) attaching means connected to said pocket-shaped means and extending between the legs of said lazy-tong fence below the vertex for securing said pocket-shaped means onto the vertex.

4,523,746

LOAD PICKUP COUPLING DEVICE AND METHOD

Claude L. Chapman, 3300 W. Union Ave., Englewood, Colo. 80110

Division of Ser. No. 154,878, May 30, 1980, Pat. No. 4,348,009. This application Aug. 4, 1982, Ser. No. 405,168
Int. Cl.³ B64D *1/22*
U.S. Cl. 258—1.2 **16 Claims**



16. A method of performing repeated hookups with and disengagements from a hoist line carried by an aircraft comprising the steps of:

flying a hoist line having an end member toward a hookup device including an arm having an outline as viewed from the top that defines a target area with an opening for the entry and exit of the hoist line;

moving the hoist line through said opening, along a guide surface of said arm, and into a retainer portion of said arm, said retainer portion being narrower than said end member so that said end member cannot pass through said retainer portion;

moving said end member up against the bottom of said retainer portion and raising said arm from a ready position to a raised suspended position to effect a connection between said hoist line and arm in which an end portion of the hoist line adjacent the end member extends around said retainer portion and the end member, due to its size, is prevented from pulling through said retainer portion and to suspend the hookup device from the aircraft;

flying the hookup device to a second location and positioning the device so that it is supported from below with said arm returning to said ready position; and

dropping the end member out of the retainer portion and passing said hoist line through the exit opening to disengage the hoist line from the arm means.

4,523,747

DISCHARGING MOLTEN METAL FROM A SMELTING FURNACE

Heinrich Schnitzer, Rheinberg, and Bodo Wronka, Duisburg, both of Fed. Rep. of Germany, assignors to Mannesmann Ag, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 12, 1983, Ser. No. 531,055
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321576
Int. Cl.³ C21B *15/00*
U.S. Cl. 266—44 **10 Claims**



1. Method of discharging a metallurgical smelting furnace under avoidance of slag inclusion in the outflow of molten metal wherein the furnace is provided with an external bottom outlet comprising the steps of

providing a surface ratio in the furnace of water cooled surface area to fire proof refractory surface area in the range from 6:1 to 9:1;

tilting the furnace by an angle that increases from zero to not more than 15° to maintain an uncritical level of molten metal above the outlet; and

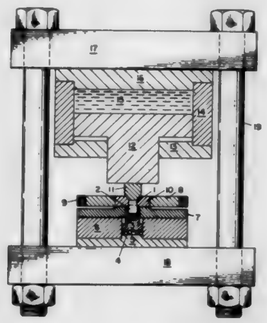
tilting the furnace back and towards an opposite tilt of not more than −6°, toward the end of the discharge so that residual molten metal and slag layer floating thereon will flow away from the outlet.

4,523,748

VERY HIGH PRESSURE APPARATUS FOR QUENCHING

Richard Latter, Burke, Va., assignor to R & D Associates, Marina del Rey, Calif.

Filed Sep. 2, 1983, Ser. No. 529,020
Int. Cl.³ C21D *9/00*
U.S. Cl. 266—249 **16 Claims**



1. A high pressure quenching apparatus for rapidly decompressing materials so that they remain in metastable states comprising:

means for applying high pressure above 10,000 bars to a sample including:

a press, first and second opposed rams, a preloaded cylindrical pressure vessel, a sample compartment formed by a piston operating in the bore of said pressure vessel;

means for rapidly breaking the continuity of the pathway by which pressure is transmitted from the two rams to the sample compartment, to release the pressure on said sample at a rate equal to or above ten million bars per second;

said means for breaking the continuity including a frangible member;

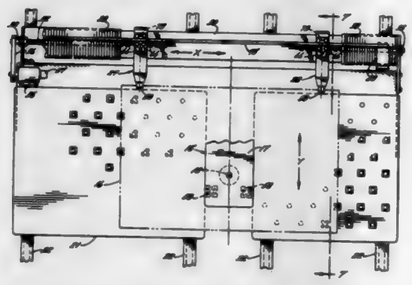
the first one of said rams being substantially smaller and lighter than the other, wherein hydraulic fluid is included in the pressure transmitting pathway to said first ram, and means is provided for mounting said frangible member in confining relationship with respect to said hydraulic fluid.

4,523,749

HOLE FORMING MACHINE WITH ADJUSTABLE WORK CLAMPS

Lee Kindgren, Rockford; William B. Scott, Rochelle, and Robert W. Voges, Rockford, all of Ill., assignors to W. A. Whitney Corp., Rockford, Ill.

Filed Mar. 2, 1983, Ser. No. 471,446
Int. Cl.³ B23Q *3/08*
U.S. Cl. 269—32 **8 Claims**



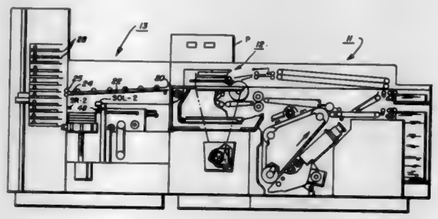
1. A machine having a tool for forming holes in a substantially flat and horizontal work sheet, said machine comprising a base, a carriage selectively movable back and forth relative to said base along an X-axis, first and second laterally spaced clamps normally movable with said carriage and adapted to selectively grip and release one edge portion of the work sheet, said clamps re-positioning said work sheet along said X-axis relative to said tool when said clamps grip said work sheet and move laterally with said carriage, the improvement in said machine comprising, first and second power-operated actuators movable with said first and second clamps, respectively, each actuator being selectively operable to lock the respective clamp to said carriage for lateral movement therewith or to release such clamp from the carriage to permit the carriage to move relative to such clamp, means fixed along the X-axis so that the carriage is movable relative to said fixed means, and selectively operable power-operated means cooperating with said fixed means for holding each clamp in a stationary position along the X-axis when such clamp is released from the carriage whereby the carriage may be moved relative to such clamp in a stationary position to permit such clamp to be re-positioned along the carriage.

4,523,750

COPIER/DUPLICATOR WITH FINISHING APPARATUS HAVING LOW STAPLE CONTROL FEATURES

Lawrence C. Hubler, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1984, Ser. No. 645,645
Int. Cl.³ B42B *1/02*; B27F *7/06*
U.S. Cl. 270—53 **4 Claims**



1. In a copier having a programmer for controlling a reproduction run of a preset number of stapled copy sets, and including a stapling apparatus having a clamping/stapling position whereat a plurality of sheets to be stapled are clamped preparatory to the application of a staple thereat, a magazine for holding one or more sticks of staples, and a staple follower within the magazine for contacting the end of a stick, the improvement comprising:

means for sensing a low staple condition in the magazine when there is approximately a predetermined number of staples remaining therein to be consumed,

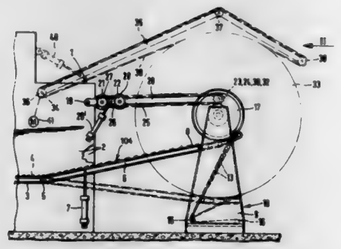
said sensing means being connected to the programmer and being cooperative therewith to permit continuation of the reproduction run and operation of said drive means until a specific segment of the reproduction run is completed, the programmer, upon completion of the segment, causing the copier to assume a standby condition and to hold the count of the number of copy sets produced after said specific segment of the run has been completed.

4,523,751

APPARATUS FOR CONVOLUTING SHEETS OF PAPER ON A CORE

Peter Merkli, Oftringen, Switzerland, assignor to GRAPHA-Holding AG, Hergiswil, Switzerland

Filed Aug. 8, 1984, Ser. No. 638,888
Claims priority, application Switzerland, Aug. 23, 1983, 4578/83
Int. Cl.³ B65H *39/08*; B65B *63/04*
U.S. Cl. 270—60 **10 Claims**



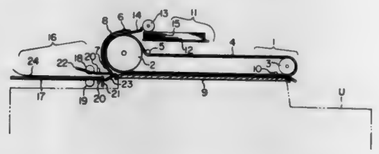
1. Apparatus for converting a succession of sheets into a roll of convoluted sheets, comprising axially spaced apart first and second rotary cores; an elongated band having first and second end portions connected to the respective cores and an intermediate portion; guide means for directing a part of said intermediate portion substantially tangentially of said first core; means for rotating said cores independently of one another so that each of said cores winds the band therearound while rotating in a direction to collect the band; and means for supplying the sheets onto said intermediate portion of the band while said first core rotates in a direction to collect the band so that the sheets are confined between the convolutions of the band on said first core.

4,523,752

ORIGINAL DOCUMENT INSERTING DEVICE FOR COPYING APPARATUS

Shuji Kigawa, and Eiji Otake, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 169,147, Jul. 15, 1980, abandoned. This application Jul. 15, 1983, Ser. No. 513,785
Claims priority, application Japan, Jul. 23, 1979, 54-92669
Int. Cl.³ B65H *3/44*
U.S. Cl. 271—9 **5 Claims**



1. An original document feeding device to be used for a copying apparatus, comprising:

(a) automatic feed means for successively feeding the uppermost one of original documents stacked face up on a base;

(b) alternate feed means for individually feeding an original document inserted therein;

(c) transport means for conveying each fed original document to a projection station for copying and for discharging a previous original document at said projection station;

(d) an automatic copy actuator for providing a series of signals for operating successive copying cycles of said copying apparatus;

(e) an alternate feed detector for providing an interrupt signal upon detection of an original document inserted in said alternate feed means;

(f) a copy position detector for detecting the position of an original document transported by said transport means to said projection station;

(g) first circuit means responsive to said signals of said actuator for successively actuating said automatic feed means, and responsive to an interrupt signal of said alternate feed detector to interrupt actuation of said automatic feed means and actuate said alternate feed means in priority over said automatic feed means; and

(h) second circuit means responsive to said signals of said actuator for successively actuating said transport means, and responsive to said copy position detector for stopping said transport means upon transport of each original document to said projection station for copying,

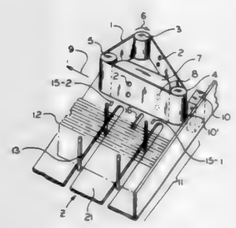
whereby successive cycles of copying from said stacked original documents are automatically effected and said successive cycles may be interrupted at any point for copying an individually inserted original document.

4,523,753

APPARATUS FOR FEEDING FLAT ARTICLES

Kunio Hiromori, and Kiyoshi Tsuda, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1982, Ser. No. 433,980
Claims priority, application Japan, Oct. 14, 1981, 56-152745[U]
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—31.1 **3 Claims**



1. An apparatus for feeding flat articles comprising:

hopper means for storing flat articles in an upright position;

feeding means at the edge of said hopper means for picking up and feeding the flat articles stored in said hopper means, one by one;

a plurality of detection means, each for detecting the pack density of the flat articles stored in said hopper means, said plurality of detection means being located at different positions which are longitudinally distributed away from the pick up position of said feeding means, said different positions also being distributed in a longitudinal direction of the flat articles stored in said hopper means; and

transfer means responsive to said plurality of detection means for transferring said flat articles stored in said hooper means to said feeding means.

4,523,754

PAPER GUIDING DEVICE IN A COPYING APPARATUS

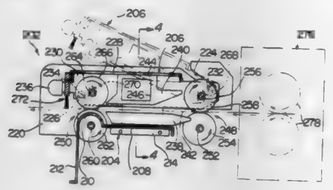
Masahiko Hisajima, Osaka; Hiroshi Kimura, Habikino; Yutaka Shigemura, Takarazuka; Isao Yada, Neyagawa; Yoichiro Irie, Suita; Kiyoshi Morimoto, Osaka, and Takashi Nagashima, Neyagawa, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Division of Ser. No. 349,544, Feb. 17, 1982,. This application Nov. 23, 1983, Ser. No. 554,644

Claims priority, application Japan, Mar. 2, 1981, 56-28445; Mar. 10, 1981, 56-32265[U]; Mar. 10, 1981, 56-32266[U]

Int. Cl.³ B65H *5/38*

U.S. Cl. 271—264 **3 Claims**



1. In an improved copying paper guiding device including, in opposition, a lower guide plate having a main flat portion and an upper guide plate having a main flat portion, the improvement comprising:

a plurality of rising pieces having top edges and being laterally spaced-apart upon the upper side of the main flat portion of the lower guide plate, said rising pieces rising above the lower guide plate and extending in the direction of movement of copying paper being guided through the improved guiding device; and

a plurality of hanging pieces having lower edges and being laterally spaced-apart on the lower side of the main flat portion of the upper guide plate, said hanging pieces hanging from the upper guide plate and extending in said direction of movement of copying paper;

said top edges of said rising pieces and said lower edges of said hanging pieces defining a path of movement of the copying paper through the improved guiding device, each of said top edges and said lower edges having minimal contact with the copying paper during movement along said path; and

said upper guide plate main flat portion having a plurality of openings extending therethrough for dissipating heat from the copying paper away from the paper and the improved paper guide device; and

each of said hanging pieces having an opening extending therethrough for dissipating heat from the copying paper away from the paper and the improved guiding device;

said top edges of said rising pieces, said lower edges of said hanging pieces and said heat dissipating openings through the main flat portion of the upper guide plate and through each of said hanging pieces substantially preventing accumulation of moisture on the copying paper and on the improved copying paper guiding device.

4,523,755

SURFACE FOR SPORTS AREAS, PARTICULARLY TENNIS COURTS, AND ITS MANUFACTURE

Egon Turba, Rothwiese 39, 8122 Penzberg, Fed. Rep. of Germany

Filed May 28, 1981, Ser. No. 268,105

Int. Cl.³ A63C *19/02;* **C04B** *31/20, 13/00;* **E01C** *13/00*

U.S. Cl. 272—3 **16 Claims**

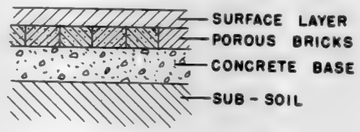
1. A process for the manufacture of a surface for a sports area, such as a tennis court, characterized by applying a layer of a non-hydrated mixture consisting essentially of tile cement, brick dust and other powdered, non-hydrated and non-hydratable mineral material on a prepared, essentially level horizontal foundation and then hydrating the tile cement in situ in said layer; in that the non-hydrated mixture is formed in situ on said foundation by the steps comprising:

(a) preparing an intimate dry powder mixture of the components brick dust, other powdered, non-hydrated and non-hydratable mineral material, and dry tile cement;

(b) spreading said dry powder mixture on said foundation;

(c) compacting said layer of powder mixture; and

(d) applying the necessary amount of water; and



in that the tile cement before hydration consists of approximately 24.8 to 89.8 percent hydraulic cement, approximately 10 to 75 percent aggregate selected from sand or ground limestone, or both, and approximately 0.2 to 6.5 percent methyl cellulose together with one or more components selected from the class consisting of up to 10 percent interpolymer of vinyl chloride and vinyl propionate, up to 6 percent condensation product of melamin formaldehyde, up to 0.1 percent polyacrylamide, up to 25 percent trass, and up to 5 percent fibrous material.

4,523,756

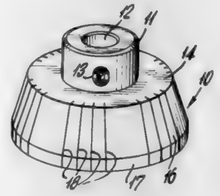
BALL KICKER

Thomas M. Camilleri, 277 Ave. W, Brooklyn, N.Y. 11223

Continuation-in-part of Ser. No. 958,717, Nov. 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 769,410, Feb. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 622,234, Oct. 14, 1975, abandoned. This application May 22, 1980, Ser. No. 152,338

Int. Cl.³ A63D *5/02*

U.S. Cl. 273—49 **9 Claims**



1. In a ball kicker for an automatic pinspotter bowling machine mounted on a movable shaft, the improvement wherein the outer surface which contacts the bowling ball is formed of an elastomeric material having a durometer hardness of from about 35 to about 45 and wherein the outer surface is provided with a plurality of radial grooves adapted to move the bowling ball both when dry and when coated with oil.

4,523,757

BOWLING BALL WEIGHT EXCHANGER

Robert C. Swett, and Richard E. Swett, both of 1074 Strong St., Schenectady, N.Y. 12307

Filed May 31, 1983, Ser. No. 499,372

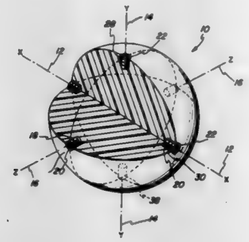
Int. Cl.³ A63B *37/10*

U.S. Cl. 273—63 E **5 Claims**

1. An improved bowling ball for use in determining the most beneficial internal ball weight distributions for a particular bowler's style comprising:

a bowling ball having mutually perpendicular x, y and z axes emanating outwardly from the center of the ball; and

at least six weight receptables, one at each of the intersections of said axes and the exterior surface of the bowling ball, each receptable containing an internally threaded



cylinder secured to the inner surface of the receptacle and adapted to receive an insert of predetermined weight for creating various weight imbalances within the ball.

4,523,758

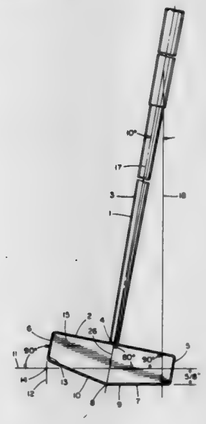
GOLF CLUB PUTTER

Fred W. Guendling, Jr., 19904 Center St., Box 443, Mokena, Ill. 60448

Filed May 2, 1983, Ser. No. 490,285

Int. Cl.³ A63B *53/00*

U.S. Cl. 273—77 R **3 Claims**



1. A golf club for use as a putter comprising a club head and a club shaft connected thereto, said club head including a heel portion at one side edge thereof, a toe portion at the opposite side edge thereof, a flat sole portion along a bottom edge thereof extending from said heel portion toward said toe portion and terminating at an intermediate point between said heel portion and said toe portion, a planar striking surface on said club head between said heel portion and said toe portion and above said sole portion, said flat sole portion of said club head having a planar surface which is substantially normal to said planar striking surface, a reference line above said flat sole portion and parallel to its said bottom edge a distance of five eights of an inch, said reference line being horizontal to the ground when said flat sole portion is lying flat on the ground, the longitudinal axis of said club shaft connected to said club head diverging from the vertical by at least ten degrees in relation to said horizontal reference line when said sole portion of said club head is lying flat on the ground, said club shaft being connected to said club head at substantially the midpoint of said club head between said heel portion and said toe portion, said club shaft extending in a substantially straight line from said club head to the outer free end of said club shaft, said planar striking surface of said club head lies in a first plane, said longitudinal axis of said club shaft lies in a second plane, said second plane being substantially parallel to said first plane, said club head including a back portion extending between said opposite side edges thereof, said back portion being spaced apart from said striking surface of said club head a distance which is less than the lateral distance across said club head between said heel portion and said toe portion, wherein the lower edge of said club head includes a laterally sloping edge extending laterally from said sole portion at said intermediate termination point upwardly and laterally therefrom to said toe portion of said club head, the upper edge of said club head extending at a fixed substantially right angle to said longitudinal axis of said club shaft on both sides thereof.

4,523,759

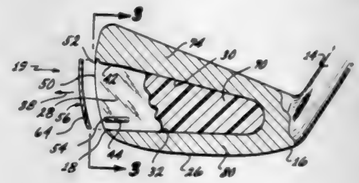
GOLF CLUB

Lawrence Y. Igarashi, 27171 Hidden Trail Rd., Laguna Hills, Calif. 92653

Filed May 11, 1983, Ser. No. 493,732

Int. Cl.³ A63B *53/08, 53/06*

U.S. Cl. 273—169 **5 Claims**



1. A metal iron type golf club designed for minimizing offsets from the center of moments and torque when the club strikes a ball comprising:

a golf club having a heel and toe wherein the heel has a hosel extending therefrom adapted to receive a shaft therein:

a cavity within said club surrounded by at least a portion of the metal weight of said club established within a perimeter region outside of said cavity and wherein said perimeter region and said cavity extend from said toe toward said heel in a diminishing manner as to its overall cross sectional size and said cavity is closed from communication with said hosel;

means for closing said cavity formed as a plate welded to said club and overlying said cavity formed with an opening therethrough passing into said cavity;

means in said cavity for displacing a portion of said cavity and formed of a mass of plastic foam larger in size than the opening in said plate and having properties which enable said foam to be implaced through the opening of said plate; and,

means in said opening in said plate for sealing said foam within said cavity.

4,523,760

PORTABLE GOLF DRIVING NET ASSEMBLY

Robert Bednarczuk, 2283 Bone Rd., R.R.#4, Lebanon, Ohio 45036

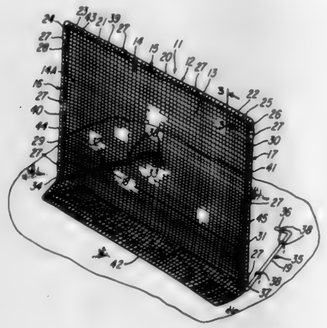
Filed Oct. 5, 1983, Ser. No. 539,090

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—181 F **7 Claims**

1. A recreational net assembly comprising a frame having a plurality of members, a net, and means for mounting said net on said frame, said net having an arrangement of first and second sets of generally parallel spaced-apart cords, said sets arranged generally perpendicular to each other and having ends which constitute edges of said net, the spaced-apart cords in at least one edge overlapping at least one of said frame members and

contacting at least some of the spaced-apart cords constituting an adjacent part of said net, said mounting means comprising a

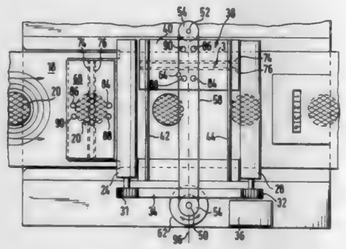


lacing member passed alternately between spaced-apart cords in said one edge and said adjacent part of said net.

4,523,761
METHOD AND APPARATUS FOR RATING HITS ON TARGETS

Georg Huscher, Ottobeurer Str. 31, D-Markt Rettenbach, Fed. Rep. of Germany

PCT No. PCT/DE82/00168, § 371 Date Apr. 28, 1983, § 102(e) Date Apr. 28, 1983, PCT Pub. No. WO83/00920, PCT Pub. Date Mar. 17, 1983
PCT Filed Aug. 24, 1982, Ser. No. 496,319
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1981, 3134561
Int. Cl.³ F41J *5/02*
U.S. Cl. 273—371 **15 Claims**



7. Apparatus for rating hits on targets comprising in combination:

(a) a target feeder accommodated in a housing having means for conveying a target in a predetermined direction and a travel pulse generator associated with said feeder;

(b) a first photoelectric detector system adjacent the path of travel of said target including means for detecting two mutually opposite hole edges of a target moving in a predetermined direction, means for detecting the bright-dark boundaries at the mutually opposite edges of a bull's eye of said target, means for receiving a transmitted light or reflected light from said detecting means and generating hole center and bull's eye center signals;

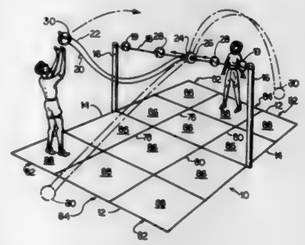
(c) a second photoelectric detector system spaced from said first photoelectric detector system having means for transporting said second system transversely to the direction of movement of said target, means for detecting two mutually opposite hole edges of said target, means for detecting the bright-dark boundaries at the mutually opposite edge of a bull's eye of said target, means for receiving a transmitted light or reflected light from said detecting means into hole center and bull's eye center signals; and

(d) means for converting bull's eye center signals, hole center signals into a rating for said target hits.

4,523,762
GAME APPARATUS

Ronald S. Garner, Sr., P.O. Box 545, Dayton, Ohio 45402

Filed Oct. 12, 1984, Ser. No. 660,343
Int. Cl.³ A63B *71/02*
U.S. Cl. 273—411 **12 Claims**



1. Game apparatus, comprising:

a generally rectangular playing field defined within a pair of spaced, parallel baselines and a pair of spaced, parallel sidelines,

a pair of support posts positioned outside said playing field, said posts each being positioned adjacent the midpoint of a respective one of said sidelines,

a support line extending between said pair of support posts and attached to said posts adjacent their upper ends, said support line bisecting said playing field and extending generally parallel to said baselines,

a tether line means,

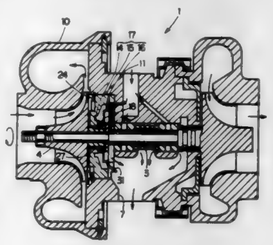
a tether line ring engaging said support line and attached to a first end of said tether line means, and

a playing ball attached to the second end of said tether line means, whereby said playing ball may be struck by one or more players on either side of said support line and caused to travel repeatedly over said support line.

4,523,763
TURBOCHARGER LUBRICATING OIL SEALING METHOD

Masumi Asano, Toyota; Mitsuyuki Ugajin, Okazaki, and Kiyoshi Isogai, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 3, 1984, Ser. No. 627,660
Claims priority, application Japan, Jul. 8, 1983, 58-106636[U]
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—1 **16 Claims**



1. A method of assemblying a lubricating oil sealing apparatus in a turbocharger, comprising:

placing an annular resilient sealing means around an outer peripheral portion of an annular main portion of a sealing collar, whereby an outer diameter of the annular resilient sealing means is greater than an outer diameter of the outer peripheral portion of the annular main portion of the sealing collar;

inserting the annular main portion of the sealing collar into a hole in a retainer, such that the outer diameter of the annular resilient sealing means resiliently engages an inner diameter of the hole in the retainer;

press fitting a deflector into a stepped portion of the retainer, said stepped portion of the retainer being located at an outer peripheral portion thereof and engaging an outer circumferential portion of the deflector, whereby a radially extended projection of the annular sealing collar is located between the retainer and the deflector, such an assembly comprising the oil sealing apparatus;

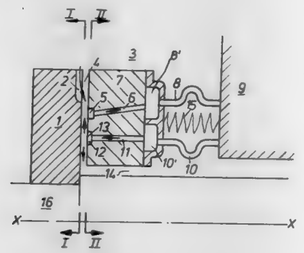
press fitting the oil sealing apparatus into a recess in a housing; and

securing the oil sealing apparatus to the housing with an annular stop ring.

4,523,764
FLUID-SEALED SHAFT SEAL WITH BORES FOR SUPPLYING AND DISCHARGING FLUID

Rolf Albers, Oberhausen; Emil Aschenbruck, Duisburg; Günter Neuhaus, and Joachim Kotzur, both of Oberhausen, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,345
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1982, 3223703
Int. Cl.³ F16J *15/38, 15/40, 15/48*
U.S. Cl. 277—3 **14 Claims**



1. A fluid sealed device for a shaft rotatable in a housing, comprising:

a first seal ring rotatating with the shaft having a radial surface;

a second seal ring having a radial surface defining a radial gap with said first seal ring radial surface;

a packing element connected between the housing and said second seal ring for biasing said second seal ring toward said first seal ring to close said gap;

said second seal ring having at least one sealing fluid supply bore having a supply opening communicating with said gap and a fluid discharge bore having a discharge opening communicating with said gap at a different radial position from said supply opening;

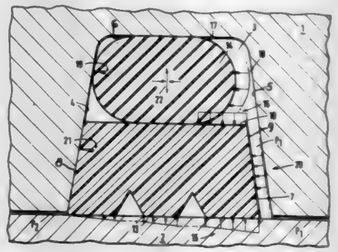
sealing fluid supply means connected to said at least one sealing fluid supply bore for supplying sealing fluid to said gap for acting against the biasing of said packing element; and

auxiliary fluid supply means communicating with said gap at a radial position other than that of said supply and discharge openings, for supplying auxiliary fluid to said gap to form a substantially annular zone of elevated pressure with respect to a pressure of said sealing fluid at said discharge opening for reducing escape of sealing fluid radially from said gap.

4,523,765
HIGH PRESSURE SEALING MEANS FOR LONGITUDINALLY MOVABLE PARTS OF DEEP-WELL DRILLING TOOLS

Gerhard Heidemann, Celle, Fed. Rep. of Germany, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Apr. 26, 1984, Ser. No. 604,242
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1983, 3320515
Int. Cl.³ F16J *9/05, 5/24*
U.S. Cl. 277—165 **7 Claims**

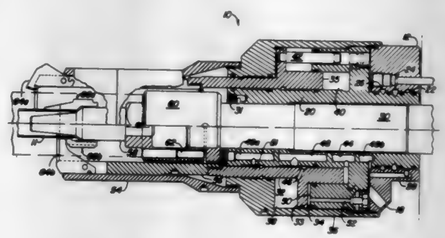


1. A high-pressure sealing means for two relatively longitudinally movable parts of deep-well drilling tools, comprising: a wearing sealing ring of resilient, wear and heat resistant organic polymeric material disposed in an annular groove of substantially trapezoidal cross-sectional shape with two inclined sides that converge towards the bottom of the annular groove in a first part of a drilling tool and bearing against a second part of the drilling tool and the sealing ring having inclined sides extending parallel to and adjacent the inclined sides of the annular groove and a sealing wall surface extending substantially over its axial length, which seals against the second part, is narrower than the width of the annular groove and displaceable between the two inclined sides of the annular groove for the selective formation of a static sealing surface at one of the inclined sides of the annular groove; and a pressure ring which prestresses the wearing sealing ring radially, being formed from a tightening and sealing ring of resilient elastomer material which has a large volume in relation to space remaining in the annular groove in which it is located and which can be and is compressed and deformed radially between an opposite wall surface of the sealing ring situated opposite the sealing wall surface and the bottom of the annular groove.

4,523,766
CHUCK ASSEMBLY

Larry A. Dettmer, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 13, 1983, Ser. No. 504,030
Int. Cl.³ B23B *31/18*
U.S. Cl. 279—4 **9 Claims**



1. A chuck mechanism for positioning a tube assembly com-

prised of a tube and tube fitting mounted on an end of the tube, the chuck mechanism comprising:

an axially-fixed pilot having a tube-locating surface for engagement with the tube assembly;

a hollow cylindrical axially-fixed closure sleeve coaxially surrounding at least a portion of the pilot;

a hollow cylindrical carrier tube slidably mounted for axial movement within the closure sleeve;

a plurality of circumferentially-spaced jaws pivotally attached to the carrier tube and operatively engageable with the closure sleeve; and

pressure-operated, axially-movable piston means coupled to the carrier tube and responsive to an unclamping pressure signal for axially moving the carrier tube and jaws to a releasing position wherein the jaws pivot to disengage from the tube fitting and responsive to a clamping pressure signal for axially moving the carrier tube and jaws to a clamping position wherein the jaws pivot to engage the tube fitting and wherein the jaws move the tube into butting engagement with the axially-fixed pilot.

4,523,767

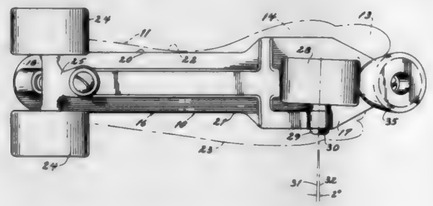
THREE WHEELED ROLLER SKATE

Steven W. Le Page, Rte. 5, Box 5125, Pasco, Wash.

Filed Nov. 12, 1982, Ser. No. 440,972

Int. Cl.³ A63C *17/04*

U.S. Cl. 280—11.19 **17 Claims**



1. A three wheeled roller skate, comprising;

an elongated rigid frame having a front and rear end and adapted to receive the foot of a skater with the toes of the foot situated above the front frame end and the heel above the rear frame end;

a rear pair of rollers mounted to the frame at the rear end thereof, for free rotation about an axis transverse to the frame;

a single front roller at the front frame end for free rotation thereon about an axis situating the front roller in an outward angled toe out orientation and at an inside cambered orientation in relation to the rear roller axis and the foot of a skater resting on the frame such that the weight of the skater borne by the front roller is shifted laterally inward toward the midline of the skater's body to accommodate natural weight distribution of the skater and to increase stability by concentrating the skater's weight within the space occupied by the skater's body.

4,523,768

COLLAPSIBLE CART-STAND

Joseph C. Dlubala, 38115 Alcoy Dr., Sterling Heights, Mich. 48077

Filed Nov. 14, 1983, Ser. No. 551,679

Int. Cl.³ B62B *3/02*

U.S. Cl. 280—42 **5 Claims**

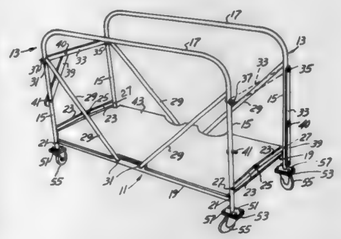
2. A collapsible cart-stand comprising a pair of parallel spaced upright side frames mounting casters at their lower ends;

longitudinally spaced pairs of aligned foldable frame support links at their inner ends pivotally connected and at their outer ends pivotally connected to lower end portions of said side frames and extending transversely thereof;

each side frame including a longitudinally extending bottom support rod interconnecting its lower ends;

a platform spanning said side frames and at its side overlying said support rods and removably secured thereto;

a pair of longitudinally spaced frame anchor links at their one ends pivotally connected to upper end portions of one side frame and at their other ends adjustably connected to upper end portions of the other side frame and extending transversely thereof;



said side frames upon removal of said platform and adjusting said other ends of said anchor links adapted for collapsing into parallel engaging registry, with said support links folded;

and a reinforcement link at one end pivotally connected to each anchor link respectively intermediate its ends, and at its other end removably secured to an intermediate connection on an adjacent side frame between its connections with said support and anchor links.

4,523,769

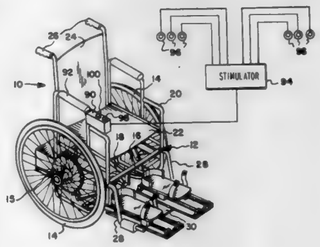
WHEELCHAIR AND DRIVE SYSTEM THEREFOR

Roger M. Glaser, Dayton; Jerrold S. Petrofsky, Beavercreek, and Howard R. DuFour, New Carlisle, all of Ohio, assignors to Wright State University, Dayton, Ohio

Filed Sep. 14, 1982, Ser. No. 417,933

Int. Cl.³ A61G *5/02*; B62M *1/04*

U.S. Cl. 280—252 **13 Claims**



1. A wheelchair comprising:

a chair portion including a pair of upright frame members, a generally planar and horizontal seat and a generally planar and vertical back connected between said frame members for supporting the body of a disabled person, and an arm rest carried on each of said frame members;

a chassis for supporting said chair portion;

a pair of side wheels for supporting said chassis;

at least one front wheel smaller than said side wheels for cooperating therewith in supporting said chassis;

a pair of individually movable footrests connected to said chassis for supporting the feet of said persons; and

drive means connected to said footrests for propelling said wheelchair in response to movement of at least one of said footrests.

4,523,770

ROLLER BICYCLE

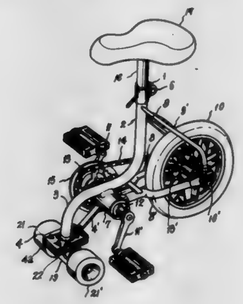
Bang W. Lee, 302-86, Echon-Dong, Yongsan-Ku, Seoul, Rep. of Korea

Filed Mar. 14, 1983, Ser. No. 475,115

Claims priority, application Rep. of Korea, May 31, 1982, 2472/1982

Int. Cl.³ B62K *5/04*

U.S. Cl. 280—266 **2 Claims**



1. A roller bicycle having a primary frame member, said primary frame member having a vertical upper portion, a vertical lower portion and a rearwardly and upwardly inclined central portion connected to said upper and lower portions by curvilinear transition sections all formed as a single unitary element; a pedal shaft tube rigidly mounted to and beneath said central portion and pedal means rotatably mounted on said tube, a bifurcated rear frame member extending generally horizontally from said pedal shaft tube; a single rear wheel within the rear bifurcated portion of said rear frame member and an axle rotatably securing said rear wheel to the rear ends of said rear frame member; means on the ends of said rear frame members for adjusting the position of said axle and wheel lengthwise of said frame member; means interconnecting said rear wheel and pedal means; a seat and means securing said seat for vertical adjustment to and above the top end of said upper primary frame portion; a base plate ridigly secured to the bottom end of said lower portion of said primary frame; a roller plate and a shock absorbing plate mounted between said base and roller plate and means interconnecting said base, shock absorbing and roller plates in laminar fashion; a pair of laterally spaced rollers at the front end of said bicycle, said rollers being of substantially smaller diameter than said rear wheel and a shaft and shaft housing means mounting said rollers for free rotation, resilient support elements connecting said shaft housing to said roller plate whereby limited lateral tilting of said primary frame with respect to the shaft housing and shaft can occur; said seat being substantially midway between said rear wheel and said front rollers and between said rear wheel and said pedal shaft tube.

4,523,771

DRAWBAR APPARATUS

Harold C. Bender, Rte. 1, Poseyville, Ind. 47633

Filed Dec. 27, 1982, Ser. No. 453,608

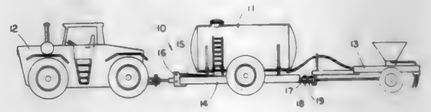
Int. Cl.³ B60D *1/14*

U.S. Cl. 280—474 **7 Claims**

1. In a first pulled vehicle normally coupled between a tow vehicle and a second pulled vehicle, a draw bar apparatus, comprising:

a housing attached to said first pulled vehicle; and

a draw bar having two ends and extending substantially between the front and rear ends of said first pulled vehicle, said one end of said draw bar attached for vertical pivotal movement to a pivot adjacent the front end of said housing, the other end of said draw bar including coupling means for coupling to said second pulled vehicle, said



draw bar pivoting relative to said first pulled vehicle in response to relative tilting in a vertical plane between said second pulled vehicle and said first pulled vehicle.

4,523,772

SANDWICH TYPE CONSTRUCTION MULTILAYER SKIS

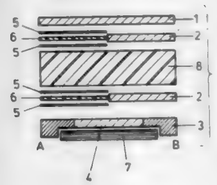
Anton Arnsteiner, Mittersill, Austria, assignor to Blizzard Gesellschaft m.b.H., Mittersill, Austria

Filed May 18, 1983, Ser. No. 495,797

Claims priority, application Austria, May 26, 1982, 2080-82

Int. Cl.³ A63C *5/00*

U.S. Cl. 280—610 **9 Claims**



1. A multilayer ski having a sandwich type construction and a central longitudinal axis, comprising a core, a cover layer located on one side of said core and a running base layer located on the other side of said core, and at least one web located between said core and one of said cover layer and running base layer, said multilayer ski having a pair of opposite side surfaces extending in the long direction of the ski and between said cover layer and said base layer, said core, said cover layer, said running base layer and said at least one web extending in the long direction of the ski for at least a significant length of the ski and between said opposite side surfaces, wherein the improvement comprises that at least one of said web and said core is divided in the width dimension between said opposite side surfaces into at least a first part and a second part each extending in the length dimension of the ski and each of said first part and second part have a different shear moduli each of said longitudinally extending first and second parts of said ski is located on an opposite side of an imaginary divisional plane extending perpendicularly to said running base from the other one of said first and second parts, the divisional plane extends in the long direction of the ski and is positioned at least adjacent the central longitudinal axis of the multilayer ski so that each of said first and second parts has a different torsional strengths.

4,523,773

LUGGAGE CART

Gilbert J. Holtz, 182 Tibbetts Rd., Yonkers, N.Y. 10705

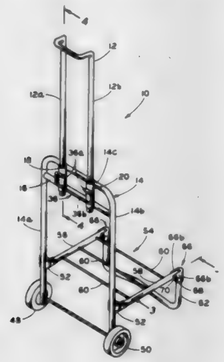
Filed Dec. 27, 1982, Ser. No. 453,878

Int. Cl.³ B62B *1/04*

U.S. Cl. 280—654 **2 Claims**

1. An improved luggage cart of the type foldable from a compact storage condition into an open condition for transporting luggage at an airport or the like, said cart comprising

a body having a back, a transversely oriented support member connected across said back, a spaced-apart pair of cylindrical members connected in vertical relation to said support member, a handle slidably disposed on said back for sliding movement in said cylindrical members between a compact storage position adjacent thereto and a position extending therefrom for facilitating the pushing and pulling of said cart, said handle being formed with two depending legs movable in said cylindrical members and having detent means thereon adapted to project through openings of a specified diameter in said cylindrical members for releasably holding said handle in said extending position on said cart back, and a cylindrical detent-release bar pivotally mounted on said cylindrical members having a diameter in cross section which is sized in relation to said diameter of each said opening of said detent means so that the pivotal traverse of said detent-release bar results in the projection thereof into said openings and establishes contact with said detent means such that the continuation of said pivotal traverse of said bar causes the complete withdrawal of said detent means from said openings and the release of said handle incident to allowing the sliding movement thereof from said extended position into said compact storage condition adjacent said cart back.



4,523,774

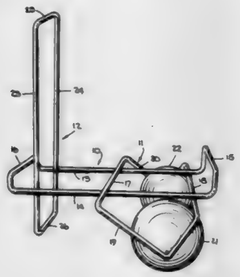
COLLAPSIBLE TOW CART

James Dickerson, Pomona, N.Y., assignor to Kevin E. Brown, Tallman, N.Y.

Filed Oct. 13, 1983, Ser. No. 541,435

Int. Cl.³ B62B *1/20*

U.S. Cl. 280—655 **7 Claims**



1. A collapsible tow cart for beach use and similar applications comprising:

A a generally rectangular main frame having parallel beams and upturned front and rear ends to provide a loading bed;

B a generally rectangular cross frame attached across the front of the main frame in a T-formation, said cross frame having parallel beams which are connected to the beams of the main frame at their points of intersection and having down-turned V-shaped ends whose apexes lie below the main frame and are joined by a transverse axle, the rear beam of the cross frame being attached to the upper face of the main frame beams to form a ledge, the front beam being attached to the under face of the main frame beams, the space between the ledge and the upturned front end of the main frame being sufficient to accommodate a cold chest;

C two identical wheels mounted on said axle in the open region between the ends of the cross frame and the beams of the main frame; and

D a rectangular loop having parallel beams pivotally connected to the beams of the main frame within the rear thereof at a position spaced from the upturned rear end at a point adjacent the lower end of the loop whereby when the loop is erected, the lower end functions as a ground rest and the upper end as a cart handle, such that when the cart is drawn, the loop abuts the upturned rear end of the main frame and is at an angle to the main frame, the loop being foldable over the main frame to collapse the cart, the space between the ledge and the erected loop being sufficient to accommodate folded beach chairs.

4,523,775

FOLDED PRINTED SHEET OR PRINTED SHEET INTENDED TO BE FOLDED AND METHOD AND APPARATUS FOR FABRICATION THEREOF

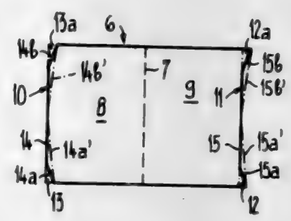
Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jun. 21, 1982, Ser. No. 390,505

Claims priority, application Switzerland, Jun. 29, 1981, 4267/81

Int. Cl.³ B42F *21/00*

U.S. Cl. 283—36 **8 Claims**



1. A folded printed sheet or a printed sheet intended to be folded and operated upon by automatic stacking or tucking equipment, comprising:

a sheet of essentially uniform thickness having opposed side edges and a fold line intermediate said opposed side edges;

said opposed side edges forming a first side edge and a second side edge;

at least one protruding portion provided at the first side edge;

said at least one protruding portion adapted to be cut-away after completion of a sheet handling operation;

said at least one protruding portion extending only over a portion of the length of the first side edge;

an inset portion provided at the second side edge located opposite the first side edge with respect to said fold line;

said inset portion having a shape essentially corresponding to that of said at least one protruding portion;

wherein the first side edge and the second side edge, in an unfolded condition of the sheet, extend essentially parallel to one another along a related bent line which is bent at least once; and

the first side edge and the second side edge possess a region extending essentially parallel to the fold line and at least one region forming an angle with respect to the region extending parallel to the fold line.

4,523,776

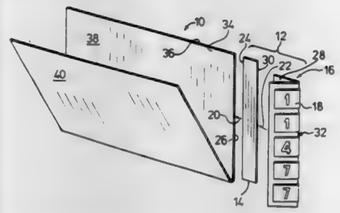
METHOD OF ADDING COLOR CODED LABELS TO FILES

Donald T. Barber, Toronto, Canada, assignor to Datafile Limited, Willowdale, Canada

Filed Jun. 24, 1981, Ser. No. 276,939

Int. Cl.³ B42F *21/06*

U.S. Cl. 283—39 **3 Claims**



1. In combination, an add-on tab and a file substrate having a straight edge to which said add-on tab is secured, said add-on tab comprising an elongate extension member in abutment with the straight edge of said file substrate and adhesively secured thereto by a carrier web having a thickness in the range of about 3 to 5 mils and of a length approximately equal to the length of said extension member, a plurality of discrete preprinted labels on the upper surface of the said web with each label spaced in the length of the carrier web and collectively defining a colour code for identifying a code substantially peculiar to such substrate, a transparent high tensile strength reinforcing plastic film of a thickness in the range of about 0.5 to about 2 mils adhesively secured over said labels and said carrier web and extending the length of said carrier web, said carrier web and film being of a width greater than said extension member and being wrapped about said extension member and secured either side and about one edge of said extension member, said add-on tab being secured to said file substrate either side thereof by said carrier web and reinforcing film which bridge the junction of said extension member and said file substrate either side of said file substrate to provide a unitary add-on tab along an edge of said file substrate, said carrier web and said plastic film distributing localized loads applied to said tab along said tab and to said file substrate adjacent said straight edge.

4,523,777

IDENTIFICATION CARD AND A METHOD OF PRODUCING SAME

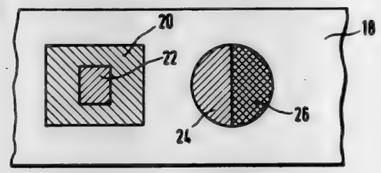
Hans J. Holbein, and Thomas Maurer, both of Munich, Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,890

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048733

Int. Cl.³ B42D *15/00*; G01D *15/10, 15/34*

U.S. Cl. 283—67 **3 Claims**



1. A method of producing an identification card having visually detectable information, comprising:

applying a plurality of color layers over each other on a synthetic carrier; and

forming the information by contacting the color layers with a controlled laser beam and selecting the energy of the laser beam and the color layer characteristics in such a way that a new color is formed restricted to a certain area, said new color being formed by an interaction between the color layers produced by at least partially melting the color layers with the laser beam.

4,523,778

HOSE COUPLING

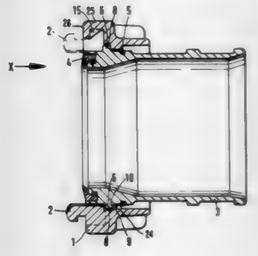
Karl Ebert, Giengen, Fed. Rep. of Germany, assignor to Max Widenmann, Armaturenfabrik, Giengen, Fed. Rep. of Germany

Filed Mar. 9, 1982, Ser. No. 356,530

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, 3110212

Int. Cl.³ F16L *55/00*

U.S. Cl. 285—73 **5 Claims**



1. A hose coupling comprising a pair of coupling halves, each said coupling half comprising a similar cam ring arranged for securing said coupling halves together, each said cam ring having an axis and a first end and a second end spaced apart in the axial direction of said cam ring, at least two cams formed on the first end of each said cam ring, each said cam ring having an axially extending radially inner cam ring surface forming the radially inner surface of said cams, a circumferentially extending groove formed in said inner cam surface and cutouts formed in said inner cam ring surface opening from said first end into said circumferentially extending groove so that said cams on each of said cam rings can be inserted through the cutouts into said circumferentially extending groove in the other of said cam rings and then rotated about said cam ring axis relative to the other said cam ring for interengaging said coupling halves and placing said hose coupling in the closed position, a separate unitary tubular connection member having a central axis secured to each said cam ring so that said cam ring is rotatably supported on said connecting member, and each said tubular connection member having a first end and a second end spaced apart in the axial direction thereof and an axially extending outer surface and axially extending inner surface, each said connection member having a sealing ring in the first end thereof so that said sealing rings contact and provide a seal when said coupling halves are interconnected, wherein the improvement comprises that said circumferentially extending groove comprises a first side and a second side disposed in spaced relation in the axial direction of said cam ring and extending radially outwardly from said radially inner cam ring surface, and a bottom spaced radially outwardly from said radially inner cam ring surface and extending axially between said first and second sides, said first side of said circumferentially extending groove being located closer to the first end of said cam ring than said second side, said first end of said cam ring includes a circumferentially extending strip extending between each cam from said cutouts around the axis of said cam ring and having a pair of radially extending side surfaces extending transversely of the axis of said cam ring with one of said side surfaces forming said first side of said circumferentially extending groove, a recess (8)

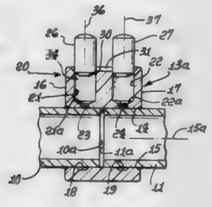
formed in said second side of said circumferentially extending groove and also in said radially inner cam ring surface of said cam ring so that said recess extends in the axial direction of said cam ring toward the second end thereof from said second side of said circumferentially extending groove and radially outwardly from said radially inner cam ring surface, said recess having a radially extending side spaced axially from the second side of said circumferentially extending groove and forming a shoulder (9), said connection member adjacent the first end thereof has circumferentially extending extensions (6) projecting radially outwardly from the outer surface thereof corresponding to the radial depth of said recess (8) radially outwardly from said radially inner cam ring surface, said extensions (6) form a stop extending angularly around said connecting member in the circumferential direction thereof for a maximum angular distance corresponding to the angular spacing between the adjacent surfaces of two said cams, said recess having a width corresponding to the axial thickness of said extensions so that each said connection member can be inserted axially into the corresponding said cam ring until said extensions (6) contact said shoulder (9) when said hose coupling is in the closed position.

4,523,779

PIPE COUPLING AND SEALING DEVICE THEREFOR

Granville S. Knox, 1323 Santa Margarita Dr., Fallbrook, Calif. 92028

Filed Aug. 23, 1984, Ser. No. 643,551
Int. Cl.³ F16L *13/10*
U.S. Cl. 285—294 **17 Claims**



1. In a coupling for joining two pipe sections having end terminals, the combination comprising
(a) a collar forming a through opening and having bore surfaces bounding said opening to closely receive a pipe section so that the collar is movable axially of the pipe section into coupling position spanning a joint formed by at least one of said end terminals,
(b) the collar having associated well means communicating with an annular recess sunk in at least one of said surfaces and extending outwardly thereof for reception of flowable cement,
(c) and plunger means to pressurize said cement supplied to said well means to cause flow of the cement to said recess,
(d) the plunger means cemented to said body in said well means after the cement has been pressurized to flow and at least substantially fill said recess.

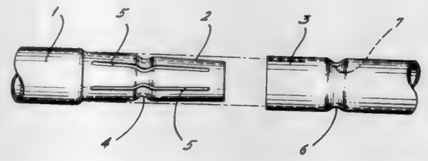
4,523,780

TUBE JOINT

David A. Cheer, Reading, England, assignor to J.P. Products, Inc., Blue Bell, Pa.

Filed Oct. 22, 1982, Ser. No. 435,916
Claims priority, application United Kingdom, Apr. 2, 1982, 8209871
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—399 **3 Claims**

1. A joint for linking first and second hollow ridge tube sections in axial alignment to form a continuous tube of substantially uniform diameter, comprising:
(a) a first tube section having one end portion of substantially uniform diameter;
(b) an inwardly directed continuous ridge formed circumferentially of said one end portion and spaced a predetermined distance from said one end of said first tube section;
(c) a second tube section having one end portion commencing with an abrupt decrease in outside diameter and tapering uniformly from the abrupt diameter decrease to the end of said second tube section, the tapered end being adapted to be received within said one end portion of said first tube section;
(d) an inwardly directed continuous recess formed circumferentially about the tapered end portion of said second tube section and spaced from the start of the taper at said abrupt diameter decrease a distance equal to the spacing of



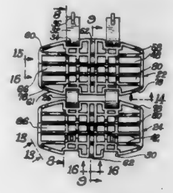
said inwardly directed ridge from said one end of said first tube section, said circumferential recess adapted to receive the inwardly directed ridge of said first tube section end portion and interlock said tubes together; and
(e) a plurality of uniformly spaced longitudinal slots formed in the tapered end portion of said second tube section extending on either side of and through the recess therein, said longitudinal slots terminating short of the end of said second tube section and short of the end of said tapered section adjacent said abrupt diameter decrease, forming in said tapered section resilient spring leaf sections which deform as the tube's sections are joined to permit the inward ridge portion of said one tube section to engage securely within the inward recess portion of said second tube section.

4,523,781

GRIPPING AID FOR THE MANUALLY DISABLED

Hal Brody, 5366 Jackson Dr., La Mesa, Calif. 92041

Filed Feb. 23, 1984, Ser. No. 582,886
Int. Cl.³ A47F *13/06;* **A47J** *45/00*
U.S. Cl. 294—1.1 **16 Claims**



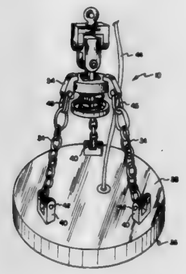
1. A grasping aid for a person having a manual/digital disability comprising:
(a) a generally palm-sized, body shaped and dimensioned to be grasped in the palm of the hand;
(b) said body being longitudinally split into a pair of half-shells hinged at one edge to clamshell together into mated relation defining a mating plane generally bisecting said body;
(c) at least one elongated channel lying generally along said plane and opening through the perimeter of said body;
(d) said body being resilient at least in those portions defining said channel, whereby implements having handles at least slightly oversized in cross-section can be gripped in said channel, whereby a person with a manual/digital disability who would have trouble grasping said instrument directly can nevertheless engage said instrument in said channel by clam shelling said half-shells together, and grasping said body.

4,523,782

LOAD-ABSORBING MOUNT FOR ELECTROMAGNETS

Glenn E. Marshall, 346 County Rd. 681, Sullivan, Ohio 44880

Filed Mar. 7, 1983, Ser. No. 472,289
Int. Cl.³ B66C *1/04*
U.S. Cl. 294—65.5 **12 Claims**



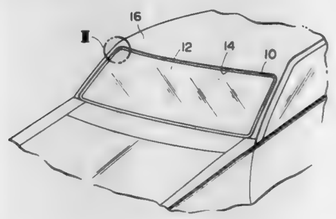
1. A load-absorbing mount for connecting a crane or other lifting device to an electromagnet having a work-engaging face and a non-work-engaging face oppositely disposed, comprising:
a plurality of force-transmitting members, each force-transmitting member being connected at one end to the non-work-engaging face of the electromagnet;
a connecting member to which each force-transmitting member is connected at its other end;
a load-carrying member to which the lifting device is connected;
adjustment means disposed intermediate the connecting member and the load-carrying member, the adjustment means movable relative to the connecting member and the load-carrying member in order to control the spacing between the connecting member and the load-carrying member; and
a spring disposed intermediate the connecting member and the load-carrying member, the spring serving to absorb loads imparted to the lifting device by the electromagnet under all operating conditions.

4,523,783

WINDOW MOULD

Yoshiyasu Yamada, No. 4-46-27, Kamisuna-cho, Tachikawa, Japan

Filed Oct. 6, 1983, Ser. No. 539,551
Claims priority, application Japan, Nov. 27, 1982, 57-208281; May 31, 1983, 58-97463
Int. Cl.³ B60J *1/02*
U.S. Cl. 296—93 **7 Claims**



1. In a window pane mounting arrangement including a panel of the vehicle body which defines therein a peripherally flanged window opening, a window pane having a peripheral edge disposed adjacent the flange of said panel thereby defining therebetween a clearance, said pane having outboard and inboard surfaces, an adhesive material partially disposed in said clearance to bond the flange and the inboard surface of said window pane, and a window moulding of elastic material adapted to be fitted to said clearance so that upon completion of the fitting thereof to said clearance, it becomes an ornament of said window pane mounting arrangement, THE IMPROVEMENT IN THAT said window moulding comprises:
an elongate band portion adapted to cover the entire length of the clearance throughout the entire length of the same, said band portion having outboard and inboard surfaces; and
first and second leg portions depending and diverging from the inboard surface of said elongate band portion and disposed in said clearance with the respective free ends of said leg portions embedded in said adhesive material, said first and second leg portions being resiliently deformable toward each other, said first leg portion having a first engaging portion which is lockably engaged with the inboard edge of said window pane, said second leg portion having separated second and third engaging portions which are resiliently engaged with said flange, all of said engaging portions being located on the outer sides of their associated leg portions.

4,523,784

LATCH CONSTRUCTION FOR LOCKING A COVER TO A PLATFORM OF A LORRY

Kjell Aspen, Halmstad, Sweden, assignor to AJ-Produkter I Hyltebruk AB, Hyltebruk, Sweden

Filed Dec. 15, 1982, Ser. No. 449,854
Claims priority, application Sweden, Dec. 15, 1981, 8107481
Int. Cl.³ B60J *7/10*
U.S. Cl. 296—100 **12 Claims**



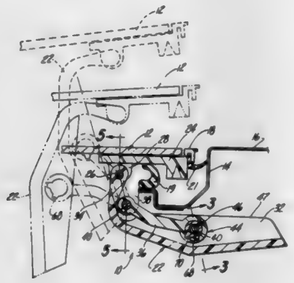
1. A latch construction for locking a cover to a platform comprising:
a plurality of latch units arranged along the periphery of said platform, each said latch unit including a latch element;
a plurality of elongated latch members arranged along the periphery of said cover, one end of each latch member being connected to said cover and the other end of each latch member being adapted to engage a corresponding latch unit;
means for moving each said latch element to an opened position to receive a corresponding latch member and for moving said latch element to a closed position to positively but releasably lock the latch member to said latch unit; and
operator means connected to each of said latch elements for simultaneous operation of all said latch elements.

4,523,785

LATCH MECHANISM FOR HINGED PANELS

David L. Draper, Hamburg, and Gerald D. McKee, Highland, both of Mich., assignors to Cars & Concepts, Inc., Brighton, Mich.

Filed Dec. 23, 1981, Ser. No. 333,819
Int. Cl.³ B60J 7/18
U.S. Cl. 296—224 **3 Claims**



1. A latch mechanism for selectively holding a hinged panel in open and closed positions relative to an opening in a vehicle body comprising: a frame extending around the opening, a handle including a pair of flanges that form a cavity, one of said flanges including an opening, means connecting said handle to said panel for pivoting about a first pivot axis, a link, means connecting said link to said frame for pivotal movement about a second pivot axis, lockable means connecting said handle and said link together for relative pivotal movement about a third pivot axis between a closed position in which said first and second axes are adjacent to each other and an open position in which said first and second axes are spaced from each other, said lockable means including a push button mounted on said link for axial movement along the third axis without any rotation with respect to the link, complementary stop elements including a tongue on said push button and also including a groove on said handle adjacent the opening in the one flange thereof, said tongue and groove being engageable with each other to hold said handle and said link against relative rotation in order to hold said panel in the open position, said tongue and groove being disengaged from each other upon axial movement of the push button to permit rotation between the handle and the link about the third axis in order to permit relative movement of said panel between the open and closed positions, a pin that extends between the other flange of the handle and the push button to support the push button for the axial movement along the third axis, a spring that biases the push button axially along the third axis to engage the tongue on the push button with the groove in said one flange of the handle, and said cavity formed by the flanges of the handle receiving and housing the link when the latch mechanism positions the panel in the closed position.

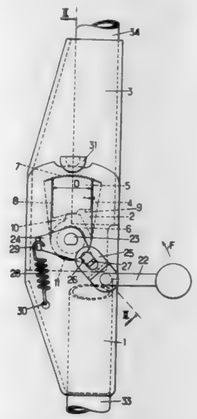
4,523,786

HINGE DEVICES FOR SEAT-BACKS

Alain Letournoux, St. Jean le Blanc, and Bernard Courtois, Champigny Morigny, both of France, assignors to Societe Industrielle Bertrand Faure, Etampes, France

Filed Jul. 7, 1983, Ser. No. 511,627
Claims priority, application France, Jul. 22, 1982, 82 12812
Int. Cl.³ A47C 1/026
U.S. Cl. 297—367 **6 Claims**

1. A hinge device for a seat-back, comprising a control hand-lever (22) accessible to the person sitting in the seat, a first inwardly toothed sector (14) integral with a flange (1) of the sitting portion, a second inwardly toothed sector (17) integral with a flange (3) of the seat-back and coaxial with the first sector, locking means operable by means of the control hand-lever to make the two sectors at will either angularly locked with each other or angularly free with respect to each other, means comprising a group of toothed bolts adapted to coact with the teeth of the two sectors and a flat central rotary cam (6) operable by means of the control hand-lever and adapted to coact with each bolt so as to either move it radially away from the axis for engaging it with the two sectors (locking position), or on the contrary to allow it to be moved closer to said axis which frees it from these two sectors (unlocking position), and means (28) for resiliently urging the control hand-lever and so the cam to their positions corresponding to



locking, each bolt and the cam being mounted so as to be able to float slightly transversely with respect to the flanges while being axially wedged between these flanges, characterized in that each of the two toothed sectors (14,17) presents a total angular amplitude less than 90°, in that the group of bolts is formed by a single bolt (5) and in that the flat cam (6) has on its periphery, opposite its single boss (10) adapted to coact with the bolt, a semi-cylindrical land (11) adapted to coact directly with two complementary semi-cylindrical lands (12,15) comprised respectively by the two flanges, these lands being coaxial to the toothed sectors of these flanges.

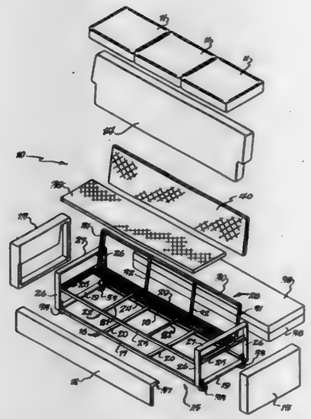
4,523,787

FURNITURE CONSTRUCTION

Wilfred R. Robinson, 5197 Mitchener Rd., Sherkston, Ontario, Canada L0S 1R0

Filed Mar. 8, 1982, Ser. No. 356,132
Int. Cl.³ A47C 4/02
U.S. Cl. 297—440 **7 Claims**

1. An article of furniture for seating comprising:
a rigid rectangular frame including a rectangular base frame, a rectangular seat frame, and a pair of upstanding arm frames, said base, seat and arm frames being interconnected with each other to form an enclosure with the seat frame spaced above and parallel to the base frame, and the arm frames being located at each end of the base and seat frames and rigidly secured thereto;
a normally upwardly extending rectangular back frame secured to said seat frame with the lower edge of the back frame adjacent one of the longer edges of said rectangular seat frame;
a hollow, generally rectangular back member which is adapted to be removably and slidably positioned over at least a portion of said back frame;
a pair of hollow, generally rectangular arm members, each of which is adapted to be removably and slidably positioned over at least a portion of one of said arm frames;
a removable seat in the form of a resilient cushion positioned on said seat frame and extending between said arm frames and from said back frame substantially to the forwardmost edge of said seat frame; and



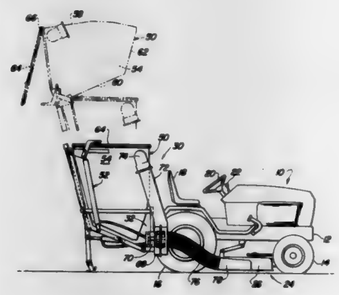
a removable front cover panel which is adapted to be removably positioned over the front side of said rigid rectangular frame between said base frame and said seat frame.

4,523,788

LIFT AND DUMP MECHANISM FOR A LAWN DEBRIS COLLECTION BOX

Keni K. Prasad, Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Aug. 15, 1983, Ser. No. 523,248
Int. Cl.³ B60P 1/34
U.S. Cl. 298—11 **5 Claims**



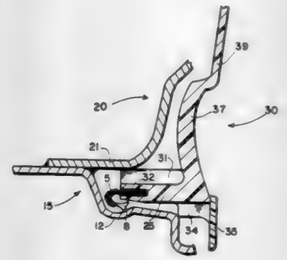
1. A lift and dump mechanism for a hopper, comprising:
a support frame adapted for connection to a tractor and including members forming a cradle; a hopper having a lower end received in said cradle when the hopper is in a fill position, said hopper having first and second pairs of opposite upper corners and including a lid hinged for movement about a first horizontal axis located adjacent the first pair of said corners; said support frame including an upwardly and outwardly inclined guide structure located adjacent said hopper at a side opposite from said first horizontal axis and said guide structure including stop means adjacent an upper end thereof; a slide structure mounted for movement along said guide structure and extending in overlapping relationship to a substantial portion of the guide structure when the hopper is in its material receiving position; pivot means vertically pivotally connecting said hopper to an upper end of said slide structure for movement about a second axis extending parallel to the first axis and located adjacent the second pair of said corners; a pair of extensible and retractable hydraulic actuators located at opposite sides of the hopper adjacent said guide structure and having lower ends pivotally connected to said support frame; a pair of drive arms having first ends vertically pivotally connected to the slide structure at an upper location thereof and having second ends respectively pivotally connected to upper ends of the hydraulic actuator; a pair of latch arms respectively mounted to said pair of drive arms and being located for moving alongside areas at opposite sides of said lid; said lid having projections located in the path of movement of said latch arms and being engaged by the latter when the hydraulic actuators are in retracted conditions whereby the lid is held shut; and lost motion connection means connecting said drive arms to said hopper at a location between said first and second axis for permitting a preselected vertical movement of the drive and latch arms relative to the hopper and hence, the lid projections upon initial extension of the hydraulic lift actuators whereby extension of said actuators will first unlatch said lid, then raise the hopper together with the slide structure until the latter engages said stop means and then rotates said hopper about said second axis to dump the hopper contents.

4,523,789

WHEEL COVER AND RETENTION CLIP

James Schwarz, P.O. Box 9310, Daytona Beach, Fla. 32020

Filed Aug. 10, 1984, Ser. No. 639,595
Int. Cl.³ B60B 7/02, 7/06
U.S. Cl. 301—37 P **12 Claims**



1. A wheel cover and retaining clip system for a vehicle wheel having an axially aligned flange attached to a tire rim, said rim having an annular safety hump comprising:
a circular wheel cover molded from plastic;
a plurality of retainer bosses integral with and circumferentially spaced around said wheel cover, each of said bosses including a body portion disposed essentially axially, a retaining clip recess in said body portion, and a buttress integral with said body portion and extending radially inward therefrom; and
a J-shaped spring clip, said clip having an inner arm portion, a short outer arm portion, and a bight forming a transition from said inner arm portion to said outer arm portion, said inner arm portion having a plurality of barbed tabs formed therein and said outer arm portion terminating in a pair of upwardly bent barbs;
whereby said upwardly bent barbs are adapted to engage the interior of said annular safety hump and said buttress is adapted to contact said wheel flange when said wheel cover is installed on said wheel.

4,523,790

LIGHT WEIGHT WHEEL FORMED FROM SHEET METAL

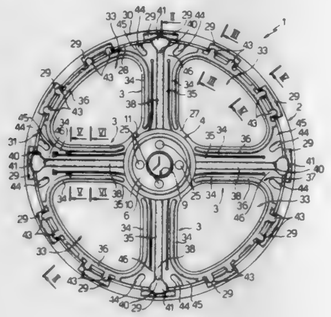
Lauro Mariani, Livorno, Italy, assignor to Gilardini S.p.A., Turin, Italy

Filed May 4, 1982, Ser. No. 374,740

Claims priority, application Italy, May 6, 1981, 67607 A/81; Mar. 25, 1982, 53104/82[U]

Int. Cl.³ B60B *3/04, 3/10*

U.S. Cl. 301—64 SD **10 Claims**



1. A wheel for a land vehicle comprising:

a central hub;

a substantially circular disc sheared and bent to integrally form a cup-shaped hub retainer element, a plurality of spokes radially extending from said hub retainer element, and an outer annular edge connecting said spokes, said outer edge sheared into a plurality of sectors bent alternatively above and below the plane of said outer edge whereby said outer edge forms an annular channel coaxial with said central hub; and

an annular rim element secured to said annular channel.

4,523,791

METHOD FOR MONITORING AND CONTROLLING HYDRAULIC BRAKE SLIP CONTROL DEVICES SUPPLIED WITH ENERGY FROM AN EXTERNAL SOURCE, AND AN APPARATUS FOR IMPLEMENTING THIS METHOD

Juan Belart, Walldorf; Jochen Burgdorf, Offenbach-Rumpenheim; Dieter Kircher, Frankfurt am Main; Hans-Wilhelm Bleckmann, Obermoerlen, and Lutz Weise, Mainz, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 15, 1983, Ser. No. 514,062

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1982, 3232051

Int. Cl.³ B60T *8/04*

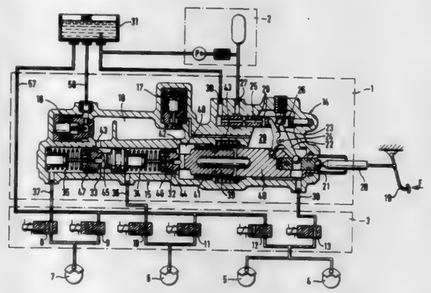
U.S. Cl. 303—92 **28 Claims**

1. A method for monitoring and controlling vehicular hydraulic brake slip control devices disposed in a hydraulic brake system having a plurality of brake circuits interconnected with the vehicle wheels and having at least one static brake circuit, at least one dynamic brake circuit and a hydraulic fluid reservoir, fluid being admitted into said static brake circuit from said dynamic brake circuit during a control cycle of said control devices, comprising the steps of:

detecting at least one of an insufficient amount of fluid in said reservoir and an inadequate pressure in one of an external energy supply for chambers of said brake system and said chamber of said brake system;

providing a signal indicative of the insufficient fluid and inadequate pressure;

partially deactivating said brake slip control devices in response to said signal by halting pressure reduction in said static brake circuit and inhibiting dynamic fluid flow into said static brake circuit from said dynamic brake circuit when at least one of said insufficient amount of fluid and said inadequate pressure is detected; and,



controlling deceleration of the connected wheels with said dynamic brake circuit during said deactivating step.

4,523,792

DUAL-CIRCUIT HYDRAULIC BRAKE SYSTEM

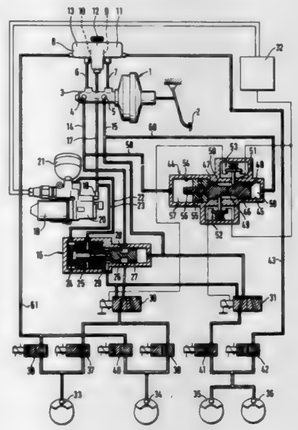
Juan Belart, Walldorf, and Jochen Burgdorf, Offenbach-Rumpenheim, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,383

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247496

Int. Cl.³ B60T *8/02, 17/22*

U.S. Cl. 303—92 **8 Claims**



1. A dual-circuit hydraulic brake system with slip control for automotive vehicles of the type having a plurality of sensors sensing the rotational behavior of the wheels and with a plurality of solenoid valves controllable by slip monitoring electronic devices, in which wheel brakes of the brake system connected to the brake circuits may be pressurized by a tandem master cylinder and by an auxiliary pressure source, with said auxiliary pressure source comprising an electric-motor-driven pressure medium pump and an accumulator, wherein each working chamber of the tandem master cylinder **(3)** communicates with a brake valve **(16)**, wherein the brake valve **(16)** can generate a dynamic pressure which, upon the actuation of the brake, is supplied to the wheel brakes **(33, 34, 35, 36)** by a switching-over action of inlet valves **(30, 31)**, and wherein the inlet valves **(30, 31)** are additionally controllable by a differential pressure alarm switch **(44)** having inputs respectively connected to the working chambers of the tandem master cylinder **(3)**.

4,523,793

HIGH-PERFORMANCE LOW-TORQUE ANTI-FRICTION BEARING ASSEMBLY

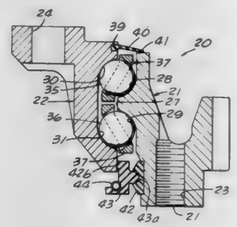
Conrad M. Fritz, Altadena, Calif., assignor to Keystone Engineering Company, Los Angeles, Calif.

Filed Sep. 30, 1982, Ser. No. 431,357

The portion of the term of this patent subsequent to Aug. 23, 1990, has been disclaimed.

Int. Cl.³ F16C *19/10*

U.S. Cl. 384—604 **14 Claims**



1. A heavy-duty anti-friction bearing assembly suitable for supporting a stabilized platform or the like with minimal torque losses under loads capable of causing distortion of said bearing assembly, including simultaneously occuring axial, radial and moment loads, comprising:

a single forged alloy steel nose ring having an annular radial nose formed with arcuate raceways on the opposite lateral sides thereof;

a single forged alloy steel cup ring concentric with said nose ring and formed with a pair of arcuate raceways converging toward a respective arcuate raceway on said nose ring and each of said arcuate raceways of said nose and cup rings having hardened surfaces;

separate rows of balls mounted between an associated pair of raceways of said nose and cup rings including independently functioning spacer means in each of said rows of balls for maintaining adjacent balls spaced apart; and wherein

the ratio of the diameter of said bearing assembly divided by the square root of the bearing assembly cross section having a value of at least 15.

4,523,794

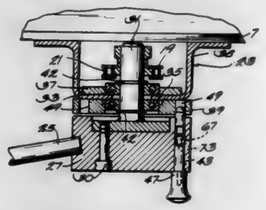
LOCK FOR MANUAL MOBILE STORAGE SYSTEM

Robert J. Peterman, Cederburg, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Jul. 15, 1983, Ser. No. 514,114

Int. Cl.³ A47B *87/00*

U.S. Cl. 312—201 **2 Claims**



1. In combination with a mobile filing and storage system having frame means for storing material and adapted to move along a predetermined path; wheel means for supporting the frame means and for allowing easy movement thereof; drive means for driving the wheel means; and hub means mounted for rotation within the frame means about a hub axis for actuating the drive means,

an improved apparatus for locking the system against movement comprising:

a. an anti-roll plate fixedly attached to the frame means, the plate having at least one locking aperature therein;

b. a generally cylindrical pin having a longitudinal axis generally parallel to the hub axis disposed for manual reciprocation in the hub means, the pin being selectively positionable between partial insertion into the anti-roll plate locking aperature for locking engagement therewith and complete withdrawal from the antiroll plate locking aperature for unlocking disengagement therefrom, the pin having a plurality of circumferential grooves intermediate the ends thereof, the grooves being formed as a pair of symmetrical frusto-conical surfaces having common bases; and

c. biasing means disposed in the hub means for bearing against the pin frusto-conical surfaces to retain the pin in the selected position and to provide a gradually increasing and subsequent decreasing resistance to pin reciprocation, thereby creating a tactile feel of pin displacement between the engaged and disengaged positions.

4,523,795

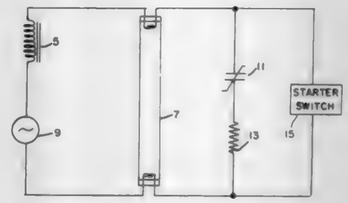
DISCHARGE LAMP OPERATING APPARATUS AND METHOD

Stephen G. Johnson, Georgetown, and William M. Labadini, Salisbury, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 431,956, Sep. 30, 1982, abandoned. This application Aug. 10, 1984, Ser. No. 639,608

Int. Cl.³ H05B *39/00*

U.S. Cl. 315—97 **14 Claims**



1. Discharge lamp operating apparatus comprising

a fluorescent lamp having a wattage of about 13 watts;

inductive ballast means coupled to said fluorescent lamp, said ballast means having an inductive value in the range of about 900 mh;

service voltage source means in the range of about 108 to 132 volts AC coupled to said inductive ballast means and to said lamp;

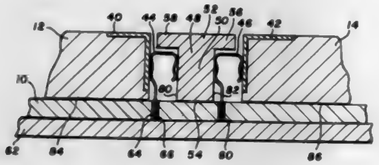
preheat switching means shunting said discharge lamp; and

a non-linear capacitor of a value in the range of about 3.0 nanofarads shunting said fluorescent lamp for effecting and continuing starting and operation of said fluorescent lamp at not less than about 75% of the RMS voltage of said service voltage source.

4,523,796
CONNECTOR ASSEMBLY FOR MOUNTING LEADLESS CHIP CARRIERS

William J. Rank, Minneapolis, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 6, 1984, Ser. No. 568,755
Int. Cl.³ H01R *23/72*
U.S. Cl. 339—17 CF **11 Claims**

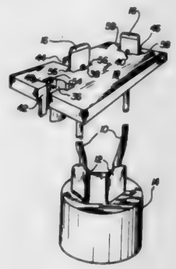


1. A connector assembly for connecting a leadless chip carrier to external circuitry on a printed wiring board, said chip carrier having a plurality of electrically conductive chip carrier pads at its periphery, said connector assembly including:
an elongate and electrically insulative body mounted with respect to said printed wiring board;
a first row of resilient, electrically conductive leads mounted with respect to said printed wiring board and along a first side wall of said body, each lead connected at a first end thereof to said external circuitry and extending away from a surface of said printed wiring board; each lead having first and second sectors generally equidistant from said printed wiring board surface and spaced apart from one another a predetermined distance transversely of said body; wherein said first and second sectors are substantially identical, each of said leads adapted to be mounted in alternative positions along said body with either of said first or second sectors engaging a chip carrier pad and the remaining sector engaging said first side wall.
wherein said chip carrier contacts and elastically deforms said leads as it is inserted on said printed wiring board, and, with said chip carrier fully inserted: one sector of each lead contacts an associated chip carrier pad; the other sector of each said lead contacts said first side wall; and said elastic deformation reduces the transverse distance between said sectors; said leads together tending to maintain the chip carrier in its fully inserted position.

4,523,797
CONNECTOR ADAPTOR

Samuel Kimmelman, Cranford, N.J., assignor to Parker Hannifin Corporation, Cleveland, Ohio

Filed Mar. 9, 1983, Ser. No. 473,413
Int. Cl.³ H01R *3/00, 13/42*
U.S. Cl. 339—147 R **7 Claims**

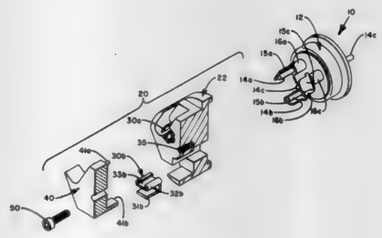


1. An adaptor for locating a plurality of connectors in a selected array on one face of the adaptor, said adaptor comprising:
a plate having a face surface and a back surface that are separated by at least one edge surface, said plate further having a plurality of apertures, a plurality of channels, and a plurality of recessed shoulders with at least one of said channels located between the periphery of one of said apertures and an edge of the plate, and with at least one of said recessed shoulders adjacent to the periphery of one of said apertures; and
a plurality of support tubes connected to the back surface of said plate, each of said tubes being located adjacent to a respective one of said apertures and having a longitudinal slot for receiving one of said connectors therethrough.

4,523,798
CONNECTOR BLOCK

Kenneth C. Barrows, Liverpool, and Raymond T. Divers, Camillus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,379
Int. Cl.³ H01R *13/436*
U.S. Cl. 339—192 RL **2 Claims**



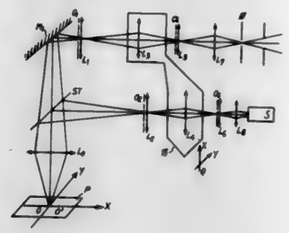
2. A connector block including:
a base;
a plurality of U-shaped connector means in said base and each including a first arm defining a slot means for mechanically engaging a conductor means by relative motion along an axial direction and a second arm adapted to be connected to a source of electricity; and
cover means removably attached to said base and located with an outer edge radially inward of said second arms and overlying said first arms and coacting with said connector means for securing said connector means in said base and overlying said means for mechanically engaging a conductor means whereby the conductor means are prevented from being dislodged from said means for mechanically engaging a conductor means but allowing electrical access along said axial direction to said second arms.

4,523,799
DEVICE OPTIMIZING THE COUPLING OF TWO OPTICAL SYSTEMS FOR THE OBSERVATION AND ANALYSIS OF OBJECTS

Michel M. Delhaye, Villeneuve d'Ascq; Paul A. Dhamelincourt, Anvoeullin; Edouard F. da Silva, Auneuil, and Jacques H. Barbillat, Villeneuve d'Ascq, all of France, assignors to Agence Nationale de Volorisation de la Recherche (ANVAR), Paris, France

Filed Dec. 6, 1982, Ser. No. 446,975
Claims priority, application France, Dec. 4, 1981, 81 23322
Int. Cl.³ G02B *27/17, 21/00*
U.S. Cl. 350—6.3 **12 Claims**

1. An optical coupling device for coupling two optical systems for the observation and examination of objects, one said system being an examination system and including a source of light and a radiance analyzer and the other said system being an observation system and including an objective lens, said coupling device being operative to redirect an examination beam transmitted by the observation system along the principal optical axis of the examination system, characterized by
(a) a plurality of fixed lenses disposed at locations in said beam where images of points of an object are formed and

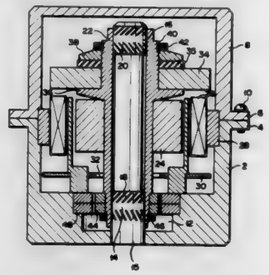


(b) at least one optical deflecting element disposed between the fixed lenses at a location in said beam where said images are enlarged,
(c) said optical deflecting element being movable rectilinearly to deflect the beam to carry out an analogous scanning of the object.

4,523,800
POLYGONAL MIRROR OPTICAL DEFLECTOR

Mitsuo Yamashita, Yokohama; Goro Oda, Sagamihara, and Masashi Kamiya, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 14, 1983, Ser. No. 513,796
Claims priority, application Japan, Jul. 20, 1982, 57-126122; Jul. 30, 1982, 57-133557
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.7 **7 Claims**

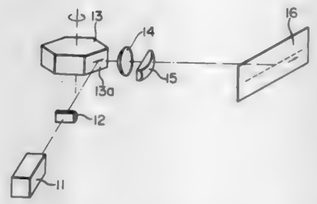


1. A polygonal mirror type optical deflector unit, comprising:
a housing;
a shaft extending within the housing;
a hollow cylindrical spindle detachably mounted on the shaft and having the shaft inserted thereinto;
a polygonal mirror secured to said spindle so as to rotate therewith;
dynamic pressure type bearing means for supporting the hollow cylindrical spindle in the radial direction;
thrust bearing means for magnetically suspending the hollow cylindrical spindle in its axial direction;
a motor rotor fixed to the hollow cylindrical spindle; and
a motor stator fixed to the housing for generating a field for rotating the motor rotor.

4,523,801
SCANNING OPTICAL SYSTEM SUBJECTED TO A MOISTURE PROOF TREATMENT

Takeshi Baba; Noriyuki Nose, both of Yokohama; Hideo Yoshikawa, Tokyo; Kazuo Minoura, Yokohama; Akinori Hasu, Sagamihara; Setsuo Minami, Kawasaki, and Kazuhiko Matsuoka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,936
Claims priority, application Japan, Mar. 3, 1981, 56-30352
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.8 **5 Claims**

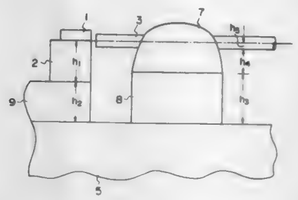


1. An optical system for scanning a medium with a beam spot, said optical system comprising:
means for supplying a light beam;
means for deflecting the light beam from said light beam supplying means in a predetermined direction and in a deflection plane;
means disposed between said deflecting means and said medium for imaging the light beam from said deflecting means on said medium as a beam spot, said imaging means having at least one lens element made of a moisture absorbing material the refractive index of which varies with the amount of moisture absorbed, said lens element having a shape in which the length in a direction parallel to the deflection plane of the light beam is greater than the length in a direction orthogonal to the deflection plane of the light beam; and
means for mitigating the influence on the imaged condition of the light beam on the medium resulting from said lens element being subjected to moisture, said mitigating means including a moisture proof member provided only on the portion of the surface of said lens element through which the light beam does not pass.

4,523,802
UNITARY MOUNTING STRUCTURE FOR SEMICONDUCTOR LASER AND OPTICAL FIBER

Haruo Sakaguchi, Tanashi; Norio Seki, Tokyo; Shu Yamamoto, Chofu, and Akira Okada, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1982, Ser. No. 347,061
Claims priority, application Japan, Feb. 19, 1981, 56-22201
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.12 **7 Claims**



1. A unitary structure for a semiconductor laser and an optical fiber, comprising: a substrate; a semiconductor laser submount, a mount for the submount disposed on the substrate;

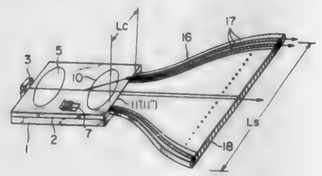
a semiconductor laser fixed by a fusion-welding material on the semiconductor laser submount; a fiber submount disposed on a substrate in the vicinity of the semiconductor laser mount and submount; and an optical fiber fixed to the fixed submount disposed to be coupled coaxially with output light of the semiconductor laser; the fiber submount including a fixing material stable over time having a melting point effective to not affect the fixedness stability between the substrate and the semiconductor laser submount and between the semiconductor laser submount and the semiconductor laser, the thicknesses of the semiconductor laser mount and submount and the fiber submount and fixing material being selected in terms of the interrelation between substantially common coefficients of linear thermal expansion of materials forming them and the coefficient of linear thermal expansion of the optical fiber so that expansion deviations of the semiconductor laser and the optical fiber from the substrate caused by temperature variations in a range including temperature variations in manufacturing steps are substantially equal to each other and effective to substantially reduce misalignment of the coaxial axes of the optical fiber and the output light of the semiconductor laser, and thereby minimize lowering of the coupling efficiency between the semiconductor laser and the optical fiber.

4,523,803

OPTICAL SCANNING DEVICE

Kozo Arao, Yokohama, and Tadashi Sato, Kokubunji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 350,063
Claims priority, application Japan, Feb. 27, 1981, 56-27763
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.13 **5 Claims**



1. An optical scanning device comprising:
a substrate;
a thin film waveguide path for propagating a light beam, said thin film waveguide path being formed on said substrate;
a waveguide path bundle formed integrally with and of the same material as said thin film waveguide path on said substrate, each waveguide path of said waveguide path bundle having a light entrance portion and a light exit portion, and being wider in the light exit portion thereof than in the light entrance portion thereof onto which the light beam propagated in said thin film waveguide path in incident;
first means for deflecting a light beam propagated in said thin film waveguide path; and
second means for condensing a light beam deflected by said first means to guide deflected light beam onto said light entrance portion of said waveguide path bundle.

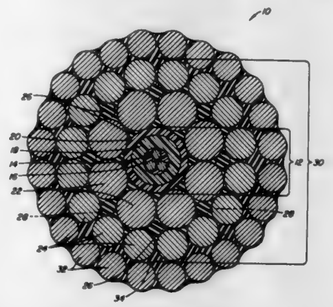
4,523,804

ARMORED OPTICAL FIBER CABLE

Robert E. Thompson, Roanoke, Va., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 17, 1982, Ser. No. 408,975
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.23 **37 Claims**

1. An armored optical cable suitable for use in an environment which subjects said cable to repeated longitudinal elongation and relaxation forces, said cable comprising:
a substantially non-deformable central core element;
at least six substantially solid elements would helically around said central element in a given handedness;
at least twice the number of said at least six elements of inner armor wires wound around and contacting said at least six elements of the same handedness in a unilay helical configuration, said at least six elements and said inner armor



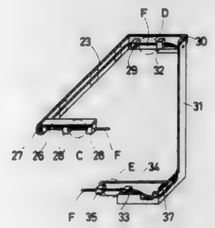
wires being fabricated around said central core element at the same time wherein the elements and the wires of the same handedness and the central core element form a central bundle, said central bundle containing at least one jacketed optical fiber; and
a plurality of outer armor wires contacting said inner armor wires, said outer armor wires wound in an opposite helical handedness to the handedness of said inner armor wires such that the torques exerted by said inner armor wires and said outer armor wires are substantially balanced.

4,523,805

DEVICE FOR TRANSFERRING INFORMATION THROUGH FIBEROPTIC BUNDLES WITHOUT DISTORTION OF INFORMATION TRANSFERRED THERETHROUGH

Masato Nagashima; Mikizo Katsuyama, both of Kyoto, and Masahiro Yamamoto, Shiga, all of Japan, assignors to Dainippon Screen Manufacturing Co., Ltd., Kyoto, Japan

Filed Jun. 24, 1982, Ser. No. 391,735
Claims priority, application Japan, Jul. 3, 1981, 56-104680
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.24 **6 Claims**



1. A moveable joint for an optical fiber support arm arranged so that bending of the arm imposes only twisting forces, and not bending forces, on the optical fiber comprising:
(1) an optical fiber comprising;
(a) a first portion that extends generally in a first direction,
(b) a second portion that extends generally in a second direction, the second direction being at a predetermined right angle to the first direction, and

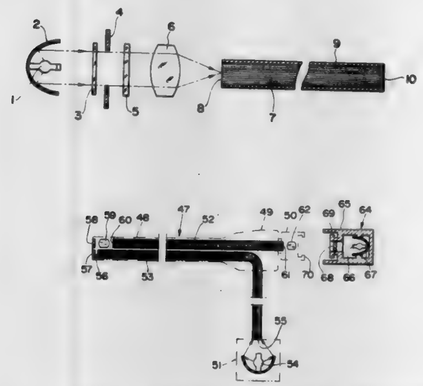
(c) a third portion consisting of the portion of the optical fiber between the first portion and the second portion, and
(2) a jointed optical fiber arm comprising;
(a) a first support member extending generally in the first direction, and supporting the first portion of the optical fiber,
(b) a second support member extending generally in the second direction, and supporting the second portion of the optical fiber,
(c) joint means for joining the first support member and second support member, and for allowing rotation of the second support member with respect to the first support member, and
(d) the joint means limiting the rotation of the second support member to the plane containing the second support member and lying at the predetermined right angle to the first support member, whereby movement of the second support member with respect to the first support member causes substantially no additional bending or unbending of the optical fiber.

4,523,806

METHOD AND APPARATUS FOR RESTORING THE LIGHT TRANSMITTANCE OF AN IMAGE-TRANSMITTING OPTICAL FIBER BUNDLE USED IN A FIBER OPTIC ENDOSCOPE

Takuo Kojima, and Kuniaki Ishibashi, both of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Feb. 17, 1982, Ser. No. 349,619
Claims priority, application Japan, Feb. 17, 1981, 56-22082; Jan. 20, 1982, 57-005907
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.25 **3 Claims**



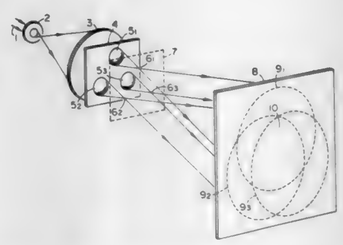
1. A method of maintaining the light transmittance of an image-transmitting optical fiber bundle which has been exposed to X-ray irradiation, which comprises exposing said image-transmitting optical fiber bundle through one end to visible light radiation when the bundle has received about one roentgen unit of X-ray irradiation.

4,523,807

METHOD FOR MAKING A MEMBER HAVING MICROSTRUCTURE ELEMENTS ARRANGED THEREON

Takashi Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 433,143, Oct. 6, 1982, abandoned, which is a continuation of Ser. No. 108,031, Dec. 28, 1979, abandoned. This application May 25, 1984, Ser. No. 614,398
Claims priority, application Japan, Dec. 29, 1978, 53-165092
Int. Cl.³ G02B *27/00*
U.S. Cl. 350—128 **11 Claims**



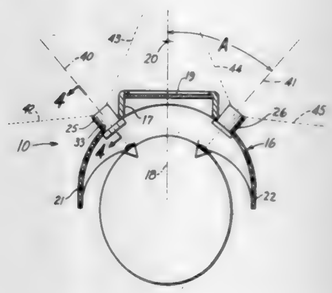
1. A method of making a microstructure member, comprising:
providing light beams which are emitted from an arrangement of two or more light sources and which are interferable with one another;
superposing the light beams axially without re-imaging to produce equally spaced interference fringes having two-dimensional monotonous periodicity; and
exposing a recording medium to the produced interference fringes with a fixed relative position between the interference fringes and the recording medium.

4,523,808

WELDING HELMETS WITH AUXILIARY OPTICAL VISION SYSTEMS

Charles G. Miller, deceased, late of Pasadena (by Ann S. Miller, executrix); James B. Stephens, La Crescenta, and Charles Youngberg, Altadena, all of Calif., assignors to Wilson Sales Company, Inc., South El Monte, Calif.

Filed Jul. 12, 1983, Ser. No. 513,112
Int. Cl.³ G02B *25/04, 7/02;* A61F *9/06*
U.S. Cl. 350—146 **17 Claims**



1. In a welding helmet comprising a shell mountable to a welder's head, said helmet having an opaque wall extending in front of and to the sides of the welder's face to shield him from a welding arc or flame in front of him, and from arcs or flames to the side of him, said shell having a window occupied by a welder's glass to enable the welder to look forwardly along a

forward axis at work in front of him while an arc or flame is burning, the improvement comprising:

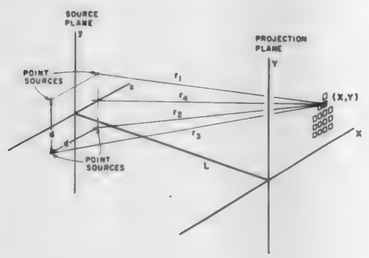
to the side of said window and passing through said wall, a reducing auxiliary vision system through said helmet having the optical property of reducing an object which is located about 30 inches from the hood to an apparent distance significantly greater than the distance to said object, said auxiliary system having an optical axis directed at an angle to said forward axis, whereby to provide visibility under normal illumination of regions substantially to the side of said forward axis.

4,523,809

METHOD AND APPARATUS FOR GENERATING A STRUCTURED LIGHT BEAM ARRAY

John Taboada, San Antonio, Tex., and Bruce R. Altschuler, Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 4, 1983, Ser. No. 520,356
Int. Cl.³ G02B *27/10*
U.S. Cl. 350—163 **15 Claims**



1. A method of simultaneouslu generating a space volume-filling structured light beam array for projection upon an object in non-contact surface metrology, comprising the steps of:

(a) generating a coherent light beam;

(b) projecting said beam with slight divergence through a predetermined plane;

(c) partitioning said beam received at said plane into four light beam segments of predetermined spacing and pattern;

(d) generating from said beam segment pattern, a two-dimensional array comprising an interference pattern of said beam segments; and

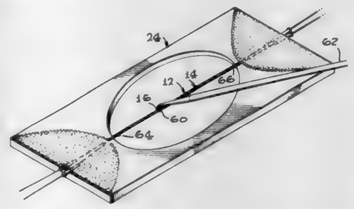
(e) projecting said array in a direction orthogonal to the plane of the array onto said object.

4,523,810

OPTICAL FIBER COUPLING METHOD AND APPARATUS

Willis C. Goss, Altadena; Mark D. Nelson, Montrose, and John M. McLauchlan, Pasadena, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 26, 1982, Ser. No. 342,828
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—320 **6 Claims**



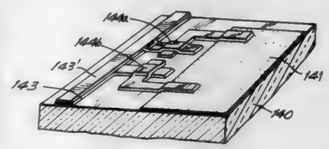
1. A method for coupling a pair of optical fibers, comprising: holding said fibers parallel and adjacent to one another; and applying a liquid to said fibers which is hydrophillic to said fibers, by moving a liquid-gas interface along the length direction of the fibers to zip them together.

4,523,811

LIQUID CRYSTAL DISPLAY MATRIX INCLUDING A NON-LINEAR DEVICE

Tadashi Ota, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jan. 15, 1982, Ser. No. 339,526
Claims priority, application Japan, Jan. 16, 1981, 56-4850; Aug. 25, 1981, 56-132904; Sep. 4, 1981, 56-139549
Int. Cl.³ G02F *1/13*; H01C *7/10, 7/13*
U.S. Cl. 350—333 **9 Claims**



1. A matrix liquid crystal display device including a metal-insulator-metal (MIM) construction, comprising:

a first substrate,

a plurality of liquid crystal display picture element electrodes disposed on the first substrate and spaced apart in a matrix array of columns and rows;

a plurality of leads formed on the first substrate between one of the associated columns or rows of picture element electrodes;

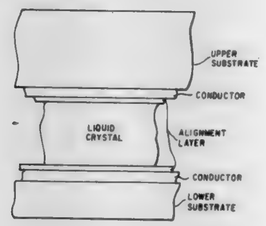
a non-linear device coupled in series between each picture element electrode and the associated lead, the non-linear device including two MIM switches connected in parallel with each other, wherein one of the MIM switches comprises a lower metal thin film on the surface of the substrate coupled to said lead, an insulator thin film on said lower metal thin film and an upper metal thin film disposed on the insulator thin film and including a lead portion coupled to the associated picture element electrode; and the other MIM switch comprises a lower metal thin film including a MIM portion and a lead portion on said substrate, said lead portion coupled to the associated picture element electrode and said MIM portion in the region between said lead and said picture element electrode, an insulator film on said lower metal thin film and an upper metal thin film disposed on the MIM portion of said insulator and the lower metal thin film and coupled to said lead.

4,523,812

PLASTIC LIQUID CRYSTAL DEVICES WITH UNEQUAL SUBSTRATE THICKNESSES

Perry A. Penz, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 23, 1982, Ser. No. 444,264
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—334 **7 Claims**



1. A liquid crystal device comprising:

first and second substrates each comprising a birefringent material;

first and second conductor layers, said conductor layers respectively being disposed on respective innerfaces of said respective substrates;

first and second alignment layers respectively disposed on said first and second conductor layers;

perimeter seal means interposed between said first and second substrates and sealing the perimeters thereof together to define a cavity between said first and second substrates with said first and second conductor layers and said first and second alignment layers being disposed in respective opposing relationship with respect to each other;

a liquid crystal material filling the cavity defined between said first and second substrates; and

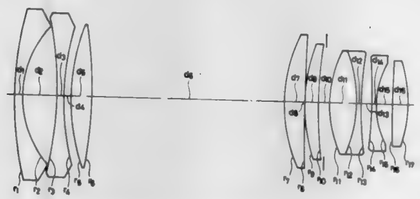
the respective thicknesses of said first and second substrates being of unequal magnitudes of a degree sufficient to prevent the appearance of obtrusive interference colors.

4,523,813

ZOOM LENS SYSTEM

Yasuzi Ogata, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1984, Ser. No. 568,144
Claims priority, application Japan, Jan. 27, 1983, 58-10544
Int. Cl.³ G02B *9/64, 15/14*
U.S. Cl. 350—426 **7 Claims**



1. A zoom lens system comprising a front lens group having negative refractive power and a rear lens group having positive refractive power, said rear lens group consisting of a positive lens component, a positive meniscus lens component having a convex surface on the object side, a positive meniscus cemented doublet composed of a biconvex lens element and a biconcave lens element, a negative lens component and a positive lens component, said zoom lens system being so adapted as to perform zooming by varying the airspace reserved between said front and rear lens groups, and to satisfy the following conditions (1) and (2):

$$0.47<r_{15}/f_R<0.53 \quad (1)$$

$$0.1<n_7-n_6 \quad (2)$$

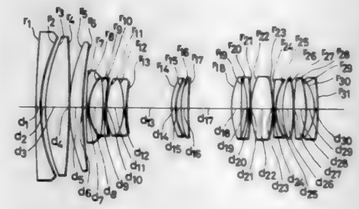
wherein the reference symbol r_{15} represents radius of curvature on the image side surface of the negative lens element arranged in said rear lens group, the reference symbols n_6 and n_7 designate refractive indices of both the lens elements respectively of the positive meniscus cemented doublet arranged in said rear lens group and the reference symbol f_R denotes focal length of said rear lens group.

4,523,814

ZOOM LENS

Sadao Okudaira, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1983, Ser. No. 506,266
Claims priority, application Japan, Jun. 23, 1982, 57-108168; Mar. 9, 1983, 58-38625
Int. Cl.³ G02B *9/64, 15/18*
U.S. Cl. 350—427 **11 Claims**



1. A zoom lens comprising, in order from the object, a first lens group having a positive refractive power, a second lens group having a negative refractive power, a third lens group having a positive refractive power and a fourth lens group having a positive refractive power, said first through fourth lens group being independently moved in an axial direction to vary the overall focal length, said zoom lens meeting the following conditions:

(1) $0.25F_W<F_I<0.45F_W$,

(2) $1.65<n_{IV}$, and

(3) $1.2f_{BW}<f_{BT}<0.95f_{BM}$

where F_W is the overall focal length at the minimum end,

F_I is the focal length of the first lens group,

n_{IV} is the average refractive index, at d-line, of the lens elements constituting the fourth lens group,

f_{BW} and f_{BT} are the backfocuses at the minimum and maximum ends of the overall focal length, respectively,

f_{BM} is the backfocus at an intermediate value of said overall focal length between said minimum and maximum ends.

4,523,815

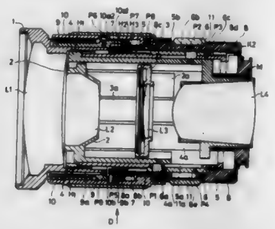
ZOOM LENS BARREL FOR MACROFOCUSING

Yasumasa Tomori, Sakadoshi, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1983, Ser. No. 510,457
Claims priority, application Japan, Jul. 27, 1982, 57-113529[U]
Int. Cl.³ G02B *7/10*
U.S. Cl. 350—430 **10 Claims**

1. A zoom lens barrel having lens assemblies, including a focusing lens assembly and a variable power lens assembly comprising a mount ring for connecting the lens barrel to a

camera body, a zooming ring rotatable on the mount ring for adjusting the focal length of the lens assemblies, and a focusing ring rotatable on the mount ring for effecting focusing for normal photographing as well as for macro-photographing, the improvement comprising a guide means between the mount ring and the focusing ring for enabling the focusing ring to rotate for normal photographing, to move in the axial direction at the terminal position of the rotation in the shortest object distance position, and to further rotate after the axial movement for macro-photographing, a connecting ring which ro-



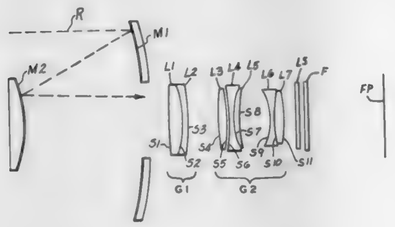
tates to move only the focusing lens assembly, a macrohelicoid ring which rotates to move the whole lens assemblies while maintaining a predetermined spatial relationship therebetween, and a switching means for selectively connecting the connecting ring or the macrohelicoid ring to the focusing ring in accordance with the axial movement of the focusing ring, so that the connecting ring rotates together with the focusing ring within a range of the rotation for focusing of the focusing ring, and that the macrohelicoid ring rotates together with the focusing ring within a range of the rotation for macro-photographing of the focusing ring.

4,523,816

CATADIOPTRIC LENS

Melvyn H. Kreitzer, Cincinnati, Ohio, assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Aug. 12, 1983, Ser. No. 522,519
Int. Cl.³ G02B *17/08*
U.S. Cl. 350—444 **9 Claims**



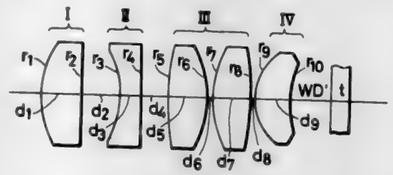
1. A catadioptric lens having object and image sides comprising a first component having a first reflective surface with a central aperture therethrough, a second component having a reflective surface disposed on the object side of said first component, said second component arranged to reflect light to refractive lens groups on the image side of said second component, said first and second components being arranged in fixed relationship, a first lens group of positive power disposed to the image side of said second component, and a second refractive lens group of negative power disposed on the image side of said first refractive group, said second refractive group being axially movable to focus said lens.

4,523,817

LENS SYSTEM FOR OPTICALLY RECORDED DISKS

Juro Kikuchi, Hachiooji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 440,860
Claims priority, application Japan, Nov. 18, 1981, 56-183742
Int. Cl.³ G02B *9/60, 21/02*
U.S. Cl. 350—465 **10 Claims**



1. A lens system for optically recorded disks comprising first, second, third and fourth lens components in the order from the light-source side wherein said first lens component has positive refractive power, said second lens component has negative refractive power, said third lens component has positive refractive power and consists of two positive lenses, and said fourth lens component has a concave surface on the disk side and has positive refractive power, said lens system for optically recorded disks being arranged to fulfill the following conditions:

(1) $0<r_1<|r_2|$

(2) $r_3<0$, $|r_3|<|r_4|$

(3) $f_1/f>0$

(4) $f_{12}/f<0$

(5) $0.6<f_{34}/f<1$

wherein reference symbols r_1 and r_2 respectively represent radii of curvature of the surface on the light-source side and surface on the disk side of the first lens component, reference symbols r_3 and r_4 respectively represent radii of curvature of the surface on the light-source side and surface on the disk side of the second lens component, reference symbol f represents the focal length of the lens system as a whole, reference symbol f_1 represents the focal length of the first lens component, reference sumbol f_{12} represents the total focal length of the first and second lens components, and reference symbol f_{34} represents the focal length of the third and fourth lens components.

4,523,818

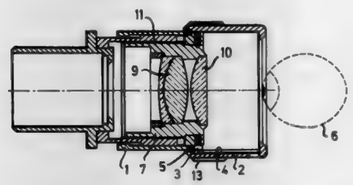
OCULAR EYECUPS FOR WEARERS OF GLASSES

Walter H. Lang, and Joachim Hornschu, both of Konigsbronn, Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Jun. 9, 1983, Ser. No. 502,725
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1982, 3223538
Int. Cl.³ G02B *23/16*
U.S. Cl. 350—579 **2 Claims**

1. An eyecup for adjustment of pupil coincidence for an ocular of an optical viewing instrument, characterized by the fact that a rigid tubular eyecup (2) is adapted for sliding engagement to the housing (1) of the ocular, a snap-ring friction

element (5) recessed in said housing for retaining a selected position of continuous axial adjustment, the eyecup (2) having



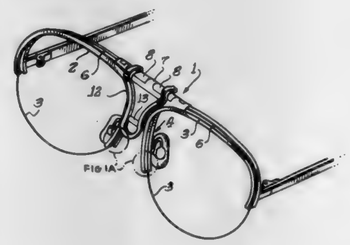
a longitudinal slot (4) for keyed reception of at least one guide part (3) carried by the ocular housing (1).

4,523,819

EYEGLASSES WITH EXCHANGEABLE LENSES

Franz Dianitsch, Linz, and Anton Pschebezin, Haid, both of Austria, assignors to Optyl Eyewear Fashion International Corporation, Norwood, N.J.

Filed May 24, 1983, Ser. No. 497,645
Int. Cl.³ G02C *1/00, 1/04, 5/00*
U.S. Cl. 351—106 **7 Claims**



1. Eyeglasses comprising:
a frame means;
a pair of exchangeable lenses carried by the frame means;
partial rims on the frame means partially surrounding the lenses;
grooves formed in edges of the lenses;
a thread projecting into the grooves and cooperating with the partial rims to support and to retain the lenses;
an upper bridge on said frame means and joining the partial rims;
a lower bridge means on said frame means disposed beneath the upper bridge and joining the partial rims;
a retainer clip pivoted on the upper bridge and movable between an upper open position and a lower locked position with the lower bridge means;
a thread section of the thread located at the lower bridge means and spanning the partial rims; and
tension means associated with the retainer clip at the lower bridge means to engage the thread section and to force the thread to pull taut and to remain taut when the retainer clip is in its locked position.

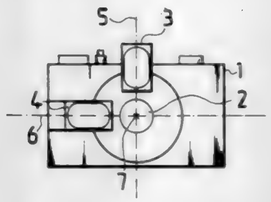
4,523,820

PROCEDURE AND MEANS FOR ESTABLISHING AND RECORDING ERRORS OF THE EYE

Kari A. Kaakinen, Karankakatu 15, SF-87500 Kajaani 50, Finland

Filed May 12, 1982, Ser. No. 377,520
Claims priority, application Finland, May 19, 1981, 811541
Int. Cl.³ G03B *29/00;* A64B *3/14*
U.S. Cl. 351—206 **7 Claims**

1. A method for establishing and recording errors of the eye which comprises simultaneously photographing from a distance of at least about one meter from the eye the cornea, corneal reflexes and retinal reflexes of the eye in at least two different meridians of the eye using a camera having at least



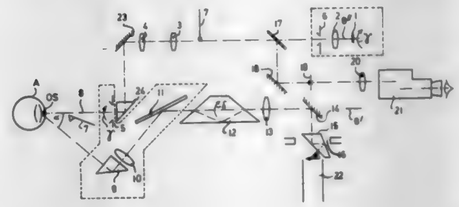
one objective lens and at least one light source, the objective lens and light source being disposed in different meridians of the eye.

4,523,821

DEVICE FOR EXAMINING ANTERIOR SECTIONS OF THE EYE

Walter Lang; Dieter Müller; Franz Muchel, all of Königsbronn; Roland Wanner, Oberkochen, and Peter Niesel, Bollingen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Dec. 7, 1982, Ser. No. 447,537
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150124
Int. Cl.³ A61B *3/10, 3/14*
U.S. Cl. 351—214 **5 Claims**



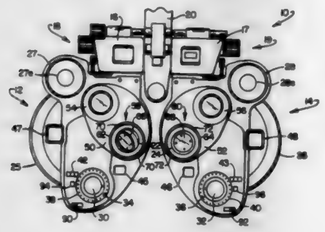
1. A device for examining anterior portions of the eye by a slit-lamp instrument developed on the Scheimpflug principle, in which a fixation object (7) for the eye of a test subject and a graticule (19) for the localizing of the corneal reflex are provided in the illumination beam path, characterized by the fact that in the imaging-beam path an opto-electronic image converter (22) is provided to which an electronic computer for picture data-processing is connected and that, in order to produce different optical meridian sections in the eye of the test subject (a) the opto-electronic image converter (22) is stationary, and (b) in the imaging-beam path a reflecting prism (9) and a reversing prism (12) are each rotatable about the optical axis (8), the respective rotations of the reflecting prism and of the reversing prism being so coupled as to maintain a stationary orientation of the image at the opto-electronic image converter (22) regardless of the instantaneous rotary orientation of the reflecting prism.

4,523,822

REFRACTOR WITH OPTICALLY ENCODED CYLINDER AXIS POSITION

Marlin O. Thurston, Columbus, Ohio, assignor to R. H. Burton Company, Grove City, Ohio

Filed Jul. 14, 1983, Ser. No. 513,707
Int. Cl.³ A61B *3/02*
U.S. Cl. 351—234 **20 Claims**



1. A refractor, comprising:
a housing having a patient eye position for viewing along a sight axis extensible therethrough;
a cylinder lens assembly including a plurality of rotatably movable cylinder lens components;
means for positioning select said cylinder lens components into an aligned orientation with said sight axis;
hand manipular axis control means engageable with a positioned said cylinder lens component for effecting the rotation to a select cylinder axis orientation;
first position absolute encoding means responsive to said axis control means positions for deriving a unique first position signal corresponding with the instantaneous said cylinder axis orientation of said positioned cylinder lens;
a cross-cylinder assembly operative in axis and power modes mounted upon said housing and having cross-cylinder lens means with a select power axis, rotatable lens mount means supporting said cross-cylinder lens means and movable to position said cross-cylinder lens means in alignment with said sight axis, motor means having an output coupled in driving relationship with said rotatable lens mount means and energizable in response to a drive signal to effect the rotation thereof;
second position absolute encoding means responsive to the instantaneous rotational orientation of said lens mount means for deriving a unique second position signal corresponding therewith;
digital readout means responsive to a digital input signal for displaying a numeric value corresponding therewith; and
control circuit means responsive to said first position signal for deriving said digital input signal to effect said digital readout means display, responsive to said first position signal and second position signal in the presence of said axis mode condition for deriving a said drive signal effecting the driven movement of said lens mount means positioning said cross-cylinder lens means select power axis in an orientation displaced 45° from said select cylinder axis orientation, and responsive to said power mode condition for deriving a drive signal effecting the driven movement of said lens mount means positioning said cross-cylinder lens means select power axis in alignment with said select cylinder axis orientation.

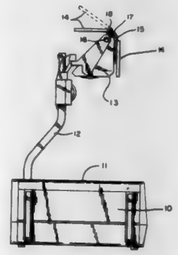
4,523,823

LIGHT BLOCKING PANEL FOR OVERHEAD PROJECTORS

Mary E. F. Roope, 14547 Farmcrest Pl., Colesville, Md. 20904

Filed Apr. 5, 1984, Ser. No. 596,917
Int. Cl.³ G03B *21/14*
U.S. Cl. 353—97 **4 Claims**

1. In an overhead projector of the type having an elevated projection head including a forward projection lens and a light box below the projection head having a top horizontal transparent stage on which transparencies are placed, the combination with said projection head of a gravity responsive opaque panel of a size and shape to substantially cover the front of said projection head and said lens when in a free-hanging vertical position, and a flexible hinge means interconnecting the opaque



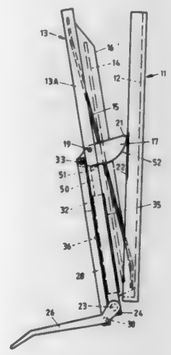
panel and projection head whereby a user of the overhead projector can manually flip the opaque panel from its free-hanging vertical position in front of the projection lens to an elevated inactive position of the panel away from the front of the lens where the panel will again be held stationary by the influence of gravity.

4,523,824

DEVICE FOR A PHOTOGRAPHIC CAMERA

Karl Gfeller, Langwiesen, and Peter Dätwyler, Diessenhofen, both of Switzerland, assignors to Sinar AG Schaffhausen, Feuerthalen, Switzerland

PCT No. PCT/CH83/00106, § 371 Date May 15, 1984, § 102(e) Date May 15, 1984, PCT Pub. No. WO84/01440, PCT Pub. Date Apr. 12, 1984
PCT Filed Sep. 15, 1983, Ser. No. 610,984
Claims priority, application Switzerland, Oct. 1, 1982, 5745/82
Int. Cl.³ G03B *17/44*
U.S. Cl. 354—161 **13 Claims**



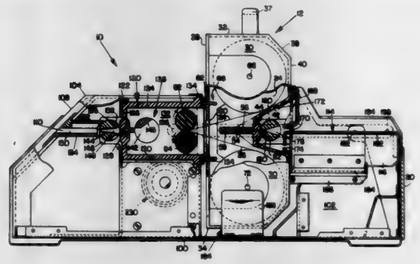
1. A device designed for a photographic camera, having a frame-type camera back which defines a bearing face for a photographic negative material or for a cassette containing said negative material, and having a pressure means located behind said camera back and movably connected thereto by means of springs that strive to force said pressure means toward said bearing face of said camera back, characterized by at least one retarding means (17–52) to damp movements of said pressure means (13) through the force of said springs, dependent upon the actual speed of movement.

4,523,825

FILM PROCESSING APPARATUS AND SYSTEM

Philip Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 14, 1984, Ser. No. 620,627
Int. Cl.³ G03D *5/06*
U.S. Cl. 354—301 **32 Claims**



1. A film processing apparatus having processing and non-processing modes of operation, said apparatus being configured for use with a cassette holding at least a processing sheet yieldably carrying, on one surface thereof, a substantially uniformly distributed supply of a film processing liquid, the cassette being of the type having a housing formed of vapor and gas impervious material and including an entry opening, through which an exposed film unit advanced along a film entry path is adapted to move into the cassette housing, and an exit opening through which the film unit and processing sheet are adapted to be advanced simultaneously from the housing, along an exit path of travel, in superposed relation with the processing liquid carrying surface facing a surface of the film unit adapted to be wetted with the processing liquid to initiate film processing, said processing apparatus comprising:
means for receiving and supporting such a cassette;
means for advancing the processing sheet and a film unit along the exit path of travel while applying compressive pressure thereto to facilitate wetting the film unit surface with the processing liquid;
entry sealing means having a non-processing mode of operation for blocking the cassette entry opening to prevent vapor and gas transmission therethrough, and a processing mode of operation for unblocking the entry opening to provide access thereto for a film unit being advanced along the entry path of travel; and
exit sealing means having a non-processing mode of operation for blocking the cassette exit opening to prevent vapor and gas transmission therethrough so as to cooperate with said entry sealing means for isolating the processing sheet from the ambient atmosphere surrounding said apparatus, and a processing mode of operation for unblocking the exit opening to provide access to the exit opening for accommodating advancement of the processing sheet and film unit along the exit path of travel.

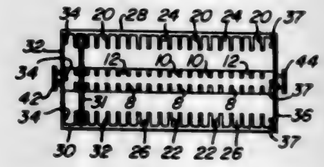
4,523,826

AUTORADIOGRAPHY APPARATUS INCLUDING A SLIDE RACK

Nurten N. Gunduz, and Dincer H. Gunduz, both of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Division of Ser. No. 216,295, Dec. 15, 1980, Pat. No. 4,435,063. This application Nov. 19, 1982, Ser. No. 443,035
Int. Cl.³ G03D *3/00, 13/08*
U.S. Cl. 354—337 **17 Claims**

1. Autoradiography apparatus comprising
a rack member for holding a multiplicity of specimen-bearing slides having an upper frosted portion,
said rack member having a base portion, an upper portion and a connecting portion,
said base portion having a plurality of upwardly projecting spaced first separator members defining a series of first slide-receiving slots therebetween,
said first slide-receiving slots being generally centrally positioned in said base portion,
said base portion having an upstanding peripheral wall with sidewall portions resisting transverse movement of said slides out of said first slide-receiving slots and endwall portions,
said upper portion having a plurality of spaced second separating members defining a series of second slide-receiving slots generally aligned with and spaced from said first slide-receiving slots, and
said second separating members being spaced above the base of said first slide-receiving slots a distance sufficient to place said second separating members in contact with said slide frosted portion when said slide is in said rack, whereby slides disposed within said rack member will be engaged solely by their upper frosted portion and lower portion.

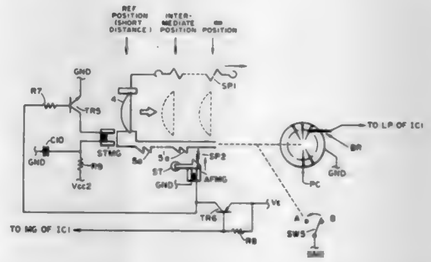


4,523,827

CAMERA

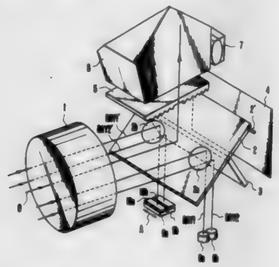
Makoto Masunaga, and Hideo Taka, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1981, Ser. No. 298,532
Claims priority, application Japan, Sep. 8, 1980, 55-125111
Int. Cl.³ G03B *3/00*
U.S. Cl. 354—400 **19 Claims**



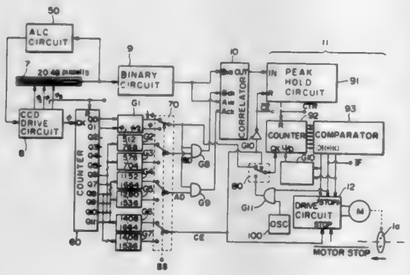
1. A camera comprising a distance detecting system for repeatedly detecting an object distance; a photographic lens control system for stopping the displacement of a photographic lens when said photographic lens reaches a position represented by distance data obtained by said distance detecting system, during the course of displacement from a predetermined set position of said photographic lens by actuating means; and controlling means for prohibiting initiation of the displacement of said photographic lens by said actuating means until effective distance data is obtained from said distance detecting system or until the number of distance detecting operations reaches a predetermined value.

4,523,828
FOCUS DETECTING DEVICE
Masatake Kato, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 1, 1984, Ser. No. 616,532
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—403 **6 Claims**



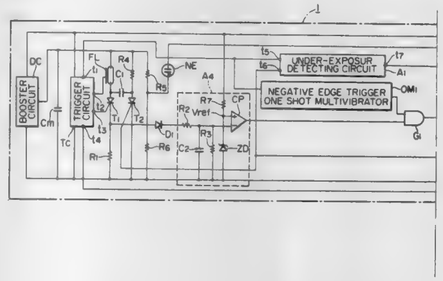
1. A device for detecting the focusing state of an objective lens for a light of standard wavelength, comprising:
projecting means for projecting lights of different wavelengths from each other onto an object;
sensing means for sensing the reflected lights from the object;
discriminating means for detecting the focusing states of the objective lens for the respective wavelengths of light based on the outputs of said sensing means and for computing the focusing state of the objective lens for the light of standard wavelength from the focusing states of the objective lens for the different wavelengths of light.

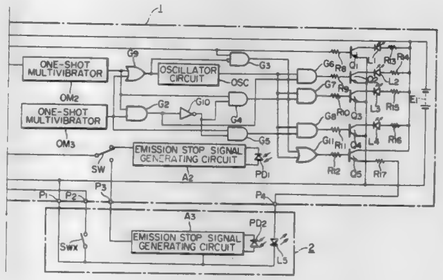
4,523,829
AUTOMATIC FOCUS DETECTING DEVICE
Mitsuo Eguchi; Kiyoharu Tagawa; Hitoshi Ogawa; Mikio Bandai, and Nobuharu Nagashima, all of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan
Filed Feb. 21, 1984, Ser. No. 581,678
Claims priority, application Japan, Mar. 11, 1983, 58-41074
Int. Cl.³ G03B *3/00*
U.S. Cl. 354—406 **12 Claims**



1. An automatic focus detecting device which is used with a camera having a taking lens comprising a focusing lens system, a zooming lens system and a master lens system for detecting the defocusing amount of said focusing lens system from the amount of shift occurring between two images of an object, said two images being formed by light beams passing through two different areas in said zooming lens system and moving in opposite directions as said focusing lens system moves along its optical axis, said device comprising:
an image sensor for converting the intensity distributions of said two images formed thereon into time sequence video signals, respectively;
correlation means for extracting said time sequence video signals from said image sensor to be stored therein in order to detect the amount of shift occurring between said two images; and
extraction control means operable in at least first and second operation modes for extracting time sequence video signals of a narrow image every "M" (≧o) pixels in the first operation mode and a wide image every "N" (>M) pixels in the second operation mode.

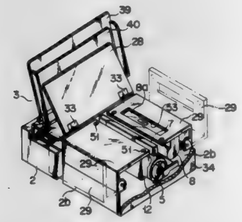
4,523,830
AUTOMATIC CONTROL TYPE ELECTRONIC FLASH APPARATUS
Yoshikazu Iida, Chigasaki; Nobuyoshi Hagyuda, and Hiroshi Hasegawa, both of Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Sep. 27, 1982, Ser. No. 424,336
Claims priority, application Japan, Oct. 29, 1981, 56-173471
Int. Cl.³ G03B *7/16, 15/02*
U.S. Cl. 354—416 **3 Claims**





1. An automatic control type electronic flash apparatus comprising:
(a) means for emitting flashlight, which means include a flash discharge tube, a first coil connected in series therewith, and a main capacitor for supplying a discharging current to said flash discharge tube;
(b) flashlight emission stopping means for receiving the flashlight emitted by said flashlight emitting means and reflected by an object to be photographed and for stopping emission of the flashlight by said flashlight emitting means when a quantity of the flashlight received reaches a predetermined value;
(c) integrating means for integrating a current corresponding to the flashlight emitted by said flashlight emitting means instead of the flashlight reflected by the object, said integrating means including a second coil magnetically coupled to said first coil, and an integrating circuit for integrating a current associated with a current generated in said second coil;
(d) comparing means for comparing an integrated value from said integrating means with a reference value and for generating a first output when the integrated value is smaller than the reference value and a second output when the integrated value is greater than the reference value; and
(e) indicating means for indicating an over-exposure in response to the first output.

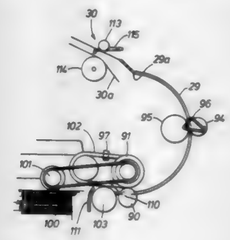
4,523,831
COPYING APPARATUS WITH OPENABLE UPPER HOUSING
Makoto Yokoo, Tokyo; Yoshitsugu Nakatomi, Yokohama, and Shinichi Hashimoto, Fujisawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed May 17, 1982, Ser. No. 379,045
Claims priority, application Japan, May 18, 1981, 56-74568
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **13 Claims**



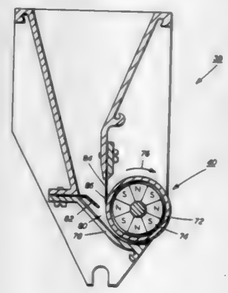
4. A copying apparatus which comprises:
a housing having an opening at the top;
a document table disposed on the top of the housing and having a glass platen on which an original document is to be laid, said document table being reciprocally movable in one direction between a first position wherein the document table fully covers the top of the housing and a second position wherein the document table partially covers the top of the housing, said document table being pivotal around an axis extending in said one direction between the first position and a third position wherein the top of the housing is fully opened;
a copying mechanism disposed inside said housing to reproduce on a sheet of copying paper an image of the original document laid on the glass platen; and
a protective member attached to the housing for protecting the copying mechanism, said protective member being pivotal around an axis perpendicular to said one direction between a third closed position where the protective member is located over the copying mechanism and a second opened position wherein the protective member fully exposes the copying mechansim when the document table is in the first position, wherein
said protective member includes first and second protective covers severally pivotally mounted on said housing.

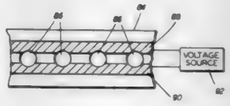
4,523,832
SHEET TRANSPORT
John R. Strutt, Shefford, and Anil G. Bhagwat, Hemel Hempstead, both of England, assignors to Xerox Corporation, Stamford, Conn.
Filed Sep. 20, 1983, Ser. No. 534,052
Claims priority, application United Kingdom, Sep. 21, 1982, 8226811
Int. Cl.³ G03G *15/00;* **B65H** *5/00*
U.S. Cl. 355—3 SH **4 Claims**

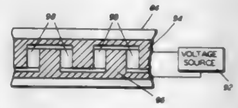
1. A sheet transport for reversing the direction of travel of a sheet, comprising a direction reversing guide consisting only of an outer, curved surface, spaced drive rolls for conveying sheets along said surface, said spaced drive rolls including input and disengageale output drive nips spaced less than the dimension of travel of the smallest sheet intended to be transported from a single intermediate drive nip, and registration means, said registration means includes a buckle inducing throat formed between an end portion of said guide and an opposed guide surface directed towards said output nip, and one or more retractable registration stops for registering a sheet in the disengaged nip, said end portion of said guide having a proturberance arranged to direct a sheet out of alignment with the disengaged nip and against said opposed guide surface, whereby a sheet fed against the registration means is buckled about said protuberance, said output nip being subsequently reengaged for feeding the sheet in synchronism with a developed image on a photoreceptor.



4,523,833
DEVELOPER ROLLER METERING BLADE
Thomas B. Jones, Brighton, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 28, 1983, Ser. No. 546,266
Int. Cl.³ G03G *15/09*
U.S. Cl. 355—3 DD **14 Claims**







1. An apparatus for developing a latent image recorded on an image receiving member, including:

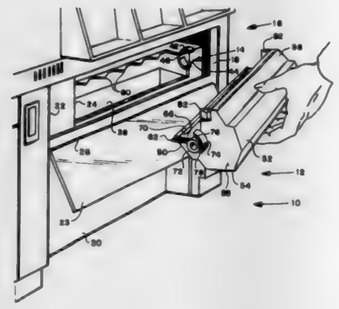
a housing defining a chamber for storing a supply of marking particles therein;
means for transporting the marking particles from the chamber in said housing to a development zone closely adjacent to the latent image recorded on the image receiving member;
a member having a free edge thereof contacting said transporting means and at least one aperture therein closely adjacent to the free edge through which a portion of the marking particles on said transporting means pass through prior to being transported to the development zone; and
means for controlling the quantity of marking particles passing through the aperture in said member.

4,523,834

DRY TONER REPLENISHING APPARATUS

Frederick J. Pelda, White Plains, N.Y., and Roderick N. Schmaling, Brookfield Center, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 9, 1984, Ser. No. 569,353
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—3 DD **6 Claims**



1. In a xerographic copying machine having a frame and instrumentalities mounted therein for making xerographic copies of original documents, one of said instrumentalities being a dry toner developing apparatus which utilizes dry toner developing material stored in a storage receptacle located adjacent one end of said frame, apparatus for periodically replenishing dry toner developing material into said storage receptacle, said apparatus comprising:
A. an aperture defined by a portion of said frame adjacent said one end of said frame,
B. a toner material supply container adapted to be removably received within said opening for dispensing developing material into said storage receptacle, said supply container having a dispensing opening and closure means normally closing said dispensing opening,
C. cooperating connecting means on said frame adjacent said aperture and on said supply container for removably connecting said supply container to said frame for limited pivotal movement of said supply container with respect to said frame between first and second positions in the latter of which said dispensing opening overlies said storage container, and
D. means mounted on said frame for engaging said closure means where said supply container is inserted into said opening and is in said first position and for opening said closure means during pivotal movement of said supply container from said first position to said second position, whereby dry toner developing material in said supply container is dispensed by gravity flow through said dispensing opening into said storage receptacle.

4,523,835

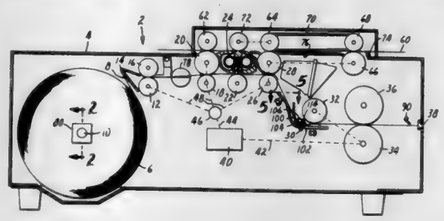
Patent Not Issued For This Number

4,523,836

CONTINUOUS COPIER

Robert F. Nepper, North St. Paul; Alan J. Solyntjes, Minneapolis, and Carl W. Abrahamson, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 29, 1983, Ser. No. 518,645
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—16 **4 Claims**



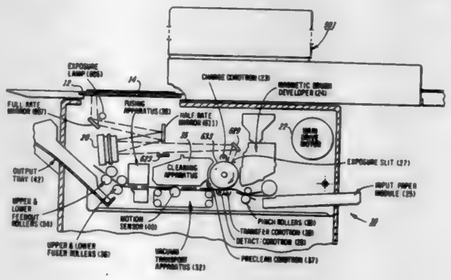
1. A copy machine capable of producing extended indeterminate length copies comprising:
a housing including a paper exit;
a supply of continuous copy paper mounted within said housing;
a series of rollers for transporting said paper through said housing and ending in a terminal pair of rollers adjacent said paper exit which engage said paper and transport said paper at a speed in excess of the speed at which said paper is transported by any other of the rollers in said series so that said paper is pulled through said machine by said terminal rollers;
means for sensing the engagement of said paper by said terminal rollers; and
means responsive to said sensing means for selectively applying a drag to said supply of copy paper so that said copy paper is in tension throughout said machine between said terminal rollers and said supply of copy paper.

4,523,837

DOCUMENT HANDLING SYSTEM TO ENABLE LARGE DOCUMENT COPYING ON A STANDARD OFFICE COPIER

Russell A. Temple, Sierra Madre; Martin G. Wesseler, Arcadia; David C. Harper, Claremont; Harry F. Eiland, Cerritos, and Robert G. Tellkamp, West Covina, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 14, 1983, Ser. No. 513,935
Int. Cl.³ G03B *27/48, 27/50, 27/70*
U.S. Cl. 355—51 **13 Claims**



1. A dual mode document copier comprising:

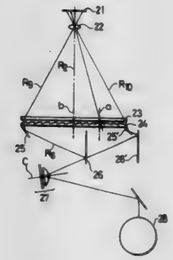
a first operator station on one side of said copier for presenting to the copier normal and smaller size documents to be copied in a first mode,
a second operator station on the other side of said copier for presenting to the copier normal and larger size documents to be copied in a second mode,
a document handling module being positioned on said one side of said copier away from said first area when said normal and smaller size documents are to be copied and being positioned on said other side of the copier over said first area when normal and larger size documents are to be copied.

4,523,838

IMAGE FORMING APPARATUS

Yu Yamada, Kokubunji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1982, Ser. No. 446,496
Claims priority, application Japan, Dec. 8, 1981, 56-197218
Int. Cl.³ G03B *27/48*
U.S. Cl. 355—66 **5 Claims**



1. An image forming apparatus comprising:
first optical means for forming an intermediate image of a desired final image;
second optical means for slit scanning the intermediate image formed by said first optical means to reconstruct the intermediate image, by off-axis imaging, on a light-receiving member, said second optical means including a movable mirror for scanning said intermediate image and a fixed image forming optical system; and
optical means disposed between said first and second optical means for diverting the principal rays from the intermediate image, in a slit scanning sectional plane, in the same direction which is not parallel to the optical axis of said first optical means.

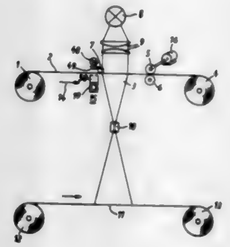
4,523,839

METHOD AND ARRANGEMENT FOR EVALUATING A SERIES OF ORIGINALS FOR COPYING

Bernd Payrhammer, and Bernhard Knör, both of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 466,976
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1982, 3205898
Int. Cl.³ G03B *27/74, 27/80*
U.S. Cl. 355—68 **41 Claims**

1. A method of evaluating a series of originals prior to reproduction, each of said originals having a pair of substantially parallel edges, and said originals being arranged so that said edges extend in substantial parallelism with one another, said method comprising the steps of:
(a) measuring the transparencies of a series of regions of each original along at least two scanning lines which extend transversely of said edges;
(b) deriving change values representative of significant transparency differences between neighboring regions from the transparency values obtained during the measuring step, said change values including first change values derived from one of said scanning lines and second change values derived from the other of said scanning lines;
(c) evaluating said change values to establish the quality of each original for reproduction; and
(d) generating a signal when first and second change values



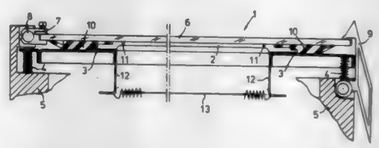
are substantially simultaneously derived from respective locations of said scanning lines situated on a common reference line substantially paralleling said edges, said signal indicating a substantial probability of one of said edges being substantially in register with said reference line.

4,523,840

DEVICE FOR BRINGING SHEETS INTO FLAT POSITION

Jens Hagedorn-Olsen, Hornbæk, Denmark, assignor to Océ-Helioprint AS, Kvistgard, Denmark

Filed Jan. 21, 1983, Ser. No. 459,751
Claims priority, application Netherlands, Feb. 1, 1982, 8200356
Int. Cl.³ G03B *27/20*
U.S. Cl. 355—91 **8 Claims**

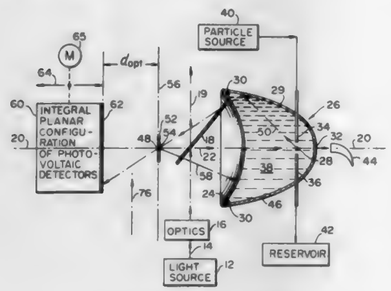


1. A device for bring sheetlike material into flat position in an exposure plane of a reprographic apparatus, comprising a support plate having a transparent resilient body portion presenting an even support surface to receive the sheetlike material, a pressure plate for pressing said material flat against said support surface, said pressure plate being substantially flat and rigid and transparent and being pivoted along an edge thereof for swinging movement between open and closed positions in which, respectively, said pressure plate is out of contact with and in integral contact with said support surface or a sheetlike material resting thereon, said support plate being formed of a transparent resilient resin and said body portion being formed substantially flat but being elastically deformable to a resiliently bowed posture, and yieldable force applying means acting on opposite edge portions of said support plate for normally holding said body portion in a resiliently slightly bowed posture with said support surface slightly convex, said body portion being displaced progressively to a flat posture against the force of said yieldable means by progressive engagement of said pressure plate against said support surface upon movement of the pressure plate from open to closed position.

4,523,841
RADIANT ENERGY RERADIATING FLOW CELL SYSTEM AND METHOD

Albert Brunsting, Miramar, and Walter R. Hogg, South Miami, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Mar. 15, 1979, Ser. No. 20,817
Int. Cl.³ G01N *21/47, 21/64*
U.S. Cl. 356—73 **6 Claims**



1. A method of measuring the directional distributional properties of the radiant energy reradiated from a particle for characterization or the like of said particle and using a known integral configuration of photovoltaic detectors having a sensitive front planar surface which method comprises:

A. Passing the particle through a sensing zone located on the interior of a concave reflector whose configuration is substantially defined by a geometric law, the reflector being symmetrical about an optical axis and having a first focal point also defined by said geometric law, the sensing zone being at said first focal point,

B. directing a beam of incident radiant energy along said axis to said sensing zone,

C. intercepting the radiant energy which has been reradiated by said particle and emerging from the front or said reflector at said planar surface,

D. adjusting the integral configuration along said axis while maintaining its disposition relative to the axis in order to modify the response of said photovoltaic detectors due to said reradiated radiant energy from said particle, and thereafter

E. removing the integral configuration and substituting therefor a composite optical member having the property of separating the received reradiated energy from said particles into plural individual ray groups and directing said ray groups along an equivalent plural number of respective paths, each group having a different direction relative to one another and a direction divergent from the said axis, and measuring the said individual ray groups separately by respective interception of said plural paths.

4,523,842
ASPERIC SURFACE TEST FIXTURE

Edwin M. Allen; Eugene C. Foust; Steven A. Sievert; William C. Fitzgerald, and Max L. Moffitt, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1983, Ser. No. 476,748
Int. Cl.³ G01M *11/02;* G01N *21/55*
U.S. Cl. 356—124 **11 Claims**

1. A fixture for testing a primary mirror surface test specimen comprising:

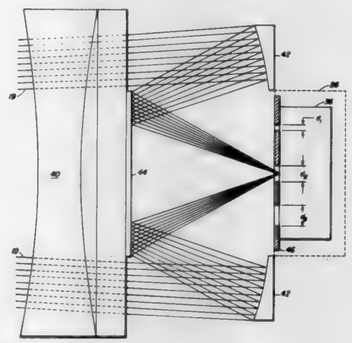
a light source for emitting a light beam along a predetermined optical path;

means for positioning said primary mirror surface test specimen in said optical path;

a corrector lens placed in said optical path between said light source and said positioning means;

a secondary mirror placed in the optical path of light reflected from said primary mirror surface, said secondary mirror re-reflecting said light along an extension of said optical path to a focal plane;

a light detector placed in the extension of said optical path;



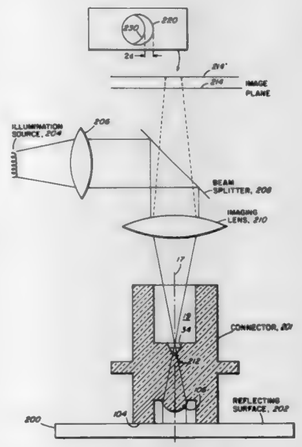
a screen having a plurality of apertures, each aperture having a characteristic size, placed in said focal plane and between said secondary mirror and said light detector; and

a translator connected to said screen.

4,523,843
OPTICAL TEST SET-UP FOR EXPANDED BEAM CONNECTOR

Paul Melman, Newton, and W. John Carlsen, Boston, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 4, 1983, Ser. No. 520,392
Int. Cl.³ G01B *11/26;* G02B *7/26*
U.S. Cl. 356—127 **8 Claims**



1. A method of testing the accuracy of construction of a molded, integral, transparent, telecentric optical fiber connector body having an optical axis, a reference surface at one end of said body perpendicular to said axis, a lens surface recessed inwardly from said reference surface to provide a focal point on said axis, a cavity at an opposite end of said body for receiving both an optical fiber and separate means for holding and centering said optical fiber, and a truncated conical indentation recessed inwardly from said cavity, said indentation terminating in a circular flat having a center on or near said focal point, said method comprising the steps of

(a) placing said reference surface of said body on an optically flat reflector with said reference surface parallel to the reflecting surface of said reflector;

(b) illuminating said opposite end of said body with a noncoherent light source;

(c) providing an image plane distant from said opposite end of said body;

(d) focussing light reflected or transmitted from said opposite end onto said image plane, so that

(1) illumination from said noncoherent light source is reflected from said circular flat, and focussed on said image plane, whereby a first image is formed thereon; and

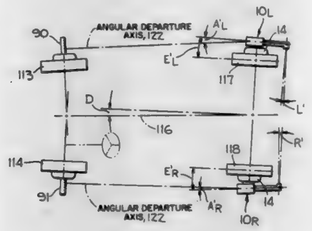
(2) illumination from said noncoherent light source is collimated by said lens surface, reflected from said reflecting surface, focussed by said lens surface to said focal point, and focussed onto said image plane to form a second image thereon; and

(e) measuring the displacement, if any, of said first image with respect to said second image.

4,523,844
DETERMINING TOE OF REAR AND FRONT VEHICLE WHEELS

Raymond Titsworth, Conway, Ark., and Melvin H. Lill, San Jose, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 16, 1982, Ser. No. 418,881
Int. Cl.³ G01B *11/26, 5/24;* G01C *1/00*
U.S. Cl. 356—152 **31 Claims**



1. A method of measuring toe for wheels supporting a vehicle chassis wherein the wheels include at least one pair of non-steerable transversely opposed wheels, utilizing a pair of alignment heads adapted to be mounted on ones of said pair of wheels and providing a signal commensurate with the total toe angle of the wheels on which the heads are mounted, and an angle measuring system incorporated in each head including means defining an angular departure axis extending therefrom, comprising the steps of

mounting an alignment head on each wheel of a non-steerable wheel pair,

directing each of said axes at separate ones of a pair of points equidistant from a point on the centerline of the vehicle chassis,

providing an electrical signal indicative of the angular departure of each departure axis from the plane of the non-steerable wheel on which the respective head is mounted,

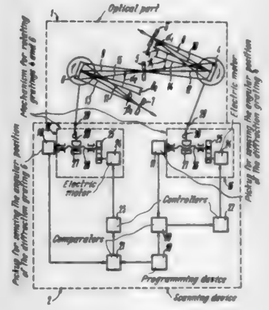
combining the angular departure signals with one half the total toe signal and displaying individual toe values for each of the non-steerable wheels, and

providing an electrical command signal for one non-steerable wheel which causes subsequent total toe angle changes to be applied only to the toe display value of said one wheel whereby said one non-steerable wheel may be adjusted for toe and actual individual toe values continuously displayed without further reference to said departure axes.

4,523,845
DOUBLE GRATING MONOCHROMATOR

Enn K. Erme; Tilt P. Lepasaar, both of Tartu; Jury E. Ummer, Tallin, and Rein A. Kink, Tartu, all of U.S.S.R., assignors to Institut Fiziki Akademii Nauk Estonskoi SSR, Tartu, U.S.S.R.

Filed Feb. 9, 1983, Ser. No. 464,785
Claims priority, application U.S.S.R., May 14, 1982, 3437401
Int. Cl.³ G01J *3/18*
U.S. Cl. 356—333 **1 Claim**



1. A double grating monochromator comprising an entrance slit, a first diffraction grating, an intermediate slit, a second diffraction grating, and an exit slit all optically coupled and arranged in series along a propagation path of the radiation, and a scanning device for varying the angular positions of said diffraction gratings, as the radiation spectrum is scanned, said scanning device comprising:

a pickup sensing the angular position of said first diffraction grating,

a pickup sensing the angular position of said second diffraction grating,

a programming device having a first output and a second output, for generation of signals specifying the angular positions of said first and second diffraction gratings, as the radiation spectrum is scanned, so that the angles of radiation incident on said diffraction gratings are related by

$$\frac{\sigma_1|(\text{Sin}\,\alpha_1 + \text{Sin}\,\beta_1)|}{|K|} = \frac{\sigma_2|(\text{Sin}\,\alpha_2 + \text{Sin}\,\beta_2)|}{|K| + 1}$$

where

σ_1,α_1, and β_1: constant of one of said diffraction gratings, angle of radiation incident on this grating, and angle of radiation diffracted from this grating, respectively,

σ_2,α_2, and β_2: constant of the other of said diffraction gratings, angle of radiation incident on this grating, and angle of radiation diffracted from this grating, respectively, and

K: spectral order of radiation diffracted from one of said diffraction gratings and extracted by the slit located immediately after this grating, the value of "K" being determined by the working portion of the spectral region of the monochromator,

a first comparator having a first input connected to said first output of said programming device, a second input connected to said pickup sensing the angular position of said first diffraction grating, and an output for generation of a signal corresponding to the difference between signals at its inputs,

a second comparator having a first input connected to said second output of said programming device, a second input connected to said pickup sensing the angular position of said second diffraction grating, and an output for genera-

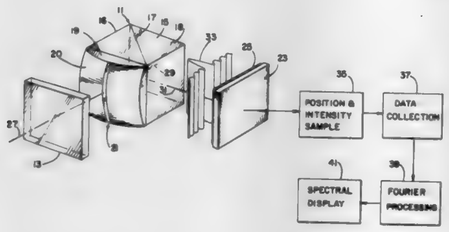
tion of a signal corresponding to the difference between the signals at its inputs,
a first controller having an input connected to said output of said first comparator, and an output,
a second controller having an input connected to said output of said second comparator, and an output,
a first electric motor kinematically coupled with said first diffraction grating for positioning it as specified by the signal from said first output of said programming device, and having a control input connected to said output of said first controller, and
a second electric motor kinematically coupled with said second diffraction grating for positioning it as specified by the signal from said second output of said programming device, and having a control input connected to said output of said second controller.

4,523,846

INTEGRATED OPTICS IN AN ELECTRICALLY SCANNED IMAGING FOURIER TRANSFORM SPECTROMETER

James B. Breckinridge, La Canada, and Fred G. O'Callaghan, Mission Viejo, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 10, 1982, Ser. No. 416,443
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—346 **9 Claims**



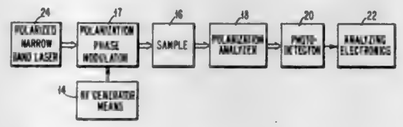
1. In an imaging Fourier transform spectrometer, an improved interferometer mechanism wherein the optical path difference between the retroreflecting mirrors is obtained electronically, without physical movement of the retro-reflecting mirrors, said interferometer mechanism comprising:
an opaque lens means having a light transmissive slot therein placed in the path of a source of radiation for relaying an image of a pupil;
a beam splitter means placed in the path of the radiation passing through the slot in said lens for creating a first and second wavefront;
an optically reflective cube fixed in position relative to said path of radiation passed through the slot in said lens, said cube having:
a first mirror surface placed in the path of the first wavefront from the beam splitter, at an optical path distance CA at the first mirror surface;
a second mirror surface placed in the path of the second wavefront from the beam splitter at an optical path distance of CB at the second mirror surface, CB having a fixed optical path difference relative to CA, said second mirror surface being at an angle to its wavefront that is different from the angle made by the first mirror surface to its wavefront; and
a two-dimensional pixel detector array means comprised of a plurality of detector elements in a grid placed normal to the path of the interference fringe wavefront from said beam splitter for electronically sensing the fringe field free of any mechanical movement relative to said optical cube, the location of each detector element in one direction being an indicator of optical path difference between said first and second mirror surfaces, the location of each detector element in the other direction corresponding to a pixel of spatial information.

4,523,847

FREQUENCY MODULATION-POLARIZATION SPECTROSCOPY METHOD AND DEVICE FOR DETECTING SPECTRAL FEATURES

Gary C. Bjorklund, Los Altos, and Marc D. Levenson, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 7, 1983, Ser. No. 511,593
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—349 **11 Claims**



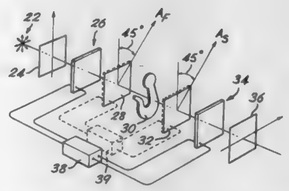
1. A method of detecting a single, narrow polarization anisotropic spectral feature in a sample comprising
providing a beam of light having an optical frequency bandwidth which is narrow compared to the width of the narrow spectral feature and having a center frequency ω_c which lies near the feature,
polarization phase modulating the beam of light with a single RF frequency to provide a pure FM spectrum having a carrier frequency and upper and lower sidebands where the sidebands and carrier are in different states of polarization,
exposing the sample containing the narrow spectral feature to the polarized modulated light so that the FM sidebands probe the narrow spectral feature,
polarization analyzing the light emerging from the sample,
photodetecting the light from the polarizer to detect a beat at a specific RF frequency used for polarization phase modulation, and
electronically monitoring the amplitude of the RF beat signal to indicate the strength of the narrow spectral feature.

4,523,848

POLARISCOPE

Barry Gorman, Preston, and Edwin J. Hearn, Birmingham, both of England, assignors to National Research Development Corporation, London, England

Filed Sep. 24, 1982, Ser. No. 423,309
Claims priority, application United Kingdom, Oct. 1, 1981, 8129655
Int. Cl.³ G01B *11/18*
U.S. Cl. 356—368 **6 Claims**



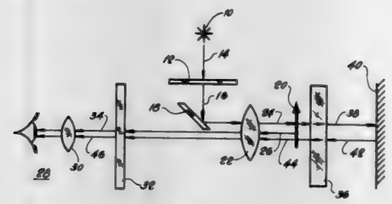
1. A polariscope comprises means to provide an input beam of polarised light;
first liquid crystal means which in a first state allows direct passage of the polarised input beam and in a second state applies a 45° rotation to the polarised input beam;
a first quarter wave plate;
sample location means;
a second quarter wave plate;
second liquid crystal means which in a first state allows passage of light polarised perpendicular to the polarisation axis of the input beam and in a second state applies a 45° rotation to said light;
second polarising means parallel to or crossed with respect to the first polarising means; and
switch means to cause the first and second liquid crystal means each to change between their first and second states.

4,523,849

FRONT LIGHTED OPTICAL TOOLING METHOD AND APPARATUS

William J. Stone, Kansas City, Mo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 347,758, Feb. 11, 1982, Pat. No. 4,501,473. This application Jun. 30, 1983, Ser. No. 509,554
Int. Cl.³ G01B *11/24*
U.S. Cl. 356—369 **20 Claims**



1. A frontally illuminated optical tooling target, comprising:
(a) fiducial means for reflecting a beam of polarized light from a frontal direction back toward the frontal direction with a first polarization;
(b) a polarizing element positioned at the rear of said fiducial means for effecting a change in the polarization of any of said frontal light bypassing the fiducial means and passing through the polarizing element;
(c) a reflective surface positioned on the rear of said polarizing element for reflecting light passing through said polarizing element back through a second pass of the polarizing element toward the frontal direction with a second polarization, the second polarization differing from the first polarization, whereby upon adjustment of the intensity of one of the first and second polarizations so as to be greater than the other an optical contrast is provided between the light reflected from the fiducial means and the reflective surface.

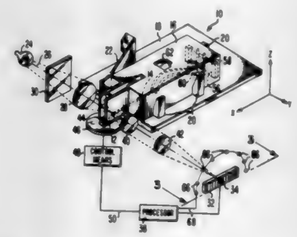
4,523,850

SYSTEM FOR POSITIONING A BODY

Robert L. Covey, Cranbury, N.J., and Michael T. Gale, Wettswill, Switzerland, assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 14, 1982, Ser. No. 434,316
Int. Cl.³ G05D *1/10*
U.S. Cl. 356—375 **17 Claims**

1. A method of positioning a body having two opposed edges and having a first axis oriented to pass through said edges, comprising the steps of:
exposing said body to a beam of light oriented along a second axis substantially orthogonal to said first axis in a direction such that one or both of said edges are imaged by an optical system for projecting a linear section across said body as a silhouette-like image onto all or a portion of a linear array of photodetectors disposed along a direction substantially parallel to said first axis,
scanning said photodetector array to obtain a light intensity transition profile of all or part of said projected image along said photodetector array, said profile having one or two fifty percent (50%) intensity points,
shifting said body along said first axis until both of the fifty percent (50%) intensity points along said transition profile strike predetermined locations along said photodetector array, said profile being indicated by a projected image comprising both of said edges,



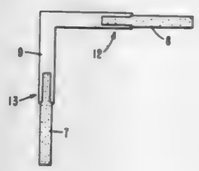
moving said body along said second axis until the slope of said intensity transition profile is maximized, thereby obtaining an in-focus position, and
translating said body along a third axis, substantially orthogonal to said first and said second axes, until the minimum in said intensity transition profile drops to a predetermined percent of the full intensity value.

4,523,851

PRECISION IC ALIGNMENT KEYS AND METHOD

George Maheras, and Hubert O. Hayworth, both of Fort Collins, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 11, 1982, Ser. No. 407,204
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—399 **6 Claims**



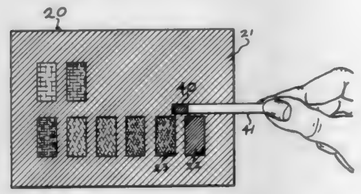
1. An alignment key system, comprising:
a first structural pattern lying in a first plane, characterized by two substantially straight segments that are greater in length than in width and that are substantially orthogonal in relative orientation; and
a second structural pattern lying in a second plane visually parallel to said first plane, characterized by two substantially straight segments that are greater in length than in width, that are substantially orthogonal in relative orientation, that have a relative position one to another to cause a visually perceived partial overlap with said first structural pattern when said first and second structural patterns are aligned, and that in such an aligned state locates the overlapping regions to be furthest from the intersection defined by linear projections of the orthogonal segments of the first structural pattern.

4,523,852

COLOR COMPARISON REFERENCE STANDARD AND METHOD FOR USING SAME

Robert Bauer, Bristol, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jun. 9, 1983, Ser. No. 502,462
Int. Cl.³ G01J *3/52*
U.S. Cl. 356—421 **13 Claims**



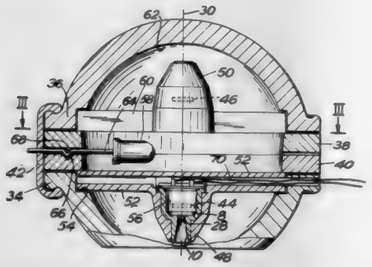
1. A color comparison reference standard comprising a plurality of colored reference areas of differing hues corresponding to discrete reference values and to which a colored response area of a colorimetric test means can be compared to determine the reference value most closely related to the hue of the colored response area, and a background area against which said colored reference areas are displayed, said background area having a luminance (L*) value of from about 15 to about 80, the luminance (L*) value of any portion of said background area being within about 30 of the average luminance (L*) value of any two or more adjacent ones of said colored reference areas which are displayed against said portion of said background area.

4,523,853

MEDICAL TEST REACTION AREA REFLECTED LIGHT PHOTOMETRIC DEVICE

Rudolf V. Rosenbladt, Bad Homburg; Klaus Nenninger, Mannheim, and Rudolf Schüssler, Lampertheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,292
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138878
Int. Cl.³ G01N *21/47*; G01J *1/06*
U.S. Cl. 356—446 **16 Claims**



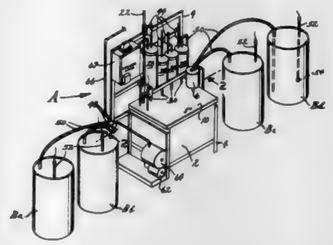
1. In a reflected-light photometric device for determining the reflectivity of a specimen area which is part of an objective area specifically dedicated for the determination of certain properties of body fluids, having a light source for illuminating the specimen area, and a first photodetector for picking up light reflected from the specimen area, the improvement comprising an opaque first diaphragm with a diaphragm surface shaped essentially as a hollow truncated cone and having a light-absorbing inner area facing the axis of symmetry of the path of light between the specimen area and the detector, means mounting the first diaphragm in said path to essentially symmetrically surround the axis of symmetry along part of its length and taper upwardly toward the detector with the cross-section of its upper edge smaller than that of its lower edge and a second diaphragm disposed closer to the specimen area than the first diaphragm with a light absorbing diaphragm surface facing the photodetector, an aperture that surrounds the specimen area and which is essentially symmetrical to the axis of symmetry of the path of light.

4,523,854

APPARATUS FOR MIXING FOUNTAIN SOLUTION

Robert A. Beckley, Mount Vernon, Ill., assignor to World Color Press, Inc., Effingham, Ill.

Filed Nov. 7, 1983, Ser. No. 549,315
Int. Cl.³ B01F *15/02*
U.S. Cl. 366—132 **13 Claims**



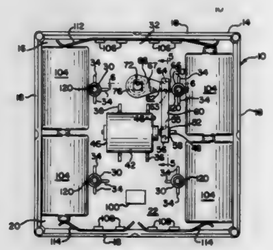
1. An apparatus for preparing a fountain solution for lithographic printing presses by mixing water with liquid additives derived from additive containers, said apparatus comprising: a mixing tank; a water supply line directed into the tank; a remotely operated water valve in the water supply line; a measuring container for each additive; additive supply means for directing additive from each additive container into its measuring container; an additive sensor at each additive container for determining when the additive container has a predetermined quantity of additive in it; additive release means for introducing the additive from each measuring container into the mixing tank; discharge means for withdrawing mixed fountain solution from the mixing tank; and control means to which the remotely operated water valve, the additive supply means, the additive sensors, the additive release means, and the discharge means are responsive, the control means including high and low sensors for detecting when the mixing tank is substantially empty and substantially full, respectively, the control means when the high sensor detects that the mixing tank is full causing the additive supply means to introduce an additive into each measuring container until the additive sensor for that measuring container detects that the container has a predetermined quantity of additive in it, the control means allowing the discharge means to withdraw solution from the tank as the level of the solution in the tank drops from the high sensor to the low sensor and preventing the discharge means from further withdrawing solution from the tank when the level of the solution reaches the low sensor, the control means further holding the water valve open and causing the additive release means to introduce a predetermined quantity of additive simultaneously from each of the measuring containers into the tank after the level of the solution reaches the low level sensor, whereby the water and additives are mixed within the tank to form more fountain solution, the control means further closing the water valve and preventing the additive release means from introducing additive into the tank when the level of solution reaches the high sensor.

4,523,855

SHAKER

Robert L. Walker, 20 White Oaks Cir., St. Charles, Ill. 60174

Filed May 2, 1984, Ser. No. 606,263
Int. Cl.³ B01F *11/00*
U.S. Cl. 366—211 **6 Claims**



1. A shaking device for mixing materials in miniature size container, said device comprising:

a housing having a shell-like shape defining an interior space,

motor means to produce a high-speed rotary output supported in brackets carried by said housing and extending into said interior space,

a circular bearing member having an eccentrically offset aperture for a drive shaft of said motor means disposed therein and a laterally radiused outer surface,

a connecting rod having an expandable opening formed in ends thereof respectively, said eccentric bearing member readily disposed in one said opening with said opening formed with a surface complementary to said member radiused surface to secure said member in said opening and allow operative interaction between said member and said connecting rod,

an operating member having an arm with a radiused end disposed in said opening in an opposite end of said connecting rod with said opposite end opening formed with a surface complementary to said arm radiused end to secure said arm end in said opening and allow operative interaction between said arm end and said connecting rod and an upright shaft disposed in a vertical passageway in said housing and extending outwardly therefrom, and

a cradle attached to said operating member upright shaft with said cradle having spaced frame members to receive said miniature size container oriented horizontally with said container held therebetween by strap means attachable to said cradle,

wherein energizing said motor means rotates said eccentric bearing member to reciprocate said connecting rod and in turn oscillate said operating member and attached cradle, said oscillation mixing said materials in said container carried by said cradle to homogenize said materials.

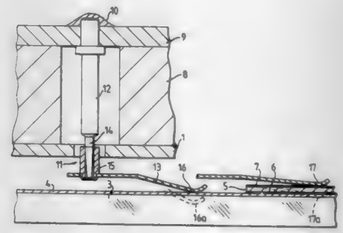
4,523,856

ELECTRONIC TIMEPIECE INCLUDING AN ELECTRO-ACOUSTIC TRANSDUCER

Claude-André Gygax, Evilard, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services, Bienne, Switzerland

Filed May 29, 1981, Ser. No. 269,932
Claims priority, application France, Jun. 4, 1980, 80 12715
Int. Cl.³ G04B *23/02*
U.S. Cl. 368—72 **3 Claims**

1. An electronic timepiece comprising at least an analog display means in which the hands are located between a dial and a crystal, a metallized decoration seen from outside the crystal mounted on the inner surface thereof for partially extending thereover, an electro-acoustic transducer supported by the metallized decoration and having at least a first electrode attached to said metallized decoration to assure an electrical connection with said first electrode of said transducer, a printed circuit located within the timepiece movement providing electronic control means and having output terminals for providing an electric signal at an acoustic frequency, two conductive leads arranged so that the first thereof contacts said metallized decoration and the second thereof contacts a second electrode of said transducer wherein each of said conductive leads comprises a stud arranged to traverse the dial in a region lying under the decoration, a first end of each of said studs



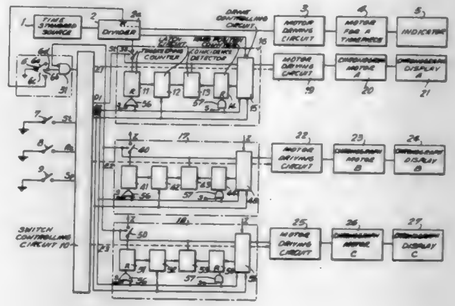
being fixed to a respective output terminal and the second end adapted to receive, following assembly of the dial onto the timepiece, a spring blade, at least two of said spring blades for effecting an electrical contact in the case of said first stud with said decoration and in the case of said second stud with said second electrode following introduction of the timepiece movement into the case bearing the crystal.

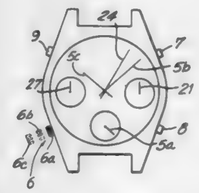
4,523,857

MULTI-FUNCTION ANALOG ELECTRONIC TIMEPIECE

Kenichi Ushikoshi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Aug. 30, 1983, Ser. No. 527,893
Claims priority, application Japan, Aug. 31, 1982, 57-151072
Int. Cl.³ G04F *5/00*
U.S. Cl. 368—157 **17 Claims**





1. An analog electronic timepiece having multiple functions comprising: a standard frequency signal generator, a divider network receiving the standard signal output of said generator

and outputting signals of lower frequency, one said lower frequency signal being a timekeeping signal, an analog display for timekeeping having a timekeeping indicator hand connected to a timekeeping motor, timekeeping motor driving means for receiving said timekeeping signal and outputting timekeeping driving signals to said timekeeping motor, a power source for electrically powering all electrical components of said timepiece;

at least one supplemental motor, each said at least one supplemental motor being connected respectively to a supplemental indicator hand;

supplemental motor driving means receiving signals from said divider network and outputting supplemental driving signals respectively to said at least one supplemental motor;

switch means for independently starting and stopping each said at least one supplemental motor, said timekeeping function being unaffected by operation of said switch means;

external actuating means for selectively actuating said switch means by selective operation of said external actuating means;

phase control means for receiving said frequency outputs of said divider and for shifting the phases therebetween, said phase-shifted signals being input to said timekeeping and supplemental motor driving means, respectively, said timekeeping motor never being driven concurrently with any of said at least one supplemental motor, peak current drain from said power source being less than for concurrent motor driving.

4,523,858

COMBINED ELECTRONIC CALCULATOR AND ELECTRONIC ALARM TIMEPIECE

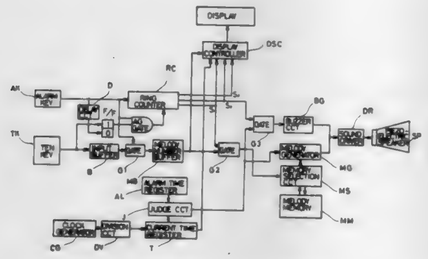
Toshio Nishimura, Joyo, and Akitaka Morita, Shiki, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 4, 1982, Ser. No. 354,757

Claims priority, application Japan, Mar. 6, 1981, 56-32700; Mar. 6, 1981, 56-32701

Int. Cl.³ G04G *13/00*

U.S. Cl. 368—272 **7 Claims**



1. An electronic alarm timepiece comprising:

clock means for developing current time information;

alarm generation means for generating a plurality of alarm tones;

means for introducing time information indicative of desired alarm times;

a bistable alarm selection switch;

alarm selection means, responsive to actuation of said bistable alarm selection switch, for selecting a particular alarm tone from the plurality of alarm tones and for enabling generation of the particular alarm tone in response to the agreement between current time information and alarm time information, the selection of the particular alarm tone within said plurality of alarm tones and the selective enabling of the generation of the particular alarm tone being carried out solely by actuation of said bistable alarm selection switch;

said alarm selection means including ring counter means for cyclically selecting a particular alarm tone from said plurality of alarm tones.

4,523,859

SEALED UNITARY THERMOMETRIC CALIBRATION CELL CONNECTING DIFFERENT FIXED POINTS

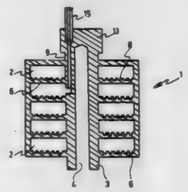
Georges Bonnier, Montsoult, and Yves Hermier, Paris, both of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Mar. 8, 1983, Ser. No. 473,247

Claims priority, application France, Mar. 9, 1982, 82 03951

Int. Cl.³ G01K *15/00, 1/16*

U.S. Cl. 374—1 **7 Claims**



1. A sealed thermometric cell for calibrating thermometers comprising:

means for defining a unitary assembly of at least two hermetically sealed chambers, each containing a substance having a characteristic phase transition temperature different from that of the substance contained in the other chamber;

said chambers being separated by a partition wall having high heat conductivity, and

said means including an integral massive metal part forming at least a portion of said partition wall of each of said chambers to further insure high heat transfer between said chambers, said part defining a housing for the reception of a thermometer to be calibrated.

4,523,860

GAS SATURATION MONITORING SYSTEM AND METHOD

Thomas G. Chin, El Cerrito; Rudy F. Klaver, Albany, and Arthur Alston, El Cerrito, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 14, 1982, Ser. No. 449,679

Int. Cl.³ B01F *3/04;* **G01N** *25/12*

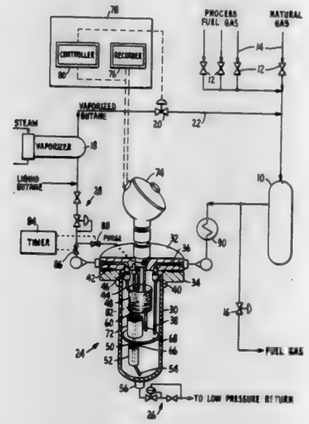
U.S. Cl. 374—27 **11 Claims**

1. A method for monitoring the amount of a condensable fuel that can be added into a fuel gas before condensation is likely to occur, comprising the steps of:

measuring a first temperature indicative of the fuel gas temperature;

measuring a second temperature wherein the second temperature is the adiabatic saturation temperature of the condensable fuel and related to the rate at which the condensable fuel evaporates into the fuel gas;

determining a difference between the first measured temperature and the second measured temperature; and



recording the determined difference for selectively determining if the fuel gas is maintained at a safe level.

4,523,861

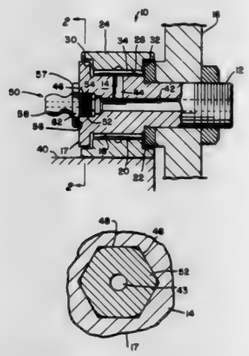
BEARING WITH A LUBRICATION FITTING

Leo Stella, Bristol, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Jun. 18, 1984, Ser. No. 621,783

Int. Cl.³ F16C *33/66*

U.S. Cl. 384—475 **5 Claims**



1. A bearing comprising: an inner member; an outer member of greater inside diameter than the outside diameter of the inner member thus providing an annular space between the inner member and the outer member; a plurality of rolling members in the annular space, said inner member having a longitudinal lubrication passage, at least a portion of said longitudinal lubrication passage being non-circular, and a cross-hole extending radially from the longitudinal lubrication passage to the annular space; and a lubrication fitting having a cylindrical shank press fit into said non-circular lubrication passage portion.

4,523,862

TAPERED ROLLER BEARING

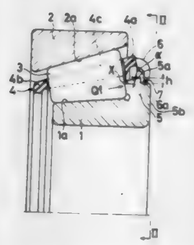
Hiroyoshi Yasui; Teruo Yoshida, both of Nara; Hiroshi Ueno, Osaka, and Katsunori Tsumura, Nara, all of Japan, assignors to Koyo Seiko Company Limited, Osaka, Japan

Filed Jan. 30, 1984, Ser. No. 574,962

Claims priority, application Japan, Jun. 28, 1983, 58-100350[U]

Int. Cl.³ F16C *33/46, 33/58*

U.S. Cl. 384—564 **14 Claims**



1. In a tapered roller bearing including an inner race and an outer race respectively having a first tapered track and a second tapered track, a plurality of tapered rollers disposed between said inner race and said outer race, and held in circumferentially equally spaced positions by a cage made of a synthetic resin, a shoulder for guiding the tapered rollers, provided only at a large diameter portion of said inner race, and projections for engagement with said shoulder, formed on a large diameter side annular portion of said cage at portions thereof corresponding to its positions between windows for the tapered rollers, the improvement comprising;

said cage having the projections each formed on the large diameter side annular portion thereof in such a shape as is folded radially and inwardly at its forward end portion, with a width and a thickness of said projection being gradually reduced from its base towards said forward end portion to provide a pointed shape,

said inner race having the shoulder formed into an inclined surface, with its diameter being increased from an inner side of the bearing towards its outer side, and

an engaging portion formed in said shoulder for engagement with said projections, whereby the forward ends of said projections are engaged with said engaging portion so as to maintain non-contact with respect to said shoulder during rotation of the bearing.

4,523,863

THRUST BALL BEARING

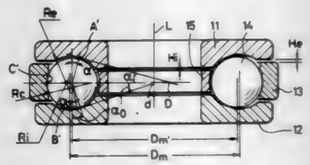
Hideo Okoshi, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1983, Ser. No. 541,969

Claims priority, application Japan, Oct. 25, 1982, 57-185958

Int. Cl.³ F16C *19/10, 33/58*

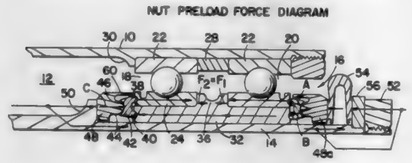
U.S. Cl. 384—609 **8 Claims**



1. A thrust ball bearing comprising a row of balls, first and second axially opposed races each having a track groove whose cross-sectional radius is greater than the radius of each

ball and which has a single spot of contact with each ball to allow rolling contact, a retainer disposed axially between the first and second races and diametrically inside of the balls to retain said balls between said first and second races, and a third race disposed axially between the first and second races and having a track groove circumscribing each ball with a single spot of contact, the inner diameter of the track groove of the third race being slightly smaller than the diameter of a circle circumscribing the balls when the balls are settled in the bearing so that the apex of a cone formed by the tangents of the balls at their points of contact wth the first and the second races lies slightly beyond the center axis of the bearing, the third race being supported by the balls to rotate with the balls about the center axis of the bearing so that spin contact is allowed but there is no sliding contact between each ball and the track groove of the third race in the circumferential direction thereof, the third race being formed with a circumferentially extended oil groove at a position including the center of spin motion of each ball.

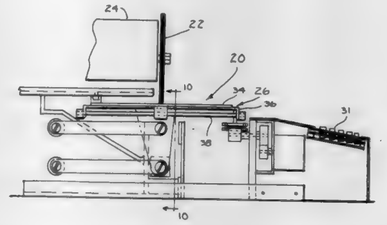
4,523,864
TANDEM BEARING CONSTRUCTION
Jerry D. Walter, North Palm Beach, Fla., and Claude R. Stogner, Huntsville, Ala., assignors to United Technologies Corporation, Hartford, Conn.
Filed Apr. 27, 1984, Ser. No. 604,755
Int. Cl.³ F16C *19/10, 33/58*
U.S. Cl. 384—613 **4 Claims**



1. Means for equalizing the load on tandemly mounted ball bearings supporting a shaft in a housing, each of the ball bearings including an inner race, an outer race and a plurality of balls mounted therebetween, means for locking said tandemly mounted bearings in axially spaced relationship to said shaft, said equalizing means including a concentrically mounted carrier disposed between said housing and said outer races, a pair of load equalizers mounted at the ends of said carrier and said outer races each having a pair of legs engaging the ends of the carrier and the ends of the outer races, a pair of pivoted members engaging the load equalizers at the opposite end of said legs and equal distance therefrom said legs being pivoted in response to thrust loads imposed on said bearing to transmit the loads in a predetermined proportion to said carrier and said outer races, the carrier being in sliding relation with said housing so that the thrust load is equalized in both the forward and reverse directions.

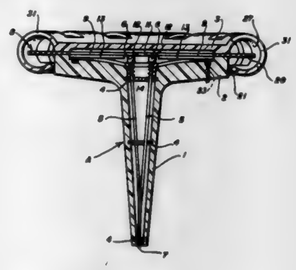
4,523,865
MARKING AND ENGRAVING MACHINE
Roy A. Schacht, 744 Des Peres Rd., St. Louis, Mo. 63131
Filed Aug. 24, 1983, Ser. No. 525,960
Int. Cl.³ B41J *3/38, 1/54*
U.S. Cl. 400—18 **20 Claims**

1. A marking machine provided with a rotatable horizontally extending shaft having means for receiving selectively a vertically disposed rotatable marking wheel or separate engraving tool adapted to be engaged in marking contact with a workpiece supportable upon an underlying worktable, said marking wheel being provided with marking characters such as letters, numerals and the like and an engraving tool for engraving characters, designs and the like on the periphery of the wheel, said marking wheel or separate engraving tool and worktable being adapted to be engaged together to bring the marking wheel or separate engraving tool and workpiece together in marking engagement and means for driving said worktable in an X-Y relation to provide said engraving by the marking wheel or the separae engraving tool, said means comprising providing said worktable with an upper worktable member supportable upon a lower worktable member for slidable movement to the front and rear thereof in a Y direction, means for driving the lower worktable member with the upper worktable member supported therein in a transversing X



direction to the left and right of the machine, means for driving the upper worktable member in said Y direction reciprocably toward the front and rear of the machine, said means for driving the upper worktable and said means for driving the lower worktable being independent of each other and being simultaneously operable at different rates of speed, said marking wheel or separate engraving tool being rotatable to a selected marking or engraving position in registry with said workpiece and means for raising the worktable and supported workpiece into marking or engraving engagement with said marking wheel or separate engraving tool.

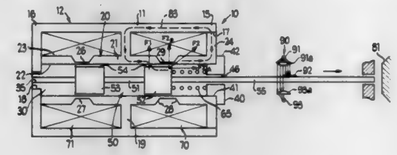
4,523,866
WIRE PRINT HEAD HAVING PIEZOELECTRIC DRIVE ELEMENTS
Peter Hirzinger, Wendelstein, and Karl-Heinz Vatterott, Duderstadt, both of Fed. Rep. of Germany, assignors to Triumph-Adler A.G. fur Buro- und Informationstechnik, Nuremberg, Fed. Rep. of Germany
Filed Jul. 22, 1983, Ser. No. 516,463
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1982, 3227801
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **7 Claims**



1. A wire print head comprising
a generally cone shaped tubular wire guide structure having a circular flange at its large end,
print wires supported by said wire guide structure having a drive end and a print end, said print wires being supported within said wire guide structure with the drive ends in a circle array and with said print ends in a line array,
a circular cover member secured to said flange and defining a cavity therebetween,

a ring clamped between said cover member and said circular flange having radial tabs extending into said cavity toward the center of said ring with the free ends of said tabs in driving contact with the drive ends of associated print wires,
and piezoelectric drive elements bonded to each of said tabs operable when driven by print signals to flex said tabs thereby to drive associated print wires, said circular flange having a curved surface on the side defining said cavity, said curved surface having radial grooves opposite said radial tabs of a width less than the width of said radial tabs and more than the width of said piezoelectric drive elements, said curved surface serving to guide movement of flexed tabs and said grooves allowing non contacting movement of driven piezoelectric drive elements.

4,523,867
BI-DIRECTIONAL DRIVE PRINT WIRE ACTUATOR WITH FORWARD-VELOCITY AND REVERSE-POSITION CLOSED LOOP FEEDBACK CONTROL
Harry R. Berrey, Waynesboro, and Paul W. Caulier, Greenwood, both of Va., assignors to Genicom Corporation, Waynesboro, Va.
Filed Jul. 25, 1983, Ser. No. 516,897
Int. Cl.³ B41J *3/12, 9/42*
U.S. Cl. 400—124 **26 Claims**



1. An impact print wire actuator for imprinting upon a target surface comprising:
print wire means movable in forward and reverse directions between an at-rest position spaced from the target surface and an impact position against the target surface,
a source of first and second reference signals,
drive means coupled to said print wire means for effecting movement thereof in said forward and reverse directions, and
control means coupled to said drive means and to said print wire means for continuously varying the forward and reverse driving forces applied to said print wire means as said print wire means moves between the at-rest and impact positions thereof as different first and second functions of the instantaneous position of said print wire means and of said first and second reference signals respectively during said forward and reverse movements.

7. An impact print wire actuator for imprinting upon a target surface comprising:
print wire means movable in forward and reverse directions between an at-rest position spaced from the target surface and an impact position against the target surface,
drive means coupled to said print wire means for powering the movement of said print wire means,
position sensing means in communication with said print wire means for continuously generating a position signal corresponding to the instantaneous displacement of said print wire means for monitoring the instantaneous displacement of the print wire means, and
control means coupled between said position sensing means and responsive to said position signal for controlling the operation of said drive means by effecting a closed loop velocity feedback control circuit during said forward movement and a closed loop position control circuit during said reverse movement.

4,523,868
RIBBON FEED CARTRIDGE
David T. Shadwick, Versailles, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 18, 1983, Ser. No. 514,407
Int. Cl.³ B41J *35/28*
U.S. Cl. 400—208 **5 Claims**

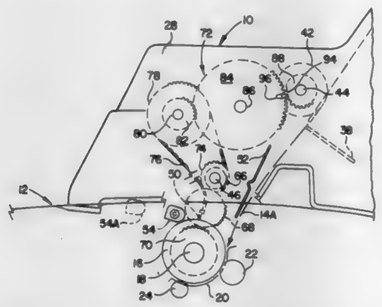


1. A ribbon cartridge for a printer comprising a chamber, a supply of ribbon contained within said chamber, a spool for taking up said ribbon after use, an opening for exit and entrance of said ribbon from and into said chamber to provide a span of said ribbon exterior to said chamber,
a drive, drivingly engaging said spool on the periphery thereof to drive said ribbon onto said spool,
a carrier for shiftably supporting said spool relative to said drive to move the axis of said spool away from said drive as used ribbon is collected on said spool,
said carrier comprised of a support plane of material perpendicular to said axis of said spool, and supported and guided by the interior of said cartridge,
said chamber, on one surface perpendicular to said axis of said spool, comprises a channel means for restraining, supporting and guiding said carrier for movement within said channel means with said carrier positioned with said support plane substantially parallel with said one surface and constraining said carrier for movement only away from said drive,
spring means directly interconnecting said chamber and said carrier for yieldingly biasing said carrier toward said drive.

4,523,869
SHEET FEEDER
Samuel W. Martin, Weston, Conn., assignor to LQ Corporation, Meriden, Conn.
Filed Aug. 29, 1983, Ser. No. 527,014
Int. Cl.³ B41J *13/10*
U.S. Cl. 400—629 **13 Claims**

1. For use in controlling sequential feeding of individual paper sheets along a paper feed path from a paper storage hopper to a computer controlled printer wherein each individual paper sheet is accurately moved by a power operated platen into a printing position for the start of printing thereon in synchronism with a start-to-print cycling control of the word processor printer, a mechanical timing mechanism comprising sheet engaging feed means upstream of the word processor printer, and drive means drivingly connected between the platen and the feed means for operating the feed means, the drive means being continuously operable in uninterrupted repetitive operating cycles responsive to uninterrupted unidirectional operation of the platen, the drive means including mechanical timing means for intermittently actuating the feed

means responsive to said uninterrupted operation of the printer drive for sequentially driving individual paper sheets a prese-



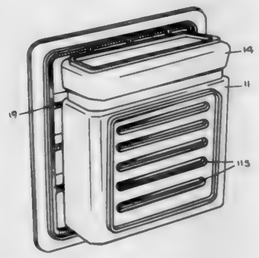
lected distance in one direction along the paper feed path in timed relation to the printer operation.

4,523,870

AROMA-DISPENSING CARTRIDGE AND HOLDER ASSEMBLY FOR AUTOMOBILES

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Jul. 26, 1982, Ser. No. 402,031
Int. Cl.³ A61L *9/04*
U.S. Cl. 98—2.11 **5 Claims**



1. An aroma-dispensing system comprising a cartridge and holder assembly which when activated functions to diffuse an aromatic vapor into a forced air stream intercepted by the assembly, said assembly operating in combination with means in which said stream is emitted through a vent grill formed by at least one slat, said assembly comprising:

A. an open-top holder having a rectangular cross section, the front and rear walls thereof having corresponding arrays of parallel slots, said holder being provided at its rear wall with releasable clip means provided with a pair of cooperating flexible elements engaging the slat of the grill to secure the assembly thereto, whereby the forced air therefrom is intercepted by the assembly;

B. a cartridge telescopically receivable in the holder and having front and rear walls provided with similar arrays of parallel slots, said cartridge housing a pad of porous material permeable to said forced air stream and impregnated with a liquid scent; and

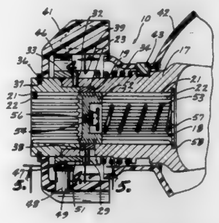
C. control means to render said cartridge axially shiftable relative to the holder from an active position in which the holder and cartridge slots lie in registration, thereby permitting the forced air stream to pass through the pad to volatilize the liquid to produce said aromatic vapor, to an inactive position in which the slots are out of registration to effectively seal the cartridge.

4,523,871

AUTOMATIC LOCK OPEN U-JOINT COUPLER

Florian B. Recker, 802 First St. SW., Dyersville, Iowa 52040

Filed Sep. 1, 1977, Ser. No. 829,910
Int. Cl.³ F16B *7/00*
U.S. Cl. 403—12 **5 Claims**



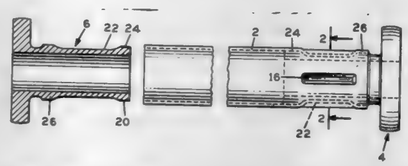
1. In a coupling for releasably connecting a power shaft to a drive shaft having external splines and an annular recess around the shaft between the opposite ends of the splines, the coupling including a housing connected to the power shaft and having an open end with a bore having internal splines meshable with the external splines on the drive shaft, an annular locking sleeve having internal splines alignable with the internal splines of the housing and rotatably mounted in the housing for shifting between open and locking positions wherein the splines are respectively aligned and misaligned with the internal splines of the housing, the housing being axially slidable onto the drive shaft when the locking sleeve is in its open position with the external splines on the drive shaft meshing with the internal splines in the housing and the locking sleeve to a drive position wherein the locking sleeve splines are located in the recess of the drive shaft so that the sleeve is rotatable to its locking position wherein the misalignment of the splines of the locking sleeve with the splines of the drive shaft prevent separation of the housing and the drive shaft, and further including a follower member having external splines meshing with the internal splines of the housing and axially slidable therein between a first position wherein it engages only the housing spline and a second position wherein it engages both the housing spline and the locking sleeve splines to hold said splines in alignment and spring means for biasing the following member toward its second position, characterized in that the spring means comprises a compression spring means mounted in the housing bore and having one end connected to the housing and the other end attached directly to the follower member.

4,523,872

TORSION RESISTANT GROOVED JOINT

Aldo Arena, Smithtown, and Robert L. Benoit, Oakdale, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,252
Int. Cl.³ F16B *4/00*
U.S. Cl. 403—274 **6 Claims**



1. A torque tube assembly wherein the torsional strength of the end connection exceeds the torsional strength of the tube comprising a pair of end members interconnected by a tubular member, each of said end members having a male extension

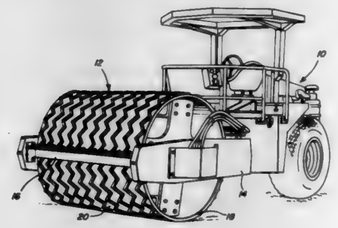
extending into said tubular member, said male members each having a plurality of axial grooves spaced equidistant circumferentially around said male member with shoulders at the opposite axial ends of said grooves, the inner wall of said tubular member resting on said shoulders, end portions of said tubular member intermediate said shoulders being recessed into said grooves and forming a torque transmitting inteconnection therebetween, each of said axial grooves being comprised of a plurality of straight side walls and a bottom member intersecting said side walls, each of said side walls being equally angularly sloped with respect to a vertically disposed plane normal to a horizontally disposed plane passing through intersections of said side walls and an outer surface of said end members, said intersections of said side walls with said outer surface and said bottom member each having a radius, the axial length of said grooves between said shoulders being greater than the circumferential width of said grooves, the number of grooves in the end member divided by the outer diameter of the end member being equal to or less than 2.1 divided by the groove width, the depth of each groove, as measured substantially vertically at the groove edge, divided by the groove width, measured at the bottom of the groove, being equal to or less than 2, and the angular slope of each of the groove side walls being not substantially less than 5° and not substantially more than 60° with said side walls sloping away from said bottom member of the recess, whereby the angle of slope of said groove side walls is selected in accordance with the wall thickness of said tubular member.

4,523,873

VIBRATORY ROLLER WITH AXIALLY SPACED ZIG ZAG IMPACT BARS AND WIRE ROPE CLEANERS

Robert B. Elliot, P.O. Box A-26,, Ward Cove, Ak. 99928

Filed Aug. 16, 1983, Ser. No. 524,154
Int. Cl.³ E01C *19/26*
U.S. Cl. 404—124 **5 Claims**



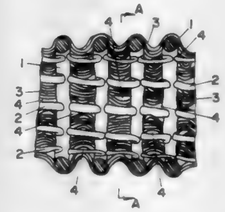
1. In combination with a vibratory roller journalled from a frame portion of a vehicle of the compaction-type, said roller including a generally cylindrical outer face, a plurality of circumferentially extending lug bands carried by the outer face of said roller, said lug bands being disposed in laterally spaced zones of said outer face spaced longitudinally of said roller and in which diametric planes of said roller lie, said lug bands being comprised of lugs including outer surfaces disposed at least substantially normal to intersecting radii of said roller and generated about the axis of rotation of said roller, said outer surfaces being at least substantially circumferentially continuous about said roller and extending in zig-zag paths contained in said zones, the lateral spacing between said zones defining circumferentially continuous paths of said outer face free of said lug bands, scraper members carried by said frame portion and disposed in at least closely spaced relation relative to said face, said scraper members being operative to scrape accumulated debris from said paths as said roller is rotated relative to said frame portion, said lugs including opposite side surfaces divergent from said outer surfaces toward said outer face, said lugs being generally hexagonal in transverse cross section and welded to said outer face with the welding operation being performed to create fillets on opposite sides of said lugs forming inward continuations of said inclined side surfaces.

4,523,874

PLASTIC UNDERDRAINAGE TUBE

Shinji Miki; Toyokazu Nishio; Shinzo Matsuyama, and Shinichi Yamazaki, all of Azuchimachi, Japan, assignors to Takiron Co., Ltd., Osaka, Japan

Filed Sep. 23, 1982, Ser. No. 422,088
Int. Cl.³ E02B *11/00*
U.S. Cl. 405—43 **3 Claims**



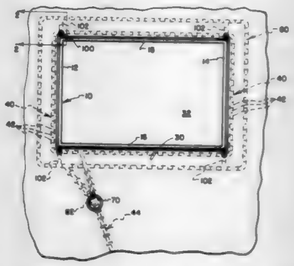
1. A plastic underdrainage tube having a longitudinal axis comprising as an integrally extruded unit a plurality of axially spaced apart annulate bands having relatively greater thicknesses arrayed so that said axis passes through a center of each band, a plurality of longitudinally parallel bars each joining integrally at its intersections to said annulate bands to form a reticular tube body, and a plurality of circumferentially disposed longitudinal strands in thicknesses less than those of said annulate bands and those of said bars, said strands joining integrally substantial portions of outer peripheries of said annulate bands and bars respectively and being positioned radially outwardly of said bars at any cross section perpendicular to said longitudinal axis and being closely spaced apart along the circumference of said tube body to define drainage openings therebetween in the mesh portions defined by the annulate bands and longitudinal bars, and said openings being dispersed over the entire surface of the tube.

4,523,875

AUXILIARY DRAINAGE SYSTEM FOR ELIMINATING WATER PROBLEMS ASSOCIATED WITH A FOUNDATION OF A BUILDING

Dante DiFiore, 5387 Wilson Mills Rd., Highland Heights, Ohio 44143

Filed Dec. 27, 1982, Ser. No. 453,129
Int. Cl.³ E02B *11/00*; E02D *19/00*; E04D *13/08*
U.S. Cl. 405—50 **10 Claims**



1. A method of relieving and eliminating ground water buildup near at least a portion of a foundation wall of a building, wherein the building has a basement floor that is internal with respect to the foundation wall, and wherein the basement

floor has a top surface, and wherein the building has a footer drain line system extending along the foundation wall portion, including the steps of:

(a) digging a trench at a location that is external with respect to and extending along but spaced a substantial distance on the order of several feet laterally outwardly from an underground wall which forms a portion of a foundation wall of a building, the trench extending to a depth below the height of a top surface of a basement floor of the building;

(b) installing an elongate auxiliary drain line means in the trench at a level below that of the height of the top surface of the basement floor of the building and at a level below that of nearby portions of the footer drain line system, with the auxiliary drain line means being similarly spaced a substantial distance from and external to the underground wall for providing openings at spaced locations along the elongate auxiliary drain line means to admit water from a surrounding area that is external with respect to the undergrond wall into the auxiliary drain line means, including establishing at least one branch line connection between the auxiliary drain line means and the nearby footer drain line portions so that water may discharge from the footer drain line system through the branch line connection into the auxiliary drain line means;

(c) providing means for connecting the auxiliary drain line means to a storm drain line which serves the building so that water which is admitted to the auxiliary drain line means is channeled into the storm drain line; and,

(d) filling substantially all but the topmost few inches of the trench with particulate material to provide porous reservoir means surrounding the auxiliary drain line means at a location which is external with respect to the underground wall and extending upwardly from the auxiliary drain line means for receiving ground water and ducting it to the auxiliary ground drain line means to prevent the buildup of ground water in the vicinity of the foundation wall portion.

4,523,876

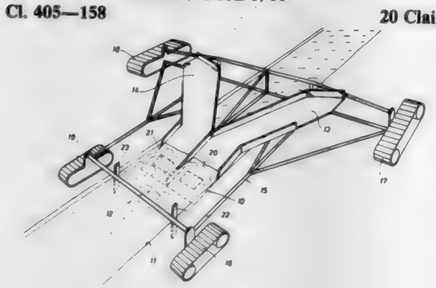
ICE SLOT MAINTENANCE

Dean P. Hemphill, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 2, 1983, Ser. No. 557,493

Int. Cl.³ F16L *1/00*

U.S. Cl. 405—158 **20 Claims**



1. A method for laying a pipeline beneath ice covering water comprising:

cutting an elongated slot in the ice;

removing newly formed ice from the ice slot until the pipeline can be laid through the ice slot by

positioning an inclined plane in the ice slot to a depth no less than the interface of the newly formed ice and underlying water, the inclined plane being at least partly supported by means located adjacent to the ice slot;

moving the inclined plane laterally along the length of the ice slot;

sliding the newly formed ice up the inclined plane and out of the water; and

laying the pipeline through the ice slot.

4,523,877

J-TUBE METHOD AND APPARATUS

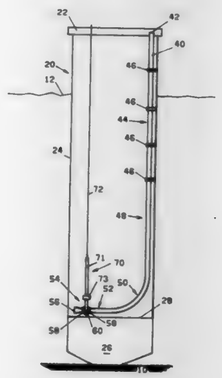
Lyle D. Finn, Houston; Bruce C. Volkert, Katy; Jamie F. Mathews, Jr., Houston, all of Tex., and Michael M. Brady, Cobham, England, assignors to Exxon Production Research Co., Houston, Tex.

PCT No. PCT/US80/01066, § 371 Date Mar. 5, 1982, § 102(e) Date Mar. 5, 1982, PCT Pub. No. WO82/00697, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 21, 1980, Ser. No. 391,600

Int. Cl.³ F16L *1/04*

U.S. Cl. 405—195 **5 Claims**



1. A method for installing a service line extending upwardly from the seaflor through a curved guide tube at an offshore structure, the guide tube including a generally longitudinal upper segment, a substantial, generally longitudinal lower segment, a generally lateral segment, and a lower end, said method comprising:

connecting said upper segment to the structure so that it cannot move substantially laterally with respect to the structure, but can be moved longitudinally with respect to the structure, leaving said lower segment and said lateral segment free of the structure;

restraining said lower end so that it cannot move substantially laterally with respect to the structure, but can be moved longitudinally with respect to the structure;

moving the tube with respect to the structure to an elevation at which said lateral segment is above the highest expected mudline on the structure after settling;

placing the structure on the seafloor;

permitting the structure to settle to its substantially final elevation;

lowering the tube with respect to the structure until said lower end is a short distance above the seafloor;

drawing said service line through the tube; and

releasing said lower end, thereby permitting the force of gravity to flex said guide tube so that said lower end descends toward the seafloor.

4,523,878

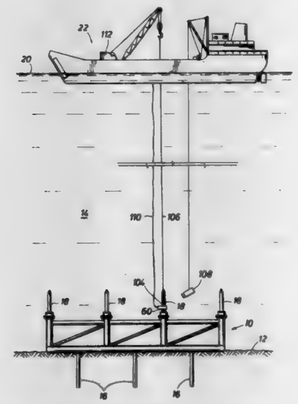
REMOTELY REPLACEABLE GUIDEPOST METHOD AND APPARATUS

Jene A. Richart, Houston, Tex.; Bradley D. Beitler, Ojai, Calif., and David G. Deeken, Weybridge, England, assignors to Exxon Production Research Co., Houston, Tex.

Continuation of Ser. No. 296,762, Aug. 27, 1981, abandoned. This application Apr. 13, 1984, Ser. No. 599,884

Int. Cl.³ E02D *29/00*; E21B *7/128, 43/013*; E16L *1/04*

U.S. Cl. 405—195 **12 Claims**



1. A remotely replaceable guidepost system for use in remote alignment of equipment being lowered from the surface of a body of water to a subsea structure located on the floor of said body of water, said remotely replaceable guidepost system comprising:

a receptacle formed integrally with or permanently rigidly attached to said subsea structure, said receptacle having an upper load-bearing surface;

a guidepost having a vertical axis, unobstructed upper section and a lower section, said lower section of said guidepost being remotely insertable into said receptacle;

a support shoulder formed integrally with or rigidly attached to said guidepost, said support shoulder being located between said upper section and said lower section of said guidepost such that said support shoulder contacts said upper load-bearing surface of said receptacle when said guidepost has been fully mated with said receptacle so that downward vertical loads on said guidepost are transmitted by said support shoulder to said receptacle; and

means for releasably locking said lower section of said guidepost into said receptacle, said locking means being releasible only by application of an upward vertical force to said guidepost.

4,523,879

ICE BARRIER CONSTRUCTION

Raymond G. Finucane, and Hans O. Jahns, both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Apr. 16, 1982, Ser. No. 369,042

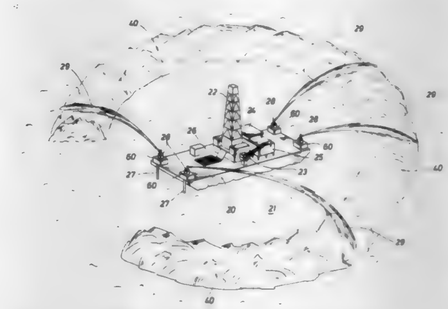
Int. Cl.³ E02D *21/00*; E02B *17/00*

U.S. Cl. 405—217 **28 Claims**

1. A method for protecting an offshore structure located in a body of water which is at or near its freezing temperature, comprising the steps of:

(a) withdrawing water from said body of water when the temperature of the ambient air is below the freezing temperature of said water;

(b) spraying said water upwardly and outwardly in a stream through said ambient air to cause said water to freeze as it passes through said ambient air, said stream being directed so that the resulting spray ice is deposited at a location which is laterally offset from said offshore structure and from the position from which said water is sprayed, wherein said spraying causes a high enough percentage of said water to freeze as it passes through said ambient air so



that the resulting spray ice accumulates into a mass of spray ice at said location; and

(c) continuing steps (a) and (b) until said mass of spray ice forms a grounded spray ice barrier having a size and shape adapted to protect said offshore structure.

4,523,880

TIE ROD ASSEMBLY FOR ROCK BOREHOLE ANCHOR

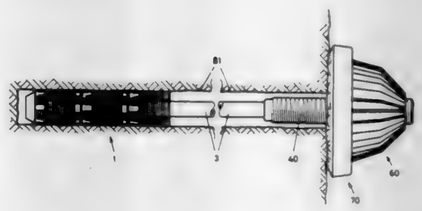
Erwin Isler, Rapperswil, Switzerland, assignor to H. Weidmann, AG, Rapperswil, Switzerland

Filed May 4, 1983, Ser. No. 491,489

Claims priority, application Switzerland, May 14, 1982, 3023/82; Dec. 29, 1982, 7614/82

Int. Cl.³ E21D *21/00*; F16B *2/14, 43/00*

U.S. Cl. 405—259 **14 Claims**



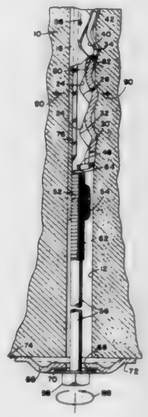
1. A tie rod for a rock securing system having a tension element anchored in a borehole by a molded anchoring element which rests against the wall of the borehole and holds the tension element, the tension element being connected with the anchoring element in a pressure-locked mannner in the rock by frictional force, and the free end of the tension element being threaded to a tension nut supported by an anchor plate resting against the surface of the rock, characterized by: the anchoring element (**1**) comprising a plurality of axially spaced spreading bolts (**10**) each solidly connected with the tension element (**3**) and each having a plurality of wedge surfaces (**15**) surrounding the tension element, and a plurality of spreading sleeves (**29**) individually associated with and surrounding the bolts and connected with each other, a threaded sleeve (**40**) coupled to a free end (**42**) of the tension element, the outer surface of the tension element and the inner surface of the threaded sleeve each having a plurality of mating elevations (**95, 96, 97**), said elevations having a saw-tooth sectional configuration with equal height flanks (**45**) of increasing length from the free end, and the tension nut (**60**) and anchor plate (**70**) each having an arched surface of the same shape (**65, 77**) in the area where the tension nut bears against the anchor plate.

4,523,881

LATERAL FORCE SYSTEM AND SUPPORT FOR SUPPORTING MINE ROOFS

Thomas Ringe, Phoenixville, Pa., assignor to Mine Roof Support Systems, Inc., Spring City, Pa.

Filed Apr. 1, 1983, Ser. No. 481,377
Int. Cl.³ E21D *20/00, 21/00*
U.S. Cl. 405—259 **8 Claims**



1. A supportive force applying bolt for mine roofs adapted for insertion in a vertical hole in a said roof, said bolt comprising a generally U-shaped body member with laterally spaced front edges, said front edges being of continuous smoothly undulating extended stepped wavilinear configurations, a slide member having both longitudinal faces with a continuous smoothly undulating stepped wavilinear configuration similar to that of said body member edges in mating coactable engagement therewith, rotatable means operatively connected to the lower end of said body member and operatively engageable with the lower end of said slide member, said rotatable means being operable to cause relative displacement between said body and slide members through a downward movement of said body member with respect to said slide member, said members upon opposite relative displacement moving and displacing said mating stepped surfaces from low to high portion contact therebetween serving to laterally relatively space said members and create lateral oppositely directed forces against plural contacted side portions of the hole, and thereby lateral opposite forces in the proximate material of said mine roof, said rotable means being in coactive engagement with the mine roof surface adjacent said vertical hole and operable upon rotation to contactably set and position said slide member against material in said hole and to create vertical compressive forces in the mine roof material through coactive downward movement of said slide body and positioned contact of said rotatable means with the mine roof surface.

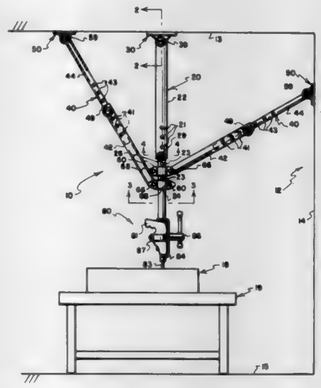
4,523,882

DRILL PRESS WITH OVERHEAD MOUNT

Robert W. Hengesbach, 7886 Mentor Rd., Mentor, Ohio 44060

Filed May 5, 1982, Ser. No. 374,950
Int. Cl.³ B23B *47/00*
U.S. Cl. 408—236 **8 Claims**

1. A drill press mounting assembly comprising:
an upright member having connection means at one end thereof for detachably securing an electric drill thereto for use at a work station,
overhead mount means including a pivotal connection attached to the other end of said upright member for supporting said upright member in swingable pendant relation therefrom,
a pair of bracing members disposed respectively in angular relation to said upright member, said bracing members each having respective pivotal connections at each end thereof,
said upright member and each of said bracing members respectively including telescopically extensible portions disposed between said connections thereof thereby to adjustably select a predetermined fixed length for said upright member and each of said bracing members,
each said bracing member having its pivotal connection at one said end adjustably securable at selected positions to said upright member, and,



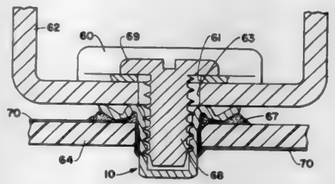
overhead mount means attached respectively to the said pivotal connection at the other said end of each said bracing member,
thereby to facilitate positioning of said mounting assembly as necessary by virtue of the said pivotal connections at each end of each said bracing member, whereby an electric drill secured to said pendant upright member is stabilized for drilling operations by said pair of angularly related bracing members through the respective overhead mounts thereof and of said pendant upright member.

4,523,883

PRINTED CIRCUIT BOARD FASTENER

Francis C. Peterson, St. Charles; William G. Rodseth, Elgin, and William A. Spring, Geneva, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 18, 1982, Ser. No. 434,816
Int. Cl.³ F16B *37/06;* **H01B** *7/34*
U.S. Cl. 411—171 **5 Claims**



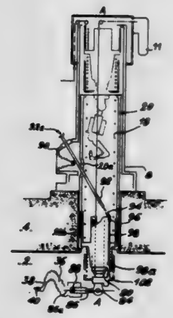
1. A fastener for use in assembling an article to a printed circuit board having an aperture, said fastener comprising: a generally tubular internally threaded nut body adapted to be inserted into said aperture, a radially extending flange integrally formed at one end of said body, said flange including an integral conical spring washer which flairs radially outwardly and in a direction away from said body, said flange also including an inner first portion immediately adjacent said body, said first portion providing stopping means to limit deflection of said conical spring washer, said first portion creating a circumferential recess for allowing flow of fluids about said body, a spacer disposed between said first portion and said conical spring washer, said spacer including radial flow channels communicating with said circumferential recess.

4,523,884

REMOTE MANIPULATION ASSEMBLY

Gilles Clément, Paris; Daniel Francois, Vendome; Paul Marchal, Gif Sur Yvette, and Claude Moreau, Nantes, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Oct. 8, 1981, Ser. No. 309,604
Claims priority, application France, Oct. 17, 1980, 80 22328
Int. Cl.³ B25T *3/00*
U.S. Cl. 414—8 **4 Claims**



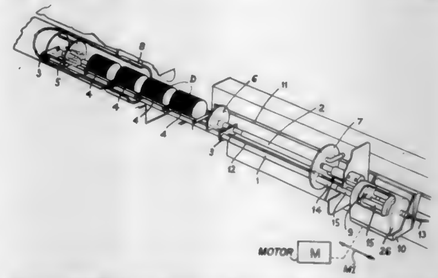
1. A remote manipulating assembly comprising a movable platform (6) carrying a telescopic supporting or carrying assembly at the end of which a multi-part, multi-jointed remote manipulation arm (12) can be displaced inside an enclosure, wherein the platform is located on a wall of the enclosure, at least one opening being provided in the wall to permit the introduction of the telescopic carrying assembly having a longitudinal axis (AA) into the enclosure, and wherein the platform is provided with a hood (8) within which the telescopic carrying assembly and the remote manipulation arm can be completely contained, the hood also being provided in its opening part with means for the tight connection to the wall of the enclosure cooperating with sealing means provided in the opening, and having at its other end means for controlling the displacements of the telescopic carrying assembly, whilst also having connection and supply means for the displacements of the remote manipulation arm, together with its operation and the operation of its tools said telescopic carrying assembly being constituted by a primary telescopic carrying means sliding within the hood and which comprises at least one sleeve (20) whose length is equal to the free internal height of the hold and a carrying carriage (26) moving within the sleeve of the primary telescopic carrying means and carrying a secondary telescopic carrying means supporting said remote manipulation arm, said secondary telescopic carrying means being comprised of a plurality of telescoped tubes (31) each of a length less than the length of said sleeve (20) to allow containment of said tubes and said manipulation arm within said sleeve when said tubes and sleeve are retracted into said hood.

4,523,885

APPARATUS FOR LOADING MAGAZINES INTO FURNACES

Christopher J. Bayne, Lightwater; Joseph L. Lambert, Cobham, and Graham E. Collyer, Ottershaw, all of England, assignors to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Apr. 11, 1983, Ser. No. 483,724
Claims priority, application United Kingdom, Apr. 29, 1982, 8212453; Aug. 26, 1982, 8224546; Feb. 9, 1983, 8303592; Feb. 9, 1983, 8303596
Int. Cl.³ F27D *5/00*
U.S. Cl. 414—156 **10 Claims**



1. Apparatus for introducing silicon wafers (D) in magazines (4,104) into a process tube (8,105) of a furnace or diffusion oven, comprising
at least two spaced silica tubes closed at their forward ends, next adjacent the process tube (8), to constitute supporting members (1,2; 14; 101,102) for the loaded magazines (4,104),
a clamping device (9,106) for holding and supporting said members (1,2; 14; 101,102) cantilever-fashion by that end of each member which is remote from the process tube (8),
motor means (M) associated with said clamping device (9,106) for moving said supporting members with the loaded magazines thereon into and out of the process tube (8) in a substantially horizontal direction (M1); and
at least one insert (15,36) reinforcing each supporting member (1,2; 14; 101,102),
said magazines (4,104) and their supporting members (1,2; 14; 101,102) remaining entirely suspended throughout the loading, processing, and unloading operations, and out of contact with the interior wall of the process tube (8).

4,523,886

CONTAINER HANDLER WITH PROGRAMMED ELECTRO-HYDRAULIC CONTROL CIRCUIT

Jerry L. Reeves, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio

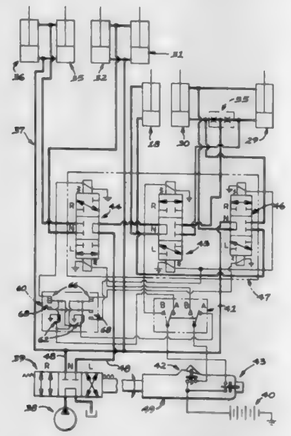
PCT No. PCT/US 82/00057, § 371 Date Jan. 13, 1982, § 102(e) Date Jan. 13, 1982, PCT Pub. No. WO83/02483, PCT Pub. Date Jul. 21, 1983
This PCT application filed Jan. 13, 1982, Ser. No. 349,481
Int. Cl.³ F15B *11/20;* **B66F** *9/22*
U.S. Cl. 414—641 **6 Claims**

1. A programmed electro-hydraulic control circuit (37) comprising
a pressurized fluid source (38);
a single main control valve (39) connected to said source (38) and movable between first (R) and second (L) positions;
an electrical power source (40);
a master switch (41) connected to said power source (40) and movable between first (A) and second (B) positions;
first (42) and second (43) switches each movable between a closed position connecting said power source (40) to said master switch (41) and an open position disconnecting said power source (4) from said master switch (41);
a plurality of solenoid-actuated control valve means (44,45,46), each connected to said main control valve (39) and to said master switch (41), and each actuatable to a preselected first (R) or second (L) position thereof in response to, said master

switch (41) being in either one of its first (A) or second (B) positions, and at least one of said first (42) and second (43) switches being in its closed position, said main control valve (39) being further movable to a neutral position (N), between its first (R) and second (L) positions, preventing communication of said pressurized fluid source (38) to said control valve means (44,45,46) and wherein said control valve means (44,45,46) includes first (44), second (45) and third (46) control valve means each further movable to a neutral position (N) between the first (R) and second (L) positions thereof;

first cylinder means (18) for extending in response to positioning of said main control valve (39) being in its first position (R) and retracting in response to positioning of said main control valve (39) in its second position (L) with both such extension and retraction being in response to said master switch (41) being in its first (A) position, said first switch (42) being in its open position and said second switch (43) being in its closed position, each of said first (44) and second (45) control valve means being in its neutral position (N), and said third control valve means (46) being in its second position (L);

second cylinder means (35,36) for extending in response to said main control valve (39) being in its first position (R) and retracting in response to said main control valve (39) being in its second position (L) with both such extensions and



retraction being in response to positioning of said master switch (41) in its first position (A), positioning of said first switch (42) in its closed position, positioning of said second switch (43) in its open position, positioning of said first control valve means (44) in its first position (R), positioning of said second control valve means (45) in its neutral position (N), and positioning of said third control valve means (46) in its neutral position (N); and

a pair of third cylinder means (29,30) for alternately extending or retracting when said main control valve (39) is in its first (R) or second (L) position, respectively, with both such extension and retraction being in response to said master switch (41) being in its first position (A), said first switch (42) being in its closed position, said second switch (43) being in its closed position, said first control valve means (44) being in its neutral position (N), said second control valve means (45) being in its second position (L), and said third control valve means (46) being in its first position (R).

4. A programmed electro-hydraulic control circuit (37) in combination with a container handler (10,11) having a mast assembly (12), a carriage (16) mounted for vertical movement on said mast assembly (12), and a container handling attachment (10) including a lower frame assembly (17) slidably mounted for side shifting on said carriage (16), side shift cylinder means (18) for laterally shifting said lower frame assembly (17) on said carriage (16), an upper frame assembly (21) mounted for vertical and pivotal movement on said lower from assembly (17), a pair of lift and tilt cylinder means (29,30) for selectively lifting opposite ends of said upper frame assembly (21) simultaneously or for lifting one such end relative to the other end on said lower frame assembly (17), a pair of extensible members (23,24) slidably mounted on opposite ends of said upper frame assembly (21), spread cylinder means (31,32) for selectively extending said extensible members (23,24), a latch (33,34) movably mounted on the end of each of said extensible members (23,24), latch cylinder means (35,36) for moving each said latch (33,34) to lock a container on said carriage (16), said control circuit (37) including

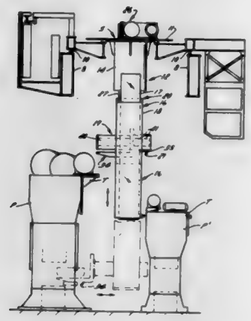
a pressurized fluid source (38), a main control valve (39) connected to said source (38) and movable between said first (R) and second (L) positions, an electrical power source (40), a master switch (41) connected to said power source (40) and movable between first (A) and second (B) positions, first (42) and second (43) switches each movable between a closed position connecting said power source (40) to said master switch (41) and an open position disconnecting said power source (40) from said master switch (41), and a plurality of solenoid-actuated control valve means (44, 45, 46) for selective actuation to first (R) and second (L) positions thereof in concurrent response to, said master switch (41) being in either one of its first (A) or second (B) positions, and at least one of said first (42) and second (43) switches being in its closed position, each of said control valve means (44,45,46) being connected to said main control valve (39) and to said master switch (41) and further connected to at least one of said cylinder means (18,29,=32,35,36) to control actuation thereof, said main control valve (39) being further movable to a neutral position (N), between its first (R) and second (L) positions, preventing communication of said pressurized fluid source (38) to said control valve means (44,45,46) and wherein said control valve means (44,45,46) includes first (44), second (45) and third (46) control valve means each further movable to a neutral position (N) between the first (R) and second (L) positions thereof, said side shift cylinder means (18) being responsive for extending in response to positioning of said main control valve (39) in its first position (R) and retracting in response to positioning of said main control valve (39) in its second position (L) with both such extension and retraction being in response to said master switch (41) being in its first (A) position, said first (42) switch being in its open position and said second switch (43) being in its closed position, each of said first (44) and second (45) control valve means being in its neutral position (N), and said third control valve means (46) being in its second position (L), each said latch cylinder means (35,36) being responsive for extending in response to said main control valve (39) being in its first position (R) and retracting in response to said main control valve (39) being in its second position (L) with both such extension and retraction being in response to positioning of said master switch (41) in its first position (A), positioning of said first switch (42) in its closed position, positioning of said second switch (43) in its open position, positioning of said first control valve means (44) in its first position (R), positioning of said second control valve means (45) in its neutral position (N), and positioning of said third control valve means (46) in its neutral position (N), and each of said lift and tilt cylinder means (29,30) being responsive for alternately extending or retracting when said main control valve (39) is in its first (R) or second (L) position, respectively, with both such extension and retraction being in response to said master switch (41) being in its first position (A), said first and second switches (42) being in their closed positions, said first control valve means (44) being in its neutral position (N), said second control valve means (45) being in its second position (L), and said third control valve means (46) being in its first position (R).

4,523,887

STACKER CRANE FOR NARROW AISLES

Donald P. Reiff, Wauwatosa, Wis., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Apr. 6, 1983, Ser. No. 482,572
Int. Cl.³ B60P *1/04*; B65G *1/00*; B66C *17/10*
U.S. Cl. 414—664 **1 Claim**



1. A stacker crane comprising a mast extending along a vertical axis, transport means supporting the mast for horizontal motion, and load supporting means positionable vertically along the mast, said transport means comprising an elevated trolley having a turntable thereon to which the mast is connected for rotation about said axis, and wherein a winch on said turntable, connected with the load supporting means by a cable, positions the load supporting means vertically along the mast, said stacker crane characterized by:

A. the mast having a short tubular upper portion concentric to said axis and connected to the turntable, through which said cable extends;

B. the mast comprising a pair of vertically extending mast elements that are spaced to opposite sides of said axis,

(1) each of said mast elements having at its upper end a rigid connection to a transversely extending beam secured to said tubular upper portion;

C. the masts being connected with said transport means for rotation about said axis;

D. the load supporting means comprising a carriage member, said carriage member

(1) being of inverted U-shaped with a pair of vertically extending legs connected at their upper ends by a sidewardly extending bight portion,

(a) said cable having a connection to the bight portion of the carriage member,

(2) being disposed between the mast elements with each of its legs guidingly engaging one of them, and

(3) having a pair of horizontally extending parallel and opposite tracks, one on each leg,

(a) each projecting in both a forward and a rearward direction beyond its leg, and

(b) each defining a pair of opposite track surfaces that extend along at least a major portion of its length,

(i) one of which faces upwardly and

(ii) the other of which faces downwardly,

(c) each of said tracks having a groove therein which opens towards the other track and which defines said surfaces;

E. the load supporting means further comprising

(b) a frame confined between the tracks,

(2) a pair of load engaging tongues projecting forwardly beyond said frame,

(a) said tongues being mounted on said frame for translatory sideward motion,

(3) two pairs of rollers on said frame, one pair for each of said tracks,

(a) a front roller of each pair being rollingly engaged with said upwardly facing surface on its track,

(b) the rear roller of each pair being rollingly engaged with said downwardly facing surface on its track, and

(c) all of said rollers having their axes substantially contained in a single horizontal plane;

F. actuating means carried by the frame and connected with each of the tongues for adjustingly moving the tongues sidewardly towards and from one another; and

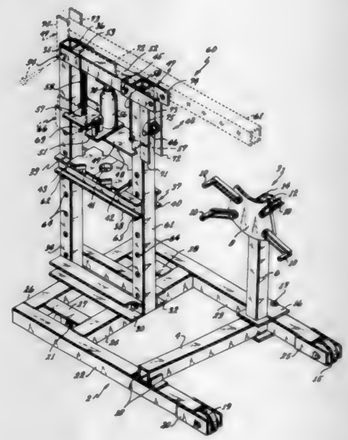
G. means on said frame for reversibly rotatably driving one roller of each of said pairs, for moving the frame along said tracks to an extended forward position in which said tongues project beyond the front ends of said tracks and to a retracted rearward position in which said tongues are near said axis.

4,523,888

COMBINED ENGINE-HANDLING AND METALWORKING MACHINE

Richard S. Pezzner, Northridge, and George L. Rader, Sun Valley, both of Calif., assignors to RSP Innovation Design Mfg., Inc., No. Hollywood, Calif.

Filed Jan. 26, 1984, Ser. No. 574,005
Int. Cl.³ B30B *1/04*
U.S. Cl. 414—680 **5 Claims**



1. A combination engine-handling and metalworking machine comprising:

a. A support structure, said support structure comprising a pair of horizontally disposed spaced parallel hollow beams each of which is connected at one end thereof to wheels and interconnected at the opposite end thereof by a pair of first and second cross pieces, said cross pieces being joined near the ends thereof by caster mounts with underlying casters,

b. A crane means which may be erected thereon, said crane means comprising a vertical post having horizontally disposed spaced parallel channel beams attached to and extending from the lower end of said post in spaced parallel relation to and in between said pair of hollow beams, said post being mountable upon said first and second cross pieces; a boom attached to the upper end of said vertical post and extending generally in perpendicular relation thereto; and power means for pivoting said boom about said vertical post, said power means having a top and base portion;

c. A carrying means that may be erected upon said support structure to which an engine or other object may be secured;

d. A press means, including said vertical post, said boom that

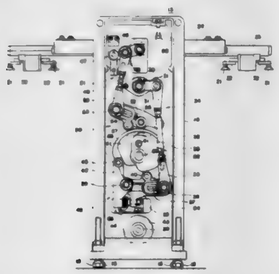
is adaptable as a stanchion for use with said press means, said boom being joined and secured at the bottom end thereof to the ends of said horizontally disposed spaced parallel channel beams that are opposite the ends of said channel beams attached to said vertical post; a third horizontally disposed cross piece extending above and in spaced parallel relation to said horizontally disposed spaced parallel channel beams and connected at each end thereof to the top ends of said vertical post and said boom, respectively, said third cross piece comprising means for receiving and securing said top portion of said power means; first and second springs; first means for attachment of the upper ends of said first and second springs to said third cross piece; a horizontally disposed guide member having ends that engage said vertical post and said boom to permit slidable vertical movement thereof, said member including means thereon for receiving and securing said base portion of said power means, which is adaptable for use with said crane means to raise and lower said boom; a second means for attachment of said guide member to the lower ends of said first and second springs; fourth and fifth horizontally disposed spaced parallel cross pieces that engage and are secured to said vertical post and said boom; and a pair of press plates that are supported by said fourth and fifth cross pieces.

4,523,889

APPARATUS FOR AUTOMATICALLY DELIVERING WORKPIECE

Masaru Orii, Machida, Japan, assignor to Kabushiki Kaisha Orii Jidoki Seisakusho, Japan

Filed Apr. 21, 1982, Ser. No. 370,570
Claims priority, application Japan, Feb. 16, 1982, 57-023377
Int. Cl.³ F16H *25/12*
U.S. Cl. 414—752 **3 Claims**



1. An apparatus for automatically delivering a workpiece which comprises:

(a) a body;

(b) a horizontally-disposed support member mounted on said body for vertical movement;

(c) a horizontally-disposed slide bar supported by said support member for horizontal movement therealong, said slide bar having a pair of workpiece holders at its opposite ends;

(d) first cams and a second cam mounted on a common cam shaft and having their respective cam surfaces, said first cams consisting of a cam **38** and an auxiliary cam **41**;

(e) first and second cam mechanisms operable respectively in response to said cam surface of said first and second cams, said first cam mechanism including cam levers **35** and **42**, rollers **40** and **43** and a belleville spring **44**, and said second cam mechanism including a cam lever **52**, a roller **57** and a coil spring **58**;

(f) a first displacement transmitting mechanism operatively connecting said first cam mechanism to said slide bar for displacing said slide bar horizontally, said first displacement transmitting mechanism including a lever **31'**, an upper rod end **31**, an extensible rod **32** and a lower rod end **33**;

(g) a second displacement transmitting mechanism operatively connecting said second cam mechanism to said support member for displacing said support member vertically, said second displacement transmitting mechanism including an upper rod end **48**, an extensible rod **49** and a lower rod end **50**;

(h) a motor having an output shaft connected to said cam shaft for rotating said first and second cams; and

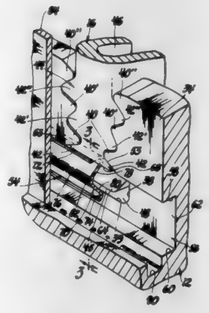
(i) said cam surfaces of said first and second cams having such configurations that upon one revolution of said cam shaft, said slide bar and said support member are moved horizontally and vertically, respectively, in a sequential manner, thereby moving the workpiece in a predetermined manner.

4,523,890

END SEAL FOR TURBINE BLADE BASE

Douglas K. Thompson, Speedway, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1983, Ser. No. 543,492
Int. Cl.³ F01D *5/08, 5/30*
U.S. Cl. 416—95 **3 Claims**



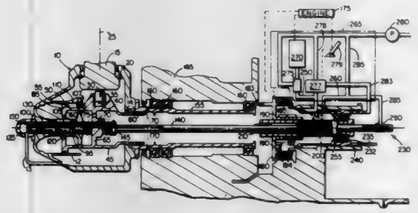
1. In a gas turbine engine rotor including a wheel rotatable about an axis of said engine with an upstream face and a downstream face in planes perpendicular to said axis and a plurality of circumferentially arrayed retention slots between said faces with lugs on opposite sides of said slots, a plurality of blades each having a base with lugs thereon slidably disposed in a corresponding one of said slots and defining therewith a root manifold with said base lugs engaging said slot lugs for blade retention and for defining seals on opposite sides of said root manifolds at predetermined radii from said engine axis, and means for directing pressurized air to each of said root manifolds through one of said upstream and said downstream faces, an end seal comprising, means on said wheel and on each of said blades defining an annular groove in the other of said upstream and said downstream faces traversing each of said bases and including a cylindrical outboard edge at a radius from said engine axis generally equal to said predetermined radius and a cylindrical inboard edge inboard of each of said slots and an annular slot face parallel to said other face, an annular imperforate seal ring in said groove having a right cylindrical flange adjacent said outboard edge and a foot engaging said slot face in a circle of contact inboard of each of said slots, said flange being centrifugally thrust against said outboard edge during rotation of said wheel to effect a 360° seal around said wheel outboard of each of said root manifolds, and means biasing said foot against said slot face during rotation of said wheel to effect a 360° seal around said wheel inboard of each of said root manifolds.

4,523,891

PROPELLER PITCH CHANGE ACTUATION SYSTEM

Robert A. Schwartz, Vernon, and Jerome G. Duchesneau, Andover, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 15, 1983, Ser. No. 504,641
Int. Cl.³ B64C *11/38*
U.S. Cl. 416—157 R **14 Claims**



1. A system for adjusting the pitch of a variable pitch propeller, said propeller comprising a plurality of blades (**15**), each of said blades being mounted to a hub (**10**) and operably connected to a first output member (**45**) associated with a fluid driven pitch change actuator (**87**) pressurizable with fluid from a source thereof, movement of said first output member effecting an adjustment in blade pitch, said system being characterized by:

an input actuator (**230**) having a second output member (**235**);

a valve (**95** and **120**) disposed within said hub, adjacent to said pitch change actuator and in fluid communication therewith for selectively pressurizing said pitch change actuator to effect a desired adjustment in blade pitch; and

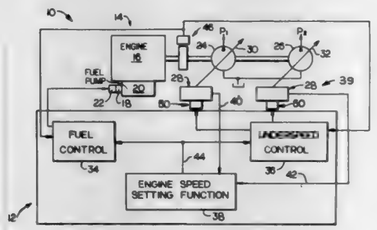
a conduit (**140**) operatively connecting said second output member to said valve for transmitting movement of said second output member to said valve for selectively positioning the valve and for providing through the interior of said conduit means, fluid from said source to said valve and said pitch change actuator.

4,523,892

HYDROSTATIC VEHICLE CONTROL

Randall M. Mitchell, Washington, and John T. Armstrong, Jr., Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 14, 1984, Ser. No. 609,676
Int. Cl.³ F04B *49/00, 1/26*
U.S. Cl. 417—34 **17 Claims**



1. An apparatus for controlling an internal combustion engine having a rack for controlling a fuel injection pump, and at least one variable displacement hydraulic pump, said pump having a load sensing means for detecting hydraulic load and adjusting inclination of a swash plate in response to hydraulic flow and load requirements, the apparatus comprising:

first means for detecting the displacement of said hydraulic pump and delivering a first signal responsive to the displacement of said hydraulic pump;

second means for detecting the rotational speed of said engine and delivering a second signal responsive to said rotational speed;

control means for receiving said first signal and delivering a third signal responsive to the magnitude of said first signal;

underspeed control means for receiving said second and third signals, comparing said second and third signals, and delivering a fourth signal in response to said third signal being greater than said second signal;

swash plate actuator means for receiving said fourth signal and reducing the angle of inclination of said swash plate by an amount responsive to the magnitude of said fourth signal;

fuel control means for receiving said second and third signals, comparing said second and third signals, and delivering a fifth signal in response to said third signal being less than said second signal; and,

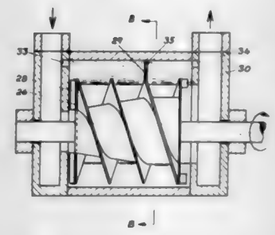
rack actuator means for receiving said fifth signal and controlling the supply of fuel to said engine responsive to the magnitude of said fifth signal.

4,523,893

LIQUID RING PUMP

Willy Johst, Vingårdsgade 13, DK-9000 Aalborg, and Henrik Elsass, Sophus Bauditzvej 13, DK-2920 Charlottenlund, both of Denmark

Filed Sep. 23, 1983, Ser. No. 535,026
Claims priority, application United Kingdom, Dec. 9, 1982, 8235149
Int. Cl.³ F04C *19/00*
U.S. Cl. 417—68 **16 Claims**



1. A liquid ring pump including a helically bladed rotor (**2**) eccentrically mounted in an elongated pump casing (**1**) and including a hub (**3**) for supporting the rotor, a suction inlet (**18**) and a discharge outlet (**19**) positioned at respective ends of the pump casing (**1**), characterized by a preferably circular plate (**26**) being fixedly mounted on the hub proximate that one of the respective ends of pump casing at the inlet and for closing the open space between the bladings ends at the inlet, and access to the space between the bladings is given only through one or more openings (**27**) in the plate (**26**).

4,523,894

EJECTOR PUMP WITH RINGSHAPED NOZZLE

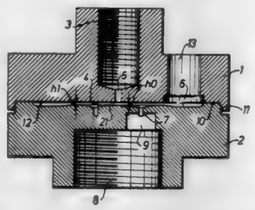
Lennart Forslund, Upsala, and Örjan Nilsson, Solna, both of Sweden, assignors to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed Jun. 1, 1984, Ser. No. 616,556
Claims priority, application Sweden, Jun. 3, 1983, 8303162
Int. Cl.³ F04F *5/00*
U.S. Cl. 417—161 **4 Claims**

1. In an ejector pump including two opposed integral blocks, each having end surfaces and defining between said end surfaces an annular nozzle slot for a pumping mediu, said nozzle slot being directed mainly radially outwards; an annular mixing zone situated radially outside said nozzle slot; an outlet open-

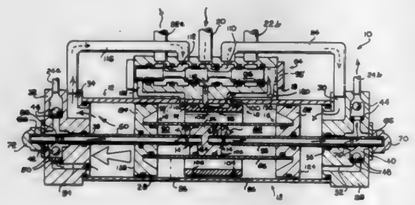
ing in said mixing zone in at least one of said blocks, said outlet opening including at least one mainly axially directed secondary channel in communication with said mixing zone; and an annular diffuser slot situated radially outside said mixing zone; the nozzle slot, the mixing zone and the diffuser slot being defined by an interspace (**12**) between end surfaces (**4, 6**) of said two integral blocks (**1, 2**) separated by spacer means (**10**), the improvement wherein:

portions of at least one of said end surfaces (**6**) form walls of said nozzle and diffuser slots and are separated by an annular groove (**7**) positioned in said end surface (**6**) and connected to at least one passage (**9**) forming together with the groove (**7**) said secondary channel,



the diffuser slot height close to the groove (**7**) is larger than the nozzle slot height (h_0) close to the groove and decreasing in the shape of at least two bevels (Z_1 and Z_2) having bevel angles α_1 and α_2, the bevel angle α_1, of one of said bevels (Z_1) closest to the groove being 8° to 15°, inclusive, and the angle α_2 of another of the said bevels being 4° to 8°, inclusive, the ratio α_1/α_2 being from 1.25–3.25 and each bevel having a width of at least 0.5 times the smallest groove width, the diffuser slot height (h_1) being substantially constant and amounting to 0.84–0.97 times the nozzle slot height (h_0) close to the groove (**7**) along a distance of at least 0.8 times the smallest width of the groove (**7**) commencing at a distance of at most 4.9 times the smallest width of the groove (**7**) from the outermost edge of the nozzle (**21**).

4,523,895
FLUID INTENSIFIER
Ethan A. Silva, 410 McAuley, Oakland, Calif. 94609
Filed Dec. 28, 1982, Ser. No. 454,062
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—225 **13 Claims**



1. A fluid intensifier powered by a pressurized fluid source and comprising:

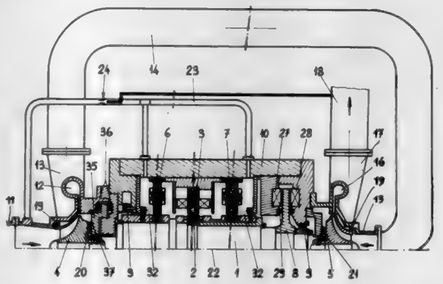
(a) an elongated main cylinder assembly having a first end portion provided with a first end portion orifice and a first main cylinder assembly outlet; a second end portion provided with a second end portion orifice and a second main cylinder assembly outlet; and a solitary input port into which fluid from a pressurized fluid source may flow;

(b) a stationary assembly including a fixed piston centrally located within said main cylinder assembly; a first output tube extending between said first end portion and said fixed piston; and a second output tube extending between said second end portion and said fixed piston; wherein both said first output tube and said second output tube are provided with apertures proximate their ends permitting fluid communication through said tubes;

(c) a reciprocating assembly including a first movable piston disposed within said main cylinder assembly between said first end portion and said fixed piston; a second movable piston disposed within said main cylinder assembly between said second end portion and said fixed piston; and a movable cylinder coupling said first movable piston to said second movable piston and enclosing said fixed piston; said reciprocating assembly completing a pump cycle with a first stroke in the direction of said second end portion and a second stroke in the direction of said first end portion such that a portion of said fluid from said pressurized fluid source is pumped at a pressure greater than that of the pressurized fluid source through said first output tube and out said first main cylinder assembly outlet during said first stroke, and a portion of said fluid from said pressurized fluid source is pumped at a pressure greater than that of the pressurized fluid source through said second output tube and out said second main cylinder assembly outlet during said second stroke, the remainder of said fluid from said pressurized fluid source being exhausted from said main cylinder at a pressure less than that of the pressurized fluid source; and

(d) bistable valve means coupled to said main cylinder assembly and having a first stable state and a second stable state; said bistable valve means switching from said first stable state to said second stable state at the end of said first stroke, and switching from said second stable state to said first stable state at the end of said second stroke; and bistable valve means including first means moved between said first stable state and said second stable state by the movement of said reciprocating assembly and operative to develop a hydraulic signal of its stable state, and second means responsive to said hydraulic signal and operative to direct said pressurized fluid source to said first end portion orifice when said first means is in said first stable state, and to couple said pressurized fluid source to said second end portion orifice when said first means is in said second stable state.

4,523,896
CENTRIFUGAL COMPRESSOR
Bernard Lhenry, and Max Roustan, both of Le Creusot, France, assignors to Creusot-Loire, Paris, France
Filed May 16, 1983, Ser. No. 494,844
Claims priority, application France, Jun. 4, 1982, 82 09771
Int. Cl.³ F04B *35/04;* **F16C** *39/06;* **F04D** *29/08*
U.S. Cl. 417—244 **4 Claims**



1. A centrifugal compressor capable of rotating at high speed, comprising

(a) a single shaft carrying at least two compressor wheels cantilevered on its two ends for setting in motion fluid to be compressed;

(b) a high-speed electric motor comprising a rotor carried by said shaft and located in a central portion of said shaft;

(c) at least two magnetic bearings for supporting said shaft;

(d) a magnetic stop for adjusting the axial position of said shaft;

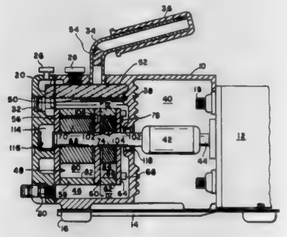
(e) a housing surrounding at least said electric motor, said magnetic bearings and said magnetic stop;

(f) at least one first facial sealing means located at one of said compressor wheels and adjustable as a result of axial displacement of said shaft by means of said magnetic stop;

(g) at least one second facial sealing means located at the second compressor wheel and adjustable as a result of a controlled longitudinal displacement of a supporting component; and

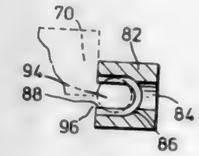
(h) circuit means for placing the space within said housing under a predetermined partial vacuum.

4,523,897
TWO STAGE VACUUM PUMP
Ralph C. Lower, Bryan, and Gary P. Murray, Montpelier, both of Ohio, assignors to Robinair Division, Montpelier, Ohio
Continuation of Ser. No. 387,620, Jun. 11, 1982, abandoned.
This application Jul. 16, 1984, Ser. No. 630,351
Int. Cl.³ F04B *23/04;* **F04C** *25/02*
U.S. Cl. 417—244 **1 Claim**



1. A two stage rotary vacuum pump including a pump module having first and second pumping chambers defined therein each having a cylindrical circumference, a rotor shaft rotatably mounted within the module extending through the chambers and eccentrically related thereto, an electric motor drivingly connected to the rotor shaft, first and second rotors each having an axis, lateral sides, and fixed to the shaft located within the first and second chambers, respectively, at least one non-radial vane movably mounted in each rotor extending from the periphery thereof having an outer end engaging the associated chamber circumference and translatable between extended and rectracted positions, the vane being in a gas compression exhausting position at its retracted position and the outer end having trailing and leading edges with respect to the direction of rotor rotation, a valve plate located intermediate the rotors having a port defined therein establishing communication between the chambers at predetermined rotational positions of the rotors, an exhaust plate disposed adjacent the second rotor having an exhaust port defined therein selectively communicating with the second chamber at a predetermined rotational position of the second rotor, the improvement comprising, each of the rotors including a cylindrical circumference and lateral sides radially perpendicular to the rotor shaft, the lateral side of the first rotor adjacent the valve plate and both lateral sides of the second rotor being recessed intermediate the associated rotor circumference and the rotor shaft, an annular hub defined upon the recessed lateral sides of the rotors adjacent the rotor shaft, the rotor recesses being of an annular configuration and located intermediate the associated rotor circumference and hub, a slot defined in each rotor intersecting the associated rotor lateral side recesses, the rotor vane being slidably mounted within said slot, the port within the valve plate communicating with said rotors' recesses whereby fluid pressure within the second chamber biases the vanes toward the chambers' circumferences and hydraulic axial forces upon the second rotor are substantially balanced, the vanes' outer ends comprising a cylindrical segment surface having a radius substantially equal to the radius of the associated chamber circumference and having a center coinciding with the axis of the associated chamber at the vanes' retracted position whereby the entire outer ends of the vanes engage the chamber circumference at the termination of the compression cycle at the vanes' retracted position to produce optimum compression and reduce the likelihood of gas re-expansion, the valve intermediate the rotors comprising a relatively thin plate and including first and second parallel sides, said first side defining a portion of the first chamber and said second side defining a portion of the second chamber, said valve plate port comprising a first recess defined in said valve plate intersecting said first side, a second recess defined in said valve plate intersecting said second side and an axial passage defined in said valve plate directly intersecting said valve plate sides and communicating with said recesses, said recesses being elongated in the direction of rotor rotation and offset with respect to each other in the direction of rotor rotation, said passage being located centrally with respect to said recesses in the direction of rotor rotation.

4,523,898
HYDRAULIC WOBBLE PUMPS
Paul H. Martin, and John C. Martin, both of Toronto, Canada, assignors to Diesel Equipment Limited, Toronto, Canada
Filed Jan. 10, 1984, Ser. No. 569,616
Int. Cl.³ F01B *31/00, 1/18*
U.S. Cl. 417—269 **2 Claims**



1. In an hydraulic wobble pump having, a housing assembly which has first and second oppositely disposed outer ends, a wobble chamber and a power transmission chamber formed in said housing, a wobble shaft mounted for rotation in said housing and extending into said wobble and power transmission chambers, said wobble shaft having an inner end located in said wobble chamber, a power transmission gear removably mounted on said wobble shaft and located in said power transmission chamber, a plurality of pistons slidably mounted in cylinders formed in said housing and extending longitudinally from said wobble chamber to said first outer end of said housing at circumferentially spaced intervals about the periphery of a central portion of said housing, the improvement of;

(a) a service passage formed at said second end of said housing and opening into said power transmission chamber, said passage being proportioned to permit said power transmission gear to pass therethrough when being mounted on or removed from the wobble shaft when it is located in said power transmission chamber,

(b) an end plate removably mounted at said second outer end of said housing for closing said service passage,

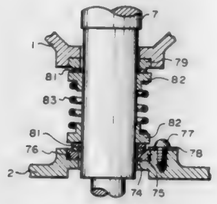
(c) a fluid inlet passage extending inwardly from said first outer end through said central portion of said housing and opening into said wobble chamber directly opposite said inner end of said wobble shaft to permit an anvil shaft to extend therethrough to provide a support which will support the wobble shaft when said power transmission gear is being mounted on wobble shaft when it is located in said housing.

4,523,899

SUBMERGIBLE MOTOR PUMP ASSEMBLY

Kiyoshi Ouchi, Fujisawa, Japan, assignor to Ebara Corporation, Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,833
Claims priority, application Japan, Dec. 15, 1982, 57-219494
Int. Cl.³ F04B *39/02, 21/02*
U.S. Cl. 417—360 **4 Claims**



1. A submergible motor pump assembly comprising:
a motor section having a motor shaft extending downwardly from the motor section;
a pump section disposed axially below said motor section and encasing an impeller mounted at the end of said motor shaft extending into the motor section;
an intermediate unit disposed between said motor and pump section so as to assemble said sections to said unit by mechanical fastening means for coupling said two sections to said unit in the axially opposite directions, respectively, so that said motor shaft extends through said unit, said unit including a mechanical seal means in a chamber provided in said unit to seal said two sections from each other and containing oil for lubricating said mechanical seal,
said chamber being defined by an upper member, a lower member connected to said upper member with a space therebetween, and a sleeve extending in said space between said upper and lower members, said sleeve being adapted to support said mechanical seal means thereabout and to receive said shaft therethrough, said upper member constituting a lower bracket for the motor section to support a lower bearing for rotatably supporting said shaft at the bottom of said motor section and said lower member constituting an upper wall of an impeller chamber of said pump section; and
means for retaining said sleeve and said mechanical seal means in said intermediate unit when said shaft is removed from said intermediate unit, whereby the oil in said chamber need not be removed when said motor shaft is removed for maintenance.

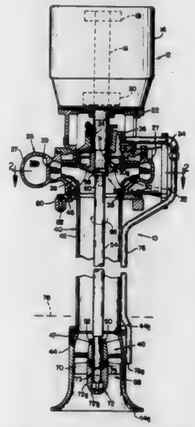
4,523,900

IMPELLER PUMP WITH SELF-PRIMING COLUMN ATTACHMENT

Max Frey, Portland, Oreg., assignor to Roper Industries, Inc., Commerce, Ga.

Filed Mar. 22, 1984, Ser. No. 592,462
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—365 **6 Claims**

1. The combination of
a motor-driven centrifugal pump assembly including an impeller housing with an inlet as the base thereof, an impeller within said housing facing said inlet, and a motor including an output shaft disposed above the impeller housing, said output shaft extending into and being drivingly connected to said impeller,
a self-priming column attachment detachably secured to the pump assembly including an elongate hollow column having its upper end secured to the impeller housing with the interior of the column connecting with said inlet, an elongate shaft extension extending axially within said column with a detachable connection between the upper end of said shaft extension and said output shaft, bearing means rotatably supporting said shaft extension within said column adjacent the bottom end of the column, and an axial flow inducer within said column connected to said shaft extension,
said impeller housing having walls defining a double-volute impeller chamber enclosing the impeller within the housing, and a balance chamber disposed upwardly of and behind the impeller receiving fluid under pressure from the impeller, and



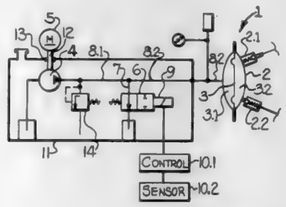
a balance line conduit connected at its upper end with said balance chamber and extending to an open, lower end disposed at substantially the level of said axial flow inducer,
said double-volute chamber serving to radially balance said output shaft in the region of said connection between said shaft extension and said output shaft and said balance line conduit serving to axially balance said shaft extension which extends from said connection.

4,523,901

CONTROL APPARATUS FOR A POSITIVE DISPLACEMENT RECIPROCATING PUMP

Heinz Schippers, Remscheid; Siegfried Hertell, Radevormwald, and Otwin Eich, Remscheid, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrick AG, Remscheid, Fed. Rep. of Germany

Filed Oct. 13, 1982, Ser. No. 434,172
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1981, 3141359; Nov. 28, 1981, 3147235; Apr. 1, 1982, 3212112
Int. Cl.³ F04B *9/08, 35/02*
U.S. Cl. 417—395 **11 Claims**



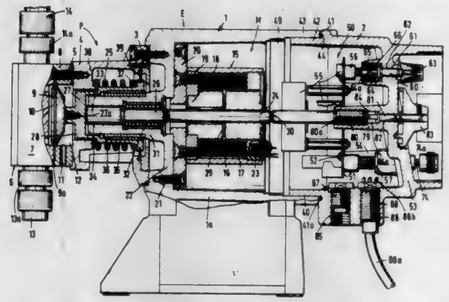
1. A positive displacement reciprocating pump for conveying a liquid or gaseous fluid, and comprising
a fluid enclosure,
movable piston means disposed in said enclosure and sealably dividing the enclosure into a pumping chamber on one side of the piston means and an actuating chamber on the other side thereof,
an inlet valve and a separate outlet valve each communicating with said pumping chamber,
control means for intermittently supplying a pressurized working fluid to said actuating chamber so as to intermittently move said piston means along a stroke which extends in a direction toward said pumping chamber and thereby discharge the conveyed fluid from such chamber, said control means including a source of pressurized working fluid adapted to deliver a substantially constant flow of working fluid, a working fluid line extending between said source and said actuating chamber for delivering such constant flow to said actuating chamber, and valve means operatively connected to said working fluid line for intermittently opening said line to a discharge tank or the like to release the pressure therein, said control means further including means for actuating said valve means in a sequence of working times and idle times, with each of the working times consisting of a closed time period wherein pressure is maintained in said working fluid line and an open time period wherein said pressure is released in said line, with each of said working times being of essentially uniform duration and with the closed time periods of the working times being of essentially uniform duration which is sufficient to move said piston means along its predetermined stroke, and with the pressure in said line being released during said idle times.

4,523,902

DIAPHRAGM PUMP FOR USE IN AN EXPLOSIVE ATMOSPHERE

Michael Wally, Bammental, Fed. Rep. of Germany, assignor to Chemie und Filter GmbH Verfahrenstechnik KG, Heidelberg, Fed. Rep. of Germany

Filed Jan. 21, 1983, Ser. No. 459,790
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202069
Int. Cl.³ F04B *17/04, 43/04;* **F01B** *19/02;* **F16J** *1/10*
U.S. Cl. 417—410 **28 Claims**



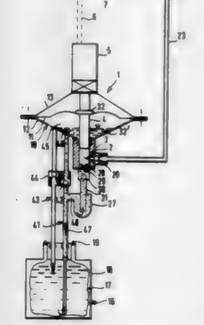
1. A fluid flow machine comprising a diaphragm pump having a diaphragm; means for driving said pump including electromagnet means having a movable armature and means for deforming said diaphragm in response to movement of said armature, said deforming means comprising a discrete motion transmitting member disposed between said diaphragm and said armature, a second member interposed between said motion transmitting member and said diaphragm and means for yieldably biasing said second member against said motion transmitting member, said motion transmitting member being located between said second member and said armature and being in contact with said second member and said armature solely under the action of said biasing means; a common, pressure-resistant enclosure for said pump and said driving means, said enclosure including a main portion, a cover and means for securing said cover to said main portion, said main portion having a first part surrounding at least a portion of said pump and a second part surrounding said electromagnet means, said second part comprising a peripheral wall which surrounds said electromagnet means, an end wall integral with said peripheral wall and disposed between said electromagnet means and said first part, and a sleeve integral with said end wall and projecting towards said first part, said sleeve having first and second sections and said motion transmitting member being movably mounted in said sleeve, the outer diameter of said motion transmitting member and the inner diameter of said first section being approximately equal to prevent the propagation of ignition between the interior of said second part and the interior of said first part of said enclosure, said cover being snugly interfitted with said main portion to prevent the propagation of ignition between the interior of said enclosure and the surrounding atmosphere, said main portion having a first cylindrical surface and said cover having a second cylindrical surface, one of said surfaces surrounding the other of said surfaces and the snug fit between said cover and said main portion being disposed between said surfaces; and bearing means in said second section of said sleeve arranged to guide said motion transmitting member.

4,523,903

DOSING PUMP

Hans Arens, Wertingen, Fed. Rep. of Germany, assignor to Grunbeck Wasseraufbereitung GmbH, Hochstadt, Fed. Rep. of Germany

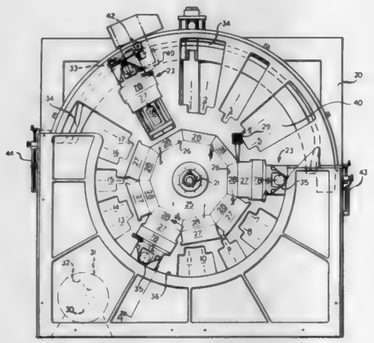
PCT No. PCT/EP83/00084, § 371 Date Nov. 9, 1983, § 102(e) Date Nov. 9, 1983, PCT Pub. No. WO83/03447, PCT Pub. Date Oct. 13, 1983
PCT Filed Mar. 22, 1983, Ser. No. 557,150
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 3210821
Int. Cl.³ F04B *7/04, 23/04*
U.S. Cl. 417—489 **6 Claims**



1. A dosing pump comprising a pump cylinder having a first inlet, a second inlet and an outlet, a suction valve and a discharge valve being provided at the second inlet and the outlet, respectively,
a dosing piston cooperating with the pump cylinder,
a diaphragm connected with the dosing piston and being disposed within a diaphragm chamber disposed at a level above the pump cylinder,
wherein the diaphragm chamber is connected with a container for dosing agent via a suction conduit comprising a suction valve and a return conduit comprising a pressure valve, and with the pump cylinder via a connection forming the first inlet of the pump cylinder,
the dosing piston extending through this connection and allowing fluid to enter the pump cylinder from the diaphragm chamber when the dosing piston emerges from

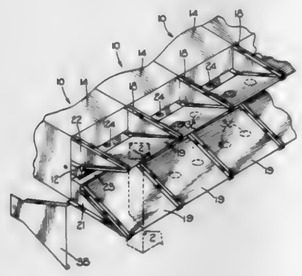
the pump cylinder, and wherein a suction line is provided which connects the second inlet with the suction conduit.

4,523,904
BLOW MOLDING APPARATUS
Merritt W. Martin, Saline, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 28, 1984, Ser. No. 594,075
Int. Cl.³ B29C *1/16, 17/07*
U.S. Cl. 425—539 **13 Claims**



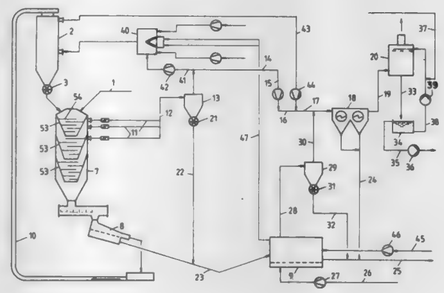
1. In a blow molding apparatus wherein a plurality of sets of molds are mounted on a wheel rotatable about an axis and the molds are moved toward and away from one another to enclose a parison and the parison is blown to the confines of the cavity between the mold sections as the wheel rotates by the application of air, an apparatus for controlling the application of the air comprising:
- a valve assembly associated with each set of molds on the wheel and comprising a valve which is opened and closed to control the flow of air to the mold,
- said valve assembly including a rotatable cam for moving the valve to open and closed positions,
- a starwheel associated with the cam,
- and a first actuator mounted at a first position along the path of the wheel for engagement with the starwheel to rotate the cam and open the valve,
- and a second actuator mounted at a second position along the path of the wheel for engagement with the starwheel to rotate the cam and close the valve.

4,523,905
BURNER FOR GASEOUS FUELS
David Lewis, Birmingham, England, assignor to Nu-Way Energy Limited, England
Filed Jul. 21, 1983, Ser. No. 516,702
Int. Cl.³ F23D *15/00*
U.S. Cl. 431—351 **3 Claims**



1. A burner for gaseous fuels, comprising a burner body for delivering a fuel gas to a combustion zone which is, in part, defined between two flame-confining walls on respective opposite sides of said zone, the cross-section of said combustion zone, transversely of the direction of gas flow therethrough, being elongate, each said wall being divided in the elongate direction thereof into a plurality of separate wall elements whose adjacent edges are free to move relatively so as to permit thermal expansion of said elements in said elongate direction, and a plurality of brackets supporting said elements, each said bracket being secured to said body and extending therefrom in said direction of gas flow, each said bracket including a pair of slots on respective opposite sides thereof, said adjacent edges of said elements being slidably received in the respective slots so as to prevent a significant gasflow between said adjacent edges, said wall elements being rigidly secured to said burner body only at locations on said elements which are upstream of said combustion zone.

4,523,906
DEVICE FOR DRYING GYPSUM
Vladan Petrovic, Essen, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany
Filed Dec. 6, 1982, Ser. No. 447,628
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151045
Int. Cl.³ F27B *15/00;* **C04B** *11/02*
U.S. Cl. 432—197 **6 Claims**

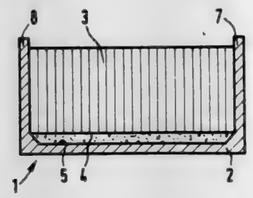


1. A device for drying cold, wet gypsum, comprising a heater; means for feeding a plurality of heat-retaining solid particles into said heater; means for storing gypsum to be dried; a moving-layer-type drier in the form of an upright stationary container having an inlet at its top, an outlet at its bottom and a plurality of superposed funnel-like means arranged between the inlet and the outlet; means for conveying an amount of hot solid particles from said heater and an amount of gypsum from said storing means into the inlet of said drier; and separating discharging device connected to the outlet of the drier to separate the dried gypsum from the solid particles.

4,523,907
HOLDER AND METHOD OF FIRING CERAMIC BRIQUETTES
Andreas Hässler, Jahnstrasse 46, D-7904 Erbach, Fed. Rep. of Germany
PCT No. PCT/DE82/00050, § 371 Date Sep. 28, 1982, § 102(e) Date Sep. 28, 1982, PCT Pub. No. WO82/03118, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 10, 1982, Ser. No. 433,138
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1981, 3109146; Jan. 29, 1982, 3202909; Feb. 8, 1982, 3204233
Int. Cl.³ F27D *5/00;* **F23D** *3/40*
U.S. Cl. 432—258 **8 Claims**

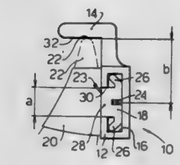
1. A holder for firing ceramic briquettes, in particular clay tiles, the holder having a floor, at least one separator piece

extending upwards from said floor for permitting a plurality of such holders to be stacked upon one another when the briquettes in such holders are being fired, means for supporting a



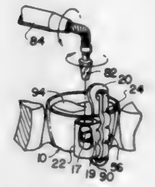
plurality of briquettes in said holder in spaced relation to the holder floor, and a quantity of solid fuel situated in the space between the holder floor and the said briquettes for generating the heat required to effect the firing of said briquettes.

4,523,908
DEVICE FOR POSITIONING AND PROTECTING AN ORTHODONTIC BRACKET
Giovanni Drisaldi, Via Valletta Fogliano, 1; Eugenio Fontana, Via S. Giovanni 89/14, both of I - 27029 Vigevano; Virgilio Manetti, Via Filagno, 14, I - 24047 Treviglio; Franco Segù , Corso Cavour, 34, I - 27029 Vigevano; Sandro Segù , Corso Cavour, 102, I - 27029 Vigevano, and Bruno Segù , Via Trilussa, 22, I - 27029 Vigevano, all of Italy
Continuation of Ser. No. 529,984, Sep. 8, 1983, abandoned, which is a continuation of Ser. No. 339,161, Jan. 13, 1982, abandoned, which is a continuation of Ser. No. 193,007, Oct. 2, 1980, abandoned. This application Jun. 25, 1984, Ser. No. 625,174
Claims priority, application Italy, Dec. 7, 1979, 27918 A/79
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—8 **1 Claim**



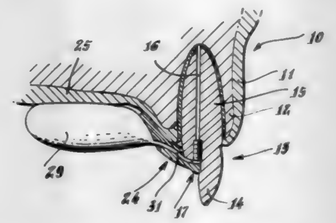
1. A one-piece disposable plastic device for applying, to a tooth, an orthodontic bracket provided with at least one slot for receiving an orthodontic wire for orthodontic use, comprising a positioning portion in the form of a small round rod at one end of said device having a rounded positioning surface on one side thereof that bears directly on the incisal edge or top of a tooth and having an opposite surface on the other side thereof that is an extreme end surface of said device, and located at a predetermined distance relative to the axis of said slot, and at the other end of said device a shell portion for covering said slot, said shell portion having a flat upright surface against which said slot opens, said two portions being integral with each other and having a total length less than the exposed height of a tooth, said shell portion having a housing of sufficient size to receive the element or elements of the bracket provided with slot, and the hooks for the fastening of the orthodontic wire, said shell having an aperture for the passage of the neck joining said bracket to the tooth or to the band, said aperture being of such size as to accurately accommodate said neck with slight force fitting about said neck and with the surfaces of the shell and neck that are next to the tooth substantially flush with each other.

4,523,909
PLASTIC DENTAL MATRIX AND METHOD OF MANUFACTURING SAME
Harry J. Lazarus, 36 Knox La., Englishtown, N.J. 07726
Filed Mar. 6, 1984, Ser. No. 586,569
Int. Cl.³ A61C *5/04*
U.S. Cl. 433—39 **33 Claims**



1. A dental matrix for engaging around a tooth, comprising:
- a plastic blanked sheet member having a straight windable portion carrying a first tail end of said sheet member, an intermediate portion carrying a curved tooth engaging portion carrying a second head end of said sheet member;
- said straight windable portion being wound into a cylindrical coil and being heat treated to retain an inside diameter and an outside diameter for said coil, said first end being disposed in a core of said coil;
- said curved tooth engaging portion having receiving means at said second head end;
- locking means engaged with said receiving means and with said intermediate portion of said sheet member between said coil and said second end to form said curved tooth engaging portion into a tooth engaging band, said locking means permitting a slidable withdrawal of said intermediate portion through said locking means with a winding of said coil with a dentist's matrix coil winder tool for tightening said band around a tooth by winding of said coil against said locking means, which locks the matrix on the tooth; and
- winder engaging means at said first tail end for engaging a matrix coil winder tool for winding said coil.

4,523,910
METHOD AND APPARATUS FOR INJECTING MEDICATION INTO A BODY THROUGH A TOOTH
Joseph J. Makovich, 67 Old Ridgefield Rd., Wilton, Conn. 06897
Filed Jan. 31, 1983, Ser. No. 462,677
Int. Cl.³ A61C *17/02*
U.S. Cl. 433—80 **7 Claims**



1. Apparatus for introducing medicinal fluid into the blood stream of a living body that has a tooth with an unobstructed root canal passing from the tooth crown to the end of the root comprising:
- fluid input means adapted to be secured to the crown portion of a tooth in communication with an unobstructed root canal passing to the end of the root in communication with the living body tissue;

said fluid input means including a flexible reservoir means adapted to contain medicinal fluid;

said fluid input means being further adapted to be located entirely within the body mouth in back of the tooth line; and

said fluid input means being selectively operable when in position in back of the tooth line to introduce fluid from the reservoir through the root canal and into the living body tissue.

4,523,911

FOOT-ACTUATED CONTROL ARRANGMENT PARTICULARLY FOR DENTAL ARRANGMENT

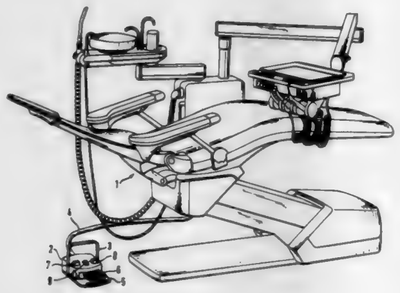
Hartmut Braetsch, Schemmerhofen, and Karl Herter, Warthausen, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Jan. 17, 1984, Ser. No. 571,507

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1983, 3302558

Int. Cl.³ A61C *1/02*

U.S. Cl. 433—101 **9 Claims**



1. In a foot-actuated control arrangement, in particular for dental apparatuses including foot-treadle means displaceable from an initial position towards both sides in one plane; an actuating element actuatable on a switching and control element wherein said actuating element is displaceable along a pivot path about a bearing location, and at least one control element having a first, active position wherein said control element urges said actuating element to an initial position thereof along the pivot path and automatically reconveys said actuating element into said initial position subsequent to a displacement from said initial position; the improvement comprising: said control element includes a second, inactive position wherein the actuating element moves along its pivot path independent of said control element and may be held in every position along the pivot path; and means connected to the control element to move the control element between its first and second positions.

4,523,912

MINERAL TOOTH WITH SILANE-COUPLED ADHESIVE PLASTIC PART

Alfred Breustedt, Berlin; Heinz Täschner, Radeberg; Rainer Korf, Radeberg, and Renate Lorenz, Radeberg, all of German Democratic Rep., assignors to VEB Kombinat Medizin-und Labortechnik Leipzig, Leipzig, German Democratic Rep.

Continuation of Ser. No. 415,770, Sep. 7, 1982, abandoned, which is a continuation-in-part of Ser. No. 164,757, Jun. 30, 1980, abandoned. This application Mar. 10, 1983, Ser. No. 474,089

Claims priority, application German Democratic Rep., Jun. 29, 1979, 213978

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—202 **19 Claims**



1. A process for producing an artificial tooth which comprises:

(a) providing a base mineral portion;

(b) fritting said base mineral portion at a temperature in the range of between 600° C. and 900° C., to produce a base mineral portion having grain sizes with a fractionation of from about 60 μm to about 100 μm;

(c) applying a silane layer to at least one surface of the base mineral portion, said silane layer being selected from the group consisting of ν-amino-propyltriethoxysilane, ν-glycidyloxypropyltri-methoxysilane, ν-methacryloxy-propyltrimethoxysilane, and ν-aminopropyltrimethoxysilane;

(d) applying a plastic adhesive layer onto said silane layer, said plastic adhesive layer comprising 30% to 33% polymethacrylic acid methyl ester, 3% to 6% dioxane, 63% to 66% methacrylic acid methyl ester, 1% to 2% of a sensitizer, and 0.3% to 1% of a vapor pressure reducing substance; and

(e) polymerizing said plastic adhesive layer with a quartz lamp radiating heat source using UV-rays for 3 to 6 minutes at a temperature of from 20° C. to 50° C., and under normal atmospheric pressure.

14. An artificial tooth comprising a base mineral portion, said base mineral portion having grain sizes with a fractionation of from about 60 μm to about 100 μm and produced by fritting said base mineral portion at a temperature in the range of between 600° C. and 900° C., a silane layer on at least one surface of said base mineral portion, said silane layer being selected from the group consisting of γ-aminopropyltriethoxysilane, γ-glycidyloxypropyltrimethoxysilane, γ-methacryloxypropyltrimethoxysilane, and γ-aminopropyltrimethoxysilane, and a plastic adhesive layer on said silane layer, said plastic adhesive layer comprising 30% to 33% polymethacrylic acid methylester, 3% to 6% dioxane, 63% to 66% methacrylic acid methylester, 1% to 2% of a sensitizer, and 0.3% to 1% of a vapor pressure reducing substance, said plastic adhesive layer being a polymerized layer produced by polymerization with a quartz lamp radiating heat source using UV-rays for 3 to 6 minutes at a temperature of from 20° C. to 50° C., and under normal atmospheric pressure.

4,523,913

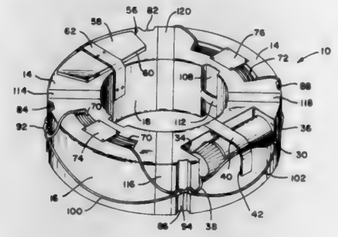
BUOYANT EMERGENCY LIFE SAVING DEVICE

Jon C. Kaino, P.O. Box 857, Ilwaco, Wash. 98624

Continuation-in-part of Ser. No. 393,456, Jun. 29, 1982, abandoned. This application Oct. 25, 1983, Ser. No. 545,152

Int. Cl.³ B63C *9/10, 9/20*

U.S. Cl. 441—81 **8 Claims**



1. Life saving and emergency rescue flotation device to be carried on small vessels, comprising:

(a) an annulus type flotation body having a hollow, hard plastic, shell body with flotation means therein, said flotation body being rectangular in its cross-section and having top and bottom walls and inner and outer side walls, said flotation means consisting of low density, lightweight, buoyant plastic foam material,

(b) said flotation body including on its top surface a generally upwardly opening and uncovered first compartment for containing a removable emergency tethered light means and further including retaining means for holding said light means in said first compartment,

(c) said flotation body further including an open, second compartment for containing survival and emergency signalling gear and the like and which second compartment has removable cover means therefor,

(d) at least one tethering line compartment formed in each of the top and bottom walls and having tethering lines therein secured by at least partial retaining cover means over said tethering line compartments,

(e) at least two rope tie down means on the outer side wall of said flotation body for gripping if desired and for securing tethering lines and a line for said light means, and

(f) hand grip rope means secured between said rope tie down means.

4,523,914

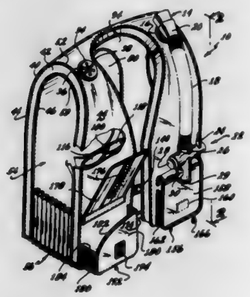
CONFORMABLE BUOYANCY COMPENSATOR

Mark Faulconer, Costa Mesa, and Allan R. Langton, Santa Ana, both of Calif., assignors to U.S.D. Corp, Santa Ana, Calif.

Filed Jan. 26, 1983, Ser. No. 461,180

Int. Cl.³ B63C *9/16*

U.S. Cl. 441—108 **7 Claims**



7. A buoyancy compensator having the capability of increasing or decreasing relative buoyancy of an underwater diver dependent upon the air therein adaptively formed with a neck portion forming a yoke around a user's neck and a vest portion on either side of one's chest with a rear portion adapted for placement at least in part on each side of a backpack for a diver wherein the improvement comprises:

a frontal bladder portion having at least two communicating chambers divided at least in part by an internal spanning member formed as a portion of the bladder connecting the front and back walls of said bladder to form said plurality of chambers,

means to receive a backpack for diving tanks on the rear portion of said backpack;

covering means overlying said bladder to control the expansion thereof;

a plurality of chambers formed in the rear of said buoyancy compensator bladder freely communicable with said front chambers, wherein said bladder is formed from a plastic material which has been heat set to provide at least in part said spanning member;

heat set pleats around the shoulder portion thereof; and

said pleats being formed as linear heat set pleats terminating in an expanded heat set area in order to crimp and retain the buoyancy compensator shoulder configuration around said shoulder.

4,523,915

REVERSE WEAVING MECHANISMS

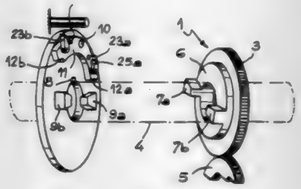
Ulrich Mutschler, Caluire, France, assignor to Staubli-Verdol, Chassieu, France

Filed Jul. 18, 1983, Ser. No. 515,085

Claims priority, application France, Jul. 19, 1982, 82 12849

Int. Cl.³ D03D *49/20*

U.S. Cl. 464—3 **7 Claims**



1. A coupling device for connecting drive from a loom shaft driving the grippers in a weaving loom to a drive shaft for weft selecting means, and for shifting the phase of the drive through a desired angle when the direction of the loom is reversed between its normal forward drive and reverse drive, the coupling device comprising:

(a) a driven disc fixed to said selecting means shaft to rotate the latter therewith and having annularly spaced driven tooth means;

(b) a drive disc disposed axially opposite said driven disc and rotatable with respect thereto and having drive tooth means extending axially toward the driven disc and interengaging with the driven tooth means thereon, the drive tooth means and the driven tooth means being annularly spaced to provide lost-motion angular clearance equaling the desired angle of phase shift when the loom direction is reversed;

(c) means coupled between the loom shaft and the drive disc for driving the latter by the former; and

(d) lock means carried by the driven disc for engaging the tooth means of said drive disc and operative automatically in response to reversal of the direction of rotation of the loom to lock said discs in their respective phase-shifted orientations.

4,523,916

AXIALLY FLEXIBLE DRIVE DISC

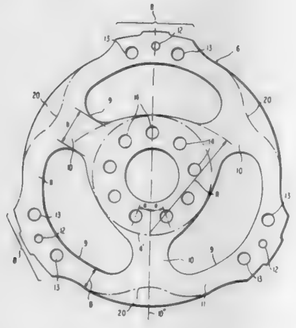
Wolfgang Kizler, Fellbach; Wolfgang Sieder, Waiblingen; Hans-Joachim Schöpf, Stuttgart; Helmut Dobler, Esslingen, and Roland Glück, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 10, 1983, Ser. No. 503,026

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222119

Int. Cl.³ F16D *3/06*

U.S. Cl. 464—98 **22 Claims**



1. An axially flexible drive disc made of sheet metal, which is flangedly connected centrally thereof to an end of a drive shaft of a vehicle engine and which is connected radially outwardly at a plurality of fastening points spaced circumferentially substantially evenly to an input element of an adjacent transmission, said drive disc including a plurality of kidney-shaped cutouts corresponding in number to the number of the plurality of fastening points, each of said plurality of kidney-shaped cutouts being associated with a respective fastening point of the plurality of fastening points and disposed in the same area as the respective fastening point radially between the respective fastening point and the central flange connection, each of said kidney-shaped cutouts extending in both circumferential directions with spoke-type webs remaining between adjacent kidney-shaped cutouts, each of said webs extending from said flange connection to a circumferential rim and being at least approximately twice and at most approximately three times as wide as the minimum width of the circumferential rim of the drive disc which extends toward the fastening points, each of said kidney-shaped cutouts being contoured along a radially inner contour generally in the shape of an arc having a radius of curvature from 1.5 to 4 times that of a circumferential circle of the central flange, the inner contour of each of the plurality of kidney shaped cutouts touching the circumferential circle of the central flange at a peripheral position generally coinciding with the intersection of a line passing through the corresponding fastening point and the central axis of the drive disc.

4,523,917

VARIABLE PITCH DIAMETER TORQUE SENSING PULLEY ASSEMBLY

Walter C. Schildt, Elgin, Ill., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 27, 1983, Ser. No. 565,642

Int. Cl.³ F16H *11/06*

U.S. Cl. 474—19 **8 Claims**

1. A variable pitch diameter torque sensing pulley assembly comprising

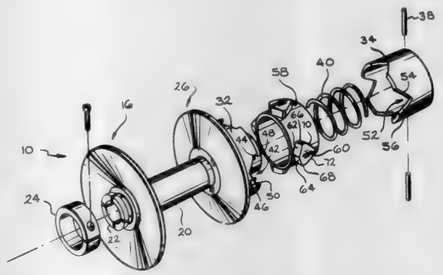
a first pulley half including a hub,

a second pulley half mounted on said hub for axial and rotational movement,

means operatively connected to said pulley halves for biasing them toward each other,

first cam means connected to said first pulley half and having a plurality of first sloped surfaces,

second cam means connected to said second pulley half and having a plurality of second sloped surfaces, the slope of which is different than the slope of said first surfaces,



cam follower means operable with said first or second cam means for biasing said pulley halves toward each other, and

means for limiting relative movement between said cam follower means and only the cam means having surfaces with the least slope.

4,523,918

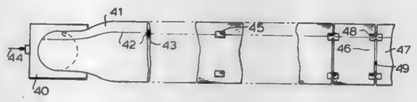
METHOD OF FORMING A BAG CHAIN

Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Nov. 12, 1982, Ser. No. 441,243

Int. Cl.³ B31B *1/90*

U.S. Cl. 493—198 **22 Claims**



1. A method of making a chain of laterally interconnected plastic bags having confronting releasably interlocking rib and groove profile elements on the inner confronting wall surfaces, comprising the steps of:

advancing a continuous length of plastic bag material having interlocked rib and groove profile elements on the inner surface;

applying heat to spaced spot seal areas at bag section intervals along the length of the material at the profile elements to permanently join the elements in the spot seal areas;

applying heat and forming lateral cross seals extending the width of the material and aligned with said spot seal areas to provide side seams for bags at each side of said lateral cross seals; and cutting through the material along substantially the center of said lateral cross seals for separation of the bag sections along the cut except at said spot seal areas and with said cut extending partially into said spot seal areas a predetermined limited distance so that the bags remain attached at said areas for separation with a predetermined force when it is desired to detach the bags from the chain.

4,523,919

PROCESS AND APPARATUS FOR ATTACHING SMALL TEAR-OPEN STRIPS TO PACKAGING MATERIAL OR THE LIKE

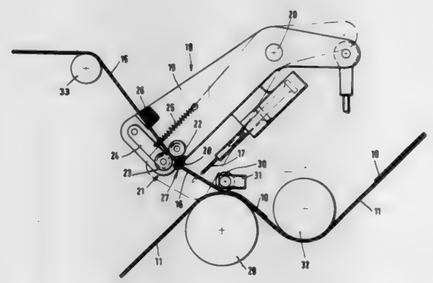
Heinz Focke, Verden, and Hans J. Bretthauer, Bremen, both of Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,305

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120332

Int. Cl.³ B31B *1/90*

U.S. Cl. 493—212 **8 Claims**



1. A method for attaching small, elongate, tear strips (**10**) at predetermined positions on wrapping blanks (**12**) defined on a web (**11**) of packaging material, comprising the steps of:

(a) continuously advancing a web of packaging material through a tear strip application station,

(b) gripping a continuous length of tear strip material (**15**) with clamping means (**21**) shortly behind an extending free end (**16**) thereof,

(c) advancing the clamping means in a first direction towards the application station and attendantly advancing the free end into the application station and into engagement with the web,

(d) pressing the free end against the web at the application station such that the continuous advance of the web pulls the tear strip material with it,

(e) simultaneously with step (d), releasing the clamping means grip on the tear strip material and moving the clamping means in a second direction opposite to the first direction,

(f) severing the tear strip material at a point spaced downstream from the clamping means to provide a new extending free end, and

(g) cyclically repeating steps (b) through (f).

4,523,920

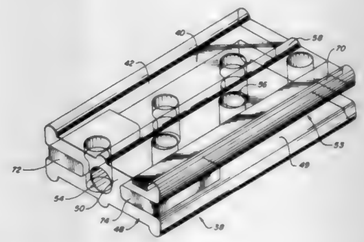
SURGICAL SUCTION DRAIN

Ronald D. Russo, Barrington, R.I., assignor to SIL-FAB Corporation, Hudson, Mass.

Filed Dec. 5, 1983, Ser. No. 557,866

Int. Cl.³ A61M *27/00*

U.S. Cl. 604—93 **7 Claims**



1. A surgical suction drain, comprising:

a first longitudinally extending flange having generally parallel planar external and internal surfaces;

a second spaced apart longitudinally extending flange having generally parallel planar external and internal surfaces;

a longitudinally extending web integrally formed centrally between and abutting the internal surfaces of said first and second flanges defining first and second longitudinally extending and laterally directed exudate receiving channels;

said longitudinally extending web having a longitudinally extending lumen directly connectable to a controlled source of negative pressure; and

said first and second flanges and said longitudinally extending web having a plurality of transversely extending and longitudinally spaced apertures therethrough each of which has open ends in communication with a corresponding one of said external surfaces of said flanges and an internal opening in communication both with a corresponding one of said first and second longitudinally extending and laterally directed exudate receiving channels and with said central lumen.

4,523,921

SURFACE-ACTIVE POLYSILOXANES

Henri Sebag, Paris, and Guy Vanlerberghe, Claye-Souilly, both of France, assignors to L'Oreal, Paris, France

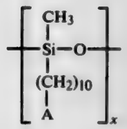
Continuation of Ser. No. 345,097, Feb. 2, 1982, abandoned, which is a division of Ser. No. 98,329, Nov. 27, 1979, Pat. No. 4,342,742. This application Aug. 27, 1984, Ser. No. 644,618

Claims priority, application France, Dec. 5, 1978, 78 34268

Int. Cl.³ A61K *7/13, 7/06*

U.S. Cl. 8—405 **7 Claims**

1. In a composition for dyeing hair comprising an aqueous or aqueous-alcoholic carrier, a hair dye and a surfactant, the improvement comprising, as said surfactant at least 0.5×10^{-3} weight percent of at least one of a cyclic or linear polysiloxane, or a mixture thereof, having the formula



wherein

x is an integer from 3 to 10, and

A is a cationic, anionic, zwitterionic or non-ionic hydrophilic unit which contains one or more of the same or different groups selected from the group consisting of amine, amine oxide, ammonium, ammonioalkylcarboxylate, ammonioalkyl-sulphonate, amide, sulphonamide, ether, thioether, sulphoxide, hydroxyl, ester and acid group.

4,523,922

THICKENER MIXTURES, PROCESS FOR THE MANUFACTURING OF TRANSFER PRINTING PAPER SHEETS USING THESE MIXTURES, AND PAPER SHEETS SO OBTAINED

Sienling Ong, Hofheim am Taunus; Ulrich Karsunky, Hünfelden, and Helmut Schmidt, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 523,893, Aug. 15, 1983, Pat. No. 4,454,279, which is a continuation of Ser. No. 378,413, May 14, 1982, abandoned. This application Apr. 2, 1984, Ser. No. 595,994

Claims priority, application Fed. Rep. of Germany, May 18, 1981, 3119711

Int. Cl.³ B41M *5/02;* **C09D** *7/12;* **D06P** *5/13;* **C08F** *5/05*

U.S. Cl. 8—471 **4 Claims**

1. A method for making a heat transfer printing paper sheet which comprises gravure printing a paper sheet with an aqueous printing ink comprising a heat sublimable disperse dyestuff and a thickener mixture comprising:

(a) a copolymer of vinyl acetate and an unsaturated low molecular weight carboxylic acid selected from the group consisting of at least one of acrylic, crotonic, and maleic acid,

(b) a copolymer of maleic anhydride and ethylene, or a water swellable polyacrylic acid,

(c) a water-soluble, polyhydroxy compound, solid at room temperature, of the formula

$$C_nH_{2n+2-m}(OH)_m$$

in which n is an integer of from 4 to 6 and m is an integer of from 2 to 6, with the proviso that m is smaller than or identical to n,

(d) an organic solvent, water-immiscible at room temperature and completely miscible with organic, water miscible solvents of the formula

$$C_aH_{2a+2-b}[O(CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-O)_{x/b}-H]_b$$

in which a is an integer of from 2 to 6, b is an integer of from 1 to 6, and x is a number of from 8 to 60, with the proviso that b is smaller than or identical to a, and

(e) a water-miscible organic solvent of the formula

$$C_yH_{2y+2-z}(OH)_z$$

in which y and z each are an integer of from 1 to 6 with the proviso that z is smaller than or identical to y.

4,523,923

SOLID DISPERSE DYE FORMULATIONS CONTAINING NON-IONIC DISPERSANTS FOR TRANSFER PRINTING INKS

Urs Büchel, Biel-Benken, Switzerland, and Paul Muther, Basel, both of, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 16, 1984, Ser. No. 580,908

Claims priority, application Switzerland, Feb. 28, 1983, 1082/83

Int. Cl.³ C09B *67/38;* **D06P** *1/16*

U.S. Cl. 8—524 **9 Claims**

1. A solid disperse dye formulation which does not contain anionic dispersants and which comprises one or more disperse dyes having a particle size of less than 5 μm, and one or more nonionic dispersants selected from the group of the fatty alcohol ethoxylates having a molecular weight in the range from 800 to 2000, of the fatty amine ethoxylates having a molecular weight in the range from 500 to 1000 and of the polyvinylpyrrolidones having a molecular weight in the range from 10,000 to 25,000.

4,523,924

PROCESS FOR THE PREPARATION OF STABLE AQUEOUS SOLUTIONS OF WATER-SOLUBLE REACTIVE DYES BY MEMBRANE SEPARATION

Roger Lacroix, Village-Neuf, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,654

Claims priority, application Switzerland, Dec. 20, 1982, 7430/82; Aug. 5, 1983, 4265/83

Int. Cl.³ C09B *67/26;* **D06P** *3/66*

U.S. Cl. 8—527 **11 Claims**

1. A process for the preparation of a stable aqueous formulation which contains a water-soluble reactive dye, comprising the steps of

(i) treating, under a pressure of 10 to 100 bar, an aqueous solution or suspension of the crude dye with a semipermeable asymmetrical membrane, suitable for reverse osmosis and having a pore diameter of 0.1 to 50 nm, which membrane is modified by polyfunctional compounds containing ionic groups, the basic skeleton consisting of cellulose acetate, polyacrylonitrile or a copolymer of acrylonitrile and ethylenically unsaturated monomer; so as to concentrate the dye solution and at least partially remove salts thereform; and, at the same time, replacing part of the water which is drawn off from the dye solution or suspension with demineralized water so that the total calcium and magnesium ion concentration does not exceed 0.01% by weight and

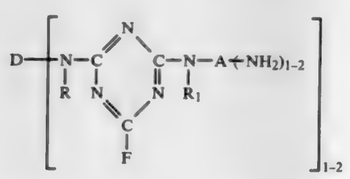
(ii) further stabilizing the obtained dye solution by addition of a polyphosphate or dihydrogen phosphate/polyphosphate buffer.

4,523,925
PROCESS FOR DYEING OR PRINTING CELLULOSE TEXTILE FIBER MATERIALS WITH REACTIVE DYES CONTAINING FLUORO-TRIAZINE

Peter Scheibli, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 3, 1983, Ser. No. 500,742
Claims priority, application Switzerland, Sep. 6, 1982, 3557/82
Int. Cl.³ C09B *62/04*; D06P *3/66, 1/38*
U.S. Cl. 8—549 **16 Claims**

1. A process for dyeing or printing cellulose-containing textile fiber materials with reactive dyes, which comprises using reactive dyes of the formula



(1)

in which D is the radical of an organic dye, R and R_1 independently of each other are hydrogen or substituted or unsubstituted C_{1-4}-alkyl, and A is a substituted or unsubstituted aliphatic or aromatic radical.

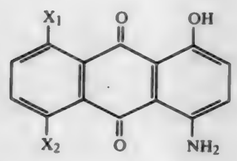
4,523,926
MIXTURES OF DISPERSE DYESTUFFS

Horst Brandt, Odenthal; Günter Gehrke; Rolf Müders, both of Cologne; Hans-Günter Otten, Leverkusen, and Dieter Wiegner, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 640,433
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1983, 3331437; Nov. 25, 1983, 3342691
Int. Cl.³ C09B *67/22*
U.S. Cl. 8—639 **8 Claims**

1. Dyestuff mixture containing

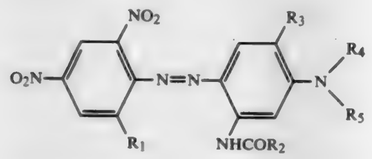
(a) 60–90% by weight of a brominated diaminodihydroxyanthraquinone of the general formula



(I)

wherein X_1 and X_2=OH or NH_2, but $X_1 \neq X_2$, with an average bromine content of 5–35%,

(b) 40–10% by weight of an azo dyestuff of the formula



(II)

wherein

R_1=H, Cl or Br,

R_2=C_1–C_4-alkyl,

R_3=H or C_1–C_4-alkoxy, and

R_4 and R_5=H, C_1–C_4-alkyl, C_3H_5-alkenyl or C_1–C_2-alkoxy-C_2–C_4-alkyl,

and

(c) 0–10% by weight of one or more shading dyestuffs.

4,523,927
METHOD OF COAL UPGRADING

Toshio Kuge; Hiroshi Yokoyama; Shunsuke Nogita, all of Hitachi; Yoichi Nakamura, and Katsumi Muroi, both of Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 15, 1983, Ser. No. 514,272
Claims priority, application Japan, Jul. 21, 1982, 57-125810
Int. Cl.³ C10L *9/08, 5/32*
U.S. Cl. 44—1 B **10 Claims**

1. A method of coal upgrading comprising the steps of:

heat treating low-rank coal at a temperature not exceeding 600° C. to dehydrate the coal, to pyrolyze hydrophilic oxygen-containing groups of the coal and to distill off tar from the coal; and

coating the surface of the coal subjected to said heat treating step with a portion of the tar by contacting tar vapor with the coal while keeping a temperature difference between the coal and the tar vapor in a range from 150° to 300° C.

6. A method of coal upgrading comprising the steps of:

heating low-rank coal at a temperature not exceeding 600° C. to reduce the moisture content of the coal and to obtain tar from the coal through destructive distillation;

cooling the coal reduced in its moisture content to a temperature lower than a heating temperature in said heating step; and

coating the surface of the cooled coal with tar by contacting a portion of the distilled tar in the vapor state with the cooled coal; said coating being conducted with a temperature difference between the cooled coal and the tar vapor being in a range of from 150° to 300° C.

4,523,928
GASOHOL PRODUCTION FROM THERMOCHEMICAL CONVERSION OF BIOMASS TO ETHANOL

Melville E. D. Hillman, Columbus; William J. Huffman, Worthington; Edward S. Lipinsky, Columbus, and Edgel Stambaugh, Worthington, all of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Apr. 28, 1980, Ser. No. 144,190
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—56 **24 Claims**

1. A method for making a liquid fuel-ethanol blend which comprises:

establishing an aqueous reaction mixture of a carbohydrate material, a metal salt, and water in a reaction zone held at elevated temperature of about 150°–300° C. to form an intermediate carbohydrate complex of said metal and/or a metal lactate salt;

pyrolyzing at a temperature of about 275°–400° C. said complex and/or lactate salt in the presence of water in a pyrolysis zone to form ethanol;

recovering said ethanol; and

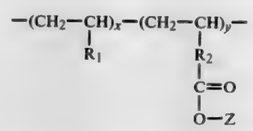
blending combustible liquid fuel with said ethanol.

4,523,929
ANTIMISTING SYSTEM FOR HYDROCARBON FLUIDS

Ilan Duvdevani, Leonia; John A. Eckert, Mountainside; Donald N. Schulz, Annandale, and Kissho Kitano, Fanwood, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 565,105, Dec. 23, 1983, abandoned. This application Jun. 28, 1984, Ser. No. 625,831
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—62 **3 Claims**

1. An antimisting hydrocarbon solution comprising a organic liquid mixed with a copolymer of an alpha-olefin and a vinyl alkylenecarboxylic acid, wherein the concentration of said copolymer in said hydrocarbon is about 0.05 to about 2 grams per 100 ml of said solution, wherein such copolymer has the formula:

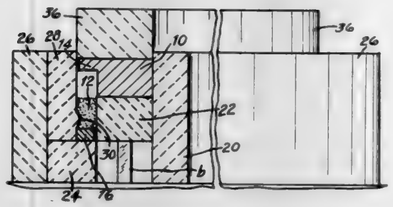


wherein R_1 is an alkyl group having about 1 to about 25 carbon atoms, R_2 is an alkylene group having about 3 to 17 carbon atoms, Z is a mixture of hydrogen and an alkyl group having about 1 to 25 carbon atoms, x is about 95.0 to about 99.99 mole % and y is about 0.01 to about 5 mole %, wherein hydrogen comprises about 1 to about 45 mole% of Z said organic liquid having a solubility parameter of less than 9.5 and being selected from the group consisting of mineral oil, synthetic oil, alkane, cycloalkane and aromatic and mixtures thereof.

4,523,930
METHOD OF MANUFACTURING COMPOSITE GRINDING WHEEL

William H. Williston, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Filed Aug. 6, 1984, Ser. No. 637,947
Int. Cl.³ B24D *3/00*
U.S. Cl. 51—293 **6 Claims**

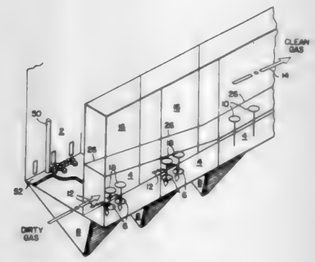


1. The method of making a composite grinding wheel having an annulus forming a support member, the annulus having a groove surrounding its periphery, said groove being defined by side walls and having an inner and outer periphery and being adapted to receive and be bonded to the grinding medium, said annulus including a shoulder around its periphery for defining a floor and one wall of said groove, and said composite wheel including a ring element adapted to be assembled over said shoulder and bonded to said annulus to complete said composite wheel comprising the steps of: supporting said annulus and said ring in spaced apart but concentric relationship; fitting a plurality of mold components together with said spaced apart annulus and ring elements to form a mold cavity that defines the outer periphery of said groove and is concentric with said inner periphery; filling said cavity with unbonded grinding medium; cold pressing said annulus and ring together and compacting said grinding medium while moving said shoulder and said ring elements into a concentric juxtaposed position; and sinter bonding said cold pressed grinding medium; and then stripping said mold components from the assembled bonded grinding medium, shoulder, and ring element that has been bonded to said shoulder.

4,523,931
FABRIC FILTER SYSTEM WITH IMPROVED GAS BYPASS MEANS FOR REMOVING PARTICULATE MATTER FROM GASES

Richard L. Miller, Womelsdorf, and Carlos Estela, Myerstown, both of Pa., assignors to General Electric Environmental Services, Inc., Lebanon, Pa.

Filed Jun. 9, 1983, Ser. No. 502,853
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—80 **22 Claims**



1. A baghouse filter system comprising:

(a) a plurality of filter compartments each having a gas inlet for receiving particulate-laden gas, a gas outlet for delivering filtered gas, fabric filter means between the gas inlet and the gas outlet and means for selectively blocking the gas inlet of each compartment;

(b) a gas inlet manifold mounted internally in the baghouse and connected to a source of particulate-laden gas and to the gas inlet of a plurality of filter compartments;

(c) a gas outlet manifold connected to the gas outlet of a plurality of filter compartments and to a baghouse clean gas outlet, the gas outlet manifold having a common wall with the gas inlet manifold, the gas outlet manifold being mounted internally in the baghouse adjacent the gas inlet manifold; and

(d) at least one poppet damper means in the common wall, thereby providing an internal bypass means for passing particulate-laden gas from the gas inlet manifold to the gas outlet manifold.

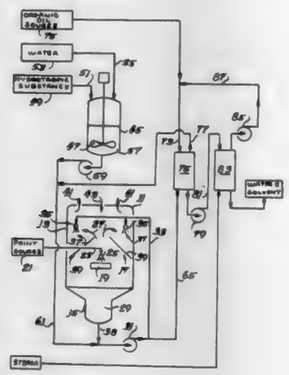
4,523,932
HYDROTROPES AND USES THEREOF

David R. Cosper, Downers Grove, and Gretchen L. McKay, Addison, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation of Ser. No. 390,294, Jun. 21, 1982, Pat. No. 4,444,573. This application Jan. 23, 1984, Ser. No. 573,089
The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—85 **3 Claims**

1. A method for using an aqueous organic hydrotrope solution to remove at least a portion of a hydrocarbon solvent from a stream of air containing the solvent, wherein the method comprises introducing the stream of air containing the solvent into a scrubber containing an effective amount of the aqueous organic hydrotrope solution, and contacting of the stream of air containing the hydrocarbon solvent with the aqueous or-

ganic hydrotrope solution thereby producing a first scrubber product stream containing scrubbed air and a second scrubber



product stream containing the aqueous organic hydrotrope and hydrocarbon solvent solution.

4,523,933

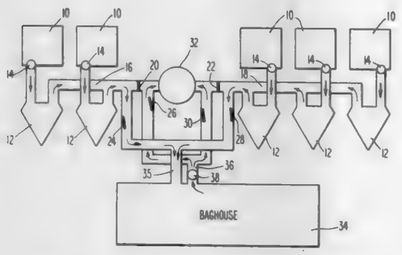
APPARATUS FOR CONVEYING PARTICULATE MATERIAL

Frank I. Laush, Edmonds, and Vernon L. Parker, Everett, both of Wash., assignors to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. No. 182,682, Aug. 29, 1980, abandoned. This application Sep. 30, 1981, Ser. No. 307,111

Int. Cl.³ B01D *46/00*

U.S. Cl. 55—97 **4 Claims**



1. A system for removing particulate material from a gas stream comprising a chamber having an inlet for receiving the gas stream containing said particulate material and an outlet passage through which the particulate material is adapted to be removed, filter means within the chamber for intercepting the gas stream and collecting the particulate material thereon, vacuum creating means for establishing a pressure drop across the chamber for causing gas flow through the filter means and means for removing the retained particulate material from the filter means and causing it to flow, by gravity, out of the outlet passage of the chamber; characterized in that the system includes a slurry-conveying conduit communicating with the outlet passage; liquid flow control means for only partially filling the conduit with a liquid for conveying the particulate material away from the chamber as a slurry while maintaining an air passage in the conduit that communicates with the outlet passage of the chamber; and vacuum creating means communicating with the air passage in the conduit for establishing a higher vacuum in said air passage than in the chamber whereby liquid vapors are impeded from flowing into the chamber from the slurry-conveying conduit.

4,523,934

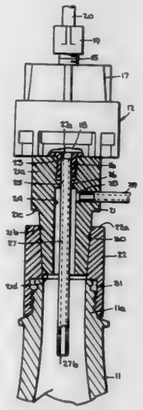
FILTER-DEGASSER

Henry Joshua, 256 Woodward Ave., Staten Island, N.Y. 10314

Filed Mar. 6, 1984, Ser. No. 586,664

Int. Cl.³ B01D *29/00*

U.S. Cl. 55—189 **15 Claims**



1. A solvent filter-degasser adapted to be connected to a solvent bottle and having a filtering portion and a vacuum application portion, with said filtering portion including a filter holder having intake and discharge ports and a filter membrane intersecting the path of flow of solvent between said ports;

wherein the improvement comprises that:

(a) said vacuum application portion comprises a generally tubular member having a first bore extending therethrough and open at both ends, said first bore having

(i) an upper section profiled to define interlocking means for tightly securing said member to said discharge port of said filter holder,

(ii) an intermediate section with a smooth wall surface, and

(iii) a lower section the width of which is greater than the diameter of said intermediate section,

and a tube extending through said first bore and having an outer diameter substantially equal to said diameter of said intermediate section of said first bore, said tube being frictionally and tightly received and retained in said intermediate section of said first bore and having its upper end in direct communication with said discharge port of said filter holder for receiving solvent exiting therefrom, said member further having a second bore therein extending from the outside surface of said member to and communicating with said lower section of said first bore for connecting the region of said lower section of said second bore surrounding said tube to a source of vacuum, and at least the lower part of said member having an outside surface which tapers from a maximum diameter to a minimum diameter at the lower end of said member,

(b) whereby said lower part of said member can be inserted into and withdrawn from the neck of said solvent bottle or an adjunct thereof, and be received therein with a smooth tight fit, without requiring relative rotation between said member and said solvent bottle or adjunct thereof.

4,523,935

ELECTRICAL HEATER RETAINED IN A POROUS CERAMIC STRUCTURE

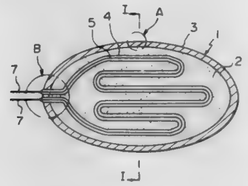
Shigeru Takagi, and Masahiro Tomita, both of Anjo, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 29, 1982, Ser. No. 403,041

Claims priority, application Japan, Aug. 3, 1981, 56-120637

Int. Cl.³ B01D *39/20;* **F01N** *3/02*

U.S. Cl. 55—282 **6 Claims**



1. A porous ceramic structure having a minute cavity therein, an electrical heater placed in the cavity so as to define a constant space therearound and being retained therein by ceramic adhesive attached to the ceramic structure.

4,523,936

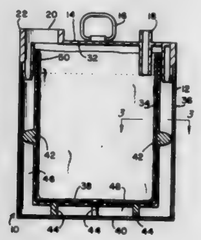
SEPARATION-CHAMBER MEANS

William G. Disanza, Jr., 25 Washington Ave., Hillsdale, N.J. 07642

Filed Jul. 25, 1984, Ser. No. 634,048

Int. Cl.³ B01D *45/18*

U.S. Cl. 55—429 **8 Claims**



1. Separation-chamber means, for use in a negative-pressure, collection system, for collecting refuse, such as debris, particulate matter, and the like, comprising:

means defining a chamber in which to collect refuse;

said chamber having an imperforate outer wall and a foraminous inner wall;

said walls being generally concentric defining an annular void therebetween;

a separation-collection area formed within said foraminous inner wall;

means for (a) admitting gas, and refuse suspended in such gas, into said separation-collection area, and for (b) discharging gas from said separation-collection area; wherein said outer wall has a bottom and an open top;

said admitting and discharging means comprises means for admitting gas into said separation-collection area, as aforesaid, through said open top, and means for discharging gas from said separation-collection area, as aforesaid, also through said open top; and

said discharging means comprises port means opening externally of said separation-collection area, and opening internally and commonly, onto both said separation-collection area and said annular void, through said open top.

4,523,937

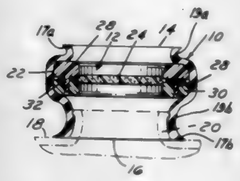
MODEL ENGINE AIR FILTER

Thomas J. Brubaker, 5775 John R., Troy, Mich. 48098

Filed Sep. 29, 1982, Ser. No. 426,685

Int. Cl.³ B01D *39/16, 46/10*

U.S. Cl. 55—509 **6 Claims**



1. An air cleaner for a miniature internal combustion engine wherein the air cleaner is mounted to the engine air inlet comprising:

a thin, flat filter member;

a tubular elastic boot member open at opposite ends with the boot member having an increased diameter portion intermediate said opposite ends defining an internal groove for receiving the filter member;

said filter member disposed in said groove by stretching one of said ends over said filter member so as to seal said filter member within said groove;

said boot member at opposite ends of the increased diameter portion being radially inwardly necked and terminating in radially outwardly extending peripheral flared flanges at said opposite ends of the boot member; and

said boot member having a longer axial dimension between said groove and the other of said ends than between said groove and said one end, whereby the stretching of said other end over the engine air inlet will not impair the sealing fit of said groove of the boot member about the filter member.

4,523,938

METHOD OF AND APPARATUS FOR CONTINUOUSLY MONITORING DIAMETER VARIATIONS OF AN OPTICAL FIBER BEING DRAWN

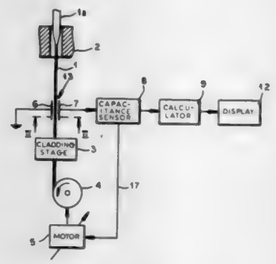
Giorgio Grego, Turin, Italy, assignor to Cselt - Centro Studi E Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Jul. 2, 1982, Ser. No. 394,535

Claims priority, application Italy, Jul. 6, 1981, 67936 A/81

Int. Cl.³ C03B *37/02*

U.S. Cl. 65—2 **4 Claims**



1. A method of minimizing variations in the diameter of an optical fiber being drawn from a preform, comprising the steps of:

(a) passing said fiber between two parallel plates of a constant-charge capacitor, one of said plates being an electret;

(b) continuously comparing the potential of the other of said plates with a reference voltage; and

(c) modifying the fiber-drawing speed in response to differences between said potential and said reference voltage in a sense tending to reduce said differences.

2. In an apparatus for drawing an optical fiber from a preform, including heating means for fusing a preform to be converted into an optical fiber, winding means downstream of said heating means for continuously drawing said fiber from said preform, and variable-speed drive means coupled with said winding means,

the combination therewith of:

a constant-charge capacitor with a pair of parallel plates spacedly flanking said fiber between said heating means and said winding means, one of said plates being an electret;

a source of reference voltage; and

comparison means with inputs respectively connected to the other of said plates and said source for detecting differences between said reference voltage and the potential of said other of said plates, said comparison means having an output circuit connected to said drive means for modifying the speed of said winding means in a sense tending to reduce said differences.

4,523,939

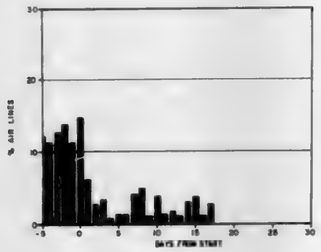
METHOD FOR REDUCING STRIATIONS IN FUSED SILICA

Robert G. Jenkins, Acton, and Dennis B. Shinn, Topsfield, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 235,829, Feb. 19, 1981, abandoned. This application Jan. 9, 1984, Ser. No. 568,517

Int. Cl.³ C03B *20/00*

U.S. Cl. 65—32 **14 Claims**



1. In a method for forming a fused silica body having reduced striations by feeding silica material into an upper portion of a crucible and heating said material in a first atmosphere of hydrogen and helium to form a silica melt which flows into a lower portion of said crucible to a discharge zone, said crucible being heated by a heating means mounted outside of said crucible in a heating zone which extends adjacent to said crucible, the improvement comprising: supplying said heating zone and said discharge zone with a second atmosphere consisting essentially of hydrogen and at least one noble gas selected from the group consisting of neon, argon, krypton, xenon, and mixtures thereof and drawing said melt from said crucible through said discharge zone and said second atmosphere to form a fused silica body.

4,523,940

SOIL TREATING METHOD AND COMPOSITION FOR CONSERVING NITROGEN IN SOIL

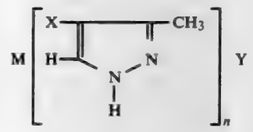
Kim E. Arndt, Pittsburg; Ronald W. McCormick, and Richard B. Rogers, both of Concord, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 25, 1984, Ser. No. 624,422

Int. Cl.³ C05C *13/00*

U.S. Cl. 71—11 **45 Claims**

1. A composition which comprises a reduced nitrogen fertilizer in admixture with from about 0.05 to about 98 percent by weight (based on the amount of reduced nitrogen) of a pyrazole compound-metal complex which corresponds to the formula



wherein M represents cobalt, copper, iron, manganese, nickel, or zinc; Y represents Cl_2, Br_2, $(NO_3)_2$ or SO_4; X represents hydrogen, bromo, chloro or methyl and n represents the integer 2 or 4.

4,523,941

PROCESS FOR THE PARTIAL SOLUBILIZATION OF PHOSPHATE ROCK AND OBTAINING PHOSPHATE FERTILIZERS THEREFROM

Hossam A. A. Abdel-Hehim; Wagner C. Coelho, and Gloria M. G. Soares, all of Rio de Janeiro, Brazil, assignors to Petroleo Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil

Continuation of Ser. No. 411,134, Aug. 24, 1982, Pat. No. 4,464,504. This application Mar. 26, 1984, Ser. No. 593,169

Claims priority, application Brazil, Aug. 24, 1981, 8105391[U]

Int. Cl.³ E05B *67/32*

U.S. Cl. 71—37 **1 Claim**

1. A process for the partial solubilization of phosphate rock to obtain fertilizer comprising: octacalcium phosphate, diammonium phosphate and calcium sulfate, therefrom comprising:

reacting phosphate rock with acid ammonium sulfate in an amount by weight of 0.4 to 0.7 parts of said acid ammonium sulfate to 1 part phosphate rock in the presence of sufficient water to ensure a moisture content of at least 16% and at a temperature of about 50°–130° C. to obtain fertilizer comprising: octacalcium phosphate, diammonium phosphate and calcium sulfate.

4,523,942

4H-3,1-BENZOXAZINE DERIVATIVES, COMPOSITIONS AND HERBICIDAL USE

Gerhard Hamprecht, Weinheim; Juergen Varwig, Heidelberg, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

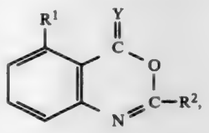
Continuation of Ser. No. 217,560, Dec. 17, 1980, abandoned. This application Jan. 31, 1983, Ser. No. 462,477

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1980, 3000309

Int. Cl.³ A01N *43/86;* **C07D** *265/20, 265/22*

U.S. Cl. 71—88 **14 Claims**

1. A 4H-3,1-benzoxazine derivative of the formula



(I)

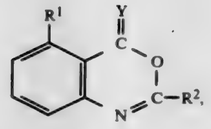
where

R^1 is halogen,

Y is oxygen or sulfur and

R^2 is phenyl which is monosubstituted by haloalkyl of up to 3 carbon atoms.

4. A herbicidal composition comprising a carrier and/or diluent and a herbicidally effective amount of a compound of the formula



(I)

where

R^1 is halogen,

Y is oxygen or sulfur and

R^2 is phenyl which is monosubstituted by haloalkyl of up to 3 carbon atoms.

4,523,943

HERBICIDAL N-(HETEROCYCLIC)-AMINOCARBONYL THIOPHENESULFONAMIDES

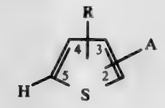
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 255,226, May 4, 1981, Pat. No. 4,398,939, which is a continuation-in-part of Ser. No. 153,279, Jun. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 27,025, Apr. 4, 1979, abandoned. This application May 4, 1983, Ser. No. 491,528

Int. Cl.³ C07D *409/12;* **A01N** *46/66*

U.S. Cl. 71—90 **26 Claims**

1. A compound of the formula:



wherein

A is $SO_2N(R_3)C(O)N(R_4)R_5$;

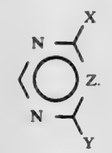
R is C_1–C_4 alkyl, C_3 alkenyl, OCH_3, NO_2, Cl, Br, $SO_2NR_1R_2$ and $SO_2N(OCH_3)CH_3$;

R_1 and R_2 are independently C_1–C_3 alkyl;

R_3 is H or CH_3;

R_4 is H, CH_3 or OCH_3;

R_5 is



X is H, Cl, Br, CH_3, CH_2CH_3, C_1–C_3 alkoxy, CF_3, SCH_3, CH_2OCH_3, $OCH_2CH{=}CH_2$ or $OCH_2C{\equiv}CH$;

Y is CH_3 or OCH_3;

Z is N;

and their agricultural salts; provided that

(a) A cannot be in the 4-position of the thiophene ring; and

(b) one of R_3 or R_4 must be H; and

(c) when A is in the 3-position and R is in the 2-position, then R is other than Cl, Br or CH_3.

19. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,523,944

N-PHENYLSULFONYL-N'-PYRIMIDINYLUREAS

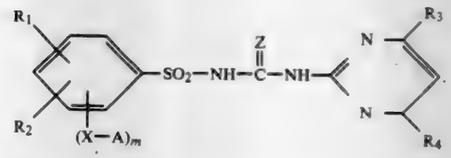
Werner Föry, Basel; Karl Gass, Magden; Willy Meyer, Riehen, and Rolf Schurter, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 396,959, Jul. 9, 1982, Pat. No. 4,443,243. This application Jan. 19, 1984, Ser. No. 571,985

Int. Cl.³ C07D *239/42;* **A01N** *43/54*

U.S. Cl. 71—92 **21 Claims**

1. An N-phenylsulfonyl-N'-pyrimidinyl- or -triazinyl-urea of the general formula I



wherein

A is a C_3–C_6-alkynyl group,

X is oxygen, sulfur or a sulfinyl or sulfonyl bridge,

Z is oxygen or sulfur,

m is the number one or two,

R_1 is hydrogen, halogen, C_1–C_5-alkyl or C_2–C_5-alkenyl or a group —Y—R_5,

R_2 is hydrogen, halogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or C_1–C_4-haloalkyl, or a group —Y—R_5, —$COOR_6$, —NO_2 or —CO—NR_7—R_8,

R_3 and R_4 independently of one another are hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, halogen or alkoxyalkyl having at most 4 carbon atoms,

R_5 and R_6 are each C_1–C_5-alkyl, C_2–C_5-alkenyl or C_2–C_6-alkynyl,

R_7 and R_8 independently of one another are each hydrogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or C_2–C_6-alkynyl, and

Y is oxygen, sulfur or a sulfinyl or sulfonyl bridge; and the salts of these compounds.

4,523,945

2-AMINO-6-(CYCLOPROPYLMETHYL-AMINO)-PYRIMIDINES USEFUL AS HERBICIDES AND MICROBICIDES

Rudolf Mengel; Ludwig Schröder, both of Ingelheim; Werner Stransky, Gau-Algesheim; Gerbert Linden, Ingelheim; Gerhart Schneider, Mühltal, and Sigmund Lust, Darmstadt, all of Fed. Rep. of Germany, assignors to Celamerck, Gesellschaft mit beschränkter Haftung & Co. KG, Ingelheim am Rein, Fed. Rep. of Germany

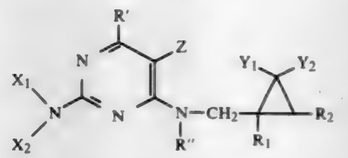
Filed Feb. 14, 1984, Ser. No. 580,079

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305524

Int. Cl.³ A01N *43/48;* **C07D** *239/02;* **A61K** *31/505*

U.S. Cl. 71—92 **9 Claims**

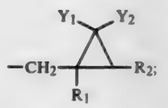
1. A compound of the formula



wherein

R' is hydrogen, halogen, straight or branched alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 3 carbon atoms, methylthio or di(alkyl of 1 to 6 carbon atoms)amino;

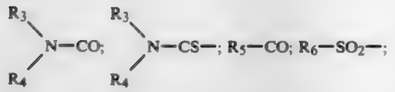
R'' is hydrogen, straight or branched alkyl of 1 to 4 carbon atoms or



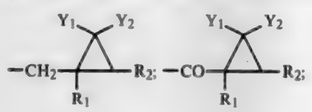
R_1 and R_2 are each hydrogen or straight or branched alkyl of 1 to 4 carbon atoms which may optionally be interrupted by —O— or —N—;

X_1 is hydrogen, straight or branched alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 5 carbon atoms or R_6—SO_2—;

X_2 is hydrogen; straight or branched alkyl of 1 to 6 carbon atoms; alkenyl of 2 to 5 carbon atoms; phenyl; benzyl; mono- or polysubstituted phenyl, where the substituents are one alkyl of 1 to 4 carbon atoms and/or 1 to 3 halogens which may be identical to or different from each other; mono- or polysubstituted benzyl, where the substituents are one alkyl of 1 to 4 carbon atoms and/or 1 to 3 halogens which may be identical to or different from each other;



R_6—SO_2—NH; R_6—SO_2—NH—CO—; R_7—O—CO;



—CH=C(CN)$_2$; or —CH=N—CN; or

X_1 and X_2 together with each other are $(CH_3)_2N$—CH=;

R_3 and R_4 are each hydrogen or straight or branched alkyl of 1 to 4 carbon atoms;

R_5 is hydrogen, straight or branched alkyl of 1 to 6 carbon atoms; mono-, di- or trihalo-substituted methyl; phenyl; or mono- or polysubstituted phenyl, where the substituents are one methyl and/or 1 to 3 halogens which may be identical to or different from each other;

R_6 is straight or branched alkyl of 1 to 6 carbon atoms; trifluoromethyl; phenyl; benzyl; mono- or polysubstituted phenyl, where the substituents are one methyl, alkoxy of 1 to 3 carbon atoms or —$COOR_7$ and/or 1 to 3 halogens which may be identical to or different from each other; or mono- or polysubstituted benzyl, where the substituents are one methyl, alkoxy of 1 to 3 carbon atoms or $COOR_7$ and/or 1 to 3 halogens which may be identical to or different from each other;

R_7 is straight or branched alkyl of 1 to 6 carbon atoms;

Y_1 is hydrogen, chlorine or bromine;

Y_2 is chlorine or bromine; and

Z is hydrogen, halogen or methylthio; or a salt thereof.

7. The method of eradicating undesirable plants which comprises contacting said plants or seeds thereof with an effective herbicidal amount of a compound of claim 1.

8. The method of killing phytopathogenic microorganisms on useful plants, which comprises contacting said microorganisms with an effective microbicidal amount of a compound of claim 1.

4,523,946

SUBSTITUTED 4,5-DIMETHOXYPYRIDAZONES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Adolf Parg, Bad Duerkheim; Bruno Wuerzer, Otterstadt, and Gerhard Hamprecht, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

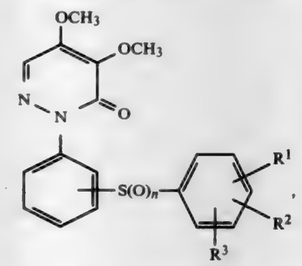
Filed Jan. 13, 1983, Ser. No. 457,655

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202678

Int. Cl.^{3} C07D *237/22;* A01N *43/58*

U.S. Cl. 71—092 **12 Claims**

1. A substituted 4,5-dimethoxypyridazone of the formula



(I)

where R^1, R^2 and R^3 independently of one another are each hydrogen, halogen, nitro, cyano, carboxyl, alkyl of 1 to 4 c-atoms, haloalkyl of 1 to 4 c-atoms, alkoxy of 1 to 4 c-atoms, haloalkoxy of 1 to 4 c-atoms, alkylmercapto of 1 to 4 c-atoms, haloalkylmercapto of 1 to 4 c-atoms, alkylsulfinyl of 1 to 4 c-atoms, or alkylsulfonyl of 1 to 4 c-atoms, and n is 0, 1 or 2, wherein halo and halogen stand for fluorine, chlorine, bromine or iodine.

4,523,947

USE OF TRIAZINE DERIVATIVES FOR PROTECTING MAIZE AND SORGHUM PLANTS

Henry Szczepanski, Wallbach, and Dagmar Berrer, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

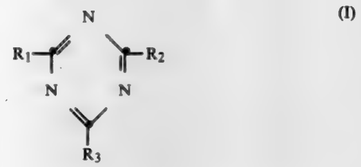
Filed May 29, 1984, Ser. No. 615,021

Claims priority, application Switzerland, Jun. 6, 1983, 3085/83

Int. Cl.^{3} A01N *43/66*

U.S. Cl. 71—93 **10 Claims**

1. A process for the protection of maize and sorghum plants against the harmful effects of herbicidal chloroacetanilides and chloroacetamides, which process comprises treating these plants, parts of these plants or cultivated areas for these plants with a compound of the formula I



(I)

wherein

R_1, R_2 and R_3 independently of one another are each C_1–C_5-alkyl which is unsubstituted or monosubstituted by C_3–C_6-cycloalkyl, or mono- or polysubstituted by halogen, or is C_3–C_6-cycloalkyl which is unsubstituted or mono- or polysubstituted by halogen, or one of the substituents R_1, R_2 and R_3 is also halogen or —NR_4R_5, in which R_4 is hydrogen or C_1–C_5-alkyl and R_5 is hydrogen, C_1–C_5-alkyl, monochloroacetyl or dichloroacetyl, or with a composition containing a compound of the formula I.

4,523,948

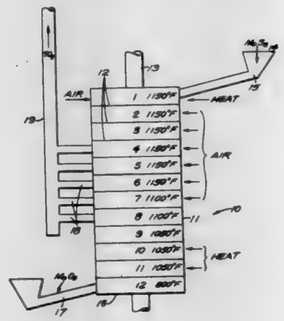
ROASTING OF MOLYBDENITE CONCENTRATES CONTAINING FLOTATION OILS

Larry F. McHugh, Fairfield, Conn., and Daniel E. Barchers, Arvada, Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 14, 1984, Ser. No. 580,042

Int. Cl.^{3} C22B *1/06*

U.S. Cl. 75—7 **5 Claims**



1. In a method for treating molybdenum concentrates in a roasting furnace having a first roasting zone and at least a second roasting zone, said concentrate containing residual flotation oil in an amount over 2% by weight which during roasting inhibits the roasting capacity of said furnace and adversely affects the sulfur dioxide concentration of the effluent gas, the improvement which comprises:

deoiling said molybdenite concentrate by heating it to a vaporizing temperature below the temperature at which the oil pyrolyzes,

mixing sulfur with said deoiled concentrate in an amount at least sufficient to provide after roasting an effluent gas containing a minimum of about 2.7% by volume of SO_2,

feeding said heated deoiled concentrate to said first roasting zone,

applying heat to said concentrate in said first roasting zone, including the sensible heat of said concentrate and heat generated by sulfur, sufficient to heat said concentrate to a roasting temperature sufficiently high to initiate a substantially self-sustaining roasting reaction but not exceeding about 1250° F.,

the amount of heat generated by combustion of said sulfur being not substantially in excess of that required to heat the concentrate to said temperature at which self-sustaining roasting reactions are initiated in said first roasting zone,

and continuing the roasting through the first and at least the second roasting zone to effect desulfurization of said deoiled molybdenite concentrate and form molybdenum trioxide.

4,523,949

ALUMINUM DROSS RECLAMATION

Irving W. Gower, Berwyn; Carl J. Cherry, King of Prussia, and David S. Yang, Berwyn, all of Pa., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 30, 1982, Ser. No. 429,578

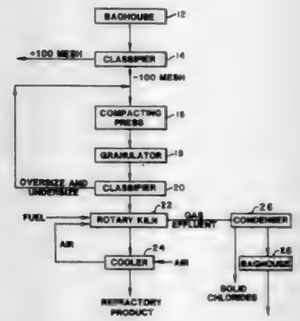
Int. Cl.^{3} C22B *7/04*

U.S. Cl. 75—24 **4 Claims**

1. A method of treating aluminum dross containing chlorides and combustible volatile material to remove said chlorides and combustible volatile material therefrom and to produce a calcined aluminum oxide refractory material comprising the steps of:

a. agglomerating the aluminum dross in the absence of free water so as to produce dry compacts of said dross;

b. calcining said dry compacts of said aluminum dross in a direct fired rotary kiln wherein said temperature is maintained in excess of 1800° F. whereby said chlorides and combustibles are volatilized and said combustibles are burned and said calcined aluminum oxide refractory material is formed;



c. separating said calcined aluminum oxide refractory material from the products of combustion including said volatilized chlorides;

d. condensing and separating said volatilized chlorides from the remaining products of combustion.

4,523,950

BORON CONTAINING RAPID SOLIDIFICATION ALLOY AND METHOD OF MAKING THE SAME

Chung-Chu Wan, Diamond Bar, Calif.; Rong Y. Wang, Pine Brook, and Deepak Kapoor, Saddle Brook, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 220,618, Dec. 29, 1980,. This application Nov. 9, 1981, Ser. No. 318,893

Int. Cl.^{3} F16H *29/10*

U.S. Cl. 75—123 B **5 Claims**

1. A single-phase, boride-free, homogeneous age hardenable microcrystalline alloy consisting of a composition restricted such that the composition is within a region of a pseudo ternary diagram for the M*-T*-B system,

where M* is the sum of the atomic percents of Ni, Co and Fe; and T* is the sum of the atomic percents of Mo and W, said region of said pseudo ternary diagram being defined by a triangle having its corners at:

(83, 16, 1)

(39, 33, 28), and

(68, 31, 1)

where the indicies are respectively M*, T* and B.

4. A single-phase, boride-free, homogeneous age-hardenable microcrystalline alloy consisting essentially of a composition restricted such that the composition is within a quadrilateral region of the ternary diagram for the Ni-Mo-B system having its corners at:

(83, 16, 1),

(28, 37, 35),

(25, 40, 35), and

(59, 40, 1);

where the indicies are, respectively, the atomic percent of Ni, Mo, and B.

4,523,951

STAINLESS STEEL

Rockne J. Andreini; Audley J. Farmer, and Svetlana Yaguchi, all of King County, Wash., assignors to Earle M. Jorgensen Co., Seattle, Wash.

Continuation of Ser. No. 449,608, Dec. 14, 1982, Pat. No. 4,450,008. This application Nov. 21, 1983, Ser. No. 553,373

Int. Cl.³ C22C *38/04*

U.S. Cl. 75—126 B **13 Claims**

1. A fully austenitic, substantially nonmagnetic stainless steel, comprising:

a stainless steel alloy of Iron including Manganese, Chromium, Molybdenum, Nickel, and Nitrogen to make the steel fully austenitic and substantially nonmagnetic;

0.035% max. Carbon, by weight, in the alloy; and

Columbium in the alloy at a concentration of at least ten times the Carbon concentration;

wherein the concentration of Nitrogen is between 0.2–0.5%, by weight, to provide Nitrogen strengthening to the steel through working the steel at a temperature in the range between about 1100°–1400° F., and

wherein the concentration, by weight, of the Manganese is between about 16–20%; of the Chromium is between about 12–15; and of the Nickel is no greater than 2.5%.

4,523,952

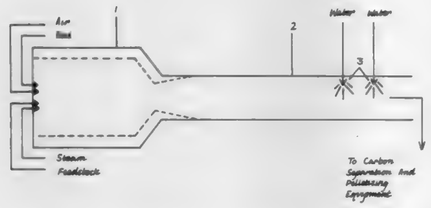
MANUFACTURE OF PRINTING INKS

Stephen J. Kovalsky, Indian Head Park, Ill., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Jan. 30, 1984, Ser. No. 575,178

Int. Cl.³ C09D *11/02*

U.S. Cl. 106—20 **12 Claims**



1. A direct process for producing printing inks from a hydrocarbon residue feedstock which comprises the steps of (1) charging the feedstock into a chamber where (a) it is atomized and (b) its decomposition products are reacted with oxygen and heat, (2) discharging the products of step (1) into a mixing device containing a liquid oil ink vehicle and additives, and (3) recovering the product.

4,523,953

PHOTOSTABLE YELLOW COMPOSITE PIGMENTS AND PROCESS FOR THEIR PREPARATION

Camillo Paffoni, Pogno; Filippo M. Carlini; Giorgio Bottaccio, both of Novara, and Alberto Osti, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

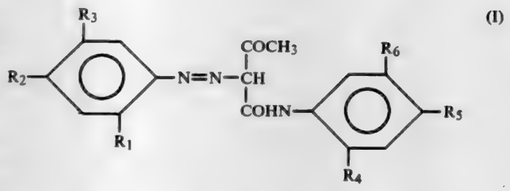
Filed Dec. 5, 1983, Ser. No. 558,023

Claims priority, application Italy, Dec. 6, 1982, 24619 A/82

Int. Cl.³ C08L *1/08;* **E09D** *11/00*

U.S. Cl. 106—23 **16 Claims**

1. Composite ternary organic-inorganic pigments consisting of 70 to 90% by weight of a binary inorganic component of titanium dioxide and aluminum hydrate and, 10% to 30% by weight of an organic co-precipitated component consisting of an organic azoic dye containing in its structure at least one carboxylic (—COOH) and/or sulphonic ($—SO_3H$) acid function, of the formula:



(I)

wherein R_1 is selected from the group consisting of NO_2 $—SO_3H$ and —COOH; R_2 is selected from the group consisting of NO_2, $—SO_3H$, alkyl and alkoxyl; R_3 is selected from the group consisting of H, halogen and alkyl; R_4 and R_5 are each selected from the group consisting of H, halogen, alkyl and alkoxyl; R_6 is selected from the group consisting of H, halogen and alkoxyl, and wherein the —COOH and/or $—SO_3H$ group of dye (I) is salified with metal cations.

4,523,954

PROCESS FOR MANUFACTURING CELLULAR PLASTER AND MOLDED PLASTER ARTICLES

Philippe Pichat, Paris; Michel Niel, Annezin, and Robert Sinn, Lens, all of France, assignors to CDF Chimie, S.A., Paris, France

Continuation-in-part of Ser. No. 283,324, Jul. 15, 1981, abandoned. This application Oct. 12, 1982, Ser. No. 433,767

Claims priority, application France, Jul. 16, 1980, 80 15653

Int. Cl.³ C04B *11/00, 1/00;* **C01F** *11/46*

U.S. Cl. 106—110 **8 Claims**

1. In a process for producing cellular plaster, comprising mechanically admixing dry plaster with an aqueous foam, said dry plaster being obtained by calcining a neutralized phosphogypsum and having a pH in aqueous suspension of at least about 5, the improvement which comprises incorporating in the admixture of said plaster and said foam about 0.1–5% by weight, relative to the dry plaster, of slaked lime, by adding said slaked lime to said dry plaster prior to admixture with said foam, or by adding said slaked lime separately during said admixing, to increase the bending strength and compressive strength of the resultant cellular plaster for a given plaster density.

4,523,955

HYDROUS CALCIUM SILICATE INSULATION PRODUCTS MANUFACTURED BY RECYCLING GREENWARE

Jerry L. Helser, Hebron, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 944,540, Sep. 21, 1978, Pat. No. 4,477,397. This application May 2, 1984, Ser. No. 606,315

Int. Cl.³ C04B *1/00*

U.S. Cl. 106—120 **2 Claims**

1. A moldable slurry for manufacturing low density hydrated calcium silicate heat insulating bodies comprising an aqueous slurry of reactive calcareous and siliceous materials and particulated greenware, and produced by a process including the steps of:

a. preparing a moldable slurry comprising a water dispersion of reactive calcareous and siliceous containing materials;

b. partially gelling said dispersion by heating at a temperature of approximately 180°–210° F.;

c. molding said partially gelled dispersion and expressing water therefrom thereby forming rigid greenware articles;

d. removing portions of said greenware articles selected for recycling to the process;

e. curing the remaining molded articles by heating and pressurizing; and

f. pulverizing the selected greenware articles from step d to form particulated greenware and adding said particulated greenware to the composition of step a in a subsequent cycle of the process.

4,523,956

TRANSFER COATING METHODS, COMPOSITIONS AND PRODUCTS

John F. Thurlow, Gorham, Me., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 817,767, Jul. 21, 1977, abandoned. This application Jun. 3, 1981, Ser. No. 270,170

Int. Cl.³ C08K *3/04;* **C08L** *91/00, 91/06, 91/08*

U.S. Cl. 106—243 **11 Claims**

1. A coating composition comprising a non-soluble aqueous dispersion of:

(1) an inorganic filler material;

(2) carbon black colorant present in the range from about 5% to about 35% of the amount of said filler; and

(3) a wax or wax-like material selected from the group consisting of carnauba, palm, condelilla, esparto, sugar cane, ouricury, montan, ozocerite, paraffin, and microcrystalline waxes, and metallic salts of fatty acids of at least eleven carbon atoms; in which the filler is substituted for a portion of the wax or wax-like material and colorant without impairing the transfer quality of the composition;

said wax or wax-like material being in the range from about 10% to about 40% of the amount of said filler.

4,523,957

OPEN-GRADED ASPHALT EMULSION MIXES

Peter E. Graf, Orinda, and Judson E. Goodrich, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 178,056, Aug. 14, 1980, Pat. No. 4,423,088, which is a continuation of Ser. No. 22,762, Mar. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 820,261, Aug. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 732,849, Oct. 18, 1976, abandoned. This application Sep. 1, 1983, Ser. No. 517,188

Int. Cl.³ C09D *3/24*

U.S. Cl. 106—277 **14 Claims**

1. A paving composition comprising about 80 to 97% by weight of an open-graded aggregate and about 3 to 20% by weight of a cationic bituminous emulsion, said emulsion comprising about 40 to 75% by weight of asphalt, relative to the emulsion, 0.25 to 5.0% by weight relative to the emulsion of a cationic emulsifier, and water as a continuous phase of said emulsion to make up 100% by weight, said composition also containing about 0.01 to 3.0% by weight relative to the emulsion of an ionic polyelectrolyte having an ionic charge opposite to the emulsifier and comprising a salt of a polycarboxylic acid with an average molecular weight of from 1,000 to 10,000,000.

4,523,958

PIGMENT FORMULATIONS AND THEIR USE OF PIGMENTING GRAVURE PRINTING INKS AND FINISHES

Wolf D. Fechner, Dirmstein; Rudolf Polster, Frankenthal; Joachim Kranz, Ludwigshafen, and Eduard Hartmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 15, 1983, Ser. No. 475,698

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211165

Int. Cl.³ C09B *47/04, 47/08*

U.S. Cl. 106—288 Q **10 Claims**

1. A formulation containing

(a) a finely divided copper phthalocyanine which is unsubstituted or monosubstituted or disubstituted by chlorine, and

(b) an iron hexacyanoferrate-III pigment, which formulation is obtained by thoroughly milling a mixture of (a) and (b).

4,523,959

PURIFICATION OF SUGARCANE JUICE

Michel Exertier, Orsay, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 294,733, Aug. 20, 1981, abandoned. This application Sep. 27, 1983, Ser. No. 536,224

Claims priority, application France, Sep. 19, 1980, 80 20173

Int. Cl.³ C13D *3/14*

U.S. Cl. 127—46.2 **13 Claims**

1. A process of purifying sugarcane juices, comprising the steps of first contacting the sugarcane juices to be purified with a hydrophobic adsorbent and next with a supported strong anion exchange material, then contacting the juices, in any order, with an anion exchange resin and a cation exchange resin, and finally eluting aconitic acid retained by the anion exchange resin of the then contacting step with a solution of acid pH or a solution of basic pH, thereby obtaining aconitic acid or aconitate, wherein the juices to be purified are obtained by crushing and pressing cane, adding a flocculating agent to the juices obtained, and centrifuging and filtrating the resulting mixture so that it has a concentration of sugars of 10° to 25° Brix, and wherein the hydrophobic adsorbent is selected from the group consisting of a cross-linked vinyl aromatic polymer and a mineral support of alumina or silica coated with an amount of less than 15 mg/m^2 of a film of cross-linked vinyl aromatic polymer, said adsorbent having a particle size of 50 to 5000 μm, a specific surface of 5 to 600 m^2/g, a pore diameter of 60 to 3000 Å, and a pore volume of 0.2 to 4 ml/g.

9. A process for the purification of low-grade sugar solutions comprising the steps of first contacting the low-grade sugar solutions with a hydrophobic adsorbent, next contacting the low-grade sugar solutions with a supported strong anion exchange material, then contacting the low-grade sugar solutions, in any order, with an anion exchange resin and a cation exchange resin, and finally eluting aconitic acid retained by the anion exchange resin of the then contacting step with a solution of acid pH or a solution of basic pH, thereby obtaining aconitic acid or aconitate, wherein the low-grade sugar solution is obtained from sugarcane juice by clarification,, evaporation, crystallization and redissolution, said sugarcane juices being obtained by crushing and pressing cane, adding a flocculating agent to the juices obtained, and centrifuging and filtrating the resulting mixture so that it has a concentration of sugars of 10° to 25° Brix, and wherein the hydrophobic adsorbent is selected from the group consisting of a cross-linked vinyl aromatic polymer and a mineral support of alumina or silica coated with an amount of less than 15 mg/m^2 of a film of cross-linked vinyl aromatic polymer, said adsorbent having a particle size of 50 to 5000 μm, a specific surface of 5 to 600 m^2/g, a pore diameter of 60 to 3000 Å, and a pore volume of 0.2 to 4 ml/g.

4,523,960

METHOD FOR THE PRODUCTION OF HIGH FRUCTOSE CORN SYRUP

Joseph N. A. Otte, Ruisbroek, Belgium, assignor to Dow Chemical, Belgium, S.A., Midland, Mich.

Filed Dec. 9, 1983, Ser. No. 560,040

Claims priority, application European Pat. Off., Dec. 22, 1982, 822016523

Int. Cl.³ C13D *3/14*

U.S. Cl. 127—46.2 **8 Claims**

1. An improved method for preparing high fructose corn syrup wherein a glucose-containing process stream is sequentially treated with a strong acid cation-exchange resin and then an anion-exchange resin prior to the enzyme isomerization of at least a portion of the glucose to the fructose, the improvement in said method comprising contacting the glucose-containing process stream with a weak acid resin subsequent to the treatment of the process stream with the strong acid and anion resins but prior to enzyme isomerization.

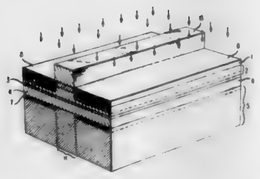
4,523,961

METHOD OF IMPROVING CURRENT CONFINEMENT IN SEMICONDUCTOR LASERS BY INERT ION BOMBARDMENT

Robert L. Hartman, Warren; Louis A. Koszi, Scotch Plains, both of N.J.; Richard S. Williams, Panorama City, Calif., and John L. Zilko, Fanwood, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 12, 1982, Ser. No. 441,365
Int. Cl.³ H01L *21/225;* **H01S** *3/00, 3/06*
U.S. Cl. 148—1.5 **14 Claims**





1. A method for fabricating a III-V compound semiconductor device comprising the following steps:

forming a resistive region within a III-V semiconductor substrate by irradiating said substrate with ions selected from the group consisting of He, Ne, Ar, Xe and Rn; and growing at least one III-V semiconductor epitaxial layer on said substrate such that a minimum resistivity of the ion implanted region is retained.

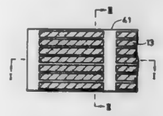
4,523,962

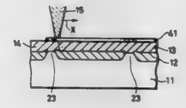
METHOD FOR FABRICATING MONOCRYSTALLINE SEMICONDUCTOR LAYER ON INSULATING LAYER BY LASER CRYSTALLIZATION USING A GRID OF ANTI-REFLECTION COATING DISPOSED ON POLY/AMORPHOUS SEMICONDUCTOR

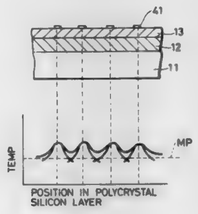
Tadashi Nishimura, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1983, Ser. No. 561,104
Claims priority, application Japan, Dec. 13, 1982, 57-219961
Int. Cl.³ H01L *21/263;* **B05D** *3/06*
U.S. Cl. 148—1.5 **3 Claims**

1. In a method for fabricating a monocrystalline semiconductor layer from a polycrystalline or amorphous semiconductor layer formed on a main face of a monocrystalline semiconductor substrate having on said main face a thick insulating layer formed with windows through which said polycrystalline or amorphous semiconductor layer is in contact with said monocrystalline semiconductor substrate, in which the polycrystalline or amorphous semiconductor layer is melted by a scanning thereof with a CW laser beam to monocrystallize said polycrystalline or amorphous semiconductor layer starting from portions of said monocrystalline semiconductor substrate extending through said windows, the monocrystallized semiconductor material having a common crystallographical axis to that of said monocrystalline semiconductor substrate, wherein the improvement comprises the step of: providing a thin antireflection layer of insulating material of silicon nitride on said polycrystalline or amorphous semiconductor layer including a first portion and a second portion, a portion of said polycrystalline or amorphous semiconductor layer above said windows being covered by said first portion of said thin antireflection layer, said second portion of said thin antireflection layer being disposed on remaining portions of said polycrystalline or amorphous semiconductor layer, said second portion having the form of a grid of parallel lines extending from said







first portion in a direction of scanning of said laser beam, the power of said laser beam being constant.

4,523,963

METHOD OF FABRICATING MOS DEVICE ON A SOS WAFER BY STABILIZING INTERFACE REGION WITH SILICON AND OXYGEN IMPLANT

Takao Ohta, Tokyo, and Junichi Ohno, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 27, 1984, Ser. No. 583,833
Claims priority, application Japan, Mar. 2, 1983, 58-34174
Int. Cl.³ H01L *21/265, 7/00*
U.S. Cl. 148—1.5 **1 Claim**

1. A method of fabricating a MOS device on a SOS wafer by stabilizing an interface region with a silicon and oxygen implant, comprising the steps of:

forming a monocrystalline silicon layer on a sapphire substrate;

ion-implanting silicon and oxygen in a portion of said silicon layer, which is located in the vicinity of said interface between said sapphire substrate and said silicon layer;

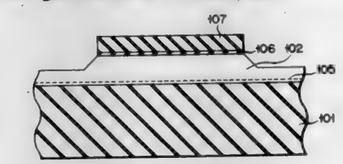
annealing the resultant structure to improve a crystal structure of said portion of said silicon layer in the vicinity of said interface, and forming an insulation layer at said interface;

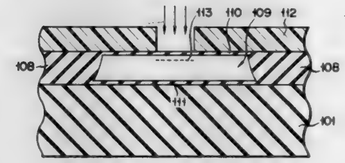
selectively forming an element isolation region in said silicon layer to obtain an island silicon layer;

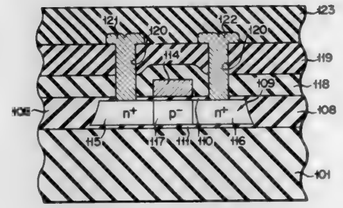
forming a gate insulation film on said island silicon layer;

forming a gate electrode on said gate insulation film;

ion-implanting an impurity in said island silicon layer by using said gate electrode as a mask; and







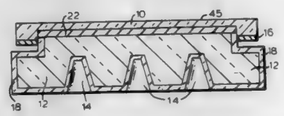
annealing the resultant structure to form source and drain regions in said island silicon layer such that bottoms thereof reach a surface of said insulation layer.

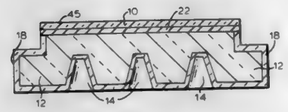
4,523,964

HIGH TEMPERATURE LAYERED SILICON STRUCTURES

L. Bruce Wilner, Palo Alto, and Herbert V. Wong, San Francisco, both of Calif., assignors to Becton, Dickinson and Company, Paramus, N.J.

Division of Ser. No. 233,728, Feb. 12, 1981, Pat. No. 4,400,869.
This application Mar. 30, 1983, Ser. No. 480,528
Int. Cl.³ H01L *29/84, 21/225*
U.S. Cl. 148—33.2 **7 Claims**





1. A laminate for use as a high temperature pressure transducer, said laminate comprised of a silicon wafer oriented (100) and having a silicon gauge wafer film rich in boron laminated to one side thereof, said laminate obtained by the steps of

(a) selecting a diaphragm wafer;

(b) selecting a gauge wafer;

(c) depositing in a first depositing step a boron rich layer on one surface of said gauge layer;

the improvement characterized by

(d) depositing in a second depositing step silicon dioxide on one surface of said diaphragm layer;

(e) orienting said diaphragm wafer with said gauge wafer so that said boron rich layer is adjacent said silicon dioxide layer;

(f) subjecting in a first subjecting step said wafers to temperature and pressure conditions sufficient to cause adhesion between said boron rich layer and said silicon dioxide layer;

(g) said first subjecting step is carried out in a press first at a pressure at about two pounds per square inch for a time sufficient to elevate said temperature to an adhesion temperature above the melting temperature of said boron rich layer;

(h) said first subjection step is carried out secondly by maintaining said elevated temperature for six hours at an elevated pressure within the range of between about above two and sixty pounds per square inch;

(i) subjecting in a second subjecting step said oriented wafers to temperature conditions sufficient to simultaneously diffuse said boron rich layer into both said gauge wafer and said silicon dioxide layer on said diaphragm wafer;

(j) removing a substantial portion of said gauge wafer from the surface thereof opposite said diaphragm wafer to provide a boron rich gauge wafer film;

(k) said removing step including preferentially etching said gauge wafer to a uniform thickness; and

(l) said uniform thickness is within the range of between about 5×10^{19} and 1×10^{20} atoms of boron per cubic centimeter of remaining gauge film.

4,523,965

HIGH CARBON STEEL MICROCRACKING CONTROL DURING HARDENING

John R. Lyman, Orono, Me., assignor to Board of Trustees of the University of Maine, Bangor, Me.

Filed Mar. 7, 1983, Ser. No. 472,656
Int. Cl.³ C21D *1/18*
U.S. Cl. 148—143 **18 Claims**



1. A method for hardening high carbon steel comprising:

heating the steel to the full austenitizing temperature of the selected steel composition and maintaining the full austenitizing temperature for sufficient time to dissolve the high carbon content phase into the austenite structure;

quenching the austenitized steel in an intermediate quenching step to a temperature below the martensite start temperature for the selected steel composition but substantially above the final quench temperature and controlling and limiting the time duration of the intermediate quenching to initiate transformation of only a minor portion of the austenite structure to martensite;

tempering the martensite formed by the intermediate quenching step in an intermediate tempering step to a temperature above said intermediate quench temperature thereby halting the intermediate transformation to martensite and imparting toughness to the minor portion of martensite formed during the intermediate quenching step;

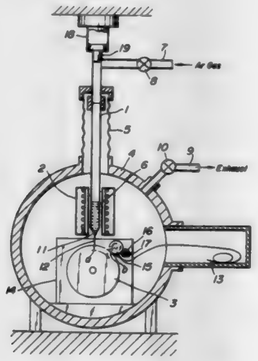
quenching the steel in a final quenching step to a final quenching temperature substantially below the intermediate quenching temperature and transforming the major portion of austenite to martensite so that the steel as finally quenched comprises a major portion of untempered martensite intermixed with a minor portion of tough tempered martensite thereby minimizing or avoiding microcracking which may by caused by mutual impingement of untempered martensite crystals.

4,523,966

PROCESS OF PRODUCING SILICON RIBBON WITH P-N JUNCTION

Noboru Tsuya; Kenichi Arai, and Toshio Takeuchi, all of Sendai, Japan, assignors to Tohoku University, Sendai, Japan

Continuation of Ser. No. 346,589, Feb. 8, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 650,569
Claims priority, application Japan, Feb. 9, 1981, 56-16887
Int. Cl.³ H01L *21/208*
U.S. Cl. 148—171 **10 Claims**



1. A process of producing a silicon ribbon with a p-n junction, comprising the steps of melting a raw silicon material having a polarity of the p- or n-type in a heat-resisting tube at a temperature higher than 0.5° C. and lower than 20° C. above the melting point of the raw silicon material, ejecting the melt of raw silicon material onto a rotary cooling substrate, cooling the melt super-rapidly so as to produce a silicon ribbon, and doping an impurity having a polarity of the p- or n-type and whose polarity is opposite to that of the raw silicon material onto the silicon ribbon thus ejected while the silicon ribbon is still at a temperature of 600° C. to 1,000° C. by applying dopant in a gaseous, liquid or paste state, whereby a p-n junction is formed in the silicon ribbon during the course of fully solidifying the silicon ribbon.

4,523,967

INVERT EMULSION EXPLOSIVES CONTAINING A ONE-COMPONENT OIL PHASE

Richard V. Cartwright, Wantage Township, Sussex County, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 6, 1984, Ser. No. 638,334
Int. Cl.³ C06B *45/02*
U.S. Cl. 149—2 **23 Claims**

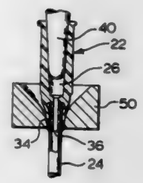
1. A blasting composition comprising
(A) an invert water/oil emulsion component consisting essentially of
(a) an internal discontinuous aqueous phase containing about 50–90 weight percent of a water soluble inorganic oxygen supplying salt; and
(b) an effective amount of a continuous hydrophobic organic phase of a partial ester of a 2–12 carbon polyhydric alcohol esterified by a tall oil fatty acid,
(B) a solid oxygen-supplying inorganic salt to obtain an Oxygen Balance of about zero,
(C) 0% to about 50% by volume of a density control agent; and
(D) 0% to about 40% by weight of a sensitizer.

4,523,968

TUBE AND FITTING ASSEMBLY AND METHOD OF MAKING SAME

George W. McCool, St. Joseph, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Sep. 19, 1983, Ser. No. 533,908
Int. Cl.³ B29C *27/08*
U.S. Cl. 156—73.5 **20 Claims**



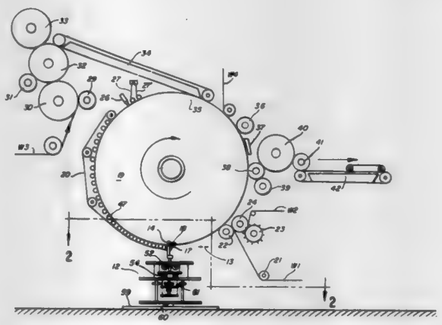
1. A method of making a tube and fitting assembly comprising the steps of providing a formable fitting having an end socket and a pin having a bore therethrough extending concentrically within the socket, inserting one end portion of a plastic tube onto the pin and into the socket, providing a die having a die-forming cavity narrowing toward one end thereof, effecting relative rotation of the fitting and die and relative axial movement of the fitting and die toward each other with the walls of the socket engaging the walls of the die-forming cavity and with the fitting moving in a direction toward the narrow end thereof to inwardly form the walls of the socket against the outer surface of the tube, and separating the fitting with the tube attached thereto from the die.

4,523,969

METHOD AND APPARATUS FOR MANUFACTURING A PRODUCT HAVING ELASTIC MEANS DISPOSED IN A DIRECTION TRANSVERSE TO PRODUCT MOVEMENT

Harvey J. Spencer, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Jan. 9, 1984, Ser. No. 569,172
Int. Cl.³ B32B *31/10*
U.S. Cl. 156—161 **15 Claims**



1. A method of applying stretched elastic segments to a web as for a diaper waist-band or the like comprising:
advancing at least one continuous stretched elastic ribbon along a first linear path,

gripping said ribbon at two pairs of points spaced longitudinally in said first path,
severing said ribbon between said pairs of points to provide a stretched ribbon segment between one pair of points and a portion of said continuous ribbon between the other pair of points,
advancing the ribbon segment along a portion of an orbital path while maintaining the length of said segment parallel to said first linear path, and
adhesively uniting said segment to a continuous web being advanced in a second linear path generally perpendicular to said first linear path.

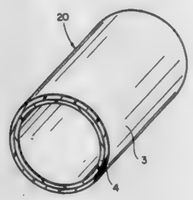
11. Apparatus for applying stretched elastic segments to a web for diaper waist-bands and the like comprising:
means for advancing at least one continuous stretched elastic ribbon along a first linear path, a pedestal adjacent said first linear path and equipped with a plurality of circumferentially spaced gripping means, each gripping means including a pair of spaced apart grippers adapted to grip said ribbon at two points spaced therealong,
means operatively associated with said pedestal for rotating said gripping means to bring said successive gripping means into engagement with said ribbon at spaced points,
a cutting means adjacent said first linear path for cutting said ribbon between said successive gripping means to provide a discreet ribbon segment,
said rotating means being operative to rotate said gripping means on an increasing radius through an arc of about 90° and while maintaining said gripping means in a predetermined orientation to maintain said segment parallel to said first linear path,
means for advancing a continuous web along a linear path generally perpendicular to said first linear path, and
a belt equipped drum in said second path, said belt cooperating with said drum to press said segment against said web.

4,523,970

PROCESS FOR MANUFACTURING SEALANT COATED ARTICLES

Lester T. Toy, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 276,111, Jun. 22, 1981, abandoned. This application Jun. 7, 1983, Ser. No. 500,226
Int. Cl.³ B29D *7/02, 23/04*
U.S. Cl. 156—244.11 **20 Claims**



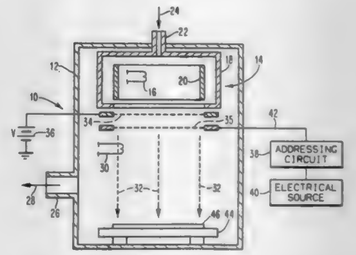
1. A process for manufacturing a sealant coated dimensionally heat-recoverable laminated sheet comprising the steps of:
selecting a first polymer composition comprising a radiation cross-linkable polymer;
forming a second polymer composition by admixing a thermoplastic component and a rubber component in proportions such that the composition comprises 30 to 95% of the thermoplastic component and 5 to 70% of the rubber component, said second composition being radiation convertible to a sealant composition;
extruding said first and second polymer compositions to form a unitary laminated sheet possessing two layers formed respectively of said first and second polymer compositions and being in a first configuration;
deforming said sheet at a temperature below the crystalline melt temperature of said first composition in to a second configuration; and
exposing said sheet to a source of ionizing radiation to initiate the formation of chemical bonds between adjacent polymer chains in said first composition, and to induce chemical change in said second composition, thereby converting said second composition from a melt processable composition to a sealant composition and rendering said first composition recoverable towards said first configuration upon subsequent heating.

4,523,971

PROGRAMMABLE ION BEAM PATTERNING SYSTEM

Jerome J. Cuomo, Lincolndale; James M. E. Harper, Yorktown Heights, both of N.Y.; Harold R. Kaufman, Ft. Collins, Colo., and James L. Speidell, Carmel, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1984, Ser. No. 626,097
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—345 **18 Claims**



1. An ion beam system for producing a patterned ion beam without the need for masks, comprising:
an ion source for producing ions,
a programmable grid having a plurality of extraction apertures therein through which said ions can selectively be extracted from said ion source to produce said patterned beam,
electrical bias means for electrically biasing individual ones of said extraction apertures for selectively extracting ions from said ion source or preventing the extraction of said ions, thereby producing said ion beam pattern,
means for selectively changing the electrical bias on individual ones of said extraction apertures in order to change said selected ion beam pattern.

4,523,972

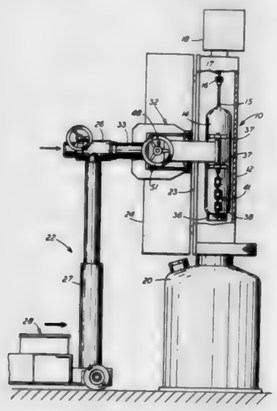
METHOD OF AND APPARATUS FOR HANDLING CRYSTAL INGOTS

Robert H. Cushman, Princeton, N.J., and Charles E. Stout, Jr., Emmaus, Pa., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Nov. 28, 1983, Ser. No. 555,781
Int. Cl.³ C30B *15/02*
U.S. Cl. 156—617 SP **21 Claims**

1. Apparatus for handling a crystal ingot comprising:
at least one pair of opposed jaws movably mounted to an end of a cantilever beam so as to move with respect to each other in a first plane, said jaws having inward directed guiding surfaces for contacting opposite sides of a lateral surface of the crystal ingot upon being manipulated into position adjacent to such opposite sides of the lateral surface of the crystal ingot;
a base support positioned and arranged so as to contact a lower end of the crystal ingot in a direction substantially perpendicular to said first plane of movement of the at least one pair of jaws for supporting said crystal ingot in said substantially perpendicular direction;

means for locating said base support relative to and below the jaws, said locating means capable of supporting a substantially vertical force component of the crystal ingot; and



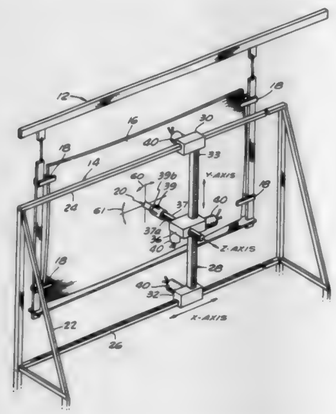
means for manipulating said at least one pair of jaws into positions adjacent to and into contact with opposite sides of such lateral surface of the crystal ingot to firmly support a force component in a direction substantially orthogonal to the force component supported by the base support.

4,523,973

METHOD AND APPARATUS FOR AUTOMATED CHEMICAL MILLING OF COMPOUND CURVED SURFACES

Carl Nelson, Anaheim, Calif., assignor to Aerochem, Inc., Orange, Calif.

Filed Oct. 17, 1983, Ser. No. 542,790
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—626 **23 Claims**



1. A method of measuring the wall thickness of a generally planar shaped and a compound curved shaped workpiece at a multiplicity of locations using an ultrasonic sensor carried by a holding device adapted to locate the sensor adjacent the surface of the workpiece and to permit controllable movement of the sensor relative thereto horizontally, vertically and along axes extending perpendicularly from the surface of the part, said sensor being adapted to direct an ultrasonic sound pulse at the workpiece, detect the pulse echos reflected from the first and second surfaces of the work piece and measure the time between said echos whereby the thickness of the work piece can be calculated, said method comprising the steps of:

(a) identifying a multiplicity of horizontally and vertically spaced apart points on the surface of the workpiece;
(b) positioning the sensor proximate one of said points;
(c) moving the sensor along a first transverse axis extending perpendicularly from said point on the surface to a position wherein the sensor is spaced apart from the surface a predetermined distance;
(d) actuating the sensor to determine the wall thickness at said point;
(e) moving the sensor relative to the work piece to a position wherein it is proximate another of said points;
(f) actuating the sensor to determine the wall thickness at said latter point;
(g) successively repeating the movement of the sensor relative to the work piece to a position proximate each of the said multiplicity of points; and
(h) actuating the sensor to determine the wall thickness at each of said multiplicity of points.

4,523,974

METHOD OF FABRICATING A PELLICLE COVER FOR PROJECTION PRINTING SYSTEM

Dawn L. Duly; Henry Windischmann, both of Huntington, and W. D. Buckley, Easton, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 466,268, Feb. 14, 1983, Pat. No. 4,465,759. This application Mar. 21, 1984, Ser. No. 592,040
Int. Cl.³ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—630 **15 Claims**

1. A method of fabricating a pellicle cover assembly for use in a projection system for forming an image on a radiation sensitive wafer, said method comprising the steps of:

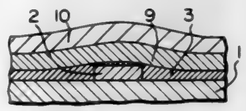
applying a gold film onto the surface of a wafer;
applying a thin uniform polymer film onto the gold film surface of said wafer;
curing said polymer film;
adhering a pellicle support ring to the polymer film;
cutting through the polymer and gold films between the ring and wafer edges to expose the wafer surface;
carefully peeling the ring off the wafer, resulting in a gold coated polymer membrane that is already mounted on a pellicle support ring; and
etching off the gold film.

4,523,975

INTEGRATED CIRCUIT PLANARIZING PROCESS

Christopher K. Groves, Bromont, Canada; Kevin Duncan, St. Albans, Vt., and Edward C. D. Darwall, Bromont, Canada, assignors to Mitel Corporation, Ontario, Canada

Filed Apr. 28, 1982, Ser. No. 372,690
Claims priority, application Canada, Apr. 19, 1982, 401226
Int. Cl.³ H01L *21/312*
U.S. Cl. 156—643 **34 Claims**



1. A process for planarizing an integrated circuit comprising:

(a) depositing and defining first metal conductors on the surface of an integrated circuit,
(b) depositing a first dielectric layer over the surface of the integrated circuit including said conductors, the dielectric layer being comprised of a material selected from the group consisting of silicon dioxide and silicon nitride,
(c) depositing and polymerizing a layer of negative isoprene resist over the surface of the dielectric layer,
(d) etching the surface of the isoprene and dielectric layers, with an etchant to which the first metal conductors are substantially immune, to a predetermined thickness over the metal conductors, in an atmosphere containing 32 to 50% oxygen in a CF_4 gas in a plasma etcher,
(e) cleaning the etched surface, and
(f) depositing a second dielectric layer over the surface selected fron the group consisting of silicon dioxide and silicon nitride,

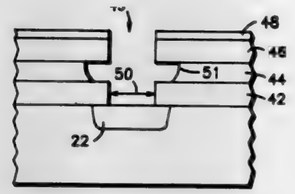
whereby a planarized surface having very large radius of curvature steps over the metal conductors is produced.

4,523,976

METHOD FOR FORMING SEMICONDUCTOR DEVICES

Yefim Bukhman, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 2, 1984, Ser. No. 627,264
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; B29C *17/08*
U.S. Cl. 156—643 **11 Claims**



1. A method for forming an opening through a polyimide layer to expose an underlying surface wherein said opening is characterized by tapered side walls and a predetermined size, said method comprising the steps of: forming a first layer of cured polyimide on said surface; forming a second layer of partially cured polyimide overlying said first layer; forming a masking layer overlying said second layer; forming a pattern in said masking layer to expose portions of said second layer, said pattern including an opening of predetermined size; isotropically etching said second layer exposed through said pattern to expose portions of said first layer; anisotropically etching said first layer exposed through said second layer using said pattern in said masking layer an etch mask to form an opening of said predetermined size in said first layer; removing said masking layer; and curing said second layer.

4,523,977

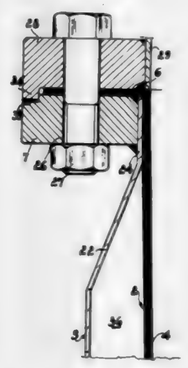
METHOD AND A DEVICE FOR ATTENUATING PRESSURE PULSES THROUGH FLUIDS, IN PARTICULAR FOR CONTINUOUS PAPER WEB PRODUCING MACHINES

Maurizio Cantini, Ascoli Piceno, Italy, assignor to Arnoldo Mondadori Editore S.p.A., Milan, Italy

Filed Aug. 4, 1983, Ser. No. 520,192
Claims priority, application Italy, Sep. 7, 1982, 23144 A/82
Int. Cl.³ D21F *1/06*
U.S. Cl. 162—259 **4 Claims**

1. A pulse attenuating device for a continuous paper web production machine which comprises:

(a) an outer rigid body having a conical central housing; cylindrical rim portions spaced axially from each end of the central housing, the diameter of each of said rim portions being less than the diameter of the corresponding end of the central housing; tapered end portions joining the ends of the central housing to the corresponding rim portions; and ring flanges projecting radially from said cylindrical rim portions;
(b) a resilient inner body extending through said outer rigid body so as to define between said bodies an annular compensating chamber, said inner body comprising a multilayered tubular jacket having a central portion and flared end portions and composed of alternating rubber, woven rayon and polyester fabric layers; and reinforcing means consisting of a plurality of additional layers overlying each end of said central portion and said flared end portions of the tubular jacket, so as to form an integral structure therewith, the outside diameter of the reinforcing means which overlies the end portion of said central portion of said tubular jacket being substantially equal to the inner diameter of the corresponding rim portion;
(c) sealing means for affixing circumferentially the flared end portions of said reinforcing means to the ring flanges



of said outer rigid body and adapted to secure a feed conduit to one end of said pulse attenuating device and an outlet conduit to the other end of said pulse attenuating device, the internal diameter of each conduit being substantially equal to the internal diameter of the corresponding end of the resilient inner body so that, when conduits are connected to the pulse attenuating device, a smooth, uninterrupted passageway is formed from the feed conduit through the pulse attenuating device and into the outlet conduit.

4. The pulse attenuating device of claim 1 further comprising inlet and outlet means for the passage of pressurized fluid to the annular compensating chamber, an electro-pneumatic circuit adapted for sensing the pressure value of the fluid in said compensating chamber and deviation from a preset value, means for controlling the pressure of the pressurized fluid in the compensating chamber so as to create damping differentials for modifying pressure changes occurring in the fluid being conveyed through the paper web production machine.

4,523,978

FORMING SHOE FOR A FORMER IN A PAPER MACHINE

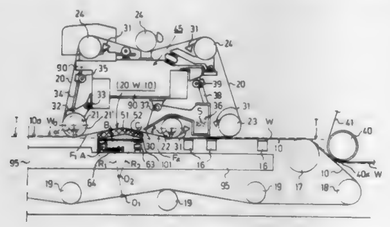
Martti Pullinen, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Apr. 29, 1983, Ser. No. 490,043
Claims priority, application Finland, Apr. 30, 1982, 821531
Int. Cl.³ D21F *1/36*
U.S. Cl. 162—300 **18 Claims**

1. In a two-wire section of a paper making machine comprising an integrated forming shoe mounted at a location and at an attitude and including curved guiding surface means having an active portion, said active portion being that portion of said curved guiding surface means over which a joint run of the

wires and a paper web interposed therebetween is guided over a curved path of travel, said active portion having a length and surface characteristics, and wherein the web is dewatered as it passes over said guiding surface means at least in a direction away from said forming shoe at least in part due to the curved path of travel under the effect of centrifugal forces, the improvement comprising:

said guiding surface means of said integrated forming shoe includes at least two guiding surface means portions arranged in immediate succession in the direction of said path of travel of said joint run, said guiding surface means



portions having different respective radii of curvature, and wherein said active portion of said curved guiding surface means includes a length of at least one of said at least two guiding surface means portions,

means for adjusting at least one of the attitude and location of said integrated forming shoe in its entirety to change said active portion of said curved guiding surface means over which the joint run of the wires and interposed web is guided to selectively provide which of said at least two guiding surface means portions of different radii of curvature and the lengths thereof are included in said active portion.

4,523,979

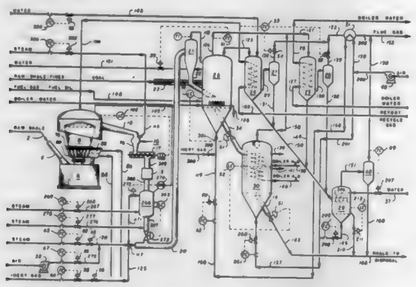
APPARATUS FOR RECOVERY OF RETORTED SHALE FROM AN OIL SHALE RETORTING PROCESS

Roland F. Deering, Brea, and John H. Duir, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 454,836, Dec. 30, 1982, Pat. No. 4,446,001, which is a continuation-in-part of Ser. No. 451,597, Dec. 20, 1982, Pat. No. 4,435,271. This application Jan. 9, 1984, Ser. No. 569,237

Int. Cl.³ C10B *49/00*

U.S. Cl. 202—99 **11 Claims**



1. An apparatus for recovering retorted shale particulates from an oil shale retort comprising, in combination and in fluid communication:

(1) an oil shale retort for retorting particulates of oil shale of at least ¼ inch mean diameter, said retort operating at conditions of elevated pressure;

(2) a first vessel with an entrance opening and exit opening for a moving bed of particulates to pass therethrough, said vessel being further provided with means for introducing a gas thereinto under sufficient pressure to prevent flow of gases from the retort into said first vessel;

(3) means for transporting said retorted shale particulates from said retort into said first vessel through the entrance opening;

(4) means for crushing said particulates to a size less than ½ inch in diameter;

(5) means for transporting said particulates from said first vessel through the exit opening thereof to said crushing means;

(6) a second vessel provided with an entrance opening and exit opening for said moving bed of particulates, said vessel being further provided with means for introducing a gas thereinto at a rate sufficient to maintain said moving bed in a fluidized condition;

(7) means for transporting said particulates from said crushing means into said second vessel through the entrance opening;

(8) a combustor for combusting combustible materials upon said particulates under fluidized conditions and operating at a pressure lower than that of the retort;

(9) means for transporting said particulates from said second vessel to said combustor, said transporting means comprising means for introducing and transporting a gas at a sufficient rate to carry said particulates in an entrained form; and

(10) means for regulating the rate at which said particulates exit said second vessel through the exit opening thereof while simultaneously reducing the pressure of solids passing therethrough to that prevailing in said transporting means (9).

4,523,980

PROCESS FOR THE RECOVERY OF HIGH PURITY SQUARIC ACID

James J. Barber, West Newton, Mass., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Aug. 31, 1984, Ser. No. 645,975

Int. Cl.³ C25C *1/00*

U.S. Cl. 204—59 R **9 Claims**

1. A process for the isolation of substantially pure squaric acid from a squarate salt and complex containing product of the electrolytic cyclization of carbon monoxide, comprising:

contacting the squarate salt and complex containing electrolysis product solid substantially at the same time with

(1) a nonoxidizing aqueous acid, and

(2) an immiscible organic solvent;

separating the formed solid, substantially pure squaric acid from the resulting reaction mixture.

4,523,981

MEANS AND METHOD FOR REDUCING CARBON DIOXIDE TO PROVIDE A PRODUCT

Peter G. P. Ang, and Anthony F. Sammells, both of Naperville, Ill., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 27, 1984, Ser. No. 593,984

Int. Cl.³ C25B *3/04*

U.S. Cl. 204—72 **32 Claims**

1. A process for reducing carbon dioxide to at least one useful product comprising the steps of:

a. providing a R_{II}/O_{II} redox coupled electrolyte solution,

b. providing a R_I/O_I redox coupled electrolyte solution,

c. separating the R_{II}/O_{II} solution from the R_I/O_I solution with a first membrane having photosensitizers,

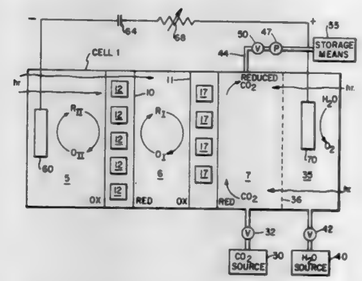
d. providing carbon dioxide,

e. separating the carbon dioxide from the R_I/O_I solution with a second membrane having photosensitizers and a catalyst,

f. providing water,

g. separating the water from the carbon dioxide in a manner so that hydrogen ions, but not oxygen, may pass from the water to participate in the reduction of the carbon dioxide, and

h. illuminating both membranes so as to produce excited photosensitizers to cause electron transfer from the R_{II}-



$/O_{II}$ solution to the R_I/O_I solution thence to the carbon dioxide to cooperate with passed hydrogen ions in the reducing of the carbon dioxide to provide at least one product.

4,523,982

ELECTRON RICH AROMATICS AS CURE PROMOTERS FOR RADIATION CURABLE COMPOSITIONS

George A. Lee, Wayland, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 240,706, Mar. 5, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 479,107

The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.

Int. Cl.³ C08F *2/50*

U.S. Cl. 204—159.15 **20 Claims**

1. A photopolymerizable composition comprising the following components:

(a) an ethylenically polymerizable compound containing at least two ethylenically unsaturated polymerizable groups per molecule;

(b) at least one monovinylidene diluent;

(c) a photoinitiator; and

(d) an electron-rich, aromatic promoter,

said components being present in proportions such that, upon exposure to the appropriate light radiation, the composition cures to form a hard tack-free coating or film which contains less than 1 weight percent of a monovinylidene diluent.

4,523,983

REACTIVE PLASTISOL DISPERSION

Shiow C. Lin, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 493,035, May 9, 1983, Pat. No. 4,463,128. This application Apr. 30, 1984, Ser. No. 590,458

Int. Cl.³ C08J *3/28*; C08L *29/14*

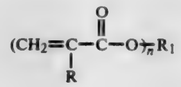
U.S. Cl. 204—159.15 **16 Claims**

1. A reactive plastisol dispersion comprising

(1) a polyvinyl acetal thermoplast in particle form having a particle size in the range from about 0.1 to about 1,500 microns;

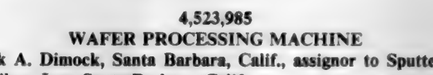
(2) a liquid plasticizer member of the group consisting of

(a) at least one ethylenically unsaturated monomer, oligomer or prepolymer of the formula:



wherein R is H or CH_3, R_1 is an organic moiety and n is 1 or more,

(b) at least one unsaturated polyester containing the group:



wherein R_2 and R_3 are organic moieties, x is 0–20 and y is 1–20; and

(c) a mixture of (a) and (b),

said liquid plasticizer being present in an amount ranging from 50 to 2,000 parts per 100 parts of the thermoplast by weight; and

(3) 0.0005 to 30% by weight of the plasticizer of a photoinitiator.

4,523,984

TREATMENT OF ION-EXCHANGE MEMBRANE

Keith G. Moss; Peter J. Smith, both of Cheshire, and Robin A. Woolhouse, Bunbury Nr. Tarporley, all of England, assignors to Imperial Chemical Industries, PLC, London, England

Filed Jun. 6, 1983, Ser. No. 501,759

Claims priority, application United Kingdom, Jun. 8, 1982, 8216559

Int. Cl.³ C25B *13/00*

U.S. Cl. 204—296 **11 Claims**

1. A method of treating a sheet of an ion-exchange membrane for use in an electrolytic cell comprising at least one anode and at least one cathode, or a precursor for said ion-exchange membrane, in which method the sheet is swollen by contacting the sheet with a liquid medium, characterised in that after swelling the sheet with liquid medium the liquid medium is replaced in the sheet by contacting the thus swollen sheet with an electrolyte to be electrolysed, in that the sheet is swollen by the liquid medium at or near a first face, which in the electrolytic cell faces the anode, to an extent greater than the sheet is swollen by the liquid medium at or near a second face, which in the electrolytic cell faces the cathode, and in that the extent of swelling at or near said first face is greater than the extent of swelling which would be effected by contacting the sheet with the electrolyte to be electrolysed.

4,523,985

WAFER PROCESSING MACHINE

Jack A. Dimock, Santa Barbara, Calif., assignor to Sputtered Films, Inc., Santa Barbara, Calif.

Filed Dec. 22, 1983, Ser. No. 564,748

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **12 Claims**

1. In a wafer processing machine for processing wafers of the type wherein wafers, in a wafer carrier open on the top and bottom and having slots in the side walls for holding the wafers, are transported to or from the wafer carrier relative to a wafer process station:

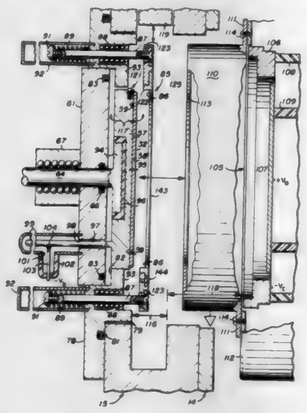
wafer pickup blade means passing transversely through the wafer carrier from the bottom for engagement with the wafers for transport of the wafers relative to the wafer process station;

wafer carrier transport means for sequentially moving the wafer carrier relative to said pick up blade means so as to serially move respective wafers relative to the wafer process station;

indexing means operatively associated with said wafer carrier transport means for indexing the position of said wafer carrier relative to said wafer pickup blade means and having a linear array of radiant energy indicia indicative of the position of said wafers within the wafer carrier;

radiant energy readout means operatively associated with said linear array of radiant energy indicia for giving an output when a respective one of said radiant energy indi-

cia is in registration relative to said readout means, whereby the position of the wafers in the wafer carrier



relative to the position of said wafer pickup blade means is determined in use.

4,523,986

LIQUEFACTION OF COAL

Frederick B. Seufert, Bedford Hills, N.Y., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,345
Int. Cl.³ C10G *1/06, 1/00*
U.S. Cl. 208—10 **25 Claims**

1. A process for the liquefaction of ground coal or similar liquefiable carbonaceous solids which comprises:

(1) reacting a preheated slurry mixture comprising dried ground coal or similar liquefiable carbonaceous solids and liquid hydrocarbon slurry oil from (2) (IV), and at least a portion of the hydrogen-rich gas from (4) while in contact with a hydrogenation catalyst in a liquefaction zone at a temperature in the range of about 700° to 950° F., a pressure in the range of about 0 to 300 atmospheres, and a residence time in the range of about 2 to 75 minutes;

(2) separating the effluent stream from the liquefaction zone in (1) into at least the following separate streams by the steps of:

(I) introducing the effluent stream from the liquefaction zone in (1) into a separation zone and separating said effluent stream into the stream of hydrogen-containing gas mixture and a stream of liquid hydrocarbon;

(II) separating a portion of hydrogen-rich gas from said hydrogen-containing gas mixture from (I) to produce a recycle stream of hydrogen-rich gas, and introducing the remainder of the hydrogen-containing gas mixture into the partial oxidation gas generating zone in (3) as a portion of the feed;

(III) reducing the pressure on the stream of liquid hydrocarbon from (I) and separating said stream into hydrocarbon vapors and liquid hydrocarbon oil;

(IV) hydrocloning the liquid hydrocarbon oil from (III) to produce a liquid hydrocarbon slurry oil stream and a underflow liquid hydrocarbon oil stream containing particulate matter;

(V) vacuum distilling a preheated liquid hydrocarbon oil stream containing particulate matter from (IV) in a vacuum fractionating zone thereby forming a stream of vacuum bottoms and a stream of vacuum gas oil vapors; and

(VI) fractionating a preheated mixed stream of hydrocarbon vapors from (III) and the vacuum gas oil vapors from (V) thereby forming a vent gas stream of hydrogen-containing gas mixture and at least one stream of liquid hydrocarbon distillate, and introducing said vent gas stream of hydrogen-containing gas mixture into the partial oxidation gas generating zone in (3) as a portion of the feed;

(3) reacting in a partial oxidation gas generating zone the hydrogen-containing gas mixture from (2) (II) less any hydrogen-rich gas separated therefrom, and the vent gas stream of hydrogen-containing gas mixture from (2) (IV), and with or without at least a portion of the vacuum bottoms from (2) (V), with a stream of free-oxygen containing gas, and with or without supplemental temperature moderator, at a reaction temperature in the range of about 1700° to 3000° F. and a pressure in the range of about 1 to 250 atmospheres to produce a stream of hot raw effluent gas comprising H_2 and CO, entrained carbon-containing solids, and with or without ash and slag; and

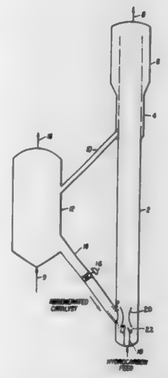
(4) cooling and scrubbing with water the hot raw effluent gas stream from (3), and separating carbon-containing solids and any ash and slag from said gas stream thereby obtaining a stream of clean effluent gas comprising H_2 and CO, and deriving therefrom a stream of hydrogen-rich gas.

4,523,987

FEED MIXING TECHIQUE FOR FLUIDIZED CATALYTIC CRACKING OF HYDROCARBON OIL

Joe E. Penick, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 26, 1984, Ser. No. 665,333
Int. Cl.³ C10G *11/18*
U.S. Cl. 208—157 **4 Claims**



1. In a fluid catalytic cracking process comprising admixing a hydrocarbon oil feed with hot regenerated catalyst in the bottom section of a reactor riser, passing the mixture of the hydrocarbon oil feed and the catalyst through the riser, thereby at least partially volatilizing the oil feed and effecting cracking thereof at the process temperature under endothermic process conditions and deactivating the catalyst by deposition of carbonaceous deposits thereon, separating the deactivated catalyst from the cracked hydrocarbonaceous feed, passing the deactivated catalyst to a regenerator vessel wherein the carbonaceous deposits are removed from the deactivated catalyst under exothermic process conditions by means of a regenerating medium introduced into the regenerator vessel, and passing the regenerated hot catalyst substantially above process cracking temperature to the bottom section of the reactor riser; the improvement comprising

continuously injecting liquid oil feed into a primary mixing zone in a venturi tube mixer spaced inwardly from the reactor riser wall at the bottom portion therein adjacent a regenerated catalyst return conduit;

continuously passing a first portion of the hot regenerated catalyst into the venturi tube mixer sufficient to vaporize a major amount of oil feed without substantial cracking thereof; and

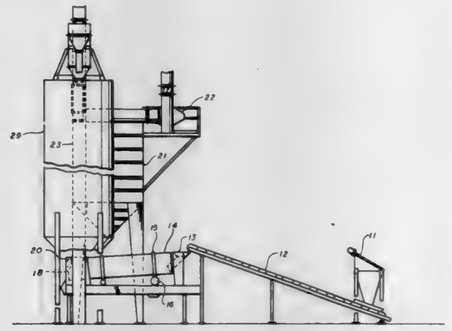
passing a remaining second hot regenerated catalyst portion into the reactor riser through a passage between the venturi tube mixer and reactor riser wall, thereby mixing additional hot catalyst with vaporized oil feed to crack the oil feed in the reactor riser above the venturi tube mixer.

4,523,988

APPARATUS AND METHOD FOR PRODUCING VIRGIN AND/OR RECLAIMING USED ABRASIVES

Harold M. Hedrick, II, Houston, Tex., assignor to Apache Equipment, Inc., Houston, Tex.

Filed Aug. 18, 1983, Ser. No. 524,452
Int. Cl.³ B07B *4/02, 7/02*
U.S. Cl. 209—11 **8 Claims**



1. An apparatus for producing virgin and/or reclaiming used abrasive materials, said apparatus comprising

(a) a pre-scalper for separating materials and debris larger than one inch (1″) in diameter from used abrasive material,

(b) a belt conveyor for receiving the separated abrasive material from said pre-scalper, and for transporting same,

(c) a rotary dryer drum, said rotary dryer drum being adapted to receive the separated abrasive material larger than one (1″) in diameter from said belt conveyor, and for drying same,

(d) a rotary scalper attached to the end of the rotary dryer drum, said rotary scalper having apertures of appropriate size to permit the entry of abrasive material particles up to three-sixteenths of an inch (3/16″) in diameter,

(e) an oversize particle chute appropriately disposed at the end of the rotary dryer drum to aid in discarding particles larger than 3/16″ in diameter;

(f) a dust plenum surrounding the rotary scalper, said dust plenum removing all particles smaller than one hundred fifty (150) mesh, with damper to control air,

(g) a baghouse being in communication with said dust plenum through a duct conduit arrangement, said baghouse being itself equipped with a suction motor,

(h) an abrasive particle chute appropriately disposed at the end of said rotary dryer drum for receiving abrasive size particles (3/16″ to 150 mesh),

(i) a bucket elevator adopted to receive abrasive size particles from said abrasive particle chute,

(j) a separator connected to said bucket elevator, said separator being adopted to receive abrasive size particles from said bucket elevator and to separate said abrasive particle into particle size ranges, and

(k) air duct from separator to baghouse, with damper to control size separation,

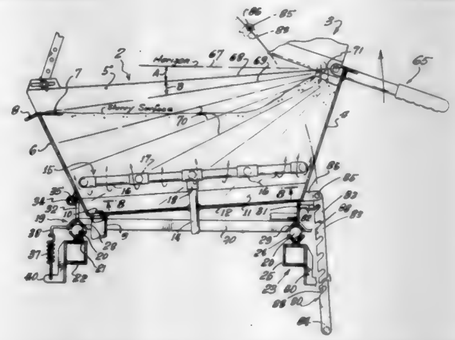
(l) storage bins to receive the reclaimed and separated abrasive particles.

4,523,989

JIG PAN CONCENTRATOR

Ralph G. Graefe, Northridge, Calif., assignor to Keene Engineering, Inc., Northridge, Calif.

Filed Mar. 6, 1984, Ser. No. 586,676
Int. Cl.³ B07B *9/00*
U.S. Cl. 209—44 **8 Claims**



1. In a jig pan concentrator for values occuring in sand, said values having a density greater than that of said sand, wherein said pan is a deep frustum of an inverted right rectangular pyramid having:

an open top in a first reference plane;

a closed bottom in a second reference plane parallel to said first reference plane, spaced therefrom by a selected distance d;

a transverse axis in said first reference plane which transverse axis is horizontal;

a longitudinal axis in said first reference plane, said longitudinal axis being tilted from horizontal by a selected first angle A equal to about 4°;

two sloping side walls oriented parallel to said longitudinal axis and inclined to said first reference plane at a dihedral angle of about 65°;

a sloping back wall oriented parallel to said transverse axis and inclined to said first reference plane at a dihedral angle of about 65°;

a sloping front wall oriented parallel to said transverse axis and inclined to said first reference plane at a dihedral angle of about 65°, wherein the top edge of said front wall is lowered by about one sixth of said selected distance d below said first reference plane to provide a linear, horizontal spillway gate for tailings effluent and to augment the effect of said first angle A of tilt by the amount of a second angle B, said spillway gate extending the full distance between said two sloping side walls;

a carriage frame having a front, a back, said carriage frame pivotally supporting said bottom of said pan proximal to said front wall while disengageably supporting said bottom of said pan proximal to said back wall at an elevation higher than that of said front wall to provide said tilt of said selected first angle A;

a first linear track mounting oriented horizontally parallel to said transverse axis, supporting said front of said carriage frame;

a second linear track mounting oriented horizontally parallel to said transverse axis, supporting said back of said carriage frame;

a base frame supporting said first and second linear track mountings;

driving means mounted on said base frame to provide linear translational motion to said carriage frame along said first and second linear tracks, said driving means consisting of motor means having an adjustable speed of from about 4 rpm to about 1000 rpm driving a rotary shaft, a variable stroke cam on said shaft adjustable to a stroke of from about 0.03″ to about 2.0″, a connecting rod connecting said cam to said carriage frame;

a valley in said closed bottom of said pan along its centerline parallel to said longitudinal axis, said valley depending from said second reference plane;

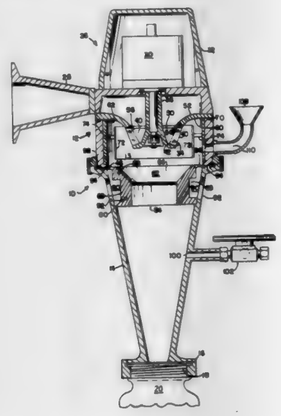
the improvement consisting of providing a flat water manifold in said pan oriented in a plane parallel to said second reference plane, spaced therefrom a selected nominal distance h equal to from about 1" to about 2", said water manifold being an open rectangle which is subdivided by at least one coplanar tubular member, said water manifold being provided with at least one row of uniformly distributed jet orifices, all said jet orifices being directed downward at said bottom of said pan, and inlet means in said water manifold for pressurized water from an outside source.

4,523,990

PARTICULATE CLASSIFYING APPARATUS

Robert W. Duyckinck, New Providence, N.J., assignor to Mikropul Corporation, Summit, N.J.

Filed Mar. 13, 1984, Ser. No. 589,129
Int. Cl.[3] B04B *5/12*
U.S. Cl. 209—138 **8 Claims**



1. Apparatus for classifying particulate material entrained in a gaseous carrier comprising

a generally cylindrical chamber having a carrier gas outlet at the upper end thereof, and a perimetric cylinder wall,

means for introducing particulate material into said chamber,

a radial flow classifying rotor associated with said carrier gas outlet to selectively reject oversize particulate material from the carrier gas stream passing therethrough,

a tailings delivery chute dependent from the lower end of said chamber,

a nozzle assembly disposed in the upper end of said tailings chute for creating a jet pump induced transport path of carrier gas in the periphery of said chamber and having a restricted axial aperture therein for passage of tailings from said chamber to said chute, said nozzle member further including first means for selectively directing an upwardly moving curtain of carrier gas adjacent to the perimetric cylinder wall of said cylindrical chamber, said curtain serving as a jet pump inducing a transport path and serving as a deaglomerating mechanism,

gas inlet means feeding said carrier gas into the nozzle, and

annular isolating baffle means disposed intermediate said cylinder wall and said classifying rotor to define an annular channel for said upwardly moving curtain of air.

4,523,991

CARRIER PARTICLE FOR THE FROTH FLOTATION OF FINE ORES

Wilfred C. Meyer, and James J. Jakubowski, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 27, 1982, Ser. No. 453,182
Int. Cl.[3] B03D *1/14*
U.S. Cl. 209—166 **15 Claims**

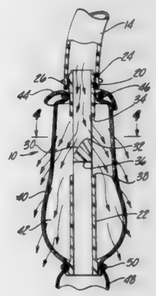
1. A froth flotation process for beneficiating finely sized metal or phosphate particles from a finely sized mineral ore pulp comprising floating the finely sized mineral ore pulp in a frothing aqueous medium comprising a collector for the finely sized metal or phosphate particles, a frother and carrier particles in an effective amount for beneficiating the finely sized metal or phosphate particles by flotation, wherein the carrier particles comprise glass; calcite; magnetite; quartz; taconite; transition metals; transition metal oxides and hydrates thereof; group IIIA metals, metal oxides and hydrates thereof; group IVA metals, oxides, metal oxides and hydrates thereof; metal carbonates; sulfides; or silicates; and are adapted for selectively floating the finely sized metal or phosphate particles, have a particle size of between about 10 and 300 microns and a density which is suitable for selectively beneficiating the finely sized metal or phosphate particles by froth flotation and, have a surface treated with a condensation product, or acid derivative of a condensation product, of an alkanolamine with a fatty acid, a fatty acid ester, a dibasic fatty acid or a tribasic fatty acid in a sufficient amount to render the carrier particle sufficiently hydrophobic to float in the frothing aqueous medium and to act as a carrier for the finely sized metal or phosphate particles under conditions such that the finely sized metal or phosphate particles and the carrier particles are recovered in the froth wherein the surface of the carrier particle is treated with the condensation product prior to contacting the carrier particles with the frothing aqueous medium, with the proviso that the condensation product with which the carrier particle is treated is a different compound than the compound used as the collector for the metal or phosphate.

4,523,992

FILTER ASSEMBLY

James T. Sackett, 27325 Gail, Warren, Mich. 48093

Filed Jun. 1, 1984, Ser. No. 616,241
Int. Cl.[3] B01D *25/04, 25/30, 35/02*
U.S. Cl. 210—232 **9 Claims**



1. A filter assembly for use with a water discharge hose of a washing machine comprising:

a body having an inlet tubular member and an elongated outlet tubular member, said members being substantially coaxial and axially spaced from each other, each tubular member having an inner end which faces the inner end of the other tubular member, and an outer end,

a plurality of circumferentially spaced fins secured to and extending outwardly from said tubular members,

means for fluidly connecting said outer end of said inlet tubular member to the discharge hose,

a tubular filter element,

means for attaching one end of said filter element to said inlet member and the other end of said filter element adjacent said outer end of said outlet tubular member so that said filter element encloses said fins and so that said inner end of said outlet member is positioned at a midpoint of said filter element, and

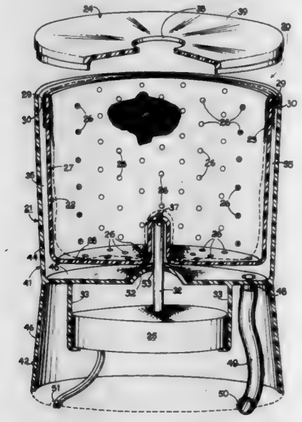
means positioned between said inner ends of tubular members for diverting fluid flow from said outer end towards said inner end of said inlet member radially outwardly around the inner end of said outlet member and toward said filter element.

4,523,993

PRECIOUS METAL RECOVERY APPARATUS

Mark I. Farber, Orange, Conn., assignor to Resource Associates International Corp., West Haven, Conn.

Filed Jun. 27, 1983, Ser. No. 507,974
Int. Cl.[3] B01D *33/06*
U.S. Cl. 210—297 **8 Claims**



1. Apparatus for removing particles of precious metal from suspension in an aqueous carrier comprising:

A. a perforate vessel supportingly mounted for rotation about an axis thereof and comprising

1. a substantially cylindrical drum mounted for rotation about the central axis thereof, with the lower end of the drum being closed by a base member and the upper end of the cylinder being open for ease of access, and

2. a plurality of holes formed throughout the cylindrical walls and base member thereof;

B. a housing peripherally surrounding a major portion of the perforate vessel and supportingly maintaining the perforate vessel for rotation therein;

C. filter means comprising

1. a bag-like configuration having a diameter substantially equal to the diameter of the cylindrical vessel and an overall top-to-bottom depth at least substantially equal to the depth of the cylindrical vessel for completely covering in overlying relationship both the walls and the base of said perforate vessel, and being removably positionable in cooperating relationship with the entire inside surfaces of the perforate vessel, and

2. a pore size which prevents the precious metal particles from passing therethrough, while allowing the aqueous carrier to pass therethrough; and

D. drive means

1. supportingly mounted to the housing, and

2. drivingly engaged with the perforate vessel for controlled rotation thereof;

whereby upon rotation of the perforate vessel with a precious metal containing aqueous carrier contained therein, the aqueous carrier is forced through the filter means and the walls of the vessel for disposal, while the precious metal is retained directly within the filter means for recovery.

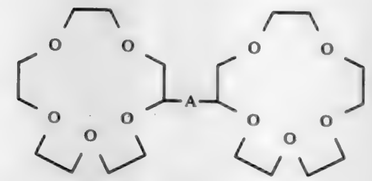
4,523,994

BIS-CROWN-ETHER DERIVATIVES AND THEIR USE

Toshiyuki Shono, Suita; Keiichi Kimura, Osaka, and Takumi Maeda, Nishinomiya, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Jun. 28, 1983, Ser. No. 508,578
Claims priority, application Japan, Jun. 30, 1982, 57-114934
Int. Cl.[3] C08J *5/22;* **C08K** *5/15*
U.S. Cl. 210—500.2 **15 Claims**

1. An ion-selective membrane comprising at least one bis-crown-ether derivative of the general formual (I):



(I)

wherein A represents a divalent organic group which may take such a configuration that the two crown rings may easily overlap spatially, holding a monovalent metal ion having an ionic radius of 1.3–2.1 Å between them, like a sandwich.

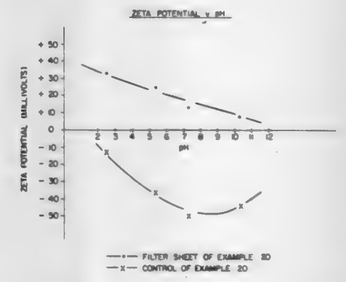
8. An ion-selective membrane of claim 1, wherein the bis-crown-ether derivative is dispersed in a water-insoluble organic polymer as the carrier and is made to form a solid membrane.

4,523,995

CHARGE-MODIFIED MICROFIBER FILTER SHEETS

David B. Pall, Roslyn Estates; Peter J. Degen; Irving B. Joffee, both of Huntington; Warren M. Foss, Glen Cove, and Thomas C. Gsell, Levittown, all of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Oct. 19, 1981, Ser. No. 312,723
Int. Cl.[3] B01D *13/00*
U.S. Cl. 210—504 **32 Claims**



1. A process for forming a filter sheet exhibiting a positive zeta potential in alkaline media comprising:

(1) mixing inorganic microfibers normally having a negative zeta potential with an aqueous solution of a water soluble, non-colloidal cationic thermo-setting binder resin or polymer to form a microfiber dispersion;

(2) adding a precipitating agent comprising a synthetic, water soluble or dispersible polymer containing anionic groups to said dispersion to precipitate said binder resin or

polymer and coat said microfibers with said binder resin or polymer; and

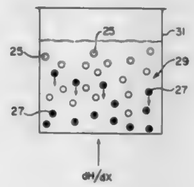
(3) forming the coated microfibers of step (2) into a filter sheet, said filter sheet exhibiting a positive zeta potential in alkaline media.

4,523,996

METHOD OF SEPARATING CATIONIC FROM ANIONIC BEADS IN MIXED RESIN BEDS

Robert G. Charles, Allison Park, and William M. Hickam, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 22, 1984, Ser. No. 582,341
Int. Cl.³ B01J *47/06*
U.S. Cl. 210—504 **14 Claims**



1. In a mixed resin bed containing a mixture of ionic resin beads, said mixture comprising an anionic bead component and a cationic bead component, the improvement wherein each of the resin beads of one of said bead components has integrally incorporated therewith a first ferromagnetic material having a first Curie point, and each of the resin beads of the other bead component has integrally incorporated therewith a second ferromagnetic material having a second Curie point different from said first Curie point, so as to render said one bead component magnetically attractive under an applied inhomogeneous magnetic field at a different temperature than said other bead component is rendered magnetically attractive.

4,523,997

AFFINITY CHROMATOGRAPHY MATRIX WITH BUILT-IN REACTION INDICATOR

Laura J. Crane, Long Valley, and Hugh E. Ramsden, Scotch Plains, both of N.J., assignors to J. T. Baker Chemical Company, Phillipsburg, N.J.

Filed Mar. 2, 1984, Ser. No. 585,782
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—635 **6 Claims**

1. The p-nitrophenylester of succinoylaminopropyl silica gel.

4,523,998

CONTINUOUS ION EXCHANGE PROCESS USING THERMALLY REGENERABLE LIQUID ION EXCHANGERS

Bang M. Kim, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1983, Ser. No. 557,986
Int. Cl.³ B01D *15/04*
U.S. Cl. 210—638 **13 Claims**

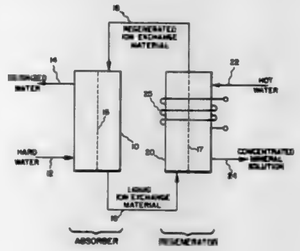
1. A method for continuous removal of mineral ions from an aqueous feed solution, said method comprising:

introducing said feed solution into a first reaction vessel;

introducing a substantially aqueously insoluble mixture of liquid cation exchange material and liquid anion exchange material into said first reaction vessel with said feed solution at a first temperature, whereby said mineral ions become absorbed by said liquid ion exchange material;

introducing said liquid ion exchange material from said first vessel into a second vessel;

introducing an aqueous solution into said second vessel, said solution in said second vessel being controlled to be at a temperature greater than said first temperature, said second temperature being sufficient to permit the dissolving



of said mineral ion species in said aqueous solution in said second vessel; and

removing said aqueous solution containing said dissolved mineral species from said second vessel.

4,523,999

ULTRAFILTRATION METHOD

Seiji Toyoshi; Tetsuo Tanegawa, both of Saga; Masaru Saeki, Fujisawa, and Tetsuya Kawakita, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 16, 1983, Ser. No. 561,974
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—639 **9 Claims**

1. A method for removing impurities including humic substances, gums, polysaccharides, proteins or a mixture thereof from an amino acid fermented liquor obtained from cane, beet molasses, or a mixture thereof, said amino acid being selected from the group consisting of glutamic acid, lysine and a mixture thereof; said method comprising:

(a) adjusting the pH of the fermented liquor to a value of from 2–5 to precipitate said impurities, said impurities having an isoelectric point falling within a pH range of 2–5;

(b) ultrafiltering said impurities from said fermented liquor using a semipermeable ultrafiltration membrane.

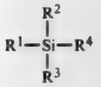
4,524,000

PROCESS FOR THE REMOVAL OF OIL FROM AN OIL-IN-WATER DISPERSION

Eric J. Clayfield; Arnold G. Dixon, and Richard J. L. Miller, all of Chester, United Kingdom, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 14, 1984, Ser. No. 579,925
Claims priority, application United Kingdom, Feb. 17, 1983, 8304389
Int. Cl.³ B01D *17/02*
U.S. Cl. 210—649 **9 Claims**

1. A process for the separation of two liquids by passing a dispersion of negatively charged droplets of a liquid in an aqueous liquid along the surfaces of a layer of fibers, thus forming coalesced dispersed liquid and, after the aqueous liquid has left the solid material, separating coalesced dispersed liquid from the aqueous liquid, in which process the solid material has been manufactured by contacting fibers of a solid material having active hydrogen atoms in surface groups in the presence of water with a compound of the general formula (I):



(I)

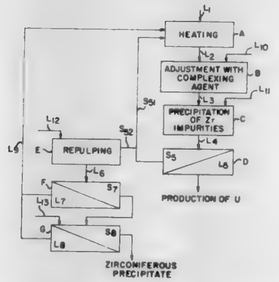
in which R^1 represents an aliphatic or cycloaliphatic group which contains at least one substituted or unsubstituted amino group, with the group present between the silicon atom and the first nitrogen atom, seen from the silicon atom, being an alkylene group having in the range of from 1 to 5 carbon atoms, wherein said substituted amino group is substituted with 1 or 2 alkyl groups having 1 to 5 carbon atoms, and R^2, R^3, and R^4 represent hydrolyzable alkoxy, aroxy, or cyclo-alkoxy groups having not more than 6 carbon atoms, and said fibers have an average diameter between about 0.5 and 50 microns and are arranged in a layer having a bulk density between about 25 and 200 grams per liter in a layer having a height between about 0.5 and 15 centimeters.

4,524,001

METHOD OF PURIFYING URANIFEROUS AQUEOUS SOLUTIONS

Philippe Joubert, Lyons, France, assignor to Uranium Pechiney, Paris, France

Filed Sep. 21, 1983, Ser. No. 534,341
Claims priority, application France, Oct. 4, 1982, 82 17102
Int. Cl.³ C02F *1/52*
U.S. Cl. 210—713 **7 Claims**



1. In a method of purifying uraniferous aqueous solutions containing impurities comprising at least one of the elements zirconium and/or hafnium, and also containing at least one of the anions $SO_4^=$, NO_3^-, Cl^- or F^-, said anions acting as complexing agents for the uranium and impurities, said impurities being precipitated by means of an alkaline agent, said method comprising the following steps carried out for the purpose of selectively and quantitatively separating the impurities from the uranium:

(a) bringing said uraniferous solution to a temperature of at least 40° C.;

(b) adjusting the content of complexing agent to bring the molar ratio:

[complexing agent]/[soluble U + Zr and/or Hf]

to at least 3;

(c) introducing an alkaline agent to adjust the pH of said solution to between 2.2 and 4.3; and

(d) separating the alkaline-treated solution into a solid phase and a liquid phase, said liquid phase comprising a purified uraniferous solution, and said solid phase comprising a zirconium and/or hafnium precipitate.

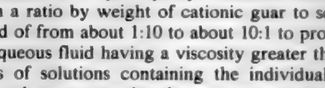
4,524,002

FOAMING AGENT

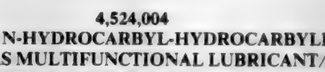
Mohamed M. Hashem, Wayne, N.J., assignor to GAF Corporation, Wayne, N.J.

Filed Feb. 23, 1983, Ser. No. 469,069
Int. Cl.³ C09K *7/08*
U.S. Cl. 252—8.5 C **9 Claims**

1. A high foaming, electrolyte resistant composition consisting essentially of from about 40 to about 60 weight % of component A having the structure



and from about 60 to about 40 weight % of component B having the structure



wherein n in each instance has an average value of 1–5; R is hydrogen or methyl; M^+ is H^+, Na^+, K^+, NH_4^+ or a lower alkylamino group and each of the C_6H_{13}-, C_8H_{17}- and $C_{10}H_{21}$-alkyl groups has a branched structure.

4,524,003

METHOD OF VISCOSIFYING AQUEOUS FLUIDS AND PROCESS FOR RECOVERY OF HYDROCARBONS FROM SUBTERRANEAN FORMATIONS

John K. Borchardt, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 8, 1983, Ser. No. 483,090
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—8.55 R **15 Claims**

1. A method for producing a viscosity increase in an aqueous fluid in excess of the additive viscosity of the individual components of a viscosifying composition comprising:

admixing an aqueous fluid with a viscosifying composition comprising at least one member selected from the group consisting of (i) sulfonated guar having a degree of substitution in the range of from about 0.05 to about 1.0 and at least one compound selected from the group consisting of xanthan gum, guar, hydroxypropyl guar, hydroxypropyl guar derivatives, hydroxyethyl cellulose and hydroxyethyl cellulose derivatives present in a ratio by weight of sulfonated guar to selected compound of from about 1:10 to about 10:1 and (ii) cationic guar having a degree of substitution of from about 0.05 to about 1.0 and at least one compound selected from the group consisting of hydroxypropyl guar, hydroxypropyl guar derivatives, hydroxyethyl cellulose and hydroxyethyl cellulose derivatives present in a ratio by weight of cationic guar to selected compound of from about 1:10 to about 10:1 to produce a viscous aqueous fluid having a viscosity greater than the viscosities of solutions containing the individual compounds at the same total polymer concentration, said viscosifying composition being present in an amount sufficient to provide a concentration of at least about 250 ppm.

4,524,004

BORATED N-HYDROCARBYL-HYDROCARBYLENE DIAMINES AS MULTIFUNCTIONAL LUBRICANT/FUEL ADDITIVES AND COMPOSITIONS THEREOF

Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 28, 1983, Ser. No. 546,710
Int. Cl.³ C10M *1/54, 5/28*
U.S. Cl. 252—32.7 E **20 Claims**

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor effective friction reducing-high temperature stabilizing amount of an additive consisting of a partially borated, partial carboxylic acid reaction product of a N-hydrocarbyl-hydrocarbylene diamine or the partially borated ammonolysis reaction product of a N-hydrocarbyl-hydrocarbylene diamine and a low molecular weight hydrocarbyl ester prepared by reacting the diamine and the carboxylic acid or ester in a molar ratio of about 3:1 to about 9:1 and borating wherein reaction

conditions vary from about 3½ to 8 hours, from about 70° to 250° C. and from about ambient pressure.

4,524,005
BORATED DIHYDROCARBYLENETRIAMINE AMIDES AND LUBRICANT AND FUEL COMPOSITIONS CONTAINING SAME
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Feb. 1, 1984, Ser. No. 576,180
Int. Cl.³ C10M *1/54*
U.S. Cl. 252—49.6 **26 Claims**

1. A product of reaction made by (1) reacting an amine or a mixture of amines of the formula

R—NH—R^1—NH—R^1—NHR

wherein R is hydrogen or a C_{10} to C_{30} hydrocarbyl group, at least one R being the latter, and R^1 is the same or different C_2 to C_4 hydrocarbylene group with a carboxylic acid or ester of the formula

R^2COOR^3

wherein R^2 and R^3 are individually hydrogen or a C_1 to C_4 hydrocarbyl group, (2) followed by reacting the product of (1) with a boron compound selected from the group consisting of boric oxide, a metaborate, a compound of the formula

$(RO)_xB(OH)_y$

wherein R is a C_1 to C_6 alkyl group and x and y are 0 to 3, their sum being 3, and mixtures thereof, the amount of acid or ester reacted with the amine being sufficient to react from about 5% to about 95% of the available amino groups and the amount of boron compound reacted with the product from reaction (1) being in excess of the remaining amount required to react with the amino groups.

11. A lubricant composition comprising a major amount of a lubricating oil or grease therefrom and an antifriction amount of a product of reaction made by (1) reacting an amine or a mixture of amines of the formula

R—NH—R^1—NH—R^1—NHR

wherein R is hydrogen or a C_{10} to C_{30} hydrocarbyl group, at least one R being the latter, and R^1 is the same or different C_2 to C_4 hydrocarbylene group with a carboxylic acid or ester of the formula

R^2COOR^3

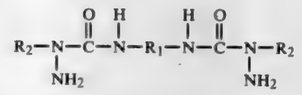
wherein R^2 and R^3 are individually hydrogen or a C_1 to C_4 hydrocarbyl group, followed by reacting the product of (1) with a boron compound selected from the group consisting of boric oxide, a metaborate, a compound of the formula

$(RO)_xB(OH)_y$

wherein R is a C_1 to C_6 alkyl group and x and y are 0 to 3, their sum being 3, and mixtures thereof, the amount of acid or ester reacted with the amine being sufficient to react from about 5% to about 95% of the available amino groups and the amount of boron compound reacted with the product from reaction (1) being in excess of the remaining amount required to react with the amino groups.

4,524,006
SELECTED ALKYLHYDRAZINE AND HYDROXYALKYLHYDRAZINE ADDUCTS OF DIISOCYANATES AND THEIR USE AS ANTIOXIDANTS
Bonnie B. Sandel, Milford, Conn., assignor to Olin Corporation, Cheshire, Conn.
Filed May 16, 1984, Ser. No. 610,908
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—51.5 A **17 Claims**

1. A method for inhibiting the oxidation of functional fluids selected from the group consisting of liquid hydrocarbon distillate fuels and hydrocarbon lubricant oils and greases which comprises adding to said functional fluid an effective oxidation inhibiting amount of an alkylhydrazine or hydroxyalkylhydrazine adduct of a diisocyanate having the formula:



wherein R_1 is selected from the group consisting of an arylene group containing from 6 to about 12 carbon atoms and a cycloalkylene group containing from about 5 to about 20 carbon atoms; and wherein each R_2 is individually selected from the group consisting of an alkyl group containing from 1 to about 20 carbon atoms and a hydroxyalkyl group containing from 2 to about 20 carbon atoms.

4,524,007
POLYESTER DEMULSIFIERS AND COMPOSITIONS THEREOF
Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Filed May 2, 1983, Ser. No. 490,627
Int. Cl.³ C10M *1/26*
U.S. Cl. 252—56 R **21 Claims**

1. A composition comprising a major amount of an oil of lubricating viscosity or grease prepared therefrom and a minor effective demulsifying amount of an additive compound prepared by esterifying an ether capped alcohol with a carboxylic or polycarboxylic acid, anhydride or dianhydride thereof wherein the carboxylic acid is an aromatic or unsubstituted bridged alicyclic acid or anhydride thereof having at least two carboxyl groups.

4,524,008
CONTROLLED INITIATION CHROMIUM DIOXIDE SYNTHESIS
Horng-Yih Chen, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 16, 1983, Ser. No. 564,012
Int. Cl.³ C01G *37/027*
U.S. Cl. 252—62.56 **7 Claims**

1. A process for the manufacture of modified ferromagentic chromium dioxide wherein a reaction mixture paste containing trivalent and hexavalent chromium oxides is hydrothermally reacted under a pressure of from 100 to 700 bar at a temperature of 200°–600° C. in the presence of an antimony, iron or tellurium modifier, characterized in that, the modifier is added in aqueous solution to the reaction mixture paste prior to the application of pressure and heat, said solution being prepared by adding the modifier to an aqueous CrO_3 solution and heating to effect dissolution and wherein the modified ferromagnetic chronium dioxide when incorporated into a magnetic tape exhibits lower noise, better print through, narrower coercivity distribution and more uniform switching field distribution than said modified ferromagnetic chromium dioxide produced as above but where the modifier is added in solid form to the reaction mixture paste.

4,524,009
DETERGENT BUILDER
Vivian B. Valenty, Schenectady, N.Y., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.
Filed Jan. 31, 1984, Ser. No. 575,421
Int. Cl.³ C11D *00/00*
U.S. Cl. 252—89.1 **20 Claims**

1. A compound of the formula:

$MOOCCH_2(MOOC)HCOCH_2CH(OH)CH_2OCH(COOM)CH_2COOM$

wherein M is a salt-forming cation or hydrogen or mixtures thereof.

4,524,010
HIGH-SUDSING, GRANULAR DETERGENT COMPOSITION WITH GREATER GRANULATE STABILITY AND PROCESS FOR ITS PREPARATION
Herbert Reuter, Hilden; Wolfgang Seiter, Neuss, and Ingo Wegener, Dusseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft (KGaA), Dusseldorf, Fed. Rep. of Germany
Filed Nov. 16, 1982, Ser. No. 442,094
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151536
Int. Cl.³ C11D *1/12*
U.S. Cl. 252—135 **4 Claims**

1. A high sudsing, granular, spray-dried detergent composition with excellent granule stability comprised of anionic surface-active compounds, sodium tripolyphosphate, sodium aluminosilicate and sodium silicate, having a bulk density of from 300 to 400 gm per liter and a mean granule size of 0.4 to 0.8 mm where the amount of granules with a granule size of less than 0.1 mm is less than 10% by weight and the amount of granules with a granule size of more than 1.2 mm is less than 5% by weight, and having the composition of:

(A) from 35% to 45% by weight of a sodium linear alkylbenzene sulfonate having from 10 to 14 carbons atoms in the alkyl,

(B) from 3% to 10% by weight of sodium fatty alcohol sulfate where said fatty alcohol has from 10 to 20 carbon atoms and is selected from the group consisting of alkanols and alkenols,

where the sum of the of the components (A) and (B) is from 40% to 48% by weight,

(C) from 8% to 20% by weight of sodium tripolyphosphate,

(D) from 8% to 18% by weight of finely crystalline, bound water-containing sodium aluminosilicate having the formula:

$0.7–1.5\ Na_2O.Al_2O_3.1.3–4\ SiO_2$

and having a calcium binding power of at least 100 mg CaO/gm of active substance (AS) and a particle size of less than 25μ, with at least 80% by weight of the particles having a size of less than 10μ,

(E) from 8% to 18% by weight of sodium silicate of the composition:

$Na_2O:SiO_2 = 1:2$ to 1:3.5,

(F) from 0 to 10% by weight of sodium sulfate and/or sodium carbonate, and

(G) from 8% to 15% by weight of water, including bound water and water of crystallization contained in components (C) to (F), the amount of water removable at a drying temperature of 140° C. being from 4% to 8% by weight,

where the sum of the components (C) to (G) is from 52% to 60% by weight, produced by spray-drying an aqueous slurry of the constituents at drying gas outlet temperature of up to 95° C.

4,524,011
FLUX REMOVAL SOLVENT BLEND
Emmett L. Tasset, Clute, Tex.; Susan M. Dallessandro, Midland, Mich., and Warren F. Richey, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 439,699, Nov. 8, 1982, abandoned. This application Nov. 4, 1983, Ser. No. 549,364
Int. Cl.³ C11D *7/50*
U.S. Cl. 252—171 **11 Claims**

1. A methylchloroform rosin flux removal composition having no flash point as measured by Cleveland Open Cup method consisting essentially of:

(a) a stabilized methylchloroform,

(b) from about 0.5 to less than about 2 volume percent methanol,

(c) from about 3 to about 10 volume percent of at least one alcohol having from 2 to 5 carbon atoms, and

wherein the volume of components (b) and (c) are based on the total composition, and wherein said rosin flux is removed from a substrate by said composition to the extent that, after cleaning in said composition, said substrate upon being placed in a 75% by volume aqueous isopropyl alcohol solution for 5 minutes and subjected to ultrasonic vibration will provide a resistivity to said alcohol solution of at least 10×10^5 ohm-cm.

4,524,012
FABRIC SOFTENING AND FLUFFING DETERGENT COMPOSITION
Harold E. Wixon, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Jun. 8, 1983, Ser. No. 500,590
Int. Cl.³ C11D *9/06, 3/12, 7/10*; D06M *13/00*
U.S. Cl. 252—174 **20 Claims**

1. A fabric softening and fabric fluffing particulate detergent composition which comprises spray dried beads containing a detersive proportion of an anionic synthetic organic detergent and a building proportion of a builder for such detergent, a fabric softening proportion of bentonite, which is capable of softening fabrics during washing thereof with the anionic detergent and builder, and a softening and fluffing proportion of a magnesium compound which is at least slightly water soluble, in such proportion that it improves the softening effect of the bentonite and improves the fluffiness of the fabrics washed with the detergent composition, which bentonite and magnesium compound are external to the spray dried beads of anionic synthetic organic detergent and builder.

4,524,013
POWDERED NONIONIC-BASED DETERGENT COMPOSITIONS CONTAINING SODIUM ACETATE TRIHYDRATE
Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.
Filed Apr. 6, 1984, Ser. No. 597,630
Int. Cl.³ C11D *1/83*
U.S. Cl. 252—174.21 **4 Claims**

1. A particulate non-phosphate detergent composition comprising a nonionic detergent active compound or compounds which further comprises in admixture therewith an effective amount of particulate sodium acetate trihydrate to substantially arrest and/or inhibit nonionic bleeding from said detergent composition.

4,524,014

PHOTOBLEACH SYSTEM, COMPOSITION AND PROCESS

Timothy D. Finch, Wirral, and Stuart W. Beavan, Birkenhead, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Feb. 17, 1983, Ser. No. 467,545

Claims priority, application United Kingdom, Feb. 19, 1982, 8204959; Mar. 9, 1982, 8206842

Int. Cl.³ H07J *7/18;* **C11D** *7/54*

U.S. Cl. 252—188.1 **15 Claims**

1. A photobleach system comprising a synergistic mixture of

(a) an electron donor which on transferring its electron will not be capable of undergoing the reverse reaction, having a reduction potential E° (donor$^+$/donor) <3.0 eV, and

(b) a visible/ultra-violet radiation absorbing compound (chromophore acceptor) which on absorption of said radiation is converted to its excited electronic state (chromophore acceptor*) which on electron transfer from said electron donor forms a reactive radical anion (chromophore acceptor), said chromophore acceptor having a reduction potential (acceptor/acceptor)$\leqq$0.0 eV and E° (acceptor*/acceptor)$\leqq$3.0 eV,

the E° (donor$^+$/donor) being lower than the E° (acceptor*-/acceptor).

4,524,015

OXYGEN ABSORBENT

Hideyuki Takahashi; Toshio Komatsu, and Yoshiaki Inoue, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 521,167

Claims priority, application Japan, Aug. 9, 1982, 57-138241; Aug. 17, 1982, 57-142292

Int. Cl.³ C09K *15/02;* **A23B** *7/14;* **A23D** *5/04*

U.S. Cl. 252—188.28 **8 Claims**

1. A particulate or granular oxygen absorbent comprising at least one ascorbic compound selected from ascorbic acid, ascorbic acid salts or mixtures thereof, an alkali metal carbonate, an iron compound, carbon black and water.

4,524,016

PROCESS FOR SPHEROIDAL BAFCL:EU PHOSPHOR PARTICLES

August Ferretti, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 28, 1983, Ser. No. 509,324

Int. Cl.³ C09K *11/465*

U.S. Cl. 252—301.4 H **7 Claims**

1. Process for preparing spheroidal particulate BaFCl:Eu phosphor having a narrow size distribution, which process comprises:

(a) spray drying the slurry comprised of BaFCl, or the precursors thereof, a europium halide, and a $BaCl_2$ flux in a liquid under conditions which produce porous spheroidal agglomerates of BaFCl, or the precursors thereof, $BaCl_2$, and the europium halide, the agglomerates having an average diameter larger than the desired diameter of the particulate phosphor;

(b) firing the porous spheroidal agglomerates of step (a) in a flowing inert atmosphere for about 10 to about 120 minutes at a temperature of about 650° C. to about 950° C.;

(c) cooling the fired material of step (b) to ambient temperature in an inert atmosphere;

(d) washing the cooled material of step (c) with water to remove $BaCl_2$; and

(e) drying the washed material of step (d) to remove the water and to produce the free flowing powder consisting essentially of spheroidal particulate BaFCl:Eu phosphor.

4,524,017

DERIVATIVES OF NORBORNANES HAVING HYDROCARBON SIDE CHAINS AND PERFUME COMPOSITIONS CONTAINING THE SAME

Yoshiharu Inoue, Osaka; Fumio Tanimoto, Kyoto, and Hisao Kitano, Osaka, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

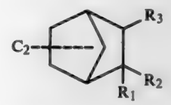
Filed Feb. 24, 1982, Ser. No. 351,993

Claims priority, application Japan, Feb. 28, 1981, 56-29188; Feb. 28, 1981, 56-29189; Aug. 22, 1981, 56-131743; Aug. 22, 1981, 56-131744

Int. Cl.³ A61K *7/46;* **C07C** *47/445, 47/347, 33/14*

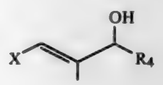
U.S. Cl. 252—522 R **6 Claims**

1. A norbornane derivative having a hydrocarbon side chain which is represented by the following general formula (I)



(I)

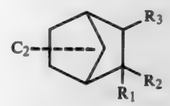
wherein C_2 is an ethylidene group or a vinyl group connected to the 5 or 6 position of the norbornane ring, the dashed line connected to C_2 is a single bond when C_2 is a vinyl group and a double bond when C_2 is an ethylidene group, each of R_1 and R_2 is a hydrogen atom or a methyl group, and R_3 is a formyl group or a group represented by the following general formula (II)



(II)

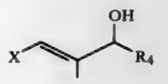
wherein R_4 is a methyl group, an ethyl group, a n-propyl group or an isopropyl group and X is a carbon atom of the norbornane ring.

6. A perfume composition containing a compound represented by the following general formula (I)



(I)

wherein C_2 is an ethylidene group or a vinyl group connected to the 5 or 6 position of the norbornane ring, the dashed line connected to C_2 is a single bond when C_2 is a vinyl group and a double bond when C_2 is an ethylidene group, each of R_1 and R_2 is a hydrogen atom or a methyl group, and R_3 is a formyl group or a group represented by the following general formula (II)



(II)

wherein R_4 is a methyl group, an ethyl group, a n-propyl group or an isopropyl group and X is a carbon atom of the norbornane ring.

4,524,018

LASTING FRAGRANT ARTICLE USING GRADUALLY DECOMPOSING PERFUME

Jiichiro Yemoto, Kumamoto; Ryokichi Tarao, Kanagawa, and Yoshio Yamamoto, Kumamoto, all of Japan, assignors to Chisso Corporation, Osaka and S.T. Chemical Co., Ltd., Tokyo, both of, Japan

Filed Jul. 28, 1982, Ser. No. 402,810

Claims priority, application Japan, May 28, 1982, 57-90946

Int. Cl.³ A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 A **5 Claims**

1. A fragrant article which comprises a pregnant impregnated with a composition containing at least one perfume and at least one aromatizing component of the formula:

$$R_aSi(OR')_b(OR'')_c$$

wherein R is selected from the group consisting of hydrogen and a saturated or unsaturated aliphatic hydrocarbon group having 1 to 10 carbon atoms; R′ is selected from the group consisting of alkyl and alkenyl having 1 to 5 carbon atoms; R″ is a saturated or an unsaturated aliphatic hydrocarbon group, having 5 or 6 carbon atoms, with the proviso that R″ develops aroma in the form of R″OH; each of R, R′ and R″ may be the same or different if two or more of them are present in the same molecule; a is zero or an integer of from 1 to 3, b is zero or an integer of from 1 to 3, and c is an integer of from 1 to 4, with the proviso that a+b+c=4.

4,524,019

SPIRO-LACTONE DERIVATIVES, THEIR USE AS PERFUMING AGENTS, AND PERFUMING COMPOSITION CONTAINING SAME

Wolfgang K. Giersch, and Günther Ohloff, both of Bernex, Switzerland, assignors to Firmenich, SA, Switzerland

Filed Jul. 25, 1983, Ser. No. 517,024

Claims priority, application Switzerland, Aug. 12, 1982, 4835/82

Int. Cl.³ A61K *7/46;* **C07D** *307/94, 311/96*

U.S. Cl. 252—522 R **5 Claims**

1. A method to improve, enhance or confer a coumarin type perfume character to fragrance compositions which comprises adding thereto a perfume effective amount of a compound selected from the group consisting of 5,9-Dimethyl-1-oxaspiro[5.5]undec-8-en-2-one, 9-Methyl-5-methylene-1-oxaspiro[5.5]undec-8-en-2-one and 4,8-Dimethyl-1-oxaspiro[4.5]-dec-7-en-2-one.

3. 5,9-Dimethyl-1-oxaspiro[5.5]undec-8-en-2-one.

4. 9-Methyl-5-methylene-1-oxaspiro[5.5]undec-8-en-2-one.

5. 4,8-Dimethyl-1-oxaspiro[4.5]dec-7-en-2-one.

4,524,020

ISOPROPYL SUBSTITUTED CYCLOHEXENYL METHYL KETONES AND PERFUMERY USES THEREOF

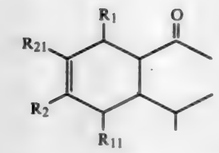
Mark A. Sprecker, Sea Bright; Robert P. Belko, Woodbridge, both of N.J.; Augustinus G. Van Loveren, Ryebrook, N.Y., and Marie R. Hanna, Hazlet, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 24, 1984, Ser. No. 643,827

Int. Cl.³ A61K *7/46;* **C07C** *49/21*

U.S. Cl. 252—522 R **11 Claims**

1. An isopropyl substituted cyclohexenyl methyl ketone defined according to the structure:



wherein R_1, R_2, R_{11} and R_{21} each represents hydrogen or methyl with the provisos that:

(a) at least two of R_1, R_{21}, R_2 and R_{11} represent hydrogen;

(b) either R_2 is methyl and R_{21} is hydrogen or R_{21} is methyl and R_2 is hydrogen; and

(c) R_1 is methyl only when R_2 is methyl and R_{11} is methyl only when R_{21} is methyl.

5. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of intimately admixing with said consumable material an aroma augmenting or enhancing quantity of at least one isopropyl substituted cyclohexenyl methyl ketone defined according to claim 1.

4,524,021

PERFUMERY USES OF ESTERS OF PHENYL ALKANOLS

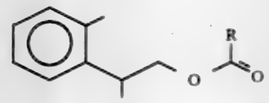
Wilhelmus J. Wiegers, Red Bank, and Mark A. Sprecker, Sea Bright, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 491,657, May 5, 1983,. This application Jun. 5, 1984, Ser. No. 617,585

Int. Cl.³ A61K *7/46;* **C11B** *9/00*

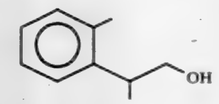
U.S. Cl. 252—522 R **2 Claims**

1. The composition comprising the compound defined according to the structure:



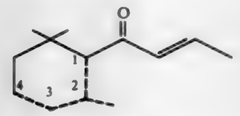
wherein R is methyl or ethyl and, intimately admixed therewith, a compound selected from the group consisting of:

(a) a compound having the structure:



(b) 3-methyl-1-phenyl-pentanol-5; and

(c) at least one butanoyl cyclohexane derivative defined according to the structure:



wherein one or two of the dashed lines represent carbon-carbon double bonds and the other of the dashed lines represent carbon-carbon single bonds with the proviso that when the dashed lines represent two carbon-carbon double bonds, said carbon-carbon double bonds are conjugated.

2. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed polymers comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of the composition defined according to claim 1.

4,524,022

DICYCLOPENTADIENE SULFONATE LIQUID DETERGENT FORMULATIONS

Carter G. Naylor, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,538
Int. Cl.³ C11D *1/12, 1/831, 3/44*
U.S. Cl. 252—548 **13 Claims**

1. A highly concentrated liquid detergent composition comprising:
(a) about 25 wt. % to about 50 wt. % of a surface active agent comprising:
(i) a nonionic surfactant in the amount of about 20 wt. % to about 40 wt. %, and
(ii) an anionic surfactant in the amount of about 0 wt. % to about 20 wt. %;
(b) about 0 wt. % to about 10 wt. % of a solvent selected from the group consisting of ethanol, isopropanol and mixtures thereof;
(c) a hydrotrope selected from the group consisting of the ammonium, sodium, potassium, calcium and magnesium salts of dicyclopentadiene sulfonate in an amount sufficient to give the highly liquid detergent a kinematic viscosity of from 50 to 500 cs at 25° C.; and
(d) water.

4,524,023

BICYCLODECYL ETHER SULFONATES AND COMPOSITIONS CONTAINING THE SAME

David R. McCoy, and Carter G. Naylor, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,539
Int. Cl.³ C11D *1/22, 1/831*
U.S. Cl. 252—548 **7 Claims**

1. A highly concentrated homogeneous liquid detergent composition comprising:
(a) about 25 wt. % to about 50 wt. % of a surface active agent comprising:
(i) an anionic surfactant and
(ii) a nonionic surfactant wherein the weight ratio of anionic:nonionic is 0:1 to 2:1;
(b) 0 wt. % to about 10 wt. % of a solvent selected from the group consisting of ethanol, isopropanol and mixtures thereof;
(c) a bicyclodecyl ether sulfonate hydrotrope of the formula:



wherein
AO is an alkyleneoxy selected from the group consisting of ethyleneoxy, propyleneoxy and mixtures thereof;
n is an integer averaging from 0 to 20; and
M is a cation selected from the group consisting of ammonium, sodium, potassium, calcium and magnesium; and
m is 1 or 2
wherein the hydrotrope is an amount sufficient to give the liquid detergent a kinematic viscosity of from 100 to 250 cps @ 25° C., and
(d) water.

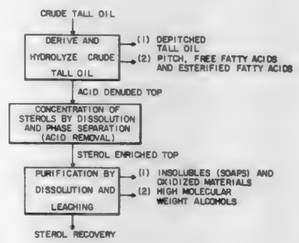
4. The composition of claim 1 wherein the surface active agent comprises:
(i) from 5 wt. % to 15 wt. % of the anionic surfactant dodecylbenzene sulfonate, and
(ii) from 25 wt. % to 35 wt. % of a nonionic surfactant which is a 2:1 to 8:1 (wt:wt) mixture of the 8.5 molar ethoxylate of nonylphenol and triethanolamine.

4,524,024

PROCESSES OF RECOVERING FATTY ACIDS AND STEROLS FROM TALL OIL PITCH

Richard E. Hughes, London, England, assignor to The Badger Company, Inc., Cambridge, Mass.

Filed Feb. 10, 1983, Ser. No. 465,650
Int. Cl.³ C09F *1/00*
U.S. Cl. 260—97.6 **29 Claims**



1. The process of enhancing the recovery of fatty acids from crude tall oil, the process comprising the steps of:
distilling crude tall oil so as to form a first fraction comprising pitch, free fatty acids and fatty acid esters, a second tall oil fraction comprising largely non-volatile material and a third depitched tall oil fraction rich in fatty acids;
separating said first, second and third fractions;
recovering said second and third fractions;
hydrolyzing said first fraction so as to convert at least some of said fatty acid esters to fatty acids;
distilling said hydrolyzed first fraction so as to form additional amounts of said third fraction from said hydrolyzed first fraction; and
recovering said additional amounts of said third fraction while reducing the overall amount of said second fraction.

4,524,025

HYBRIDOMA CELL LINES AND MONOCLONAL ANTIBODIES TO THEOPHYLLINE

John E. Geltosky, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 393,680, Jun. 30, 1982, abandoned. This application Aug. 9, 1982, Ser. No. 406,554
Int. Cl.³ A23J *1/00;* **C12P** *21/00;* **C12N** *5/00;* **G01N** *33/54*
U.S. Cl. 260—112 R **3 Claims**

1. Mouse monoclonal IgG isotype antibody to theophylline having 5% or less cross-reactivity with caffeine wherein the hybrid continuous cell line producing said antibody is a hybrid of a spleen cell from a mouse immunized with an 8-substituted theophylline-carrier conjugate and a mouse myeloma cell line.

4,524,026

NOVEL PROTEINOUS CANCER-CELL PROLIFERATION INHIBITORY FACTORS

Yoshio Sakagami, No. 3-16-19, Jugaoka, Meguro-ku, Tokyo, and Hofumi Manabe, No. 2-5-27, Inogashira, Mitaka-shi, Tokyo, both of Japan

Filed Aug. 27, 1984, Ser. No. 644,234
Claims priority, application Japan, Aug. 29, 1983, 58-158858; Sep. 1, 1983, 58-161237
Int. Cl.³ C07G *7/00;* **A61K** *43/00*
U.S. Cl. 260—112 B **5 Claims**

1. A glycoprotein, fractionated from human blood or sera

and named cancer-cell proliferation inhibitory factor A (T.D.F.H.A), which is a white powder melting at 245° to 249° C. (with decomposition); has a molecular weight of approximately 73,900 when measured by electrophoresis in 10% sodium dodecylsulfate solution; is readily soluble in water, and insoluble in butanol, acetone, ethyl acetate, chloroform, benzene and hexane; has an amino acid composition of 10.0% aspartic acid, 5.4% threonine, 3.8% serine, 16.0% glutamic acid, 4.2% proline, 1.4% glycine, 4.8% alanine, 2.6% cystine, 5.1% valine, 0.8% methionine, 2.2% isoleucine, 9.6% leucine, 4.9% tyrosine, 5.7% phenylalanine, 11.4% lysine, 3.5% histidine and 5.2% arginine in error of ±10% to the % values; shows a positive response to the ninhydrin, anthrone, Molish and periodic acid reactions; gives an infrared absorption spectrum as shown in FIG. 1 (KBr pellet); and exhibits ultraviolet absorption maxima at 279 nm in water of pH 3.0, at 278 nm in water of pH 7.0 and at 277 nm in water of pH 10.0, and is obtainable from the human body.

4,524,027

MEMBRANE-ASSOCIATED PROTEINS (MP_2), A PROCESS FOR OBTAINING THEM, AND THEIR USE

Hans Bohn, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Sep. 21, 1984, Ser. No. 653,037
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334405
Int. Cl.³ C07G *7/00;* **A61K** *35/42, 35/50, 39/395*
U.S. Cl. 260—112 R **3 Claims**

1. Proteins MP_2 having the following characteristics:
(a) an electrophoretic mobility in the range between that of α_2 and that of β_1 globulins;
(b) an isoelectric point in the pH range 4.4–5.0;
(c) a sedimentation coefficient s_{20w} in the range from 7 to above 20 S, the main fractions (IV, III, II and I) sedimenting at about 7, 9, 14 and 20 S respectively;
(d) molecular weights in the range from 200,000 to 1,000,000, the main fractions (IV, III, II and I) having molecular weights of about 210,000, 400,000, 750,000 and 1,000,000;
(e) an extinction coefficient $E_{1cm}^{1\%}$ (280 nm) of 12.5±0.2;
(f) a carbohydrate content of 8.0±3.2% (mannose 1.4±0.4%, fucose 0.4±0.2%, galactose 1.2±0.4%, N-acetylglucosamine 2.6±1.8%, and N-acetylneuraminic acid 2.4±1.4%) and
(g) an aminoacid composition in which aspartic acid, glutamic acid, leucine, valine, serine and glycine are among the aminoacids present in greatest amounts.

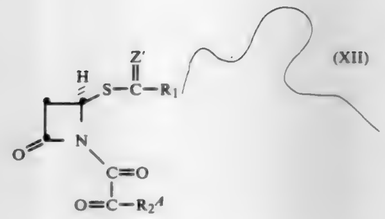
4,524,028

MONOCYCLIC INTERMEDIATES FOR THIA-AZA COMPOUNDS WITH A β-LACTAM RING

Jacques Gosteli, Basel; Ivan Ernest, Birsfelden, both of Switzerland, and Robert B. Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 353,288, Mar. 1, 1982, , which is a division of Ser. No. 902,639, May 4, 1978, Pat. No. 4,331,676. This application Sep. 24, 1982, Ser. No. 423,359
Claims priority, application Luxembourg, May 9, 1977, 77306
Int. Cl.³ C07D *205/08, 403/12, 401/12, 487/04*
U.S. Cl. 260—239 A **2 Claims**

1. (Compounds of the formula



(XII)

in which Z^1 represents oxygen, sulphur or a methylidene group optionally mono- or di-substituted by lower alkyl, cycloalkyl, cycloalkyl-lower alkyl, phenyl, phenyl-lower alkyl or esterified carboxy, R_1 represents hydrogen; lower alkyl; cycloalkyl; cycloalkyl-lower alkyl; phenyl; naphthyl; phenyl-lower alkyl; lower alkyl, cycloalkyl, cycloalkyl-lower alkyl, phenyl, naphthyl or phenyl-lower alkyl monosubstituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, mercapto, lower alkylthio, carboxyl, lower alkoxycarbonyl, carbamoyl, cyano, nitro, amino, amino mono- or di-substituted by lower alkyl, or lower alkyleneamino; amino-lower alkyl in which the amino group is acylated by acetyl, phenoxyacetyl, tert.-butoxycarbonyl, benzyloxycarbonyl or p-nitrobenzyl-oxycarbonyl; protected carboxyl; aminocarbonyl; aminocarbonyl mono- or di-substituted by lower alkyl; pyridyl; thienyl; furyl; pyridyl-lower alkyl; thienyl-lower alkyl; furyl-lower alkyl; lower alkylthio; lower alkenylthio; cyclo-alkylthio; cycloalkyl-lower alkylthio; phenylthio; phenyl-lower alkylthio; or lower alkylthio, lower alkenylthio, cycloalkylthio, cycloalkyl-lower alkylthio, phenylthio or phenyl-lower alkylthio monosubstituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, mercapto, lower alkylthio, carboxyl, lower alkoxycarbonyl, carbamoyl, cyano, nitro, amino, amino mono- or di-substituted by lower alkyl, lower alkanoylamino or lower alkeyleneamino; and R_{2a} together with the carbonyl grouping —C(=O)— to which it is attached represents a protected carboxyl group.

4,524,029

PROCESS FOR SEPARATING FATTY ACIDS

Michael T. Cleary, Elmhurst; Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Sep. 22, 1983, Ser. No. 534,911
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.³ C11C *1/08*
U.S. Cl. 260—419 **9 Claims**

1. A process for separating a saturated fatty acid from an unsaturated fatty acid contained in a feed mixture comprising said acids, said process comprising contacting said feed mixture at separation conditions with a molecular sieve comprising a crystalline silica having a silica to alumina mole ratio of at least 12, thereby selectively retaining said saturated fatty acid, removing the remainder of the feed mixture from the molecular sieve, and recovering said saturated fatty acid from said molecular sieve by displacement at displacement conditions, with a displacement fluid comprising a diluent soluble in said feed mixture and having a polarity index of at least 3.5.

4,524,030

PROCESS FOR SEPARATING FATTY ACIDS

Michael T. Cleary, Elmhurst; Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 474,999, Mar. 14, 1983, which is a continuation-in-part of Ser. No. 407,672, Aug. 12, 1982, Pat. No. 4,404,145, which is a continuation-in-part of Ser. No. 333,250, Dec. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 297,453, Aug. 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 252,745, Apr. 10, 1981, Pat. No. 4,329,280. This application Oct. 7, 1983, Ser. No. 539,859

Int. Cl.³ C11C *1/08*

U.S. Cl. 260—419 **10 Claims**

1. A process for separating a fatty acid from a feed mixture comprising a fatty acid and a rosin acid, said process comprising contacting said feed mixture at separation conditions with a molecular sieve comprising a crystalline silica having a silica to alumina mole ratio of at least 12, thereby selectively retaining said fatty acid, and removing rosin acid from the fatty acid containing molecular sieve, said fatty acid being recovered from said molecular sieve by displacement at displacement conditions with a displacement fluid comprising an ester containing less than six carbon atoms per molecule.

4,524,031

FLUOROSULFATOPERFLUOROCARBONYL COMPOUNDS

Hans Millauer, Eschborn; Günter Siegemund, Hofheim am Taunus, and Werner Schwertfeger, Butzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 300,919, Sep. 10, 1981, abandoned. This application May 20, 1983, Ser. No. 496,634

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034491

Int. Cl.³ C07C *141/00*

U.S. Cl. 260—456 F **3 Claims**

1. A perfluorocarbonyl compound of the formula

$$R_f\text{—}\underset{\underset{OSO_2F}{|}}{CF}\text{—}R'_f\text{—}[CF_2\text{—}O\text{—}\underset{\underset{CF_3}{|}}{CF}]_n\text{—}COF,$$

wherein

R_f is perfluoroalkyl having 1 to 10 carbon atoms,

R_f' is perfluoroalkylene having 1 to 10 carbon atoms, and

n is 0 to 10.

4,524,032

DIRECT FLUORINATION OF ETHERIFIED OR UNETHERIFIED HYDROXY GROUP BEARING AROMATIC COMPOUNDS

Susumu Misaki; Sadamu Ishii, and Masahiro Suefuji, all of Osaka, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 144,020, Apr. 28, 1980, abandoned. This application Jan. 14, 1983, Ser. No. 458,095

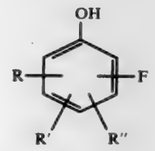
Claims priority, application Japan, Apr. 28, 1979, 54-53136

Int. Cl.³ C07C *121/50, 41/00, 39/12*

U.S. Cl. 260—465 F **9 Claims**

1. A process for the direct fluorination of hydroxy group-bearing aromatic compounds which comprises reacting a hydroxy group-bearing aromatic compound with fluorine gas in an inert solvent at a temperature of from −40° to 10° C. to give the corresponding product having at least one hydroxy group and at least one fluorine atom thereon.

8. The process according to claim 1, wherein said product is represented by the formula:



wherein R, R′ and R″ are each hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, nitro, cyano, formyl, phenyl, hydroxyphenyl or lower alkoxyphenyl.

4,524,033

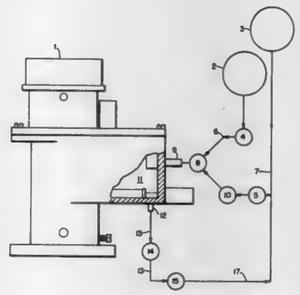
MULTIPLE FUEL CARBURETOR

Jefferson D. Elledge, 8060 Northcrest Dr., Jonesboro, Ga. 30236

Filed Mar. 31, 1983, Ser. No. 480,796

Int. Cl.³ F02M *1/16*

U.S. Cl. 261—18 B **2 Claims**



1. A dual fuel supply system for internal combustion engines comprising a first tank adapted to contain gasoline and a second tank adapted to contain a second fuel, first and second fuel pumps connected to said first and second tanks respectively and adapted to supply fuel to electrically operated selector valve means controlling the discharge of fuel into a carburetor float bowl, electrical switch means adapted to be manually operated to selectively energized alternate of said pumps and simultaneously move said selector valve means to either a first position transmitting fuel from said first pump or to a second position transmitting fuel from said second pump, said fuel bowl having a drain tube therein, said drain tube including a normally closed solenoid valve and a normally inactive electric fuel pump and discharging into said second fuel tank, and electric switch means adapted to energize said drain-line solenoid valve and pump to empty said bowl.

4,524,034

CARBURETOR

Benjamin L. Ellison, 350 Airport Way, Renton, Wash. 98055

Continuation-in-part of Ser. No. 367,897, Apr. 13, 1982, abandoned, which is a continuation-in-part of Ser. No. 270,593, Jun. 4, 1981, abandoned. This application Nov. 9, 1983, Ser. No. 550,301

Int. Cl.³ F02M *9/06*

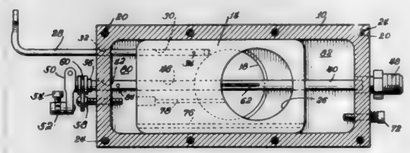
U.S. Cl. 261—44 A **25 Claims**

1. In a fluid device having a first fluid passageway, a throttle valve having an adjustable throttle opening mounted to alterably constrict the first fluid passageway and thereby control the effective cross-sectional dimension of the passageway, and a fluid metering system for supplying a second fluid to the first fluid passageway for mixture with the first fluid passing therethrough, the improvement wherein the fluid metering system comprises:

a. a fluid supply including means for supplying a substantially continuous distribution of said second fluid across said throttle opening, said supply means having a distribution outlet extending across said throttle opening, and said second fluid being supplied along the entire distribution outlet,

b. means responsive to adjustment of said throttle opening to change the effective length of said distribution outlet responsive to change of the effective cross-sectional dimension of the first fluid passageway,

c. fluid opening means in said distribution outlet to supply a non-uniform distribution of said second fluid across said throttle opening, said fluid opening means increasing in fluid discharge rate at a greater rate than the increase of



the effective cross-sectional dimension of said first fluid passageway as the throttle valve is opened in order to increase the distribution of said second fluid as the effective cross-sectional dimension of said first fluid passageway is increased,

d. means to maintain the second fluid at a pressure no greater than the total pressure of the first fluid, and

e. means to alter the proportionate flow of the second fluid through said distribution outlet in relation to the flow of the first fluid in said passageway, said means to alter including means for sensing the dynamic pressure of said first fluid and for altering the rate of supply of said second fluid responsive to a percentage of said sensed dynamic pressure.

4,524,035

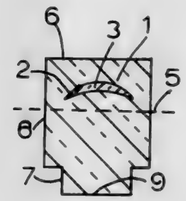
METHOD OF MAKING BIFOCAL LENS BLANKS

Charles W. Neefe, 811 Scurry St., Box 429, Big Spring, Tex. 79720

Filed Jun. 8, 1984, Ser. No. 618,746

Int. Cl.³ B29D *11/00*

U.S. Cl. 264—1.8 **14 Claims**



1. A method of making bifocal resinous lens blanks by the steps of, providing a positioning cylinder connected to a low refractive index polymer, placing the positioning cylinder in a lathe collet and cutting a first convex optical surface orientated with the positioning cylinder, casting a high refractive index liquid monomer on the convex surface of the low refractive index polymer polymerizing the high refractive index monomer to form a high refractive index polymer, placing the positioning cylinder in a lathe collet a second time and cutting a second shorter radius optical surface orientated with the positioning cylinder and intersecting the first longer radius optical surface and both the low refractive index polymer material and the high refractive index polymer material, casting low refractive index monomer over the second shorter radius optical surface and polymerizing the monomer to form a monolithic mass to form a blank from which a bifocal lens is made.

4,524,036

PROCESS FOR THE MANUFACTURE OF POLYURETHANE RESIN FOR ELECTROSTATIC SPINNING

Denis K. Gilding, Groton, Mass., and Roy M. Clarke, Liverpool, England, assignors to University of Liverpool, England and Vascor Inc., Calif.

Continuation of Ser. No. 501,039, Jun. 6, 1983, abandoned, which is a continuation of Ser. No. 291,649, Aug. 10, 1981, abandoned. This application Apr. 9, 1984, Ser. No. 597,968

Int. Cl.³ B29C *6/00, 23/00*

U.S. Cl. 264—10 **21 Claims**

1. In a process of electrostatic spinning of urethane polymers to form fine diameter fibers wherein a solution of a urethane polymer is introduced into an electrostatic field in the form of droplets which are attenauated into fibers while being drawn to an electrode where the fibers are collected, the improvement which comprises using as the said urethane polymer a polyurethane resin produced by a process which comprises the steps of:

a. reacting in a volatile organic solvent a polyalkylene ether glycol and an organic diisocyanate in a molar ratio of about 1:2 to form a prepolymer;

b. reacting said prepolymer with additional organic diisocyanate and an alkanediol extender in a volatile organic solvent to form a polyurethane resin, the final molar ratios of the polyalkylene ether glycol, organic diisocyanate, and alkanediol being about 1:3.7:2.5;

c. continuing said reaction with incremental additions of volatile organic solvent until a 25 to 30 percent by weight solids solution of said polyurethane resin having an inherent viscosity of from about 2.0 to 2.4 is obtained; and

d. terminating said reaction by the addition of an alcohol.

4,524,037

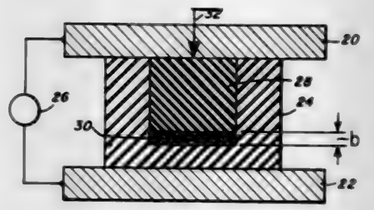
METHOD AND APPARATUS FOR FORMING A FLEXIBLE THERMOPLASTIC RESIN FOAM ARTICLE USING AN RF FIELD

Michel Marc, 48 Ridge Hill Farm Rd., Wellesley, Mass. 02181

Filed Aug. 16, 1982, Ser. No. 408,159

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—26 **15 Claims**



1. A process of forming a flexible, thermoplastic foam article using a mold with a mold cavity, a pair of electrodes across which an RF field may be impressed and compressing means, said process comprising the steps of:

inserting a preform of the foam material into the mold;

compressing the foam material with the compressing means;

applying an RF heating field while maintaining the foam material compressed to heat the foam material to a temperature below the temperature at which the foam material would become permanently deformed into its compressed state;

withdrawing the compressing means; and

permitting the foam material to expand to conform to and in substance fill said mold cavity as the material cools to

cause the foam material to permanently deform to assume the general shape and size of the mold cavity.

4,524,038

METHOD OF MAKING A VIBRATION-RESISTANT ELECTRICAL COMPONENT AND CONNECTION LEAD COMBINATION, PARTICULARLY EXHAUST GAS COMPOSITION SENSOR

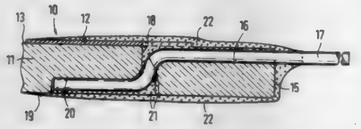
Wolfgang Heinemann, Weissach; Rainer Noack, Bietigheim, and Helmut Weyl, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,536

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1981, 3150435

Int. Cl.³ B28B *23/00*

U.S. Cl. 264—61 **24 Claims**



1. Method of making an electrical component which comprises

a substrate (**11**, **11'**) of brittle, sinterable material having the characteristic of shrinking upon sintering and having an exposed surface (**13**, **19**);

a layer electrode (**12**, **12'**) applied to said exposed surface;

an electrical connection wire (**17**) electrically connected to said layer electrode and mechanically retained on the substrate;

wherein a bonding mass is provided, securing the connecting wire to the substrate and retaining said wire thereon,

comprising, in accordance with the invention, the steps of

forming the substrate (**11**, **11'**) in unsintered state;

forming the surface (**13**, **19**) of the substrate in the region of the connection of the layer electrode (**12**, **12'**) and the connection wire (**17**) with a channel-like depression or groove (**16**, **16'**) extending essentially parallel to said surface, the groove being defined and positioned between groove walls;

pre-sintering the so formed substrate to render the substrate form-stable;

applying said layer electrode (**12**, **12'**) to said surface (**13**, **19**);

positioning the connection wire (**17**) longitudinally within said groove (**16**, **16'**) and essentially parallel to said surface, the diameter of said connection wire being just slightly smaller than the width of the groove to leave a small clearance space between the longitudinally positioned and opposed groove walls;

introducing an electrically conductive sinterable bonding material (**21**) into the clearance space between the groove walls and the connection wire,

said sinterable bonding material surrounding and embedding the connection wire therein to form a sub-assembly comprising the substrate (**11**, **11'**), the layer electrode (**12**, **12'**) thereon, the connection wire (**17**) within the groove (**16**, **16'**) and the sinterable bonding material (**21**) in said groove;

and then finish-sintering said sub-assembly while shrinking the substrate and the sinterable bonding material to securely hold the connection wire in said groove by clamping of the wire between the groove walls upon shrinkage of the substrate and the bonding material.

4,524,039

MOULDING OF CONSTRUCTION PRODUCTS

Christopher G. Bevan, London, England, assignor to C. G. Bevan Associates Limited, London, England

Continuation of Ser. No. 212,707, Nov. 5, 1980, abandoned. This application Sep. 17, 1982, Ser. No. 419,133

Claims priority, application United Kingdom, Mar. 5, 1979, 7907611

Int. Cl.³ B06B *3/00*

U.S. Cl. 264—71 **17 Claims**



1. A method of manufacturing construction products comprising the steps of feeding dry or substantially dry constituents including a liquid-setting powder and a reinforcement therefor into a molding zone, vibrating at least a part of said mold to effect compacting of the constituents in such molding zone to such a degree that said constituents will stand and be self-sustaining upon removal of an upstanding portion of the mold, removing at least a portion of the mold from contact from said compacted constituents, thereby exposing at least one upstanding surface of the compacted constituents, and applying to substantially the full extent of said surface a quantity of setting liquid, said quantity being sufficient to wet all of the compacted constituents in the molding zone so as to initiate a chemical setting reaction but not sufficient to completely saturate the compacted constituents and to cause the associated effect to structural collapse of the compacted constituents in the region of said exposed surface.

4,524,040

PROCESS FOR MAKING COATED GLASS FIBER REINFORCED COMPOSITES

William L. Hergenrother, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 4, 1983, Ser. No. 520,388

Int. Cl.³ B32B *9/00*; **B05D** *3/02*; **B29G** *5/00*; **D04H** *1/58*

U.S. Cl. 264—136 **12 Claims**

1. Process for forming a glass fiber reinforced composite having a high flexural strength to density ratio and having resistance to strength loss incident to exposure to water, said process comprising the steps of

(a) forming a maleic anhydride adduct of 1,2-polybutadiene by reacting maleic anhydride with 1,2-polybutadiene having a number average molecular weight of more than 10,000 and a crystallinity ranging from 0% to 50%, said reaction being carried out under an inert atmosphere at a temperature ranging from about 150° C. to about 260° C. and in the absence of a free radical initiator, the weight ratio of polybutadiene to maleic anhydride ranging from about 100:1 to 1.5:1;

(b) dissolving the adduct in powder form in an organic solvent;

(c) coating glass fibers with the solution produced in step (b) utilizing from about 0.1 grams to about 6 grams of adduct per hundred grams of glass fibers;

(d) evaporating the solvent to provide glass fibers size coated with adduct;

(e) admixing the size coated glass fibers with unsaturated thermosetting resin and curing agent, the size coated glass fibers being present in an amount ranging from about 20% to about 70% by weight of the admixture;

(f) curing to form a composite.

4,524,041

PROCESSES FOR PREPARING THERMOSTABLE FIBERS AND FILAMENTS

Walter Fester, Königstein, and Bernd Huber, Kelheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 473,050

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209795

Int. Cl.³ D01F *6/18, 6/00*

U.S. Cl. 264—182 **10 Claims**

1. A process for preparing N,N-dimethylformamide-insoluble acrylic fibers and filaments having increased thermostability, comprising the steps of:

obtaining filament bundles or tows by means of wet- or dry-spinning of a solution of polymer which contains more than 50% by weight of acrylonitrile units,

continuously treating the filament bundles or tows with an aqueous solution containing copper (I) ions during the fiber production process, while fresh from the wet-spinning process or while still containing solvent from the dry-spinning process, and before the first drying stage or a first heat treatment above 100° C. so that absorption of copper (I) ions by the filament bundles or tows takes place within seconds,

fixing the copper content in the thus-treated bundle or tow, concurrent or subsequent to the treatment, by means of heating to a temperature above about 60° C., and

heating the thus fixed copper containing filament bundles or tows to a temperature of 200° to 350° C. during or after the drying stage.

4,524,042

PROCESS FOR PRODUCING HYDRAULICALLY SETTING EXTRUDING MATERIALS

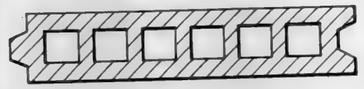
Tsuneo Genba; Akio Mizobe, and Masaki Okazaki, all of Okayama, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jul. 20, 1983, Ser. No. 515,545

Claims priority, application Japan, Aug. 9, 1982, 57-138996

Int. Cl.³ D02G *1/20*

U.S. Cl. 264—211 **10 Claims**



1. A process for producing hydraulically setting materials which is characterized by dispersing in said material as a reinforcing fiber collected yarns which are obtained by fixing polyvinyl alcohol fibers with a water-soluble collecting agent to 200–10,000 denier and cutting said fibers so that the aspect ratio of the single fiber unit is 50–700, and 60% or more of which is split into single fibers during extrusion.

4,524,043

PROCESS FOR THE MANUFACTURE OF PRODUCTS FROM REINFORCED POLYESTER RESINS

John R. McDougal, 7043 Strout Rd., Morrow, Ohio 45152

Continuation-in-part of Ser. No. 441,385, Nov. 12, 1982, abandoned, and Ser. No. 510,596, Jul. 5, 1983,. This application Feb. 21, 1984, Ser. No. 587,319

Int. Cl.³ B29G *1/00*

U.S. Cl. 264—320 **11 Claims**

1. A process for the manufacture of a molded, reinforced polyester resin polymeric product comprising the steps of:

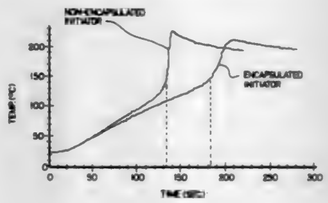
(a) forming by intensively mixing a ready-to-mold resin and reinforcement composite of an unsaturated polyester resin reactant, a cross-linking monomer, reinforcing material, and microcapsules of from 5 to 200 microns in diameter containing a liquid phase including an initiator for cross-linking of the polyester resin reactant and the monomer, said microcapsules isolating said initiator from said resin until a predetermined elevated temperature of at least about 180° C. is reached in the process;

(b) aging said composite until a control viscosity of at least 60,000,000 centipoises at 22° C. is reached;

(c) introducing a predetermined amount of said composite into a cavity of a mold;

(d) applying heat and pressure to said composite to fill said mold cavity uniformly with mixture prior to any significant initiator-induced cross-linking during a first portion of the molding cycle;

(e) causing said microcapsules to release said initiator at said predetermined elevated temperature by using the vapor pressure of the liquid phase within the microcapsules, and thereby terminating said first portion of the molding cycle and commencing a second exothermic portion of the molding cycle, said microcapsules having a wall thickness



and strength sufficient to withstand the vapor pressure of said liquid phase up to the internal pressure developed in the microcapsules at said predetermined elevated temperature;

(f) effecting substantially all initiator-induced cross-linking during said second exothermic portion of the molding cycle whereby said first portion of said molding cycle is substantially prolonged by maintaining said initiator in said microcapsules and the prolongation of the first portion of said molding cycle permits the use of increased molding temperatures and a net reduction in the overall molding cycle as compared with the use of such initiator in the composite in a conventional nonencapsulated form; and

(g) removing the cured composite from said mold cavity to provide said polymeric product.

4,524,044

REACTION INJECTION MOLDING METHOD

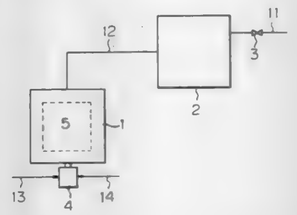
Masao Nishiyama; Keiichiro Katada, and Yoshiteru Akimoto, all of Hirakata, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Sep. 16, 1983, Ser. No. 533,274

Claims priority, application Japan, Sep. 30, 1982, 57-169728

Int. Cl.³ B29F *1/00*

U.S. Cl. 264—328.6 **7 Claims**



1. A process for forming a molded article by reaction injection molding, comprising the steps of:

pressurizing a mold cavity by filling the cavity with an inert gas at a pressure in the range of 0.5 to 20 kg/cm²·G;

injecting into said pressurized cavity starting material capable of reacting to form a polymerized material, the injection of said starting material compressing said gas to increase the pressure within said cavity to a given value; and after injection of said starting material, raising the pressure of the gas within said cavity to an elevated value higher than said given value, and maintaining the pressure within said cavity at said elevated value until the polymerization molding of the starting material is completed.

4,524,045

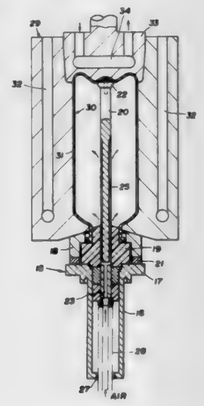
METHOD OF FABRICATING BOTTLE-SHAPED CONTAINER OF SATURATED POLYESTER

Yoshiaki Hayashi; Kouichi Haraguchi, and Yukio Koshidaka, all of Matsudo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 240,916, Mar. 5, 1981, abandoned, which is a continuation of Ser. No. 64,813, Aug. 8, 1979, abandoned. This application Aug. 24, 1983, Ser. No. 525,804

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—521 **11 Claims**



1. A method of fabricating a bottle-shaped container of saturated polyester from a preformed cylindrical piece of polyethylene terephthalate with a bottom, comprising:

heating the piece to a temperature for orienting,

loading the heated piece into the blowing mold which is heated at a temperature in the range between the glass transition temperature and the orientation temperature of the saturated polyester,

biaxially orienting the piece by longitudinally orienting the piece and then laterally orienting it by introducing compressed air into the interior of the piece while said piece is contained in the mold until the outer wall of the piece comes into contact with the inner wall of the mold;

the container expanded by said biaxially orienting step being thermally set by said contact with the outer wall of the container with the inner wall of the mold retained at a temperature in the range between substantially the glass transition temperature and the orientation temperature for a period of time in the range of six to eight seconds;

opening the mold to unload and rapidly cool the container thus molded;

said mold having a capacity upwardly adjusted by about 6% relative to the desired final capacity of said container, said blowing mold temperature being in the range of about 70° C. to less than about 80° C.

4,524,046

METHOD FOR MANUFACTURING A CAM-CAM SHAFT ASSEMBLY

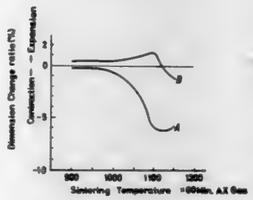
Tetsuya Suganuma, Nagoya; Koji Kazuoka, Toyota; Shuichi Fujita, Toyota; Yoshitaka Takahashi, Toyota; Katsuhiko Ueda, Aichi, and Hitoshi Nakamura, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 393,673, Jun. 30, 1982,. This application Apr. 16, 1984, Ser. No. 599,605

Claims priority, application Japan, Jul. 1, 1981, 56-102446

Int. Cl.³ B22F *5/00, 7/08*

U.S. Cl. 419—8 **12 Claims**





1. A method for manufacturing a cam-cam shaft assembly, which comprises the steps of:

(a) molding a component having a through-hole therein from an alloy material to be sintered, said material exhibiting a ratio of contraction of an inner diameter of said component at a joining portion when the component is sintered alone to said inner diameter thereof before sintering to be more than 2%;

(b) presintering said component;

(c) assembling said component onto a metal shaft such that said metal shaft is inserted into said through-hole; and

(d) sintering said component assembled onto said metal shaft, whereby the joining of said component to said metal shaft is carried out in such a manner that the apparent interference is more than 2%.

4,524,047

THERMIONIC DETECTOR WITH MULTIPLE LAYERED IONIZATION SOURCE

Paul L. Patterson, 2212 Brampton Rd., Walnut Creek, Calif. 94598

Filed Mar. 2, 1983, Ser. No. 471,282

Int. Cl.³ G01N *27/62*

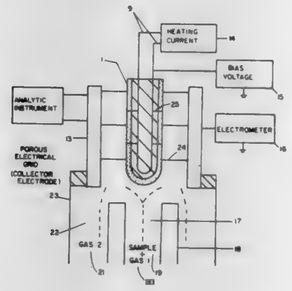
U.S. Cl. 422—98 **10 Claims**

1. An apparatus for thermionic ionization detection of chemical substances in a gaseous environment, the apparatus comprising, in combination:

a thermionic source having a surface and comprising a metallic heater element capable of withstanding operating temperatures up to about 1000° C.; a first coating layer covering said heater element, said first coating layer comprising a hardened ceramic cement material impregnated with a metallic compound additive which is non-corrosive to said heater element at operating temperatures up to about 1000° C. and wherein said metallic compound additive has an electric conductivity greater than said ceramic cement material; a second coating layer covering said first coating layer, said second coating comprising a hardened ceramic cement material impregnated with an alkali metal compound, said second coating layer being molded onto said first coating layer in such manner that there is no direct contact of said second coating layer with said heater element, and all materials used in said firsat and second coating layers being capable of withstanding operating temperatures up to about 1000° C.;

a metallic collector electrode structure adjacent to said thermionic source and means for spacing said collector electrode structure from said surface of said thermionic source, said spacing means defining a gaseous environment test site, between said surface of said thermionic source and said collector electrode structure, within which chemical substances to be detected may be present;

means for supplying an electrical current to said heater element for the purpose of heating said thermionic source to operating temperatures in the range of from about 100° C. to about 1000° C.;



means for transferring a gaseous test sample suspected of containing chemical substances which are to be detected to said test site about said thermionic source whereby these chemical substances form gas phase ions by a process of electrical charge emission from said surface of said thermionic source; and

means for applying a bias voltage to said heater element to cause a difference in electrical potential between said thermionic source and said collector electrode, the difference in electrical potential causing the gas phase ions to move toward said collector electrode, and causing a migration of electrical charge from said heater element through said first coating layer and said second coating layer to replace charge emitted from said surface of said thermionic source.

4,524,048

APPARATUS FOR COMPACTING BIOINJURIOUS WASTES

Gerhard Schmidt, Linsengericht, and Walter Kohlpoth, Offenbach, both of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

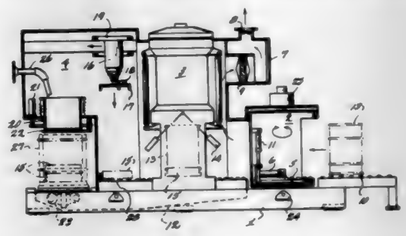
Filed Nov. 23, 1982, Ser. No. 443,892

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146592

Int. Cl.³ G21F *9/34, 9/36*

U.S. Cl. 422—159 **17 Claims**

1. An apparatus for compacting solid bioinjurious waste in closed containers comprising in combination a closed containment means having roller conveyor means, a container receiving means which is rotatable about a vertical axis, a high pressure press, a container discharge lock means with a receiving chamber, a first hydraulic cylinder means within said receiving means for transporting the container into the high pressure press and said receiving means being provided with a second liftable hydraulic cylinder means lying under the roller conveying means when located in one position and, when lifted to a second position, extendable in the direction of said high pressure press to eject the shaped container from the high pressure press, and a movable gripping means for engaging and



moving the shaped container to the container discharge lock means.

4,524,049

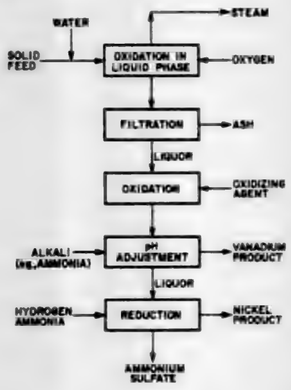
PROCESS FOR CONCURRENT STEAM GENERATION AND METAL RECOVERY

Song-P. Sit, Calgary, Canada, assignor to Zimpro Inc., Rothschild, Wis.

Filed Aug. 31, 1983, Ser. No. 528,269

Int. Cl.³ C01G *31/02, 53/00*

U.S. Cl. 423—65 **18 Claims**



16. A process for concurrent steam generation and the recovery of vanadium and nickel from fly ash, comprising the steps of:

(a) slurrying said fly ash and elemental sulphur in water and subjecting said slurry to temperatures of 500° to 650° F. and pressures of 1000 to 4000 psig in the presence of air or oxygen within a wet oxidation reactor;

(b) regulating the addition of elemental sulphur to said slurry of fly ash to result in a pH value of 0.2–0.3 within said reactor;

(c) discharging off-gases from the reactor at elevated pressure and temperature to a heat exchanger to generate steam;

(d) withdrawing oxidized slurry from said reactor and removing suspended solids therefrom by filtration to produce a filtrate containing vanadium and nickel compounds;

(e) adding sodium perchlorate to said filtrate to oxidize vanadium oxides to the pentoxide state;

(f) adding ammonia to oxidized filtrate to achieve pH about 2 to precipitate vanadium pentoxide; and

(g) filtering precipitated vanadium pentoxide from ammonia adjusted oxidized filtrate.

4,524,050

CATALYTIC HYDROLYSIS OF CARBONYL SULFIDE

Michael S. Chen, Zionsville; Thomas J. Edwards, Allentown, both of Pa., and William R. Ernst, Roswell, Ga., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

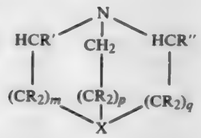
Continuation-in-part of Ser. No. 456,222, Jan. 7, 1983, Pat. No. 4,482,529. This application Jul. 8, 1983, Ser. No. 512,288

The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—243 **18 Claims**

1. A process for hydrolyzing COS present in a gas stream to H_2S and CO_2 under conditions necessary to effect said hydrolysis which comprises contacting said gas stream with a bicyclo tertiary amine catalyst having the general formula:



wherein X represents H—C or N; R and R′ represent H, CH_3— or C_2H_5—; R″ represents H or CH_3— only if R′ is not C_2H_5; and m, p and q≧1.

4,524,051

CATALYST PREPARATION AND OXIDATION OF CARBON MONOXIDE WITH SAID CATALYST

Christopher J. Wright, Abingdon, and Christopher F. Sampson, Newbury, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 9, 1984, Ser. No. 569,030

Claims priority, application United Kingdom, Jan. 10, 1983, 8300554

Int. Cl.³ B01D *53/36;* **B01J** *23/14, 23/62*

U.S. Cl. 423—247 **5 Claims**

1. A method of preparing a catalyst comprising providing a substrate with tin (IV) oxide support material and with catalytically active material comprising a precious metal wherein the tin (IV) oxide is provided by contacting the substrate with a dispersion of colloidal or non-colloidal particles in a liquid medium, said dispersion being convertible to tin (IV) oxide by drying and firing, followed by drying and firing.

5. A method for the catalytic oxidation of carbon monoxide comprising contacting carbon monoxide with a catalyst as claimed in claim 1.

4,524,052

BORATE CHLORIDE POLYMERIZATION CATALYSTS

Daniel F. Graves, Clinton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 24, 1984, Ser. No. 685,582

Int. Cl.³ C01B *33/20, 25/10*

U.S. Cl. 423—277 **8 Claims**

1. A compound described by the molecular formula: $BNP_2O_2X_6$, wherein X is selected from the group consisting of F, Cl, Br, I and mixtures thereof.

6. A process for the manufacture of catalytically active compounds which comprises reacting in a halogenated solvent a compound of the formula $X_2P(O)NHP(O)X_2$ with a compound of the formula BX_3, wherein X is selected from the class consisting of F, Cl, Br, I and mixtures thereof.

7. A process for the polymerization of halophosphazene trimers which comprises reacting a halophosphazene trimer in the presence of a catalytically effective amount of a catalyst represented by the formula $BNP_2O_2X_6$, wherein X is selected from the class consisting of F, Cl, Br, I and mixtures thereof.

4,524,053

PROCESS FOR PREPARING CORES AND MOLDS

Charles E. Seeney, Brazil, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Division of Ser. No. 342,308, Jan. 25, 1982, Pat. No. 4,390,370. This application Nov. 12, 1982, Ser. No. 440,918

Int. Cl.³ C01B *25/36*

U.S. Cl. 423—306 **3 Claims**

1. A composition obtained by reacting phosphoric acid with olivine in a ratio of about 3–5:1 by weight at a temperature of about 70°–100° C. for a period of two hours or more.

4,524,054

PROCESS FOR THE PRODUCTION OF DICALCIUM PHOSPHATE

Christopher W. George, Brighton; Hari N. Sinha, Surrey Hills; Mary R. Vujcich, Albert Park, and Graham S. Walker, Brighton, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization and Queensland Phosphate Limited, both of, Australia

PCT No. PCT/AU83/00054, § 371 Date Jan. 5, 1984, § 102(e) Date Jan. 5, 1984, PCT Pub. No. WO83/03818, PCT Pub. Date Nov. 10, 1983

PCT Filed May 4, 1983, Ser. No. 574,097

Claims priority, application Australia, May 5, 1982, PF3855

Int. Cl.³ C01B *15/16, 25/26*

U.S. Cl. 423—308 **10 Claims**

1. In a process for the recovery of dicalcium phosphate from a phosphate ore, wherein the ore is leached with a mixture comprising water, sulphur dioxide and an organic carbonyl compound selected from the group comprising acetone, methyl ethyl ketone or methyl isobutyl ketone, cyclohexanone, acetaldehyde, formaldehyde and benzaldehyde; the leach liquor contains dissolved phosphate and calcium hydroxysulphonate and is separated from any gangue and other insoluble material; the improvement which comprises carrying out the leaching at a temperature in the range of from 10° to 40° C. and selecting the sulphur dioxide and carbonyl compound concentration such that substantially no calcium hydroxysulphonate is precipitated at the leaching stage; and treating the leach liquor to recover therefrom a dicalcium phosphate product and at least part of the sulphur dioxide and the carbonyl compound.

4,524,055

CRYSTALLINE ALUMINOSILICATE ZEOLITE AND PROCESS FOR PRODUCTION THEREOF

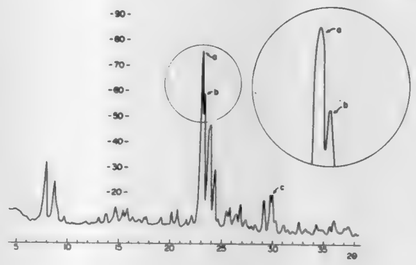
Tamio Onodera; Tokuji Sakai; Yasuo Yamasaki, and Koji Sumitani, all of Matsuyama, Japan, assignors to Teijin Petrochemical Industries Ltd., Tokyo, Japan

Filed Feb. 22, 1983, Ser. No. 468,381

Claims priority, application Japan, Feb. 22, 1982, 57-26000

Int. Cl.³ C01B *33/28;* **B01J** *29/28*

U.S. Cl. 423—328 **9 Claims**



1. A crystalline aluminosilicate zeolite characterized by having

(a) a silica/alumina mole ratio in the range of from 10 to 100,

(b) X-ray lattice distances d shown in Table A in the specification,

(c) a (cyclohexane/n-hexane) adsorption ratio of at least 0.7, and

(d) when the intensity (I_o) of the X-ray diffraction peak at d(Å)=3.86 is taken as 100, the relative intensity (I/I_o) of the X-ray diffraction peak d(Å)=3.83 is at least 75.

7. The process of claim 6 wherein the alkali metal hydroxide is sodium hydroxide.

4,524,056

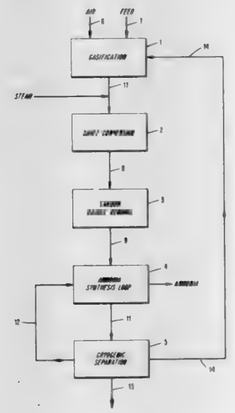
PROCESS FOR THE PRODUCTION OF AMMONIA

David Banquy, Paris, France, assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jul. 5, 1983, Ser. No. 510,790

Int. Cl.³ C01C *1/04*

U.S. Cl. 423—359 **9 Claims**



1. A process for producing ammonia from a carbon containing feedstock comprising:

(a) subjecting said feedstock to a catalyst free partial oxidation reaction with air as the only source of free oxygen in a reactor operating adiabatically, at a temperature between 800° C. and 1700° C., thereby producing a raw synthesis gas containing hydrogen, carbon oxides, methane, and nitrogen, with a methane content of less than 10 mole percent on a dry basis and a molal ratio of $(H_2+CO)/N_2$ of 0.7 to 2.4;

(b) subjecting said raw synthesis gas to a shift conversion reaction to convert essentially all the carbon monoxide contained therein to carbon dioxide and hydrogen;

(c) subjecting the shift converted raw synthesis gas to a purification for removing the carbon oxides and the sulfur compounds from said gas, thereby obtaining a purified synthesis gas containing a molal ratio of H_2/N_2 of less than 2.4;

(d) injecting said purified synthesis gas having a molal ratio of H_2/N_2 of less than 2.4 into an ammonia synthesis loop to produce ammonia and recovering said ammonia from the loop;

(e) extracting a purge gas from said ammonia synthesis loop, and treating said purge gas to obtain a hydrogen-rich stream, a nitrogen-rich stream, and a methane-rich stream;

(f) recycling said hydrogen-rich stream to said ammonia synthesis loop; and

(g) recycling at least partially said methane-rich stream to processing step (a).

4,524,057

PRODUCTION OF CONCENTRATED PHOSPHORIC ACID AND HEMIHYDRATED CALCIUM SULFATE

Bernard Bigot, La Londe, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 371,943, Apr. 26, 1984, abandoned, which is a continuation of Ser. No. 961,282, Nov. 16, 1978, abandoned. This application Apr. 13, 1984, Ser. No. 600,154

Claims priority, application France, Nov. 16, 1977, 77 34395

Int. Cl.³ C01B *25/16*

U.S. Cl. 423—555 **21 Claims**

1. In a process for the direct production of concentrated phosphoric acid and calcium sulfate hemihydrate by sulfuric acid attack upon calcium phosphate, the improvements comprising (i) continuously conducting the acid attack reaction, with concomitant formation of crystalline calcium sulfate hemihydrate, in but a single, homogeneous liquid reaction medium comprising the products of reaction, (ii) maintaining constant the temperature of the reaction medium as to effect formation of hemihydrated calcium sulfate, (iii) controlling the amount of reactants introduced to the reaction such as to maintain essentially constant, in liquid phase, a solids content of between 25 and 50% by weight and a determined sulfate ion content ranging from 5 g/l to 20 g/l with said determined sulfate ion content being inversely proportional for a given temperature with the P_2O_5 concentration which ranges between 55% and 40% by weight, such that said determined sulfate ion content ranges from 5 g/l to 20 g/l for a P_2O_5 concentration of about 40% with the temperature of the reaction medium being about 100° C., from about 5 g/l to 16 g/l for a P_2O_5 concentration of about 45% with the temperature of the reaction medium being about 95° C., from about 5 g/l to about 14 g/l for a P_2O_5 concentration of about 50% with the temperature of the reaction medium being about 90° C., and from 5 g/l to 12 g/l for a P_2O_5 concentration of about 55% with the temperature of the reaction medium being about 85° C., and (iv) withdrawing a fraction of reaction effluent, including the concentrated phosphoric acid, and individually separating and recovering hemihydrated calcium sulfate from said reaction effluent fraction upon cooling the effluent fraction to a temperature sufficient to insure yielding a hemihydrate stable enough to be transferred and washed without hydration.

4,524,058

PROCESS FOR THE PREPARATION OF A HYDROGEN-RICH GAS

Pierre E. Dejaifve, and Gerard Quillaud, both of Grand-Couronne, France, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 18, 1984, Ser. No. 662,462

Claims priority, application France, Nov. 7, 1983, 83 17645

Int. Cl.³ C01B *2/10*

U.S. Cl. 423—656 **11 Claims**

1. A process for the preparation of a hydrogen-rich gas by reacting a carbon monoxide-containing gas with stream under suitable conditions in the presence of a catalyst, wherein said catalyst comprises a spinel having the formula $Li_xCu(1-x)Fe_5O_8$ in which $0<x1$.

4,524,059

FATTY ACID ANALOGS

David R. Elmaleh, Newton Center, and Eli Livni, Brookline, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Jan. 28, 1983, Ser. No. 461,734

Int. Cl.³ A61K *49/00, 43/00*

U.S. Cl. 424—1.1 **44 Claims**

1. A radioactively labeled analog of a fatty acid,

said analog being capable of being taken up by mammalian tissue,

said analog exhibiting an in vivo beta-oxidation rate below that of the corresponding radioactively labeled fatty acid.

4,524,060

SLOW RELEASE PHARMACEUTICAL COMPOSITION

Ahmed S. Mughal, High Wycombe, and David S. Holmes, Reading, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

Continuation-in-part of Ser. No. 375,935, May 7, 1982,. This application Oct. 28, 1983, Ser. No. 546,684

Claims priority, application United Kingdom, May 21, 1981, 8115678

Int. Cl.³ A61K *9/28, 9/52*

U.S. Cl. 424—19 12 Claims

1. A pharmaceutical composition in capsule form comprising a plurality of sustained release pellets each containing about 50 to 90% by weight of a mixture of micronised indoramin or a pharmaceutically acceptable salt thereof, about 4 to 25% by weight of microcrystalline cellulose as a hydrophilic long chain polymer, about 0.5 to 10% by weight of a wetting agent and about 1 to 10% by weight of a disintegrant other than microcrystalline cellulose, the mixture being in the form of a non-compressed pellet and having an enteric coat or a sustained release coat permeable to gastro-intestinal juices, the indoramin having a particle size where 90% of the particles are less than or equal to 15μ, the ratio of indoramin to hydrophilic long chain polymer being about 30:1 to about 2:1 and the ratio of indoramin to wetting agent being about 300:1 to about 5:1 so as to allow at least about 80% release of indoramin into gastro-intestinal media within about 24 hours.

4,524,061

POLYMERIC SUNSCREENS

James R. Cho, Oakland, and Stephen C. Johnson, Newton, both of N.J., assignors to GAF Corporation, Wayne, N.J.

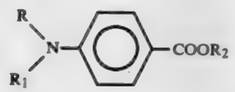
Filed Apr. 22, 1983, Ser. No. 487,484

Int. Cl.³ A61K *7/44;* C08F *226/08*

U.S. Cl. 424—60 13 Claims

1. The polymer consisting essentially of the monomers:

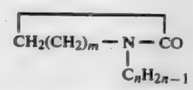
(a) 10 to 50 wt. % of a p-amino-alkenylbenzoate having the formula



wherein R is hydrogen or lower alkyl, R_1 is hydrogen or lower alkyl and R_2 is a vinyl or allyl radical;

(b) 5 to 6 wt. % of N-vinylpyrrolidone;

(c) 20 to 80 wt. % of a monomer selected from the group consisting of an acrylate or methacrylate having 5 to 24 carbon atoms or a lactam having the formula



wherein m has a value of 3 to 5 and n has a value of 2 to 4; and mixtures thereof; and optionally containing

(d) 0 to 40 wt. % of acrylic or methacrylic acid based on the total of monomers (a), (b) and (c).

4,524,062

ANTIPERSPIRANT/DEODORANT STICK COMPOSITIONS

Dennis Laba, Middlesex; John J. Margres, Jr., Old Bridge, and Kristin Burkhardt, Union, all of N.J., assignors to Armour Pharmaceutical Company, Tuckahoe, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,431

Int. Cl.³ A61K *7/32, 7/34, 7/38*

U.S. Cl. 424—65 10 Claims

1. A deodorant-antiperspirant stick composition comprising

a, 5 to 25 weight percent of an antiperspirant agent of solid particles selected from the group consisting of aluminum halide, aluminum hydroxyhalide, zirconyl oxyhalide, zirconyl hydroxyhalide and zirconium aluminum glycine complex;

b, 4 to 25 weight percent glycol stearate enrobing the solid particles of said antiperspirant agent and thereby forming coated antiperspirant particles;

c, q.s. to 100 weight percent with a cologne stick base comprising the mixture of

(1) 10 to 25 weight percent of a deodorant selected from the group consisting of sodium aluminum chlorhydroxy lactate, 5-chloro-2-(2,4-dichlorophenoxy)phenol, 3,4,4-trichlorocarbanilide, cetyl pyridinium chloride and sodium aluminum lactate,

(2) 25 to 40 weight percent of a cosmetically acceptable alcohol, and

(3) 3 to 15 weight percent of sodium stearate as gelling agent for said deodorant and alcohol mixture;

said coated antiperspirant particles being suspended in said cologne stick base.

4,524,063

OPHTHALMIC COMPOSITIONS

Larry A. Wheeler, Cucamonga, Calif., assignor to Allergan Pharmaceuticals, Inc., Irvine, Calif.

Filed Dec. 22, 1983, Ser. No. 564,156

Int. Cl.³ A61K *31/74, 31/275*

U.S. Cl. 424;78 4 Claims

1. A pharmaceutical composition for the treatment of ocular allergic diseases containing a pharmaceutically acceptable ophthalmic vehicle comprising from about 1.0% to about 5.0% polyvinyl alcohol and from about 1.0% to about 10.0% lodoxamide tromethamine in an aqueous solution.

4,524,064

WOUND-COVERING MATERIALS

Masao Nambu, Yokohama, Japan, assignor to Nippon Oil Company, Limited, Tokyo, Japan

Filed May 24, 1983, Ser. No. 497,664

Claims priority, application Japan, May 26, 1982, 57-87979

Int. Cl.³ A61K *31/74, 31/78*

U.S. Cl. 424—81 5 Claims

1. A process of treating a burn comprising applying to the surface of the burn a water-insoluble gel produced by applying an aqueous solution containing a polyvinyl alcohol with a degree of hydrolysis not less than 95 mol.% and a viscosity-average degree of polymerization not less than 1,500, a water-soluble C_{2-20} polyhydric alcohol having 2–8 hydroxyl groups in the molecule and a high-viscosity water-soluble substance having a viscosity in 2% aqueous solution not lower than 300 cP at 25° C. selected from the group consisting of propyleneglycol ester of alginic acid, tragacanth gum, puleulan, arabia gum, gatty fum, karaya gum, dextrin, starch, Dioscoreaceae mucous substance, mucous Malvaceae, furcellaran, curdlan, methylcellulose, guar gum, locust bean gum, xanthan gum, agar, carrageenan, fucoidin, alginic acid, sodium alginate, alginic acid triethanolamine, pectin, agarose, carboxymethylcellulose, tamarind gum, gelatin, polyacrylic acid, sodium polyacrylate, polymethacrylic acid, polyvinylsulfonic acid, polyvinylpyridine, polyethylenimine, vinylimidazole-itaconic acid copolymer, poly (2,4-pentadiene-1-ol) and poly (N-vinyl-2-pyrrolidone), concentrations of said polyvinyl alcohol, said water-soluble polyhydric alcohol and said water-soluble high viscosity substance being adjusted respectively to 1.5–8% by weight, 10–85% by weight and 0.2–15% by weight, onto a flat or curved plate having 30,000–200,000 projections per m^2, the total area occupied by the projections being 10–70% to a thickness from 0.5 to 5 mm, cooling the applied plate to a temperature not higher than −6° C. to solidify the solution and then subjecting the resulting mass to vacuum dehydration to a ratio of dehydration from 5% by weight to 95% by weight.

4,524,065

METHOD FOR THE PREVENTION AND TREATMENT OF SCARS WITH ENZYMES

Sheldon R. Pinnell, Durham, N.C., assignor to Bio-Specifics N.V., Curacao, Netherlands Antilles

Filed Aug. 4, 1983, Ser. No. 520,203

Int. Cl.³ A61K *37/48*

U.S. Cl. 424—94 24 Claims

1. A method for the dissolution of mammalian cicatrices which comprises administering an effective amount of the enzyme collagenase directly into the lesion.

12. A method for the dissolution of mammalian cicatrices which comprises administering an effective amount of the enzyme collagenase in combination with an effective amount of the enzyme hyaluronidase directly into the lesion.

4,524,066

PROCESS FOR THE PREPARATION OF INJECTABLE CHONDROITIN POLYSULFATE

Karl H. Wolf, Munich, Fed. Rep. of Germany, assignor to Luitpold-Werk Chemisch-pharmazeutische Fabrik, Munich, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,226

Claims priority, application Fed. Rep. of Germany, May 11, 1981, 3118588

Int. Cl.³ A61K *31/725*

U.S. Cl. 514—23 15 Claims

1. A process for the preparation of an injectable chondroitin polysulfate with a molecular weight up to about 15000 which comprises:

A. oxidatively depolymerizing crude chondroitin polysulfate by treatment with an oxidatively depolymerizing agent selected from the group consisting of

(a) peracetic acid in the presence of salts of heavy metals, and

(b) hydrogen peroxide; and

B. fractionating the oxidatively depolymerized chondroitin polysulfate so produced by a step selected from the group consisting of

(a) precipitation with methanol, ethanol, isopropanol, acetone, tetrahydrofuran or dioxane; and

(b) ultrafiltration.

4,524,067

SOYBEAN SAPONINS, AND A METHOD OF ISOLATING THE SAME

Shigeru Arichi, and Yoshihiro Uchida, both of Osaka, Japan, assignors to Osaka Chemical Laboratory Co., Ltd., Osaka, Japan

Continuation of Ser. No. 194,974, Oct. 8, 1980, abandoned. This application Apr. 21, 1983, Ser. No. 487,096

Claims priority, application Japan, Oct. 29, 1979, 54-140167; Nov. 20, 1979, 54-150938; May 19, 1980, 55-66284

Int. Cl.³ A61K *31/70;* C07H *15/00, 15/24*

U.S. Cl. 514—33 2 Claims

1. Substantially pure 3-0-[β-D-glucopyranosyl-(1→2)-β-D-galactopyranosyl-(1→2)β-D-glucuronopyranosyl]-22-0-[β-D-glucopyranosyl-(1→3)-β-L-arabinopyranosyl]-soyasapogenol A(soyasaponin A_1) or substantially pure 3-0-[β-D-galactopyranosyl-(1→2)-β-D-glucuronopyranosyl]-22-0-[β-D-glucopyranosyl-(1→3)-α-L-arabinopyranosyl]-soyasapogenol A (soyasaponin A_2), or non-toxic salt thereof.

2. A composition having antioxidizing and metabolism affecting activity comprising an effective amount of either soyasaponin A_1 or soyasaponin A_2 and a carrier.

4,524,068

CYCLODEXTRIN INCLUSION COMPLEX OF PIPERONYL BUTOXIDE

József Szejtli; Zsuzsanna Budai; Erzsébet Radvány née Hegedüs; László Papp; György Körmöczy, and Gabriella Pap née Imrényi, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Nov. 9, 1983, Ser. No. 550,478

Claims priority, application Hungary, Nov. 9, 1982, 3597/82

Int. Cl.³ A61K *31/73*

U.S. Cl. 514—58 4 Claims

1. An inclusion complex of piperonyl butoxide and cyclodextrin, wherein the piperonyl butoxide is present in an amount of 0.6 to 1.5 moles relative to 1 mole of cyclodextrin.

4,524,069

Patent Not Issued For This Number

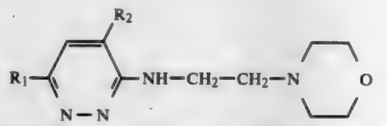
4,524,070

AMINATED DERIVATIVES OF PYRIDAZINE SUBSTITUTED IN 6 POSITION BY A HETEROCYCLE OR AN ALICYCLE AND COMPOSITIONS, SAID DERIVATIVES BEING ACTIVE ON THE CENTRAL NERVOUS SYSTEM

Jean-Paul Kan; Kathleen Biziere, both of Clapiers, and Camille-Georges Wermuth, Strasbourg, all of France, assignors to Sanofi, Paris, France

Filed Jan. 18, 1984, Ser. No. 571,698
Claims priority, application France, Jan. 24, 1983, 83 01029
Int. Cl.³ A61K *31/535;* **C07D** *413/12*
U.S. Cl. 514—230 **6 Claims**

1. Aminated derivatives of pyridazine of formula:



(I)

in which R_1 represents a 2-thienyl, 3-thienyl or cyclohexyl group; R_2 represents a lower alkyl group having 1 to 4 carbon atoms, or a hydrogen atom, and acid addition salts thereof.

5. A pharmaceutical composition active on the central nervous system comprising a compound of claim **1** and a pharmaceutically acceptable carrier.

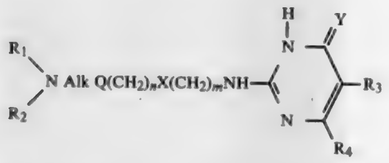
4,524,071

PYRIMIDONE DERIVATIVES

Barry J. Price, Hertford; John W. Clitherow, Sawbridgeworth; John Bradshaw, Ware; Michael Martin-Smith, Ware; Duncan B. Judd, Ware, and Roger Hayes, Welwyn, all of England, assignors to Glaxo Group Limited, London, England

Filed Jul. 17, 1979, Ser. No. 58,256
Claims priority, application United Kingdom, Jul. 26, 1978, 31153/78
Int. Cl.³ C07D *239/244;* **A61K** *31/505*
U.S. Cl. 514—272 **21 Claims**

1. Compounds of the formula (1):



(I)

and physiologically acceptable acid addition salts, and hydrates thereof, in which

R_1 and R_2 which may be the same or different, each represent hydrogen, C_1-C_6 alkyl, C_3-C_8 cycloalkyl, C_3-C_6 alkenyl, C_3-C_6 alkynyl, arC_1-C_6 alkyl or C_1-C_6 alkyl substituted by hydroxy, C_1-C_3 alkoxy, amino, C_1-C_4 alkylamino or di-C_1-C_3 alkylamino or R_1 and R_2 together with the nitrogen atom to which they are attached form a saturated monocyclic 5 to 7 membered heterocyclic ring which may contain the further heterofunction —O—;

Alk represents a straight alkylene chain of 1 to 4 carbon atoms;

Q represents a benzene ring in which incorporation into the rest of the molecule is through bonds at the 1- and 3- or 1- and 4-positions;

X represents $—CH_2—$, —O— or —S—;

n represents zero or 1;

m represents 2, 3 or 4;

Y represents =O or =S;

R_3 represents hydrogen in which case R_4 represents methyl or R_3 represents—$(CH_2)_p$—$V(CH_2)_q$Ar, phenyl or C_1–C_6 alkyl in which case R_4 represents hydrogen;

V represents $—CH_2—$, —O— or —S—;

p represents zero, 1, 2 or 3;

q represents zero, 1, 2 or 3; the sum of p+q being 3 or less;

Ar represents phenyl, substituted phenyl which is substituted by one or more substituents selected from the group consisting of C_{1-3} alkyl, C_{1-2} alkoxy C_{1-3} alkyl, hydroxy, C_{1-3} alkoxy, methylenedioxy, halogen, trifluoromethyl and di-C_{1-3}-alkylamino; naphthyl, pyridyl, furanyl, thienyl, thiazolyl, oxazolyl, indolyl, quinolyl or isoquinolyl.

4,524,072

REDUCTION OF STROKE DAMAGE

Justin A. Zivin, 31 Camp St., Paxton, Mass. 01612

Filed Jun. 18, 1984, Ser. No. 621,501
Int. Cl.³ A61K *31/445, 31/485*
U.S. Cl. 514—280 **11 Claims**

1. A method of reducing stroke-induced neurological damage in a human patient comprising administering to said human patient an effective amount of a pharmaceutically acceptable neurological-damage-reducing serotonin antagonist said serotonin antagonist being selected from 2-bromo-lysergic acid diethylamide, lycergic acid diethylamide, and cyproheptadine.

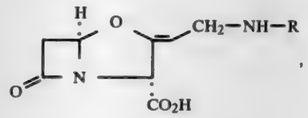
4,524,073

β-LACTAM COMPOUNDS

Irene Stirling, Reigate; Gordon Bruton, Croydon; Stephen H. Calvert, Guildford, and Brian P. Clarke, Kingswood, all of England, assignors to Beecham Group p.l.c., England

Filed Jul. 20, 1983, Ser. No. 516,121
Claims priority, application United Kingdom, Jul. 22, 1982, 8221162; Dec. 15, 1982, 8235692
Int. Cl.³ A61K *31/44, 31/42, 31/43;* **C07D** *499/32, 498/10*
U.S. Cl. 514—80 **46 Claims**

1. A compound of the formula (I):



(I)

a pharmaceutically acceptable salt thereof or an in-vivo hydrolyzable ester thereof wherein R is alkyl of 2–12 carbon atoms or aralkyl of 2–6 carbon atoms in the alkyl moiety substituted on an alkyl carbon atom other than that adjacent to —NH— group, by 1–3 substituents selected from the group consisting of halo; non-aromatic heterocyclyl of 4–7 ring atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonyalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, said non-aromatic heterocyclyl being linked through carbon; an aromatic heterocyclyl of 4–7 ring atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonyalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo; nitro; oxo; $—OR^1$; SR^1; $—P(O)R^2R^3$; $—NR^4R^5$; $=NR^6$; and $—S(O)_nR^S$ wherein n is one or two and R^S is hydroxy, hydrocarbyloxy or heterocyclyl of 4–7 ring atoms unsubstituted or substituted by alkyl of 1–6 carbon atoms, a heterocyclyl of 4–7 ring atoms, amino, alkanoylamino of 1–6 carbon atoms in the alkyl moiety, mono-, di- or trialkylamino of 1–6 carbon atoms in each alkyl group, hydroxy, alkoxy of 1–6 carbon atoms, mercapto, alkylthio of 1–6 carbon atoms, heterocyclylthio of 4–7 ring atoms, arylthio, sulphamoyl, carbamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, carboxy or a salt or ester thereof, alkanoyloxy of 1–6 carbon atoms in the alkyl moiety, arylcarbonyl or heterocyclylcarbonyl of 4–7 ring atoms; or R^S is $—NR^TR^U$ wherein R^T and R^U are each hydrogen or a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substitutents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo; or R^T and R^U together form the residue of a heterocyclic ring of 4–7 ring atoms; R^1 is hydrogen, a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, heterocyclyl of 4–7 ring members, $—COR^H$, CO_2R^H or $CON(R^H)_2$ wherein R^H is hydrogen, a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, or a heterocyclyl of 4–7 ring atoms, or two of said R^1 groups are joined to form a ring; R^2 and R^3 are each hydroxy, a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, or carbyloxy; R^4 is hydrogen or a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo; R^5 is hydrogen, a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, a heterocyclyl of 4–7 ring atoms, $—COR^H$, CO_2R^H or $CON(R^H)_2$ wherein R^H is hydrogen, a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, or heterocyclyl of 4–7 ring atoms, or $—S(O)_nR^S$ wherein n and R^S are as above defined; and R^6 is hydroxy, a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl, of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, hydrocarbyloxy, amino, arylamino or $—NHCONH_2$; provided that a carbon atom of the group R which carries an oxo substituent does not carry a second substituent other than a group $—NR^4R^5$.

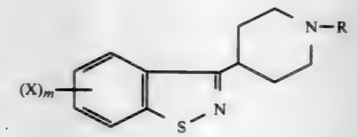
4,524,074

3-(4-PIPERIDINYL)-1,2-BENZISOTHIAZOLES

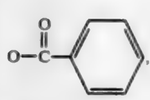
Joseph T. Strupczewski, Flemington, N.J., assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 499,583, May 31, 1983, Pat. No. 4,458,076.
This application Apr. 23, 1984, Ser. No. 602,780
Int. Cl.³ A61K *31/445*
U.S. Cl. 514—321 **2 Claims**

1. A method of treating psychoses comprising administering to a mammal in need of psychoses treatment a psychoses-treating, effective amount of a compound of the formula



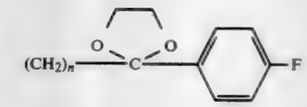
wherein R is hydrogen, loweralkyl, loweralkenyl, cycloalkyl-loweralkyl, phenylloweralkyl, hydroxy, diloweralkyamino-loweralkyl, cyano, cyanomethyl,



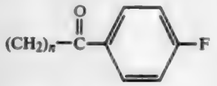
a group of the formula



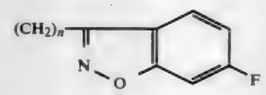
wherein R^1 is hydrogen, loweralkyl or a group of the formula OR^2 wherein R^2 is phenyl or benzyl; a group of the formula



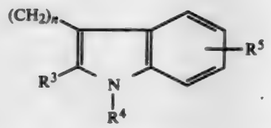
wherein n is 2 or 3; a group of the formula



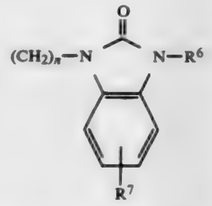
wherein n is 2 or 3; a group of the formula



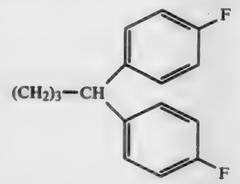
wherein n is 2 or 3; a group of the formula



wherein R^3 and R^4 are each independently hydrogen or loweralkyl, R_5 is hydrogen, halogen or loweralkyl, and n is 2 or 3; a group of the formula



wherein R^6 is hydrogen or loweralkyl, R^7 is hydrogen, halogen or loweralkyl, and n is 2 or 3; or a group of the formula



X is hydrogen, halogen, loweralkyl, loweralkoxy or hydroxy; and m is 1 or 2; the optical antipodes thereof; or pharmaceutically acceptable acid addition salts thereof.

4,524,075

PHARMACEUTICAL FORMULATIONS CONTAINING PSEUDOMONIC ACID

Joshua Oduro-Yeboah, Worthing, England, assignor to Beecham Group p.l.c., England

Filed May 26, 1983, Ser. No. 498,276

Claims priority, application United Kingdom, May 28, 1982, 8215684; May 12, 1983, 8313036

Int. Cl.³ A61K *31/44*

U.S. Cl. 514—451 **20 Claims**

1. A highly stable pharmaceutical composition in topical application form which comprises an antibacterially effective amount of pseudomonic acid, a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable ester thereof and a stabilizing amount of at least 1% by weight of a poly(alkylene)glycol, a poly(alkoxy substituted alkylene)glycol, a pharmaceutically acceptable ether thereof, a pharmaceutically acceptable ester thereof or a mixture thereof.

4,524,076

NOVEL γ-AMINOBUTYRIC ACID TRANSAMINASE INHIBITORS

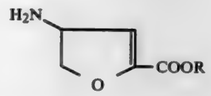
Brian W. Metcalf, Mason, and Bruce J. Lippert, Cincinnati, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 597,799, Apr. 6, 1984, abandoned, which is a continuation of Ser. No. 540,743, Oct. 11, 1983, abandoned. This application Oct. 22, 1984, Ser. No. 663,250

Int. Cl.³ A61K *31/34*; C07D *307/89*

U.S. Cl. 514—472 **11 Claims**

1. A compound of the formula



including the individual enantiomers and racemic mixtures thereof, the pharmaceutically acceptable salts thereof, wherein R is hydrogen or $C_{1\text{-}6}$ lower alkyl.

4,524,077

LIQUID 2-HYDROXY-4-METHYLTHIOBUTYRIC ACID AND PROCESS FOR THE PREPARATION THEREOF

Dennis A. Ruest, Manchester; Masaharu Takano, St. Louis, and Lawrence R. Wolf, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 14, 1983, Ser. No. 550,857

Int. Cl.³ A01N *37/02*; C07C *149/14*

U.S. Cl. 514—557 **24 Claims**

1. A process for the preparation of 2-hydroxy-4-methylthiobutyric acid having improved color, odor and lower viscosity, comprising the steps of

hydrolyzing 2-hydroxy-4-methylthiobutyronitrile with sulfuric acid having an initial strength of betwen about 50% by weight and about 70% by weight on an organic-free basis, thereby producing an intermediate aqueous hydrolysis product solution containing 2-hydroxy-4-methylthiobutyramide;

hydrolyzing said 2-hydroxy-4-methylthiobutyramide with sulfuric acid having a strength of between about 30% by weight and about 50% by weight on an organic-free basis, thereby producing an aqueous hydrolyzate solution containing 2-hydroxy-4-methylthiobutyric acid;

contacting said hydrolyzate solution with a substantially water-immiscible organic solvent in a liquid/liquid extraction system to produce an extract comprising said solvent and 2-hydroxy-4-methylthiobutyric acid transferred from said hydrolyzate; and

recovering said 2-hydroxy-4-methylthiobutyric acid from said extract in the presence of about 5% or more by weight water based on the amount of recovered 2-hydroxy-4-methylthiobutyric acid.

24. A liquid phase animal feed supplement comprising between about 80% and about 95% by weight of the total of weight proportions of 2-hydroxy-4-methylthiobutyric acid monomer, dimers, and oligomers, and between about 5% and about 20% by weight water, and having a color of not greater than about 10 as measured on the Gardner scale, a ratio of the weight proportions of monomer to the weight proportions of the sum of dimers and other oligomers of about 2.8 or more, a kinematic viscosity at 25° C. as measured by a Cannon-Fenske viscometer of not greater than about 90 centistokes, and which, upon subjection to accelerating rate calorimetry exhibits neither exothermic nor endothermic thermochemical effects at any temperature less than about 150° C.

4,524,078

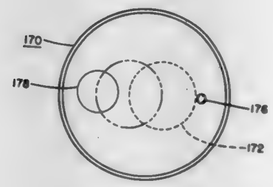
PRESSURIZED CONTAINER PROVIDING FOR THE SEPARATE STORAGE OF A PLURALITY OF MATERIALS

Robert F. Bardsley, Harrington Park, N.J.; Thomas P. Finucane, Hartsdale, N.Y.; Carl Hebel, Dover Foxcroft, Me.; Charles D. Schoonmaker, Boonton Township, Morris County, N.J.; Philip J. Wruk, Wilton, Conn., and Edward P. Lee, deceased, late of White Plains, N.Y. (by Janice N. Lee, executrix), assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 336;838, Jan. 4, 1982, Pat. No. 4,399,158, which is a continuation-in-part of Ser. No. 917,262, Jun. 20, 1978, abandoned. This application Mar. 29, 1982, Ser. No. 363,244

Int. Cl.³ B65D *25/08*

U.S. Cl. 426—112 **4 Claims**



1. A container arrangement for separately storing a first liquid material and a second material in a container and providing for the automatic admixing of the first and second materials upon opening of the container, comprising, a container, having a flat top container wall, containing said first liquid material at superatmospheric pressure, with the pressure surrounding said container being atmospheric, said flat top container wall having a weakened portion defining a dispensing orifice along which the container is adapted to be opened by pressing the weakened portion into the container, a separate closed compartment, defined by closure walls, arranged within said container and filled with said second material at superatmospheric pressure which is equal to or less than the superatmospheric pressure in the container, said separate compartment being cup shaped with a planar open end which is releasably attached to a flat inner surface of said flat top container wall such that the flat inner surface of said container top wall forms a closure for said planar open end of the cup shaped compartment, such that the releasably attached compartment is released and detached from the inner surface of said flat top container wall responsive to the difference in pressure across the closure walls of the closed compartment caused by the superatmospheric pressure within the compartment and the lower pressure in the container, when the pressure in the container drops from superatmospheric pressure to atmospheric pressure upon opening of the container to atmospheric pressure, with said difference in pressure resulting in a sufficient force on said compartment closure walls to cause detachment of the compartment from the flat inner surface of the container, thereby allowing the first liquid material and the second material to admix through said planar open end of the compartment, and said cup shaped compartment extending at least partly beneath said weakened portion of the top container wall, such that the opening of the top closure by pressing the weakened portion into the container further ensures that the compartment is detached from the top surface of the container.

4,524,079

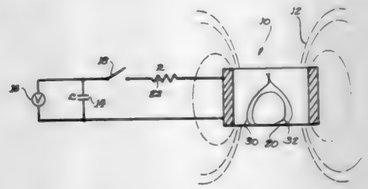
DEACTIVATION OF MICROORGANISMS BY AN OSCILLATING MAGNETIC FIELD

Gunter A. Hofmann, San Diego, Calif., assignor to Maxwell Laboratories, Inc., San Diego, Calif.

Filed Nov. 10, 1983, Ser. No. 550,894

Int. Cl.³ A23L *3/00, 3/26*; A61L *2/02*

U.S. Cl. 426—234 **8 Claims**



1. A method of deactivating microorganisms present in material having an electrical resistivity of at least about 10 ohms-cm which method comprises,

subjecting said material to at least one pulse of a pulsed, decaying, oscillating magnetic field having an intensity of between about 2 and about 100 Tesla and a frequency of between about 5 and about 500 kHz.

4,524,080

METHOD OF IMPROVING QUALITY OF WHEAT FLOUR

Ko Sugisawa, Nara; Masanori Yamamoto, Suita; Masaru Shibuki, Kyoto; Yukihiro Nomura; Kouji Sengoku, both of Nara, and Seiji Higashine, Nara, all of Japan, assignors to House Food Industrial Company Limited, Osaka, Japan

Filed Jun. 14, 1983, Ser. No. 504,375

Claims priority, application Japan, Jun. 16, 1982, 57-102139

Int. Cl.³ A21D *2/00, 6/00*

U.S. Cl. 426—236 **5 Claims**

1. A method of improving the water holding capacity of wheat flour, which comprises contacting said wheat flour for a time period of less than 60 minutes with a non-equilibrium plasma which is generated under a reduced pressure of lower than 100 Torr. in a gas selected from the group consisting of air, nitrogen gas, oxygen gas and carbon dioxide gas by applying a high frequency wave selected from the group consisting of radiowave and microwave.

4,524,081

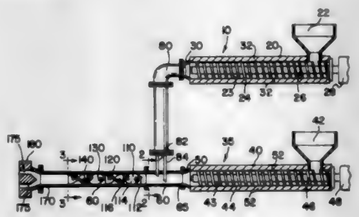
METHOD FOR MAKING A MARBLED PET FOOD

Arun K. Bansal, Hanover Park, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Nov. 8, 1983, Ser. No. 549,959

Int. Cl.³ A23P *1/00*; A23J *3/00*

U.S. Cl. 426—249 **9 Claims**



1. A method for continuously making a marbled semi-moist or dry pet food comprising the steps of:

(a) merging a red pet food stream with a white pet food stream by (i) advancing the red pet food stream under a first pressure into a conduit having a substantially circular

cross section, said first pressure being sufficient to mold the red pet food stream into the shape of the conduit, and (ii) advancing the white pet food stream into a plurality of medial locations within said conduit to combine the white pet food stream with the red pet food stream into a single, merged pet food stream comprising a white pet food disposed within a red pet food at a plurality of medial locations, said merged pet food stream having a substantially circular cross-section;

(b) partially mixing the merged pet food stream by advancing the merged pet food stream through the conduit and through at least one stationary mixing element having means for dividing the merged pet food stream into at least two pet food substreams, said element also having means for partially mixing the respective pet food substreams, and said element also having means for discharging the respective pet food substreams into the conduit in a reconsolidated, partially mixed pet food strea; thereby dividing the merged pet food stream into at least two pet food substreams, partially mixing the respective pet food substreams and discharging the respective pet food substreams into the conduit in a reconsolidated, partially mixed pet food stream;

(c) expressing the reconsolidated partially mixed pet food stream through a shaping die at a second pressure above about 40 psig; and

(d) cutting the expressed pet food stream into pet food pieces.

4,524,082

HIGHLY CONCENTRATED EGG WHITE OR SALTED WHOLE EGG PRODUCT AND ITS METHOD OF PREPARATION

Roger Liot, Creteil, France, assignor to Roger Liot, S.A., Creteil, France

Filed Oct. 14, 1981, Ser. No. 311,311
Claims priority, application France, Oct. 17, 1980, 80 22309
Int. Cl.³ A23L *1/32*
U.S. Cl. 426—312 **9 Claims**

1. A process for preparing a concentrated whole egg product in the form of a paste which can be stored at ambient temperature in an air excluded environment and can then be reconstituted by rehydration for use in any culinary preparation in the same way as fresh whole egg, comprising

concentrating liquid whole egg to a paste having a dry solids content of 55 to 62% without permitting the temperature of the product to exceed 60° C.,

said concentrating step comprising

scavenging the product surface by means of a dry inert gas at a temperature not exceeding 60° C., the product being moved or agitated without turbulence substantially preventing the formation of foams and crusts;

and adding between 2 and 4% salt by weight based on the concentrated egg product; whereby said paste maintains its preservation and the textural properties of said liquid whole egg during storage at ambient temperature for at least three months in an air free atmosphere.

6. A concentrated whole egg paste product capable of being stored at ambient temperature in an air excluded environment which can then be reconstituted by rehydration for use in any culinary preparation in the same way as fresh whole egg, essentially consisting of:

dry whole egg solids content of from 55 to 62% which has been obtained by concentrating liquid whole egg without permitting the temperature of the product to exceed 60° C.;

salt by weight between 2 and 4%;

additional food ingredients or flavoring agents in amounts of 0.1 to 2%; and

containing less than 20,000 microorganism germs per gram after storage in an inert atmosphere for three months at ambient temperature and for a further week at 37° C. said paste product having substantially the same textural properties as said liquid whole egg.

4,524,083

RESERVED LIQUID EGGS AND METHOD OF PREPARATION

Roger Liot, Creteil, France, assignor to Roger Liot, S.A., Creteil, France

Continuation-in-part of Ser. No. 341,261, Jan. 21, 1982, abandoned, which is a continuation of Ser. No. 196,825, Oct. 14, 1980, abandoned, which is a continuation of Ser. No. 26,052, Apr. 2, 1979, abandoned, which is a continuation of Ser. No. 842,240, Oct. 14, 1977, abandoned. This application Apr. 29, 1983, Ser. No. 489,984
Claims priority, application Luxembourg, Oct. 15, 1976, 76012
Int. Cl.³ A23B *5/00;* **A23L** *1/32*
U.S. Cl. 426—330.1 **16 Claims**

1. In a salt- or sugar-containing raw egg product designed for maintenance at room temperature prior to inclusion in a recipe, the improvement which comprises:

(a) incorporating in said raw egg product sufficient salt, sugar or mixture thereof to provide an osmotic pressure of at least 20 atm;

(b) removing substantially all oxygen which could lead to recognizable spoilage or deterioration when said raw egg product is stored at room temperature for a prolonged period of time, said removal comprising treating said egg product to a temperature which avoids coagulation and deterioration of protein contained in said egg product, whereby the total amount of oxygen that results is less than 3 ppm;

(c) subjecting the deoxygenated and salted- or sugared-egg product mixture to a temperature below the coagulation and protein-deteriorating temperature for for a period sufficient to substantially destroy any bacterial contaminants; and

(d) storing the resultant product at conditions to maintain the oxygen level below 3 ppm and to avoid bacterial contamination.

4,524,084

PROCESS FOR THE OBTENTION OF AN ALGAE BEVERAGE

Francis Schirmann, Strasbourg, France, assignor to Klein-Wanner Societe Anonyme, Ingwiller, France

Filed Aug. 3, 1983, Ser. No. 520,132
Claims priority, application France, Aug. 5, 1982, 82 13831
Int. Cl.³ A23L *2/04*
U.S. Cl. 426—590 **7 Claims**

1. Process for the obtention of an algae beverage, comprising cutting and finely chopping a marine alga comprising fucus vesiculosus, keeping it in an oven for about 24 hours at a temperature of about 120° C., adding thereto an alcohol-water solution having a volume ratio of alcohol to water of 40/60 to 65/35, in the amount of about 10% by weight of the algae heated in the oven, then macerating the obtained mixture for about three weeks in a closed receptacle, at ambient temperature, then filtering said mixture and pressing the solids content, so as to remove therefrom all the liquor, then producing a mixture of the liquor thus obtained with a fruit concentrate and with water, and finally, pasteurizing the obtained product at about 75° C. for about 20 minutes.

4,524,085

LECITHIN CONTAINING COOKING FATS WITH REDUCED THERMAL DISCOLORATION

Edward R. Purves, and Robert F. Thomas, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 14, 1983, Ser. No. 551,391
Int. Cl.³ A23D *5/00, 5/02*
U.S. Cl. 426—601 **22 Claims**

1. A process for the preparation of a cooking fat composition comprising:

(a) pretreating lecithin by diluting with fat to form a mixture such that the lecithin is in an amount of about 5% to about 85% by weight of the mixture, adding water in an amount of at least about 5% by weight of the lecithin, heating to at least about 130° F. (54° C.) to 170° F. (77° C.), and filtering the mixture to remove excess lecithin; and

(b) adding the filtrate to a cooking fat in amounts to provide sufficient lecithin to improve the anti-sticking properties of said composition;

wherein thermal discoloration of the fat is decreased compared to a fat containing the same level of untreated lecithin without substantially reducing the anti-sticking properties of the fat.

4,524,086

HARD BUTTERS AND COMPOSITIONS MADE THEREWITH

Kenneth W. Player, Olmsted Falls, and Lonny L. Wilson, Brunswick, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Dec. 27, 1983, Ser. No. 566,094
Int. Cl.³ A23D *5/00;* **A23G** *3/00*
U.S. Cl. 426—607 **10 Claims**

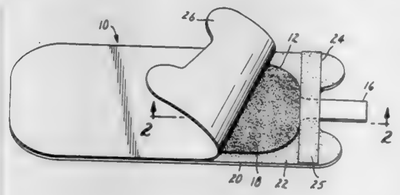
1. A confectionery coating composition of exceptional gloss and gloss retention, comprising sugar, a lauric hard butter and an ester emulsifier blend, said ester emulsifier blend being present in the amount of aboout 2.6–6%, based on the weight on the hard butter, the improvement comprising an emulsifier blend consisting essentially of about 1.3–3% lactylated fatty acid ester of glycerol and about 1.3–3% polyglycerol ester of a fatty acid having an average degree of polymerization of about 2–6, an ester hydroxyl number of about 340–410, and a polyol hydroxyl number of about 970–1350.

4,524,087

CONDUCTIVE ADHESIVE AND BIOMEDICAL ELECTRODE

Michael R. Engel, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 114,565, Jan. 23, 1980, abandoned. This application Jul. 18, 1983, Ser. No. 514,950
Int. Cl.³ A01N *1/02;* **B05D** *3/02, 3/06;* **A61B** *5/04*
U.S. Cl. 427—2 **17 Claims**



1. A process for making an essentially dry biomedical electrode comprising of an electrode plate having a first surface and a second surface, means for electrically connecting said electrode plate to a lead wire of an electro-medical device, and a swellable, dermally-nonirritating, conformable, cohesive, ionic, hydrophilic polymeric conductive material on said second surface of said electrode plate for enhancing electrical connection with the skin, said process comprising: forming said conductive material on said electrode plate by the steps of:

(a) compounding a precursor of said conductive material comprising

(1) a water soluble polyhydric alcohol which is a liquid at about 20° C.;

(2) an ionic, unsaturated, free radically polymerizable material soluble in said polyhydric alcohol;

(3) a photo initiator; and

(4) a crosslinking agent of a multi-functional unsaturated free radically-polymerizable material;

(b) coating said precursor on said second surface of said electrode plate or onto a releasable transfer sheet; and

(c) polymerizing said coated precursor by exposure to ultraviolet light whereby an electrically conductive pressure-sensitive adhesive layer is formed on said electrode plate or said transfer sheet; and

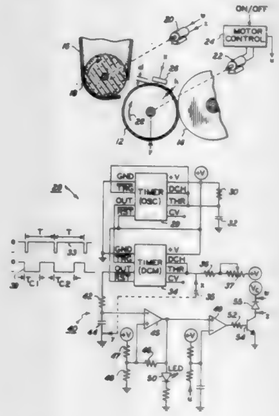
(d) if formed on said transfer sheet, adhering said adhesive layer to said second surface of said electrode plate.

4,524,088

METHOD AND APPARATUS FOR CONTROLLING THE THICKNESS OF DEVELOPER ON AN APPLICATOR, SUCH AS A MAGNETIC BRUSH, IN ELECTROSTATIC REPRODUCTION

Ben W. Fagen, Jr., and Douglas W. Cappon, both of Rochester, N.Y., assignors to Magnetic Technologies Corp., Rochester, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,651
Int. Cl.³ B05D *5/12;* **G03G** *15/00*
U.S. Cl. 427—10 **24 Claims**



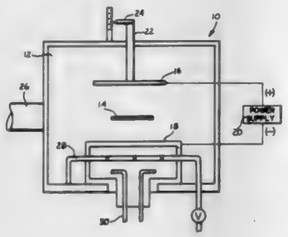
1. The method of controlling the thickness of monocomponent developer material on a magnetic brush operative to transfer said material to a photoreceptor to develop an image thereon, said method comprising the steps of sensing the dielectric constant presented by the amount of said material in a region adjacent to said brush, converting said dielectric constant into a repetitive electric pulse waveform, the duty cycle of which correspond to said dielectric constant to provide an electrical control signal, and controlling the dispensing of said developer material on to said brush with said control signal.

4,524,089

THREE-STEP PLASMA TREATMENT OF COPPER FOILS TO ENHANCE THEIR LAMINATE ADHESION

Reza Haque, Hamden, and Edward F. Smith, III, Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 22, 1983, Ser. No. 554,466
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 **13 Claims**



1. A process for coating at least one surface of a substrate material with an adherent polymeric film, said process comprising:

forming a first plasma of predominantly oxygen gas in the vicinity of said substrate material;

exposing said substrate material to said first plasma for a first period of time;

forming a plasma of a hydrocarbon monomer gas in the vicinity of said substrate material;

exposing said substrate material to said hydrocarbon monomer gas plasma for a second period of time;

forming a second plasma of predominantly oxygen gas in the vicinity of said substrate material; and

exposing said substrate material to said second oxygen plasma for a third period of time.

4,524,090

DEPOSITION OF COMPOUNDS FROM MULTI-COMPONENT ORGANO-METALS

Nicholas Bottka, Burke, Va.; Robert W. Schwartz, and Wayne E. Thun, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1984, Ser. No. 605,712
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—53.1 **6 Claims**

1. A method of depositing a film having the formula $A^{IIB}B^{VIA}$, wherein A^{IIB} is a group IIB metal and B^{VIA} is a chalcogenide selected from the group consisting of S, Se and Te, upon a target surface comprising the steps of:

exposing said surface to an environment containing a photolytically decomposable organo-metallic compound, said compound selected from the group consisting of R-X-M-X-R', R-M-X-M-R', R-M-X-R', R-M-CH_2-X-R' and R-M-X-X-R' wherein: R and R' are each selected from the group consisting of hydrogen, an alkyl, an aryl and an organic radical containing a heteroatom; M is a group IIB metal; and X is a chalcogenide; and

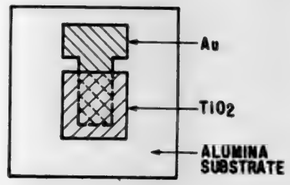
photolytically decomposing said organo-metallic compound to effect deposition of said film upon said surface.

4,524,091

METHOD OF PREPARING TiO_2 THICK FILM PHOTOANODES FOR PHOTOELECTROCHEMICAL CELLS

Cornelis Blaauw; Hussein M. Naguib, both of Kanata; Syed M. Ahmed, and Ahmad Aftab, both of Ottawa, all of Canada, assignors to Canadian Patents and Development Limited-Societe Canadienne des Brevets et d'Exploitation Limitee, Ottawa, Canada

Filed Sep. 22, 1982, Ser. No. 421,507
Claims priority, application Canada, May 28, 1982, 403995
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—74 **19 Claims**



1. A method of producing a photoanode comprising the steps of:

(a) screen printing a film of conductive material on a clean ceramic substrate,

(b) heating said substrate and film to fuse said conductive material into a conductive layer,

(c) screen printing a layer of TiO_2 particles no larger than about 40 μm in an organic carrier, over said conductive layer so that some area of said TiO_2 is directly bonded to said ceramic substrate, said TiO_2 being a mixture of rutile and anatase forms in a ratio of more than 1:10 to 1:1,

(d) heating said substrate and layers to burn off said organic carrier and to sinter said TiO_2 particles, at least some of which are transformed from anatase form to rutile form,

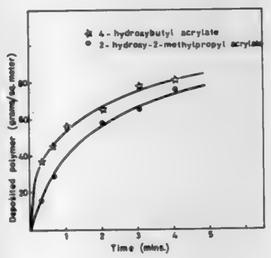
(e) heating the resulting structure in a reducing atmosphere to transform said TiO_2 to TiO_{2-x}, where x is between 0 and 1.

4,524,092

PROCESS AND A COMPOSITION FOR COATING A METALLIC SUBSTRATE WITH A POLYMERIC FILM

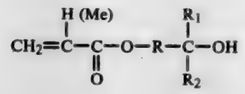
Sebastiano Cesca; Aldo Priola, both of S.Donato Milanese, and Fiorenzo Renzi, Gorgonzola, all of Italy, assignors to Anic S.p.A., Italy

Filed Sep. 7, 1983, Ser. No. 530,002
Claims priority, application Italy, Sep. 15, 1982, 23291 A/82
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—388.2 **11 Claims**



1. A process for coating a metallic substrate with a cross-linked polymeric film, comprising contacting the metallic substrate with an aqueous composition comprising:

(a) at least one acrylic or metacrylic compound which can be defined by the general formula:



(I)

wherein:

R is a straight-line or branched aliphatic hydrocarbon radical, either saturated or unsaturated, having from 2 to 10 carbon atoms, or a cycloaliphatic or an aromatic group;

R^1 and R^2, which may be equal to or different from one another, are straight-line or branched alkyl groups, either saturated or unsaturated, having from 1 to 8 carbon atoms, or cycloaliphatic or aromatic groups;

(b) at least one unsaturated organic acid capable of being copolymerized with a compound of formula (I), in an amount of from 5 to 40 parts by weight per 100 parts of the compound, or an organic or a mineral acid that cannot be copolymerized with the compound (I), in an amount of from 1 to 10 parts by weight per 100 parts of the compound (I); and

(c) a polymerization catalyst; and subsequently heating the metallic substrate which has been contacted with the polymeric composition at a temperature up to about 180° C. for a time necessary to effect cross-linking of the polymeric film coating the substrate.

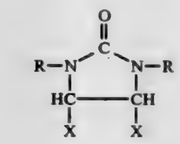
4,524,093

FABRIC COATING COMPOSITION WITH LOW FORMALDEHYDE EVOLUTION

William E. Devry, Fairview Park, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 30, 1984, Ser. No. 605,313
Int. Cl.³ B05D *3/02;* **C08L** *61/26*
U.S. Cl. 427—389.9 **9 Claims**

1. In an aqueous acrylic latex coating composition, the improvement which essentially comprises incorporating into the latex from about 1% to about 15% by dry weight of an imidazolidone curing resin of the formula



where X=—H, or —OH; and R=—CH_2O—R' where R' is alkyl having 1–10 carbons, and from about 0.5% to about 10% by dry weight of a metal chloride-type acid catalyst wherein said improvement substantially reduces formaldehyde evolution during curing.

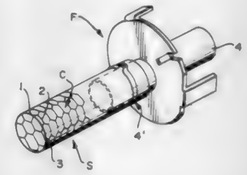
4,524,094

SELF-SUPPORTING CATALYTIC SLEEVE FORMED OF INTERWOVEN LOOSELY PACKED MULTI-FIBER STRANDS FOR RECEIVING AIR-COMBUSTIBLE GAS MIXTURES FOR FLAMELESS CATALYTIC COMBUSTION ALONG THE SLEEVE

Robert Lindstrom, Reading, and Robert J. Allen, Saugus, both of Mass., assignors to Prototech Company, Newton Highlands, Mass.

Filed Apr. 19, 1984, Ser. No. 602,011
Int. Cl.³ F16L *13/08;* **B32B** *5/16;* **D04C** *1/00*
U.S. Cl. 428—36 **5 Claims**

1. A self-supportable air-gas mixture-receiving flameless combustion catalytic device comprising strands or yarns of loose packed and twisted inorganic fibers braided uniformly and loosely into a cylindrical sleeve, means for mounting the sleeve at one end to receive the air-gas mixture flowing along the axis of the sleeve as it extends substantially self-supportable therebeyond, and a catalytic coating provided on the external surfaces of the strands, as braided, and within the interstices thereof, the tension of braiding being adjusted to maintain low pressure drop consistent with both self-supporting mechanical strength in the cylindrical form and sufficient catalytic area of braid to effect substantially complete flameless combustion of the air-gas mixture flowing transversely through the sleeve along its longitudinal axis.

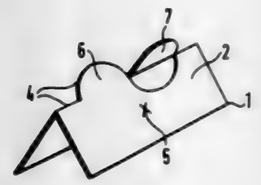


4,524,095

LAMINATE INCLUDING AN ADHESIVE-COATED SUBSTRATE AND A REMOVABLE COVER LAYER HAVING MEANS TO FORM GRASP PARTS UPON BENDING

Karl-Heinz Gockel, Solingen-Gräfrath; Dieter Anhäuser, Melsbach; Hans R. Hoffmann, Neuwied, and Karl-Heinz Reinhold, Hausen, all of Fed. Rep. of Germany, assignors to Lohmann GmbH & Co. KG and Sanol Schwarz GmbH, both of, Fed. Rep. of Germany

Filed Oct. 12, 1983, Ser. No. 541,143
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1983, 3315271
Int. Cl.³ B32B *3/10, 3/00*
U.S. Cl. 428—43 **10 Claims**



1. A flat laminate part comprising:

a flexible substrate layer having at least one surface;

a cover layer at least partially on the one surface of said substrate layer;

means for effecting adhesion of said cover layer to said surface of the substrate layer in the area of said cover layer such that the layers are securely held together but may be pulled apart;

a continuous cut in said cover layer from one edge to another edge of said cover layer thereby separating the cover layer into two parts, at least parts of said cut respectively diverting substantially from a straight connection line between the end points of the cut at the edges of the cover layer into each part of said cover layer;

the flexibility of said cover layer and the adhesion between said substrate layer and said cover layer being such that, upon bending of the flat laminate part substantially along said straight connection line between the end points of said cut at the edges of said cover layer in a direction which produces a convex curvature of the exposed surface convexly on the side of the cover layer, said diverting

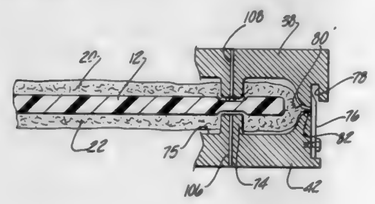
parts of said cut line into each part of the cover layer are separated and peeled off from the substrate layer to form thereby a grasp part for each cover layer part.

4,524,096

HEAT BONDED COMPOSITE PLASTIC ARTICLE AND METHOD AND APPARATUS FOR MAKING SAME

Charles E. Schiedegger, Metamora, and Vean Elfes, Lapeer, both of Mich., assignors to Metamora Products Corp., Metamora, Mich.

Filed Nov. 25, 1983, Ser. No. 555,046
Int. Cl.³ B32B *3/02, 27/04, 5/14, 5/32*
U.S. Cl. 428—68 **7 Claims**



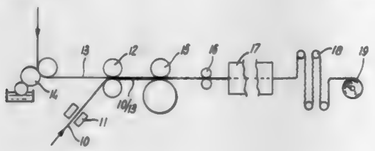
1. A heat-bonded rigid composite plastic article comprising a rigid body of solid thermoplastic material and a layer of flexible cellular plastic foam material disposed over the body of rigid thermoplastic material, said rigid body and said flexible layer being bonded together in a plurality of mutually discontinuous areas characterized by a permanent compression of the foam material, melting of the solid thermoplastic material of said rigid body in said discontinuous areas, and welding of the melted thermoplastic material of said rigid body into said foam to form a fused, rigid bond between said rigid thermoplastic body and said flexible foam layer.

4,524,097

WALLCOVERING IN ROLL FORM

Thomas Graham, Clitheroe, England, assignor to Reed International, PLC, London, England

Filed Sep. 14, 1983, Ser. No. 532,097
Claims priority, application United Kingdom, Sep. 14, 1982, 8226097; Apr. 22, 1983, 8311066
Int. Cl.³ B32B *3/00, 7/00, 23/08*
U.S. Cl. 428—141 **10 Claims**



3. A wallcovering in roll form for application to a surface with a water-based adhesive and for decoration with a water-based material after application to said surface, said wallcovering comprising two plies (**10**, **13**) which have been laminated together and whilst together, and moist, subjected to an embossing process, characterized in that one ply (**13**) is a paper material and the other ply (**10**) is a plastics material, in which the plastics material has a low water liquid permeability, is flexible, is dimensionally stable in the presence of water and is capable of restraining expansion of the wallcovering when it is wetted without exceeding its elastic limit and has a resistance to stretching, the plastics material being orientated polypropylene having a web thickness in the range of 10–250 microns, and in which the resistance to stretching of the wallcovering is such that, with the paper ply material having a cross-direction expansion in the range of 1 to 3% when saturated with water, the wallcovering cross-direction expansion is less than 0.4%.

5. A wallcovering as claimed in claim **3** in which the plastics ply has been taken beyond its rupture point in the course of embossing so that short, spaced, along-the-web, fissures are created to improve porosity for drying.

4,524,098

BOARD FOR ADDITIVE CIRCUITS

Tadao Shimizu, Tachikawashi; Noriyuki Shimizu, and Shoji Harada, both of Tokyo, all of Japan, assignors to Nikkan Industries Co., Ltd., Tokyo, Japan

Filed May 10, 1983, Ser. No. 493,269
Claims priority, application Japan, Oct. 9, 1982, 57-177994
Int. Cl.³ B32B *15/14;* **C04B** *39/08;* **H05K** *1/02*
U.S. Cl. 428—156 **9 Claims**

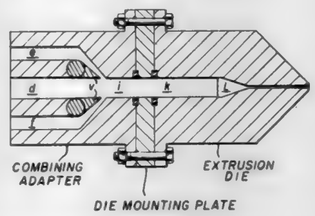
1. A press-molded board suitable for use in additive circuits which board is formed with minute convexo-concave irregularities in a large number on the surface of an inorganic composite plate wherein there is present (1) potassium titanate as a fiber-like inorganic substance alone or together with a needle-like inorganic substance in admixture with (2) an isotropic solid vitreous inorganic substance having a softening point below the melting point of the needle-like or fiber-like inorganic material, while maintaining the needle-like or fiber-like form of (1), where in the total weight of (1) and (2) contains 2 to 50% of the needle-like or fiber-like inorganic material (1) and 98 to 50% of the vitreous inorganic material (2), said irregularities on the surface are of 3 to 50 μm in R max.

4,524,099

COEXTRUDED ELASTOMERIC FILMS

Robert C. Di Luccio, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 424,448, Sep. 27, 1982, abandoned. This application Aug. 30, 1983, Ser. No. 526,960
Int. Cl.³ B32B *7/02*
U.S. Cl. 428—213 **9 Claims**



1. A transparent, elastomeric composite film structure having nontacky surface properties, said film structure comprising a core layer of an ethylene/vinyl acetate copolymer containing about 30–50 weight percent of vinyl acetate and two outer layers, coextruded with said core layer, of a polymeric material selected from the class consisting of homopolyethylene and copolymers of ethylene with up to 10% by weight of the copolymer of a C_3–C_8 α-olefin or vinyl acetate, said outer layer polymeric material having a density of at most about 0.94 g/cm³, said two outer layers providing about 0.5–10% of the total thickness of said composite film structure, which structure following coextrusion is exposed to high energy radiation of which it absorbs about 4–16 megarads.

4,524,100

INORGANIC COMPOSITE AND THE PREPARATION THEREOF

Tadao Shimizu, Tachikawashi; Noriyuki Shimizu, and Shoji Harada, both of Meguroku, all of Japan, assignors to Nikkan Industries Co., Ltd., Tokyo, Japan

Filed May 10, 1983, Ser. No. 493,271
Claims priority, application Japan, May 10, 1982, 57-78028; May 10, 1982, 57-78029
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—283 **24 Claims**

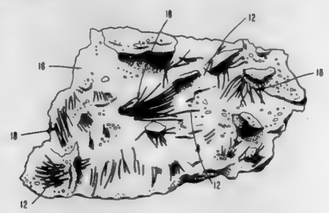
1. An inorganic composite of high density comprising (1) a needle-like or fiber-like inorganic material, or mixture thereof, present in an admixture with (2) an isotropic vitreous inorganic material, said needle-like or fiber-like inorganic material maintaining its needle-like or fiber-like form, said composite having been formed by directly bonding material (1) to material (2) by molding and heating to form a composite having a specific gravity of 2.0 to 2.6.

4,524,101

HIGH MODULUS POLYETHYLENE FIBER BUNDLES AS REINFORCEMENT FOR BRITTLE MATRICES

Nancy C. Eickman, Mountainside, N.J.; Walter Fabisiak, Easton, Pa., and Robert Dix, Wayne, N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 464,269, Feb. 7, 1983, Pat. No. 4,483,727. This application Jul. 27, 1984, Ser. No. 635,103
Int. Cl.³ C04B *31/34;* **D01G** *1/04*
U.S. Cl. 428—294 **16 Claims**



1. A discrete, coherent bundle of high modulus polyethylene fibers prepared by the process comprising:

(a) preparing highly oriented, multifilament yarn;

(b) compressing the yarn to deform the individual filaments in cross-section whereby a loosely adhering unitary mass of individual filaments is formed wherein each filament substantially conforms to the deformed shape of the surrounding filaments; and

(c) chopping the compressed yarn into bundles of appropriate lengths wherein there is at least partial fusion between the fiber ends during said chopping.

4,524,102

MICROCELLULAR POLYURETHANE FOAMS HAVING INTEGRAL SKIN

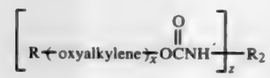
Fritz Hostettler, R.F.D. 3, Box 318E, Stillhouse Rd., Freehold, N.J. 07728

Filed Feb. 15, 1984, Ser. No. 580,434
Int. Cl.³ B32B *29/00, 3/25;* **C08J** *9/34;* **C08G** *18/14*
U.S. Cl. 428—318.8 **36 Claims**

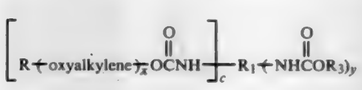
1. A polyurethane product prepared by reacting a mixture comprising (a) a polyol having a molecular weight in the range of from about 1800 to about 10,000, (b) an organic polyisocyanate, (c) optionally, a chain extender, and (d) a catalyst for accelerating the NCO/active hydrogen reaction, in the presence of (e) a blowing agent and (f) from about 5 to about 50 parts by weight, per 100 parts by weight of said polyol, of a non-hydroxyl flow modifier, said flow modifier having the following characteristics: (i) a boiling point above about 150° C., (ii) normally-liquid or low melting solid forming a compatible liquid with said polyol, (iii) an average molecular weight upwards to about 3000, (iv) consisting essentially of carbon and hydrogen atoms in the form of monovalent or polyvalent hydrocarbon groups; and from 1 to 5 urethane

groups; and from 1 to 25 oxyalkylene groups per urethane group.

2. The polyurethane product of claim **1** wherein said flow modifier is of the group consisting of Formula I infra:



wherein the oxyalkylene unit contains from 2 to 4 carbon atoms in the oxyalkylene chain; wherein each R, individually, represents a monovalent acyclic, alicyclic or aromatic group; wherein x is at least one and upwards to 25; wherein z is from 1 to 5; and wherein R_2 represents a monovalent acyclic, alicyclic or aromatic group when z is 1 or a polyvalent acyclic, alicyclic or aromatic group when z is 2 to 5, the valence of R_2 being equal to the value of z; and Formula II infra:



wherein R, x and oxyalkylene have the meanings assigned in Formula I supra, wherein R_1 is a polyvalent acyclic, alicyclic, or aromatic group having the polyvalent meanings assigned to R_2 of Formula I supra, the valence of R_1 being equal to c plus y, wherein each R_3 individually is an acyclic, alicyclic or aromatic group; wherein y has a value of 1 to 2; and wherein c has a value of 1 to 2.

33. A multipackage curable composition useful in the manufacture of microcellular elastomers comprising Package A and Package B,

(a) wherein said Package A consists essentially of a mixture of polyester polyol, flow modifier, organic blowing agent, and a catalyst for accelerating the NCO/active hydrogen polyurethane reaction, said polyester polyol and said flow modifier being present in amounts which provide from about 5 to about 35 parts by weight of flow modifier per 100 parts by weight of polyester polyol, (i) said polyester polyol having a molecular weight of from about 1,800 to about 10,000, and (ii) said flow modifier being defined by claim **2**;

(b) wherein said Package B is an organic polyisocyanate.

4,524,103

FILTER PAPER

Nigel J. Seager, Kent, England, assignor to Whatman Reeve Angel Public Limited Company, Maidstone, England

Filed Oct. 14, 1983, Ser. No. 542,299
Claims priority, application United Kingdom, Oct. 15, 1982, 8229533
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—338 **8 Claims**

1. A filter paper consisting essentially of split fibrilated polyaramid fibrous material.

4,524,104

ADHESIVE COMPOSITION AND LAMINATES THEREFROM

Shigeru Hagio, Mukou, and Youji Kawachi, Oumihachiman, both of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

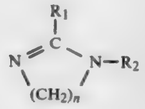
Filed Jul. 26, 1982, Ser. No. 401,816
Claims priority, application Japan, Aug. 25, 1981, 56-133590
Int. Cl.³ B32B *27/06, 27/08, 27/10;* **C09J** *3/26*
U.S. Cl. 428—341 **27 Claims**

1. A label, tape, contact film or other laminate structure comprising at least one substrate layer and an adhesive layer thereon having as adhesive a composition comprising

(A) at least one acrylic copolymer of 0.5–10% by weight of at least one ethylenically unsaturated monomer (a) having at least one NCO-reactive group, and 90–99.5% by weight of at least one ethylenically unsaturated monomer (b) having no NCO-reactive group, comprising an ester of (meth)acrylic acid with an alcohol having 1–14 carbon atoms;

(B) at least one blocked polyisocyanate comprising a reaction product of an organic polyisocyanate with at least one blocking agent selected from the group consisting of phenols, C- H- acid compounds, lactams, oximes, bisulfites, tertiary alcohols, secondary aromatic amines, imides and mercaptans;

(C) catalist comprising at least one cycloamidine compound selected from the group consisting of cycloamidines having the general formula (1) and salts thereof:



(1)

[wherein R_1 is H or an alkyl group having 1–8 carbon atoms, R_2 is an alkyl group having 1–8 carbon atoms, or R_1 and R_2 may be joined to form a ring having 2–11 methylene groups, n is an integer of 2–6, and each of the methylene groups may carry a lower alkyl substituent];

wherein equivalent ratio of the blocked NCO group of (B) to the NCO-reactive group of (A) is 0.01–0.4:1.

2. The laminate structure of claim **1**, wherein the adhesive composition is present in an amount of 5 to 100 g/m².

4,524,105

MELT-SPUN ACRYLONITRILE POLYMER FIBER OF IMPROVED PROPERTIES

William E. Streetman, Gulf Breeze, and Shashikumar H. Daftary, Pensacola, both of Fla., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 853,014, Nov. 17, 1977, abandoned. This application Apr. 14, 1980, Ser. No. 140,043
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—364 **2 Claims**

1. A melt-spun acrylonitrile polymer fiber wherein said acrylonitrile polymer has a composition of 87.6 parts acrylonitrile, 11.9 parts methyl methacrylate, 0.5 parts acrylamidomethylpropane sulfonic acid, and 3.5 parts polyvinyl alcohol, said fiber having a dye intensity of at least about 60, a shade change due to hot-wet processing of less than about 15, a straight tenacity of greater than about 3.8 grams per denier, a loop tenacity of greater than 2.5 grams per denier, and providing higher yarn spin limits than acrylonitrile polymer fiber produced by other spinning procedures while also providing higher yarn strength and single end breaks than comparable yarn spun from acrylonitrile polymer fiber produced by other spinning procedures.

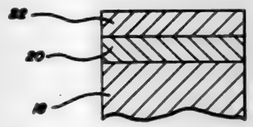
2. A melt-spun acrylonitrile polymer fiber wherein said acrylonitrile polymer has a composition of 89 parts acrylonitrile, 11.0 parts methlmethacrylate and 6.5 parts polyvinyl alcohol, said fiber having a dye intensity of at least about 60, a shade change due to hot-wet processing of less than about 15, a straight tenacity of greater than about 3.8 grams per denier, a loop tenacity of greater than 2.5 grams per denier, and providing higher yarn spin limits than acrylonitrile polymer fiber produced by other spinning procedures while also providing higher yarn strength and single end breaks than comparable yarn spun from acrylonitrile polymer fiber produced by other spinning procedures.

4,524,106

DECORATIVE CARBON COATING AND METHOD

James D. Flasck, Rochester, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jun. 23, 1983, Ser. No. 507,277
Int. Cl.³ B32B *9/00*
U.S. Cl. 428—408 **18 Claims**



9. A coated article comprising:

a substrate; and

a decorative coating formed by dc magnetron sputtering over at least a portion of the substrate said coating consisting essentially of a thin black layer of disordered carbon.

15. A method of making a black decorative coating having a high gloss comprising:

providing a relatively smooth surface; and

dc magnetron sputtering carbon from a high density graphite target on the smooth surface to form a thin, black layer consisting of amorphous carbon on the surface.

4,524,107

TOUGHENED THERMOSET LAMINATES

Joseph R. Marchetti, Hempfield Township, Westmoreland County, and Zal N. Sanjana, Penn Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 20, 1984, Ser. No. 591,359
Int. Cl.³ B32B *27/38*
U.S. Cl. 428—413 **16 Claims**

1. A composition comprising:

(A) a water emulsifiable thermosettable epoxy resin;

(B) an effective amount of a water compatible epoxy hardener;

(C) an effective amount of a water compatible catalyst for said epoxy resin;

(D) about 5 to about 35%, based on total resin solids, of a water compatible terpolymer polymerized from about 10 to about 60% of an ethylenic monomer selected from the group consisting of ethylene, propylene, and mixtures thereof, and about 40 to about 90% of a vinylic monomer selected from the group consisting of vinyl acetate, vinyl chloride, and mixtures thereof, and an acrylic monomer selected from the group consisting of acrylamide, acrylic acid, methacrylic acid, and mixtures thereof, where the amount of said acrylic monomer is sufficient to give an acid number of about 1 to about 60; and

(E) sufficient water to produce a viscosity of about 100 to about 100 to about 400 centipoises.

4,524,108

MAGNETIC RECORDING MEDIUM

Yoshio Kawakami, Tohbu, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Sep. 23, 1983, Ser. No. 535,067
Claims priority, application Japan, Nov. 8, 1982, 57-194643
Int. Cl.³ B32B *5/16;* **G11B** *5/70*
U.S. Cl. 428—480 **1 Claim**

1. In a magnetic recording medium comprising a substrate and a magnetic layer formed thereon and composed of magnetic powder dispersed in a polymer binder, an improvement wherein said substrate is made of a polyethylene terephthalate having a refractive index of at least 1.499 in the direction of the thickness of the substrate, said substrate being treated on the side on which said magnetic layer is formed with corona discharge treatment.

4,524,109

RECORD TURNTABLE AND POLYMERIC COATING THEREON

Nitin V. Desai, Hightstown, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 22, 1983, Ser. No. 487,917
Int. Cl.³ B32B *27/32;* **B05D** *1/02;* **C08F** *10/00*
U.S. Cl. 428—523 **3 Claims**

1. A record turntable adapted for rotation during playback of a record supported by said turntable having around its perimeter a uniform antifriction coating containing poly(isobutylene) having a weight average molecular weight of from about 50,000 to about 100,000.

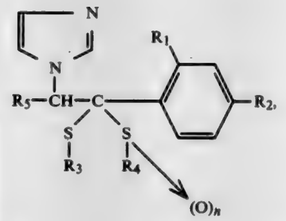
4,524,110

ANTIMICROBIAL IMIDAZOLE DERIVATIVES

Jan Heeres, Vosselaar; Leo J. J. Backx, Arendonk, and Joseph H. Mostmans, Antwerp, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 342,553, Jan. 25, 1982, Pat. No. 4,483,865, which is a continuation-in-part of Ser. No. 248,594, Mar. 27, 1981, abandoned. This application Sep. 28, 1984, Ser. No. 655,267
Int. Cl.³ B32B *23/04*
U.S. Cl. 428—537.1 **13 Claims**

1. A method of protecting non-living materials from microbial attack which comprises treating said materials with an effective antimicrobial amount of a compound selected from the group consisting of an imidazole derivative having the formula



(I)

the possible stereochemically isomeric forms, the acid addition salts and the metal salt complexes thereof, wherein:

R_1 and R_2 are each independently selected from the group consisting of hydrogen, halo and methyl;

R_3 and R_4 are each independently selected from the group consisting of C_1–C_6-lower alkyl and C_3–C_4-lower alkenyl, or R_3 and R_4 form, together with the sulfur atoms to which they are attached and the bridging carbon atom, a 5-, 6- or 7-membered ring which is optionally substituted with 1 to 4 C_1–C_4-lower alkyl groups;

R_5 is a member selected from the group consisting of hydrogen, C_1–C_4-lower alkyl, 2-propenyl and 2-propynyl; and n is 0, 1 or 2.

2. A method according to claim **1** wherein said non-living materials are wood or coatings.

3. A method according to claim **1** wherein said non-living materials are textiles.

4,524,111

WELDABLE PAINT-COATED STEEL SHEETS HAVING EXCELLENT CORROSION RESISTANCE

Joji Oka, Tokyo; Hideaki Iwakura, Kanagawa; Narumi Ando, Tokyo; Kiyotoshi Iwasaki, Fukuoka, and Yoshio Shindow, Chiba, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 377,595, May 12, 1982, abandoned. This application May 3, 1984, Ser. No. 605,998
Claims priority, application Japan, May 19, 1981, 56-74281; May 19, 1981, 56-74282; May 19, 1981, 56-74283
Int. Cl.³ B32B *15/08, 15/02*
U.S. Cl. 428—551 **10 Claims**

1. A weldable paint-coated steel sheet having improved corrosion resistance, weldability and workability, comprising a zinc alloy coated steel substrate containing 3 to 80% by weight of iron in the zinc alloy coating and a paint coating applied thereupon, said paint coating containing:

(1) not less than 70% by weight of zinc alloy powder with respect to the non-volatile matter of the paint, or

(2) at least one metal powder selected from the group consisting of zinc powder in amounts not less than 5% and zinc alloy powder in amounts not less than 40% by weight, said metal powder being used together with at least one powder selected from the group consisting of hard electric conductive powder in amounts not less than 20% and carbide powder in amounts not less than 5% by weight, all percentages being based on the total non-volatile matter in the paint coating, wherein the zinc alloy coating is present on the steel sheet in an amount of at least 1 g/m² and the paint coating thickness is in the range of 3 to 20μ.

5. A weldable paint-coated steel sheet having improved corrosion resistance, weldablility and workability, comprising a zinc allow coated steel substrate containing 3 to 20% by weight of nickel in the zinc alloy and a paint coating applied thereupon, said paint coating containing:

(1) not less than 70% by weight of zinc alloy powder with respect to the non-volatile matter of the paint, or

(2) at least one metal powder selected from the group consisting of zinc powder in amounts not less than 5% and zinc alloy powder in amounts not less than 40% by weight, said metal powder being used together with at least one powder selected from the group consisting of hard electric conductive powder in amounts not less than 20% and carbide powder in amounts not less than 5% by weight, all percentages being based on the total non-volatile matter in the paint coating, wherein the zinc alloy coating is present on the steel sheet in an amount of at least 1 g/m² and the paint coating thickness is in the range of 3 to 20μ.

4,524,112

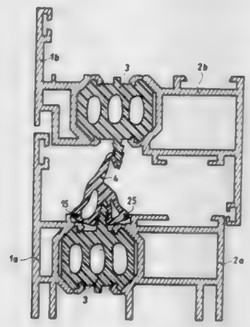
COMPOSITE PROFILED MEMBER

Otto Willert, Muehlenstrasse 30, DE-8784 Burgsinn, Fed. Rep. of Germany

Filed Aug. 3, 1983, Ser. No. 519,860
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1982, 3229229; Aug. 5, 1982, 3229230
Int. Cl.³ E06B *1/32*
U.S. Cl. 428—595 **17 Claims**

1. In a composite profiled member including two metal profiled bars, and at least one thermally insulating, one-piece insulating bar having two generally flat sides and two opposed engaging sides, with each said engaging side engaging into a respective clamping groove on a respective one of said metal

profiled bars and being fastened in the respective said clamping groove by respective hook-shaped groove webs which define the sides of each said clamping groove and which are pressed against said insulating bar, and wherein corresponding centering means are provided on said insulating bar and in each respective said clamping groove to assure dimensional accuracy when said groove webs are pressed against said insulating bar to fasten same; the improvement wherein: said centering means includes a bottom for each respective said clamping groove which is provided with a centering groove which has a trapezoidal cross section and widens in the direction toward said insulating bar, and a part of each said engaging side of said



insulating bar which has a trapezoidal cross section that becomes narrower in the direction toward the facing one of said metal profiled bars with said part centeringly engaging in the respective said centering groove; an elastic seal is provided; and means are provided for fastening said seal to said insulating bar so as to stiffen said seal and precisely fix its position when said composite profiled bar is cut to length, said means for fastening including at least one rib which projects from one of said generally flat sides of said insulating bar, is shaped so as to fasteningly engage said seal, extends in the longitudinal direction of said insulating bar, and to which said elastic seal is fastened.

4,524,113

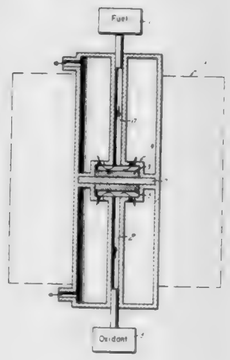
DIRECT USE OF METHANOL FUEL IN A MOLTEN CARBONATE FUEL CELL

Roger R. Lesieur, Enfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 510,507, Jul. 5, 1983, abandoned. This application Apr. 30, 1984, Ser. No. 605,457

Int. Cl.³ H01M *8/14*

U.S. Cl. 429—16 **2 Claims**



1. A method of operating a molten carbonate fuel cell having a catalyst containing anode, a cathode, a molten carbonate electrolyte disposed therebetween, and fuel and oxidant passageways operating at about 1100° F. (593° C.) to about 1400° F. (736° C.) utilizing hydrogen as the fuel wherein the improvement comprises:

introducing methanol into the fuel passageway,

contacting the anode with said methanol in the presence of water at the operating temperature of the cell, thus causing the methanol to steam reform, producing hydrogen, carbon monoxide and carbon dioxide, and

contacting the anode with the hydrogen fuel causing the hydrogen to oxidize producing free electrons.

4,524,114

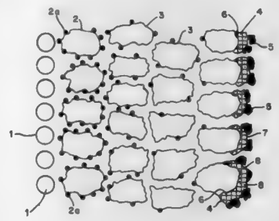
BIFUNCTIONAL AIR ELECTRODE

George J. Samuels, Syracuse; Thomas A. Schmitkons, Camillus; Terry L. Streeter, Liverpool, all of N.Y., and Royce W. Murray, Chapel Hill, N.C., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 5, 1983, Ser. No. 510,489

Int. Cl.³ H01M *4/86*

U.S. Cl. 429—42 **17 Claims**



1. An improved electrical device of the type which includes a material which is susceptible to decomposition when subjected to fluctuations in redox potential, said material being attached to a surface; the improvement which comprises a redox matrix comprising a polymeric matrix containing an insulating and rectifying amount of a dispersed redox conductor, said redox matrix being positioned between said material and the source of said redox potential and said redox matrix allowing the flow of electrical current to said material only at selected redox potentials.

4,524,115

VOLTAGE STABILIZING AGENTS FOR CELLS

John W. Paulson, and David J. Schulz, both of Madison, Wis., assignors to Rayovac Corporation, Madison, Wis.

Filed Nov. 19, 1982, Ser. No. 442,868

Int. Cl.³ H01M *10/44, 4/58*

U.S. Cl. 429—50 **2 Claims**

1. A process for reducing the open circuit voltage of a fresh nonaqueous lithium cell, the cell including a lithium based anode, an electrolyte, and a cathode, the process comprising:

(a) blending lithium hydroxide, the components of the cathode, and graphite into a mixture;

(b) compressing the mixture into pellet form, the pellet forming the cathode for the above cell.

4,524,116

ELECTROPHOTOGRAPHIC CONTACT PRINTING AND MASTER THEREFORE

Victor C. Humberstone, Sawston, England, assignor to Comtech Research Unit Limited, Bermuda

Filed May 17, 1983, Ser. No. 495,450

Claims priority, application United Kingdom, May 18, 1982, 8214427

Int. Cl.³ G03G *13/04, 13/22*

U.S. Cl. 430—31 **17 Claims**

1. A method of forming a master for use in image transfer and of contact printing onto a TEP film with said master, which comprises:

(1) forming an opaque image on a planar surface of a transparent electrically insulating substrate;

(2) depositing a thin transparent layer of an electrically conducting material over at least those regions of the surface which do not carry image elements;

(3) depositing a thin layer of an electrically insulating material over said planar surface and said image elements so as to form a thin transparent electrically insulating layer;

(4) forming a uniform surface charge on the surface of the photoconductive layer of the TEP film;

(5) bringing the charged surface of the TEP film into contact or into near contact with said image-bearing master;

(6) exposing the charged surface of the TEP film through said master;

(7) removing the master; and

(8) developing the TEP film.

4,524,117

ELECTROPHOTOGRAPHIC METHOD FOR THE FORMATION OF TWO-COLORED IMAGES

Kouji Maekawa, Kyoto; Mamoru Kato, Osaka; Syoji Nakagama, Osaka, and Yumiko Sano, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 15, 1984, Ser. No. 621,090

Claims priority, application Japan, Jun. 30, 1983, 58-120587

Int. Cl.³ G03G *13/01*

U.S. Cl. 430—44 **7 Claims**



1. An electrophotographic method for the formation of two-colored images comprising:

(1) uniformly charging the surface of a photoreceptor having a conductive substance and a photoconductive layer formed on the conductive substance, said photoconductive layer being sensitive to a first color,

(2) exposing a two-colored original, to form on said photoconductive layer an electrostatic latent image, which corresponds to a second color region in the original, with the same polarity as the electric charges on the surface of said photoconductive layer,

(3) subjecting the surface of said photoreceptor to a reversal development treatment by the use of a photoconductive color toner charged with the same polarity as the electric charges constituting said electrostatic latent image, to develop the non-charged region with the photoconductive color toner,

(4) subjecting said electrostatic latent image to a normal development treatment by the use of an insulative toner having a color different from the color of said photoconductive color toner, and

(5) charging the color toners on said photoconductive layer with a different polarity from the charging polarity in process (1) and simultaneously exposing said original through a filter shielding against said first color.

4,524,118

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIAL WITH OZONE INHIBITOR

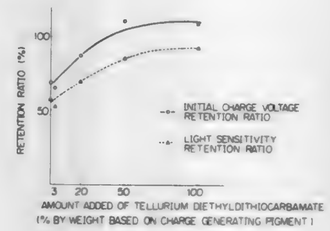
Kaname Nakatani, Kawasaki; Nobuhiro Miyakawa, Abiko; Teruaki Higashiguchi, Tokyo, and Tomomi Edo, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 17, 1983, Ser. No. 505,253

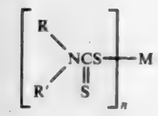
Claims priority, application Japan, Jun. 25, 1982, 57-108525

Int. Cl.³ G03G *5/04*

U.S. Cl. 430—56 **5 Claims**



1. An electrophotographic material comprising an electroconductive substrate and formed thereon a layer of a photoconductive composition containing a dispersion of an organic pigment as a charge generating pigment in a charge transporting medium, said photoconductive composition comprising 0.5 to 20% by weight of at least one charge transporting substance selected from the group consisting of hole transporting substances and electron transporting substances, 1 to 20% by weight of a binder resin, and as an ozone resistance improver 50 to 100% by weight of an N,N-di-substituted-dithiocarbamic acid salt of the formula



wherein

R and R' each is an alkyl or aryl group,

M is a metal atom or an organic base, and

n is a number equal to the valence of M,

all amounts being based on the weight of said charge generating pigment.

4,524,119

ELECTROPHOTOGRAPHIC CARRIERS INCORPORATING FLUORINATED CARBON AND PROCESS OF USING SAME

Matthew H. Luly, Lancaster; George D. Lockyer, Jr., Amherst; Richard E. Eibeck, Orchard Park, all of N.Y., and Joseph Gaynor, Arcadia, Calif., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 25, 1983, Ser. No. 516,815

Int. Cl.³ G03G *9/10;* **B32B** *15/04, 19/04*

U.S. Cl. 430—108 **16 Claims**

1. Electrophotographic development carrier particles for use with toner particles comprising a plurality of core particles coated with fluorinated carbon or a fluorinated carbon containing resin which resin is capable of binding the fluorinated carbon to the core particles without adversely affecting the desired triboelectric properties of the fluorinated carbon with the proviso that said resin component does not include a fluorine containing resin.

4,524,120

PROCESS FOR CHARGING TONER COMPOSITIONS

Thomas J. Budny, Ontario; William H. Hollenbaugh, Jr., and Edward J. Gutman, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 21, 1984, Ser. No. 582,211
Int. Cl.³ G03G *9/10*
U.S. Cl. 430—137 **16 Claims**

1. An improved process for rapidly charging toner particles wwhich comprises providing uncharged and charged toner particles having incorporated therein resin particles and pigment particles, and thereafter (I) adding uncharged replenishment toner particles to an imaging apparatus with charged developer composition contained therein comprised of carrier particles and toner particles, the carrier particles consisting of a core containing a continuous polymer coating thereover having incorporated therein a fluoropolymer, present on from about 1 percent to about 20 percent of the surface area of the carrier, (II) contacting the charged developing composition containing said carrier particles with the uncharged toner particles wherein charges are transferred to the uncharged toner particles within a mixing period of from about 5 seconds to about 5 minutes, thereby resulting in substantially the same level of charge intensity for said uncharged toner particles as the charge intensity for the charged toner particles in the charged developer composition.

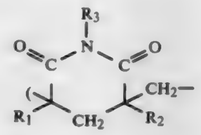
4,524,121

POSITIVE PHOTORESISTS CONTAINING PREFORMED POLYGLUTARIMIDE POLYMER

Robert D. Gleim, Newtown, and Mark P. de Grandpre, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 21, 1983, Ser. No. 553,221
Int. Cl.³ G03C *1/54, 1/68, 5/00*
U.S. Cl. 430—176 **30 Claims**

1. A positive photoresist comprising a preformed, non-cross-linked polyglutarimide polymer formed from an ester of (meth-)acrylic acid and having at least five percent by weight glutarimide units of the structure



where R_1, R_2 and R_3 independently represent hydrogen or unsubstituted or substituted alkyl, aryl, aralky, or alkaryl hydrocarbons having from one to twenty carbon atoms and where at least 20 mole percent of the R_3 substituents are hydrogen, dissolved in a non-aqueous, spinning solvent, and where the photoresist is developable with an aqueous solution.

4,524,122

SUBSTITUTED 4-NITROPHENYLAZO-1-NAPHTHOL CYAN DYES HAVING IMPROVED LIGHT STABILITY

Lynda D. Weber; Paul B. Merkel, both of Rochester, and Harold C. Warren, III, Rush, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 26, 1984, Ser. No. 654,598
Int. Cl.³ G03C *5/54, 1/40*
U.S. Cl. 430—223 **23 Claims**

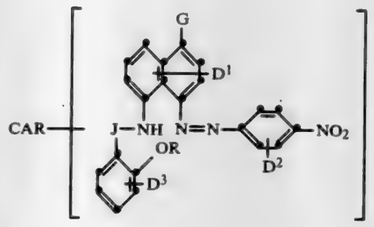
18. In a photographic assemblage comprising:

(a) a photographic element comprising a support having thereon the following layers in sequence: a dye image-receiving layer, a stripping layer, a substantially opaque layer and a photosensitive silver halide emulsion layer having associated therewith a dye image-providing material,

(b) a transparent cover sheet superposed over said silver halide emulsion layer, and

(c) an opaque alkaline processing composition and means containing same for discharge, during processing, between said cover sheet and said photosensitive element,

the improvement wherein said dye image-providing material is a nondiffusible compound capable of releasing at least one diffusible cyan dye moiety, said compound having the formula:



wherein:

(a) J represents SO_2 or CO,

(b) R represents a substituted or unsubstituted alkyl group of from 1 to about 10 carbon atoms or a substituted or unsubstituted aryl group of from 6 to about 12 carbon atoms,

(c) G represents a hydroxy group, a salt thereof, or a hydrolyzable precursor thereof,

(d) CAR represents a ballasted carrier moiety capable of releasing said diffusible dye moiety as a function of development of said silver halide emulsion layer under alkaline conditions, and

(e) D^1, D^2, and D^3 each independently represents H or one or more electron-withdrawing groups selected from $—SO_2Y^1$, $—CONY^1Y^2$, —Cl, $—COY^1$, —C≡N and $—SO_2NY^1Y^2$, where Y^1 and Y^2 each independently represents hydrogen, a substituted or unsubstituted alkyl group of from 1 to about 10 carbon atoms or a substituted or unsubstituted aryl group of from 6 to about 12 carbon atoms.

4,524,123

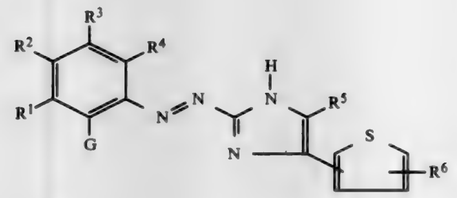
CHELATABLE 4-THIENYL IMIDAZOLE AZO DYES, THEIR USE IN COLOR PHOTOGRAPHIC RECORDING MATERIAL

Günther Schenk; Peter Bergthaller; Holger Heidenreich, all of Cologne, and Gerhard Wolfrüm, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 27, 1984, Ser. No. 593,936
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1983, 3312500
Int. Cl.³ G03C *1/40, 5/54*
U.S. Cl. 430—241 **2 Claims**

2. The method of producing a light-stable cyan image by dye diffusion processing of an imagewise exposed color photographic recording material containing, associated with at least one light-sensitive silver halide emulsion layer, a non-diffusible color providing compound while in contact with a supported image receptor layer,

the method comprising the step of releasing from said non-diffusible color providing compound under alkaline development conditions a diffusible azo dye corresponding to the following formula



wherein

R^1, R^2, R^3 and R^4, which may be identical or different, represent H, F, Cl, Br, —CN, $—NO_2$, $—CF_3$, $—OCF_3$, $—SCF_3$, alkyl, alkoxy, alkylthio, acylamino, alkylsulfonyl, arylsulfonyl, —CO—X or $—SO_2—Y$; or R^3 and R^4 together represent a group for completing a 1,3-oxathiol-S,S-dioxide ring;

R^5 represents aryl or a 2-thienyl or 3-thienyl group;

R^6 represents hydrogen, halogen or alkyl;

G represents a group capable of forming a 5-membered chelate ring;

X represents —OH, alkoxy, an amino group optionally substituted by alkyl or aryl, or a cyclic amino group;

Y represents H, —OH, an amino group optionally substituted by alkyl or aryl, a cyclic amino group or a group corresponding to the formula $—NH—SO_2—R^7$, and

R^7 represents alkyl, aryl, an amino group optionally substituted by alkyl, or a cyclic amino group

and transferring at least part of said released azo dye to said image receptor layer and forming complexes with metal ions.

4,524,124

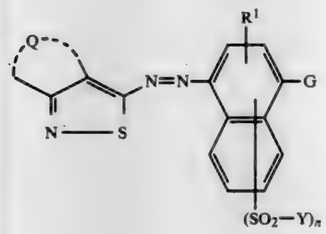
COLOR PHOTOGRAPHIC RECORDING MATERIAL CONTAINING A THIAZOLE AZO DYE RELEASER FOR CYAN DYES

Peter Bergthaller, Cologne; Rudolf Stolzenburg, Langenfeld; Paul Marx, Leverkusen, and Rainer Hamprecht, Odenthal, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 622,011
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1983, 3323282
Int. Cl.³ G03C *5/54, 1/40*
U.S. Cl. 430—241 **2 Claims**

2. In the method of producing a light-stable cyan image by dye diffusion processing of an imagewise-exposed color photographic recording material containing associated with at least one light-sensitive silver halide emulsion layer, a non-diffusible color providing compound while in contact with a supported image receptor layer,

the method comprising the step of releasing from said non-diffusible color providing compound under alkaline development conditions a diffusible azo dye corresponding to the following formula



I

in which

Q represents the remainder of the molecule required to complete a fused benzene or thiophene radical, which contains additional electron acceptor groups, or to complete a fused pyridine, pyrimidine, pyridazine, pyrazine or thiazole ring;

G represents —OH;

R^1 represents H or one or two identical or different radicals selected from the group consisting of halogen, acyl, acylamino and —CN;

Y represents H, —OH, an amino group optionally substituted by alkyl or aryl, a cyclic amino group or a group corresponding to the formula $—NH—SO_2—R^2$;

R^2 represents alkyl, aryl, an amino group optionally substituted twice by alkyl or a cyclic amino group; n=0, 1 or 2.

4,524,125

CHEMICAL ETCHING OF LITHOGRAPHIC ALUMINUM SUBSTRATE

Jen-chi Huang, Ossining, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.

Filed Aug. 13, 1982, Ser. No. 407,978
Int. Cl.³ G03F *7/02*
U.S. Cl. 430—302 **3 Claims**

1. A non-electrolytic etching method for preparing a lithographic grade aluminum web which comprises intially contacting a grained lithographic grade aluminum web, said aluminum web being grained with a mass of fine abrasive pumice particles, with a solution consisting of hot sulfuric acid at a temperature of about 70°–100° C., having a sulfuric acid concentration of about 10–90%, and wherein the resulting hot sulfuric acid treated web is anodized directly after the non-electrolytic etching treatment.

4,524,126

ADHESION OF A PHOTORESIST TO A SUBSTRATE

John C. Marinace, and Ralph C. McGibbon, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 280,150, Jun. 30, 1981, abandoned. This application Dec. 7, 1984, Ser. No. 678,389
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—311 **20 Claims**



1. A process for fabricating a semiconductor device which comprises:

providing a layer about 10 to 3,000 Å thick selected from the group of zirconium, oxide thereof, oxide of titanium, oxide of hafnium, or a mixture thereof onto a surface selected from the group of gallium arsenide, silicon, polycrystalline silicon, glass, silicon dioxide, and silicon nitride; providing a photoresist on said layer; said layer enhancing the adhesion of said photoresist to said surface; wherein said photoresist is a positive photoresist material based on a formaldehyde novolak resin and a diazoketone; exposing said photoresist to desired image; developing the desired image by removing photoresist and said layer.

4,524,127

METHOD OF FABRICATING A SILICON LENS ARRAY

James Kane, Lawrenceville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 27, 1983, Ser. No. 489,222
Int. Cl.³ G03C *5/00;* **G03B** *21/60*
U.S. Cl. 430—321 **8 Claims**

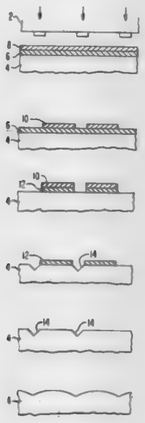
1. A process for manufacturing lens arrays in silicon which comprises:

(a) coating a 100 silicon wafer with a first protective layer of

silicon oxide and a layer of photoresist over the oxide layer,

(b) exposing the photoresist through a photomask having a uniform grating of the desired periodicity of the lens array,

(c) developing the photoresist and etching through the oxide layer to form a regular series of openings to the silicon substrate,



(d) anisotropically etching the silicon substrate to form a series of V-grooves in the openings wherein the walls of the grooves intersect along the 111 planes,

(e) removing the photoresist and oxide layers, and

(f) exposing the silicon substrate to a polishing etch bath to alter the profile of the silicon substrate to form a series of regularly shaped lenses between the V-grooves but without altering the sharpness of the bottom of said V-groove.

4,524,128

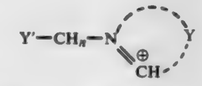
SPECTRALLY SENSITIZED SILVER HALIDE PHOTOTHERMOGRAPHIC MATERIAL

Larry D. Edwards; Frederick J. Sauter, and George J. Burgmaier, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,043
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—353 **19 Claims**

1. In a spectrally sensitized silver halide photothermographic element comprising a support bearing photographic silver halide spectrally sensitized by means of at least one spectral sensitizing dye, the improvement comprising:

as said spectral sensitizing dye, at least one heat bleachable cyanine spectral sensitizing dye having the structure



wherein Y' represents atoms which cause said dye to be heat bleachable at processing temperature of the photothermographic element; Y represents a moiety which completes a cyanine spectral sensitizing dye including, if necessary, an associated ion to maintain charge neutrality; and, n is 1 or 2 based on the valence of Y'.

4,524,129

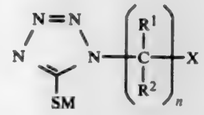
METHOD FOR PROCESSING COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shinzo Kishimoto; Shigeru Ohno, both of Kanagawa, and Teruaki Tsujikawa, Shiga, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 17, 1984, Ser. No. 651,150
Claims priority, application Japan, Sep. 16, 1983, 58-170976
Int. Cl.³ G03C *7/00*
U.S. Cl. 430—393 **20 Claims**

1. A method for processing a color photographic light-sensitive material by subjecting an exposed silver halide color photographic light-sensitive material to color development processing then to bleaching processing and fixing processing or to bleach-fixing processing, which process comprises using a ferric ion complex salt or a persulfate as a bleaching agent in the bleaching processing or bleach-fixing processing and incorporating a compound represented by the general formula (I) described below or a salt thereof in a bath of the bleaching processing or bleach-fixing processing or in a pre-bath thereof.

(I)



wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom or a lower alkyl group; X represents a NR^3R^4 group, a —COOM group, a $—SO_3M$ group or a hydroxy group; R^3 and R^4, which may be the same or different, each represents a hydrogen atom or a substituted or unsubstituted alkyl group or R^3 and R^4 are bonded to each other to form a ring; M represents a cation; and n represents an integer of 1 to 5.

4,524,130

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Yasuo Iwasa, and Shingo Ishimaru, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 19, 1984, Ser. No. 572,046
Claims priority, application Japan, Jan. 19, 1983, 58-7153
Int. Cl.³ G03C *1/46*
U.S. Cl. 430—505 **10 Claims**

1. A silver halide color photographic light-sensitive material, comprising:

a support base having thereon:

a first, color-sensitive, silver halide emulsion layer having a sensitivity with respect to light;

a second, color-sensitive, silver halide emulsion layer having a sensitivity with respect to light which is greater than the sensitivity with respect to light of the first sensitive layer, the second layer having the same color sensitivity properties as the first layer, the silver halide of the second layer having a silver iodide content in the range of 9% by mol to 15% by mol; and

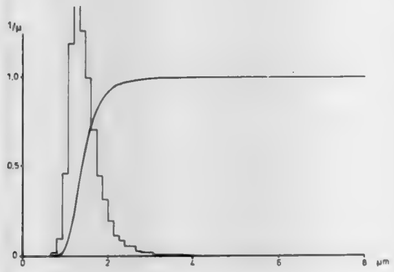
a DIR compound which releases a compound selected from the group consisting of diffusible development inhibitors having a degree of diffusion of 0.4 or more as a releasing group and precursors thereof by a coupling reaction, the DIR compound being present in a color-sensitive, silver halide emulsion layer other than the second layer, which also has the same color sensitivity properties as the first layer.

4,524,131

PHOTOGRAPHIC SILVER HALIDE RECORDING MATERIAL WITH GRAFT COPOLYMER PARTICLES IN OUTER LAYER

Wolfgang Himmelmann; Günter Sackmann, and Rudolf Meyer, all of Leverkusen, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 22, 1984, Ser. No. 643,159
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1983, 3331542
Int. Cl.³ G03C *5/24*
U.S. Cl. 430—523 **6 Claims**



1. A photographic silver halide recording material which contains, in an outer transparent layer which is applied to the front and/or rear side, preformed polymer particles which have a particle size of less than 10 μm, are soluble in alkaline processing liquids and are dispersed in a hydrophilic colloid, characterised in that the layer contains in a dispersed form from 10 to 500 mg/m² of spherical particles of a graft copolymer of methacrylic acid and methyl-methacrylate on the graft base of an α-olefin- or styrene-maleic acid semi-amide- or maleic acid copolymer having a particle size of from 0.5 to 8 μm and a particle size distribution of ±1 μm.

4,524,132

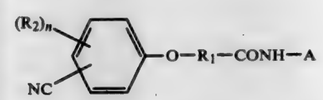
COLOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Kozo Aoki; Makoto Umemoto, and Akira Ogawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 6, 1984, Ser. No. 647,953
Claims priority, application Japan, Sep. 6, 1983, 58-163979
Int. Cl.³ G03C *7/26*
U.S. Cl. 430—552 **18 Claims**

1. A color photographic silver halide light-sensitive material comprising a support base having thereon a silver halide emulsion layer wherein said material contains at least one coupler represented by formula (I)

(I)



wherein A represents a yellow coupler residue, a magenta coupler residue, or a cyan coupler residue; R_1 represents a substituted or unsubstituted acyclic or cyclic alkylene group; R_2 represents a halogen atom, a hydroxyl group, a cyano group, a substituted or unsubstituted alkyl group, a substituted or unsubstituted acylamino group, a substituted or unsubstituted sulfonamido group or a substituted or unsubstituted acyl group; and n represents an integer of 0 to 3.

4,524,133

TEST DEVICE FOR LACTASE ACTIVITY IN A MECONIUM SAMPLE

Richard J. Tyhach, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Continuation of Ser. No. 289,455, Aug. 3, 1981, abandoned. This application Aug. 19, 1983, Ser. No. 496,925
Int. Cl.³ C12Q *1/54, 1/34, 1/26, 1/28*
U.S. Cl. 435—14 **6 Claims**

1. A test device for the detection of lactase activity in a meconium sample which comprises a carrier matrix incorporated with a composition comprising 1 to 4 percent by weight lactose, 3,3',5,5'-tetraalkylbenzidine indicator, glucose oxidase, and 0.1 to 1 percent by weight of a nonionic detergent.

4,524,134

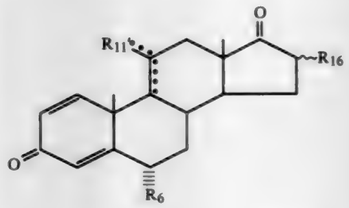
PROCESS FOR PREPARING 1,2-DEHYDRO STEROIDS

Leo A. Kominek, Portage, and Holly J. Wolf, Comstock Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

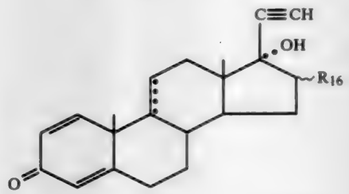
Continuation-in-part of Ser. No. 403,949, Jul. 30, 1982, abandoned. This application Oct. 25, 1982, Ser. No. 436,552
Int. Cl.³ C12P *33/02;* C12N *1/04, 11/04*
U.S. Cl. 435—61 **8 Claims**

1. A process for preparing a 1,2-dehydro-Δ^4-3-keto steroid selected from the group consisting of

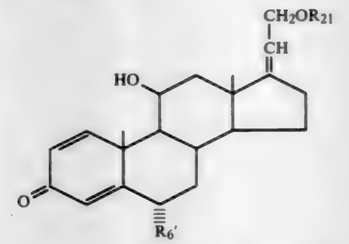
(I)



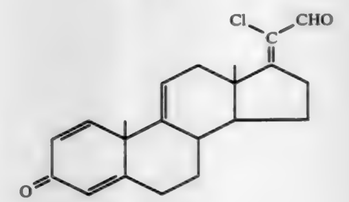
(II)



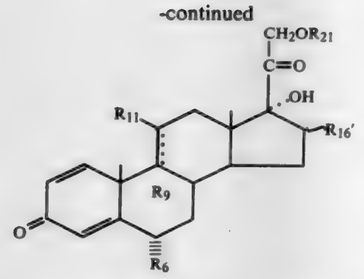
(III)



(IV)



-continued



(V)

R_6 is a hydrogen or fluorine atom or methyl group.
R_6' is a hydrogen atom or methyl group.
R_9 is nothing, a hydrogen, fluorine or oxygen atom which makes the C ring
(a) $\Delta^{9(11)}$ when R_9 is nothing and
(b) 9β,11β-epoxide when R_9 is an oxygen atom;
R_{11} is a hydrogen or oxygen atom, two hydrogen atoms, or α- or β-hydroxyl group which makes the C-ring
(a) $\Delta^{9(11)}$ when R_{11} is a hydrogen atom,
(b) 9β,11β-epoxide when R_{11} is an oxygen atom and ···· between C_{11} and R_{11} is a single bond, and
(c) a ketone when R_{11} is an oxygen atom and ···· between C_{11} and R_{11} is a double bond;
~ indicates that the attached group can be in either the α or 62 configuration;
is a single or double bond;
R_{11}' is a β-hydroxyl group, an oxygen atom (11-ketone), or hydrogen atom ($\Delta^{9(11)}$);
R_{16} is a hydrogen atom or methyl group;
R_{16}' is a hydrogen atom, methyl or hydroxyl group, when R_{16}' is an α-hydroxyl group the 16α and 17α-hydroxyl groups can be in the form of an acetonide;
R_{21} is a hydrogen atom or —OC—OR_{21}';
R_{21}' is methyl, ethyl, or phenyl which comprises exposing the corresponding 1,2-saturated-Δ^4-3 keto steroid to air-dried or heat-dried cells of Arthrobacter simplex having a moisture content of about 1 to about 10% where the cells are dried in the absence of an organic solvent.

4,524,135

A-21978C CYCLIC PEPTIDES

Bernard J. Abbott, Greenwood; Manuel Debono, Indianapolis, and David S. Fukuda, Brownsburg, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 575,648, Jan. 31, 1984, Pat. No. 4,482,487, which is a continuation of Ser. No. 493,446, Jun. 13, 1983, abandoned, which is a continuation-in-part of Ser. No. 380,497, May 21, 1982, abandoned. This application Aug. 3, 1984, Ser. No. 637,666

Int. Cl.³ C12P *21/06, 21/04;* **C12R** *1/045*

U.S. Cl. 435—69 **23 Claims**

1. The method of deacylating an antibiotic selected from the group consisting of A-21978C complex, A-21978C factors C_0, C_1, C_2, C_3, C_4, and C_5, blocked A-21978C complex, and blocked A-21978C factors C_0, C_1, C_2, C_3, C_4 and C_5 which comprises exposing the antibiotic in an aqueous medium to an enzyme which deacylates and which is produced by a microorganism of the family Actinoplanaceae until substantial deacylation is accomplished.

4,524,136

PROCESS FOR PREPARING A COSMETIC MATERIAL

Byung S. Lee, and Chang K. Kim, both of Seoul, Rep. of Korea, assignors to Pacific Chemical Industrial Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 144,876, Apr. 29, 1980, abandoned. This application Nov. 24, 1982, Ser. No. 444,187

Claims priority, application Rep. of Korea, May 1, 1979, 1979-1389

Int. Cl.³ C12P *7/56*

U.S. Cl. 435—139 **7 Claims**

1. A process for preparing a cosmetic material comprising the steps of:
(a) simultaneously and coextensively carrying out in skim milk the processes of lactic acid formulation by lactic acid bacteria and decomposition of casein by proteases in a temperature range of about 35° to 40° C. for 12 to 48 hours; and
(b) simultaneously carrying out the processes of sterilization of said lactic acid bacteria and inactivation of said proteases at about 75° C. for 30 minutes to produce a cosmetic material.

4,524,137

PREPARATION OF CATALYSTS FOR BIOCHEMICAL CONVERSION REACTIONS

Bärbel G. R. Hägerdal, Mätaregränden 10, S-222 47 Lund, and Klaus H. Mosbach, Lackalänga 31-38, S-244 02 Furulund, both of Sweden

PCT No. PCT/SE80/00216, § 371 Date Apr. 13, 1981, § 102(e) Date Apr. 13, 1981, PCT Pub. No. WO81/00576, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 22, 1980, Ser. No. 261,220

Claims priority, application Sweden, Aug. 23, 1979, 7907035

Int. Cl.³ C12N *11/10, 11/08;* **C12P** *7/14*

U.S. Cl. 435—178 **9 Claims**

1. A method of preparing a catalyst for biochemical conversion reactions, which require the presence of at least one enzyme and at least one microorganism, wherein there is added to a polymer or monomer in solution or suspension at least one enzyme, subsequent to previously activating suitable groups of the enzyme or of the polymer or monomer, so that when the polymer, or monomer, and the enzyme are brought together the enzyme is bound to the molecules of said polymer, or monomer, by covalent bonds, whereafter the polymer, or monomer, with the enzyme covalently bound thereto is mixed in solution or suspension with at least one microorganism and a polymer, or monomer, capable of being cross-linked, whereafter the mixture thus obtained is subjected to a cross-linking polymerization process so as to obtain solid bodies of polymer containing the enzyme covalently bound to the polymer material, and the microorganism entrapped in the three-dimensional cross-linked structure of said bodies.

4,524,138

SUBSTANTIALLY PORE-FREE SINTERED POLYCRYSTALLINE ARTICLES OF α-SILICON CARBIDE, BORON CARBIDE AND FREE CARBON AND PROCESS FOR THEIR MANUFACTURE

Karl A. Schwetz, Sulzberg; Klaus Reinmuth, Dursch; Klaus Hunold, Kempten, and Franz Isemann, Oberstdorf, all of Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

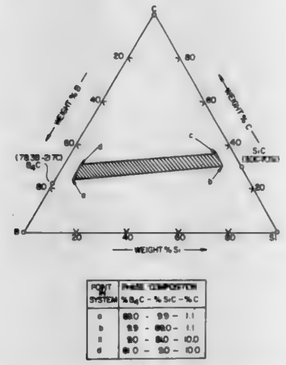
Filed May 5, 1983, Ser. No. 491,662

Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3218052

Int. Cl.³ C04B *35/56, 35/52*

U.S. Cl. 501—90 **10 Claims**

1. A substantially pore-free sintered polycrystalline article consisting essentially of α-silicon carbide, boron carbide and free carbon, the proportions in percent by weight, are defined by the trapezoidal area having, in the ternary system B/Si/C of FIG. 1, the corner points
a=89.0% B_4C, 9.9% α-SiC, 1.1% C
b=9.9% B_4C, 89.0% α-SiC, 1.1% C
c=9.0% B_4C, 81.0% α-SiC, 10.0% C
d=81.0% B_4C, 9.0% α-SiC 10.0% C;
the article having a homogeneous microstructure and a density of at least 99% of the theoretical density, an average structural



POINT IN SYSTEM	PHASE COMPOSITION % B_4C - % SiC - % C
a	89.0 - 9.9 - 1.1
b	9.9 - 89.0 - 1.1
c	9.0 - 81.0 - 10.0
d	81.0 - 9.0 - 10.0

grain size of less than 20 μm, and a 4-point flexural strength of at least 400 N/mm²said article being produced from fine-grained mixtures of α-silicon carbide, boron carbide, and a carbon source selected from carbon, an organic material that can be coked to form carbon, and mixtures thereof, by pressureless sintering and subsequent post-densification of the resulting sintered article by hot isostatic pressure sintering using an inert gas as pressure-transfer medium.

4,524,139

PROCESS FOR THE COMPRESSIVE REGENERATION OF FLEXIBLE, POROUS MATERIALS

Uwe Fuchs, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 467,007

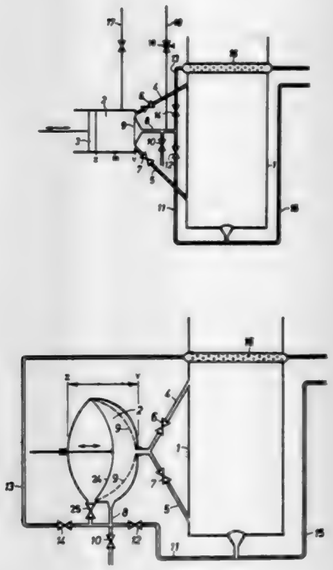
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1982, 3205377

Int. Cl.³ B01J *20/34;* **B01D** *41/02;* **C02F** *3/10;* **B30B** *9/06*

U.S. Cl. 502—22 **27 Claims**

1. A process for the compressive regeneration of flexible, porous particulate material which is loaded with substances removed from liquids treated in a reactor in which the porous material is used as filter particles, oil-separating particles, or carrier, particles, which comprises regenerating the loaded material by:
conducting the loaded material together with liquid from the reactor into a press chamber associated with the reactor and having movable press means, with the porous material being drawn into the press chamber from the reactor by moving the press means in a rearward direction to create a suction effect; moving the press means forward after the loaded material has been drawn into the press chamber to press out the liquid and the loading substances from the loaded material while retaining the material in the press chamber; conducting additional liquid into the press chamber for dispersing the porous material in the additional liquid, by subsequently moving the press means rearwardly; and then moving the press means forward to force the regenerated material dispersed in the additional liquid back into the reactor.

2. A process according to claim 1, further comprising after filling the press chamber, pressing the liquid out of the loaded material by at least one partial forward movement of the press means; taking liquid into the press chamber by at least one partial, subsequently conducted rearward movement of the press means for cleaning the material by flushing; and, by a subsequent forward movement of the press means, pressing the liquid and the substances to be removed out of the material.



3. A process according to claim 2, wherein wastewater from the reactor is taken in as the liquid to clean the material by flushing.

4,524,140

HYDROTHERMAL ZEOLITE ACTIVATION

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 465,987, Feb. 14, 1983,. This application Jul. 16, 1984, Ser. No. 631,688

Int. Cl.³ B01J *29/28*

U.S. Cl. 502—61 **8 Claims**

1. A method for substituting aluminum or gallium for boron or iron contained in the robust framework of a high silica content crystalline zeolite, which method comprises:
hydrothermally treating said zeolite in the presence of a compound of said alumina or gallium, said hydrothermal treatment being under conditions effective to induce said substitution.

7. A method for increasing the catalytic acid activity of a high silica content crystalline zeolite that contains tenaciously held boron or iron which method comprises:
contacting said zeolite with a compound of aluminum or gallium under hydrothermal conditions, which conditions include a temperature of 50° C. to 375° C. for from 0.25 hour to 350 hours whereby enhancing said catalytic acid activity as determined by the alpha test.

4,524,141

POLYMERIZATION CATALYSTS AND METHODS

Thomas J. Pullukat, Hoffman Estates, Ill.; Yu-Tang Hwang, Clinton, Iowa, and Robert A. Dombro, Palatine, Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Apr. 21, 1983, Ser. No. 487,454

Int. Cl.³ C08F *4/02, 4/62, 4/64, 4/68*

U.S. Cl. 502—107 **31 Claims**

17. The method of making a solid catalyst for use with an

organometallic cocatalyst in the polymerization and copolymerization of 1-olefins, said method comprising the steps of:

(A) reacting a support comprising

(1) silica, alumina, silica-alumina or mixtures of these having surface hydroxyl groups and dried or calcined at a temperature of at least about 200° C., or

(2) silica, alumina, silica-alumina or mixtures of these having surface hydroxyl groups and reacted with an organosilane which is reactive with said groups followed by removal of any excess of said organosilane and reaction by-products, with

(B) an excess relative to said hydroxyl groups of an organosilicon compound which is reactive with said hydroxyl groups of the formula $(R_3Si)_2NH$, where R is a hydrocarbyl group selected from C_1–C_{20} alkyls, aryls, alkaryls, aralkyls or mixtures of these; and,

(C) a Group IIA organometallic compound or complex of said Group IIA compound with a Group IIIA organometallic compound; followed by

(D) a transition metal compound of a Group IVB, Group VB or mixtures of these metals; wherein said excess organosilicon compound of (B) is not removed prior to the addition of said transition metal compound of (D).

4,524,142

PLATINUM (O) COMPLEX-BASED HYDROFORMYLATION CATALYST

Chao-Yang Hsu, Media; James E. Lyons, Wallingford, and Paul E. Ellis, Jr., Downingtown, all of Pa., assignors to Sun Tech, Inc., Philadelphia, Pa.

Filed Apr. 11, 1984, Ser. No. 598,931
Int. Cl.³ B01J *31/12, 31/22, 31/24*
U.S. Cl. 502—153 **12 Claims**

1. A catalyst system for hydroformylation of olefins, which comprises (1) a platinum (0) complex containing two bidentate diphosphine, diarsine or distibine ligands, and (2) a Group IVB metal halide.

3. The composition of claim **1** wherein the Group IVB metal halide has one of the following formulas:

$MR_nX_{(4-n)}$; MX_2; or MX_4

wherein M is germanium, lead or tin; R is alkyl, alkoxyl, aryl, or aryloxyl in which case n is an integer of from 1 to 3, or R is an anion derived from a diketone, a diacid, or a diester, in which case n is an integer of from 1 to 3 if the anion is a mono-anion, or n is 1 if the anion is a di-anion; and X is a halide.

4,524,143

CATALYST FOR PREPARATION OF LINEAR POLYETHYLENEPOLYAMINES

Steven H. Vanderpool, New Braunfels, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,154
Int. Cl.³ B01J *27/14*
U.S. Cl. 502—208 **9 Claims**

1. As a new composition of matter, a thermally activated pelleted composition consisting essentially of zirconium silicate having from about 0.5 wt. % to about 10 wt. % of phosphorous thermally chemically bonded thereto.

4,524,144

ALKALI METAL-PROMOTED ZINC TITANATE HYDROGEL CATALYST FOR DEHYDROGENATION OF ORGANIC COMPOUNDS

Arthur W. Aldag, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 468,019, Feb. 18, 1983, Pat. No. 4,463,213. This application Apr. 11, 1984, Ser. No. 598,778
Int. Cl.³ B01J *21/04, 21/06, 23/04, 23/06*
U.S. Cl. 502—342 **14 Claims**

1. A catalyst composition comprising a hydrogel of zinc titanate and a suitable acidic carrier and a promoter selected from the group consisting of lithium, sodium, potassium, rubidium and cesium.

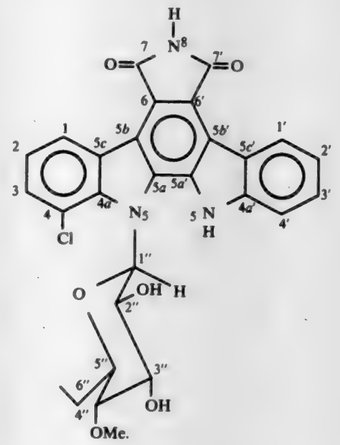
4,524,145

4'-DESCHLOROREBECCAMYCIN PHARMACEUTICAL COMPOSITION AND METHOD OF USE

James A. Matson, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Sep. 4, 1984, Ser. No. 646,673
Int. Cl.³ A61K *31/71;* C12P *19/38;* C07H *19/04*
U.S. Cl. 514—43 **3 Claims**

3. A method for therapeutically treating an animal host affected by a bacterial infection, which comprises administering to said host an effective antibacterial dose of 4'-deschlororebeccamycin having the formula



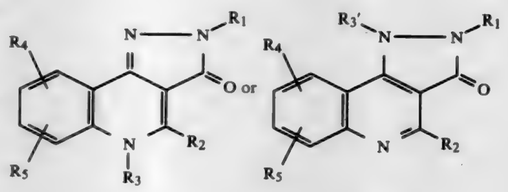
4,524,146

CERTAIN -2-HETEROCYCLE SUBSTITUTED PYRAZOLOQUINOLINES

Naokata Yokoyama, Cliffside, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 8, 1982, Ser. No. 447,825
Int. Cl.³ A61K *31/505;* C07D *401/14*
U.S. Cl. 514—273 **18 Claims**

1. A compound of the formula



(IA) (IB)

wherein R_1 represents a five-membered unsaturated heterocyclic radical having two hetero atoms comprising one nitrogen atom and one member selected from nitrogen, sulfur and oxygen; or R_1 represents an unsaturated six membered heterocyclic radical having two nitrogen atoms; or R_1 represents a bicyclic benzo-fused six membered unsaturated heterocyclic radical having one or two nitrogen atoms; or R_1 represents any of said heterocyclic radicals mono- or di-substituted by lower alkoxy, lower alkyl or halogen; R_2, R_3 and R_3', each independently, represents hydrogen or lower alkyl; R_4 and R_5, each independently, represents hydrogen, lower alkyl, lower alkoxy, halogen or trifluoromethyl; or a pharmaceutically acceptable salt thereof.

17. An anxiolytic pharmaceutical composition suitable for oral or parenteral administration to mammals comprising an effective amount of a compound of claim **1** having anxiolytic activity in combination with one or more pharmaceutically acceptable carriers.

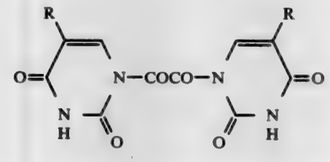
4,524,147

URACIL DERIVATIVES, PROCESS FOR PREPARING SAME, AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAME

Isao Sakano; Tatsuro Yokoyama; Seitaro Kajiya, all of Yokohama; Yutaka Okazaki, Mobara; Hiroshi Tokuda, Mobara; Hiroshi Kawazura, Mobara; Mikio Kumakura, Mobara, and Akira Awaya, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

PCT No. PCT/JP82/00081, § 371 Date Nov. 16, 1982, § 102(e) Date Nov. 16, 1982, PCT Pub. No. WO82/03392, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 24, 1982, Ser. No. 444,571
Claims priority, application Japan, Mar. 24, 1981, 56-41752
Int. Cl.³ A61K *31/505;* C07D *403/02*
U.S. Cl. 514—274 **9 Claims**

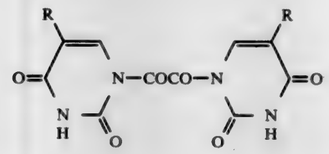
1. A uracil derivative having the general formula



(1)

where R represents a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms.

6. A pharmaceutical composition having immunomodulatory activity which comprises an effective amount of a uracil derivative of the general formula



(1)

where R represents a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms, and a pharmaceutically acceptable carrier.

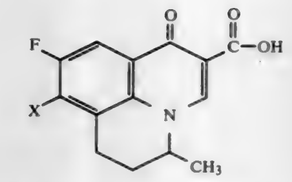
4,524,148

ANTIMICROBIAL 8,9-DIHALOBENZO[IJ]QUINOLIZINE CARBOXYLIC ACIDS

Richard M. Stern, Cottage Grove, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Filed Nov. 6, 1981, Ser. No. 318,927
Int. Cl.³ A61K *31/44*
U.S. Cl. 514—294 **1 Claim**

1. A method of inhibiting the growth of microorganisms comprising contacting said microorganisms with an effective amount of a compound of the formula



wherein X is chloro or bromo, or a sodium salt thereof.

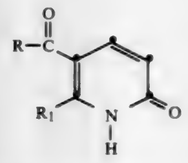
4,524,149

5-ALKANOYL-6-ALKYL-2(1H)-PYRIDINONES, THEIR PREPARATION AND THEIR CARDIOTONIC USE

George Y. Lesher, Schodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

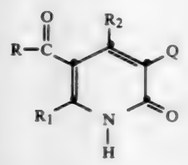
Continuation-in-part of Ser. No. 357,872, Mar. 15, 1982, Pat. No. 4,412,077. This application Feb. 7, 1983, Ser. No. 464,690
Int. Cl.³ C07D *213/57, 213/50;* A61K *31/44*
U.S. Cl. 514—350 **19 Claims**

1. A 5-(lower-alkanoyl)-6-(lower-alkyl)-2(1H)-pyridinone having the formula



where R and R_1 are each lower-alkyl.

13. The method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form to such patient a cardiotonic composition comprising a pharmaceutically acceptable inert carrier and, as the active component thereof, a cardiotonically effective amount of 3-Q-4-R_2-5-(lower-alkanoyl)-6-(lower-alkyl)-2(1H)pyridinone having the formula



where Q is hydrogen or cyano, R and R_1 are each lower-alkyl and R_2 is hydrogen or methyl.

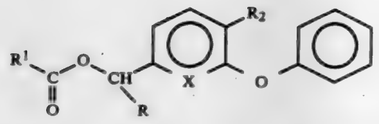
4,524,150

STABILIZED MIXTURES OF CARBAMATE INSECTICIDES AND SYNTHETIC PYRETHROIDS

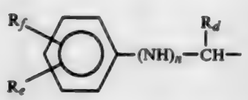
Orn Adalsteinsson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 367,754, Apr. 12, 1982, abandoned. This application Mar. 3, 1983, Ser. No. 469,898
Int. Cl.³ A01N *43/08, 37/34, 47/10, 43/40*
U.S. Cl. 514—469 **18 Claims**

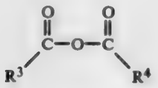
1. An improved insecticidal mixture of a carbamate insecticide and a resolved or partially resolved synthetic pyrethroid of the formula:



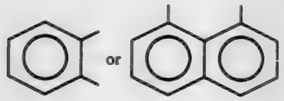
where R is H or cyano; R^1 is an optionally substituted alkyl cyclopropyl, alkenyl cyclopropyl, or R^1 has the formula:



wherein (1) R_d is C_1–C_6 alkyl, (2) R_e is H or halogen, (3) R_f is halogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl having 1–4 halogen atoms, C_1–C_4 alkoxy, or C_1–C_4 haloalkoxy having 1–4 halogen atoms, and (4) n is 0 or 1; R^2 is H or F; and X is C or N; and where the weight ratio of carbamate to pyrethroid is about 1:1 to 50:1; wherein the improvement comprises the addition of 1–20% by weight, based on the weight of the carbamate, of an anhydride stabilizer of the formula:



where R^3 and R^4 independently are C_1–C_4 alkyl or phenyl, or R^3 and R^4 taken together are C_2–C_5 alkyl, C_2–C_4 alkenyl,



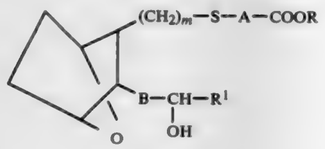
4,524,151

7-OXABICYCLOHEPTANE THIO ETHERS USEFUL AS CARDIOVASCULAR AGENTS

Jagabandhu Das, Plainsboro, and Martin F. Haslanger, Lambertville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 14, 1983, Ser. No. 551,636
Int. Cl.³ C07D *307/00*; A61K *31/34*
U.S. Cl. 514—469 **16 Claims**

1. A compound of the structure



including all stereoisomers thereof, wherein m is 1 to 4, A is $(CH_2)_n$ or $-(CH_2)_n$, $-CH{=}CH-$; n is 1 to 8; n′ is 1 or 2; B is $-CH{=}CH-$ or $-(CH_2)_2-$; R is H, lower alkyl or alkali metal; and R^1 is lower alkyl, aryl, arylalkyl, cycloalkyl or cycloalkylalkyl; wherein the term lower alkyl or alkyl by itself or as part of another group is unsubstituted or substituted with halo, trifluoromethyl, alkoxy, aryl, alkyl-aryl, haloaryl, cycloalkyl, or alkylcycloalkyl; the term aryl by itself or as part of another group contains 6 to 10 carbons and is unsubstituted or substituted with lower alkyl, halogen or lower alkoxy; and the term cycloalkyl by itself or as part of another group contains 3 to 12 carbons and is unsubstituted or is substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups; and wherein $(CH_2)_m$ or $(CH_2)_n$ may be substituted by one or more lower alkyl substituents.

11. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circuitry system of a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

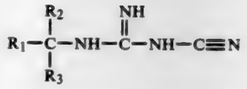
4,524,152

1-CYANO-3-(FLUOROALKYL)GUANIDINES FOR LOWERING BLOOD PRESSURE

Stephen J. Riggi, Fairport, N.Y., and Robert N. Haszeldine, Disley, England, assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 30, 1982, Ser. No. 454,759
Int. Cl.³ C07C *129/14*; A61K *31/155*
U.S. Cl. 514—609 **7 Claims**

1. The compound



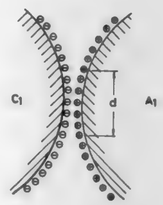
in which R_1, R_2 and R_3 are the same or different members of the class of hydrogen, fluorine, lower fluoroalkyl or lower alkyl or lower alkenyl provided that at least one member is fluorine or lower fluoroalkyl.

4,524,153

METHOD OF AND SYSTEM FOR REGENERATING POWDERY ION-EXCHANGE RESIN

Kiyomi Funabashi, Katsuta; Toshio Takagi, Hitachi; Fumio Kawamura, Hitachi, and Makoto Kikuchi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 30, 1981, Ser. No. 316,767
Claims priority, application Japan, Oct. 30, 1980, 55-153359
Int. Cl.³ B01D *15/06*
U.S. Cl. 521—26 **21 Claims**



1. A method of regenerating powdery ion-exchange resin particles, said particles having a size in the range of 2–90μ, comprising:

providing powdery ion-exchange resin comprising powdery cation-exchange resin and powdery anion-exchange resin coupled to each other;

immersing said coupled resin in an electrolytic solution, the ionic strength of said electrolytic solution being in a range of 5 to 15 and the specific gravity of the electrolytic solution being in a range between the specific gravity of the cation-exchange resin and the specific gravity of the anion-exchange resin;

stripping apart and simultaneously separating said cation and anion-exchange resins in said solution; and

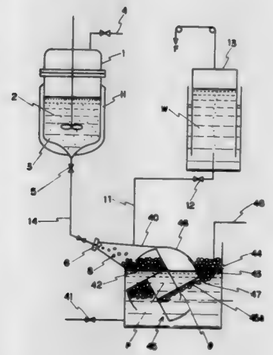
separately removing ions adherent to the cation-exchange resin and to the anion-exchange resin.

4,524,154

PRE-EXPANDING PROCESS AND APPARATUS FOR THE SAME

Hirofumi Maeda, Takatsuki; Kyoichi Nakamura, and Toshihiro Hatamoto, both of Osaka, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 6, 1984, Ser. No. 647,661
Claims priority, application Japan, Nov. 12, 1983, 58-212870
Int. Cl.³ C08J *9/22*
U.S. Cl. 521—58 **2 Claims**



1. A process for preparing pre-expanded particles of a thermoplastic resin which comprises; heating under an elevated pressure an aqueous dispersion comprising thermoplastic resin particles containing a volatile foaming agent and an aqueous medium in a pressure vessel; releasing the dispersion from the pressure vessel into a space within a sealed low-pressure vessel wherein the pressure is lower than that in the pressure vessel and the space is sealed with an aqueous medium which exists in the lower portion of the vessel and communicates with the outside of the vessel, whereby expanding the thermoplastic resin particles to give pre-expanded particles; and sinking the resulting pre-expanded particles under the aqueous medium by means of a rotary impeller provided in the pressure vessel so that the pre-expanded particles are taken out of the low-pressure vessel through the aqueous medium towards the outside of the vessel, while recovering the foaming agent volatilized from the thermoplastic resin particles by discharging the foaming agent out of the space in the low-pressure vessel with controlling the pressure in the low-pressure vessel to substantially a given pressure.

4,524,155

OPEN-CELL/MICROPOROUS MOLDED ARTICLE

Axel Walch, Frankfurt; Walter Seifried; Wolfgang Michel, both of Wiesbaden; Jürgen Kuhls, Burghausen, and Juergen Wildhardt, Huenstetten, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 402,266, Jul. 27, 1982,. This application Sep. 13, 1984, Ser. No. 650,004
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129745
Int. Cl.³ C08F *9/28*
U.S. Cl. 521—64 **22 Claims**

1. A process for the preparation of a microporous molded article having an open-cell structure and comprising a thermoplastic material which possesses an inherent latent structural convertibility and includes effective pores of a diameter in the range from about 0.002 to 10 μm, comprising the steps of:

providing a liquid solution of 1 to 50 weight percent strength, relative to its total weight, which contains as the dissolved constituent a polymer comprising at least about 70 percent by weight of a copolymer which comprises from about 20 to 80 percent by weight, relative to the total weight of the terpolymer, of copolmerized fluorinated olefin selected from the group consisting of ethylene and propylene, up to about 40 percent by weight, relative to the total weight of the terpolymer, of copolymerized olefin selected from the group consisting of ethylene and propylene, and from about 80 to 20 percent by weight, relative to the total weight of the copolymer, of copolymerized vinyl acetate, with at least 5 percent of the pro-



portion of acetate groups comprising the copolymer being converted by saponification into OH groups after copolymerization of the specified comonomers to form the terpolymer;

forming a shaped article from the liquid solution; and

coagulating the copolymer by treating the shaped article with a precipitating liquid to form a porous-structure, dimensionally stable molded article.

4,524,156

ASPHALT FOAM

Joseph A. Cogliano, Pasadena, Md., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Sep. 4, 1984, Ser. No. 646,779
Int. Cl.³ C08J *9/00*
U.S. Cl. 521—83 **6 Claims**

1. A porous structure comprising a foam of closed cellular configuration formed from a substantially homogeneous blend of from about 80 to 120 parts by weight asphalt and from about 5 to 25 parts by weight of a polyvalent metal salt of anionic group containing polymers selected from polyvalent metal salt neutralized sulfonated polymers or neutralized carboxylated polymers; said foam having a bulk density of less than about 9 pounds per cubic foot and a pore volume of at least about 85 percent.

4,524,157

ADDUCTS AND POLYMER-POLYOLS USEFUL IN THE PREPARATION OF IMPROVED PLASTICS, INCLUDING POLYURETHANE FOAMS, ELASTOMERS AND THE LIKE

Paul Stamberger, Baltimore, Md., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 279,318, Jul. 1, 1981,. This application Jun. 6, 1983, Ser. No. 501,693
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—156 **9 Claims**

1. A polyurethane which is the reaction product of a mixture comprising an organic polyisocyanate and an adduct formed by reaction of a polyol with a co-reactant, the co-reactant being selected from the group consisting of:

(A) a half-ester co-reactant formed by 1:1 molar reaction between:

(1) at least one polyhydroxyhydrocarbon having a molecular weight below about 200, and

(2) at least one polycarboxylic compound selected from the group consisting of dicarboxylic acids, dicarboxylic acid anhydrides, polycarboxylic acids having at least three carboxylic carbon atoms, and polycarboxylic anhydrides having at least three carboxylic carbon atoms,

in which at least one of the carboxylic carbon atoms of the

poly-carboxylic compound remains unreacted after the 1:1 molar reaction;

(B) an epoxy co-reactant selected from the group consisting of diepoxides, polyepoxides having more than two epoxy groups and mixtures,

in which at least one of the epoxy groups in the epoxy co-reactant remains unreacted after reaction with the polyol; and

(C) a half-ester co-reactant formed by 1:1 molar reaction between:

(1) at least one polycarboxylic compound selected from the group consisting of dicarboxylic acids, dicarboxylic acid anhydrides, polycarboxylic acids having at least three carboxylic carbon atoms, and polycarboxylic anhydrides having at least three carboxylic carbon atoms, and

(2) at least one epoxy compound selected from the group consisting of diepoxides and polyepoxides having at least three epoxy groups,

in which at least one of the epoxy groups of the epoxy compound remains unreacted after the 1:1 molar reaction.

4,524,158

METHOD FOR DISPERSING FIBRILLATED FIBERS

Alan G. Barber, Woodbury, Conn., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 361,546, Mar. 24, 1982, Pat. No. 4,439,561. This application Feb. 10, 1984, Ser. No. 578,856

Int. Cl.³ B01F *3/00, 3/08*

U.S. Cl. 523—130 **25 Claims**

1. A method for forming a suspension of a fibrillated fiber in an alcoholic medium which comprises (i) providing a mixture comprising alcohol, water, and dispersing agent, wherein the concentration of the water is at least about 15 wt.%; (ii) dispersing an undispersed fibrillated fiber in the mixture of (i) to provide a fibrillated fiber predispersion; and (iii) diluting the predispersion of (ii) with alcohol to provide a final dispersion of fibrillated fiber in an alcoholic medium.

4,524,159

LEAK STOPPING COMPOSITION AND METHOD

Alan G. Barber, Woodbury, Conn., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 361,546, Mar. 24, 1982, Pat. No. 4,439,561. This application Feb. 10, 1984, Ser. No. 578,857

The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.

Int. Cl.³ C09K *3/12*

U.S. Cl. 523—177 **38 Claims**

1. A composition for the stopping of leaks in a coolant system which comprises a suspension in a liquid medium of a fibrillated fiber in an amount which is effective for the stopping of leaks.

4,524,160

DIRECTLY MOLDABLE RESIN COMPOSITIONS FOR COMPOSITE PLASTICS

Nobuhisa Maeda, Takada; Tadashi Sakairi, and Tamotsu Wakahata, both of Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 367,226, Apr. 8, 1982, abandoned. This application Jan. 27, 1984, Ser. No. 577,948

Claims priority, application Japan, Apr. 9, 1981, 56-54136

Int. Cl.³ C08K *9/00, 7/00*

U.S. Cl. 523—200 **4 Claims**

1. In a directly moldable resin composition for composite plastics which comprises 50 to 98.5 percent by volume of a mixture of pellets of polypropylene with an average size not smaller than 2.0 mm and particles of polypropylene having an average size ranging from 30 to 40 up to 500 microns, and correspondingly from 50 to 1.5 percent by volume of at least one filler selected from the group consisting of particulate inorganic fillers having an average size ranging from 1 to 50 microns and fibrous fillers having an aspect ratio not smaller than 5, the improvement in which said at least one filler is coated with a surface active agent having a hydrophili-oleophilic balance below 13 and said surface active agent is present in an amount of 0.15 to 14.0 percent by volume of said at least one filler.

4,524,161

PROCESS FOR PREPARING AQUEOUS BINDER COMPOSITIONS

Martin P. O. Feuerhahn, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 15, 1984, Ser. No. 640,915

Claims priority, application United Kingdom, Aug. 24, 1983, 8322710

Int. Cl.³ C09D *3/58, 3/66, 5/02*

U.S. Cl. 523—414 **9 Claims**

1. A process for preparing an aqueous binder composition which comprises

(a) dispersing a pigment powder having a particle size less than 20 micrometers in a liquid, solvent-free epoxy resin,

(b) dispersing the resultant paste in water,

(c) reacting the resultant dispersion with a secondary amine or a secondary amine and a primary amine, the amount of amine or amines being sufficient to provide at least one N—H function per epoxy group of the epoxy resin, at a temperature from about 40° C. to about 100° C.,

(d) neutralizing the resulting suspension of epoxy-amine adduct coated particles, and, as desired,

(e) adjusting the concentration of the resulting dispersion within the range 35 to 75%w solids by addition of water.

4,524,162

LOW SHRINKING CURABLE MOLDING COMPOSITIONS CONTAINING A POLY(ACRYLATE)

Linda A. Domeier, Somerville, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

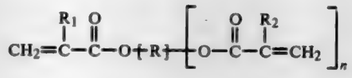
Filed May 26, 1983, Ser. No. 498,494

Int. Cl.³ C08K *3/34, 3/12, 3/40;* **C08F** *283/00*

U.S. Cl. 523—438 **31 Claims**

1. A curable molding composition suitable for the preparation of fiber reinforced molded articles by a rapid cure, injection molding process, comprising a mixture of:

(a) a poly(acrylate) characterized by the following empirical formula:



wherein R is the hydroxy-free residue of an organic polyhydric alcohol which contains alcoholic hydroxyl groups bonded to different carbon atoms, R_1 and R_2 are independently hydrogen or methyl, and n is 1 to 3;

(b) an ethylenically unsaturated monomer which is soluble in and copolymerizable with (a);

(c) a crosslinkable vinyl monomer having a reactivity ratio (r_1) with styrene of greater than one and at least one of the following:

(i) a second crosslinkable vinyl monomer having a reactivity ratio (r_1) with styrene of greater than one;

(ii) an epoxy compound having at least one 1,2-epoxy group per molecule; and

(iii) an unsaturated fatty acid ester; and

(d) a thermoplastic polymer low profile additive which is soluble in the mixture of (a), (b) and (c), said composition having a viscosity of from about 10 to about 1000 centipoise.

4,524,163

CEMENTIFEROUS COMPOSITIONS

Geoffrey Bradley, Oberiamstadt, Fed. Rep. of Germany; John T. Hoarty, and Ian M. Howarth, both of Cheshire, England, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., London, England

Filed Jun. 11, 1984, Ser. No. 619,209

Claims priority, application United Kingdom, Jun. 21, 1983, 8316819

Int. Cl.³ C04B *7/35, 13/24;* **C08K** *5/05;* **C08L** *33/02*

U.S. Cl. 524—5 **6 Claims**

1. A plasticiser additive composition comprising an aqueous solution of a copolymer or a soluble salt thereof, comprising an ethylenically polymerisable carboxylic acid and an ethylenically unsaturated monomer having a hydroxyl functional group, which monomer is copolymerisable with said acid, the copolymer having a molecular weight in the range 1000 to 15000 and from 10 to 90% by weight of the copolymer of an accelerator additive selected from triethanolamine or salts thereof and water soluble thiocyanates, said accelerator additive functioning with the copolymer to provide early strength gain when said composition is used to plasticize a cementiferous composition.

4,524,164

THERMOSETTING ADHESIVE RESINS

Tito Viswanathan, and Thomas Richardson, both of Madison, Wis., assignors to Chemical Process Corporation, Brookfield, Wis.

Continuation-in-part of Ser. No. 557,739, Dec. 2, 1983,. This application Mar. 23, 1984, Ser. No. 592,566

Int. Cl.³ C08L *3/02*

U.S. Cl. 524—14 **17 Claims**

1. A method of preparing a thermosetting resin for binding lignocellulosic materials together to form useful products which consisting essentially of heating an aqueous sugar or starch solution and a crosslinking agent selected from urea, phenol and mixtures of urea and phenol in the presence of an inorganic acid or its ammonium salt and a metal ion catalyst at a temperature between about 50° to about 200° C. for about 30 minutes to about 18 hours to obtain a partially polymerized fusible resin and then adding an organic acid anhydride to the fusible resin prior to application to the lignocellulosic materials.

4,524,165

STABILIZED COPOLYESTERETHER COMPOSITIONS SUITABLE FOR OUTDOOR APPLICATIONS

Harry R. Musser; Thomas H. Strickland, and Joseph S. Zannucci, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,035

Int. Cl.³ C08K *5/34, 5/07, 5/10*

U.S. Cl. 524—99 **27 Claims**

1. A highly weatherable copolyesterether composition having a 264 psi heat deflection temperature greater than 60° C. and an inherent viscosity of about 0.8 to about 1.5, said copolyesterether comprising

A. a 100 mole % dicarboxylic acid component comprising about 80–100 mole % 1,4-cyclohexanedicarboxylic acid having a trans isomer content of at least 70% and about 0–20 mole % of a second acid selected from the group consisting of aliphatic dicarboxylic acids having 3 to 12 carbon atoms,

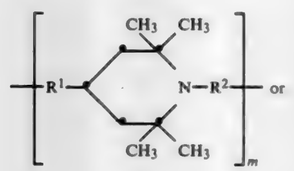
B. a 100 mole % glycol component comprising about 70–95 mole % 1,4-cyclohexanedimethanol and about 5–30 mole % of a polyalkylene ether glycol having a molecular weight of about 600 to about 3000,

C. a stabilizing effective amount of the combination of

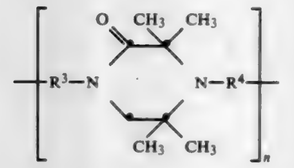
1. at least one hindered phenolic antioxidant,

2. at least one ultraviolet light stabilizing compound compatible with said copolyesterether, and

3. at least one hindered amine light stabilizing compound having the formulae



I



II

wherein m and n are each integers of from 1 to 20, R^1, R^2, R^3 and R^4 are each independently selected from hydrogen, substituted or unsubstituted alkyl having 1 to 20 carbon atoms, aryl having 6 to 22 carbon atoms, alkylene having 1 to 20 carbon atoms, cycloalkylene having 3 to 12 carbon atoms, hydroxyalkyl having 1 to 18 carbon atoms, and esters of said hydroxyalkyl; and alkylenecarboxylic acid having 2 to 18 carbon atoms and esters, amides and metal salts of said alkylenecarboxylic acid.

4,524,166

PRIMARY OR SECONDARY AMINO SUBSTITUTED DIBENZO DIOXAPHOSPHEPINS AND DIOXAPHOSPHOCINS

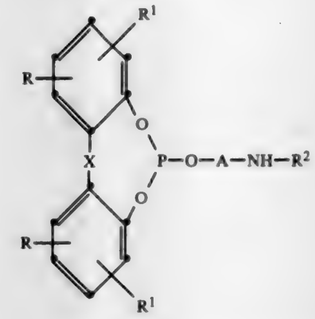
John D. Spivack, and Stephen D. Pastor, both of Spring Valley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 437,930, Nov. 1, 1982, abandoned. This application Sep. 14, 1984, Ser. No. 651,185

Int. Cl.³ C07F *9/15;* **C08G** *59/02, 63/68, 69/42;* **C08K** *5/32*

U.S. Cl. 524—117 **25 Claims**

1. A compound of the formula



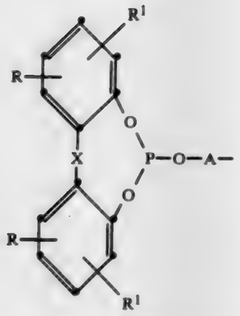
wherein

R and R^1 independently are hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or phenyl substituted with alkyl of 1 to 18 carbon atoms;

A is alkylene of 1 to 6 carbon atoms or cycloalkylene of 5 to 6 carbon atoms;

X is a direct bond or alkylidene of 1 to 12 carbon atoms; and

R^2 is hydrogen, alkyl of 1 to 12 carbon atoms or the group



15. A composition of matter comprising an organic material subject to oxidative, thermal and actinic degradation stabilized with an effective stabilizing amount of a compound of claim 1.

16. A composition of claim 15, wherein the organic material is a synthetic polymer.

4,524,167

POLYMERIC HINDERED PHOSPHONATE STABILIZERS

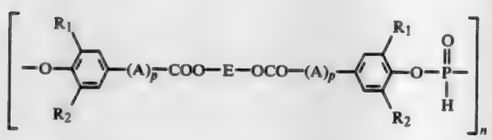
John D. Spivack, Spring Valley, and Stephen D. Pastor, Yonkers, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 582,151, Feb. 24, 1984, abandoned, which is a continuation of Ser. No. 459,844, Jan. 21, 1983, abandoned. This application Sep. 27, 1984, Ser. No. 655,277

Int. Cl.³ C08K *5/51;* **C07F** *9/06;* **C08G** *79/00*

U.S. Cl. 524—121 **14 Claims**

1. A polymeric phosphonate having the repeating structural unit of the formula



wherein

R_1 and R_2 are independently alkyl of 4 to 12 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, or aralkyl of 7 to 15 carbon atoms, or alkaryl of 7 to 15 carbon atoms,

A is alkylene of 1 to 4 carbon atoms,

E is alkylene of 2 to 12 carbon atoms, phenylene, phenylene substituted by one or two alkyl groups of 1 to 9 carbon atoms; or is the group $—T(OT)_t—$ where T is ethylene, propylene or 1,4-butylene, and t is 1 to 10; or is the group —G—X—G— where G is alkylene of 2 to 4 carbon atoms, and X is sulfur or —N(R)— where R is hydrogen or alkyl of 1 to 8 carbon atoms,

p is 0 or 1; and

n is 2 to 50.

9. A composition of matter comprising an organic material subject to oxidative, thermal and actinic degradation stabilized with an effective stabilizing amount of a polymer according to claim 1.

10. A composition according to claim 9, wherein the organic material is a synthetic polymer.

4,524,168

PROCESS FOR THE MASS COLORATION OF POLYMERS

Arnold Wick, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

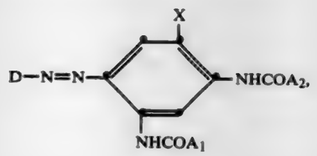
Filed Nov. 8, 1982, Ser. No. 439,684

Claims priority, application Switzerland, Nov. 18, 1981, 7411/81

Int. Cl.³ C08K *5/34*

U.S. Cl. 524—190 **9 Claims**

1. A process for the mass coloration of organic polymers, which process comprises incorporating into said polymer in the melt an azo compound of the formula I



(I)

wherein d is the radical of a carbocyclic aromatic or heterocyclic aromatic diazo component, X is hydrogen, halogen, methyl or methoxy, and each of A_1 and A_2 independently of the other is C_1–C_6alkyl, phenyl or phenyl which is substituted by halogen, C_1–C_4alkyl, methoxy, ethoxy, phenyl or phenoxy.

4,524,169

ELASTIC MOLDING MATERIAL, METHOD OF PRODUCING AND SHAPING AND USE THEREOF

Siegfried Wolff, Bornheim-Merten, and Paul Golombeck, Bornheim, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 579,914

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1983, 3305373

Int. Cl.³ C08K *5/54*

U.S. Cl. 524—263 **9 Claims**

1. Elastic molding material comprising at least one thermoplastic rubber and at least one silicate filler in an amount of 1–300 parts by weight, a processing or plasticizing oil in an amount of 0–100 parts by weight, and a sufficient amount of at least one stabilizer, which imparts resistance to aging, fatigue, oxidation, ozone or light, said molding material containing at least one organosilicon compound, having at least one alkoxysilyl group, in an amount of 0.1–25 parts by weight, all said parts by weight being based on 100 parts by weight of thermoplastic rubber.

4,524,170

FLAME RETARDANT FINISHING COMPOSITION FOR SYNTHETIC TEXTILES

Charles N. Berczi, Ormskirk, and Karen Hall, Bury, both of England, assignors to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 488,346, Apr. 25, 1983, , which is a division of Ser. No. 367,413, Apr. 12, 1982,. This application Sep. 13, 1983, Ser. No. 531,716

Int. Cl.³ C08K *5/06*

U.S. Cl. 524—371 **2 Claims**

1. A flame-retardant finishing composition for conferring wash-fast fire-retardant and after-glow suppressant properties on synthetic textiles, comprising from 40 to 55 parts decabromodiphenyl oxide, 15 to 30 parts water-insoluble metal borate salt selected from zinc borate and calcium borate, and 10 to 30 parts water-resistant polymeric binder selected from self cross-linkable acrylic/vinylidene chloride copolymer and an acrylic polymer cross-linked with melamine or urea formaldehyde per 100 parts of dry solids.

4,524,171

PREPARATION OF AN AROMATIC POLYIMIDE ACID BY SOLUTION POLYMERIZATION USING PROPYLENE GLYCOL METHYL ETHER

Kiran R. Bakshi, Murrysville; Walter P. Barie, Glenshaw, and Edward T. Sabourin, Allison Park, all of Pa., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1984, Ser. No. 642,518

Int. Cl.³ C08L *79/08*

U.S. Cl. 524—376 **9 Claims**

1. A method for preparing a solution of an aromatic polyimide acid which comprises:

reacting an aromatic dianhydride with an approximately equimolar quantity of an aromatic diamine in the presence of a solvent comprising propylene glycol methyl ether.

4,524,172

PREPARATION OF AQUEOUS SILICONE DISPERSIONS FOR TREATING TEXTILES

Helmut Steinberger; Helmut Kirschnek, and Josef Pfeiffer, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1983, Ser. No. 550,834

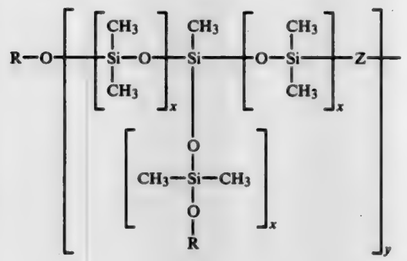
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244955

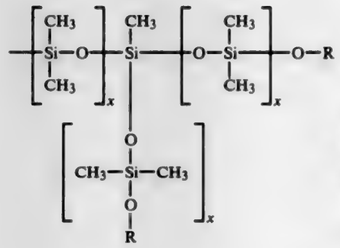
Int. Cl.³ C08K *5/01;* **C08L** *83/06*

U.S. Cl. 524—506 **6 Claims**

1. An aqueous dispersion by weight approximately consisting essentially of

(A) 1–30 parts by weight of a polyether-siloxane, crosslinked via alkylenoxy bridges, of the general formula





in which

Z is an oxyalkyleneoxy radical with 2–8 C atoms,

R is an alkyl-terminated polyether radical,

x is an interger between 2 and 25, and

y is an integer between 1 and 9,

(B) 1–40 parts of a high-molecular polyethylene with an average molecular weight of above 15,000–50,000,

(C) 1–10 parts of an anionic emulsifier,

(D) 0–15 parts of a non-ionic emulsifier, and

(e) 2–97 parts of water.

4,524,173

AQUEOUS COATING COMPOSITION COMPRISING A DISPERSION OF POLYMERIZED UNSATURATED MONOMERS, A NONIONIC SURFACTANT AND CROSSLINKING AGENT

John W. Rehfuss; Louis S. Hazelwood, and Martin B. Price, all of Louisville, Ky., assignors to Reliance Universal, Inc., Louisville, Ky.

Continuation of Ser. No. 469,417, Feb. 24, 1983, abandoned, which is a continuation-in-part of Ser. No. 348,286, Feb. 12, 1982, abandoned. This application Jul. 24, 1984, Ser. No. 633,083

Int. Cl.³ C08L *61/28*

U.S. Cl. 524—512 **8 Claims**

1. An aqueous coating composition consisting essentially of,

(A) about 52–78.5% by weight of a dispersion of polymerized ethylenically unsaturated monomers including a plurality of non-functional and functional monomers together having a combined glass transition temperature in the range of about 26°–60° C., the functional monomers being reactable with external crosslinking agents in the presence of an acid catalyst to form a crosslinked coating at temperatures below about 66° C. and consisting of (a) an hydroxyl functionality for crosslinking agents in the range of about 3–10% by weight of the total monomer composition, (b) an amide functionality for rheological characteristics in the range of about 4–9% by weight of the total monomer composition and (c) an acid monomer in the range of about 0.2–0% by weight of the total monomer composition;

(B) about 1.5–8% by weight of a surfactant, 50–100% of the particle charges of which are nonionic, the amount of surfactant in the composition being sufficient to render the composition dispersion stable throughout the pH range of about 1.0–10;

and (C) about 20–40% by weight of crosslinking agent comprised of a substituted amide alone or in mixture with up to about 50% by weight of a high solids, highly alkylated polymeric methoxy methylated substituted amine, the amide and amine being alkoxylated and/or etherified, as needed, to impart characteristics of water miscibility and stability to gellation upon acid catalysis for extended time periods.

4,524,174

REINFORCED ELASTOMER PRODUCTS

Stewart C. Watson, Williamsville, N.Y., assignor to Watson Bowman Associates, Amherst, N.Y.

Continuation of Ser. No. 326,058, Nov. 30, 1981, Pat. No. 4,473,680, which is a continuation of Ser. No. 010,252, Feb. 8, 1979, Pat. No. 4,305,172, which is a division of Ser. No. 888,660, Mar. 21, 1978, Pat. No. 4,210,698, which is a continuation-in-part of Ser. No. 616,140, Sep. 24, 1975, Pat. No. 4,080,086. This application May 29, 1984, Ser. No. 614,956

Int. Cl.³ C08L *9/02, 55/02*

U.S. Cl. 524—566 **9 Claims**

1. A process for enhancing the resistance of an elastomer body to deformation, said process comprising the step of providing an elastomeric load bearing device comprising an interior core section having an elastomeric binder and an exterior marginal section surrounding the interior section consisting of an elastomer, said process including the step of incorporating into the interior core section a sufficient amount of crushed, hard reinforcing elements such that deformation of the device is prevented or minimized under compression loading, said marginal section remaining substantially free of the reinforcing elements.

4,524,175

WATER-IN-OIL EMULSIONS OF HYDROPHOBE ASSOCIATION POLYMERS

Frederick W. Stanley, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 16, 1984, Ser. No. 600,879
Int. Cl.³ C08K *5/05, 5/06;* **C08L** *33/26*
U.S. Cl. 524—831 **15 Claims**

1. A stable water-in-oil emulsion comprising (1) a continuous oil phase and dispersed therein (2) a discontinuous aqueous phase containing a hydrophobe associative copolymer of an ethylenically unsaturated water-soluble monomer and an ethylenically unsaturated monomer having a hydrophobic moiety having at least 8 carbons capable of associating with a similar hydrophobic moiety or a hydrophobic moiety of a water-soluble surfactant.

4,524,176

ACRYLIC MODIFIED POLYESTER ANAEROBIC ADHESIVE

Roscoe A. Pike, Windsor, and Foster P. Lamm, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 21, 1984, Ser. No. 591,736
Int. Cl.³ C08L *67/06;* **C08G** *63/46*
U.S. Cl. 525—12 **7 Claims**

1. An anaerobic adhesive acrylate comprising the reaction product of a hydroxyl containing polyester and a glycidyl acrylate wherein the ratio of —OH in the polyester to glycidyl groups in the acrylate is from about 1:0.4 to about 1:1, and the reaction product is capable of polymerizing in an anaerobic environment.

4,524,177

USE OF 1,4-DIHYDROXYNAPHTHALENE IN THE HARDENING OF ETHYLENICALLY UNSATURATED COMPOUNDS

Werner Klöker, and Klaus Kraft, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 23, 1983, Ser. No. 554,569
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1982, 3244814
Int. Cl.³ C08L *67/06*
U.S. Cl. 525—14 **9 Claims**

1. A process for the hardening of acrylic resins or unsaturated polyester resins comprising hardening the resin in the presence of:

(i) from 0.02 to 1% by weight of 1,4-dihydroxynaphthalene,

(ii) from 0.0015 to 0.15% by weight, calculated on the basis of the metal, of at least one iron compound soluble in the resins to be hardened, and

(iii) from 0.25 to 7% by weight of at least one peroxide catalyst,

the percentage of (i), (ii) and (iii) being based on the resin to be hardened.

4,524,178

COMPOSITIONS OF UNSATURATED POLYESTERS OR POLYESTERAMIDES AND EFFICIENT FLEXIBILIZERS THEREFOR

Robert E. Hefner, Jr., Lake Jackson, Tex.; Patrick H. Martin, Danville, Calif., and Gregory A. Stevens, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 9, 1983, Ser. No. 502,870
Int. Cl.³ C08L *67/06, 77/12, 75/04*
U.S. Cl. 525—28 **36 Claims**

1. A flexibilizer/alkyd composition which does not phase separate upon curing and consists essentially of

a. an unsaturated polyester and/or polyesteramide alkyd which includes no terminal polycycloalkenyl groups, and

b. a total of from about 1 to about 20 parts by weight of a flexibilizer consisting essentially of one or more urethane oligomers per hundred parts of said alkyd, said oligomers each having at least one vinyl-reactive end group and being an addition product of a polyether glycol with an unsaturated isocyanate or with a diisocyanate and an unsaturated compound comprising an —NCO or —CH$_2$OH group,

c. from 0 to about 400 parts by weight of a non-resinous vinyl monomer per hundred parts of said alkyd,

with the proviso that, when said alkyd comprises an unsaturated polyester, either the parts by weight of said oligomers per hundred parts of said alkyd is not in excess of $11+9a/-(a+e)$, where a and e are the parts by weight, respectively, of said polyesteramide and said polyester in said composition, or

said unsaturated compound is an unsaturated isocyanate, an alkenylphenol, a hydroxyalkylacrylate-initiated polyglycol or N-methylolacrylamide.

4,524,179

POLYPHENYLENE ETHER COMPOSITIONS HAVING IMPROVED PROCESSABILITY

James M. Vaughan, Williamstown, W. Va., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Aug. 24, 1984, Ser. No. 643,939
Int. Cl.³ C08L *71/02, 71/04*
U.S. Cl. 525—68 **3 Claims**

1. In a composition comprising a polyphenylene ether resin and a high impact polystryene, the improvement wherein an ethylene oxide-propylene oxide block copolymer is included in an amount effective to reduce adhesion to metals.

4,524,180

RUBBER-MODIFIED, IMPACT-RESISTANT POLYMERIC COMPOSITIONS

Yun C. Sun, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 21, 1982, Ser. No. 380,594
Int. Cl.³ C08L *25/06, 53/02, 51/04*
U.S. Cl. 525—71 **6 Claims**

1. An improved rubber-modified impact resistant monovinylidene aromatic polymer composition having dispersed therein:

I. from about 1 to about 40 weight percent based on weight polymer composition of an improved rubber composition consisting of a blend of:

(a) from about 10 to about 95 weight percent based on weight improved rubber composition of polybutadiene; and

(b) from about 5 to about 90 weight percent based on weight improved rubber composition of block copolymer of butadiene with monovinylidene aomatic monomer and/or ethylenically unsaturated nitrile monomer;

the improved rubber composition being in the form of discrete particles having occluded therein and grafted thereto amounts of monovinylidene aromatic polymer; and

II. from about 5 to about 35 weight percent based on weight polymer composition of emulsion produced rubber in the form of particles, said particles having a bimodal size distribution, with the further limitation that the improved rubber-modified, impact-resistant monovinylidene aromatic polymer composition comprises from about 5 to about 40 weight percent total rubber based on weight polymer composition.

4,524,181

CURABLE EPOXY COMPOSITIONS AND CURED RESINS OBTAINED THEREFROM

Randall E. Adam, Woodbury, and William J. Schultz, Vadnais Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 11, 1983, Ser. No. 522,420
Int. Cl.³ C08L *63/02*
U.S. Cl. 525—107 **15 Claims**

1. A composition of matter that is storage stable against separation of phases comprising:

a. 1.0 part of a curable epoxide group-containing compound having one or more oxirane groups, and

b. 0.05 to 1.0 part of colloidally-dispersed, elastomeric particles that are insoluble in said epoxide compound, comprising,

(1) 75 to 98 percent by weight of an elastomeric polymer having a glass transition temperature of 25° C. or less and is selected from polymers derived from at least one (1) ethylenically-unsaturated group-containing monomer and from (2) diisocyanates and coreactive difunctional hydrogen compounds, said at least one monomer being in situ polymerized in said curable epoxide group-containing compound to a polymer which is insoluble in said epoxide compound and

(2) 25 to 2 percent by weight of a stabilizer having the formula PQ, in which

Q is a polymeric segment that has a molecular weight of at least 1000 and is soluble in said epoxide group-containing compound, and

P is selected from

(a) a functional group covalently attached to Q and also attached to the elastomeric particle during particle growth by formation of a covalent or ionic bond with the elastomeric particle, and

(b) a polymeric segment that has a molecular weight of at least 1000 and that becomes absorbed into the elastomeric particle because it is soluble in said elastomeric polymer of said monomer composition but insoluble in said epoxide group-containing compound.

4,524,182

USE OF CROSS-LINKED EPOXIDIZED FATTY OILS IN VULCANIZING POLYMERS

Armin Bauer, Bruehl; Helfried Ehrend, Speyer; Klaus Morche, Mannheim; Karl Nützel, Neulussheim, and Michael Sauerbier, Bruehl-Rohrhof, all of Fed. Rep. of Germany, assignors to Rhein-Chemie Rhein GmbH, Mannheim, Fed. Rep. of Germany

Filed Feb. 21, 1984, Ser. No. 581,878
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1983, 3307421
Int. Cl.³ C08G *59/20;* **C10M** *3/20;* **C08K** *5/11*
U.S. Cl. 525—120 **6 Claims**

1. A method of processing an elastomeric polymer comprising the steps of preparing and vulcanizing a mixture of said polymer and an effective amount of an active processing composition which comprises cross-linked epoxidized esters of at least dihydric alcohols and unsaturated fatty acids.

4,524,183

HIGH SOLIDS ACRYLIC COATING SYSTEMS

Robert J. Weber, Jr., Belle Mead, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 31, 1983, Ser. No. 547,015
Int. Cl.³ C08L *61/28*
U.S. Cl. 525—162 **9 Claims**

1. In the method of preparing high solids coating compositions comprising an acrylic resin, crosslinking agent, reactive diluent and crosslinking catalyst, the improvement which comprises using as the reactive diluent a low molecular weight, hydroxyl-containing acrylic polymer prepared by contacting one or more acrylic or methacrylic acid alkyl esters at least one of which is an hydroxyalkyl ester of acrylic or methacrylic acid with an anionic polymerization initiator in an inert solvent at a temperature of about 15° to about 20° C. wherein the alkyl groups contain 1 to about 6 carbons and the initiator concentration is greater than about 5 mole% based on the total monomer charge and then quenching the polymerization reaction.

4,524,184

IMPACT POLYMER COMPOSITION

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 23, 1984, Ser. No. 603,052
Int. Cl.³ C08L *51/04, 53/02*
U.S. Cl. 525—314 **9 Claims**

1. A high clarity impact polymer composition having an Izod Impact Strength of greater than 0.3 ft-lb/in, consisting essentially of polyparamethystyrene having a weight average molecular weight of about 50k–400k and styrene-butadiene block copolymer having a weight average molecular weight of about 50k–250k prepared by dissolving the block copolymer in paramethylstyrene monomer and polymerizing the paramethylstyrene, said block copolymer being present in the amount of about 5–20 percent by weight as concentrated rubbery domains within the polyparamethylstyrene.

4,524,185

HALOGEN-CONTAINING ELASTOMER COMPOSITION, AND VULCANIZING PROCESS USING DIMERCAPTOTHIODIAZOLE AND DITHIOCARBAMATE CURING SYSTEM

Robert F. Hinderer, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Mar. 7, 1983, Ser. No. 472,432
Int. Cl.³ C08F *8/34, 8/30*
U.S. Cl. 525—328.2 **22 Claims**

1. A vulcanizable composition comprising an active halogen-containing elastomer and a curing system consisting essentially of dimercaptothiodiazole present in an amount of from about 0.05 to about 3.0 parts by weight per 100 parts of elastomer, and a dithiocarbamate type accelerator present in an amount of from about 0.5 to about 5.0 parts by weight per 100 parts of elastomer, said dithiocarbamate type accelerator selected from the group consisting of bismuth dimethyldithiocarbamate, cadmium diamyldithiocarbamate, cadmium diethyldithiocarbamate, copper dimethyldithiocarbamate, lead diamyldithiocarbamate, lead dimethyldithiocarbamate, selenium diethyldithiocarbamate, selenium dimethyldithiocarbamate, tellurium diethyldithiocarbamate, zinc diamyldithiocarbamate, zinc di-n-butyldithiocarbamate, zinc diethyldithiocarbamate, zinc dimethyldithiocarbamate, zinc-N-ethyl phenyldithiocarbamate, zinc-N-pentamethylene dithiocarbamate, and pentamethylene-ammonium-N-pentamethylene dithiocarbamate, as well as mixtures thereof.

4,524,186

PROCESS FOR PRODUCING WATER-ABSORBING RESINS

Hiroshi Nagase, Tokyo, Japan, assignor to Fujikura Kasei Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,838
Claims priority, application Japan, Oct. 6, 1982, 57-174564
Int. Cl.³ C08F *8/12*
U.S. Cl. 525—328.8 **22 Claims**

1. A process for producing an absorbent resin, which comprises polymerizing 1 mole of a lower alkyl acrylate and 0.07 to 0.5 mole of a polyhydric alcohol ester of a monoethylenically unsaturated carboxylic acid in an aqueous medium in the absence of an emulsifying agent, saponifying the resulting polymer with a basic substance in a water-lower alcohol medium to produce a gel-like saponification product, and then neutralizing the saponification product with an acid.

4,524,187
ISOBUTYLENE-TRIENE COPOLYMERS CROSS-LINKABLE UNDER AMBIENT HUMIDITY CONDITIONS, A PROCESS FOR THEIR PREPARATION, AND INTERMEDIATE SUITABLE FOR THIS PURPOSE

Alberto Greco, Dresano; Guglielmo Bertolini, Pavia, and Omero Zavattini, Curtatone, all of Italy, assignors to Anic S.p.A., Palermo, Italy and Dow Corning Corporation, Midland, Mich.

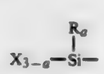
Filed Dec. 9, 1982, Ser. No. 448,263

Claims priority, application Italy, Dec. 11, 1981, 25517 A/81; Oct. 11, 1982, 23702 A/82

Int. Cl.³ C08F *8/34*

U.S. Cl. 525—332.1 **21 Claims**

1. Copolymers of isobutylene and at least one triene selected from the group consisting of 1,3,7-octatriene, 5-methyl-1,3,6-heptatriene, hexatriene, dicyclopentadiene and allylcyclopentadiene, of molecular weight variable between 1000 and 1,000,000 and cross-linkable under ambient humidity conditions, characterised by the presence of pendant functions of type



where R is a monovalent hydrocarbon radical of 1 to 10 carbon atoms, X is halogen or an alkoxy, phenoxy, thioalkoxy, acyloxy, amino, aminoxy, oxime or silanoxy radical, and a is 0, 1 or 2 wherein the silicon atoms are bonded to the copolymer through reaction with the non-terminal double bond or the vinyl bond on said triene.

4,524,188
SYNTHESIS AND COPOLYMERIZATION OF ASYMMETRIC POLYMERS

Joseph P. Kennedy, and Misao Hiza, both of Akron, Ohio, assignors to University of Akron, Akron, Ohio

Filed May 2, 1983, Ser. No. 490,554

Int. Cl.³ C08F *110/10*

U.S. Cl. 525—333.7 **10 Claims**

1. An asymmetrically telechelic polymer, comprising:

A—PIB—B

wherein PIB is a polyisobutylene backbone, and A and B are different, wherein A is selected from the group consisting of phenyl and substituted phenyl, wherein said substitution may be at any position and is selected from the group consisting of vinyl, $-SO_3\ominus$, —OH, $-NO_2$, $-NH_2$, and alkyl groups having from 1 to 10 carbon atoms; and wherein B is selected from the group consisting of methacrylate, hydroxyl, and vinylidene.

4,524,189
PREPARATION OF CHLORINATED POLYOLEFINS

James B. Akers, Jr., Baton Rouge, La.; Douglas E. Leng, Midland, Mich., and Randall J. Normand, Plaquemine, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 20, 1984, Ser. No. 591,653

Int. Cl.³ C08F *8/22*

U.S. Cl. 525—35 G **6 Claims**

1. A method for preparing a chlorinated polyolefin, comprising the steps of:

(a) suspending a particulate mass of a polyolefin or chlorinated polyolefin in an aqueous medium;

(b) injecting a submerged jet of chlorine gas traveling at a linear velocity of at least about sixty feet per second into the suspension of the polyolefin or chlorinated polyolefin, thereby atomizing the chlorine, and chlorinating the polyolefin or chlorinated polyolefine; and

(c) separating and recovering the chlorinated polyolefin product.

4,524,190
PROCESS FOR PREPARATION OF CROSS-LINKED POLY(TRI-N-BUTYLTIN)METHACRYLATE WITH SIMULTANEOUS PARTICLE SIZE REDUCTION

D. Gerald Glasgow, Centerville, and Joseph Satanek, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1984, Ser. No. 609,940

Int. Cl.³ C08F *8/44*

U.S. Cl. 525—370 **5 Claims**

1. A process for the simultaneous preparation and particle size reduction of poly(tri-n-butyltin) methacrylate comprising the steps of:

combining a cross-linked polymethacrylic acid, tributyl tin oxide, and a poly solvent capable of causing hydraulic shattering of crosslinked polymers; and

esterifying said combined elements until a desired quantity of poly(tri-n-butyltin) methacrylate product is obtained.

4,524,191
POLYESTER COMPOSITION AND PRODUCTION THEREOF

Katuyuki Nakamura, Miyazaki, and Kazuya Neki, Shizuoka, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 252,501, Apr. 8, 1981, abandoned. This application Jan. 31, 1983, Ser. No. 462,636

Claims priority, application Japan, Sep. 30, 1980, 55-136048; Nov. 22, 1980, 55-164775

Int. Cl.³ C08L *67/02, 77/06*; C08K *7/14*

U.S. Cl. 525—425 **24 Claims**

1. An injection moldable polyester composition having an increased crystallization rate comprising:

(A) 100 parts by weight of a polyester comprising mainly polyethylene terephthalate and having a reduced specific viscosity ($\eta sp/c$) of at least 0.3; and

(B) from 0.1 to 5 parts by weight of at least one wholly aromatic polyamide, as a nucleating agent, having a melting point of at least 300° C. and containing at least one of (1) a diamine group represented by the formula (I)

$$-NH-Ar_1-NH- \quad (I)$$

wherein Ar_1 represents a divalent aromatic group; (2) a dicarboxylic acid group represented by the formula (II)

$$-CO-Ar_2-CO- \quad (II)$$

wherein Ar_2 represents a divalent aromatic group; and (3) an aminocarboxylic acid group represented by the formula (III)

$$-NH-Ar_3-CO- \quad (III)$$

wherein Ar_3 represents a divalent aromatic group, linked to each other through amido bonds,

wherein said component (B) is uniformly dispersed as a distinct phase in said component (A), after blending with component (A), in a substantial size of 50 μm or less, and a half width of an exothermic peak of the polyester composition measured in a crystallization temperature range by a differential scanning calorimeter at a cooling rate of 10° C./min is 15° C. or less per 8 mg of component (A), whereby the crystallization rate of said polyester comprising mainly polyethylene terephthalate is increased.

4,524,192
FLEXIBLE COATING COMPOSITIONS

Delores J. Alexander, 29060 Lone Elm La., Southfield, Mich. 48076; Kenneth R. Kurple, 9533 Springborn Rd., Anchorville, Mich. 48004, and Panagiotis I. Kordomenos, 42758 Elizabeth Cir., Mt. Clemens, Mich. 48044

PCT No. PCT/US83/01596, § 371 Date Oct. 13, 1983, § 102(e) Date Oct. 13, 1983, PCT Pub. No. WO85/01694, PCT Pub. Date Apr. 25, 1985

PCT Filed Oct. 13, 1983, Ser. No. 553,322

Int. Cl.³ C08L *75/06, 67/02*

U.S. Cl. 525—440 **19 Claims**

1. A flexible coating composition which is characterized in that it comprises:

(A) hydroxy-containing urethane modified polyester (i) having a number average molecular weight ($\overline{M}_n$) of between about 1000 and about 10,000, (ii) having a hydroxyl number of between about 30 and about 200, and (iii) containing between about 1 and about 10 urethane groups per molecule, and being made from reactants comprising:

(1) urethane modified diol made by reacting:

(a) a diol, and

(b) diisocyanate,

wherein said diol and said diisocyanate are reacted in a molar ratio of from about 4:1 to about 4:3;

(2) polyol comprising at least about 5 weight percent triol; and

(3) acid component selected from dicarboxylic acids and anhydrides thereof;

(B) amine-aldehyde crosslinking agent; and

(C) 0–60 weight percent, based on the total weight of (A) and (B) of said composition, of a linear polyurethane having a number average molecular weight of between about 15,000 and about 40,000.

4,524,193
MODACRYLIC SYNTHETIC FIBER HAVING AN EXCELLENT DEVITRIFICATION PREVENTING PROPERTY AND A PROCESS FOR PREPARING THE SAME

Kaoru Yamazaki, Akashi; Shunichiro Kurioka, Kobe; Mitsuya Sakata, Akashi, and Takahiro Ogawa, Takasago, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 264,618, May 18, 1981, abandoned. This application Sep. 21, 1982, Ser. No. 420,882

Claims priority, application Japan, May 28, 1980, 55-71655; May 28, 1980, 55-71656

Int. Cl.³ C08F *2/26, 2/06*

U.S. Cl. 526—79 **12 Claims**

1. A process for preparing a modacrylic synthetic fiber which comprises polymerizing monomers consisting essentially of acrylonitrile, at least one of vinyl chloride and vinylidene chloride, and a sulfo group-containing vinyl monomer to produce a copolymer consisting essentially of 40 to 65% by weight of acrylonitrile, 31 to 59.9% by weight of at least one of vinyl chloride and vinylidene chloride and 0.3 to 4% by weight of a sulfo group-containing vinyl monomer, the ratio of the reactivity of said sulfo group-containing vinyl monomer to that of acrylonitrile being at least 1, under the condition satisfying the following equation:

$$33<Y-X<75$$

wherein X is a percentage of the amount of a polymer produced at the time of starting the addition of the sulfo group-containing vinyl monomer to the amount of the whole polymer to be produced, and Y is a percentage of the amount of a polymer produced at the time of finishing the addition of the sulfo group-containing vinyl monomer to the amount of the whole polymer to be produced, said polymerizing being selected from the group consisting of emulsion polymerizing and solution polymerizing, and spinning the resulting copolymer.

4,524,194
PROCESS FOR THE POLYMERIZATION OF VINYLIDENE FLUORIDE, IN AN AQUEOUS SUSPENDING MEDIUM, IN THE PRESENCE OF BIS(ALKYL) CARBONATE CHAIN REGULATORS

Joseph Dumoulin, Wezembeek-Oppem, Belgium, assignor to Solvay & Cie. (Societe Anonyme), Brussels, Belgium

Filed Feb. 29, 1984, Ser. No. 585,222

Claims priority, application France, Mar. 10, 1983, 83 04106

Int. Cl.³ C08F *2/38, 114/22*

U.S. Cl. 526—84 **19 Claims**

1. Process for the polymerisation, in an aqueous suspending medium, of vinylidene fluoride with the aid of an oil-soluble free radical polymerisation initiator in the presence of a suspending agent and a chain regulator, characterised in that the chain regulator is a bis(alkyl)carbonate, the alkyl groupings of which contain not more than five carbon atoms and the initiator, the suspending agent and the chain regulator are present in effective amounts; the molecular weight of the vinylidene fluoride polymer produced being dependent on the amount of chain regulator present, and the amount of chain regulator used in the process being selected according to the polymer molecular weight desired.

4,524,195
PROCESS AND CATALYST FOR OLEFIN POLYMERIZATION

Joel L. Martin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 19, 1983, Ser. No. 543,582

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—114 **29 Claims**

1. A process for preparing a solid catalyst suitable for the polymerization of alpha-olefins comprising

(1) forming a solution by using an organophosphate or organophosphoramide to cause the dissolution of at least one metal halide selected from the group consisting of the completely halogenated halides of rare earth metals having atomic numbers in the range of 57 to 71 in a dry organic liquid and then

(2) reacting said solution with a halogen compound of a transition metal to produce said solid.

4,524,196
PROCESS FOR PREPARING "LIVING" POLYMERS

William B. Farnham, and Dotsevi Y. Sogah, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

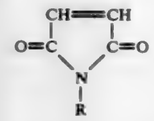
Continuation-in-part of Ser. No. 389,111, Jun. 17, 1982, Pat. No. 4,414,372. This application Nov. 7, 1983, Ser. No. 549,408

The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.³ C08F *4/16*

U.S. Cl. 526—190 **48 Claims**

1. In a process comprising polymerizing the monomer selected from the group consisting of $CH_2=C(Y)X$,



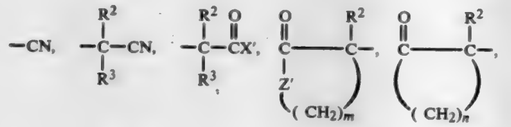
and mixtures thereof wherein:

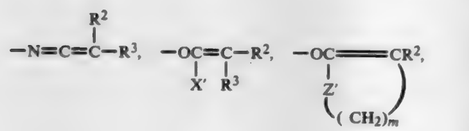
X is —CN, —CH=CHC(O)X′ or —C(O)X′;

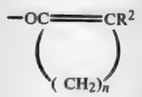
Y is —H, $-CH_3$, —CN or $-CO_2R$, provided, however, when X is CH=CHC(O)X′, Y is —H or $-CH_3$;

X′ is $-OSi(R^1)_3$, —R, —OR or —NR′R″;

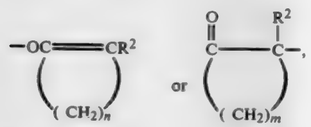
each R^1, independently, is hydrocarbyl of up to 20 carbon atoms;
R is hydrocarbyl of up to 20 carbon atoms, optionally containing one or more ether oxygen atoms within aliphatic segments thereof, and optionally containing one or more functional substituents that are unreactive under polymerizing conditions; and
each of R′ and R″ is independently selected from C_{1-4} alkyl
by contacting the one or more monomers under polymerizing conditions with:
(i) the initiator of the formula $(R^1)_3MZ$ wherein:
R^1 is as defined above;
Z is an activating substituent selected from the group consisting of



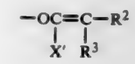




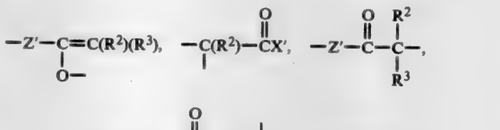
and mixtures thereof
X′ is as defined above for the monomer;
each of R^2 and R^3 is independently selected from H and hydrocarbyl of up to 20 carbon atoms, optionally containing one or more ether oxygen atoms within aliphatic segments thereof, and optionally containing one or more functional substituents that are unreactive under polymerizing conditions; and
Z′ is O or NR′;
m is 2, 3 or 4;
n is 3, 4 or 5; and
M is Si, Sn, or Ge,
provided, however when Z is

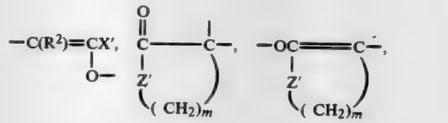


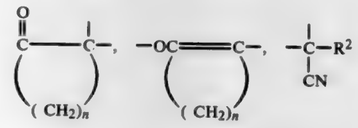
M is Sn or Ge; and
(ii) a co-catalyst which is a source of bifluoride ions $HF_2^{\ominus}$, to produce "living" polymer having repeat units of the one or more monomers, said process further characterized in that:
(a) R^1 is H, provided that at least one R^1 group is not H; and/or
(b) R is a polymeric radical containing at least 20 carbon atoms and optionally containing one or more ether oxygen atoms within aliphatic segments thereof and optionally containing one or more functional substituents that are unreactive under polymerizing conditions; and/or
(c) at least one of any R group in the monomer contains one or more reactive substitutents of the formula —Z′(O)-C—C(Y¹)═CH₂ wherein Y^1 is H or CH_3 and Z′ is as defined above; and/or
(d) the initiator is of the formula $(R^1)_2M(Z^1)_2$ or $O[M(R^1)_2Z^1]_2$ wherein R^1 and M are as defined above and Z^1 is



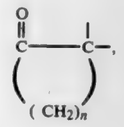
wherein X′, R^2 and R^3 are as defined above; and/or
(e) at least one of any R, R^2 and R^3 in the initiator contains one or more initiating substitutents of the formula —Z-^{2}—$M(R^1)_3$ wherein
M and R^1 are as defined above; and
Z^2 is a diradical selected from the group consisting of



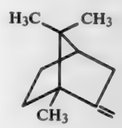




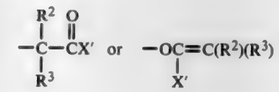
and mixtures thereof, wherein R^2, R^3, X′, Z′, m and n are as defined above, provided, however, when Z^2 is



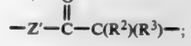
M is Sn or Ge; and/or
(f) Z is selected from the group consisting of —SR, $—OP(NR'R'')_2$, $—OP(OR^1)_2$, $—OP[OSi(R^1)_3]_2$ and mixtures thereof, wherein R, R^1, R′ and R″ are as defined above; and/or
(g) R^2 and R^3 taken together are



provided, however, Z is

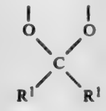


and/or Z^2 is

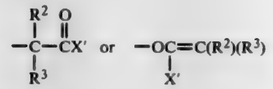


and/or

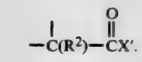
(h) X′ and either R^2 or R^3 taken together are



provided, however, Z is



and/or Z^2 is



4,524,197
PROCESS FOR MAKING VINYLIDENE FLUORIDE CONTAINING FLUOROELASTOMERS
Ausat A. Khan, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 28, 1984, Ser. No. 645,095
Int. Cl.³ C08F *2/00, 14/18*
U.S. Cl. 526—206 **12 Claims**

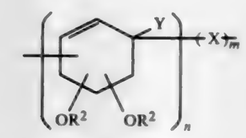
1. A process for making a fluoroelastomer which comprises feeding to an aqueous polymerization medium in a reactor about 25–75% by weight of the total monomers, vinylidene fluoride, at least one other fluorine-containing ethylenically unsaturated monomer containing at least as many fluorine atoms as carbon atoms and copolymerizable with vinylidene fluoride, an inorganic free-radical initiator, a chain transfer agent added in an amount sufficient to maintain a concentration in the aqueous polymerization medium of from about 0.5×10^{-3} to 5×10^{-3} moles per 100 grams of total monomers, and from about 0.02–2% by weight, based on the weight of the aqueous medium, of a surfactant which is a compound having the formula:

$$F—CF_2CF_2—_nCH_2CH_2—OSO_3M$$

where n is an integer of from 2–8 or mixtures thereof and M is an alkali metal cation, hydrogen or ammonium, maintaining the pH of the aqueous polymerization medium within a range of from about 2.5–5, continuously removing a portion of the resulting fluoroelastomer latex from the polymerization reactor and adding to said portion a mineral acid or a carboxylic acid containing no more than 5 carbon atoms and having a pK of less than about 4.2 to lower the pH to about 2 or below and a water-soluble salt of an alkaline earth metal to coagulate the fluoroelastomer and recovering the fluoroelastomer from the latex.

4,524,198
POLY(1,2-DISUBSTITUTED CYCLOHEXA-3,5-DIENES
Denis G. H. Ballard, Littleton; Andrew Courtis, Hightown, and Ian M. Shirley, Barnton, all of England, assignors to Imperial Chemical Industries Limited, London, England
Division of Ser. No. 433,097, Oct. 6, 1982, Pat. No. 4,476,296. This application Mar. 2, 1984, Ser. No. 585,373
Claims priority, application United Kingdom, Oct. 6, 1981, 8130114; Oct. 6, 1981, 8130115; Oct. 6, 1981, 8130116
Int. Cl.³ C08F *32/06*
U.S. Cl. 526—292.1 **5 Claims**

1. A polymeric composition comprising a polymer which has a structure which may be represented by general formula:



wherein the cyclohexenylene ring and the residue X, where X is present, may vary from unit to unit along the polymer chain; each R^2, which may be the same or different, is hydrogen, acyl or hydrocarbyloxyketo; X, where present, is the residue of a polymerisable vinyl comonomer, the OR^2 groups are on adjacent carbon atoms, Y is hydrogen, halogen or an alkyl group having up to four carbon atoms; n and m are whole numbers; and the ratio of n:m lies in the range 1:0 to 1:1000.

4,524,199
STABLE POLYMERIC DISPERSION AND METHODS FOR MAKING
Kar P. Lok, Toronto, and Christopher K. Ober, Oakville, both of Canada, assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 9, 1983, Ser. No. 549,933
Int. Cl.³ C08G *3/20;* **C08F** *2/22*
U.S. Cl. 527—313 **21 Claims**

1. A stable dispersion comprising a nonionic polar dispersion medium having dispersed therein monodispersed particles comprising a thermoplastic resin core substantially insoluble in said dispersion medium formed from a styrene or butylmethacrylate containing monomer or mixtures thereof having irreversibly anchored thereto a nonionic amphipathic steric stabilizer comprising a graft copolymer having a portion formed from a styrene or butylmethacrylate containing monomer or mixtures thereof and a portion formed from hydroxyethyl cellulose, hydroxypropyl cellulose, hydroxybutyl methyl cellulose, hydroxypropyl methyl cellulose, ethyl cellulose or cellulose propionate.

4,524,200
GRANULAR POLY(ARYLENE SULFIDE) RECOVERY USING EVAPORATION
Fred T. Sherk; Afif M. Nesheiwat, and Guy Senatore, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Continuation of Ser. No. 423,592, Sep. 27, 1982, abandoned. This application May 18, 1984, Ser. No. 611,573
Int. Cl.³ C08G *75/14*
U.S. Cl. 528—388 **23 Claims**

1. A method for recovery of granular poly(arylene sulfide) from a slurry comprising granular poly(arylene sulfide), polar organic solvent, alkali metal halide, poly(arylene sulfide) oligomers, and unreacted reactants, said method comprising:
(a) treating a polymeric reaction mixture comprising polar organic solvent and molten poly(arylene sulfide) in the presence of an amount of a liquid soluble in the polar organic solvent but said liquid not itself a solvent for poly(arylene sulfide) said amount sufficient to cause a phase separation of molten poly(arylene sulfide) from polar organic solvent upon reducing the temperature of said reaction mixture sufficiently to produce a slurry of granular poly(arylene sulfide) in polar organic solvent;
(b) reducing the temperature of said reaction mixture sufficiently to produce a slurry of granular poly(arylene sulfide) in polar organic solvent said slurry also containing alkali metal halide, poly(arylene sulfide) oligomers, unreacted reactants and liquid soluble in the polar organic solvent;
(c) heating said slurry of (b) under pressure conditions suffi-

cient to evaporate polar organic solvent, liquid soluble in the polar organic solvent and volatile impurities at a temperature below the normal boiling point of said polar organic solvent, thereby producing a dried mixture comprising poly(arylene sulfide), poly(arylene sulfide) oligomers, and alkali metal halide,

(d) reslurrying said dried mixture with water to extract alkali metal halide and disperse poly(arylene sulfide) oligomers in a reslurried mixture, and

(e) classifying reslurried mixture through a classifying means thereby recovering granular poly(arylene sulfide) on said classifying means and passing a first filtrate comprising poly(arylene sulfide) oligomers and aqueous alkali metal halide solution through said classifying means.

4,524,201

REACTIVE ORGANO TITANATE CATALYSTS

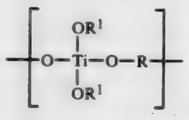
Austin E. Barnabeo, and Michael J. Keogh, both of Bridgewater, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 334,673, Dec. 28, 1981, Pat. No. 4,415,710. This application Aug. 2, 1983, Ser. No. 518,428

Int. Cl.³ C08G *79/00*

U.S. Cl. 528—395 **16 Claims**

1. A preformed, reactive catalyst, capable of crosslinking an alkylene-alkyl acrylate copolymer to a crosslinked product while catalyzing the crosslinking reaction, which is the reaction product of a mixture containing an organo titanate, a polyol having at least two primary hydroxy groups attached to non-adjacent carbon atoms and a monohydric alcohol, said reactive catalyst containing the repeating unit:



wherein R is a divalent hydrocarbon radical and each R^1 is a monovalent hydrocarbon radical.

4,524,202

PROCESS FOR THE PREPARATION OF 1,1'-DIACETALS

Lutz-Friedjan Tietze, Goettingen, and Roland Fischer, Noertenhardenberg, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

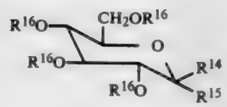
Filed Jun. 24, 1982, Ser. No. 391,655

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3128271

Int. Cl.³ C07H *1/00*

U.S. Cl. 536—18.5 **8 Claims**

8. A process for the production of 1-0-(1'-methoxy methyl)-2,3,4,6-tetra-0-acetyl-β-D-glucopyranose which comprises reacting a compound of the formula

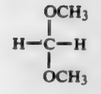


wherein

R^{16} is acetyl, R^{15} is H and

R^{14} is O-Si$(CH_3)_3$

with an acetal of the formula



in the presence of trimethyl silyl trifluoromethane sulphonate as catalyst in a suitable solvent.

4,524,203

4-(4-PYRIDINYL)ISATOIC ANHYDRIDE

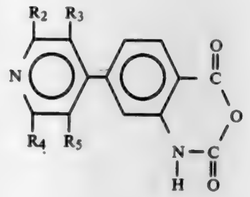
Thomas J. Walter, and Paul F. Ranken, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Aug. 15, 1983, Ser. No. 523,462

Int. Cl.³ C07D *265/26, 215/20*

U.S. Cl. 544—94 **2 Claims**

1. A 4-(4-pyridinyl)isatoic anhydride corresponding to the formula:



wherein R_2, R_3, R_4, and R_5 are independently selected from hydrogen and phenyl, phenoxy phenyl aryl, and halo substituents.

4,524,204

PROCESS FOR REPLACING ANOIONS OR ORGANIC CATIONIC SALTS

Karl H. Drexhage, Siegen, Fed. Rep. of Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 4, 1980, Ser. No. 174,959

Int. Cl.³ C07D *265/38, 311/60, 335/02, 409/06*

U.S. Cl. 544—103 **22 Claims**

1. A process for replacing said recovering the anion of a first organic cationic salt, said process comprising the steps of:

(a) preparing a first dispersion or solution by combining

(i) a first acid-stable, organic cationic salt having an anion,

(ii) a water-immiscible organic solvent, and

(iii) the acid of a solubilizing anion, thereby forming (1) a second organic cationic salt having said solubilizing anions, and (2) an acid of said anion of said first organic cationic salt, and (3) an excess, if any, of an acid of said solubilizing anion, said second organic cationic salt having a solubility in 2-ethoxyethanol:2-methoxyethyl acetate (1:1 by weight) at least 5 percent greater than said first organic cationic salt;

(b) removing the acid formed in said first dispersion or solution by, at least once

(i) mixing water with said first dispersion or solution to form a mixture comprising (1) said first dispersion or solution, which contains said second organic cationic salt having said solubilizing anion, and (2) a second solution comprising water, at least a portion of the acid formed in said first dispersion or solution, and at least a portion of any excess of said acid of said solubilizing anion, and

(ii) separating said first dispersion or solution from said second solution; and

(c) recovering said second organic cationic salt having said solubilizing anion from said first dispersion or solution.

4,524,205

PROCESS FOR THE PREPARATION OF 1-AMINO-1,3,5-TRIAZINE-2,4(1H,3H)-DIONES

Gerhard Bonse, Cologne; Reinhard Lantzsch, Leverkusen; Henning Dörr, Bergisch-Gladbach; Wolfgang Kreiss, Cologne; Karlfried Dickoré, Wuppertal; Klaus Ditgens, Wuppertal, and Eckart Kranz, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

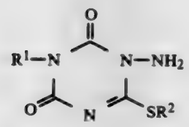
Filed Oct. 21, 1983, Ser. No. 544,334

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241114; Sep. 16, 1983, 3333447

Int. Cl.³ C07D *251/26, 251/38*

U.S. Cl. 544—223 **17 Claims**

1. A process for the preparation of a 1-amino-1,3,5-triazine-2,4(1H,3H)-dione of the formula



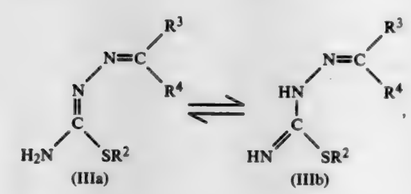
in which

R^1 is a C_{1-12}-aliphatic or a C_{5-8}-cycloaliphatic hydrocarbon radical or a benzyl or phenyl radical, and

R^2 is a C_{1-6}-aliphatic hydrocarbon radical, comprising in a first stage at a temperature from about 0° to 100° C. reacting an isocyanate of the formula

R^1—NCO

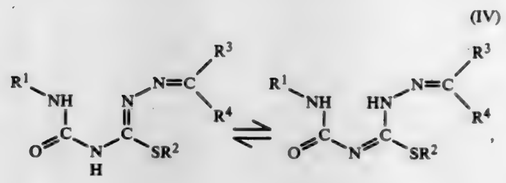
with an isothiosemicarbazone of the tautomeric formulas



(III) (IIIa) (IIIb)

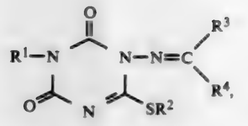
in which

R^3 and R^4 each independently is hydrogen, C_{1-4}-alkyl, C_{5-7}-cycloalkyl, benzyl or C_{8-10}-aryl, thereby to form a urea derivative of the tautomeric formulas



(IV) (IVa) (IVb)

in a second stage at a temperature between about −50° and 0° C. reacting the urea derivative with phosgene ($COCl_2$) in the presence of an auxiliary organic base and in the presence of a diluent, at least about 2 mols of phosgene and at least about 2 mols of the auxiliary base being used per mol of urea derivative, thereby to form a 1-alkylideneamino-1,3,5-triazine-2,4(1H,3H)-dione of the formula V



(V)

and in a third stage converting the 1-alkylideneamino group to a 1-amino group.

4,524,206

1-HETEROARYL-4-(2,5-PYRROLIDINEDION-1-YL)ALKYL)PIPERAZINE DERIVATIVES

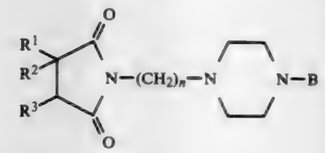
James S. New, and Joseph P. Yevich, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Sep. 12, 1983, Ser. No. 531,519

Int. Cl.³ C07D *403/14, 31/495*

U.S. Cl. 544—230 **23 Claims**

1. A compound having Formula I



I

wherein

R^1 is C_{1-4} alkyl, trifluoromethyl, Z-substituted phenyl with Z being hydrogen or halogen or R^1 can be taken together with R^2 as a C_{4-5} alkylene bridge incorporating a fused Z-substituted phenyl ring system, Z being hydrogen or halogen or R^1 can be taken together with R^3 to form a fused cyclohexenyl ring or an X^1–X^4 tetra-substituted phenyl ring with X^1–X^4 being independently selected from hydrogen, halogen or nitro;

R^2 is C_{1-4} alkyl, Z-substituted phenyl with Z as defined above, or absent when R^1 and R^3 form a fused phenyl ring system, or taken together with R^1 to form an alkylene bridge as defined above;

R^3 is H_2 or can be taken together with R^1 to form a fused phenyl ring as defined above;

B is an R^4,R^5-disubstituted heterocyclic ring system chosen from the group consisting of benzoisothiazole, pyridine, and pyrimidine, with R^4 and R^5 being independently selected from C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, cyano, halogen, or hydrogen; and

n is 2–4;

or a pharmaceutically acceptable acid addition salt thereof.

4,524,207

PROCESS FOR PREPARING SUBSTITUTED 1,3-DIHYDROSPIRO[BENZO(C)THIOPHENE]S

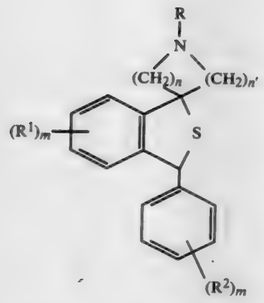
Helen H. Ong, Whippany; Vernon B. Anderson, High Bridge, both of N.J., and James A. Profitt, Goshen, Ind., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 313,169, Oct. 20, 1981, Pat. No. 4,409,229, which is a continuation-in-part of Ser. No. 165,344, Jul. 2, 1980, abandoned, which is a continuation of Ser. No. 948,908, Oct. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 857,177, Dec. 2, 1977, abandoned. This application Jul. 21, 1983, Ser. No. 515,969

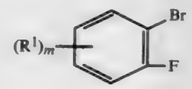
Int. Cl.³ C07D *495/10, 513/10*

U.S. Cl. 546—17 **1 Claim**

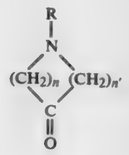
1. A process for preparing a compound of the formula



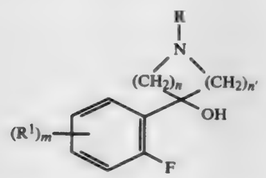
or an optical antipode or pharmaceutically acceptable salt thereof in which R is loweralkyl or phenylloweralkyl, R^1 and R^2 are the same or different and each can be hydrogen, loweralkyl, loweralkoxy, trifluoromethyl, chlorine, bromine, fluorine, methylenedioxy or loweralkylthio and m, n and n′ are integers from 1 to 3; and the sum of n and n′ is 3 or 4 which comprises converting a 2-bromo-fluorobenzene of the formula



to its 2-lithio derivatives with a loweralkyllithium at a temperature ranging from −80° to −20° C., in a suitable solvent such as ether, hexane or tetrahydrofuran, reacting the 2-lithio derivative with a cycloazalkanone of the formula



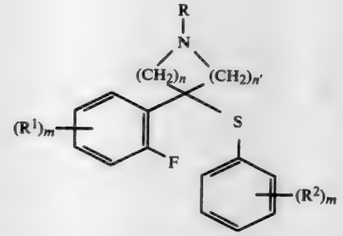
in which R is loweralkyl or phenylloweralkyl to provide a phenylcycloazalkanol of the formula



reacting the phenylcycloazalkanol with a benzylmercaptan of the formula



in the presence of glacial acetic acid and boron trifluoride etherate at a temperature of from ambient to 100° C. to provide a 4-benzylthio-4-phenylcycloazalkane of the formula



and cyclizing the 4-benzylthio-4-phenylcycloazalkane.

4,524,208

PROCESS FOR THE PREPARATION OF LYSERGIC ACID ESTERS

Gerhard Sauer, and Gregor Haffer, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

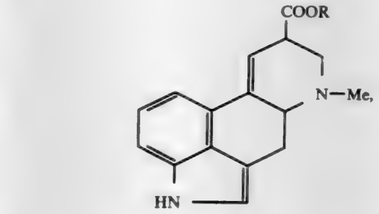
Filed May 26, 1983, Ser. No. 498,427

Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3220119

Int. Cl.³ C07D *457/04, 457/06*

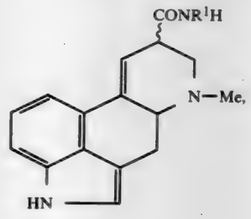
U.S. Cl. 546—69 **10 Claims**

1. A process for preparing a lysergic acid ester of the formula



wherein

R is alkyl of up to 3 carbon atoms, comprising reacting a lysergic acid or isolysergic acid amide of the formula



wherein

R is hydrogen or lower alkyl of up to 4 carbon atoms optionally substituted by an OH-group, or a reaction compatible salt thereof with an acid,

with an alcohol of the formula ROH wherein R is alkyl of up to 3 carbon atoms, at a temperature of 0° to 65° C. for a period of 2 to 30 hours in the presence of an acid or an acidic ion exchange resin at a pH value of about 0–1.

4,524,209

6-FLUORO-3-[3-(1-HETEROCYCLO)PROPYL]-1,2-BENZISOXAZOLES

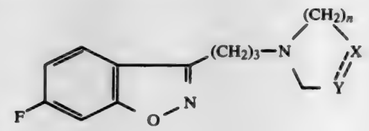
Larry Davis, Sergeantsville, and Joseph T. Klein, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.Y.

Division of Ser. No. 366,245, Apr. 9, 1982, Pat. No. 4,458,075. This application Apr. 23, 1984, Ser. No. 603,255

Int. Cl.³ C07D *413/06*

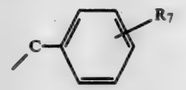
U.S. Cl. 546—148 **4 Claims**

1. A compound of the formula



wherein

X is a group of the formula



wherein

R_7 is halogen and the dotted line represents an additional carbon to carbon bond or X and Y taken together form a phenyl nucleus

n is 1, 2 or 3; the optical antipode thereof or the pharmaceutically acceptable acid additional salt thereof.

4,524,210

2,6-DI(T-BUTYL)-4-HYDROXY-4-PYRIDYL-2,5-CYCLOHEXADIEN-1-ONE INTERMEDIATES

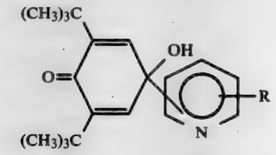
George G. I. Moore, Houlton, Wis., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 324,062, Nov. 23, 1981, Pat. No. 4,414,217. This application Aug. 12, 1983, Ser. No. 522,386

Int. Cl.³ C07D *213/04*

U.S. Cl. 546—340 **2 Claims**

1. A compound of the formula:



wherein R is hydrogen or methyl.

4,524,211

PROCESS FOR THE PRODUCTION OF SUBSTITUTED PHOSPHONIC AND PHOSPHINIC ACIDS AND THIAZOLIDINYL PHOSPHONIC AND PHOSPHINIC ACID ESTER INTERMEDIATES

Karlheinz Drauz, Freigericht; Hans G. Koban; Jürgen Martens, both of Alzenau, and Werner Schwarze, Frankfurt, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

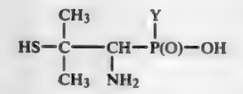
Filed Nov. 16, 1983, Ser. No. 552,103

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1982, 3245887

Int. Cl.³ C07F *9/30, 9/38, 9/65*

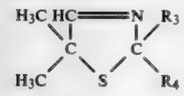
U.S. Cl. 548—111 **18 Claims**

1. A process for the production of 1-amino-2-mercapto-2-methylpropyl phosphonic acid or a 1-amino-2-mercapto-2-methylpropyl alkylphosphinic acid of the formula



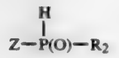
I

where Y is a hydroxy group or is R_1, where R_1 is an alkyl group from a thiazoline-(3) compound and a phosphorus compound comprising reacting a thiazoline-(3) of the formula



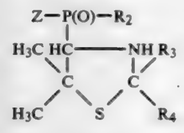
II

where R_3 and R_4 are each hydrogen, an alkyl group or are joined together with the adjacent carbon atom of the thiazoline-(3) ring to form a closed ring with an ester of the formula



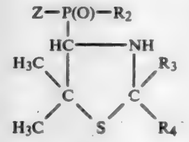
III

where R_2 is an alkoxy group and Z is R_1 or R_2 and hydrolytically splitting the ester formed of the formula



IV

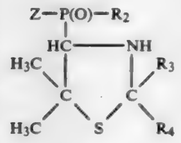
10. An ester of a thiazolidinyl phosphonic acid or a thiazolidinyl alkylphosphinic acid of the formula



IV

where Z is R_1 and R_1 is alkyl and R_2 is alkoxy and R_3 and R_4 are hydrogen, alkyl of 1 to 12 carbon atoms or are joined together with the adjacent carbon atom of the thiazoline-(3) ring to form a closed ring.

11. A ester of a thiazolidinyl phosphonic acid or a thiazolidinyl alkylphosphinic acid of the formula:



where Z is R_1 or R_2 and R_1 is alkyl and R_2 is alkoxy and R_3 and R_4 are joined together with the adjacent carbon atoms of the thiazoline-(3) ring to form a closed ring.

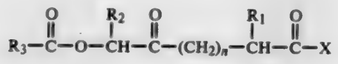
4,524,212

ACYLOXYKETONE SUBSTITUTED IMINO AND AMINO ACIDS

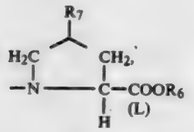
Eric M. Gordon, Pennington, and Jollie D. Godfrey, Jr., Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

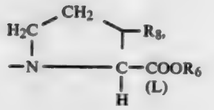
Filed Sep. 27, 1982, Ser. No. 423,875
Int. Cl.[3] C07D *207/20, 207/09*
U.S. Cl. 548—533 **10 Claims**

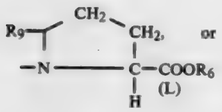
1. A compound of the formula

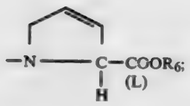


or a pharmaceutically acceptable salt thereof wherein:
X is

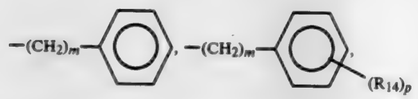




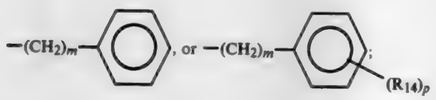




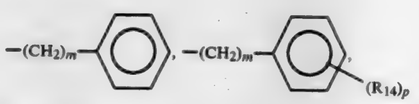
n is one or two;
R_1 is hydrogen, lower alkyl, halo substituted lower alkyl,



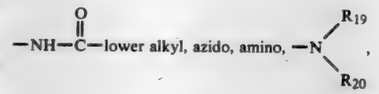
or $-(CH_2)_m$-cycloalkyl;
R_2 is lower alkyl,

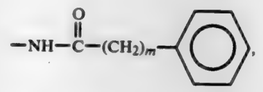


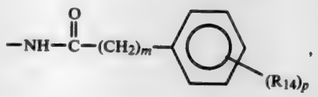
R_3 is lower alkyl,

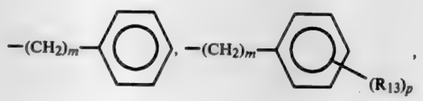


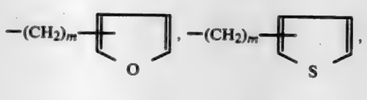
halo substituted lower alkyl, or $-(CH_2)_m$-cycloalkyl;
R_7 is hydrogen, lower alkyl, halogen, keto, hydroxy,

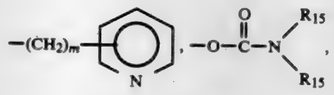




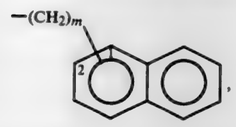




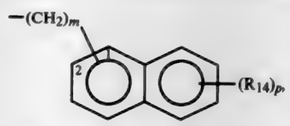




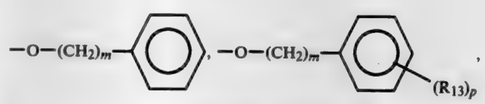
a 1- or 2-naphthyl of the formula



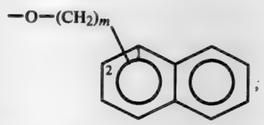
a substituted 1- or 2-naphthyl of the formula



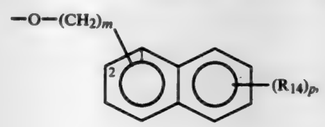
$-(CH_2)_m$—cycloalkyl, —O—lower alkyl,



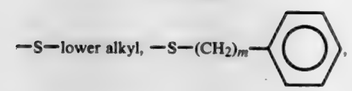
a 1- or 2-naphthyloxy of the formula



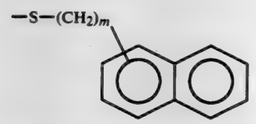
a substituted 1- or 2-naphthyloxy of the formula



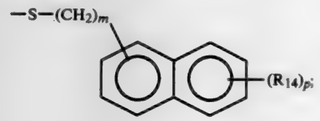
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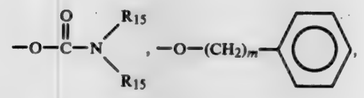
a 1- or 2-naphthylthio of the formula

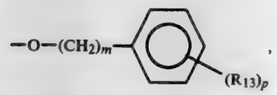


or a 1- or 2-substituted naphthylthio of the formula

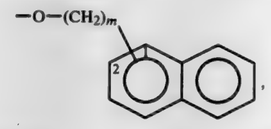


R_8 is keto, halogen,

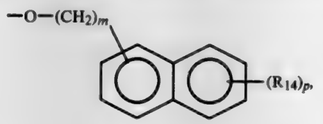


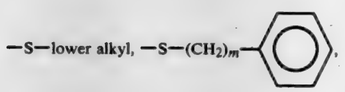


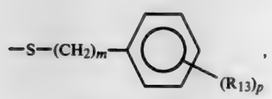
—O—lower alkyl, a 1- or 2-naphthyloxy of the formula



a substituted 1- or 2-naphthyloxy of the formula

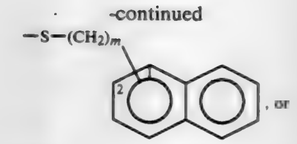




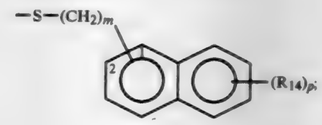


a 1- or 2-naphthylthio of the formula

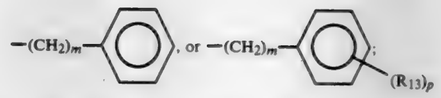
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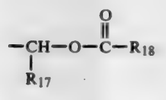
a substituted 1- or 2- naphthylthio of the formula



R_9 is keto,



R_{13} is lower alkyl or 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl.
R_{14} is lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo fluoro, trifluoromethyl or hydroxy;
m is zero, one, two, three, or four;
p is one, two or three provided that p is more than one only if R_{13} or R_{14} is methyl, methoxy, chloro, or fluoro;
R_6 is hydrogen, lower alkyl, benzyl, benzhydryl, or



wherein R_{17} is hydrogen, lower alkyl, cycloalkyl or phenyl, and R_{18} is hydrogen, lower alkyl, lower alkoxy, phenyl, or R_{17} and R_{18} taken together are $-(CH_2)_2-$, $-(CH_2)_3-$, —CH=CH—, or



R_{15} is hydrogen or lower alkyl of 1 to 4 carbons;
R_{19} is lower alkyl, benzyl, or phenethyl; and
R_{20} is hydrogen, lower alkyl, benzyl, or phenethyl.

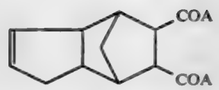
4,524,213

DICYCLOPENTADIENE DICARBOXYLIC ACID DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Hideo Suzuki; Kanji Ohtsuka, and Masami Adachi, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Filed Feb. 8, 1984, Ser. No. 578,103
Claims priority, application Japan, Nov. 9, 1983, 58-210601; Nov. 9, 1983, 58-210602; Nov. 9, 1983, 58-210603
Int. Cl.[3] C07C *61/29;* **C07D** *307/93*
U.S. Cl. 549—235 **4 Claims**

1. A compound represented by the general formula:



(I)

where each A is —OH or —OR where R is an alkyl group, an alkenyl group or a cycloalkyl group, or both A together represent a >O group.

4,524,214

PROCESS FOR FORMING ESTERS OF GLYOXYLIC ACIDS

Mervin E. Brokke, Stamford, and Walter L. Magee, Jr., Danbury, both of Conn., assignors to Stauffer Chemical Company, Dobbs Ferry, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,375
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—51 **12 Claims**

1. A process for the formation of an ester of a glyoxylic acid which comprises oxidizing an organoglycolic ester with hypohalite oxidizing agent.

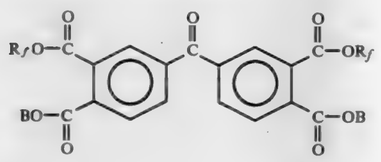
4,524,215

FLUORINATED ESTERS OF 3,3,4,4-BENZOPHENONE TETRACARBOXYLIC DIANHYDRIDE

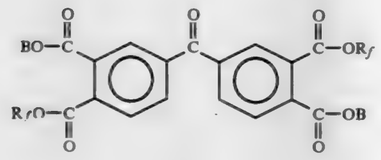
David J. Long, Stanhope, and Bryce C. Oxenrider, Florham Park, both of N.J., assignors to Allied Corporation, Morris County, Morris Township, N.J.

Filed Jun. 3, 1983, Ser. No. 500,727
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—052 **3 Claims**

1. A compound having the structure

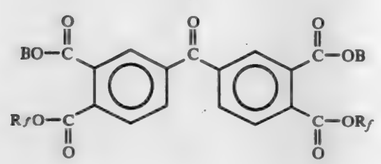


I



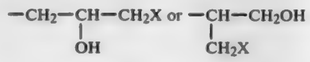
II

or



III

wherein R_f is AR′ with A being alkylene of 2–6 carbons and R′ being $CF_3(CF_2)_p$ where p is an integer of 3–15; wherein B is a moiety having the structure



with X being Cl, H, or Br.

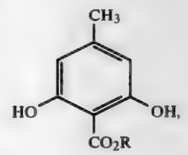
4,524,216

METHOD OF PREPARING P-ORSELLINIC ACID ESTERS

Hans-Georg Schmidt, Niederkassel, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

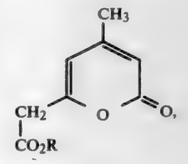
Filed Sep. 14, 1983, Ser. No. 532,199
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1982, 3235019
Int. Cl.³ C07C *69/88*
U.S. Cl. 560—70 **14 Claims**

1. Method of preparing resorcinols of the formula



I

wherein R represents alkyl groups of 1 to 6 carbon atoms, by the action of strong bases on pyrones of the formula



II

wherein R has the above meaning, characterized in that the base is used in catalytic amounts.

4,524,217

PROCESS FOR PRODUCING N-ACYL-HYDROXY AROMATIC AMINES

Kenneth G. Davenport, and Charles B. Hilton, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Jun. 8, 1984, Ser. No. 618,659
Int. Cl.³ C07C *103/12, 103/22*
U.S. Cl. 564—223 **6 Claims**

1. A process comprising contacting a hydroxy aromatic ketone with a hydroxylamine salt and a base to form the ketoxime of said ketone, and contacting said ketoxime with a Beckmann rearrangement catalyst to form an N-acyl-hydroxy aromatic amine.

4,524,218

PROCESSES FOR THE PREPARATION OF SQUARAINE COMPOSITIONS

Giuseppa Baranyi; Peter M. Kazmaier; Cheng-Kuo Hsiao, and Richard A. Burt, all of Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1984, Ser. No. 570,563
Int. Cl.³ C07C *85/00, 85/02, 85/06*
U.S. Cl. 564—307 **26 Claims**

1. An improved process for the preparation of squaraine compositions which comprises reacting squaric acid, an aromatic amine, and a composition selected from the group consisting of phenols and phenol squaraines, in the presence of an aliphatic alcohol, and an optional azeotropic substance.

4,524,219

PROCESS FOR SQUARAINE COMPOSITIONS FROM HALF ESTERS OF SQUARIC ACID

Kock-Yee Law, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 3, 1984, Ser. No. 576,656
Int. Cl.³ C07C *85/00, 85/02, 85/06*
U.S. Cl. 564—307 **18 Claims**

1. An improved process for the preparation of squaraine compositions which comprises reacting an alkyl squarate, with an aniline, in the presence of an aliphatic alcohol and an optional acid catalyst.

4,524,220

PROCESS FOR THE PREPARATION OF SQUARAINE COMPOSITIONS IN PRESENCE OF AMINE COMPONENT

Kock-Yee Law, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 12, 1984, Ser. No. 588,840
Int. Cl.³ C07C *85/00, 85/02, 85/06*
U.S. Cl. 564—307 **9 Claims**

1. A process for the preparation of squaraine compositions which comprises the reaction of squaric acid with an aromatic aniline in the presence of an aliphatic amine, wherein there results a product of reduced dark decay properties and increased charge acceptance values as compared to squaraine compositions prepared from the squaric acid process in the absence of an aliphatic amine.

4,524,221

PROCESS FOR THE PRODUCTION OF ACYLOINS

Steven M. Heilmann, North St. Paul; Larry R. Krepski, White Bear Lake, and Jerald K. Rasmussen, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

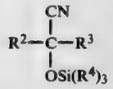
Filed Feb. 22, 1983, Ser. No. 468,719
Int. Cl.³ C07C *49/00, 49/17*
U.S. Cl. 568—322 **10 Claims**

1. A process for preparing an acyloin comprising the steps of:

(A) reacting a Grignard reagent represented by the formula

R^1MgX

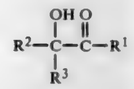
wherein R^1 is an alkyl radical containing 1 to 20 carbon atoms, an aralkyl radical containing 7 to 12 carbon atoms, or an aryl radical containing 6 to 14 carbon atoms, said radicals being unsubstituted or substituted with one or more hetero atoms selected from chloro, fluoro, tertiary amino nitrogen, and ether oxygen, and X is chloro, bromo or iodo, with a silylated cyanohydrin represented by the formula



wherein R^2 and R^3 are independently hydrogen, an alkyl radical containing 1 to 20 carbon atoms, an aralkyl radical containing 7 to 12 carbon atoms, or an aryl radical containing 6 to 14 carbon atoms, said radicals being unsubstituted or substituted with one or more hetero atoms selected from halogen, tertiary amino nitrogen, and ether oxygen, and
R^4 is an alkyl radical containing 1 to 6 carbon atoms, an aralkyl radical containing 7 to 12 carbon atoms, or an aryl radical containing 6 to 14 carbon atoms, in an anhydrous, organic solvent,

(B) treating the reaction product of step (A) with aqueous acid, whereby an aqueous acidic layer and an organic layer form, and

(C) recovering the resulting acyloin product from the aqueous acidic layer, said acyloin product being represented by the formula



wherein R^1, R^2, and R^3 are as defined above.

4,524,222

ALKYLATED PHENOL PURIFICATION

Charles F. Weidig, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jan. 26, 1984, Ser. No. 574,134
Int. Cl.³ C07C *29/74*
U.S. Cl. 568—711 **14 Claims**

1. In a process for the production of a tar free dinitro-o-sec-alkylphenol, said process comprising reacting an impure o-sec-alkylphenol with concentrated sulfuric acid to produce a sulfonated o-sec-alkylphenol and then reacting the sulfonated o-sec-alkylphenol with nitric acid, the improvement comprising contacting said o-sec-alkylphenol with a molecular sieve material to purify said o-sec-alkylphenol.

4,524,223

RESOLUTION OF ALCOHOLS USING AMINO ACIDS

David W. House, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 19, 1984, Ser. No. 572,038
Int. Cl.³ C07C *29/92, 67/48*
U.S. Cl. 568—715 **22 Claims**

1. A method of obtaining a purified diastereomer from which an optically active alcohol may be readily regenerated comprising contacting a solution containing the diastereomeric esters of an optically active amino acid selected from the group consisting of naturally occurring amino acids, phenylglycine, 4-hydroxyphenylglycine, meta-tyrosine, 3,4-dihydroxyalanine, and 3,5-diiodothyronine, and a racemic alcohol selected from the group consisting of benzylic alcohols whose formula is



where

Ar is a monovalent radical whose parent is selected from the group consisting of benzene, naphthalene, anthracene, phenanthrene, and chrysene, and

R is an alkyl, alkenyl, alkynyl, haloalkyl, or cycloalkyl moiety,

other secondary alcohols whose formula is



where

R is an alkyl or cycloalkyl moiety,

R′ is an alkyl, alkenyl, alkynyl, haloalkyl, or cycloalkyl moiety,

R′ is different from R, and

R′ is sterically bulkier than R,

and bicyclo [2.2.1] heptyl or bicyclo [2.2.2] octyl alcohols, with a chromatographic support, eluting said support with a solvent under chromatographic conditions, and collecting at least one effluent fraction containing a purified diastereomer of said ester.

4,524,224
HYDROLYSIS OF ALKYLENE CARBONATES TO AKLYLENE GLYCOLS

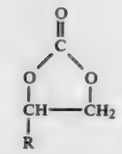
Glenn A. Taylor, Ridgewood, N.J., and Philip F. Wolf, Pleasantville, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 100,223, Dec. 4, 1979, abandoned, which is a continuation of Ser. No. 863,351, Dec. 22, 1977, abandoned. This application May 20, 1983, Ser. No. 495,462
Int. Cl.³ C07C *29/12, 31/12*
U.S. Cl. 568—858 **17 Claims**

1. The process of making glycols of the formula

$$HOCHRCH_2OH$$

which comprises hydrolyzing in a homogeneous liquid phase mixture, an alkylene carbonate of the formula



in which R is either hydrogen or methyl with an amount of water which is in excess of stoichiometry according to the equation

$$\overline{OCHRCH_2OC}=O + H_2O \xrightarrow{Cat.} HOCHRCH_2OH + CO_2,$$

employing a catalytic amount of potassium carbonate, and maintaining the mixture under a CO_2 pressure of at least 80 psig at a temperature of between about 85° C. and 500° C.

4,524,225
ACID RESISTANT CATALYST SUPPORTS; REDUCTION OF FATTY ACIDS TO FATTY ALCOHOLS

Gail M. Qualeatti, Palatine; Bruce I. Rosen, Skokie; Blaise J. Arena, and Dalia Germanas, both of Des Plaines, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 14, 1983, Ser. No. 561,491
Int. Cl.³ C07C *27/04*
U.S. Cl. 568—885 **8 Claims**

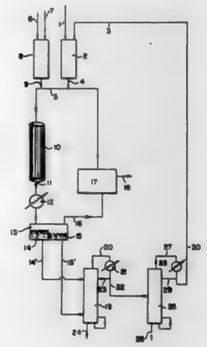
1. A method of hydrogenating a fatty acid containing from about 6 to about 24 carbon atoms, or an ester thereof containing more than about 2% free fatty acids, to a fatty alcohol comprising contacting said acid or ester with hydrogen at a temperature from about 100° to about 300° C. and a pressure from about 100 to about 3000 psig in the presence of a zerovalent metal selected from the group consisting of copper, chromium, ruthenium, platinum, palladium, rhenium and combinations thereof dispersed on a support of alpha-alumina, theta-alumina, titanated alumina, titania, or aluminum phosphate, or combinations thereof, and recovering the fatty alcohol produced thereby.

4,524,226
PREPARATION OF NITRO COMPOUNDS BY VAPOR PHASE NITRATION OF ALDEHYDES

Shu-Chieh P. Wang, Columbia, and Martin B. Sherwin, Potomac, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 510,860, Jul. 5, 1983, abandoned. This application Dec. 19, 1983, Ser. No. 563,209
Int. Cl.³ C07C *79/02*
U.S. Cl. 562—948 **18 Claims**

1. A process for selectively forming nitroalkanes comprising contacting in a reaction zone in a homogeneous gas phase and at an elevated pressure of from about 5 to about 20 bars, a temperature of from about 100° C. to about 500° C. and a time

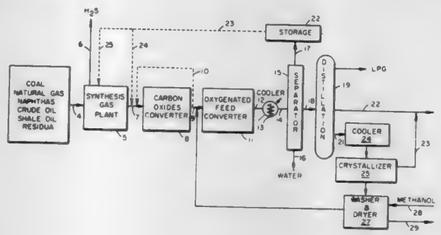


of from about 0.5 to 20 seconds at least one C_2–C_{10} aliphatic aldehyde with nitrogen dioxide and recovering the formed nitroalkane compound.

4,524,227
COPRODUCTION OF DURENE AND GASOLINE FROM SYNTHESIS GAS AND ALCOHOLS AND SEPARATION OF DURENE-GASOLINE MIXTURES

Patrick E. Fowles, Doylestown, and Tsoung-Yuan Yan, Philadelphia, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 536,572, Sep. 29, 1983, abandoned, which is a continuation of Ser. No. 409,818, Aug. 20, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 656,007
Int. Cl.³ C07C *1/04*
U.S. Cl. 585—408 **9 Claims**

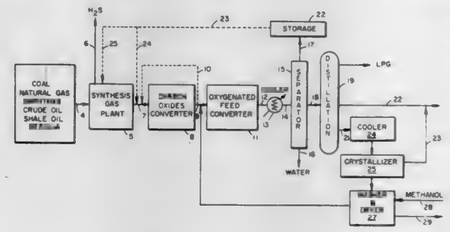


1. A method for separating durene from a gasoline-durene mixture derived from the conversion of synthesis gas or alcohols or ethers by contact with a crystalline zeolite comprising:
(a) distilling said mixture to produce a lower boiling gasoline fraction boiling below about 150° C to about 165° C. and a higher boiling fraction boiling above about 150° C. to about 165° C.;
(b) cooling said higher boiling fraction to a temperature between about 30° C. and about 0° C. to crystallize durene therefrom,
(c) separating the crystals formed from the mother liquor; and
(d) combining the separated mother liquor of with the gasoline fraction of.

4,524,228
PRODUCTION OF DURENE AND GASOLINE FROM SYNTHESIS GAS

Patrick E. Fowles, Doylestown, and Tsoung-Yuan Yan, Philadelphia, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 536,576, Sep. 29, 1983, abandoned, which is a continuation of Ser. No. 409,817, Aug. 20, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 656,009
Int. Cl.³ C07C *1/04*
U.S. Cl. 585—408 **22 Claims**



1. A method for producing durene from syngas comprising:
(a) catalytically converting said synthesis gas in a reaction zone containing a crystalline zeolite catalyst to a product stream comprising durene and liquid hydrocarbons boiling in the gasoline boiling range;
(b) fractionating the product stream of (a) to provide at least one lower boiling point fraction boiling below about 150° C. to about 165° C. and a higher boiling point fraction boiling above about 150° C. to about 165° C.;
(c) cooling said higher boiling point fraction to a temperature between about 30° C. and about 0° C. at which durene begins to crystallize from said fraction;
(d) crystallizing durene from said high boiling point fraction;
(e) separating crystallized durene from said fraction leaving behind a mother liquor; and
(f) returning said mother liquor to the lower boiling point fraction of (b).

4,524,229
ARENE ALKYLATION WITH METAL OXIDE-NIOBIUM HALIDE/OXIDE CATALYSTS

Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 587,744, Mar. 9, 1984, abandoned. This application Jan. 16, 1985, Ser. No. 691,731
Int. Cl.³ C07C *2/70*
U.S. Cl. 585—463 **32 Claims**

1. A process for alkylating benzene and substituted benzenes with an olefin having the general formula $R'CH_2{=}CH_2R''$, where R′ and R″ are individually hydrogen or alkyl or when taken together form an alkylene group, which process comprises contacting said benzene or substituted benzene with said olefin at a temperature ranging from about 0° C. to about 450° C. with a catalyst prepared by a process which comprises subliming niobium to form a vapor and reacting in a substantially anhydrous and oxygen-free atmosphere the vapor therefrom with a substantially anhydrous, hydroxyl-containing metal oxide substrate.

4,524,230
PREPARATION OF ALKYLAROMATIC COMPOUNDS

Vladimir Haensel, Hinsdale, Ill., assignor to UOP Inc., Des Plaines, Ill.

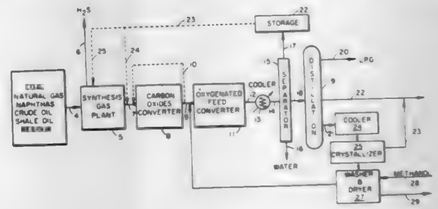
Filed Jun. 8, 1984, Ser. No. 618,852
Int. Cl.³ C07C *3/52*
U.S. Cl. 585—467 **14 Claims**

1. A process for the alkylation of an aromatic scavenger compound with a paraffinic hydrocarbon to produce a resultant alkylaromatic compound by means of attachment of a fragment of said paraffinic hydrocarbon to said aromatic compound which comprises decomposing said paraffinic hydrocarbon on the surface of a nonacid-acting catalyst containing at least one metal of Group VIII of the Periodic Table at a temperature of about 50° to about 400° C. and a pressure in the range of from about subatmospheric to about 50 atmospheres to produce fragments of said paraffinic hydrocarbon and contacting said nonacid-acting catalyst having said fragment of said decomposed paraffin thereon with said aromatic scavenger compound as a scavenging agent to scavenge said fragments of said paraffinic hydrocarbon to attach said fragment of said paraffinic hydrocarbon to said aromatic compound to form said alkylaromatic compound, and recovering said alkylaromatic compound.

4,524,231
PRODUCTION OF DURENE FROM ALCOHOLS AND ETHERS

Patrick E. Fowles, Doylestown, and Tsoung-Yuan Yan, Philadelphia, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 536,575, Sep. 29, 1983, abandoned, which is a continuation of Ser. No. 410,156, Aug. 20, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 656,010
Int. Cl.³ C07C *1/04*
U.S. Cl. 585—469 **16 Claims**



1. A method for producing durene from a feed mixture comprising C_1–C_3 alcohols or ethers or mixtures thereof comprising:
(a) catalytically converting said feed mixure to a product stream comprising durene and liquid hydrocarbons boiling in the gasoline boiling range by contacting said feed mixture with a crystalline zeolite in a reaction zone;
(b) fractionating the stream of (a) to provide at least one lower boiling point fraction boiling below about 150° C. to about 165° C. and a higher point fraction boiling above about 150° C. to about 165° C.;
(c) cooling said higher boiling point fraction to a temperature between about 30° C. and about 0° C.;
(d) crystallizing durene from said cooled fraction of (c);
(e) separating crystallized durene from said fraction leaving behind a mother liquor; and
(f) returning said mother liquor to the lower boiling point fraction of (b).

4,524,232
PROCESS FOR PRODUCING HIGH VISCOSITY INDEX LUBES

Arthur W. Chester, Cherry Hill; William E. Garwood, Haddonfield; Stanley J. Lucki, Runnemede, and Samuel A. Tabak, Wenonah, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 4, 1984, Ser. No. 568,015
Int. Cl.³ C07C *2/02*
U.S. Cl. 585—517 **4 Claims**

1. A process for synthesizing lubricating oils from C_2–C_{16} olefins comprising passing an olefinic feedstock containing same in a first stage over a ZSM-23 catalyst or its hydrogen

form under suitable conditions of time, temperature and pressure to form a liquid product boiling below the lube oil range and thereafter in a second stage passing the liquid effluent from said first stage over a ZSM-5 type catalyst having a pore size greater than about 5 angstroms or hydrogen form thereof under the same or other suitable conditions of time, temperature and pressure to further increase the carbon content of said liquid effluent and separating lubricant oil product from the second stage reaction zone.

4,524,233

PROCESS FOR THE PRODUCTION OF DIENES FROM ALDEHYDES

Wen-Liang Hsu, Akron; Neil A. Maly, Tallmadge; Barry A. Matrana; Robert W. Strozier, both of Akron, and Lawson G. Wideman, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 10, 1984, Ser. No. 649,236
Int. Cl.³ C07C *1/20, 1/253*
U.S. Cl. 585—606 **11 Claims**

1. A process for the conversion of 2-methylbutanal (2MBA) to isoprene which comprises contacting 2MBA in the vapor phase at a temperature of from 200° to 400° C. with a boron (B) phosphate (P) catalyst, the improvement characterized in that (1) the boron phosphate catalyst is prepared by
   (a) combining phosphoric acid and boric acid and/or trialkylborate, wherein the alkyl group is from 1 to 6 carbon atoms;
   (b) at such molar ratios that the molar ratio of P/B is less than 1.0 but more than 0.6;
   (c) contacting the boron phosphate with from 0 to 10 mole percent based on moles of boron, ammonia or an amine, selected from the group consisting of mono-, di- and/or tri-alkyl amines wherein the alkyl group is from 1 to 10 carbon atoms;
   (d) admixing the boron phosphate with from 0.1 to 10 weight percent graphite based on total weight of the boron phosphate;
   (e) calcining the boron phosphate in air at a temperature of from 250° to 650° C. for 1 to 6 hours;
   (f) steaming the calcined boron phosphate at 200° to 300° C. for ½ to 10 hours;
(2) the 2MBA feed is diluted with from 0 to 80 weight percent from a solvent selected from the group consisting of pentane, hexane, heptane, octane and nonane; and
(3) the 2MBA is charged to the reactor at an LHSV of from 1.0 to 20.

4,524,234

PRODUCTION OF HYDROCARBONS WITH ALUMINOPHOSPHATE MOLECULAR SIEVES

Steven W. Kaiser, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 19, 1984, Ser. No. 663,080
Int. Cl.³ C07C *1/00*
U.S. Cl. 585—638 **32 Claims**

1. The process of producing hydrocarbons comprising contacting a feedstock comprising an organic compound of the formula R—X, where R is an organic moiety and X is a moiety containing at least one of halogen, oxygen, sulfur and nitrogen, at conversion conditions with an aluminophosphate molecular sieve having a framework structure whose chemical composition expressed in terms of mole ratios of oxides is

$$Al_2O_3{:}1.0\pm0.2\ P_2O_5$$

each of said framework structures being microporous in which the pores are uniform and have nominal diameters within the range of about 3 to about 10 Angstroms, an intracrystalline adsorption capacity for water at 4.6 torr and 24° C. of at least 3.5 weight percent, the adsorption and desorption of water being completely reversible while retaining the same essential framework topology in both the hydrated and dehydrated states.

4,524,235

OLEFIN DISPROPORTIONATION AND CATALYST THEREFOR

Robert L. Banks, and Simon G. Kukes, both of c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Division of Ser. No. 518,558, Jul. 29, 1983, Pat. No. 4,490,478. This application Sep. 10, 1984, Ser. No. 649,035
Int. Cl.³ C07C *6/00*
U.S. Cl. 585—646 **12 Claims**

1. A process for the disproportionation of olefins comprising contacting an olefin feed under suitable reaction conditions with a catalytic amount of a catalyst composition produced by contacting a refractory oxide containing a metal oxide selected from the group consisting of tungsten oxide and molybdenum oxide with a promoting amount of at least one elemental metal selected from the group consisting of zinc and manganese under conditions suitable for said metal to promote the activity of said metal oxide.

4,524,236

PROCESS FOR OXYDEHYDROGENATION OF ETHANE TO ETHYLENE

James H. McCain, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 28, 1984, Ser. No. 625,777
Int. Cl.³ C07C *5/38, 5/48*
U.S. Cl. 585—658 **4 Claims**

1. In a low temperature process for converting ethane to ethylene by catalytically oxydehydrogenating ethane exothermically at a temperature of from about 150° C. to about 450° C. in the gas phase, the improvement comprises using a calcined catalyst containing

$$Mo_aV_bNb_cSb_dX_e$$

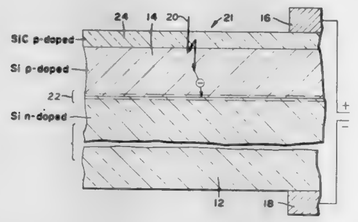
in the form of oxides
wherein:
X=at least one of the following: Li, Sc, Na, Be, Mg, Ca, Sr, Ba, Ti, Zr, Hf, Y, Ta, Cr, Fe, Co, Ni, Ce, La, Zn, Cd, Hg, Al, Tl, Pb, As, Bi, Te, U, and W; and
a=0.5 to 0.9
b=0.1 to 0.4
c=0.001 to 0.2
d=0.001 to 0.1
e=0.001 to 1.0.

4,524,237

INCREASED VOLTAGE PHOTOVOLTAIC CELL

Bernd Ross, deceased, late of San Diego, Calif.; Donald B. Bickler, Temple City, Calif., and Brian D. Gallagher, Costa Mesa, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 8, 1984, Ser. No. 578,390
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—261 **2 Claims**



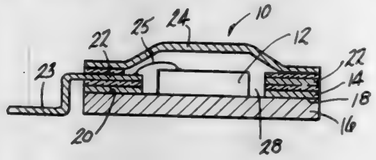
1. A photovoltaic cell comprising:
a substrate of crystalline silicon;
a first layer of crystalline silicon disposed on said substrate; and
a second layer disposed on said first layer;
said substrate and said first layer having opposite types of doping, one being p-doped and the other being n-doped;
said second layer comprising crystalline silicon carbide.

4,524,238

SEMICONDUCTOR PACKAGES

Sheldon H. Butt, Godfrey, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Dec. 29, 1982, Ser. No. 454,409
Int. Cl.³ H05K *5/04, 5/06*
U.S. Cl. 174—52 FP **32 Claims**



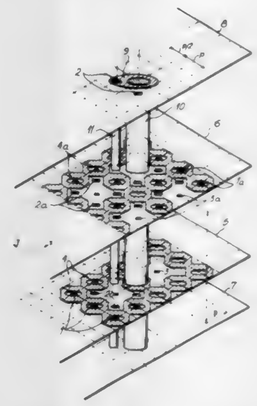
1. A casing adapted to receive an electronic device, comprising:
a first high thermal conductivity metal or metal alloy substrate having a first surface, a first metal or metal alloy cladding having a first thin refractory oxide layer on at least a first surface thereof, said first surface of said substrate being bonded to a second surface of said first metal or metal alloy cladding, said first surface of said substrate adapted to have said electronic device adhered thereto to enhance the transfer of heat generated by said device to the outside of said casing;
a metal or metal alloy leadframe having a second thin refractory oxide layer thereon, said leadframe being bonded to said first refractory oxide layer and insulated from said first metal or metal alloy cladding by said first and second refractory oxide layers, said leadframe further being adapted for electrical connection to the electronic device;
a metal or metal alloy cover having a third thin refractory oxide layer on at least a portion of one surface thereof, said third oxide layer being bonded to said second refractory oxide layer whereby said electronic device is sealed between said substrate and said cover.

4,524,239

MULTI-LAYER ELECTRIC CIRCUIT BOARD AND BLANKS THEREFOR

Francois Rouge, 27, rue Audran, 94400 Vitry sur Seine, France

Filed Aug. 31, 1982, Ser. No. 413,456
Claims priority, application France, Sep. 2, 1981, 81 16718
Int. Cl.³ H05K *1/14*
U.S. Cl. 174—68.5 **8 Claims**



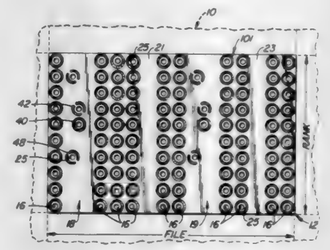
1. A blank for a multi-layer electrical circuit board, comprising an electrically insulating flat substrate having two outer faces and at least one inner layer in said substrate, parallel to said faces and having an electrically conductive network extending throughout the area of said inner layer and formed by the repetition of an elementary predetermined pattern with a predetermined pitch 2p in two orthogonal directions, said predetermined pattern being of such shape that adjacent patterns are in electrical contact and that said inner layer has a first regular grid of predetermined pitch p whose nodes constitute insulated sites and a second grid of pitch p which is off-set by p/2 from the first grid in at least one of said directions, having nodes one at least of which per elementary pattern unit is insulated while the other one belong to the conductive network.

4,524,240

UNIVERSAL CIRCUIT PROTOTYPING BOARD

Rodney D. Stock, San Rafael, and Gary H. Newman, Novato, both of Calif., assignors to Lucasfilm Ltd., San Rafael, Calif.

Filed Aug. 17, 1983, Ser. No. 523,766
Int. Cl.³ H05K *1/02*
U.S. Cl. 174—68.5 **9 Claims**



1. A prototyping board, comprising:
at least one dielectric layer intermediate of first and second electrically conductive layers forming a sandwich having a top side for component insertion and a bottom side for circuit wiring;

said sandwich having, coextensive in each layer, a layout area in which a pattern of socket pin holes on a standard 0.1 inch center is repeated in contiguous substantially 1.0 inch wide ranks and 1.6 inch wide files;

each one of said patterns having 10 equal sized rows in said ranks and 16 equal sized columns in said files, wherein ten of said columns in each one of said patterns defines socket pin holes in every row, and wherein two pairs of adjacent columns in each one of said patterns excludes socket pin holes, said pairs of said adjacent columns being separated by six columns, and

wherein said rows comprise a pattern of repeated columns of said socket pin holes ("hole") and excluded socket pin holes ("space") as follows: hole, space, space, hole, hole, hole, space, hole, hole, space, space, hole, hole, space, hole, hole, thereby to accommodate dual-in-line package (DIP) circuits of various standard widths at various locations relative to said pattern.

4,524,241

INSULATED MULTIWIRE ELECTRIC CABLE HAVING PROTECTED SOLDERABLE AND NON-HEAT-SEALING CONDUCTORS

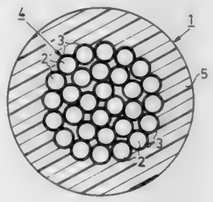
Germaine Binder, and Bernard Kremer, both of Paris, France, assignors to Thomson-Brandt, France

Continuation of Ser. No. 213,074, Dec. 4, 1980, abandoned. This application Nov. 10, 1982, Ser. No. 440,524

Claims priority, application France, Dec. 18, 1979, 79 30938

Int. Cl.³ H01B *1/02, 7/28*

U.S. Cl. 174—119 R **4 Claims**



1. A flexible insulated multiwire electric cable comprising plural uninsulated conductors surrounded by a sheath layer of electrical insulation material, each said uninsulated conductor protected by a layer of lead alloy, non-heat-sealing during formation of the sheath layer at temperatures of 300°–350° C. yet solderable even after accelerated aging, wherein each of said plural uninsulated electric conductors is individually coated with a said layer of lead alloy which has good wetability and excellent solderability and which does not lead to the formation of a nonsolderable brittle intermetallic compound, said layer being constituted by 100% alloy, said alloy consisting essentially of lead within the range 90% to 99% and tin within the range of 10% to 1%.

4,524,242

LOW-COST ELECTRONIC MAIL TERMINAL

Russell Fish, III, Mountain View, and James R. Yurchenco, Palo Alto, both of Calif., assignors to Post Technologies, Inc., Menlo Park, Calif.

Filed Feb. 8, 1983, Ser. No. 465,040

Int. Cl.³ H04L *21/00*

U.S. Cl. 178—4 **10 Claims**

1. An electronic mail terminal for point-to-point communication of messages by utilizing a standard telephone network, said terminal comprising:

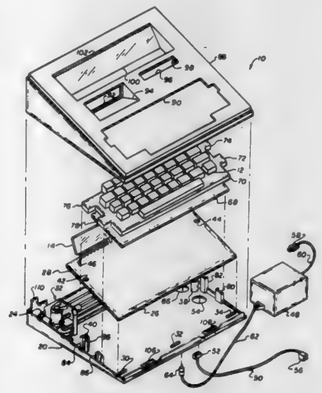
a base housing including circuit board mounting means, printer mounting means, tape drive mounting means, keyboard mounting means, and cover mounting means;

a circuit board mounted to the front portion of said base housing by said circuit board mounting means, said circuit board including communication circuitry for interfacing with said telephone network, and with computer circuitry, and control circuitry;

means for electrically coupling said printed circuit board to said telephone network;

electrical power supply means coupled to said circuit board for converting standard alternating current power to low voltage direct current power for said terminal;

a printer affixed to said base housing with said printer mounting means and electrically coupled to said circuit board, said printer operable for printing messages;



a tape drive affixed to said base housing with said tape drive mounting means and electrically coupled to said circuit board, said tape drive operable for recording messages onto and reading messages from a tape cassette;

display means affixed and electrically coupled to said printed circuit board and mounted to said base housing by said keyboard mounting means, a keyboard operable for inputing messages; and

a cover housing affixed to said base housing.

4,524,243

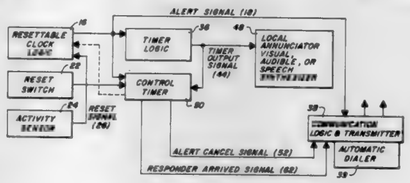
PERSONAL ALARM SYSTEM

L. Dennis Shapiro, Chestnut Hill, Mass., assignor to Lifeline Systems, Inc., Waltham, Mass.

Filed Jul. 7, 1983, Ser. No. 511,921

Int. Cl.³ H04M *11/04*

U.S. Cl. 179—5 R **42 Claims**



1. A subscriber station for transmission of information over a a communications link to a central monitoring station and indicative of subscriber inactivity comprising:

means operative to provide an alert signal at predetermined time intervals;

switch means;

means operative to transmit a first message over said communications link to said central monitoring station in response to said alert signal;

means operative to transmit a second message over said communications link to said central monitoring station within a selected period following the occurence of said alert signal upon activation of said switch means.

4,524,244

DIGITAL AND VOICE TELECOMMUNICATION APPARATUS

Federico Faggin, Los Altos Hills; Jerry A. Klein, Los Altos; Lauren F. Yazolino, Oakland; Robert G. Korody; Eric P. L. Ha, both of Cupertino, all of Calif., and Stephen Kerman, Southbury, Conn., assignors to Cygnet Technologies, Inc., Sunnyvale, Calif.

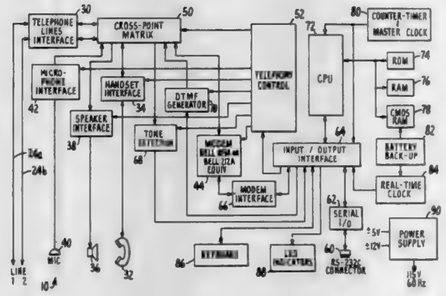
Filed Aug. 5, 1983, Ser. No. 520,739

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—2 DP **4 Claims**

MICROFICHE APPENDIX INCLUDED

(9 Microfiche, 550 Pages)



1. A communication apparatus for transmitting and receiving analog voice signals, digital data signals, and data carrier signals that precede and follow the digital data signals to and from a communication medium, in the same session, said apparatus comprising:

telephony means for transmitting and receiving said voice signals to and from said medium;

modem means for transmitting and receiving said data signals to and from said medium;

switch means interposed between said communication medium, said telephony means, and said modem means; said switch means are adapted to connect said medium and said telephony means and said modem means in a first position and in a second position, wherein in said first position said telephony means are connected to transmit and to receive voice signals to and from said medium and said modem means are connected to receive data carrier signals from said medium; and wherein in said second position said telephony means are disconnected from said medium and said modem means are connected to transmit and to receive digital data signals to and from said medium; and

control means for controlling said switch means between said first position and said second position; said control means for automatically switching said switch means from said first position to said second position when said apparatus transmits data signals to said medium or when said modem means detects said data carrier signals; and said control means for automatically switching said switch means from said second position to said first position when said apparatus terminates the transmission of digital data signal to said medium or when said modem means ceases to receive data signals from said medium;

whereby said data signal and voice signal are transmitted and received to and from said communication medium in the same session.

4,524,245

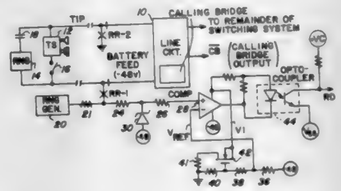
RING TRIP DETECTION SYSTEM

Bruce G. Littlefield, Honeoye Falls, N.Y., assignor to Redcom Laboratories Inc., Fairport, N.Y.

Filed Jan. 13, 1983, Ser. No. 457,556

Int. Cl.³ H04M *3/02*

U.S. Cl. 179—18 HB **18 Claims**



1. A ring trip detection system for detecting a ring trip condition when a telephone set having a ringer to which ringing signals are applied goes off-hook which comprises an up-down counter, means responsive to the duty cycle of said ringing signals with respect to a reference voltage level to condition said counter into an underflow state when said duty cycle does not exceed 50%, and means operative upon absence or occurrence of said underflow state for providing an output indicative of the presence or absence of a ring trip.

4,524,246

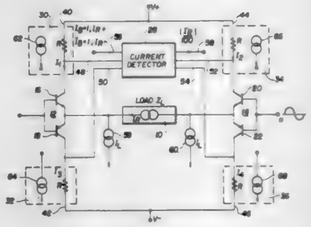
SLIC II—COMMON-MODE CURRENT REJECTION

Peter J. Meza, Indian Harbour Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 7, 1982, Ser. No. 396,072

Int. Cl.³ H04M *3/22*

U.S. Cl. 179—18 FA **8 Claims**



1. A subscriber line interface circuit for connecting a subscriber's telephone line to a telephone exchange having high common-mode currents, comprising:

two identical amplifiers, each having an output coupled to a respective wire of said telephone line and an input connected to said telephone exchange, said amplifiers connected in parallel to form a bridge circuit;

a directional current detector means coupled to said bridge circuit for detecting loop current in said circuit and for suppressing said common-mode currents as a function of the direction of loop current;

a plurality of auxiliary current detector means within said bridge circuit for sensing loop and common-mode currents; and

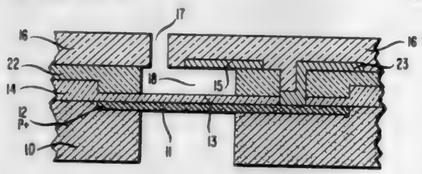
a control circuit means connected to said auxiliary current detector means and said directional current detector means for determining the polarity of said loop current and placing said direction current detector means in a proper directional mode for detecting said loop current.

4,524,247

INTEGRATED ELECTROACOUSTIC TRANSDUCER WITH BUILT-IN BIAS

W. Stewart Lindenberger, Somerset; Tommy L. Poteat, Bridgewater, and James E. West, Plainfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 7, 1983, Ser. No. 511,637
Int. Cl.³ H01G *5/16*
U.S. Cl. 179—111 R **7 Claims**



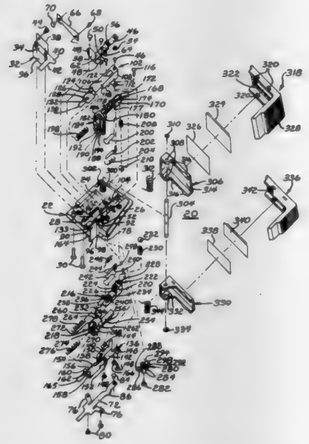
1. An electroacoustic transducer formed in a semiconductor substrate and comprising:
- a diaphragm which vibrates in response to an input signal at audio and ultrasonic frequencies;
- a pair of electrodes placed with respect to said diaphragm so that the electric field between the electrodes varies in relationship with the vibrating diaphragm to permit conversion between electrical and acoustic signals, said electrodes defining a capacitor; and
- an insulating layer adjacent to at least one of the electrodes in the area between the electrodes and including a distribution of fixed charge so as to provide a dc bias for the capacitor.

4,524,248

ALTERNATE ACTION HEADLAMP SWITCH WITH MECHANICAL LOGIC

Fred Levko, Evanston, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 3, 1983, Ser. No. 538,314
Int. Cl.³ H01H *9/26*
U.S. Cl. 200—5 B **16 Claims**



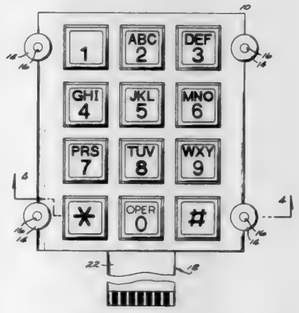
1. An electric switch arrangement comprising a base, first manually operable switch operating means on said base, first switch contact means carried by said base, means interconnecting said first switch operating means and said first switch contact means for closing said first switch contact means in response to a first movement of said first switch operating means and for opening said first switch contact means in response to a second movement of said first switch operating means, second manually operable switch operating means on said base, second switch contact means carried by said base, means interconnecting said second switch operating means and said second switch contact means for closing said second switch contact means in response to a first movement of said second switch operating means and for opening said second contact means in response to a second movement of said second switch operating means, and means interconnecting said first switch operating means and said second switch operating means for effecting movement of both of said first and second switch operating means upon manual movement of said first switch operating means, but effecting movement of only said second switch operating means in response to manual movement of said second switch operating means; said first switch operating means comprising a push on-push off means, and said second switch operating means comprising a push on-push off means.

4,524,249

KEYBOARD SWITCH ASSEMBLY

Charles F. Farrell, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 1, 1984, Ser. No. 616,363
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5A **13 Claims**



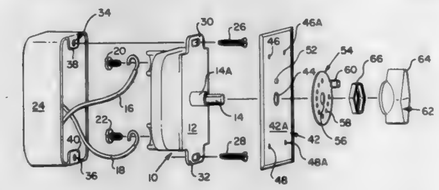
1. Keyboard apparatus comprising:
- (a) a support plate,
- (b) a sheet of flexible dielectric material having a top and a bottom surface received on the support plate, the sheet having a pattern of conductive material disposed on the top surface, the pattern having a plurality of sets of first and second spaced interdigitated runs, the sheet provided with an interconnection tail portion extending beyond the support plate, conductive runs disposed on the tail portion of facilitate electrical connection to other electrical means,
- (c) a keypad sheet of flexible, soft, electrically insulative material having a top and a bottom surface and a plurality of domed shaped portions formed therein, the dome shaped portions having a top surface and a bottom surface, the sheet disposed on the top surface of the polyester sheet with a dome shaped portion disposed over each respective set of interdigitated runs, stop means formed in the keypad sheet adjacent each dome extending above the top surface of the keypad sheet,
- (d) a layer of conductive material disposed on the bottom surface of each dome shaped portion,
- (e) an escutcheon received over the sheets and on the support plate, the escutcheon formed with a key receiving aperture for each dome shaped portion and alignable therewith, and
- (f) a key received in each aperture and adapted to transfer motion to the top surface of the dome shaped portion causing the conductive layer to move toward its respective set of interdigitated runs until the conductive layer bridges the spaced runs of its respective set, the stop means adapted to limit downward travel of a respective key.

4,524,250

ADJUSTABLE STOP TIME SWITCH

Lawrence J. Laviana, Kensington, Conn., assignor to M. H. Rhodes, Inc., Avon, Conn.

Filed Dec. 16, 1983, Ser. No. 562,175
Int. Cl.³ H01H *7/00*
U.S. Cl. 200—33 R **17 Claims**



1. A presettable time switch comprising an interval timer having a motor and setting shaft, the setting shaft rotatable in one angular direction from a timed-out position and rotatable by the motor in the opposite angular direction during a period of runout to the timed-out position, and
- a timed interval limit mechanism, the mechanism including
- a face plate attached to the timer and having a time scale indicating dial, an aperture receiving the timer setting shaft, and a stud fixed to protrude from the face plate at a predetermined radial distance from the center of the face plate aperture,
- a stop member mounted in overlying relation to the face plate and having an aperture corresponding to the face plate aperture and receiving the timer setting shaft, a plurality of stud receiving openings formed in the stop member, the centers of the stud receiving openings being located on an arc spaced from the center of the stop member aperture at said predetermined radial distance, and a protrusion projecting from the stop member, and
- a winding knob mounted on the timer setting shaft in overlying relation to the stop member, the winding knob having an indicating pointer cooperating with the dial for manually setting a desired time cycle, a preselected opening of the stop member receiving the face plate stud and cooperating with the setting shaft received in the stop member aperture for affixing the stop member and its protrusion in a preselected adjusted angular position relative to the face plate, the stop member protrusion located in interfering relation to the winding knob pointer for adjustably limiting timer runout as determined by the preselected adjusted position of the stop member upon the winding knob pointer being moved into engagement with the stop member protrusion.

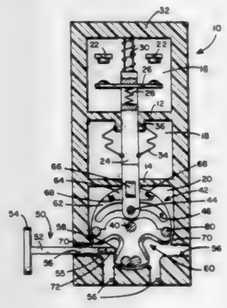
4,524,251

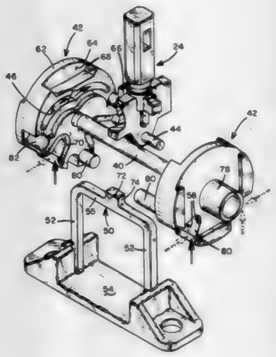
ELECTRICAL SWITCH

Siegfried Schulz, Hueckeswagen, Fed. Rep. of Germany, assignor to K. A. Schmersal GmbH & Co., Fed. Rep. of Germany

Filed Nov. 18, 1983, Ser. No. 553,039
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1983, 3330109
Int. Cl.³ H01H *13/52, 9/28*
U.S. Cl. 200—42 R **12 Claims**

1. A keyed electrical switch comprising:
- (a) a housing containing a slidably mounted push rod, said push rod including one or more electrical contacts for engagement with one or more electrical contacts mounted along a path of travel of said push rod;
- (b) a switch actuating member insertable through a mating opening in said housing;
- (c) at least one roller mounted in said housing to rotate upon engagement by said actuating member;
- (d) means engageable by said actuating member for displacing said roller along its axis of rotation and including means for limiting the rotation of said roller, unless said roller is axially displaced; and
- (e) means coupling said roller to said push rod for actuating said push rod to make or break one or more electrical connections between one or more of said electrical contacts at a predetermined pivot angle of said roller occurring when said roller is axially displaced.





4,524,252

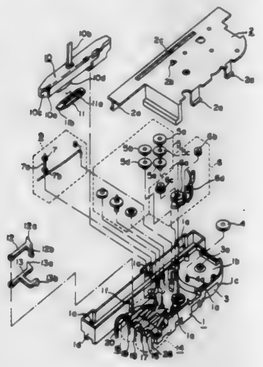
MOTOR-DRIVEN ELECTRIC TIMER

Tetuji Okazaki; Kanji Kawasaki, and Masayoshi Hirose, all of Okayama, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Oct. 19, 1982, Ser. No. 435,219
Claims priority, application Japan, Oct. 19, 1981, 56-166977; Oct. 19, 1981, 56-155318[U]; Oct. 21, 1981, 56-168341
Int. Cl.³ H01H *7/00*
U.S. Cl. 200—38 E **8 Claims**

1. A motor-driven electric timer comprising
- a slider having a rack in its sliding direction, which is externally actuatable for manually setting the timer to a desired position,
- a motor,
- a reduction gear assembly for reducing a rotational speed from said motor to a predetermined speed,

a pinion being adapted to be engaged between said reduction gear assembly and said rack of said slider,



a switching lever member following the movement of said slider, and

a contact member actuated by said switching lever member.

4,524,253

THREE POSITION SWITCH CONSTRUCTION

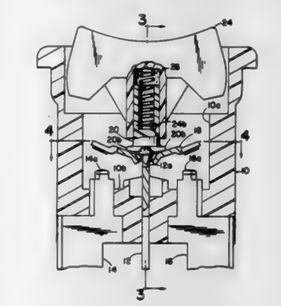
Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

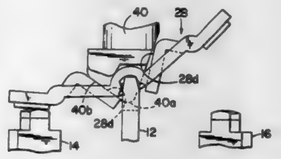
Continuation-in-part of Ser. No. 560,207, Dec. 12, 1983, abandoned. This application Apr. 2, 1984, Ser. No. 596,170

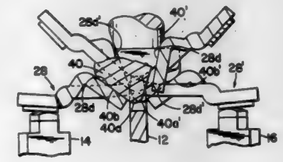
Int. Cl.³ H01H *5/06, 21/42*

U.S. Cl. 200—68.2 **23 Claims**

1. A switch comprising a base of insulating plastic and defining an upwardly open cavity, several fixed contacts spaced along a bottom wall of said cavity, said fixed contacts including a central fixed contact having an upper edge defining a single fulcrum, said switch base having means defining actuator support regions, an actuator including support means cooperating with said support regions to movably support said actuator so that an inner portion moves inside said cavity between opposed limit positions, a movable contact lever having a mid-portion pivotally supported on said fulcrum defining upper edge of said central fixed contact for movement from and to oppositely oriented limit positions such that the opposed free end portions of said movable contact lever are adapted to abut other of said fixed contacts spaced to either side of said one centrally located fixed contact, said central fixed contact consisting of a flat terminal strip mounted in a slot provided in the case bottom wall, said central fixed contact fulcrum defining upper edge portion having a relieved portion, pin means slidably received in said actuator and having a medial protuberance of width significantly less than the width of said lever and movable in a path through a central valley portion of said movable contact and through said relieved portion, spring biasing means acting on said pin means so that said pin means acts on said movable contact lever to urge said lever downwardly at least in limit positions thereof corresponding to said two limit positions of said actuator, said pin means having at least one land for selectively engaging a region of said contact lever located to one side of said central valley portion engaged by said medial protuberance whereby to provide support for said contact lever in at least one position of said contact lever, said at least one land comprising two







separated abutment area provided in laterally spaced relationship to said path of movement for said medial protuberance.

4,524,254

PRESSURE SWITCH

Hatsuyoshi Yoshida; Michio Fukutome, both of Aichi; Makoto Ohuchi, and Jyun Ohta, both of Toyota, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Oguchi and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Nov. 14, 1983, Ser. No. 551,030

Claims priority, application Japan, Nov. 17, 1982, 57-174161[U]

Int. Cl.³ H01H *35/40, 9/02*

U.S. Cl. 200—83 R **3 Claims**

1. A pressure switch, comprising:

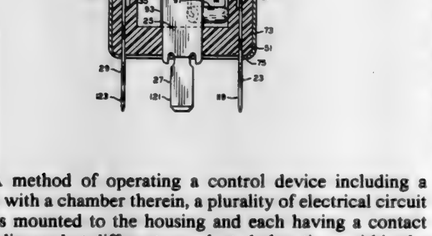
a pressure switch body having a switch chamber; a diaphragm housed in said body so as to be displaceable under pressure;

a switch element located in said switch chamber responsive to displacement of the diaphragm, said switch element further including a cylindrical vent member having an enlarged end and further including a first vent hole formed therein for communicating said switch chamber with the surrounding atmosphere;

a contact mounted in said body;

a holder having a second vent hole in communication with said first vent hole, said holder mounted in said enlarged end of said cylindrical vent member;

a stationary contact mounted on said cylindrical vent member for being contacted by said contact mounted in said body;



a porous filter for closing said second vent hole at one end via said porous filter, said porous filter being air permeable and water repellent and extending outwardly from surrounding walls of said holder; and

a washer positioned between said filter and said enlarged end of said cylindrical vent member such that said filter is spaced outwardly from said washer.

4,524,255

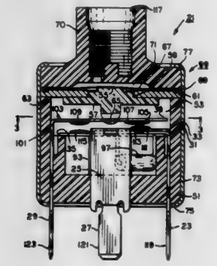
CONTROL DEVICE AND METHOD OF OPERATING SUCH

Donald L. Haag, Sterling, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 349,329, Feb. 16, 1982, Pat. No. 4,446,614. This application Dec. 29, 1983, Ser. No. 566,847

Int. Cl.³ H01H *35/24*

U.S. Cl. 200—83 R **18 Claims**



17. A method of operating a control device including a housing with a chamber therein, a plurality of electrical circuit elements mounted to the housing and each having a contact section disposed at different preselected elevations within the chamber, a switch and terminal combination including a terminal mounted to the housing, and a pair of generally coplanar switch segments disposed within the chamber, one of the switch segments having a pair of opposite sides interposed between a pair of opposite ends with one of the opposite ends being pivotally connected with the terminal and the other of the switch segments being connected with the one switch segment at least generally adjacent the other of the opposite ends thereof and extending generally laterally beyond either opposite side of the one switch segment, and means movable in the housing and defining a part of the chamber for exerting an actuating force on the switch segments, the method comprising the steps of:

moving the exerting means in the housing and transmitting the actuating force to the switch segments;

pivoting the switch segments in their coplanar relation in response to the actuating force transmitted thereto generally conjointly and in the coplanar relation thereof about the pivotal connection of the one opposite end of the one switch segment with the terminal and engaging a part of one of the one and other switch segments in electrical contacting engagement with a contact section of one of the electrical circuit elements; and thereafter

rocking the switch segments from their coplanar relation in response to the actuating force transmitted thereto generally conjointly about the pivotal connection of the one opposite end of the one switch segment with the terminal and also about the electrical contacting engagement of the part of the one of the one and other switch segments with the contact section on the one electrical circuit element and engaging a part of the other of the one and other switch segments with another contact section on another of the electrical circuit elements.

4,524,256

PRESSURE-SENSITIVE ELEMENT

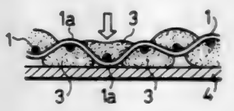
Hiroyasu Miyata, and Kazuhiko Ito, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Aug. 29, 1983, Ser. No. 527,286

Claims priority, application Japan, Aug. 27, 1982, 57-128542[U]

Int. Cl.³ H01H *35/00*

U.S. Cl. 200—86 R **3 Claims**



1. A pressure-sensitive element comprising a conductive process mesh having a plurality of spaced-apart convex conductive parts, an elastic insulator formed integrally with said mesh having a plurality of spaced-apart insulator parts between adjacent convex conductive parts which bulge more than said convex conductive parts without covering said convex conductive parts, and a conductive layer opposed to said conductive porous mesh and elastic insulator; so that when no pressure is applied, said convex conductive parts of said conductive porous mesh are spaced apart from said conductive layer by the bulging of said insulator parts of said elastic insulator, whereby said element is in its nonconductive state, and that when a pressure is applied, the bulging of said insulator parts of said elastic insulator is deformed to bring at least one of said convex conductive parts of said conductive porous mesh into contact with said conductive layer, whereby said element is in its conductive state.

4,524,257

HIGH-VOLTAGE GAS-BLAST PUFFER TYPE CIRCUIT-BREAKER

Ernst Slamecka, Alt-Pichelsdorf 13, D-1000 Berlin 20, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,517

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1981, 3113325; Jun. 16, 1981, 3124075

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **6 Claims**

1. A gas-blast puffer-type circuit-breaker comprising:

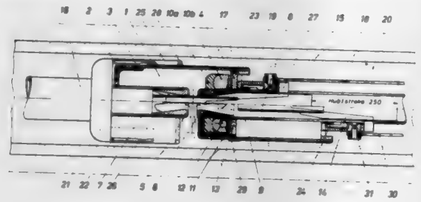
dual-blast nozzle arrangement, wherein two nozzles facing each other in a fixed axial distance;

said dual-blast nozzles, each of them ending in a gas flow absorbing volume, being temporarily surrounded by a movable single compression cylinder;

separated contact pieces for carrying continuous and arc current respectively;

the improvement of said circuit-breaker characterizing:

dual-blast nozzle arrangement, wherein a first nozzle (5) being made of electrically conducting material whereas a second nozzle (6) being made of electrically insulating material;



a movable compression cylinder (3) of electrically insulating material bearing a contact piece (23) being intended for carrying continuous current;

an arcing contact piece (8) being connected mechanically rigid and suitable for carrying electrical currents with said movable contact piece (23).

4,524,258

BACK-UP CONTROL CIRCUIT FOR CONTROLLING A MAGNETRON OF A MICROWAVE OVEN

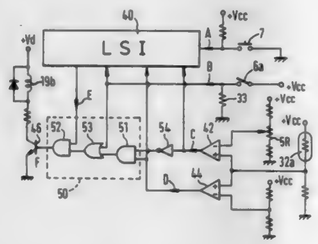
Masayuki Aoki, Nagoya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 8, 1984, Ser. No. 587,648

Claims priority, application Japan, May 27, 1983, 58-93706

Int. Cl.³ H05B *6/68*

U.S. Cl. 219—10.55 B **6 Claims**



1. A control circuit for controlling a microwave oven having a mechanical timer providing a time signal and food temperature detecting means for providing a food temperature signal, said control circuit comprising:

a magnetron;

a high voltage transformer electrically connected to said magnetron;

relay switching means, for connecting said transformer with a power source;

output control means, including a large scale integrated circuit responsive to said time signal and said food temperature signal, for producing a control signal to control said relay switching means; and

means, provided between said relay switching means and said output control means, for controlling the relay switching means in response to said control signal, said time signal, and said food temperature signal, said time and food temperature signals connected as direct inputs to said controlling means and said controlling means operative for generating a magnetron cut-off signal for operating said relay switching means to disconnect said transformer from said power source for stopping energization of the magnetron when cooking is completed.

4,524,259

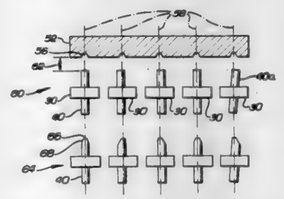
PRINT HAMMER ASSEMBLY METHOD

Peter H. Wolf, Thousand Oaks; Thomas A. Dobson, and Rafael Rozo, both of Canoga Park, all of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Filed Apr. 4, 1983, Ser. No. 481,651

Int. Cl.³ B23P *1/08;* **B23K** *26/00;* **B41J** *9/127*

U.S. Cl. 219—69 R **18 Claims**



1. A method of manufacturing a matrix printhead comprising the steps of:

providing a plurality of spaced apart elongated flat spring hammer elements;

securing an impact pin to each hammer element, wherein each impact pin has a tip which defines a dot to be printed and a tip configuration which is different from that desired for the printhead;

attaching the hammer elements to a printhead assembly; and

subsequently shaping the impact pins so that they have the desired tip configuration and so that they are accurately spaced with respect to each other.

4,524,260

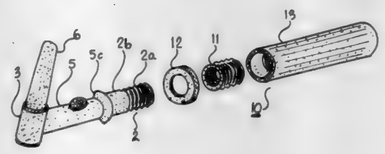
ADAPTER KIT FOR TUNGSTEN-INERT-GAS TORCHES

James V. Rotilio, 329 Hackensack St., Carlstadt, N.J. 07072

Filed May 19, 1983, Ser. No. 496,073

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—75 **4 Claims**



1. A welding torch comprising a welding head adapted to perform operations with a conventional electrode rod, and a body portion including means connectable to sources of electrical power and cooling water, said body portion including a shoulder projecting outwardly in a radial direction along the axis, forming an annular outer face normal to said axis; a terminal centered on said face comprising a tubular housing of highly conductive metal for accommodating the input ends of water cooling and electrical cables constructed to service said welding torch, wherein the portion of said tubular housing, commencing at the annular face of said shoulder, is substantially smooth and of slightly larger diameter than a screw-threaded portion at the opposite end of said terminal;

means for adapting said welding torch for operation at an electrical current in excess of about 100 amperes, said means comprising:

an internally and externally-threaded tube of high conductive metal constructed to screw onto the screw-threaded portion of said tubular cable housing in coaxial mating relation;

a gasket of heat and electrical insulating material constructed to be just accommodated on the smooth portion of said tubular cable housing, in flush relation to the annular outer face of said shoulder, and;

a sleeve of heat and electrical insulating material having substantially the same outer diameter of said gasket and having an internal screw-threaded portion commencing at a plane spaced-apart from its inner end an axial distance approximately exceeding the axial length of the smooth portion of said tubular housing and extending a substantial distance inwardly therefrom, said internal screw-threaded portion having an inner diameter constructed to screw onto the external threads of said internal and external-threaded tube when said tube is screwed in place on said tubular housing, and said sleeve constructed to make at its inner annular end flush with the outer face of said gasket in place against the outer face of said annular sleeve.

4,524,261

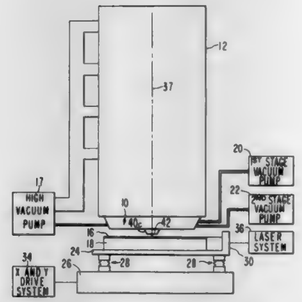
LOCALIZED VACUUM PROCESSING APPARATUS

Paul F. Petric, Swampscott, and Michael S. Foley, Beverly, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 19, 1983, Ser. No. 533,822

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 EL **25 Claims**



1. Apparatus adapted for attachment to a vacuum processing chamber for localized vacuum processing of a workpiece, said apparatus comprising:

a housing member including a bottom plate with a downwardly extending first sleeve having an aperture therethrough and an upwardly extending flange around the periphery of said plate, said flange including a plurality of ports for vacuum pumping, said bottom plate and said flange in combination defining an interior region of said housing member;

a lower plate mounted in said interior region of said housing member with a second sleeve extending downwardly into said aperture inside said first sleeve and having a tip coplanar with the tip of said first sleeve such that a first vacuum zone is defined between said first sleeve and said second sleeve and said first vacuum zone is in gas communication with a first one of said ports through a channel between said housing member and said lower plate; and

an upper plate mounted above said lower plate in said interior region of said housing member with a third sleeve extending downwardly into said aperture inside said second sleeve and having a tip coplanar with the tips of said first and second sleeves such that a second vacuum zone is defined between said second sleeve and said third sleeve and a high vacuum zone is defined inside said third sleeve, said second vacuum zone being in gas communication with a second one of said ports through a second channel between said lower plate and said upper plate and said high vacuum zone being in gas communication with a third one of said ports through the portion of said interior region above said upper plate.

4,524,262

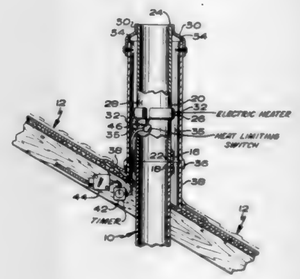
ELECTRICALLY HEATED SEWER VENT LINE DEFROSTER

Cyril G. Meyer, 830 7th St. South, Breckenridge, Minn. 56520

Filed Jan. 31, 1983, Ser. No. 462,400

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—213 **4 Claims**



1. A vent line defroster in combination with a plastic sewer vent line extending through a roof, said defroster being located above said roof and comprising:

a metal pipe having an exterior, a top and a bottom;

a heating element contacting at least a portion of said exterior of said pipe;

means for coupling the bottom of said pipe to said plastic sewer vent line; and

an outer shell having a top and a bottom surrounding and spaced outwardly from said pipe, said shell top being sealed to said pipe top and said shell bottom being sealed to said roof.

4,524,263

ELECTRIC TRAVEL IRON USING PORTABLE HAIR-DRYER AS THE HEAT SOURCE

Yücel Yamac, Graz, Austria, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

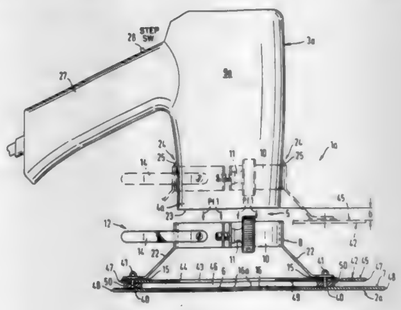
PCT No. PCT/DE82/00087, § 371 Date Nov. 30, 1982, § 102(e) Date Nov. 30, 1982, PCT Pub. No. WO82/03643, PCT Pub. Date Oct. 28, 1982

PCT Filed Apr. 15, 1982, Ser. No. 451,151

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115696; Jan. 29, 1982, 3202978

Int. Cl.³ D06F *75/00;* **A45D** *20/12;* **H05B** *1/00*

U.S. Cl. 219—249 **23 Claims**

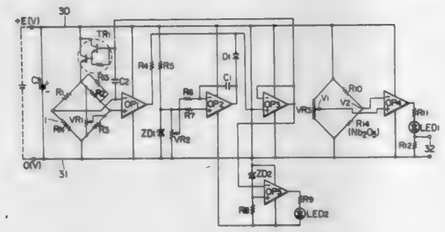


1. Electric iron, comprising:

a hand-held hot air type hair-dryer constituting an upper component of said iron, said dryer having a hand grip, providing its heating unit as a heat source for said iron, and having an outlet duct for discharge of a hot air stream from an open end of said duct;

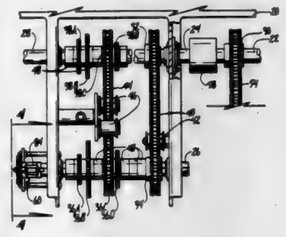
an ironing plate;
means (8) for connecting said ironing plate to said hot air outlet duct and holding said ironing plate facing said open end of said duct and spaced therefrom, thereby presenting a direct hot-air impingement surface region of said ironing plate lying directly in front of said open duct end for impingement of hot air thereagainst,
said ironing plate, (2,2*a*) having a plane upper side (7) facing said open duct end (4, 4*a*) and extending laterally outward from said direct hot-air impingement surface region and hence beyond the contour (18, 18*a*) of said open duct end (4, 4*a*) for providing a rim region capable of being heated by hot air laterally deflected from said direct hot-air impingement surface region, and
a reflection plate (42) interposed between said open duct end (4*a*) and said ironing plate (2*a*) and having an aperture (43) opposite said open duct end for passage of hot air therethrough for exit through a gap (46) between said reflection plate and said ironing plate (2*a*) after impingement upon said direct hot-air impingement region, said gap guiding said hot air along said upper side (7) of said ironing plate.

4,524,264
TEMPERATURE CONTROL APPARATUS
Takashi Takeuchi; Hideaki Takahashi, and Haruyoshi Kondo, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan
Filed May 11, 1983, Ser. No. 493,698
Claims priority, application Japan, May 13, 1982, 57-79213
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—497 **5 Claims**



1. A temperature control apparatus for and oxygen sensor, comprising:
a substrate having upper and lower major surfaces;
an oxygen sensor including a gas sensor arranged on one of said major surfaces;
a heater having a heating resistance on the other of said major surfaces;
a Wheatstone bridge having four sides and having the heating resistance of said heater in one said side thereof and resistances in the remaining three sides to achieve a voltage balance to set a target temperature when said oxygen sensor reaches a predetermined temperature, said Wheatstone bridge serving as a temperature setting means and being adapted to produce an output voltage;
a differential amplifier coupled to said Wheatstone bridge for amplifying the output voltage from said Wheatstone bridge;
ramp rate setting means for setting a voltage rise rate;
ramp function generating means coupled to said ramp rate setting means for generating a low voltage output when said power is turned on and for gradually increasing the voltage output therefrom in accordance with the voltage rise rate set by said ramp rate setting means linearly as a function of time after the power is turned on;
selecting means coupled to said differential amplifier and to said ramp function generating means for selecting the smaller of the output voltage from said differential amplifier and the output voltage from said ramp function generating means and for producing a selected voltage; and
supply power control means coupled to said selecting means for controlling power to be supplied to said Wheatstone bridge in accordance with the voltage output of said selecting means.

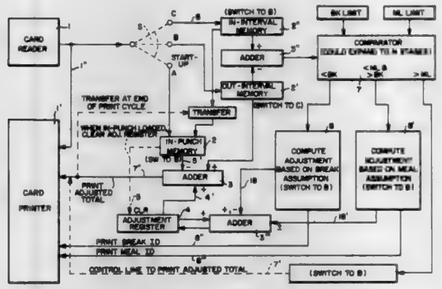
4,524,265
MECHANICAL ACREAGE COUNTER
Thomas G. Dillman, R.R. 3, Grinnell, Iowa 50112, and Glen W. Dillman, R.R. 1, P.O. Box 33, Gilman, Iowa 50106
Filed Jan. 12, 1984, Ser. No. 570,248
Int. Cl.³ G01C *22/00*
U.S. Cl. 235—95 R **7 Claims**



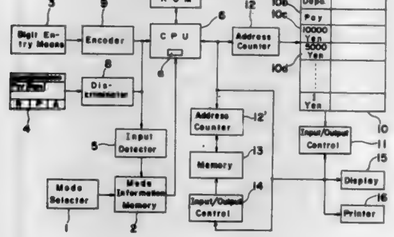
1. A mechanical counter for determining the number of acres of land seeded in combination with an agricultural planter, said planter having a frame, a plurality of planting seed units spaced along the length of said planter for planting rows of seed, a drive wheel engaging said ground, and a power train including a first shaft rotatably driven by said drive wheel, a second shaft, a clutch disposed between said first and second shafts for selectively driving said second shaft, a third shaft driven by said second shaft, and a fourth shaft driven by said third shaft for operating said planting seed units, said seed being deposited from said seed units in response to rotation of said fourth shaft, said counter comprising:
a counter frame,
connecting means connecting said counter frame to said planter frame adjacent said third shaft,
a first gear attached to said third shaft for rotation therewith,
a second gear mounted on said counter frame in meshing engagement with said first gear, and
a readout means operatively connected to said second gear to display the number of acres seeded.

4,524,266
METHOD OF AND APPARATUS FOR DISCRIMINATING BETWEEN VARIOUS TYPES OF CHECK-OUT PERIODS IN EMPLOYEE TIME-RECORDING SYSTEMS AND THE LIKE
Lawrence Krakauer, Wayland, and Lawrence Bliss, Winchester, both of Mass., assignors to Kronos, Inc., Boston, Mass.
Filed Sep. 13, 1982, Ser. No. 416,719
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—377 **4 Claims**

1. In a timecard recording apparatus, a method of monitoring the time between check-in and check-out of the timecard, that comprises, recording the check-in time on the timecard; storing the times of subsequent check-outs and check-ins; automatically comparing the time interval between each subsequent stored check-out and the next following check-in with predetermined permitted break, meal or related time intervals and recording the same on the timecard; and automatically computing the total time from the initial check-in time to the last check-out time which precedes a subsequent check-in time occurring at a time period following the last check-out time greater than the predetermined time intervals, thereby automatically adjusting to include said permitted time intervals; and recording the total adjusted time upon the card.

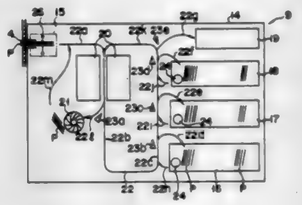


4,524,267
CASH ACCOUNTING SYSTEM HAVING DATA COMPILING CAPABILITY
Katsuji Nishimura, Habikino, and Hachizou Yamamoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 16, 1982, Ser. No. 450,474
Claims priority, application Japan, Dec. 24, 1981, 56-212228
Int. Cl.³ G06F *15/30*
U.S. Cl. 235—379 **2 Claims**



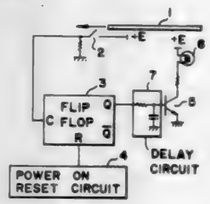
1. In a cash accounting system for registering and storing information regarding money transactions, means for facilitating auditing and checking said system and transactions comprising,
means for inputting data regarding money transacted in each transaction;
first memory means for separately storing first information related to amounts of money in each of a plurality of denominations transacted in each transaction;
second memory means for separately storing second information related to accumulated amounts of money in each of a plurality of denominations; and
checking means associated with said second memory means, said checking means comprising means for segregating said second information related to each denomination into unit information representing numbers of units of currency items in such denomination, each unit having a predetermined monetary value, and fractional unit information representing a fractional portion of such unit.

4,524,268
AUTOMATIC BANK NOTE TRANSACTION SYSTEM
Kunio Fukatsu, Ebina, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Feb. 14, 1984, Ser. No. 580,135
Claims priority, application Japan, Feb. 15, 1983, 58-23294
Int. Cl.³ G06F *15/30*
U.S. Cl. 235—379 **13 Claims**



1. An automatic bank note transaction system comprising:
a central processing unit; and
a plurality of automatic bank note transaction apparatuses which are connected to said central processing unit in an on-line basis, each automatic bank note transaction apparatus including a housing; storing means disposed in said housing for storing bank notes therein; and detecting means for detecting the amount of the bank notes stored in said storing means and generating a detection signal,
regulating means for discriminating in response to the detection signal from said detecting means which automatic bank note transaction apparatus is capable of dispensing the bank notes since said storing means thereof is filled with the bank notes and, which automatic bank note transaction apparatus requires bank note replenishment since said storing means thereof is empty, and for generating a discrimination signal; and
output means, connected to said regulating means, for generating output data representing the apparatus from which excessive bank notes are to be dispensed, and which apparatus is to be replenished with the bank notes in response to the discrimination signal from said regulating means.

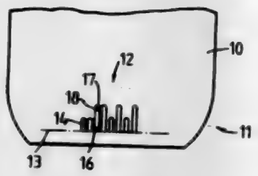
4,524,269
CARD OPERATION INDICATOR FOR MAGNETIC CARD DRIVE DEVICES
Sadaaki Ezawa, and Hiroshi Kitagawa, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan
Filed Feb. 14, 1983, Ser. No. 466,365
Claims priority, application Japan, Feb. 23, 1982, 57-27838
Int. Cl.³ G06K *7/08*
U.S. Cl. 235—449 **3 Claims**



1. A magnetic card generation indicator for a magnetic card drive device which is provided with a head for reading data from or writing data in one of two recording zones of a magnetic card, comprising:
detecting means for detecting whether the insertion of the magnetic card into the magnetic card drive device is a first or second insertion;

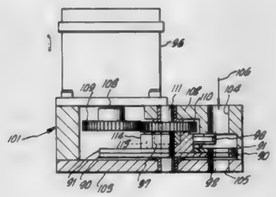
delay means for providing a predetermined delay time after the insertion of the magnetic card;
an indicator lamp; and
control means for controlling the indicator lamp by the outputs of the detecting means and the delay means to light, put out and turn ON and OFF the indicator lamp.

4,524,270
APPARATUS FOR READING A LINE MARKING FIXED TO A CARRIER
Hans Martin, Thalwil, Switzerland, assignor to Emhart Industries, Inc., Farmington, Conn.
Filed Sep. 30, 1983, Ser. No. 537,630
Claims priority, application Switzerland, Oct. 1, 1982, 5790/82
Int. Cl.³ G06K *19/06*
U.S. Cl. 235—494 **7 Claims**



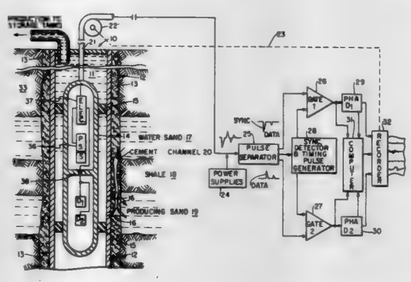
1. Apparatus for reading a line marking fixed to a carrier, the marking having longitudinal elements of different lengths which are substantially perpendicular to a joint, imaginary line, shorter elements being for use as pulse generator markings and longer elements being for use both as pulse generator markings and code symbols, the apparatus acting with an optical arrangement which displays the elements in time sequence on a reading surface in the movement of the marking carrier in the direction of the imaginary line, wherein the reading surface is divided into more than three consecutive sectors and that each sector is linked to an optoelectronic converter, and in that a first electronic switching mechanism produces a pulse signal if one element of the marking is displayed on at least one sector of the reading surface, and in that a second electronic switching mechanism produces a code signal if one element of the marking is simultaneously displayed on at least two sectors, which are separated from each other by at least one other sector or a preselectable number of other sectors.

4,524,271
LASER BLOCKING SHUTTER
Donald W. Parker, Arcadia, Calif., assignor to Cilco, Inc., Huntington, W. Va.
Filed Apr. 21, 1983, Ser. No. 487,117
Int. Cl.³ G01D *5/36*
U.S. Cl. 250—233 **7 Claims**



1. A shutter for blocking a laser beam comprising
a metal plate,
a plastic ring adjacent the plate, the plate and ring having a plurality of substantially equally spaced holes and solid areas between the holes, the holes providing a path for passing a laser beam,
housing means for housing the plate and ring and for allowing the plate and ring to be rotated in a step-wise fashion, said housing means being adapted to support the plate and ring to allow a laser beam to pass through a hole in the plate and ring assembly, and
means for rotating said plate and ring assembly.

4,524,272
BEHIND CASING WATER FLOW DETECTOR
Hans J. Paap, Bellaire, and Harry D. Smith, Jr., Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Dec. 20, 1982, Ser. No. 451,635
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—265 **20 Claims**

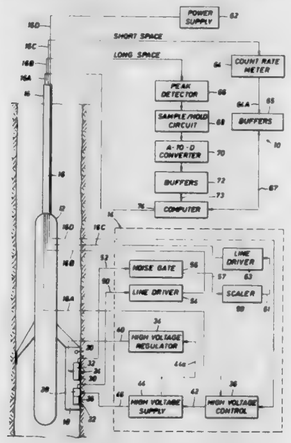


1. A method for measuring the location, linear flow rate, and volume flow rate of undesired water flow behind well casing in a producing well, comprising the steps of:
(a) locating a well tool sized and adapted for passage through a well bore and having a source of high energy neutrons at least some of which have sufficient energy to cause the nuclear reaction O^{16} (n,p) N^{16} and at least two gamma ray detectors spatially arranged in a predetermined manner with said source and each other in a well bore at a depth to be investigated;
(b) irradiating the borehole environs with high energy neutrons from said source;
(c) detecting at said detectors gamma rays resulting from the decay of the unstable isotope N^{16} comprising a portion of any undesired behind casing water flow present and generating count signals representative thereof;
(d) separating said count signals from at least one of said detectors into at least three separate energy dependent signals related to the energy of the gamma rays causing said signals and generating a ratio signal representative of the ratio of at least two separate energy dependent signals;
(e) combining said count signals from said detectors according to a first predetermined relationship to derive an indication of the linear flow rate of undesired behind casing water flow in a preferred direction; and
(f) generating an indication of the volume flow rate of undesired behind casing water flow from said ratio signal, the energy dependent signal not used in the generation of the ratio signal and the linear flow indication in accordance with a second predetermined relationship.

4,524,273
METHOD AND APPARATUS FOR GAMMA RAY WELL LOGGING
Bernard G. Hubner, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Apr. 15, 1983, Ser. No. 485,151
Int. Cl.³ G01V *5/12*
U.S. Cl. 250—269 **20 Claims**

1. A method of investigating subsurface earth formations traversed by a borehole, comprising:
introducing a first plurality of photons into said formation;

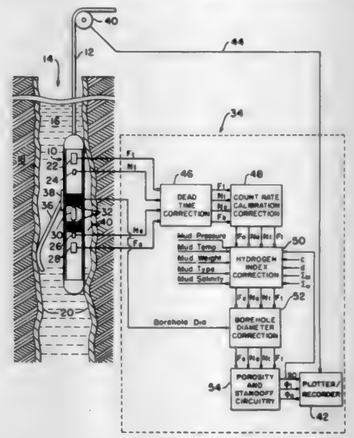
introducing a second plurality of photons into said borehole having a known energy peak;
generating during a first time interval first electrical signals representing energy of photons from said second plurality and from a third plurality of photons from said formation;
detecting said energy peak from said first electrical signals;



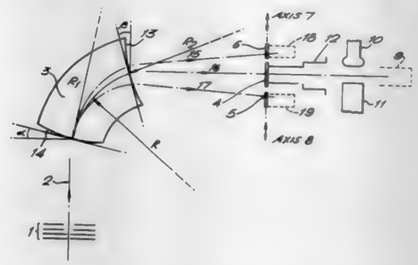
generating during a second time interval second electrical signals representing energy from photons from second plurality of photons;
detecting said energy peak from said second electrical signals;
comparing said detected energy peaks from said first and second electrical signals; and
generating a control signal in response to said comparison.

4,524,274
METHODS AND APPARATUS FOR INVESTIGATING AN EARTH FORMATION AND COMPENSATING FOR BOREHOLE ENVIRONMENTAL EFFECTS
Hubert D. Scott, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Aug. 5, 1982, Ser. No. 405,391
Int. Cl.³ G01V *5/10*
U.S. Cl. 250—269 **36 Claims**

1. A method for investigating an earth formation surrounding a mud-filled borehole, which comprises the steps of:
passing a logging tool, including a high energy neutron source and at least one pair of neutron detectors spaced at different distances from the neutron source, through the borehole;
irradiating the borehole contents and the formation with neutrons from said source;
detecting neutrons that interact with the borehole contents and the formation with said detectors;
producing a signal indicative of the neutrons detected by each detector;
determining a measure of the effectiveness of the borehole mud as a neutron moderator; and
applying to each said detector signal a correction that is a function of the measure of the effectiveness of the borehole mud as a neutron moderator to produce a corrected signal.



4,524,275
MULTIPLE COLLECTOR MASS SPECTROMETERS
John S. Cottrell, 33 Banford Rd., Manchester M20 8QP; Patrick J. Turner, 61 Altrincham Rd., Wilmslow, Cheshire, and David J. Kay, 9 Redwood Close Barmton, Northwich, Cheshire, all of United Kingdom
Filed Dec. 6, 1982, Ser. No. 447,179
Claims priority, application United Kingdom, Dec. 7, 1981, 8136791
Int. Cl.³ H01J *49/30*
U.S. Cl. 250—298 **20 Claims**



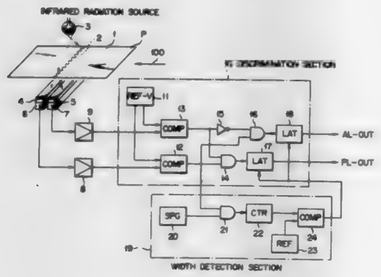
1. An isotope ratio mass spectrometer suitable for use in the determination of isotope ratios, comprising; a mass selector including, a stigmatic sector magnet having a focal plane, an ion optical axis, entrance and exit pole faces which are inclined to said ion optical axis in order to cause at least first order focusing in two mutually perpendicular planes simultaneously, said exit pole face being so curved as to cause said focal plane to be substantially perpendicular to said ion optical axis; and means for detecting ion beams at a plurality of positions in said focal plane simultaneously, wherein focussing of ions on said focal plane is achieved solely by said stigmatic sector magnet.

4,524,276

APPARATUS FOR DETECTING A SECURITY THREAD EMBEDDED IN A PAPER-LIKE MATERIAL

Ko Ohtombe, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 4, 1983, Ser. No. 481,944
Claims priority, application Japan, Apr. 6, 1982, 57-55993
Int. Cl.³ G06K *7/10;* **G01J** *5/08*
U.S. Cl. 250—338 **11 Claims**



1. An apparatus for optically detecting a security thread embedded in a paper-like material, comprising:

a radiation source for irradiating infrared rays to illuminate the paper-like material;

first detection means having a first filter adapted to selectively receive the infrared rays passing through the paper-like material and to deliver a first detection signal corresponding to the amount of infrared radiation incident onto the first detection means;

second detection means having a second filter with infrared radiation transmission characteristics different from the first filter, adapted to selectively receive the infrared rays passing through the paper-like material and to deliver a second detection signal corresponding to the amount of infrared radiation incident onto the second detection means; and

processing means connected to the first and second detection means for processing variations between the first and second detection signals so as to determine whether the security thread is present in the paper-like material and also what the security thread is made of.

4,524,277

CHARGED PARTICLE BEAM APPARATUS

Yoshimasa Shimura; Hideyuki Kakiuchi; Yoshihisa Minamikawa, and Katsuhiro Kawasaki, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1982, Ser. No. 455,941
Claims priority, application Japan, Dec. 18, 1981, 56-205574
Int. Cl.³ G01K *1/08;* **H01J** *3/00*
U.S. Cl. 250—397 **13 Claims**

1. A charged particle beam apparatus, comprising:

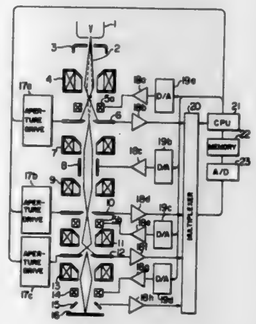
a source for a beam of charged particles;

an electron lens system for focusing the beam of chargeed particles emitted by said charged particle beam source;

at least a combination of deflecting means for deflecting said charged particle beam and an aperture member having an aperture through which said charged particle beam is passed;

a scanning signal source for supplying a scan signal to said deflecting means to thereby perform a two-dimensional scan with said charged particle beam; and

axis aligning means for correctively adjusting said combination in such a manner that the center axis of said aperture coincides with the center axis of said charged particle beam performing no scan, said adjustment being made on the basis of time-based variation in the quantity of the charged particles trapped by said aperture member when scanning with said charged particle beam is being performed in response to said scan signal, said axis aligning means including first means for detecting the quantity of the charged particles caught by said aperture member in terms of an electric signal, second means for determining the position of the center axis of said aperture on the basis



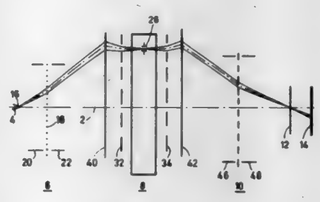
of time-based variation in said electric signal, third means for arithmethically determining deviation of said center axis position of said aperture determined by said second means from said axis position of said charged particle beam, and fourth means for correctively adjusting said combination on the basis of the deviation determined by said third means.

4,524,278

CHARGED PARTICLE BEAM EXPOSURE DEVICE INCORPORATING BEAM SPLITTING

Jan B. Le Poole, Kennedyplantsoen 56, Voorschoten, Netherlands

Filed Feb. 14, 1983, Ser. No. 465,937
Claims priority, application Netherlands, Feb. 15, 1982, 8200559
Int. Cl.³ H01J *37/30*
U.S. Cl. 250—398 **28 Claims**



1. A device for exposing a target to be positioned in an object space to a beam of charged particles, said device comprising in sequence along an optical axis

a radiation source,

a first beam splitting device arranged near said radiation source, said first beam splitting device including two systems of parallel wires directed transversely to one another and means for applying mutually different potentials to said two systems of parallel wires,

a multiple beam deflection system including an electrode system and a beam modulation system,

a second beam splitting device, and

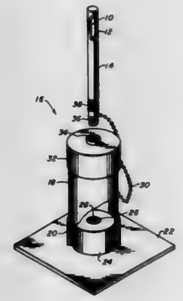
a target position .d near said second beam splitting device.

4,524,279

RADIATION SOURCE SHIELD AND CALIBRATOR

Charles L. Christianson, Laurel, and Richard Spurlock, Wheaton, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1983, Ser. No. 467,727
Int. Cl.³ G21F *5/02*
U.S. Cl. 250—497.1 **8 Claims**



1. An apparatus adapted to function as a shipping and/or storage container and as a calibration device for a predetermined radiation source associated therewith, comprising:

a case;

first means affixed to one end of said case so as to allow said case to stand vertically and to close the one end thereof;

second means affixed to the other end of said case opposite to said first means so as to allow the predetermined radiation source to be secured to said second means, and so as to close the other end of said case;

shielding means for absorbing radiation from the predetermined radiation source, said shielding means being fitted within said case at the one end thereof; and

storing and calibrating means including a rod having an ampule containing the predetermined radiation source embedded in one end thereof, and said rod being configured on the other end thereof so as to be insertable into said case via said second means to place the predetermined radiation source within said shielding means for carrying out of the shipping and/or storage function, and said rod being additionally configured on the same other end thereof so as to be attachable to said second means to place the predetermined radiation source a predetermined distance above said first means for carrying out of the calibration function.

4,524,280

METHOD FOR DETECTING DISPLACEMENT OF SEMICONDUCTOR DEVICE

Mitsuaki Ishikawa, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

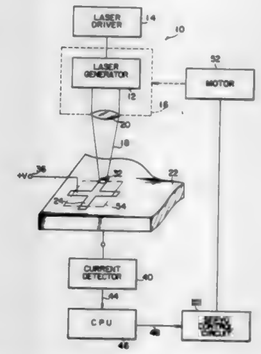
Filed Jun. 18, 1982, Ser. No. 390,033
Claims priority, application Japan, Jul. 27, 1981, 56-117432
Int. Cl.³ G21K *5/10*
U.S. Cl. 250—548 **15 Claims**

1. A method for detecting a relative positional relation and rotational error between a predetermined coordinate system of a semiconductor device and a coordinate system of an energy beam apparatus when an energy beam is radiated onto a desired portion of said semiconductor device, said method comprising the steps of:

scanning a single substantially cross-shaped semiconductive layer, having a second semiconductor type and preformed on the top of a semiconductor device having a substrate of a first conductivity type, with said energy beam spotted on said semiconductor device once along a rectangular closed scanning loop, said semiconductive layer having first and second layer portions substantially overlapping each other to define the coordinate system of said substrate and an intersection thereof corresponding to a reference point of said substrate;

detecting a change in a current generated when said energy beam crosses said semiconductive layer of said semiconductor device;

detecting four points at which the current abruptly changes



and which correspond to four beam crossing points produced two each at said first and second layer portions of said semiconductive layer; and

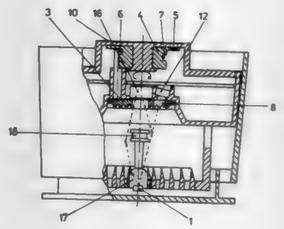
calculating said reference point of said semiconductor device and an angular displacement of the coordinate system of said semiconductor substrate from the coordinate system of said energy beam apparatus, based on data including said four points.

4,524,281

OPTICAL SMOKE DETECTOR WITH SENSITIVITY ADJUSTMENT

Jürg Muggli, Männedorf, Switzerland, and Peter Gruber, Stäfa, both of, assignors to Cerberus AG, Birmensdorf, Switzerland

Filed Nov. 3, 1982, Ser. No. 439,060
Claims priority, application Switzerland, Nov. 11, 1981, 7250/81
Int. Cl.³ G08B *17/10*
U.S. Cl. 250—574 **11 Claims**



1. A smoke detector comprising:

a radiation source for emitting radiation in a predetermined radiation region;

a radiation receiver arranged externally of a direct radiation region of the radiation source;

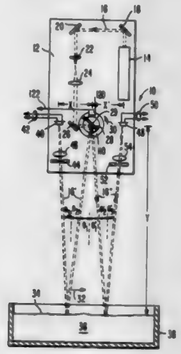
said radiation receiver being impinged by radiation scattered by smoke particles located in the direct radiation region and delivering an output signal;

externally mechanically actuatable optical means for altering an output signal of the radiation receiver in a predetermined manner;

said optical means comprising a diaphragm displaceable

along a predetermined direction of radiation for constricting an active solid angle viewed by the radiation receiver;
means for displacing said diaphragm;
said displacing means comprising cam means including a cam groove and detent means engaging with such cam groove;
said detent means being operatively connected with said displaceable diaphragm; and
said displacing means accomplishing a defined displacement of said diaphragm upon rotation of said cam means.

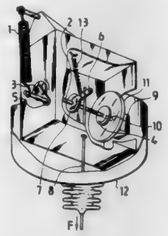
4,524,282
ELECTRO-OPTICAL LEVEL DETECTOR
Charles King, Elmira, N.Y., assignor to Courser, Incorporated, Elmira, N.Y.
Filed Jun. 24, 1982, Ser. No. 391,654
Int. Cl.³ G01H *15/06*
U.S. Cl. 250—577 **17 Claims**



1. Level detection apparatus for measuring the depth of a surface, comprising:
a source of high intensity light;
scanning means adapted to be located above the surface to be measured, said scanning means being movable to scan a beam of light from said source repetitively across the surface;
first and second detector means responsive to reflections of said beam from the surface to be measured to produce corresponding output pulses, said detector means lying in a first plane which is common to said beam of light and normal to the surface to be measured;
means for generating a time-varying signal in synchronization with the movement of said scanning means;
first circuit means responsive to an output pulse from said first detector means to obtain a first sample of said time-varying signal;
second circuit means responsive to an output pulse from said second detector means to obtain a second sample of said time varying signal; and
third circuit means responsive to said first and second samples for producing output signals proportional to the angles at which said beam was reflected to said first and second detectors.

4,524,283
ENERGY CONVERTER
Väinö P. Latvus, Helsinki, Finland, assignor to Innovex Oy, Helsinki, Finland
Filed Jun. 16, 1983, Ser. No. 505,352
Claims priority, application Finland, Jun. 18, 1982, 822200
Int. Cl.³ F03G *1/00*
U.S. Cl. 290—1 E **9 Claims**

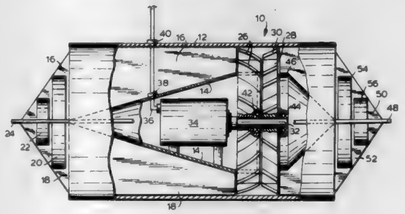
1. Device for converting mechanical energy of a type including slow or random movements into rotational energy, comprising:
a frame,
a crankshaft rotatable in one direction only in relation to the frame, said crankshaft including a crank;
a pair of freewheels arranged on the crankshaft and being operable to rotate in opposite directions about the crankshaft;



a longitudinal actuating member reciprocatingly movable in its longitudinal direction in relation to the frame and operatively connected at one end to both flywheels to rotate the crankshaft during movement of the actuating member in both directions; and a spring connected at one end to the frame and at the other end to the crank for storing the potential energy by causing the crank to rotate the crankshaft when the crank has passed a dead point determined by the actuating direction of the spring.

4,524,284,
Patent Not Issued For This Number

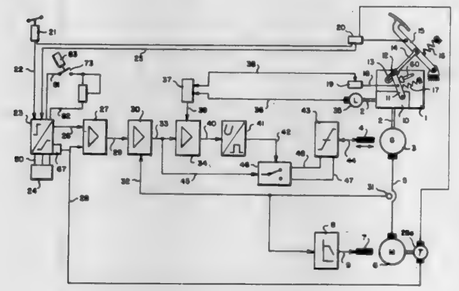
4,524,285
HYDRO-CURRENT ENERGY CONVERTER
Hans G. Rauch, 426 Wayman Cir., West Palm Beach, Fla. 33406
Continuation-in-part of Ser. No. 75,429, Sep. 14, 1979, abandoned. This application Feb. 6, 1984, Ser. No. 577,201
Int. Cl.³ F03B *13/10*
U.S. Cl. 290—43 **9 Claims**



1. A power generating system for converting the kinetic energy of a stream of fluid flow into useable energy, said system comprising:
a venturi, said venturi comprising a first housing, said first housing being an elongate flow orifice comprising a flow constriction, said flow constriction being located within said first housing, said flow constriction dividing said first housing into a divergent flow entrance, a divergent flow exit and a throat, said flow constriction comprising a secondary sealed housing;
a turbine rotor located in said throat between said secondary housing and said divergent flow exit in the direction of fluid flow through said venturi, said turbine rotor being adapted to rotate responsive to said fluid flow;
shaft means adapted to transmit the rotational energy resulting from rotation of said turbine rotor;
a means for generating useable energy responsive to said rotational energy transmitted from said turbine rotor, said means for generating being located within said secondary

housing, whereby to convert said kinetic energy of said fluid flow to said useable energy;
wherein said fluid flow is water flow in a body of water, and said system comprises a floatation means for maintaining said system at a selected depth in said body of water; and
wherein said floatation means comprises one or more floatation tanks, said floatation tanks being at least partially liquid filled, and at least one compressed air tank, each said at least one air tank being effective to selectively inject compressed air into each said floatation tank to maintain said system at said selected depth.

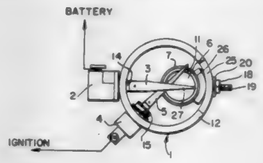
4,524,286
DRIVE UNITS FOR MOTOR VEHICLES WITH INTERNAL COMBUSTION ENGINE ELECTRIC DRIVES
Manfred Kremer, Hamburg, Fed. Rep. of Germany, assignor to Still GmbH, Hamburg, Fed. Rep. of Germany
Filed Apr. 12, 1983, Ser. No. 484,309
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213927
Int. Cl.³ B60L *11/12*
U.S. Cl. 290—45 **9 Claims**



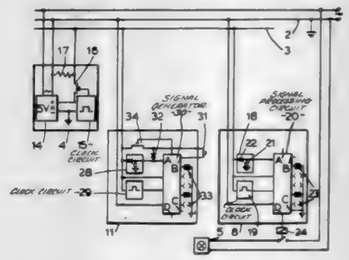
1. In a drive unit for a motor vehicle, such as an industrial truck and especially for a scoop loader, having an arbitrarily actuatable speed setting adjuster for adjusting the travel speed, an internal combustion engine wherein the speed setting adjuster is connected with a control signal transmitter and with a separately excited d.c.-current generator driven by the engine and with at least one d.c. motor that is separately excited and fed by the motorgenerator, a movement signal transmitting device that gives a signal that is dependent on the state of motion of the d.c. motor and wherein the signal of the control signal transmitter and the signal of the movement signal transmitting device are fed to a speed regulating unit, whose output signal is fed to a power regulating unit that controls the field excitation of the d.c. generator, and in which the signal of the control signal transmitter is conveyed through a nominal-value integrator, which in a delayed manner modifies the signal flowing to the speed regulating unit in accordance with a prescribed program, to the speed regulating unit when there are rapid changes in the signal of the control signal transmitter, the improvement comprising at least one means in the nominal-value integrator dependent upon an operating parameter of the motor vehicle which means acts upon and influences the delay program of the nominal-value integrator.

4,524,287
POST-COLLISION FIRE PREVENTION DEVICE
Wyley W. Brannen, P.O. Box 253, Statesboro, Ga. 30458
Filed Jan. 24, 1984, Ser. No. 573,415
Int. Cl.³ H01H *35/14;* **B60Q** *1/44*
U.S. Cl. 307—10 R **8 Claims**

1. A safety device for switching off the electrical system of a motor vehicle upon impact of the motor vehicle with an object by connecting a switching system to interrupt the electrical system to reduce post-collision fires by preventing sparks from igniting the fuel, comprising in combination,
switching means for opening the electrical system of the motor vehicle,
a switch activating system connected to said switching means including a weight housed in a breakable tube, said weight operably releasable upon impact to fall and thereby activate said switching means thereby disconnecting the electrical system of the motor vehicle to prevent sparks from the electrical system from igniting fuel, wherein said breakable tube includes a top opening and a base opening, said base opening including a stopper for sealing said opening, said breakable tube provided with a buffering system including a cushion positioned closely adjacent to said stopper and oil covering said weight in said breakable tube to reduce shock during normal operation of the motor vehicle.



4,524,288
SYSTEM FOR POWER SUPPLY TO AND SWITCHING OF A NUMBER OF ELECTRICAL APPLIANCES
Laurens M. H. Schimmelpennink, Amsterdam, and Lambertus Spaanenburg, Hengelo, both of Netherlands, assignors to Moban B.V., Simpelveld, Netherlands
Filed Apr. 6, 1983, Ser. No. 482,482
Claims priority, application Netherlands, Apr. 7, 1982, 8201481
Int. Cl.³ H02J *3/14;* **H04M** *11/06*
U.S. Cl. 307—40 **8 Claims**



7. A system for supplying power to and switching electrical appliances, each of which has a functional power-consuming part and a switching part, comprising:
a power conductor connected to a power source and to the power consuming part of each of said appliances;
a clock pulse generator for generating a clock pulse signal;
signal transmitters for generating control signals for addressing the switching parts of said appliances, each transmitter generating when activated, a characteristic control signal that is a predetermined function of the clock pulse signal;
a signal conductor connecting all of said transmitters and switching parts, each of the transmitters and switching parts including a signal part which is structured so as to be configureable by manipulation thereof either as a signal generating part in a transmitter or as a signal processing

part in a switching part, each signal part including a time control part including:

a first gate circuit having "wait" and "run" signal outputs,

a first shift register, connected to an input of said first gate, for disabling the "run" signal upon the occurrence of a predetermined preamble of a control signal on the signal conductor,

a second shift register, connected to an input of said first gate circuit, for activating the "wait" signal upon cessation of an address portion of said signal,

a third shift register,

a second gate circuit, responsive to a disabling of said "run" signal, for generating an output signal for ensuring that said address portion is entered into said third shift register,

a comparator for comparing the address in said third shift register with a fixed address and generating an output signal indicative thereof,

a relay adapted to be activated by said comparator output signal indicating a positive comparison,

a fourth shift register for storing a control signal having a preamble and said fixed address, coupled so as to be controlled by an output of said second gate circuit, and

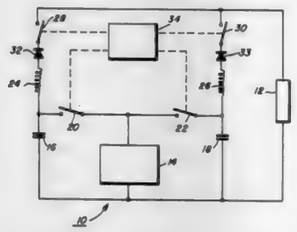
a switch for activating said second gate circuit for causing said fourth shift register to provide its contents to said signal conductor.

4,524,289

FLASH LAMP POWER SUPPLY WITH REDUCED CAPACITANCE REQUIREMENTS

Thomas J. Hammond, Penfield, and William L. Lama, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1983, Ser. No. 484,084
Int. Cl.³ H02M *3/18*
U.S. Cl. 307—110 **4 Claims**



1. A power supply circuit for supplying an output energy E_0 to a flash lamp, said power supply comprising:

a variable output, high voltage, low capacitance dc power supply,

at least a first and second capacitor charging circuit connected to said dc power supply and said lamp, each said charging circuit including a capacitor for storing an incremental portion of output energy E_0, and

means for cyclically and alternately connecting and disconnecting said charging circuits to and from said power supply and lamp so as to alternately store said incremental energy in each of said capacitors and subsequently to discharge said stored energy into said lamp,

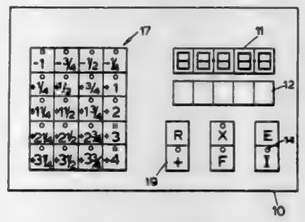
whereby the maximum output energy is delivered to said lamp in incremental portions such that the total output energy E_0 is the product of the energy discharged per cycle times the number of discharges from said charging circuits.

4,524,290

PHOTOGRAPHIC TIMER

Gene Nocon, Studio A, Floral Hall, Covent Garden, London WC2, England

PCT No. PCT/GB82/00320, § 371 Date Jun. 23, 1983, § 102(e) Date Jun. 23, 1983, PCT Pub. No. WO83/01846, PCT Pub. Date May 26, 1983
PCT Filed Nov. 9, 1982, Ser. No. 514,805
Claims priority, application United Kingdom, Nov. 12, 1981, 8134158; Jul. 16, 1982, 8220677
Int. Cl.³ H01H *43/00*
U.S. Cl. 307—141.4 **15 Claims**



13. A time switch comprising a clock and a counter for counting timing pulses emitted by the clock;

means for setting a base running time; a memory register having a plurality of addresses for holding digital values;

entry means for entering a set base running time into an address in said memory register;

an array of switches each of which is associated with a different multiplier value;

logic means for calculating values representing the products of multipliers associated with operated ones of said array of switches and the entered base running time and storing said product values in addresses in said memory register;

manually operated start means for starting the counter, running of said counter stopping whenever the count therein reaches a value equal to a value held by an address in the memory register;

display means for displaying the set base running time and, during a run, the elapsed running time;

switch means controlled to close only when said counter is running;

means for enabling the set base running time to be replaced by a new running time being the product of the previously entered base running time and a multiplier selected by operation of any one of said array of switches;

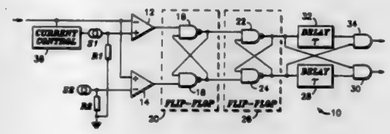
and reset means for resetting the counter to zero.

4,524,291

TRANSITION DETECTOR CIRCUIT

Heinz Lehning, Nyon, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 6, 1983, Ser. No. 456,064
Int. Cl.³ H03K *5/153*
U.S. Cl. 307—354 **7 Claims**



1. A transition detector circuit for detecting when an input signal rises above a first value and falls below a second value different from said first value, the circuit comprising:

comparator means having an input for receiving the input signal and having an output, the comparator means producing at its output a first output signal when the input signal rises above said first value and a second output signal when the input signal falls below said second value;

first bistable means having an input connected to said output of said comparator means and having an output, said first bistable means being set to a first stable state in response to said first output signal of said comparator means and producing at its output a first output signal indicative of said first stable state and being set to a second stable state in response to such second output signal of said comparator means and producing at its output a second output signal indicative of said second stable state; and

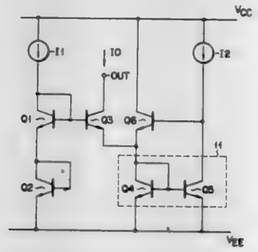
second bistable means having an input connected to said output of said first bistable means and having an output, said second bistable means being set to a first stable state in response to such first output signal of such first bistable means and producing at its output a first output signal indicative of such first stable state and being set to a second stable state in response to said second output signal of such first bistable means and producing at its output a second signal indicative of said second stable state.

4,524,292

ANALOG ARITHMETIC OPERATION CIRCUIT

Katsumi Nagano, Shimonoseki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 3, 1982, Ser. No. 414,945
Claims priority, application Japan, Sep. 24, 1981, 56-151274; Oct. 30, 1981, 56-173787
Int. Cl.³ H03F *3/45, 3/04*
U.S. Cl. 307—494 **9 Claims**



1. An analog arithmetic operation circuit having a first and second power source, said circuit comprising:

a first transistor having a collector and a base coupled together;

a first input current source connected between said first power source and the collector-base connection of said first transistor;

a second input current source;

an output terminal;

a second transistor having a collector and a base connected to an emitter of said first transistor, the emitter of said second transistor being connected to said second power source;

a third transistor having a collector connected to said output terminal, the base of said third transistor being connected to the base of said first transistor;

a fourth transistor having a collector and a base connected to an emitter of said third transistor, the emitter of said fourth transistor being connected to said second power source;

a fifth transistor having a collector connected to said second input current source, said second input current source being connected between said collector of said fifth transistor and said first power source, the base of said fifth transistor being connected to the base of said fourth transistor, and the emitter of said fifth transistor being connected to said second power source, whereby said fifth transistor together with said fourth transistor constitute a current mirror circuit; and

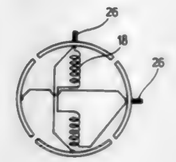
a sixth transistor having a collector connected to said first power source, a base connected to the collector of said fifth transistor, and an emitter connected to the collector of said fourth transistor, whereby an output current in proportion to a squared value of current values of said first input current source is produced at said output terminal.

4,524,293

4-POLE ELECTRIC MOTOR

Fumito Komatsu, 69-1632-12, Nomura Aza, Ooaza Hirooka, Shioziri-shi, Japan

Filed Sep. 30, 1982, Ser. No. 431,422
Claims priority, application Japan, Oct. 6, 1981, 56-159709
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—46 **10 Claims**



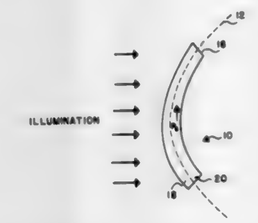
1. A 4-pole motor comprising a 4-pole armature within a 4-pole permanent-magnet ring, either the armature or ring serving as the rotor with the other serving as the stator, the electromagnetic-pole core of the armature being cross-shaped and having a rotary shaft at its center to define four core members extending radially outwardly of the shaft, one diametrically opposed pair of said core members having windings wound in the opposite directions with respect to each core member, back-up cores on the ends of cross-shaped cores of at least one pair of diametrically opposite core members, said back-up cores being separable from the respective core members, the back-up cores extending in the rotational direction of the armature when the armature is used as a rotor or in the direction opposite to the rotational direction of the ring when the ring is used as a rotor, and means for alternating the polarity of the electromagnetic poles every time the rotary shaft rotating in unison with the rotor rotates 90°.

4,524,294

FERROELECTRIC PHOTOMECHANICAL ACTUATORS

Philip S. Brody, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 7, 1984, Ser. No. 607,557
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—311 **20 Claims**



1. A method for deforming materials which are ferroelectric, have remanent polarization, and which exhibit a length-dependent photoelectric effect, comprising the step of illumi-

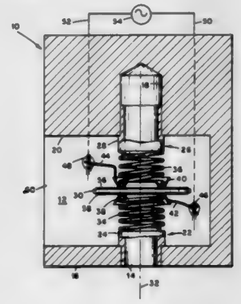
nating a plate of said material to cause the deformation of said plate.

4,524,295

APPARATUS AND METHOD FOR GENERATING MECHANICAL WAVES

Dwight L. Allensworth, and Peter J. Chen, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 25, 1982, Ser. No. 436,557
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—328 **9 Claims**



1. A method of inducing mechanical vibration in a medium comprising:

placing an electromechanical element in contact with said medium; and

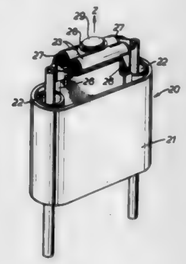
subjecting said electromechanical element to an alternating electric field at only a single frequency which excites mechanical resonance of only said element therein, said frequency being lower than any electrical resonant frequency of said element.

4,524,296

CATHODE STRUCTURE FOR ELECTRON TUBE

Shouji Nakayama, Yokosuka; Yukio Takanashi, Hiratsuka; Toshiharu Higuchi, and Touru Yakabe, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 1, 1982, Ser. No. 445,756
Claims priority, application Japan, Dec. 11, 1981, 56-198488
Int. Cl.³ H01J *1/94, 1/26, 19/48*
U.S. Cl. 313—270 **9 Claims**



1. A cathode structure for an electron tube comprising:

a cathode holder;

a pair of metal sleeves arranged parallel each other;

two coiled filaments, each filament inserted in one said metal sleeve;

supporting means for connecting said metal sleeves to said cathode holder;

a metal substrate having a first surface facing said metal sleeves and a second surface, said substrate attached to both said metal sleeves to form a space between a central portion of said first surface and said metal sleeves; and

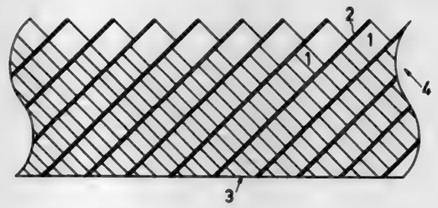
an electron emitting member disposed on said second surface of said metal substrate.

4,524,297

THERMIONIC CATHODE AND METHOD OF MANUFACTURING SAME

Georg Gärtner, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 416,840
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1982, 3205746
Int. Cl.³ H01J *1/13*
U.S. Cl. 313—346 R **18 Claims**



1. A thermionic cathode comprising:

(a) a body including a plurality of alternating layers of polycrystalline base material and electron emissive material,

each of said layers of polycrystalline base material comprising crystallites oriented such that facets thereof collectively form a diffusion surface,

each of said layers of electron emissive material being disposed on a respective one of said diffusion surfaces,

ends of said alternating layers being shaped to collectively form an electron emission surface which macroscopically makes an oblique angle with said diffusion surfaces; and

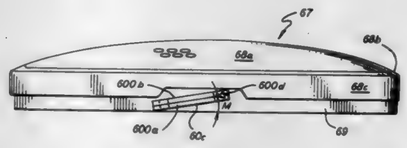
(b) a quantity of electron emissive material disposed on at least portions of the electron emission surface located to receive desorbing electron emissive material from the diffusion surfaces.

4,524,298

COLOR CATHODE RAY TUBE INCORPORATING IMPROVED THERMAL COMPENSATION TYPE APERTURE MASK SUPPORTING MEANS

Stanley L. Pawlikowski, Seneca Falls, and Richard A. Tamburrino, Auburn, both of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,496
Int. Cl.³ H01J *29/81*
U.S. Cl. 313—405 **2 Claims**



1. A color cathode ray tube comprising: an evacuated glass envelope having face panel, funnel and neck portions; a phosphor screen on the interior surface of the face panel; an electron gun in the neck for directing three electron beams toward

the screen; an aperture mask positioned adjacent the screen to direct the electron beams to desired phosphor elements on the screen, the mask having an apertured face portion and a sidewall portion; a supporting frame positioned inside and attached to the inner surface of the mask sidewall; a plurality of mounting studs protruding from the sidewall of the face panel; and a plurality of elongated mask supporting bimetal spring brackets, each having one end fixed to the sidewall of the mask frame and a free apertured end engaging a stud, each bracket comprising two relatively narrow elongated dissimilar metal elements joined edge to edge along their length dimension, with each aperture in the shape of an equilateral triangle with rounded apexes; the sidewall of the mask contoured to expose portions of the frame sidewall adjacent to the brackets and to allow clearance between the sidewalls of the mask and the brackets when deflected;

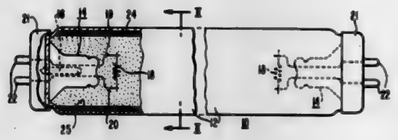
characterized in that the brackets are each comprised of rectangular shaped elements, and further characterized in that the apertures in the brackets are oriented to bridge the bimetal joints with one base of each triangular-shaped aperture parallel to the bimetal joint; and further characterized in that the brackets are fixed to the sidewall of the mask frame at an angle to the edge of the mask frame sidewall to achieve a desired Q-space between the mask and screen, as well as to permit deflection of the bracket inwardly toward the mask frame sidewall without interference with the mask sidewall.

4,524,299

FLUORESCENT SUNLAMP HAVING CONTROLLED ULTRAVIOLET OUTPUT

George V. Preston, III, Plainsboro, N.J., assignor to North American Philips Corporation, New York, N.Y.

Filed Apr. 8, 1982, Ser. No. 366,890
Int. Cl.³ H01J *61/38, 61/40*
U.S. Cl. 313—487 **9 Claims**



1. A sunlamp of the low-pressure electric discharge type comprising;

a sealed envelope that is composed of glass which transmits radiation in the ultraviolet region of the spectrum and contains a pair of electrodes and an ionizable discharge-sustaining medium that generate ultraviolet radiations of various wavelengths, including undesirable ultraviolet radiations having wavelengths in the range from about 190 nm to about 260 nm and which are shorter than erythemal radiations, when the sunlamp is energized,

phosphor material within said envelope which converts discharge-generated ultraviolet radiations into erythemal radiations having wavelengths in the range from about 260 nm to about 320 nm, and

means for limiting the amount of said undesirable shorter-wavelength ultraviolet radiations that is emitted by the sunlamp to about 0.003 of the erythemal radiations, comprising a non-luminescent coating of finely-divided calcium pyrophosphate on the inner surface of said envelope and having particle sizes in the range from about 1 micron to about 40 microns,

said phosphor material being disposed in a separate layer that overlies the calcium pyrophosphate coating and thereby places the phosphor material in close proximity to the electric discharge and in direct radiation-receptive relationship with the phosphor-exciting ultraviolet radiations generated by the discharge,

said non-luminescent coating of calcium pyrophosphate being adapted to selectively absorb the undesirable short-wavelength ultraviolet radiations and thereby constituting an integral ultraviolet-filtering means for the sunlamp.

4,524,300

LUMINESCENT SCREEN AND LAMP CONTAINING THE SAME

Joseph Rutten; Gerardus P. F. Hoeks, and Johannes T. C. van Kemenade, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1984, Ser. No. 607,913
Claims priority, application Netherlands, May 13, 1983, 8301713
Int. Cl.³ C09K *11/465;* H01J *61/42*
U.S. Cl. 313—487 **7 Claims**

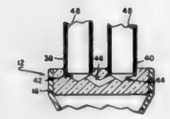
1. A luminescent screen provided with a carrier on which is formed a luminescent layer which comprises a luminescent material activated by bivalent europium or by trivalent chromium, which material is an aluminate and/or a gallate of strontium and/or barium, characterized in that the aluminate and/or gallate has an orthorhombic crystal structure with a space group P_{nnm} and has a composition defined by the formula $Me_{2-x}Eu_xA_{6-y}Cr_yO_{11}$, in which Me is mainly strontium or mainly barium, in that, when Me is mainly strontium, the Me is strontium of which up to 25 mol.% can be replaced by barium, A is aluminium of which up to 25 mol.% can be replaced by gallium, where $0.001 \leqq x \leqq 0.25$ and $y=0$, and in that, when Me is mainly barium, the Me is barium of which up to 50 mol.% can be replaced by strontium, A is gallium of which up to 25 mol.% can be replaced by aluminium, where $0.001 \leqq y \leqq 0.10$ and $x=0$.

4,524,301

COMPACT FLUORESCENT LAMPS

Sheppard Cohen, Danvers; Nikolaos Barakitis, Haverhill; Frederick A. Loughridge, Ipswich, and Richard C. Marlor, Beverly, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

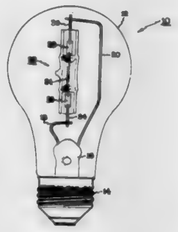
Filed Sep. 30, 1982, Ser. No. 431,955
Int. Cl.³ H01J *61/30, 61/88*
U.S. Cl. 313—493 **4 Claims**



1. A fluorescent lamp assembly comprising:

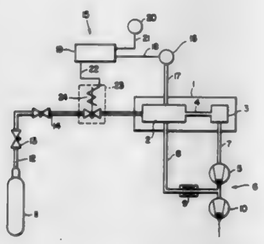
a housing terminating at one end in a base formed for electrical coupling with a socket; a receptacle fitted to the other end of said housing; a pair of U shaped fluorescent tubes mounted upon said receptacle, each of said tubes having a closed end carrying an electrode and an open end, said open ends being hermetically sealed to said receptacle; and a passage formed in said receptacle connecting said open ends.

4,524,302
GENERAL SERVICE INCANDESCENT LAMP WITH IMPROVED EFFICIENCY
Ivan Berlec, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Aug. 1, 1983, Ser. No. 519,165
Int. Cl.³ H01K *1/34*
U.S. Cl. 313—579 **20 Claims**



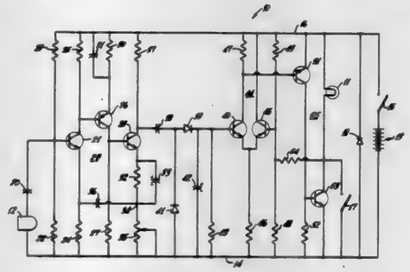
1. An improved general service incandescent lamp comprising:
(a) an electrically conductive base;
(b) an outer envelope hermetically sealed to said base;
(c) an inner envelope spatially disposed within said outer envelope and containing a halogen gas and a relatively high pressure fill-gas selected from the group consisting of xenon, krypton, argon and mixtures of these inert gases; and
(d) a tungsten filament spatially disposed within said inner envelope, said filament being specially adapted by having selected larger wire diameters and shorter wire lengths both relative to typical filaments so as to be effectively energizable for normal operating wattage rating at a reduced voltage relative to a typical household power source.

4,524,303
GLOW DISCHARGE TUBE FOR SPECTRAL-ANALYTICAL TESTS
Hermann Ritzl, Hauptstrasse 60, 8031 Seefeld 2, Fed. Rep. of Germany
Filed Jun. 3, 1983, Ser. No. 500,712
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221274
Int. Cl.³ H01J *7/24*
U.S. Cl. 315—111.81 **9 Claims**



3. A glow discharge tube system for spectral-analytical tests, comprising:
an anode cavity;
a cathode cavity connected to said anode cavity through a restricted passageway;
an electrically controllable valve;
a carrier gas source connected through said controllable valve to supply carrier gas to said anode cavity;
first vacuum pump means connected to said anode cavity to produce a first pressure level therein;
second vacuum pump means connected to said cathode cavity to produce a second pressure level therein, said second pressure level being less than said first pressure level; and
control means for operating said controllable valve to maintain the pressure level within said anode cavity at a predetermined value.

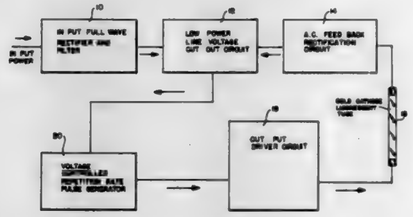
4,524,304
SMOKE ALARM ACTIVATED LIGHT
Carl D. Todd, Costa Mesa, Calif., assignor to Gateway Scientific, Inc., Costa Mesa, Calif.
Filed Aug. 19, 1982, Ser. No. 409,584
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—156 **2 Claims**



1. A light activated by the sound signal of a smoke alarm comprising;
a microphone;
a light bulb;
a source of power;
an amplifier circuit responsive to said microphone, said amplifier circuit including an adjustable feedback loop for controlling the gain thereof to compensate for different microphone sensitivities wherein said amplifier circuit comprises a direct coupled, multiple stage amplifier with a feedback capacitor between the first and last stages thereof whereby the feedback increases with increasing frequency;
circuit means including a first capacitor and rectifier means responsive to the output of said amplifier circuit for charging a second capacitor for producing a first voltage signal across said second capacitor, the value of said second capacitor being significantly higher than the value of said first capacitor, and means for draining the charge on said second capacitor;
means coupled to said power source for producing a second, reference voltage signal;
switch means interconnecting said source of power and said light bulb for selectively activating said light bulb; and
comparator circuit means responsive to said first and second voltage signals for activating said switch means when said first voltage signal exceeds said second voltage signal.

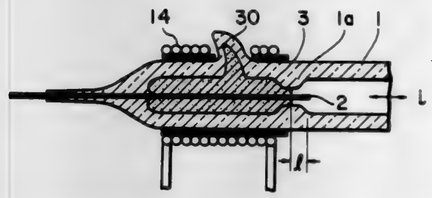
4,524,305
SOLID STATE REGULATED POWER SUPPLY SYSTEM FOR COLD CATHODE LUMINESCENT TUBE
Marshal H. Martin, Northridge, Calif., assignor to Indicator Controls Corp., Gardena, Calif.
Filed Aug. 8, 1983, Ser. No. 521,457
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—221 **6 Claims**

1. A regulated solid state power supply system for a cold cathode luminescent neon tube, and the like comprising: an auto transformer having a winding; a power input circuit adapted to be connected to an energy source for providing a power voltage for the system and having its output connected to one side of the auto transformer winding; a voltage controlled repetition rate pulse generator connected to the output of said power input circuit for producing constant duration output pulses at a variable repetition rate; an output driver circuit connected to the output of said pulse generator and to a tap on the auto transformer winding for generating a power pulse for the auto transformer in response to each output pulse



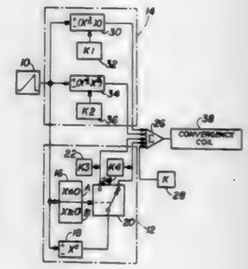
from the pulse generator; a feedback circuit having an output connected to the input of the pulse generator for producing a summation voltage for the pulse generator to control the repetition rate of the output pulses therefrom in conjunction with the power voltage from the power input circuit; and a cold cathode luminescent tube coupled in series with the other side of the auto transformer winding and the feedback circuit for providing feedback current to the feedback circuit.

4,524,306
EXTRA-HIGH PRESSURE MERCURY DISCHARGE LAMP
Takashi Fujimura, and Masahiro Nishizawa, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 7, 1982, Ser. No. 376,124
Claims priority, application Japan, May 13, 1981, 56-70703
Int. Cl.³ H01J *11/04*
U.S. Cl. 315—326 **5 Claims**



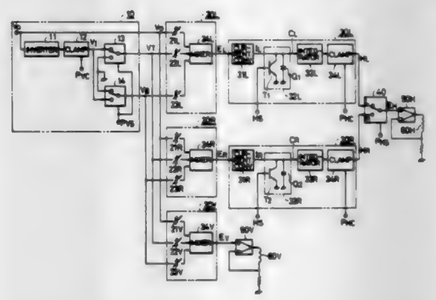
1. An extra-high pressure mercury discharge lamp comprising an end-sealed glass tube shaped to provide a long arc type tube, mercury contained in the both ends respectively of said glass tube, a pair of electrodes provided in the both ends respectively of said glass tube, said pair of electrodes being spaced from one another by a spacing no greater than 55 mm, each of said electrodes including one end portion extending toward the exterior from the associated end of said glass tube, an intermediate portion immersed in said mercury and the other end portion extending toward the interior beyond the surface of said mercury by about 1 to 3 mm and facing toward the middle of said glass tube, and a power source connected between said externally extending end portions of said electrode pair to supply power thereacross in the range of 1000 V to 2000 V, wherein said internally extending end portions of said electrode pair have a length for permitting said mercury discharge lamp to produce an emission profile such that the percentage of the emission energy concentrated in the region of D/2 (D: the inner diameter of the glass tube) is at least 68% of the total emission energy when the lamp current is in the range of 1.0 A to 1.6 A.

4,524,307
CONVERGENCE CONTROL SYSTEM FOR MULTIGUN CRT
Clayton C. Wahlquist, West Valley City, Utah, assignor to Tektronix, Inc., Beaverton, Oreg.
Continuation-in-part of Ser. No. 349,507, Feb. 17, 1982, abandoned. This application Apr. 15, 1982, Ser. No. 368,780
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—368 **6 Claims**



1. A convergence correction system for a cathode-ray tube having a viewing screen, a plurality of electron beam sources, and an associated electron beam deflection system including means for producing horizontal and vertical deflection signals, said correction system comprising
means for receiving a deflection signal and for generating therefrom a first plurality of deflection-related signals for correcting beam convergence at a plurality of first locations on said screen and a second plurality of deflection-related signals for correcting beam convergence at screen locations intermediate said first locations,
said second plurality of signals having substantially no effect on convergence at said first locations.

4,524,308
CIRCUITS FOR ACCOMPLISHING ELECTRON BEAM CONVERGENCE IN COLOR CATHODE RAY TUBES
Manabu Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 1, 1984, Ser. No. 616,248
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—368 **5 Claims**



1. A circuit for accomplishing electron beam convergence in a color cathode ray tube comprising;
first voltage generating circuit means for producing a first voltage of parabolic waveform in a first polarity which has the vertical period and is clamped to be a reference potential at the beginning and end of each vertical scanning period, a second voltage composed of a portion of parabolic waveform in a second polarity, which has the

vertical period and is clamped to be the reference potential at the middle of each vertical scanning period, obtained during the first half of each vertical scanning period and a portion taking the reference potential during the second half of each vertical scanning period, and a third voltage composed of a portion taking the reference potential during the first half of each vertical scanning period and a portion of parabolic waveform in the second polarity, which has the vertical period and is clamped to be the reference potential at the middle of each vertical scanning period, obtained in the second half of each vertical scanning period,

first voltage mixing circuit means for adjusting the amplitude of each of said first, second and third voltages separately and then mixing the first, second and third voltages each adjusted in amplitude with one another to produce a first mixed voltage,

second voltage mixing circuit means for adusting the amplitude of each of said first, second and third voltages separately and then mixing the first, second and third voltages adjusted in amplitude with one another to produce a second mixed voltage,

third voltage mixing circuit means for adjusting the amplitude of each of said first, second and third voltages separately and then mixing the first, second and third voltages adjusted in amplitude with one another to produce a third mixed voltage,

second voltage generating circuit means for producing a first correcting voltage which has a waveform obtained by modulating the amplitude of a voltage of parabolic waveform having the horizontal period with said first mixed voltage and is clamped to be the reference potential at the middle of each horizontal scanning period,

third voltage generating circuit means for producing a second correcting voltage which has a waveform obtained by modulating the amplitude of the voltage of parabolic waveform having the horizontal period with said second mixed voltage and is clamped to be the reference potential at the middle of each horizontal scanning period,

switching means for extracting said first correcting voltage during the first half of each horizontal scanning period and said second correcting voltage during the following half of the horizontal scanning period, and

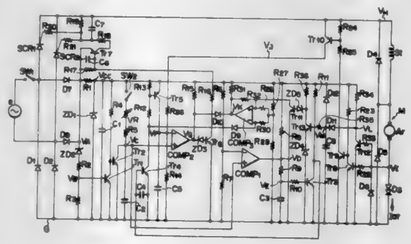
voltage supplying means for supplying the voltages extracted by said switching means and said third mixed voltage to deflecting means provided for deflecting electron beams in the color cathode ray tube to accomplish their convergence.

4,524,309
SAFETY CONTROL DEVICE OF COMMUTATOR MOTORS

Michio Hisatake, No. 4, Tamadaira, 2-chome, Hino-shi, Tokyo; Kazuji Yamamoto, No. 52-1, Saiwai-cho, 4-chome, Tachikawa-shi, Tokyo; Toru Hyodo, No. 17-27, Shibazaki-cho, 2-chome, Tachikawa-shi, Tokyo, and Yoshitaka Takahashi, No. 20-28, Hon-cho, 2-chome, Koganei-shi, Tokyo, all of Japan

Filed Dec. 18, 1981, Ser. No. 332,359
Claims priority, application Japan, Dec. 22, 1980, 55-180540
Int. Cl.³ H02K *17/32*
U.S. Cl. 318—434 **1 Claim**

1. A safety control device for a speed control circuit of a commutator motor having an armature and a stator and including an A.C. power source having predetermined power source periods, said motor being energized with a supply current from the A.C. power source and being provided with circuit means which cause a free wheel current to be produced in the motor by the inductance of the motor, said free wheel current flowing in the armature and the stator of the motor, a motor speed controller, a comparator circuit comparing a voltage due to an operated amount of the motor speed controller with a voltage due to an actual rotation speed of the motor, an ignition circuit responsive to an output of the comparator circuit and producing a signal, and semiconductor control elements responsive to the signal from the ignition circuit to make a full wave phase control of the motor supply voltage to thereby compensate for rotational variations of the motor, the control device comprising armature current detecting circuit means coupled to the motor armature and operative to detect successively, all through the power source periods and with the advance of the power source periods, the presence and absence of the sections of time series in which the supply current and the free wheel current flow in the armature of the motor; voltage maintaining circuit means connected to said detecting circuit means and being initially set to a level below a predetermined amount of voltage at the time of application of the power source to the motor, said maintaining circuit means being operative to pro-

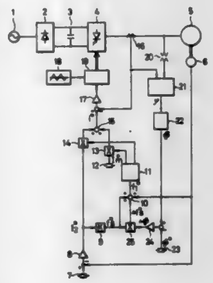


gressively accumulate the voltage above the level in a lapse of time and to decrease the voltage when the supply current and the free wheel current flow in the armature of the motor or to increase the voltage when the supply current and the free wheel current cease to flow in the armature of the motor and to maintain the voltage over at least one cycle of the power source; and bistable circuit means connected to said ignition circuit and operative for nullifying said ignition circuit when said maintaining circuit means has a voltage below the level of said predetermined amount of voltage, said bistable circuit means switching the ignition circuit into an effective condition as said maintaining circuit means comes to accumulate the voltage above the predetermined level while no speed designation is made to the speed control circuit of the motor.

4,524,310
METHOD AND APPARATUS OF CONTROLLING INDUCTION MOTORS

Hiroshi Nagase, Hitachi, and Toshiaki Okuyama, Toukai, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 3, 1983, Ser. No. 455,294
Claims priority, application Japan, Jan. 11, 1982, 57-1812
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—808 **10 Claims**

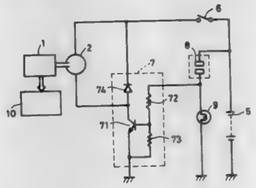


1. In a method of controlling induction motors in which the primary current of an induction motor is controlled, being divided into an excitation component and a torque component, and a slip frequency is instructed responsive to the torque component, the improvement wherein a flux difference is detected between a flux instruction value and a real flux value of said induction motor, a value for correcting the slip frequency is found by said flux difference based upon the magnitude of a value for instructing the slip frequency, and the slip frequency of said induction motor is controlled so as to become equal to the sum of said value for instructing the slip frequency and the value for correcting the slip frequency.

4,524,311
CONTROL FOR PUMPING DEVICES USED IN VEHICLES

Mitsuyoshi Yokota, and Akio Matsumoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1983, Ser. No. 549,182
Claims priority, application Japan, Nov. 12, 1982, 57-171903[U]; Nov. 12, 1982, 57-171906[U]
Int. Cl.³ B60T *13/66*
U.S. Cl. 318—481 **9 Claims**



1. A control for a pumping device for use in a vehicle comprising:

power supply means;

a motor supplied with electrical power from said power supply means;

a pumping means for use in the vehicle including a pump activated by said motor for generating a pressure;

a pressure operating unit operable by the pressure from said pump;

control means for enabling said motor to activate said pump;

first actuating switch means for activating said motor in response to a particular operation of said vehicle, and

second actuating switch means, including pressure detecting switch means, for activating said motor in response to a result of a comparison of pressure, generated by said pump, with a threshold value,

said control means including means for enabling said motor in response to operation of either of said first or second actuating means.

4,524,312
CONTROL FOR PUMPING DEVICES USED IN VEHICLES

Akio Matsumoto, and Mitsuyoshi Yokota, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1983, Ser. No. 549,183
Claims priority, application Japan, Nov. 12, 1982, 57-171905
Int. Cl.³ B60T *13/66*
U.S. Cl. 318—481 **14 Claims**

1. A control for a pumping device for use in vehicles comprising:

a DC power supply;

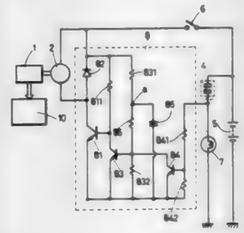
a DC motor;

a pumping device for use in the vehicles, including a pump activated by said DC motor for generating a pressure;

a power switch for supplying a DC voltage from said DC power supply to said DC motor;

a pressure-operating unit operable by the pressure from said pump;

an actuator switch for actuating said DC motor; and

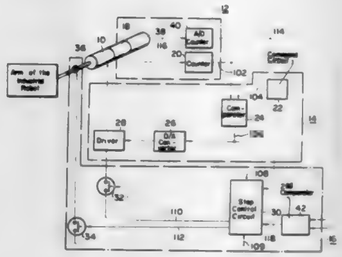


a control means for enabling said DC motor for only a given period of time in response to actuating of said power switch when said actuator switch is not actuated.

4,524,313
ERROR DETECTING MECHANISM FOR SERVOSYSTEM

Toshitaka Kuno; Hiroshi Moribe, both of Nagoya, and Atsushi Kamiya, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Feb. 3, 1983, Ser. No. 463,579
Claims priority, application Japan, Feb. 12, 1982, 57-21804
Int. Cl.³ G05B *9/02*
U.S. Cl. 318—563 **14 Claims**



1. An error detecting mechanism for a servosystem, comprising: a rotary angle detecting system including an encoder connected to a rotary shaft of a driving motor, for detecting a relative rotary angle of said driving motor and a potentiometer for detecting an absolute rotary angle of said driving motor; a driving-controlling system for driving and controlling said driving motor in accordance with a deviation value of a rotary angle detection value of said driving motor from a desired rotary angle; and an error preventing system for preventing a malfunction of said driving-controlling system; said error preventing system being provided with an emergency stop control circuit for effecting an emergency stop of said driving motor when a deviation value between said relative rotary angle detection value detected by said encoder and said absolute rotary angle detection value detected by said potentiometer exceeds a preset tolerance value.

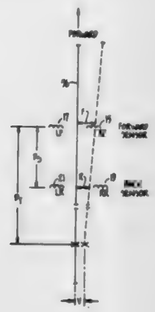
4,524,314
REAR TRAVEL GUIDANCE SYSTEM

Jack A. Walker, Sunnyvale, Calif., assignor to PORTEC, Lisle, Ill.

Filed Apr. 22, 1983, Ser. No. 487,608
Int. Cl.³ G05D *1/00*
U.S. Cl. 318—587 **4 Claims**

1. An improved, self-guided vehicle of the type which auto-

matically follows an externally defined path, and which has a ground-engaging steerable wheel, sensor means mounted on the vehicle for generating a position error signal representative of the position of the vehicle with respect to the path in the forward direction and representative of the position of a virtual sense point and the path in the reverse direction, the sensor means comprising a pair of front sensors and a pair of rear sensors, each pair of sensors being mounted on the vehicle so as to normally straddle the path and each pair producing a sensor pair signal which is representative of the difference of the outputs of the particular pair of sensors, and steering actuator means attached to the ground engaging steering wheel and responsive to the position error signal to control the orientation of the steerable wheel to automatically steer the vehicle along the external path, wherein the improvement comprises



means for generating a difference signal which is representative of the weighted difference between the front sensor pair signal and the rear sensor pair signal wherein the difference has been weighted by a predetermined quantity; and

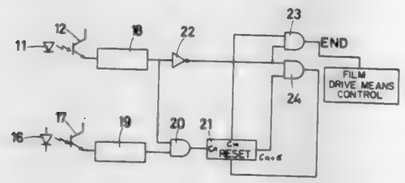
means for combining the sensor pair signal from the forward sensors with the difference signal so that the position error signal corresponds to the front sensor pair signal when the vehicle is traveling in a forward direction along the path and corresponds to the sum of the front sensor pair signal and the difference signal when the vehicle is traveling in a reverse direction along the path.

4,524,315

ROLL FILM CARRIER USED IN READER OR READER PRINTER

Keiji Nakatani, Kanagawa; Seiichi Yamagishi, Tokyo, and Kenjiro Ishii, Kanagawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 19, 1982, Ser. No. 369,867
Claims priority, application Japan, Apr. 24, 1981, 56-63102
Int. Cl.[3] G05B *19/28*
U.S. Cl. 318—603 **12 Claims**



1. A roll film carrier applicable to a reader or a reader printer, including:

supply reel means for supplying a roll film;

take-up reel means for winding up said roll film drawn from said supply reel means;

means for driving said take-up reel means so as to transport said roll film from said supply reel means to said take-up reel means;

means for generating signals corresponding to a predetermined rotation of said supply reel means;

means for generating pulses synchronously with substantially equal increments of said transport movement of said roll film along the length thereof; and

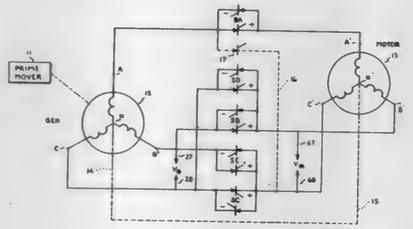
means for counting the number of pulses generated while said signal is being generated and controlling said drive means through comparison of the number of pulses counted with a predetermined number.

4,524,316

SPEED REDUCING CONTROL SYSTEM WITH VOLTAGE REGULATION FOR A POLYPHASE ELECTRIC MOTOR

Herbert J. Brown, and Thomas D. Stitt, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Oct. 11, 1983, Ser. No. 540,728
Int. Cl.[3] H02P *5/40*
U.S. Cl. 318—809 **15 Claims**



1. A "cycle-skipping" speed control system for a variable speed polyphase a-c electric motor comprising:

a. a 3-phase source of alternating voltage having a generally sinusoidal waveform, a fundamental frequency of "f" Hertz, and an rms magnitude of "v" volts;

b. at least three output terminals respectively adapted to be connected to different phases of said motor;

c. interconnecting means including at least first, second and third controllable bidirectional switches respectively connected between said output terminals and different phases of said source, each of said switches having a non-conducting state, a positive conducting state in which motor current flows through the switch in one direction, and a negative conducting state in which motor current flows through the switch in the opposite direction;

d. means coupled to preselected phases of said source for providing a train of timing pulses having a frequency that varies with f;

e. means for providing a speed command signal indicative of whether full motor speed or a fraction "1"/N of full motor speed is desired, where N is a predetermined integer;

f. means connected to said source and to at least two of said output terminals for producing a control signal representative of any deviation of the rms magnitude of voltage across said output terminals from the product of v times a predetermined proportionality constant; and

g. control means responsive to said control signal and to said speed command signal for cyclically producing, in synchronism with said timing pulses, a family of periodic firing signals that are effective selectively to initiate the conducting states of said switches, said family comprising six firing signals that respectively commence in a predetermined sequence at approximately 1/6f intervals when full speed is desired, and said control means being arranged, when a predetermined fraction of full speed is desired:

(1) to predetermine for each desired speed a particular combination and pattern of three different pairs of firing signals per family,

(2) to establish a series of recurrent periods synchronized with said timing pulses, each period having a duration of approximately N/f,

(3) to preselect for each desired speed three separate portions of each of said periods during which firing signals can be produced, with only one pair of firing signals being permitted during any one of the preselected portions,

(4) to produce in turn, during succeeding preselected portions of each period, the predetermined pairs of firing signals, whereby each firing signal in said family is produced at a frequency of f/N Hertz, and

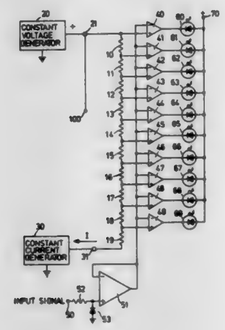
(5) to advance or to retard, as necessary to minimize said deviation, the time at which each pair of firing signals actually commences during each of said preselected portions of each period.

4,524,317

PRECISION, DYNAMIC LOW VOLTAGE MEASUREMENT SYSTEM

Leff Millard, R.D. #2 Box 288E, Whitehouse Station, N.J. 08889

Filed Aug. 23, 1983, Ser. No. 525,726
Int. Cl.[3] G05F *3/08*
U.S. Cl. 323—224 **4 Claims**



1. For use as a stepwise voltage reference:

a voltage divider consisting of a string of series connected resistors with tapping points along said string;

means for generating a constant current;

means for generating a constant voltage;

means for causing said constant current to flow through said series connected resistor string;

means for connecting said constant voltage to one point on said string of series connected resistors.

4,524,318

BAND GAP VOLTAGE REFERENCE CIRCUIT

Stephen R. Burnham, and Paul M. Henry, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

Filed May 25, 1984, Ser. No. 614,337
Int. Cl.[3] G05F *3/20*
U.S. Cl. 323—313 **16 Claims**

1. An improved band gap voltage reference circuit comprising in combination:

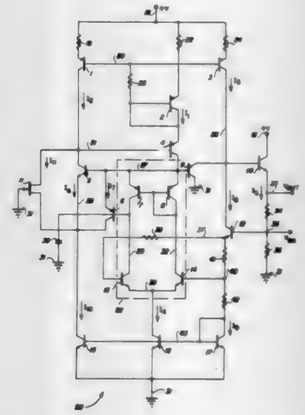
(a) a band gap cell including first and second NPN transistors and first and second PNP transistors, the emitters of said first and second NPN transistors being connected together, the emitters of said first and second PNP transistors being connected together, the collectors of said first PNP transistor and said first NPN transistor being connected together, the collector and base of said second PNP transistor being connected to the base of said first PNP transistor and to the collector of said second NPN transistor;

(b) a first resistor coupled between the bases of said first and second NPN transistors, and a second resistor connected to the base of said second NPN transistor;

(c) first constant current source means responsive to a first control current flowing through said first and second resistors for causing a first constant current to flow out of the junction between the emitters of said first and second NPN transistors, said first constant current source means also producing a second constant current substantially greater than said first constant current, said first constant current causing said first and second NPN transistors to produce a differential offset voltage across said first resistor to produce said first control current;

(d) a third NPN transistor having its emitter connected to supply said first control current to said first resistor;

(e) a third PNP transistor having its emitter coupled to the emitters of said first and second PNP transistors and having its base coupled to the collector of said first NPN transistor and having its collector connected to supply some of said second constant current;



(f) second constant current source means responsive to a second control current determined by said second constant current and the current flowing through said third PNP transistor for producing a third constant current, a portion of which flows through said third NPN transistor, and for producing a fourth constant current;

(g) a fourth PNP transistor having its base coupled to the emitters of said first, second, and third PNP transistors and its emitter connected to receive some of said third constant current,

(h) a fourth NPN transistor having its base coupled to the emitter of said fourth PNP transistor and its emitter coupled to the base of said third NPN transistor;

(i) a third resistor coupled to the base of said third NPN transistor, said fourth PNP transistor, said fourth NPN transistor, said second resistor, and said third NPN transistor providing high gain feedback from said band gap cell to produce said first control current in said first resistor to thereby apply said differential offset voltage between the bases of said first and second NPN transistors; and

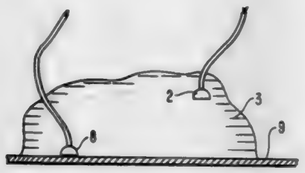
(j) a fifth NPN transistor having its emitter coupled to the collector of said third PNP transistor and its base coupled to the emitter of said third PNP transistor, in order to effectively bootstrap the collector voltage of said third PNP transistor to the emitter of said third PNP transistor.

4,524,319

METHOD FOR THE DETERMINATION OF KINETICS OF STRUCTURE FORMATION IN A BINDER

Igor L. Eberling; Lev A. Tereschenko; Nikolai I. Nikolaev; Arian M. Yakovlev; Vitaly I. Kovalenko, all of Leningrad; Nikolai K. Lipatov, Apatity Murmanskoi; Ruben A. Tatevosian, and Mikhail Y. Titov, both of Moscow, all of U.S.S.R., assignors to Territorialnoe Geolgicheskoe Upravlenie Tsentralnykh Raionov, Moscow, U.S.S.R.

Filed Feb. 26, 1982, Ser. No. 352,516
Claims priority, application U.S.S.R., Apr. 27, 1981, 3270005
Int. Cl.³ G01R *27/02;* **G01N** *11/00*
U.S. Cl. 324—65 R **2 Claims**



1. A process for monitoring structural changes in a binder having at least one solid object in contact therewith, during curing of the binder, comprising the steps of:

immersing a first conductivity monitoring pickup in a zone of said binder at the boundary between the binder and said solid object;

immersing a second conductivity monitoring pickup in a zone of said binder remote from said boundary;

applying an AC voltage not exeeding 50 mv. to each of said pickups, said voltage having a frequency in the range of about 5 KHz. to about 30 KHz., to cause each pickup to provide an output signal corresponding to the electrical conductivity of the corresponding binder zone;

comparing said output signals to provide a differential output signal corresponding to the difference in electrical conductivity of the binder between said zones and indicative of the extent of adhesion of said binder to said solid object; and

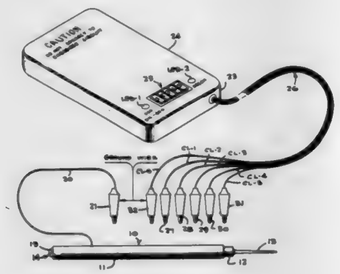
displaying or recording said differential output signal.

4,524,320

CONDUCTOR IDENTIFYING PROBE AND VOLTAGE SUPPLY DEVICE

Harvey L. Brooks, Gainesville, Ga., assignor to Gary A. Harrelson, Marbleton, Ga., a part interest

Filed Jun. 17, 1983, Ser. No. 506,400
Int. Cl.³ G01R *19/00*
U.S. Cl. 324—66 **14 Claims**



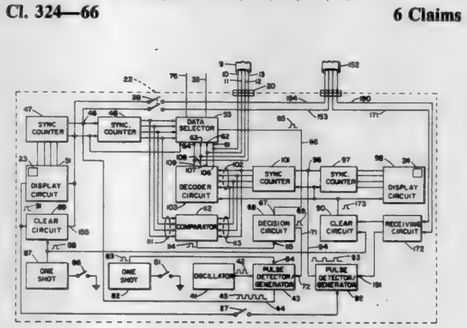
1. A portable probe-type conductor identifying and voltage supply device for identifying individual conductors in a plural conductor group extending through a conduit system, cable or the like, comprising a probe having a contact tip for engaging the individual conductors at one end of the plural conductor group and a grounding wire lead and terminal clamp device extending therefrom for releasable attachment to electrical ground at said one end, the probe further including a pair of light emitting diodes for emitting a first color and a second color respectively connected in reverse polarity parallel circuit arrangement between said contact tip and said grounding wire lead; a portable voltage supply unit including a casing housing batteries and having a plurality of manual switches and a like number of respectively associated connector leads with terminal clamp devices thereon and voltage control circuit means therefor, a grounding wire lead and clamp device for said voltage supply unit for attachment to electrical ground at a second end of the plural conductor group opposite said one end, said voltage control circuit means including means responsive to first and second pairs of said switches respectively to apply proper polarity voltages to their associated connector leads when connected at said second end to conductors of said group and when the probe tip engages such conductors to activate the diodes to emit their respective colors as steady light for said first pair of switches and as flashing light for said second pair of switches for identification of the conductors associated with said connector leads by such colors and light character emitted by the probe.

4,524,321

METHOD AND APPARATUS FOR TESTING CABLE WIRE CONNECTED TO TERMINALS AT A REMOTE LOCATION

Ali N. Jablway, Mt. Prospect, Ill., and Alexander M. Mitchell, Joppa, Md., assignors to AT&T Technologies, Inc., New York, N.Y.

Division of Ser. No. 382,749, May 27, 1982,. This application Aug. 1, 1984, Ser. No. 636,641
Int. Cl.³ G01R *31/02, 19/00, 15/12*
U.S. Cl. 324—66 **6 Claims**



5. A system for testing a group of wires interconnected between a first group of first terminals and a corresponding second group of second terminals, which comprises:

means selectively operable for sequentially impressing test signals to successive first terminals;

a probe means having a tip, and a first switch for connecting the tip to a probe output;

a first display means operable to present visual representations of successive numbers;

means responsive to placing the probe tip on a second terminal and the closure of the first switch for applying a test signal from corresponding first and second terminals and the interconnecting wire and through the probe output to operate the first display means to present the next successive number, to apprise the user of the probe that the wire interconnecting the corresponding first and second terminals is not open or that the wire is connected between corresponding terminals; said visual display being held from operation upon the wire being open so that the numerical representation is not changed to apprise the probe user that wire is open or not connected between corresponding terminals; and

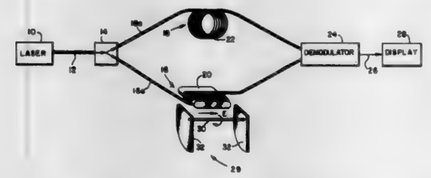
means responsive to a test signal applied through the probe output indicative of a non-open wire for operating the selectively operable means to impress the test signal on the next succeeding first terminal.

4,524,322

FIBER OPTIC SYSTEM FOR MEASURING ELECTRIC FIELDS

Lloyd C. Bobb, Willow Grove, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 18, 1982, Ser. No. 442,497
Int. Cl.³ G01R *31/02, 31/00*
U.S. Cl. 324—72 **14 Claims**



1. A system for measuring an electric field, comprising:

a source of coherent light having a narrow optical frequency;

means optically connected to said source for splitting the coherent light into a pair of substantially equal beams;

first fiber-optic means optically connected to said beam splitting means for propagating one of said beams through an isolated environment via a first optical path length;

second fiber-optic means optically connected to said beam splitting means for propagating the other of said beams through the electric field via a second optical path length modulated piezoelectrically;

shield means rotatably disposed adjacent to said second fiber-optic means for periodically reducing the electric field to near-zero in the immediate proximity thereof; and

interferometric detector means optically connected to receive said beams from said first and second fiber-optic means for combining said beams while maintaining a quadrature relaionship therebetween;

whereby deviations from the quadrature relationship are indicative of the phase change, relative to said first fiber-optic means, in said second fiber-optics means induced piezoelectrically by and determinative of the value of the electric field.

4,524,323

CERAMIC COATED DIFFERENTIAL SENSOR COIL FOR USE ON A GUN MUZZLE VELOCIMETER

Jimmy Q. Schmidt, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 17, 1983, Ser. No. 505,560
Int. Cl.³ G01P *3/66*
U.S. Cl. 324—179 **5 Claims**

1. A ceramic coated differential sensor for use on a gun muzzle velocimeter which comprises:

an inner loop having a first free end and a common inner-outer end;

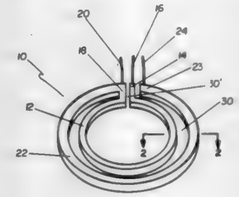
a concentrically disposed outer loop, operatively spaced from said inner loop, having a second free end and another end integrally connected with said common inner-outer end;

wire connector means fixedly attached to said first and second free ends and to said common inner-outer end;

first plasma arc coating means for providing an undercoating surface to said inner and outer loops;

second plasma arc coating means operatively disposed over said first plasma arc coating means for providing a wear and erosion resistance surface to said sensor; and

epoxy filler means for filling the open area intermediate said inner loop and said outer loop.

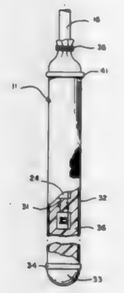


4,524,324

DOWNHOLE INSTRUMENT INCLUDING A FLEXIBLE PROBE WHICH CAN TRAVEL FREELY AROUND BENDS IN A BOREHOLE

Ben W. O. Dickinson, III, 2125 Broderick St., San Francisco, Calif. 94115

Continuation-in-part of Ser. No. 347,304, Feb. 9, 1982,. This application Jan. 28, 1983, Ser. No. 461,768
Int. Cl.³ G01V *3/18;* **E21B** *47/00, 29/02*
U.S. Cl. 324—323 **17 Claims**



1. In a package for use in a bore hole in the earth: an axially elongated flexible fabric casing of high tensile strength, payload within the casing for providing or receiving electrical signals, an elongated mass of flexible, cushioning material surrounding the payload and filling the casing to form flexible body which can be propelled through the bore hole in piston-like fashion by pressurized fluid and can travel around bends of relatively short radius in the bore hole, and a flexible cable extending axially from one end of the body and being secured to the casing of flexible material and connected electrically to the payload for carrying signals between the payload and the surface of the earth.

4,524,325

DUAL GUARD TYPE RESISTIVITY MEASURING APPARATUS

Robert A. Moore, and Edward P. Karisch, both of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 30, 1982, Ser. No. 431,539
Int. Cl.³ G01V *3/24*
U.S. Cl. 324—375 **6 Claims**

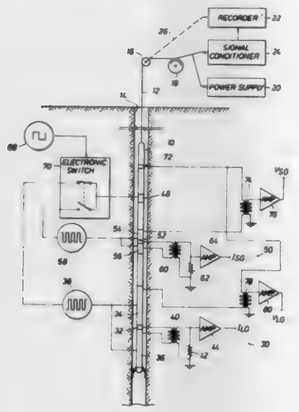
1. A well logging apparatus for measuring electrical properties of a formation intersected by a well bore wherein the electrical properties of the formation are substantially simulta-

neously measured at separate shallow and deep radial distances from the borehole comprising:

(a) a well logging sonde sized and adapted for movement along a borehole for resistivity logging of the formations adjacent said borehole;

(b) a first guard electrode system on said sonde having plural guard electrodes for focusing current to flow through the formation to a first lateral distance from the borehole, and a first current emitting electrode situated between said guard electrodes for emitting the first current;

(c) a second guard electrode system on said sonde having plural guard electrodes for focusing current to flow through the formation to a second different lateral distance from the borehole, and a second current emitting



electrode between said guard electrodes for emitting the second current;

(d) first electrical current source means for supplying a first guard current to said first guard electrode system;

(e) a second electrical current source means for supplying a second guard current to said second guard electrode system;

(f) a single return current electrode means providing current flow paths for said first and second current source means; and

(g) switching means for alternately connecting said first electrical current source means and said second electrical current source means to their respective guard electrode systems to complete current flow paths with said single return current electrode means.

4,524,326

DIGITALLY-DRIVEN SINE/COSINE GENERATOR AND MODULATOR

Michael E. Larson, Fond du Lac, Wis., assignor to AMCA International Corp., Fond du Lac, Wis.

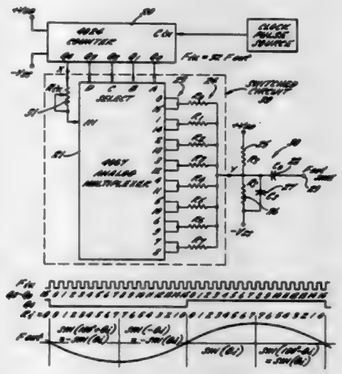
Filed Jul. 22, 1982, Ser. No. 401,008
Int. Cl.³ H03B 19/00; H03K 13/02
U.S. Cl. 328—14 **14 Claims**

1. A periodically modulating signal generator comprising, in combination,

(a) digital signal generating means for producing digital signals representing a phase number which periodically steps through successive numeric values, the digital signal having an alternating most significant bit signal and a less significant portion,

(b) digitally-controlled variable-gain analog circuit means having a digital gain control input accepting the less significant portion of the digital signal and an analog input and an analog output, for providing an analog output signal at the analog output that is the signal at the analog input scaled by a predetermined gain factor that is a predetermined function of the number represented by the signal on the digital gain control input, the gain factor being set by a particular gain circuit selected by a corresponding value of the signal on the digital gain control input, and comprising

means for cyclically selecting the gain circuits so that at least one of the gain circuits is activated by either of two complementary values of the signal on the digital control input, thereby generating a gain function of the signal on the digital control input that has even symmetry about a value generally between the minimum and maximum values of the less significant portion of the digital signal, and



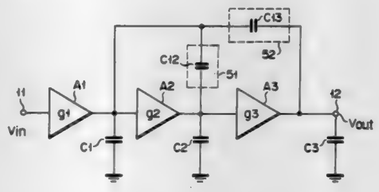
(c) means for exciting the analog input of the digitally-controlled variable-gain analog circuit means, the polarity of the excitation being specified at least in part by the most significant bit signal, so that a periodic analog signal is generated at the analog output of the digitally-controlled variable-gain analog circuit means, the periodic analog signal generally having odd symmetry about the times when the most significant bit signal changes changes its logic state, and even symmetry about times between the times when the most significant bit signal changes its logic state.

4,524,327

OPERATIONAL AMPLIFIER

Eiji Masuda, Kawasaki, and Kenji Matsuo, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 2, 1982, Ser. No. 394,615
Claims priority, application Japan, Jul. 9, 1981, 56-107473
Int. Cl.³ H03F 1/34, 3/45
U.S. Cl. 330—253 **5 Claims**



1. An operational amplifier which comprises:

first amplifying means;

second amplifying means connected to the output of the first amplifying means and carrying out inverting amplification;

third amplifying means connected to the output of the second amplifying means and carrying out noninverting amplification with a gain of substantially 1, said third amplifying means including a source follower circuit and being formed of a noninverting amplifier whose output impedance is lower than its input impedance; said first, second and third amplifying means each comprising at least one MOS transistor;

first feedback means connected directly between the output and input of the second amplifying means and carrying out a phase-compensating function; and

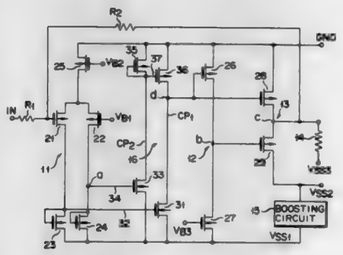
second feedback means connected between the output of the third amplifying means and the input of the second amplifying means and carrying out a phase compensating function.

4,524,328

MOS POWER AMPLIFIER CIRCUIT

Shouji Abou, and Itsuo Sasaki, both of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 19, 1983, Ser. No. 524,783
Claims priority, application Japan, Aug. 20, 1982, 57-144474
Int. Cl.³ H03F 3/45, 3/26
U.S. Cl. 330—253 **4 Claims**



1. A MOS power amplifier circuit comprising:

a pair of nodes for receipt of a first potential difference;

a terminal for receipt of a predetermined potential;

a load;

load drive means for driving said load in response to first and second load drive means input signals, said load drive means comprising first and second MOSFETs of the same channel type connected in series between said pair of nodes, with said load being connected in series between a point of common connection between said first and second MOSFETs and said terminal for receipt of said predetermined potential;

preamplifier means for operating at a second potential difference greater than said first potential difference to amplify an analog input signal, said preamplifier means comprising a differential amplifier pair of third and fourth MOSFETs supplied at their gates with said analog input signal and with a bias potential, respectively, a fifth MOSFET connected as a current source which supplies an operating current to said third and fourth MOSFETs, and sixth and seventh MOSFETs acting as loads for said third and fourth MOSFETs, respectively;

level changing means for changing the level of an output signal from said preamplifier means to provide said first load drive means input signal to said first MOSFET of said load drive means, said level changing means comprising an eighth MOSFET and a first current path, said eighth MOSFET receiving as an input current a current flowing through said sixth MOSFET, causing a current corresponding to this input current to flow into said first current path and constituting, together with said sixth MOSFET, a first current mirror circuit; a ninth MOSFET and a second current path, said ninth MOSFET receiving as an input current a current flowing through said seventh MOSFET, causing a current corresponding to this input current to flow into said second current path and constituting, together with said seventh MOSFET, a second current mirror circuit; and a third current mirror circuit comprising tenth and eleventh MOSFETs, said third current mirror circuit receiving as an input current a current flowing through said second current path and causing a current corresponding to this input current to flow into said first current path; and

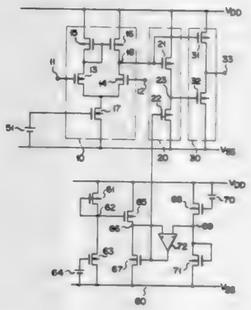
inverting amplifier means, operating at said second potential difference for inverting and amplifying said first load drive means input signal from said level changing means to supply said second load drive means input signal to the gate of said second MOSFET of said load drive means.

4,524,329

OPERATIONAL AMPLIFIER CIRCUIT

Shouji Abou, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Apr. 17, 1984, Ser. No. 601,362
Claims priority, application Japan, Apr. 21, 1983, 58-70444
Int. Cl.³ H03F 3/45
U.S. Cl. 330—253 **15 Claims**



1. An operational amplifier comprising a first potential terminal, a second potential terminal, a signal input terminal, a signal output terminal, first, second, third and fourth circuit points, amplifying means for amplifying an input signal applied through said signal input terminal and producing the amplified signal at the output terminal, level shift means for shifting the level of the signal output from said amplifying means, output means for receiving the output signals from said amplifying means and from said level shift means and producing an output signal as specified by said input signals, and bias means for applying a bias voltage to said level shift means, said operational amplifier in which said level shift means includes a first MOS transistor of a first channel type in which the current path is connected between said first potential terminal and said first circuit point and the gate is connected to said output terminal of said amplifying means, and a second MOS transistor of said first channel type in which the current path is inserted between said second potential terminal and said first circuit point; said output means includes a third MOS transistor of said second channel type in which the current path is inserted between said first potential terminal and said output terminal and the gate is connected to said output terminal of said amplifying means, and a fourth MOS transistor of said first channel type in which the current path is inserted between said signal output terminal and said second potential terminal and the gate is connected to said first circuit point, and said bias means includes a fifth MOS transistor of said second channel type in which the current path is inserted between said first potential terminal and said second circuit point and the gate is connected to said second circuit point, a first constant current source inserted between said second circuit point and said

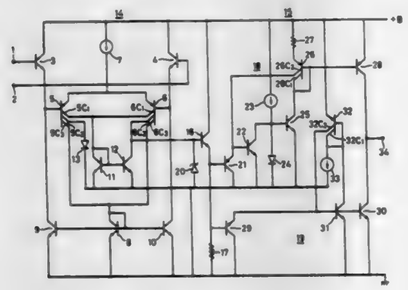
second potential terminal, a sixth MOS transistor of said first channel type in which the current path is inserted between said first potential terminal and said third circuit point and the gate is connected to said second circuit point, a seventh MOS transistor of said first channel type in which the current path is inserted between said third circuit point and said second potential terminal, a second constant current source inserted between said first potential terminal and said fourth circuit point, an eighth MOS transistor of said first channel type in which the current path is inserted between said fourth circuit point and said second potential terminal and the gate is connected to said fourth circuit point, and an amplifying section which is connected at a non-inverting input terminal to said third circuit point, at the inverting input terminal to said fourth circuit point, and at the output terminal to the gates of said second and seventh MOS transistors.

4,524,330

BIPOLAR CIRCUIT FOR AMPLIFYING DIFFERENTIAL SIGNAL

Lajos Burgyan, Mt. View, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Sep. 1, 1983, Ser. No. 529,075
Claims priority, application Japan, Sep. 4, 1982, 57-154300
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—257 **19 Claims**



1. A circuit comprising:

first and second first-polarity bipolar input transistors having respective bases for receiving a differential input signal;

first and second transistor means each comprising at least one second-polarity bipolar transistor having at least one emitter, at least one base, a first collector, and a second collector, the second polarity being opposite to the first polarity, the emitters coupled to a first voltage supply, each base of the first means coupled to an emitter of the first transistor, each base of the second means coupled to an emitter of the second transistor, and the first collectors coupled together;

a PN diode forwardly coupled between the second collector of the first means and a second voltage supply; and

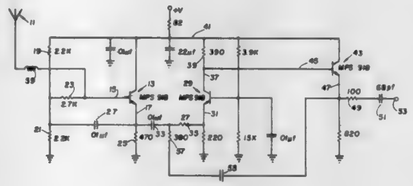
subtracting means comprising at least one first-polarity bipolar transistor having a first collector coupled to the first collectors of the transistor means, at least one base each coupled to the first collector of the subtracting means, at least one emitter each coupled to the second supply, and a second collector coupled to the second collector of the second means for supplying a composite output signal representative of the input signal.

4,524,331

HIGH INPUT IMPEDANCE AMPLIFIER CIRCUIT

Richard W. Faith, Hacienda Heights, Calif., assignor to Orion Industries, Inc., Compton, Calif.

Filed Sep. 13, 1982, Ser. No. 417,025
Int. Cl.³ H03F *1/38*
U.S. Cl. 330—292 **1 Claim**



1. A three-stage amplifier with a voltage supply for amplifying a single ac input signal received by a small radio-frequency antennae producing a single ac input signal, comprising:

first current amplification means for amplifying the current level of said single ac input signal to produce a first intermediate signal, including a first transistor connected in a common-collector configuration, said first current amplification means having low output impedance and a high input impedance;

single-stage feedback means coupling said first intermediate signal back to said single ac input signal, to supplement said single ac input signal thereby increasing the input impedance of said first current amplification means;

voltage amplification means including a second transistor connected in a common-base configuration, for amplifying said first intermediate signal producing a second intermediate signal, said first intermediate signal being coupled to the emitter terminal of said second transistor, an emitter resistor connected between said first intermediate signal and the emitter terminal of said second transistor, and a collector resistor connected between said voltage supply and the collector terminal of said second transistor, said voltage amplification means having a low input impedance; and a high output impedance;

a second current amplfication means for amplifying the current level of said second intermediate signal to produce an output signal substantially in phase with said input signal including a third transistor connected in a common-collector configuration, said second intermediate signal being coupled from said voltage amplification means to the base terminal of said third transistor, said second current amplification means having a high input impedance; and

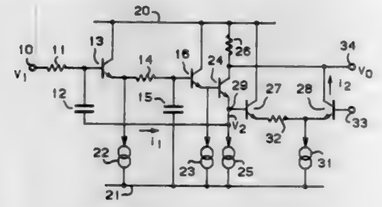
regenerative feedback means including a feedback resistor connected between the emitter terminal of said first transistor and the emitter terminal of said third transistor and, the resistance of said collector resistor being equal to the resistance of said feedback resistor, whereby said low output impedance of said first current amplification means is matched with said low input impedance of said voltage amplification means and the high output impedance of said voltage amplification means is matched with the high input impedance of the second current amplification means, thereby reducing losses due to mismatched impedances, and in combination with said regenerative feedback means and said single-stage feedback means, maximizes input impedance of said amplifier circuit.

4,524,332

INTEGRATED NOTCH FILTER

Michael J. Gay, Vaud, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 10, 1982, Ser. No. 347,656
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—294 **7 Claims**



1. A notch filter having an input and an output and comprising: a low-pass section having an input coupled to the input of the notch filter, a first output, and a second output; feedback means coupled between the second output of the low-pass section and the input of the low-pass section; and a summing section having a first input coupled to the first output of the low-pass section, a second input coupled to the second output of the low-pass section, and an output coupled to the output of the notch filter, the summing section providing an output signal being the sum of a first component signal which is proportional to the first output signal of the low-pass section and a second component signal which is proportional to the current flowing in the feedback means such that the high-frequency response of the low-pass section is compensated, the low-pass section includes a first capacitor and the feedback means includes a second capacitor such that the notch filter includes a low-pass filter of the Sallen-Key configuration, and the low-pass section further comprises an output transistor having an emitter coupled to the input of the summing section, a base, and a collector, a first voltage terminal coupled to the collector of the output transistor; and the summing section further comprises a load resistor coupled between the collector of the output transistor and the first voltage terminal, a differential amplifier including a first transistor having a base coupled to the emitter of the output transistor, an emitter, and a collector coupled to the first voltage terminal, a second transistor having a base coupled to a bias voltage source, an emitter, and a collector coupled to the collector of the output transistor an emitter resistor coupled between the emitters of the first and second transistors, and a current source coupled to the emitter of the second transistor for providing bias current to the differential amplifier.

4,524,333

PHASE-LOCKED LOOP USING INTEGRATED SWITCHED FILTER

Atsushi Iwata; Takao Kaneko, both of Tokorozawa; Akihiko Ito, Kawasaki; Tadahiro Saito, Kawasaki, and Hirokazu Fukui, Kawasaki, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Fujitsu Limited, Kawasaki, both of, Japan

Filed Aug. 11, 1982, Ser. No. 407,150
Claims priority, application Japan, Aug. 12, 1981, 56-126248
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—17 **9 Claims**

1. A phase-locked loop circuit, operatively connected to receive an input signal and generating a feedback signal, comprising:

a phase comparator, operatively connected to receive the input signal and the feedback signal, for generating a first phase difference signal or a second phase difference signal in response to a phase difference between the input signal and the feedback signal;

a loop filter, operatively connected to said phase comparator, for generating a control voltage corresponding to the phase difference;

a voltage controlled oscillator, operatively connected to said phase comparator, controlled by the control voltage; and

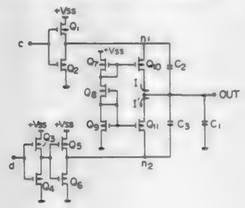
feedback means, operatively connected between said voltage controlled oscillator and said phase comparator, for providing the feedback signal to said phase comparator, said loop filter comprising:

a first input terminal, operatively connected to said phase comparator, for receiving the first phase difference signal;

a second-input terminal, operatively connected to said phase comparator, for receiving the second phase difference signal;

an output terminal, operatively connected to said voltage controlled oscillator, for outputting the control voltage to control said voltage controlled oscillator;

first, second and third capacitors, each having a first and a second terminal, each of said second terminals being operatively connected to said output terminal;



means, operatively connected to said first capacitor, for charging said first capacitor during a time period in which the first phase difference signal is generated and for discharging said first capacitor during a time period in which the second phase difference signal is generated;

first switching means, operatively connected to said first terminal of said second capacitor and to said means for charging and discharging, for supplying a first pulse signal to said second capacitor when the first phase difference signal is generated by said means for charging and discharging; and

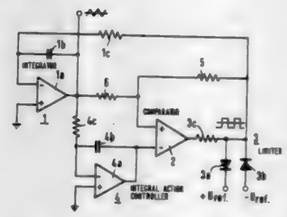
second switching means, operatively connected to said first terminal of said third capacitor and to said means for charging and discharging, for supplying a second pulse signal to said third capacitor when the second phase difference signal is generated by said means for charging and discharging.

4,524,334

TRIANGLE WAVEFORM GENERATOR

Antonio Brajder, and Klaus Hantke, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 4, 1983, Ser. No. 491,276
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219815
Int. Cl.³ H03B *5/20*
U.S. Cl. 331—135 **3 Claims**



1. In a triangle waveform generator having comparator

means, limiter means and integrating means, the comparator means having first and second inputs, a first input of said comparator means being coupled to the output of said integrating means, the output of said comparator means being coupled to said limiter means, the output of said limiter means being coupled to the input of said integrating means, the triangle waveform voltage being present at the output of said integrating means, the improvement comprising:

said limiter means being coupled directly to the output of said comparator means;

means for coupling the output of said comparator means to the first input of said comparator means; and

integral action controller means having an input coupled to the output of said integrating means, the output of said integral action controller means being coupled to the second input of said comparator means, said integral action controller means having a substantially longer time constant than said integrating means, whereby said integral action controller means compensates for asymmetries in the triangular waveform caused by said limiter means.

4,524,335

PULSE-WIDTH MODULATION CIRCUIT WITH CARRIER SIGNAL FREQUENCY CONTROL

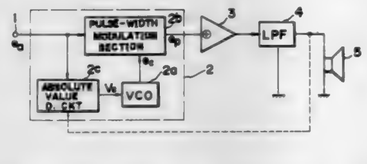
Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Mar. 10, 1983, Ser. No. 473,777

Claims priority, application Japan, Mar. 13, 1982, 57-40045; Jun. 29, 1982, 57-97936[U]

Int. Cl.³ H03K *7/08*

U.S. Cl. 332—9 R **6 Claims**



1. A pulse-width modulation circuit comprising:

pulse-width modulation means in which a carrier signal is pulse-width-modulated by an input signal to generate a pulse signal having a duty factor corresponding to a level of said input signal;

level detecting means for detecting a level corresponding to said level of the input signal; and

carrier signal generating means for generating said carrier signal for said pulse-width modulation means, said carrier signal having a frequency which deviates in accordance with the detected level of said level detecting means, the frequency of said carrier signal being decreased as said detected level increases.

4,524,336

WIDE RANGE REFLECTIVE PHASE SHIFTER/MODULATOR

Earnest A. Franke, Goode, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Oct. 15, 1982, Ser. No. 434,537

Int. Cl.³ H03C *3/00*

U.S. Cl. 332—16 R **3 Claims**

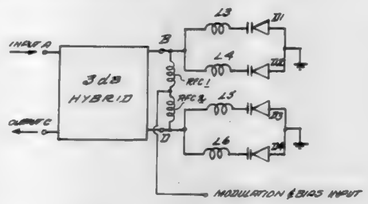
1. A phase modulator comprising:

a hybrid splitter of the type having first, second, third and fourth ports, wherein an input signal applied to said first port is split to form equal power signals at said second and fourth ports and signals input to said second and fourth ports are combined at said third port;

means for applying an input signal to be phased shifted to said first port;

a first reactive network having continuously variable reactance coupled to said second port, said first reactive network including first and second series circuits in parallel to one another, each series circuit including an inductor and a variable capacitance diode;

a second reactive network having continuously variable reactance coupled to said fourth port, said second reactive network including third and fourth series circuits in parallel with one another, each series circuit including an inductor and a variable capacitance diode;



means for applying a modulating signal to the inductors of each of said reactive networks simultaneously, the diodes of said networks always being reversed biased; and

means for deriving an output signal from said third port, said output signal being phase shifted with respect to said input signal at least in part as a function of the modulating signal applied to said inductors.

4,524,337

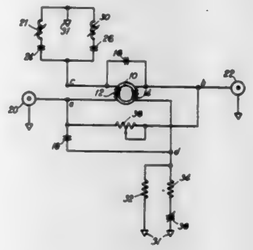
VARIABLE AMPLITUDE DELAY EQUALIZER

Billy W. Brinegar, Roswell, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Jul. 11, 1983, Ser. No. 512,592

Int. Cl.³ H03H *7/01*

U.S. Cl. 333—28 R **4 Claims**



3. An envelope delay distortion corrective network comprising:

(a) a 90° hybrid matrix having an input, an output, a first reference port and a second reference port;

(b) a reactive network connected to the first reference port to phase shift a signal applied to the matrix input; and

(c) an RC network comprising resistive and capacitive components connected to the second reference port to provide amplitude correction for the signal at the matrix output.

4,524,338

GANGED CIRCUIT BREAKER ARRANGEMENT

John F. Cotton, Athens, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 3, 1984, Ser. No. 576,681

Int. Cl.³ H01H *77/02*

U.S. Cl. 335—8 **9 Claims**

1. A ganged, multiple pole circuit breaker arrangement, comprising:

first and second multiple pole circuit breakers,

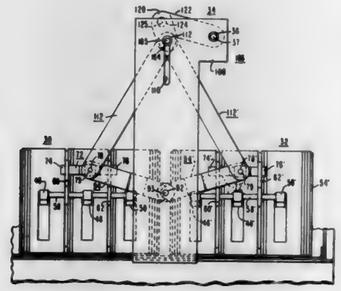
an operating pivot pin on each circuit breaker, predetermined movement of which results in the simultaneous

operation of the associated poles between their open and closed positions,

first means pivotally linking the operating pivot pins of said first and second circuit breakers to a first common pivot pin, with said first common pivot pin being fixed,

second means pivotally linking the operating pivot pins of said first and second breakers to a second common pivot pin,

third means mounting said second common pivot pin for



movement in a predetermined guided rectilinear path while restraining it against lateral movement, said guided rectilinear movement directing the axis of the second common pivot pin in a plane which includes the axis of said first common pivot pin,

and fourth means for operating said second common pivot pin in its guided rectilinear path, with such movement causing simultaneous movement of the operating pivot pins of the first and second circuit breakers in a path about the axis of said first common pivot pin.

4,524,339

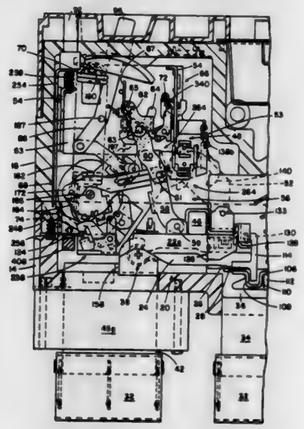
CONTACT CONTROL ARRANGEMENT FOR HIGH AMPERAGE MOLDED CASE CIRCUIT BREAKER

Ferdinand E. Chabot, Cedar Rapids, Iowa, assignor to Square D Company, Palatine, Ill.

Filed May 9, 1983, Ser. No. 492,901

Int. Cl.³ H01H *77/00*

U.S. Cl. 335—22 **26 Claims**



1. A circuit breaker having a latch assembly including a latch link pivotally supported adjacent one end in a frame and adapted to pivot in one direction against a bias force to open the contacts of said breaker, the improvement comprising:

a latch having a latch pivot defining an axis of rotation for said latch, said latch including an arcuate surface formed on an axis of rotation extending from said latch pivot and engaging said latch link along said arcuate surface at a position spaced from said one end of said latch link whereby any force tending to pivot said link in said one direction against said bias force is exerted along a radial line to said latch pivot,

means for rotating said latch in a respective direction to disengage said link and enable opening the contacts of said breaker,

a pair of toggle links having one pivot connection therebetween with one of said toggle links having a second pivot connection to said latch link,

and means for applying a contact opening force to said latch link through said one and said second pivot connection for pivoting said latch link against said bias force with said latch having tangential engagement with said latch link for enabling rotation of said latch in said respective direction against a selected proportion of the contact opening force applied to said links.

4,524,340

DEVICE FOR DISPLAYING TELEVISION PICTURES

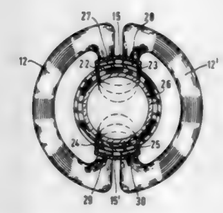
Albertus A. S. Sluyterman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 2, 1984, Ser. No. 606,118

Claims priority, application Netherlands, May 2, 1983, 8301534

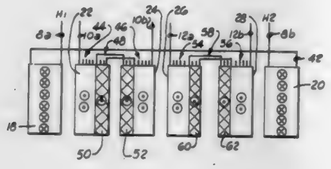
Int. Cl.³ H01F *1/00*

U.S. Cl. 335—212 **6 Claims**



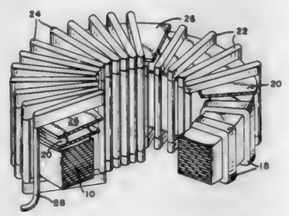
1. A device for displaying television pictures comprising a display tube the neck of which contains an electron gun system for emitting at least one electron beam towards a display screen and a deflection unit which is mounted coaxially about the display tube, which deflection unit comprises a line deflection coil system which when energized deflects the electron beam(s) in a first direction and a field deflection coil system which when energized deflects the electron beam(s) in a second direction transverse to the first direction, the said field deflection coil system comprising two field deflection coils each of the saddle type situated diametrically with respect to each other, each deflection coil comprising a plurality of conductors forming first and second lateral winding packets substantially extending in the longitudinal direction of the deflection unit which substantially coincides with the direction of the longitudinal axis of the display tube, an arcuate front end section and an arcuate rear end section which together define a window, to wherein at the rear end section of the field deflection coil system which end is adjacent the display tube's gun system are located first and second 'U' shaped members of soft magnetic material diametrically opposite to each other, each 'U' shaped member comprising a substantially arcuate transverse portion and first and second limbs, each 'U' shaped member bridging corresponding portions of adjacent lateral packets of the first and second field deflection coils with the transverse portion being positioned on the outer surface of said packets while the limbs extend towards the neck of the display tube.

4,524,341
TRANSFORMER WITH SERIES-PARALLEL-SERIES WINDING BETWEEN SPLIT WINDING
Donald W. Owen, 4619 Ridgeline Dr., Norman, Okla. 73069
Filed Feb. 7, 1983, Ser. No. 464,779
Int. Cl.³ H01F *21/12*
U.S. Cl. 336—147 **20 Claims**



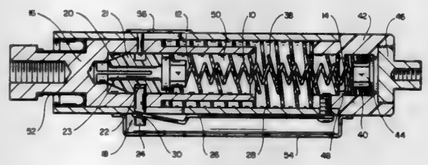
1. A transformer, comprising:
first winding means for providing a first transformer winding, said first winding means including a first portion and a second portion; and
second winding means for providing a second transformer winding, said second winding means including a plurality of subwindings, each of said subwindings having a plurality of sections selectively connectable in electrical series-parallel-series with the sections of another of said subwindings so that a first parallel segment and a second parallel segment are defined when at least two of said sections are connected in electrical parallel, said second winding means disposed in inductive relationship with said first winding means wherein said second winding means and said first and second parallel segments thereof are entirely between said first portion and said second portion of said first winding means so that said first parallel segment and second parallel segment are equally spaced from said first winding means.

4,524,342
TOROIDAL CORE ELECTROMAGNETIC DEVICE
Joseph Mas, Morristown, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.
Continuation-in-part of Ser. No. 334,751, Dec. 28, 1981, abandoned. This application May 21, 1982, Ser. No. 380,657
Int. Cl.³ H01F *27/28*
U.S. Cl. 336—182 **20 Claims**



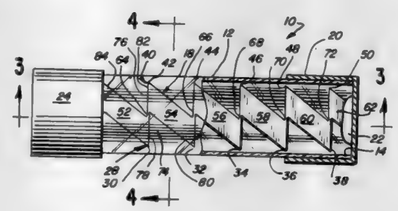
1. An electromagnetic apparatus, comprising:
(a) a magnetic core having an enclosed trunk defining a central opening;
(b) a sectionalized primary winding having at least three primary coil sections encircling said trunk and circumferentially spaced about the periphery of said core, wherein each of said primary coil sections is a coiled, electrically conductive strip having on at least one side thereof, an insulating layer;
(c) a segmented secondary winding which includes a plurality of cleft links encircling said core and interconnected to provide a spiral current path, each of said cleft links having a portion passing through said central opening of said core and being circumferentially spaced about the periphery thereof;
(d) said cleft links comprised of a sequence of generally U-shaped members, each having a first leg, a second leg and a bottom piece, with the first leg of each of the members being electrically connected to the second leg of the succeeding one of the members by a jumper, said jumper having tapered holes located therein; and
(e) said legs having tapered ends, with substantially the same taper as said tapered jumper holes, that are force fitted into said jumper holes to form said electrical connection.

4,524,343
SELF-REGULATED ACTUATOR
Robert K. Morgan, Pleasant Hill, and John R. Yaeger, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Filed Jan. 13, 1984, Ser. No. 570,464
Int. Cl.³ H01H *61/06*
U.S. Cl. 337—140 **12 Claims**



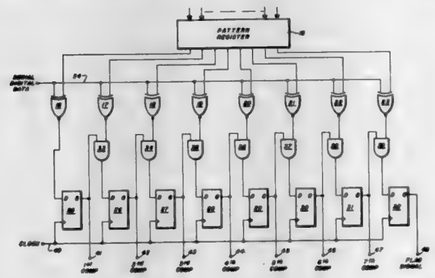
1. A self-regulated actuator comprising:
a shape-memory element capable of being longitudinally expanded when in its martensitic state and capable of being longitudinally recovered when in its austenitic state, said element capable of dimensional recovery when heated from said martensitic state to said austenitic state, said element having a first end and a second end along the longitudinal axis thereof;
a plunger located at the first end of said element;
a latch means connecting said plunger to said first end of said element when said element is longitudinally expanded, said latch means releasing said plunger at a predetermined position as said element recovers;
spring means connected to said plunger biasing said plunger away from said element, said spring means capable of moving said plunger away from said element when the plunger is released by the latch means; and
element return means biasing said first and second ends away from each other and capable of expanding said element when said element is in its martensitic state.

4,524,344
ELECTRIC FUSE
Aldino J. Gaia, St. Louis, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Oct. 12, 1983, Ser. No. 541,239
Int. Cl.³ H01H *85/04*
U.S. Cl. 337—159 **16 Claims**



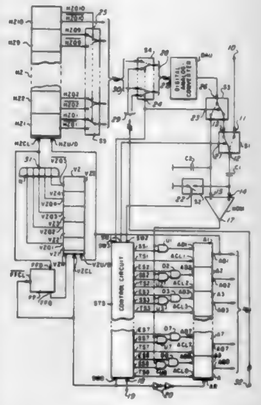
1. An electrical fuse having a fuse element, housing and electrically conductive terminals, said fuse element comprising:
an elongated element body of electrically conductive material,
said fuse element body including first and second ends,
a plurality of substantially parallel weak spots,
a plurality of heavy portions separated by said weak spots, each of said weak spots lying between and separating two of said heavy portions, said heavy portions forming a plurality of peaks so as to define a saw-tooth configuration.

4,524,345
SERIAL COMPARISON FLAG DETECTOR
Randall Sybel, Marlboro, and Daniel Schwarzkopf, Stow, both of Mass., assignors to Prime Computer, Inc., Natick, Mass.
Filed Feb. 14, 1983, Ser. No. 466,208
Int. Cl.³ G06F *7/02*
U.S. Cl. 340—146.2 **9 Claims**



1. Apparatus for detecting a flag pattern in a serial sequence of digital data signals, comprising
means for simultaneously providing bit signals corresponding to the bits in the flag pattern,
a plurality of comparators for simultaneously comparing each data signal in its turn with all the bit signals, each comparator being adapted to compare the data signal with a different one of the bit signals and emit a set signal upon the occurrence of a match,
a shift register having at least as many stages as there are bits in the flag pattern, the shift register being adapted to advance a logic signal from each set stage to the next stage in response to a clock signal,
the comparator which compares the data signal with the bit signal corresponding to the first bit in the flag pattern having its output applied to the input of the first stage of the shift register,
a plurality of gates,
each stage of the shift register being connected to the next succeeding stage by a different one of those gates, each gate obtaining one input from the output of a corresponding one of the comparators and obtaining another input from the preceding stage of the shift register,
the comparator which compares the data signal with the bit signal corresponding to the second bit in the flag pattern providing the input signal to the gate connecting the first stage of the shift register to the second stage, the comparator which compares the data signal with the bit signal corresponding to the third bit in the flag pattern providing the input signal for the gate connecting the second stage to the third stage, the other gates and comparators being arranged in like manner in consecutive order corresponding to the order of the signal bits, and
each gate enabling a logic signal to be shifted from the preceding stage of the shift register to the succeeding stage only if the preceding stage was previously set and a set signal is received by the gate from its comparator.

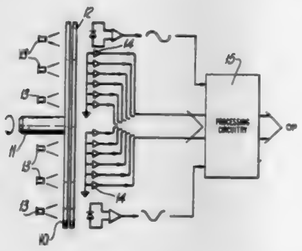
4,524,346
CIRCUIT ARRANGEMENT FOR CONVERTING AN ANALOG AC VOLTAGE SIGNAL TO A DIGITAL SIGNAL
Hartmut Bosserhoff, Allershausen; Wolfgang Steinhagen, Mauern, and Ulrich Joeres, Freising, all of Fed. Rep. of Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jul. 2, 1982, Ser. No. 394,980
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1981, 3126380
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 CC **3 Claims**



1. A circuit arrangement for converting an analog signal to a digital signal comprising:
means for cyclically sampling the analog signal and forming analog sampling values therefrom; and means for converting the analog sampling values to digital sampling values; said converting means comprising,
analog to digital converter means;
means coupled to said analog-digital converter means for integrating the signs of the digital sampling values, comprising counter means having a reversible counting direction dependent upon the sign of the digital sampling value, said counter means comprising,
precounter means;
main counter means;
decoding means coupled to the output of said precounter means and to the input of said main counter means for generating an output signal when said precounter means reaches a predetermined count, wherein upon the occurrence of said decoding means output signal said precounter means is reset and said main counter means is advanced one count, said decoding means comprising,
a NOR circuit having a plurality of inputs and an output, wherein one of said inputs is connected to the negating output of the highest value stage of said precounter means, said other NOR circuit inputs are connected to the non-negating outputs of said other stages of said precounter means, and said NOR circuit output is connected to the input of said main counter means; and
a bistable flip-flop circuit connected to said NOR circuit output and to said precounter means for resetting said precounter means upon the occurrence of an output signal from said NOR circuit;
means for generating a compensation voltage in dependence upon the output of said integrating means, said compensation voltage generating means comprising digital-analog converter means for converting the accumulated digital count in said counter means into a compensation voltage;
means for combining said compensation voltage with the analog sampling value from said sampling means, wherein

the output of said combining means is coupled to said analog-digital converter means and
means for storing said compensation voltage.

4,524,347
POSITION ENCODER
Douglas J. Rogers, Bonnyrigg, Scotland, assignor to Ferranti Limited, Cheshire, England
Continuation of Ser. No. 253,920, Apr. 14, 1981, abandoned. This application Apr. 18, 1983, Ser. No. 484,010
Claims priority, application United Kingdom, May 15, 1980, 8016094
Int. Cl.³ G08C *9/06*
U.S. Cl. 340—347 P **22 Claims**



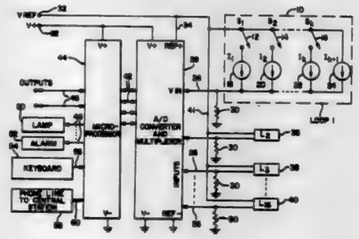
1. A position measuring device for measuring the position of an object relative to a datum position, the device comprising a position encoder for providing first positional information corresponding to the instantaneous position of the object relative to the datum position, a scale member adapted to be carried by the object, an index member fixed with respect to the datum position, the scale member and the index member having encoded tracks thereon, first circuit means responsive to the encoding on the tracks for providing two periodic sinusoidal waveforms in quadrature with one another, the periodic waveforms having a wavelength equal to a small incremental displacement of the scale member relative to the index member and having values corresponding to a predetermined fraction of the small incremental displacement; second circuit means responsive to the amplitudes of the periodic waveforms at predetermined points in each cycle thereof for determining errors present in the said waveforms caused by electrical or optical changes affecting components of said first circuit means and for applying appropriate corrections to the said waveforms; decoding means for determining from the two corrected waveforms second positional information corresponding to said predetermined fraction of said incremental displacement; and output means for combining said first positional information with said second positional information.

4,524,348
CONTROL INTERFACE
Leonard R. Lefkowitz, 14 Alpine Dr., Latham, N.Y. 12110
Filed Sep. 26, 1983, Ser. No. 535,813
Int. Cl.³ G08C *9/00*
U.S. Cl. 340—365 R **11 Claims**



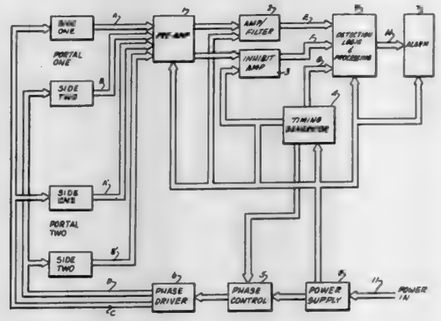
1. A control interface between a moveable physical object and a machine comprising:
(a) means for sensing and signalling any movement of said physical object in any direction in a defined field, said defined field being indentified by a plurality of antenna surfaces at least one surface of said plurality having a first field associated therewith which extends outwardly therefrom to form a region for sensing and signalling movement of said object in an X-dimension, at least another surface of said plurality having a second field associated therewith which extends outwardly therefrom to form a region for sensing and signalling movement of said object in a Y-dimension, and at least one other surface of said plurality having a third field associated therewith which extends outwardly therefrom to form a region for sensing and signalling movement of said object in a Z-dimension, said first, second and third fields being independent of each other and yet merging to form a common defined field, said sensing and signalling of movement of said object in said common defined field in any of said dimensions occurring without any physical contact of said object with any of said surfaces, and said plurality of surfaces being positioned to permit said object to be inserted into and removed from said common defined field;
(b) Means coupled to said at least one surface for receiving said signalling which is representative of said movement of said object in said X-dimension, said receiving means emitting a first operating frequency in a radio frequency range;
(c) means coupled to said at least another surface for receiving said signalling which is representative of said movement of said object in said Y-dimension, said receiving means emitting a second operating frequency in a radio frequency range;
(d) means coupled to said at least one other surface for receiving said signalling which is representative of said movement of said object in said Z-dimension, said receiving means emitting a third operating frequency in a radio frequency range, said first, second and third operating frequencies not interfering with each other during the presence of said object in said common defined field;
(e) means coupled to each of said receiving means for detecting the position of said object relative to the boundaries of said common defined field; and,
(f) means coupled to said detecting means for producing an input signal to said machine to move an element of said machine in an amount proportional to said object movement.

4,524,349
SECURITY SYSTEM HAVING DETECTOR SENSING AND IDENTIFICATION
David R. Hyatt, Portland, Oreg., assignor to Nel-Tech Development, Inc., Portland, Oreg.
Filed Aug. 9, 1982, Ser. No. 406,492
Int. Cl.³ G08B *29/00*
U.S. Cl. 340—500 **17 Claims**



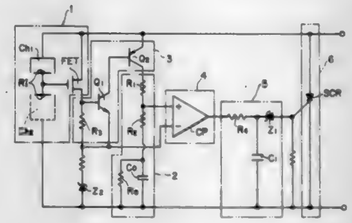
13. A security system having detector sensing and identification by analog signal amplitude, comprising:
sensor loop means including a plurality of sensor loops for generating detector signals when detectors in said loops are actuated, each sensor loop including a plurality of detectors which are connected in parallel sensor circuits and are coupled to a common loop output for applying an analog detector signal to said loop output when any of said detectors are actuated;
identification means provided in each sensor loop with a separate identification means connected to each detector, for producing analog detector signals of different D.C. amplitudes for the detectors of each loop, each detection signal amplitude also being different than the sum of any combination of the other detection signal amplitudes produced by the other detectors of the loop;
signal processor means for processing the detector signals to determine which detector produced a given detector signal and to generator a corresponding output signal; and
alarm means connected to the output of said signal processor means for indicating when said detectors are actuated.

4,524,350
DETECTION LOGIC AND SIGNAL PROCESSING METHOD AND APPARATUS FOR THEFT DETECTION SYSTEMS
Larry Eccleston, Concord, Mich., assignor to Progressive Dynamics, Inc., Marshall, Mich.
Filed Mar. 15, 1982, Ser. No. 358,383
Int. Cl.³ G08B *13/24*
U.S. Cl. 340—572 **56 Claims**



1. In a method of detecting the presence of a particular marker member within an electromagnetic interrogation field established between a pair of mutually spaced portal side members, wherein said electromagnetic field is made to alternate at one or more nominal frequencies and the field is monitored by at least first and second receiver means each disposed to access the field from a different side of said portal to detect the presence of signal indicia introduced by such a marker in response to its exposure to the alternations of the field, and wherein said receivers each produce an electrical signal representative of the frequency content of the alternating field at least in the area of proximity nearer to that receiver, the improvement for use in detecting said marker which comprises the steps of: producing a first composite electrical signal for marker-presence analysis by summing said electrical signals produced by said first and second receivers, to thereby increase detection sensitivity; producing a second composite electrical signal for use in marker-presence analysis by differencing said electrical signals produced by said first and second receivers, to reduce common-mode noise or other undesired signal characteristics in that composite electrical signal; comparatively examining representations of said first and second composite marker-presence signals with respect to one another to determine difference characteristics therebetween, and using such characteristics in said marker-presence determination.

4,524,351
SMOKE DETECTOR
Tetsuo Kimura; Hirofumi Fujii; Hayami Yuasa, and Tatuo Yonezawa, all of Tokyo, Japan, assignors to Nittan Company, Limited, Tokyo, Japan
Filed Aug. 13, 1982, Ser. No. 408,050
Claims priority, application Japan, Aug. 20, 1981, 56-129350; Feb. 2, 1982, 57-14349
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—629 **8 Claims**



1. A smoke detector comprising:
detection means for detecting smoke and providing a detection signal;
reference signal generating means actuated in reponse to said detection signal for producing a reference signal which varies with time, said reference signal generating means comprising first reference signal generating means for generating a first reference signal and second reference signal generating means for generating a second reference signal which is lower than said first reference signal;
comparison means for comparing said detection signal with said reference signal and producing a smoke implying output when said detection signal is lower than said reference signal, said comparison means comprising first comparison means for comparing said detection signal with said first reference signal and producing a first smoke implying output, and second comparison means for comparing said detection signal with said second reference signal and producing second smoke implying output; and
AND gate means receiving said first and second smoke implying outputs.
6. A smoke detector comprising:
detection means for detecting smoke and providing a detection signal;
reference signal generating means actuated in response to said detection signal for producing a reference signal which varies with time;
comparison means for comparing said detection signal with said reference signal and producing a smoke implying output when said detection signal is lower than said reference signal; and
an integration means connected to said comparison means for subjecting said smoke implying output to integration, said integration means providing a trigger signal when an integration value of said integration means reaches a predetermined value.

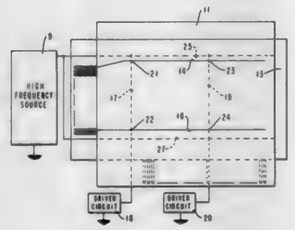
4,524,352
HIGH FREQUENCY PILOT
James C. Greeson, Jr., Woodstock, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 4, 1982, Ser. No. 385,183
Int. Cl.³ G09G *3/28*
U.S. Cl. 340—714 **8 Claims**

1. In a plasma display device comprising a plurality of display cells defined by the intersection of coordinate conductors disposed on opposite sides of a gas panel and means for discharging said display cells in response to the selective application of write signals thereto, said coordinate conductors having

a dielectric coating insulating them from contact with said gas, said dielectric coating comprising a layer of refractory material disposed thereover to eliminate aging of the surface of said dielectric by ion bombardment of said dielectric surface during discharge of said display cells, the improvement comprising

at lease one pilot cell,

said pilot cell comprising first and second electrodes connected to a high frequency drive source,



said pilot cell being positioned within the non-display area of said panel,

the light output of said high frequency pilot cell conditioning said display cells irrespective of their location in the panel immediately prior to said write signals being applied thereto.

4,524,353

LINE PATTERN TEMPLATE GENERATOR

Karl L. Chase, Glendale, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,818
Int. Cl.³ G09G *1/08*
U.S. Cl. 340—732 **9 Claims**

1. Patterning apparatus for patterning solid lines generated by a vector generator, said vector generator having line generation control means for enabling the generation of said solid lines, said patterning apparatus patterning said lines into a plurality of predetermined and selectable patterns, said patterning apparatus comprising

addressable memory means for storing a plurality of strings of digits arranged in said plurality of predetermined patterns, respectively,

means for selecting one of said strings of digits, thereby selecting one of said predetermined patterns, and

means for serially applying the digits of said selected string to said line generation control means simultaneously with the generation of said solid lines by said vector generator for alternately enabling and disabling the generation of said solid lines in accordance with the digits of said selected string so as to pattern said solid lines in accordance with said selected pattern,

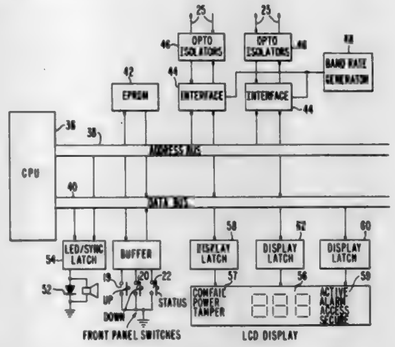
said memory further storing a further plurality of strings of digits associated respectively with said plurality of strings of digits storing said patterns, each string of said further plurality of strings comprising a string of digits including a stop bit thereby defining a stop bit string.

4,524,354

APPARATUS AND METHOD FOR MONITORING REMOTE SECURITY ZONES

Jack B. Morgan, 1657 Parkhills Ave., Los Altos, Calif. 94022

Filed May 10, 1982, Ser. No. 376,455
Int. Cl.³ H04Q *9/00*; G08B *29/00*
U.S. Cl. 340—825.36 **7 Claims**



1. A security system for a plurality of remote security zones spaced from a central control location comprising: a central control unit adapted to be placed at said central control location; and actuatable sensor adapted to be placed at each of said zones, respectively; and means coupling the central control unit with the sensors when the sensors are at respective zones, each zone having an identifying number, said central control unit including a central processor, a display, a first switch for actuating the display under the control of the central processor to cause the identifying numbers of the zones to be sequentially displayed on the display, a second switch for actuating the display under the control of said central processor to cause the status of a zone to be displayed on the display when the identifying number of the zone is displayed on the display, the status of each zone being changeable as a function of the actuation and deactuation of the respective sensor, whereby the status of a zone can change from a first status condition to a second status condition when the respective sensor is actuated, said second switch being actuatable under the control of the central processor to return the status of a zone displayed on said display to the first status condition when the status of the zone is in the second status condition when the sensor is deactuated after being actuated, said central processor being operable to display a symbol on the display representing an active actuation condition of a sensor when the sensor remains actuated after being actuated, the actuation of the second switch being operable to cause the central processor to display a third status condition of a zone before the status of the zone is returned to the first status condition if the sensor at the zone remains actuated after being actuated.

4,524,355

ABNORMAL VIBRATION MONITOR

Ichiji Shima, No. 7, Kawahara Hiyou, Kamo-cho, Sagara-gun, Kyoto-fu, Japan; Shigeru Yoshibayashi, No. 1208-1, Ohaza-Tobi, Sakurai-shi, Nara-ken, Japan, and Ryosuke Taniguti, Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo; Ichiji Shima and Shigeru Yoshibayashi, both of Amagasaki, all of, Japan

Filed Jan. 15, 1980, Ser. No. 112,288
Claims priority, application Japan, Jan. 16, 1979, 54-3703
The portion of the term of this patent subsequent to Jun. 18, 1999, has been disclaimed.
Int. Cl.³ G08C *15/08, 19/00, 19/38*
U.S. Cl. 340—870.13 **5 Claims**

1. An abnormal vibration monitor for use in an explosive atmosphere comprising:

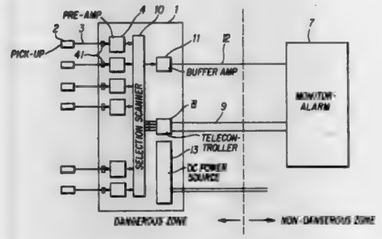
a plurality of piezo-acceleration pick-ups for detecting vibration in a plurality of parts to be monitored;

a plurality of pre-amplifiers having high impedance characteristics which are connected to said piezo-acceleration pick-ups;

a plurality of signal wires, each of which connects one of said piezo-acceleration pick-ups with one of said pre-amplifiers;

a selection scanner for receiving the outputs of said pre-amplifiers and selecting one thereof as an output;

a monitor for receiving the output from said selection scanner for transmitting a serial signal;



a single output cable for connecting said selection scanner and said monitor;

a telecontroller connected to said monitor and said selection scanner for receiving said serial signal from said monitor, and converting said serial signal into a parallel signal, whereby the selection scanner receives said parallel signal and selects one of the outputs of said pre-amplifiers in response thereto; and

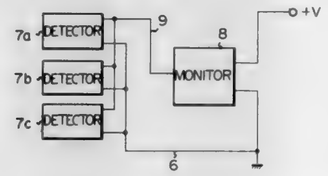
an anti-explosion casing containing said pre-amplifiers, said selection scanner and said telecontroller so as to prevent an explosion.

4,524,356

OBSTACLE DETECTING DEVICE FOR VEHICLES

Masao Kodera; Shigeyuki Akita, and Yasuhisa Yoshino, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 22, 1982, Ser. No. 401,023
Claims priority, application Japan, Jul. 27, 1981, 56-110231[U]
Int. Cl.³ G08G *1/00*
U.S. Cl. 340—904 **5 Claims**



1. A vehicular device for detecting obstacles, comprising:

a plurality of detection means, responsive to trigger signals, for transmitting respective signal waves, for receiving said signal waves as reflected by said obstacles and for producing respective output signals corresponding to respective distances of said detection means to said obstacles, each said obstacle detection means including a timing means for receiving said trigger signals and for enabling said signal wave transmission sequentially so as to produce said output signals sequentially;

monitor means, physically separated from said detection means, for monitoring said output signals, said monitor means including trigger signal generating means for generating said trigger signals, output signal receiving means for receiving said output signals and display means, having a plurality of display areas respectively corresponding to said plurality of obstacle detection means, for displaying respective distances from said obstacles to said respective detection means on their corresponding display areas in response to said output signals; and

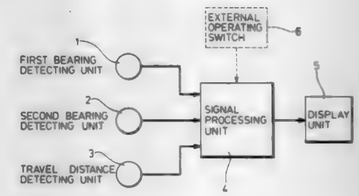
a single transmission line which connects said plurality of detection means with said monitor means to permit transmission of said trigger signal from said trigger signal generating means to said timing means, and to permit transmission of said output signals from said detection means to said output signal receiving means by superimposing said trigger signal and said output signals on an electric voltage imposed by said monitor means on said transmission line.

4,524,357

APPARATUS FOR VISUALLY INDICATING THE CURRENT LOCATION OF AN AUTOMOTIVE VEHICLE

Yukinobu Nakamura; Katsutoshi Tagami, and Tsuneo Takahashi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,285
Claims priority, application Japan, Aug. 24, 1981, 56-132451
Int. Cl.³ G08G *1/12*
U.S. Cl. 340—995 **1 Claim**



1. A current location indicating apparatus for use in an automotive vehicle wherein a current location of said vehicle is arithmetically obtained in terms of two-dimensional coordinates by signal processing means on the basis of the outputs from travel distance detecting means and bearing detecting means, and said current location of said vehicle is visually indicated on the screen of display means from the thus-obtained data in connection with the current location of said vehicle, which comprises, in operative combination:

first bearing detecting means which comprises a rate type gyroscope as a primary unit;

second detecting means which comprises an earth magnetism sensor; and

wherein said signal processing means is adapted to continuously monitor the outputs from said first and second bearing detecting means in comparison with each other to deterine whether or not errors in the output of said rate type gyroscope have accumulated during bearing detecting operation due to possible drifts thereof during vehicle operation, whereby the output of said first bearing detecting means can be automatically immediately corrected while said vehicle is in motion.

4,524,358

PULSE RADAR APPARATUS

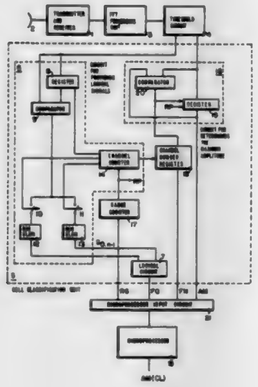
Jan Bergman; Pieter Van Genderen, both of Haaksbergen, and Willem A. Hol, Hengelo, all of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Mar. 1, 1982, Ser. No. 353,693

Claims priority, application Netherlands, Mar. 9, 1981, 8101111

Int. Cl.³ G01S *13/52, 7/28*

U.S. Cl. 343—7.7 **2 Claims**



1. In a pulse radar apparatus comprising a transmitter for transmitting radar pulses, a receiver for detecting, sampling and digitizing target returns for a plurality of range quants, an n-point FFT processing unit coupled to the receiver and having n output channels for producing respective output signals $A_0, A_1 \ldots A_{n-1}$ representing the target returns for n successive radar scans, and a threshold circuit coupled to said output channels for passing the output signals having magnitudes larger than predefined threshold magnitudes for the respective channels, the improvement comprising means for distinguishing between stationary targets and moving targets, including:

(a) a cell classification unit, coupled to the threshold circuit, for producing from the output signals passed a cell classification signal FQ having successive logical values preliminarily indicating whether target returns from respective radar cells represent moving or stationary targets, said cell classification unit comprising:

(1) circuitry for producing a signal $S_{0,1}$ indicating whether the output signal A_0 is larger or smaller than the output signal A_1,

(2) circuitry for producing a signal $S_{0,n-1}$ indicating whether the output signal A_0 is larger or smaller than the output signal A_{n-1}, and

(3) circuitry for producing the cell classification signal $FQ = S_{0,1} \cdot S_{0,n-1}$; and

(b) a processor means, coupled to the cell classification unit, for:

(1) associating adjacent radar cells, which collectively cover a target, to form a cell cluster,

(2) producing from the cell classification signals for said associated cells a cluster classification signal (CLUC) indicating whether the target covered by the cluster is moving or stationary, and

(3) responding to the cluster classification signal (CLUC) by producing a signal representative of the target covered by the cluster, if it is a moving target.

4,524,359

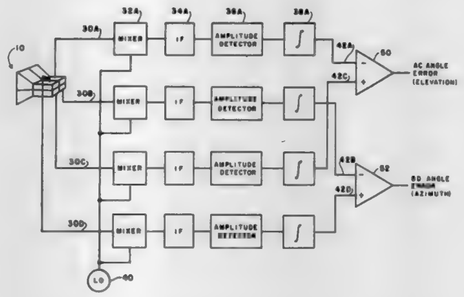
RADAR SYSTEM FOR REDUCING ANGLE TRACKING ERRORS

Edwin B. Champagne, Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 23, 1982, Ser. No. 401,164

Int. Cl.³ G01S *13/44*

U.S. Cl. 343—16 M **3 Claims**



1. A receiver for a tracking radar system operating in the microwave to millimeter wave region in a noncoherent mode, comprising:

antenna means including focusing means for focusing received radiation at a focal plane, an array of detector elements located at the focal plane, the array being divided into four quadrants with at least one detector element in each quadrant;

four receiving channels, each coupled via its individual feed means to a corresponding one of said quadrants, each channel including amplitude detection means, and providing an output signal proportional to the amplitude of the received radio frequency energy on its quadrant; wherein said amplitude detection means of each channel includes an amplitude detector which produces a train of pulses, and integrating means to integrate the train of pulses to form said output signal, such that no phase information is extracted from the received signals; and

comparison means coupled to the four receiving channels for comparing said output signals from diagonally opposite quadrants to produce error signals for use in driving the antenna means to move the focus of the received radio frequency energy toward the center of the array.

4,524,360

PULSE RADAR APPARATUS

Jan Bergman; Pieter Van Genderen, both of Haaksbergen, and Willem A. Hol, Hengelo, all of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Feb. 2, 1982, Ser. No. 344,917

Claims priority, application Netherlands, Feb. 9, 1981, 8100606

Int. Cl.³ G01S *13/20, 7/28*

U.S. Cl. 343—17.1 R **3 Claims**

1. In a pulse radar apparatus comprising a transmitter for transmitting radar pulses, a receiver for detecting, sampling and digitizing target returns for a plurality of range quants, an n-point FFT processing unit coupled to the receiver and having n output channels for producing respective output signals $A_0, A_1 \ldots A_{n-1}$ representing the target returns for n successive radar scans, and a threshold circuit coupled to said output channels for passing the output signals having magnitudes larger than predefined threshold magnitudes for the respective channels, the improvement comprising means for distinguishing between first trip echoes and multiple trip echoes, including:

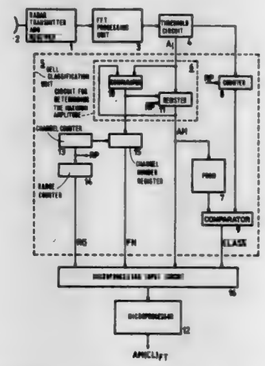
(a) a cell classification unit, coupled to the threshold circuit, for producing from the output signals passed a cell classification signal (CLASS) having successive logical values preliminarily indicating whether target returns from respective radar cells are first trip echoes or multiple trip echoes, said cell classification unit comprising:

(1) means for determining, for each cell, a value AM representing the maximum amplitude output signal for said cell,

(2) a pre-programmed memory for responding to each value AM by indicating, for the respective cell, a predefined number of output signals which are permitted to have amplitudes larger than their respective threshold magnitudes,

(3) a counter for determining for each cell the number of output signals having amplitudes larger than their respective threshold magnitudes, and

(4) a comparator for comparing, for each cell, said predefined number of output signals with the actual number of



output signals having amplitudes larger than their respective threshold magnitudes, said comparator effecting production of the cell classification signal (CLASS), said signal having a logical value representing a first trip echo only if the predefined number is equal to or larger than the actual number; and

(b) a processor means, coupled to the cell classification unit, for:

(1) associating adjacent radar cells, which collectively cover a target, to form a cell cluster,

(2) producing from the cell classification signals for said associated cells a cluster classification signal (CLUC) indicating whether the target returns for the cluster are first trip or multiple trip echoes, and

(3) responding to the cluster classification signal (CLUC) by producing a signal representative of the target covered by the cluster, if the target returns for the cluster are first trip echoes.

4,524,361

RADAR SYSTEMS EMPLOYING TWO KINDS OF PULSES

Wilhelmus A. Teulings, Haaksbergen, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

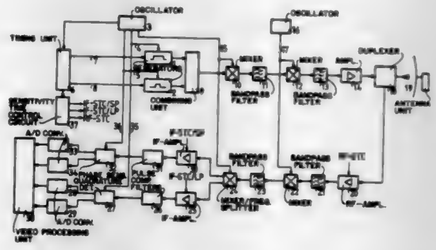
Filed Apr. 29, 1982, Ser. No. 372,884

Claims priority, application United Kingdom, May 5, 1981, 8113690

Int. Cl.³ G01S *13/28*

U.S. Cl. 343—17.2 PC **2 Claims**

1. In a radar system comprising a first generator for generating frequency-modulated transmitter pulses of relatively long duration; a second generator for generating transmitter pulses of relatively short duration; a transmitter channel coupled to said first and second generators for transmitting both the long and the short-duration transmitter pulses; and a receiver having a first receiving channel containing a pulse compression filter for the detection of return signals from the transmitter pulses of relatively long duration, and a second receiving channel for the detection of return signals from the transmitter pulses of relatively short duration the improvement wherein



the second generator comprises means for frequency-modulating the transmitter pulses of relatively short duration and the second receiving channel includes a pulse compression filter for compressing the return signals of the transmitter pulses of relatively short duration.

4,524,362

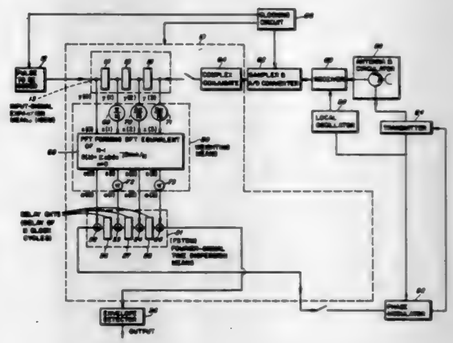
PHASE CODED PULSE EXPANDER-COMPRESSOR

Bernard L. Lewis, Fort Washington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 11, 1982, Ser. No. 377,107

Int. Cl.³ G01S *13/28*; G06F *15/332*

U.S. Cl. 343—17.2 PC **7 Claims**



1. A digital pulse-expander-compressor comprising:

pulse coder means for providing a series of weighted pulses from a single input pulse, the time interval of the series being greater than that of the input pulse, the coder means including weighting means; and

pulse compression means of the matched-filter type for receiving and processing echo signals corresponding to the output signals of the coder means, the pulse compression means including weighting means which is the same weighting means as that employed in the coder means,

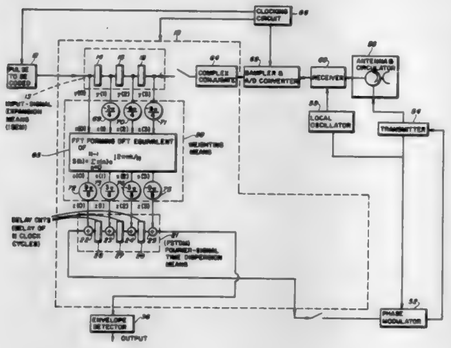
the improvement comprising said weighting means includes a discrete Fourier transform circuit; a plurality of phase-shifters, a respective phase-shifter being connected to every input of the discrete Fourier transform circuit except the first input; and a plurality of inverters, a respective inverter being connected to every other output of the discrete Fourier transform circuit.

4,524,363

P2 POLYPHASE CODE EXPANDER-COMPRESSOR

Frank F. Kretschmer, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 11, 1982, Ser. No. 377,108
Int. Cl.³ G01S *13/28*; G06F *15/332*
U.S. Cl. 343—17.2 PC **7 Claims**



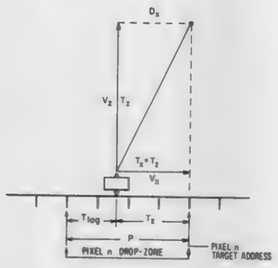
1. A digital pulse-expander-compressor comprising:
pulse coder means for providing a series of weighted pulses from a single input pulse, the time interval of the series being greater than that of the input pulse, the coder means including weighting means; and
pulse compression means of the matched-filter type for receiving and processing echo signals corresponding to the output signals of the coder means, the pulse compression means including weighting means which is the same weighting means as that employed in the coder means,
the improvement comprising said weighting means includes a discrete Fourier transform circuit; a first plurality of phase-shifters, a respective phase-shifter being connected to every input of the discrete Fourier transform circuit except the first input; and a second plurality of phase-shifters, a respective phase-shifter of the second plurality being connected to every output of the discrete Fourier transform circuit.

4,524,364

CIRCUITRY FOR CORRECTING DOT PLACEMENT FOR OSCILLATING CARRIAGE INK JET PRINTER

Lee L. Bain, Arlington, and Kenneth H. Fischbeck, Dallas, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1982, Ser. No. 443,762
Int. Cl.³ G01D *15/16, 15/18*
U.S. Cl. 346—1.1 **11 Claims**



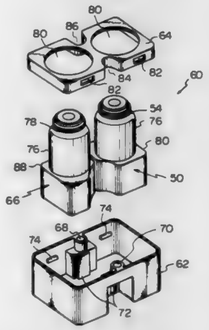
1. An ink jet printer timing circuit comprising:
counting means for determining a first number of clock pulses, each representing a unit of time, that occur between the beginning and end of the time required for the ink jet to travel each unit distance in relation to the position of the paper,
means for subtracting from said first number of clock pulses a second number of clock pulses representing the time required for an ink drop to travel from jet to paper, to produce a third number of clock pulses representing the delay required between the time that the ink jet is positioned at the start of said unit distance and the time that an ink drop should be ejected so that said ink drop will impact said paper at the time that said ink jet is at the end of said unit distance,
memory means for storing said third number, and
a timing means to convert said third number of clock pulses into a time delay, at the end of which an ink drop will be ejected, said delay being started at the time the ink jet is positioned at the start of said unit distance on the next print cycle.

4,524,365

RECEPTACLE FOR WASTE INK COLLECTION IN INK JET RECORDING APPARATUS

Sadao Kakeno; Minoru Ameyama, both of Yokohama; Kenichi Ichikawa, Tokyo; Michio Umezawa, Kawasaki, and Tomoyuki Yamaguchi, Chiba, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 31, 1983, Ser. No. 528,306
Claims priority, application Japan, Sep. 3, 1982, 57-154449
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—75 **4 Claims**



1. An ink cartridge for an ink jet recording apparatus, comprising:
a cartridge casing for accommodating a fresh ink supply container and a waste ink collecting receptacle, said cartridge casing being formed with a plurality of guide holes and a plurality of fixing pawls; and
a unit for rigidly supporting the cartridge casing, said unit being provided with a plurality of guide pins each of which is formed with a recess, said cartridge casing being locked to said unit when leading ends of the fixing pawls are individually engaged in the recesses of the guide pins.

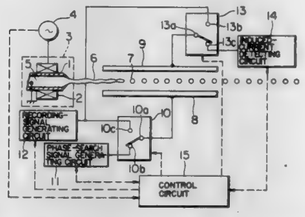
4,524,366

INK JET CHARGE PHASING APPARATUS

Takahiro Yamada, Ibaraki, Japan, assignor to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed May 16, 1984, Ser. No. 610,800
Claims priority, application Japan, May 20, 1983, 58-87566
Int. Cl.³ G01D *18/00*
U.S. Cl. 346—75 **3 Claims**

1. An ink jet recording apparatus including means for ejecting ink to change the ejected ink into ink droplets, a charging electrode disposed in the vicinity of a region where the ejected ink is changed into ink droplets, recording-signal generating means for applying a recording signal to said charging electrode to electrify an ink droplet, deflection means for deflecting said ink droplet in accordance with the electric charge thereof given by said recording signal, to deposit said ink droplet on a recording medium, phase-search-signal generating means for applying a phase search signal to said charging electrode to electrify an ink droplet, phase detecting means for searching the phase of production of said ink droplet electrified by said phase search signal, on the basis of the electric charge of said ink droplet, changeover means for selectively applying one of said recording signal and said phase search signal to said charging electrode, and a control circuit for synthetically



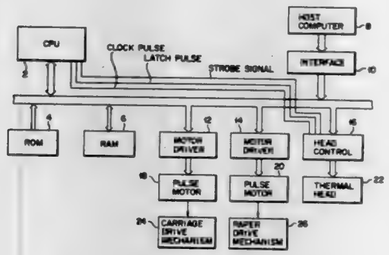
controlling said ink ejecting means, said recording-signal generating means, said deflection means, said phase-search-signal generating means, said phase detecting means, and said changeover means, wherein said charging electrode includes a pair of independent electrode plates disposed so that said electrode plates face each other and the flying path of ink droplets is interposed between said electrode plates, and said changeover means includes an electric circuit for connecting said phase-search-signal generating means and said phase detecting means to one and the other of said electrode plates, respectively, at a phase search period, to apply said phase search signal to one of said electrode plate and detect a current appearing on the other electrode plate.

4,524,367

THERMAL PRINTER

Keiichi Horiya, Numazu, and Naoki Miyazaki, Shizuoka, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 558,942
Claims priority, application Japan, Dec. 23, 1982, 57-231507; Dec. 23, 1982, 57-231508
Int. Cl.³ G06F *15/70*
U.S. Cl. 346—76 PH **10 Claims**



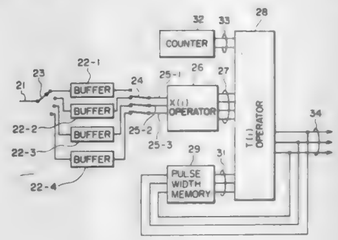
1. A thermal printer comprising
data generation means for generating character specifying data to designate a character to be printed and a size data representative of the size of the picture element of the character;
a thermal head having a plurality of heating elements arranged in a line;
head drive means for driving said thermal head in the printing direction at a speed determined by a drive signal;
head control means for selectively supplying currents to said plurality of heating elements in accordance with a dot pattern data;
memory means having a first memory area storing a plurality of character data which are each constituted by m dot pattern data each having n bits; and
print control means for receiving the character data designated by said character specifying data from said memory means, converting the n-bit dot pattern data of the received character data into dot pattern data of the number of bits designated by said size data, supplying the converted dot pattern data to said head control means and supplying the drive signal corresponding to said size data to said head drive means.

4,524,368

THERMAL HEAD DRIVE CIRCUIT

Toshiharu Inui, and Haruhiko Moriguchi, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1984, Ser. No. 595,338
Claims priority, application Japan, Apr. 1, 1983, 58-55265
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **10 Claims**



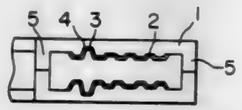
1. A thermal head drive circuit with the input connected to a source of printing data, and the output connected to a thermal head including individually actuatable and heatable heater elements, for printing successive lines comprising:
a. a pulse-applying circuit connected to the input of said thermal head for receiving pulse energy signals and applying printing pulse energy data to said thermal head;
b. storage means into which printing data from said printing data source are successively read line by line;
c. a heat storage state operator connected to the output of said storage means;
d. a counter connected to the output of said storage means for counting the number of dots in the line next to be printed;
e. a memory for storing the pulse energy signals used in printing a line immediately previous to said next to be printed line; and
f. pulse energy operator means for computing the pulse energy signals to be applied to each of said heater elements, the inputs of said pulse energy operator means being connected to the outputs of said heat storage state operator, said memory and said counter, and the output of said pulse energy operator means being connected to the input of said pulse-applying circuit.

4,524,369

PLASTIC INFORMATION-RECORDING MEDIUM

Masaaki Sato; Aizo Kaneda, and Makio Watanabe, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,374
Claims priority, application Japan, Aug. 21, 1981, 56-130235
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **9 Claims**



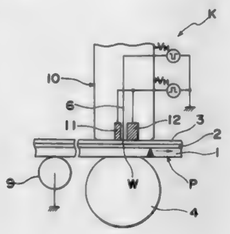
1. A plastic information-recording medium comprising a pair of juxtaposed transparent plastic substrates having a clearance between the substrates, the clearance being gas-tightly blocked from an outside atmosphere by joining the substrates together at peripheral edges thereof, and a recording film being provided on each of clearance-facing sides of the substrates, the substrates being made from: (1) a composition comprising a copolymer consisting of 5 to 25% by weight of acrylonitrile or methacrylonitrile and 95 to 75% by weight of at least one monomer copolymerizable with acrylonitrile or methacrylonitrile, said at least one monomer being a monomer other than styrene or a styrene derivative, or (2) a composition comprising at least 70% by weight of said copolymer and at most 30% by weight of butadiene rubber, whereby use of 5 to 25% by weight of acrylonitrile or methacrylonitrile in said copolymer is effective for preventing cracking of said recording film while also preventing curving of the substrate due to moisture absorption.

4,524,370

ELECTROSTATIC RECORDING APPARATUS

Nobuaki Nishioka, Toyokawa; Tatsumi Makio, and Katsutsune Ito, both of Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 9, 1982, Ser. No. 448,506
Claims priority, application Japan, Dec. 21, 1981, 56-206579
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—155 **5 Claims**



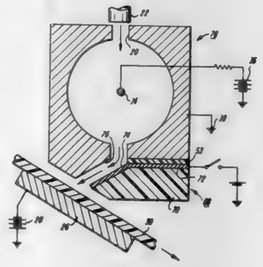
4. In an electrostatic recording apparatus which comprises a plurality of electrodes arranged at right angles to a transport direction of an electrostatic recording paper, a plurality of first and second controlling electrodes disposed parallel to and having said recording interposed therebetween, said first controlling electrodes being disposed at the upstream side of said recording electrodes and having a width facing the recording paper smaller than the width of said second controlling electrodes disposed at the downstream side of said recording electrodes.

4,524,371

MODULATION STRUCTURE FOR FLUID JET ASSISTED ION PROJECTION PRINTING APPARATUS

Nicholas K. Sheridon, Saratoga, and Michael A. Berkovitz, Woodside, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1983, Ser. No. 481,132
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—159 **5 Claims**



1. A fluid jet assisted electrographic marking apparatus for placing electrostatic charges upon a charge receptor in an image-wise pattern, said apparatus being characterized by including

housing means including an upstream, ion generation region and a downstream, ion modulation region,

means for supplying a transport fluid to said housing,

means for delivering the transport fluid to said housing at a location upstream of said ion generation region for entraining ions in the fluid path and moving them with fluid,

a channel in said housing for receiving the transport fluid from said ion generation region and for directing the transport fluid and entrained ions through said ion modulation region, said channel defining a bent path and being of a width such that laminar flow of the transport fluid will prevail therethrough, and

ion modulation means, located at said ion modulation region, including

an array of electrically conductive modulating electrodes located on one side of said channel, at a position downstream of its bend, and disposed upon a substantially planar substrate, said electrodes including a first portion extending in the plane of said substrate and a second portion departing from the plane of said substrate by an angle of less than 45°,

a conductive member on the side of said channel opposite to said modulating electrodes,

a source of modulating potential,

switch means for selectively connecting said source of modulating potential to each of said modulating electrodes, and

a source of reference potenital connected to said conductive member, whereby each of said modulating electrodes controls the passage of a beam of ions out of said bent path channel, when its respective switch is energized.

4,524,372

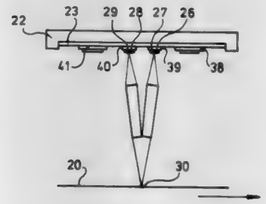
RECORDING APPARATUS

Etienne M. De Cock; Lucien A. De Schamphelaere, both of Edegem; Freddy M. Librecht, Boechout, and Willy F. Van Peteghem, Berchem, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Jan. 10, 1984, Ser. No. 569,662
Claims priority, application European Pat. Off., Jan. 21, 1983, 83200091.3
Int. Cl.³ G01D *15/14*; G02F *1/01*; H04N *1/22, 3/14*
U.S. Cl. 346—160 **17 Claims**

1. Apparatus for the line-wise transmission of information

comprising a series of microelectronic transducers formed on chips and distributed along an elongate zone for transducing input signals representing increments of a line of information, characterised in that in addition to said series of transducers (hereafter called "primary transducers") there is at least one group of transducers (hereafter called "secondary transducers") which are individually aligned in a direction transverse to the length of said elongate zone with individual primary transducers; that at least one of said secondary transducers is a



non-defective transducer which is transversely aligned with a defective primary transducer; that there is optical transfer means for transferring the image of any defective transducer and the image of the corresponding (i.e. transversely aligned) non-defective transducer onto a common transverse line, and that there is connection means for electrically connecting a secondary transducer in the apparatus so that it is effective in lieu of or in addition to the corresponding defective primary transducer.

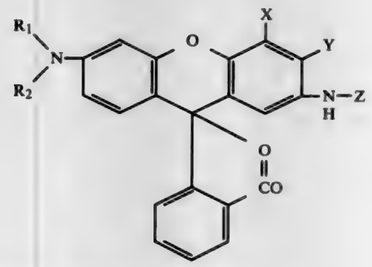
4,524,373

FLUORAN DERIVATIVES AS NEW COMPOUNDS, PROCESS FOR PREPARING THE SAME AND RECORDING SYSTEM UTILIZING THE SAME AS COLORLESS CHROMOGENIC MATERIAL

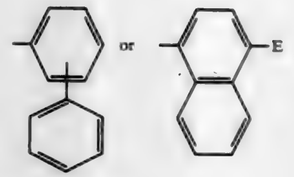
Mitsuru Kondo, Hyogo; Hiroshi Iwasaki, Kawanishi; Nobuo Kanda, Osaka; Masayuki Omatsu, and Haruo Omura, both of Motomachi, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1983, Ser. No. 467,286
Claims priority, application Japan, Feb. 24, 1982, 57-30058; Feb. 26, 1982, 57-31465; Feb. 27, 1982, 57-31543; Apr. 16, 1982, 57-64231; Apr. 21, 1982, 57-67632; May 6, 1982, 57-76972; Oct. 8, 1982, 57-178144
Int. Cl.³ B41M *5/18*; S41M *5/22*
U.S. Cl. 346—221 **3 Claims**

1. A recording system which utilizes the color forming reaction between a colorless chromogenic material an electron accepting acidic reactant material, characterized in that said colorless chromogenic material comprises at least one fluoran derivative having the general formula:



wherein Z is $-CH_2COOCH_2CH=CH_2$,



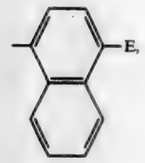
wherein E is hydrogen or



wherein each R_3 and R_4 is hydrogen, an alkyl having 1 to 4 carbon atoms or phenyl;

each R_1 and R_2 is an alkyl having 1 to 12 carbon atoms or an aralkyl having 7 to 9 carbon atoms; X is hydrogen, halogen atom, an alkyl having 1 to 4 carbon atoms or an alkoxyl having 1 to 2 carbon atoms; and Y is hydrogen, halogen atom or an alkyl having 1 to 4 carbon atoms; however,

when Z is



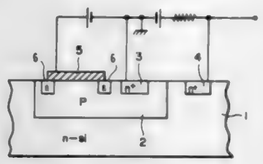
at least one of X and Y is selected from the before-mentioned substituents other than hydrogen.

4,524,374

DEVICE FOR DETECTING INFRARED RAYS

Masahiko Denda, and Natsuro Tsubouchi, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jul. 20, 1981, Ser. No. 285,243
Claims priority, application Japan, Jul. 22, 1980, 55-100929
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—15 **5 Claims**



1. A device for detecting infrared rays comprising:

a first conductivity type semiconductor substrate;

a first region of a second conductivity type formed on said substrate;

a metal material formed on said first region to form a Schottky junction between said metal material and said first region;

a second region of said first conductivity type formed on said first region to form a P-N junction between said first and second regions;

bias means for reverse biasing said Schottky junction and

thereby forward biasing said P-N junction upon infrared irradiation of said Schottky junction; and

output means for producing an output from said substrate upon irradiation of said Schottky junction with infrared rays.

4,524,375

PHOTO TRANSISTOR

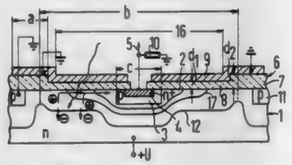
Werner Baumgartner; Dieter Krockow, and Jenö Tihanyi, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 315,293, Oct. 27, 1981, abandoned. This application Apr. 10, 1984, Ser. No. 598,355

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044341

Int. Cl.³ H01L *27/14, 31/00, 29/72, 29/04*

U.S. Cl. 357—30 **4 Claims**



1. Photo transistor, comprising a semiconductor body having a surface, a collector zone disposed in said body and having at least a part thereof emerging to the surface of said body, the collector zone being of a first conductivity type and being connectable to a potential, a base zone being embedded in a planar manner in said collector zone and having at least a part thereof emerging to the surface of said body and being of a second conductivity type, an emitter zone being embedded in a planar manner in said base zone and being of the first conductivity type, an emitter electrode disposed on said emitter zone, a region disposed on the surface of said body being intended for exposure having an edge and a remainder of said region, the region comprising the emitter zone, said part of the base zone emerging to the surface of said body and a part of the collector zone, an insulating layer covering said surface, an auxiliary zone being embedded in the surface of said body and having the second conductivity type and being connectable to a potential, an auxiliary electrode being connectable to a potential and being transparent to light and being disposed on said insulating layer and overlapping at least said part of said base zone emerging to the surface and said auxiliary zone and covering said part of said collector zone emerging to the surface, said insulating layer having a relatively thicker part and a relatively thinner part both being disposed under said auxiliary electrode, said thicker part being disposed over the edge of said region intended for exposure and overlapping said auxiliary zone and said thinner part being disposed over the remainder of said region intended for exposure.

4,524,376

CORRUGATED SEMICONDUCTOR DEVICE

John A. Cornick, Manchester, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 286,911, Jul. 27, 1981,. This application May 14, 1984, Ser. No. 610,917

Claims priority, application United Kingdom, Aug. 20, 1980, 8027063

Int. Cl.³ H01L *29/06*

U.S. Cl. 357—55 **28 Claims**

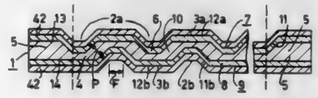
1. A semiconductor device comprising

a semiconductor body having two major surfaces,

a first of said two major surfaces having a first plurality of grooves and ridges, and a second of said two major surfaces having a second plurality of grooves and ridges, said second plurality of grooves and ridges being offset to said first plurality of grooves and ridges, and said second plurality of grooves and ridges being opposite to said first plurality of ridges and grooves respectively,

a first region of one conductivity type adjoining said first of said two major surfaces, and said first region having the same configuration as said first plurality of grooves and ridges,

a second region of an opposite conductivity type adjoining said second of said two major surfaces, and said second



region having the same configuration as said second plurality of grooves and ridges,

at least one rectifying junction having the same configuration as and extending parallel to said first major surface below said first region,

an electrode covering each of said two major surfaces,

wherein said semiconductor body has a thickness perpendicular to said two major surfaces with said thickness being uniform between said grooves and ridges of said first of said two major surfaces and said ridges and grooves respectively of said second of said two major surfaces.

4,524,377

INTEGRATED CIRCUIT

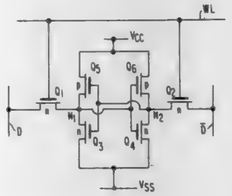
Hirotugu Eguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 265,003, May 20, 1981,. This application Feb. 14, 1984, Ser. No. 579,283

Claims priority, application Japan, May 15, 1981, 55-64752

Int. Cl.³ H01L *29/90, 29/04, 27/02, 23/48*

U.S. Cl. 357—59 **13 Claims**



1. An integrated circuit, comprising:

a semiconductor substrate of a first conductivity,

a first region of a second conductivity type formed in said semiconductor substrate and having a high impurity concentration portion of said second conductivity type therein,

at least one field effect transistor formed on said first region and having a plurality of second regions of said first conductivity type formed in said first region,

a first insulating layer formed on said semiconductor substrate and having a first opening exposing said high impurity concentration portion and a second opening exposing a part of at least one of said second regions,

a first wiring made of polycrystalline silicon of said first conductivity type formed on said first insulating layer and directly contacting with said high impurity concentration portion through said first opening thereby to provide a PN junction having a resistance component therebetween, and with said part of said at least one of said second regions through said second opening, and

means for supplying said first wiring with a predetermined voltage, in which said first region is continuously biased at said predetermined voltage through said resistance component of said PN junction.

4,524,378

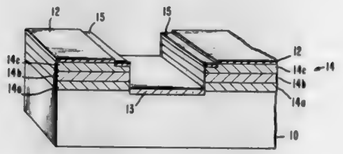
ANODIZABLE METALLIC CONTACTS TO MERCURY CADMIUM TELLERIDE

Charles A. Cockrum, Goleta; Joan K. Chia, and James F. Kreider, both of Santa Barbara, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 174,963, Aug. 4, 1980, abandoned. This application Jul. 21, 1983, Ser. No. 516,416

Int. Cl.³ H01L *23/48, 21/306*

U.S. Cl. 357—71 **14 Claims**



1. A semiconductor device comprising a compound semiconductor material consisting essentially of (Hg,Cd)Te, a metallic contact attached thereto, a uniform passivating native semiconductor oxide layer adjacent said metallic contact and a surface of said compound semiconductor material, the otherwise exposed surface of said semiconductor material being anodically oxidizable to form said passivating native semiconductor oxide layer thereon, said metallic contact comprising a plurality of metal layers including:

(a) a contact metal layer formed on a surface portion of said semiconductor material, said contact metal layer forming a substantially non-rectifying contact with said semiconductor material and providing a diffusion barrier and comprising a metal selected from the group consisting of titanium, chromium, nickel and palladium;

(b) a top metal layer formed so as to overlie said metal layers, the exposed surface portion of said top metal layer being anodically oxidizable to form a metal oxide thereon and thereby prevent any significant interference by said metal layers with the substantially uniform formation of said passivating native semiconductor oxide, said top metal layer being selected from the group consisting of metals occupying a position between hydrogen and magnesium in the Electromotive Series; and

(c) an oxide layer formed on said top metal layer, the thickness of said oxide layer being sufficient to substantially prevent any interference by said metallic contact with the anodic oxidation of said compound semiconductor material at any time subsequent to the formation of said oxide layer.

4,524,379

DOUBLE-SCANNING NON-INTERLACE TELEVISION RECEIVER WITH VERTICAL APERTURE CORRECTION CIRCUIT

Takashi Okada, Yokohama; Yasunari Ikeda, Funabashi, and Yutaka Tanaka, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,465

Claims priority, application Japan, Dec. 3, 1981, 56-195427

Int. Cl.³ H04N *9/535, 5/14*

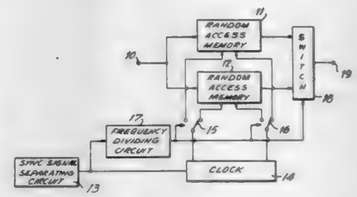
U.S. Cl. 358—11 **23 Claims**

1. A double-scanning non-interlace television receiver for receiving an interlace television signal having alternating odd and even fields of scanned lines which are normally interlaced, as displayed, comprising:

receiver means for receiving said interlace television signal and generating interlace scanning line signals from each said field;

visual display means;

non-interlace converting means for converting said interlace scanning line signals for each of said fields to non-interlace



scanning line signals which are displayed on said visual display means, with each of said scanned lines being scanned twice; and

emphasizing means for emphasizing the high frequency components of said non-interlace scanning line signals.

4,524,380

CHROMA SIGNAL RECORDING AND REPRODUCING CIRCUIT

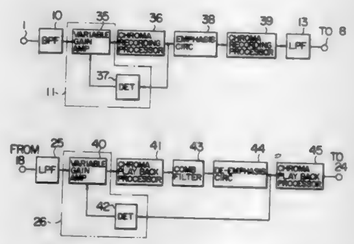
Akira Shibata; Keiichi Komatsu; Tomomitsu Kuroyanagi, all of Katsuta, and Noboru Kojima, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 7, 1982, Ser. No. 447,387

Claims priority, application Japan, Dec. 7, 1981, 56-195687; Feb. 17, 1982, 57-22703; May 17, 1982, 57-81402; Sep. 1, 1982, 57-150763

Int. Cl.³ H04N *9/491*

U.S. Cl. 358—316 **31 Claims**



1. A chroma signal recording and reproducing circuit in a magnetic recording and reproducing apparatus for frequency-modulating a luminance signal of a color video signal, low-frequency converting a chroma signal of said video signal, frequency-multiplexing at least the frequency-modulated luminance signal and the low-frequency converted chroma signal, recording the frequency-multiplexed luminance and chroma signals by a recording magnetic head on a magnetic recording medium and reproducing the frequency-multiplexed luminance and chroma signals by a reproducing magnetic head from said magnetic recording medium, said chroma signal recording and reproducing circuit comprising:

chroma signal recording means coupled for connection to said recording magnetic head including at least a first ACC circuit and a first frequency converter connected in series with said first ACC circuit for low-frequency converting the chroma signal; and

chroma signal reproducing means coupled for connection to said reproducing magnetic head including a second ACC circuit, and a second frequency converter connected in series with said second ACC circuit for frequency-converting the low-frequency converted chroma signal, a first comb filter connected to an output of the series connection of said second ACC circuit and second frequency

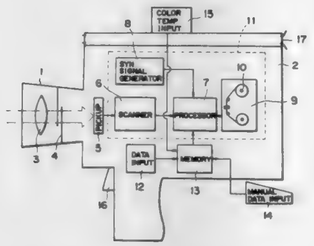
converter, and a dynamic deemphasis circuit connected to an output of said first comb filter for dynamically deemphasizing an output signal of said first comb filter in response to the level of said output signal.

4,524,381

IMAGE REPRODUCING APPARATUS

Masahiro Konishi, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed May 10, 1982, Ser. No. 376,642
Claims priority, application Japan, May 12, 1981, 56-71145
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—29 **22 Claims**



1. An image reproducing apparatus adapted for use with an electronic camera which producess image data and image reproduction signal processing data functionally related to such image data, which apparatus comprises:

(a) first means for storing the image data and its functionally related image reproduction signal processing data on the same recording medium, and for providing at an output the image data and its functionally related image reproduction signal processing data by retrieving the same from said recording medium; and

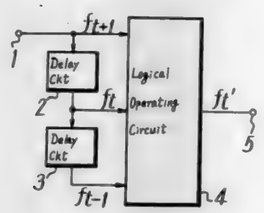
(b) processing means, connected to said output of said first means, for processing the image data as a function of its functionally related image reproduction signal processing data, wherein the image reproduction signal processing data comprises compensation data for compensating for deficiencies in reproduction of an image photographed by the electronic camera.

4,524,382

FILTER CIRCUITS

Yutaka Tanaka, and Takashi Okada, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,396
Claims priority, application Japan, Jul. 13, 1981, 56-109101
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—31 **18 Claims**



1. A filter circuit for eliminating noise from an input signal of known frequency content comprising:

signal separating means receiving an input signal to be filtered including at least a first delay circuit for delaying said input signal by an amount equivalent to a period of the maximum frequency of said input signal to produce a first delay signal and a second delay circuit for delaying said first delay signal by an amount equivalent to a period of the maximum frequency of said input signal to produce a second delay signal, such that said input signal, said first delay signal, and said second delay signal represent adjacent ones of plural separated signals spaced apart from each other at predetermined different time points; and

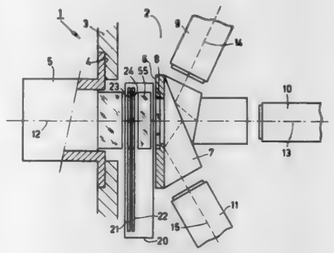
logical operating means having at least three input terminals each being supplied with a corresponding one of said plural separated signals from said signal separating means and including means for detecting a level of said input signal at said different time points for producing a filtered output signal having a desired waveform by processing said adjacent ones of said plural level detected separated signals based on a predetermined logical formula.

4,524,383

CAMERA FOR PICKING-UP COLORED PICTURES

Jacobus A. G. de Rooij, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,234
Claims priority, application Netherlands, Mar. 22, 1982, 8201168
Int. Cl.³ H04N *9/09*
U.S. Cl. 358—55 **20 Claims**



1. A color camera comprising:

a housing;

an optical input system arranged in the housing on an optical axis;

an optical distribution system arranged in the housing on the optical axis to receive light from the optical input system;

a filter wheel arranged in the housing between the optical input system and the optical distribution system, said filter wheel having a number of filter elements which can be moved onto the optical axis between the optical input system and the optical distribution system by rotating the filter wheel; and

a number of pickup tubes arranged in the housing to receive light from the optical distribution system;

characterized in that:

the filter wheel is arranged in a cassette in the housing; and

the cassette comprises an electric motor for rotating the filter wheel.

4,524,384

VIDEO AND AUDIO SECURITY SYSTEM

Stephen Lefkowitz, Englewood Cliffs; Salvatore Benenati, Red Bank, both of N.J., and Edward S. Ickowski, Brooklyn, N.Y., assignors to GBC Closed Circuit TV Corp., New York, N.Y.

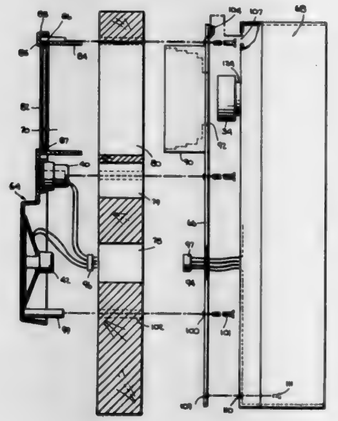
Filed Apr. 21, 1983, Ser. No. 487,135
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—108 **21 Claims**

18. A video assembly, for a video monitoring system, adapted to be mounted to a thin-walled structure such as a door, comprising:

a video camera including an optical system having a lens;

a first plate-like element adapted to be mounted to a side of said structure and having an exterior side and an interior side which faces said structure when said first plate-like element is mounted thereto, said first plate-like element having a first light-transmitting aperture;

a subassembly to which said video camera is mounted, said subassembly including means for mounting it to one side of said structure with said lens extending into an opening in said structure to receive images present on an opposite



side of said structure, said subassembly having an interior side which faces said structure when said subassembly is mounted thereto, and a second light-transmitting aperture; and

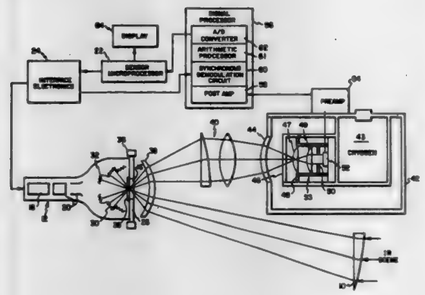
sleeve means extending through said mounting means between said first and second aperture when said video camera is mounted to said subassembly and said subassembly is mounted to said structure, wherein said lens extends through said second aperture into said sleeve.

4,524,385

PREDETECTION PROCESSING OF OPTICAL INFORMATION

James D. Billingsley, and Fergus E. Moore, both of Arlington, Tex., assignors to LTV Aerospace and Defense Company, Dallas, Tex.

Continuation-in-part of Ser. No. 279,171, Jun. 30, 1981, abandoned. This application Aug. 31, 1983, Ser. No. 528,222
Int. Cl.³ H04N *1/18*
U.S. Cl. 358—113 **52 Claims**



1. An optical data processor for preprocessing optical information from a scene being viewed by a sensor comprising:

a thermoptic modulator positioned in the image plane of the sensor, said modulator having an optical structure disposed at the faceplate thereof, said optical structure being substantially nonreflecting of optical energy, but capable of having reflecting spots written at selected coordinates thereon for reflecting optical energy incident at said spots, said modulator including writing means capable of selectively writing spots at any location on said optical structure;

control means connected to said writing means for causing a spot to be written at selected coordinates on said modulator; and

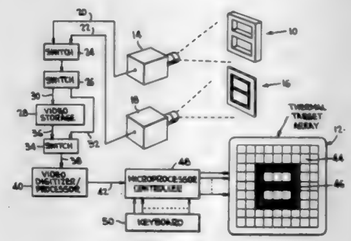
detector means positioned to view said modulator for detecting optical energy reflected from said modulator, said detector means providing an output signal representing the radiance of the scene element reflected from said modulator.

4,524,386

THERMAL TARGET DISPLAY SYSTEM

Edward A. Scott, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1982, Ser. No. 367,306
Int. Cl.³ H04M *5/16*
U.S. Cl. 358—113 **9 Claims**



1. A thermal target display system for generating simulated thermal radiation patterns of selected real-scene objects, said system comprising:

means for providing a video-compatible output signal representative of the thermal radiation image of said object;

video signal processor means for digitizing and enhancing said video compatible signal, said video signal processor means generating output signals for a plurality of pixel elements defining a video frame;

a thermal display screen having an array of individually controllable thermal radiating elements; and

control means for selectively energizing individual ones of said array of thermal radiating elements in response to said output signals from said video signal processor means to generate a thermal radiation pattern on said display screen corresponding to said video frame, said control means including

a converter for converting said output signals from said video processor means into respective temperature reference signals for said thermal radiating elements in said array,

first temperature sensing means for sensing the temperature of each thermal radiating element to generate actual temperature signals corresponding respectively to the actual temperatures of said thermal radiating elements, and

a comparator for comparing the temperature reference signal and the actual temperature signal for each thermal radiating element to provide an energizing output signal for each thermal radiating element until the actual temperature signal corresponds with the reference temperature signal.

4,524,387

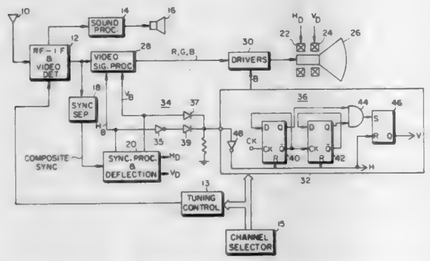
SYNCHRONIZATION INPUT FOR TELEVISION RECEIVER ON-SCREEN ALPHANUMERIC DISPLAY

Gregory G. Tamer, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,508

Int. Cl.³ H04N *5/10, 5/06, 5/50*

U.S. Cl. 358—154 **10 Claims**



9. In a display system requiring vertical and horizontal synchronization, apparatus comprising:

means for developing separate vertical and horizontal rate pulses;

combining means for combining said vertical and horizontal rate pulses so as to form a composite timing signal in which said horizontal rate pulses are absent during the duration of said vertical rate pulses;

signal processing means; and

a single conduction path for coupling said composite timing signal to said signal processing means;

said signal processing means including decoder means for generating separate vertical and horizontal signals corresponding to said vertical and horizontal rate pulses.

4,524,388

SHADING CORRECTION DEVICE

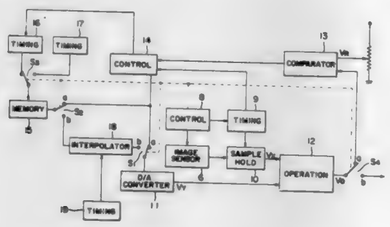
Yoshinori Abe, and Masahiko Matsunawa, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1982, Ser. No. 406,078

Claims priority, application Japan, Aug. 11, 1981, 56-124791; Jun. 22, 1982, 57-107040; Jun. 22, 1982, 57-107041

Int. Cl.³ H04N *5/34*

U.S. Cl. 358—163 **5 Claims**



1. A shading correction device comprising: a reflecting portion having a uniform reflection factor distribution; a photoelectric conversion means for converting the light reflected by said reflecting surface into an electric signal; an operation means for calculating shading correction coefficients at a predetermined sampling timing from said electric signal derived from said photoelectric conversion means; a memory means for storing the shading correction coefficients calculated by said operation means; an interpolator means adapted to perform, using said shading correction coefficients read from said memory means, a calculation for determining the shading correction coefficient corresponding to a predetermined portion of said reflecting portion by an interpolator and to hold the calculated coefficient; a correcting means for effecting a shading correction of the picture signal representing the document information to be recorded by means of shading correction coefficients read out of said interpolator; and means operable while the correction is made by said shading correcting means derived from said interpolator, to cause the shading interpolator coefficients for the next sampling to be read out of said memory means and to cause the shading correction coefficients for non-sampling period to be calculated by said interpolator circuit.

4,524,389

SYNCHRONOUS VIDEO DETECTOR CIRCUIT USING PHASE-LOCKED LOOP

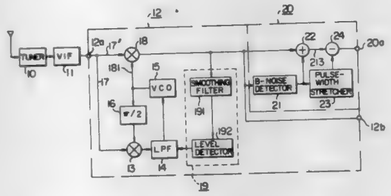
Mitsuo Isobe, Kadoma; Tetsuo Kutsuki, Toyonaka; Namio Yamaguchi, Hirakata, and Toshihide Tanaka, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 2, 1982, Ser. No. 438,466

Claims priority, application Japan, Nov. 9, 1981, 56-179469; Nov. 17, 1981, 56-184617

Int. Cl.³ H04N *5/44;* **H04B** *1/68*

U.S. Cl. 358—188 **15 Claims**



1. A synchronous video detector circuit using a phase-locked loop comprising:

voltage-controlled oscillator means for receiving an intermediate frequency output signal from a video IF amplifier and for generating first and second oscillation output signals having a phase difference of approximately $\pi/2$ (rad) relative to each other;

first multiplier means for receiving said intermediate frequency output signal amplified to a given amplitude level by said video IF amplifier and said first oscillation output signal;

second multiplier means for receiving said intermediate frequency output signal amplified to a given amplitude by said video IF amplifier and said second oscillation output signal;

coupling means of a type substantially untuned for supplying said intermediate frequency output signal of said video IF amplifier to said first and second multiplier means, respectively;

phase-locked mode detecting means for receiving an output signal component of said first multipler means to detect a presence of a video signal output; and

low-pass filter means for generating substantially a dc component of an output signal from said second multiplier means as a control signal to said oscillator means, at least a time constant of said low-pass filter means having a value which is selectably changeable with respect to a plurality of values, whereby said time constant of said low-pass filter means is increased in value to provide a narrow band characteristic which attenuates a vertical scanning frequency component when said phase-locked mode detecting means detects that a phase-locked loop including said voltage-controlled oscillator means, said second multiplier means and said low-pass filter means is in a phase-locked mode of operation and said time constant is decreased in value to provide a wider band characteristic than said narrow band characteristic when said phase-locked loop is in any other mode than said phase-locked mode, said voltage-controlled oscillator means including a voltage controlled oscillator circuit comprising a plurality of amplifying means, a load circuit connected between given output electrodes of said amplifying means, feedback means for feeding signal components generated at output terminals of said load circuit back to signal input electrodes of said amplifying means to apply positive feedback thereto, variable current source circuit means having a voltage-controlled input terminal to vary a bias current to said amplifying means, variable voltage source circuit means for detecting a current change in said variable current source circuit means and converting said current change into a voltage change to generate an output in a same direction as said current change, and bias means for supplying an output voltage of said variable voltage source circuit means to said amplifying means to thereby maintain dc bias levels at the output electrodes of said amplifying means at a substantially constant value.

4,524,390

IMAGING APPARATUS

James U. Lemke, Delmar, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,511

Int. Cl.³ H04N *3/02*

U.S. Cl. 358—213 **16 Claims**

1. Apparatus for producing signals corresponding to an optical image, said apparatus comprising

(a) first and second area array imaging devices comprised of respective rows of pixels, either of which devices may have one or more defective pixels, the defective pixels of one imaging device being different from the defective pixels of the other,

(b) beam-splitting means adapted to receive said optical image and to image said optical image simultaneously upon both said first and second imaging devices,

(c) memory means adapted to store the addresses of defective pixels of both said imaging devices,

(d) means for simultaneously scanning row-by-row both said imaging devices to produce signals in correspondence with the pixels thereof,

(e) output means,

(f) signal actuable switch means for receiving the signal outputs of said first and said second imaging devices and for conveying one or the other of said said outputs to said output means, and

(g) means cooperative with said means for scanning and said memory means for producing a switch actuating signal when there is coincidence between the instantaneous scanned address of a defective pixel of one imaging device and the address of a stored defective pixel of that imaging device, said switch actuating signal being applied to said switch means for actuating said switch and thereby causing the signal output of said switch means to represent, without defect, said optical image.

4,524,391

TWO-DIMENSIONAL SOLID-STATE IMAGE SENSOR DEVICE

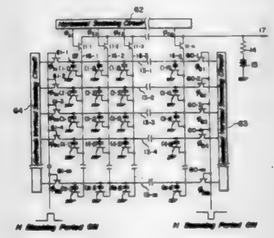
Junichi Nishizawa; Takashige Tamamushi, both of Sendai; Koji Shimanuki, and Masafumi Inuiya, both of Ashigarakami, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minamia Shigara, Japan

Filed Feb. 13, 1984, Ser. No. 579,644

Claims priority, application Japan, Feb. 22, 1983, 58-26932

Int. Cl.³ H04N *3/12*

U.S. Cl. 358—213 **4 Claims**



1. A two-dimensional solid-state image sensor device, comprising:

(a) a plurality of picture cells which are two-dimensionally arranged in column and row directions;

each picture cell comprising:

(a-1) a static induction transistor having first and second main electrode regions formed of semiconductor regions with one conductivity type which are disposed on opposite sides of a high resistance semiconductor channel region, and a gate region formed of a semiconductor region with the other conductivity type which is adjacent to said channel region to control a current flowing between said first and second main electrode regions, and

(a-2) a transparent electrode disposed via a capacitance on at least a portion of said gate region, in a manner that light is incident through said transparent electrode to said gate region in which the carrier produced by the light excitation is stored to control said current;

(b) a plurality of selection lines, each of which connects the gate regions of said picture cells in each column in common via the capacitances;

(c) means for connecting said plurality of selection lines to a readout vertical scanning circuit during each horizontal scanning period so that a read pulse voltage is sequentially applied to said plurality of selection lines from said readout vertical scanning circuit;

(d) a plurality of signal readout lines, each of which connects the first main electrode regions of said picture cells in each row in common, each picture cell being selected in said column and row directions so that a signal is read out therefrom;

(e) means for connecting said plurality of signal readout lines to a horizontal scanning circuit during each horizontal scanning period so that a readout pulse is sequentially applied to said plurality of signal readout lines from said horizontal scanning circuit; and

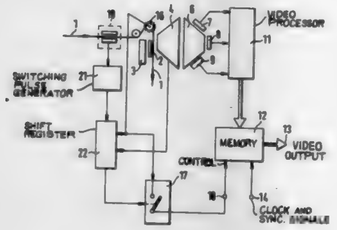
(f) means for connecting said plurality of selection lines to a refresh vertical scanning circuit during each horizontal scanning period so that a refresh pulse voltage is applied to the selected selection line from said refresh vertical scanning circuit.

4,524,392

CINE FILM-VIDEO SCANNER SYSTEM

Dieter Poetsch, Ober-Ramstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 16, 1984, Ser. No. 611,020
Claims priority, application Fed. Rep. of Germany, May 19, 1983, 3318253
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—214 **7 Claims**



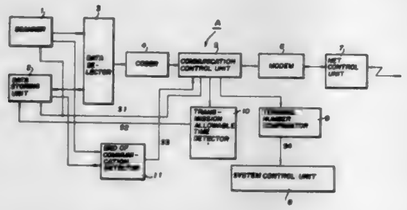
1. Cine film-video scanner system having
means (16) for transporting a cine film (1);
a video scanner (4, 6–9, 11) scanning the film and developing electrical signals representative of the scene on the film;
a memory (12) stroing said signals;
and means (14, 18) for controlling read-out of the memory in accordance with a television standard to derive an output signal (13),
and comprising
film splice or damage recognition means (19) located in advance—with respect to the direction of movement of the film—of the video scanner and deriving a "damage" signal;
and means (17) coupled to the film splice or damage recognition means and responsive to said "damage" signal for inhibiting entry into the memory (12) of signals from the video scanner upon sensing occurence of splices or damaged film areas for at least one frame of film,
said memory being controlled to repeat read-out of previously stored signals representative of a previous frame of the film and to provide said output signals.

4,524,393

FACSIMILE COMMUNICATION SYSTEM

Yoshiaki Obzeki, Atsugi, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Feb. 18, 1983, Ser. No. 467,835
Claims priority, application Japan, Feb. 19, 1982, 57-25387
Int. Cl.³ H04N *1/32*
U.S. Cl. 358—257 **6 Claims**



1. A facsimile communication system for carrying out communication between a transmitter and a receiver, said receiver comprising;
a facsimile receiving system for receiving and processing signals transmitted from said transmitter;
first storing means for storing transmitter terminal numbers of prearranged transmitters and their designated time for communication;
second storing means for storing transmitter terminal numbers of non-prearranged transmitters and their temporarily designated time for communication which is designated in accordance with the request for communication by said non-prearranged transmitters, said second storing means supplying the thus stored terminal numbers and the temporarily designated time to the corresponding non-prearranged transmitters;
allowable transmitter terminal number receiving means for receiving a transmitter terminal number from either one of said first and second storing means when the corresponding designated time is reached; and
comparing means for comparing the transmitter terminal number contained in said allowable transmitter terminal number receiving means and the transmitter terminal number currently transmitted from the transmitter, said comparing means supplying a reception allowable signal to said transmitter when the two terminal numbers are matched; whereas, said comparing means supplying a reception rejection signal to said transmitter and at the same time an operation command signal to said second storing means when the two terminal numbers are mismatched.

4,524,394

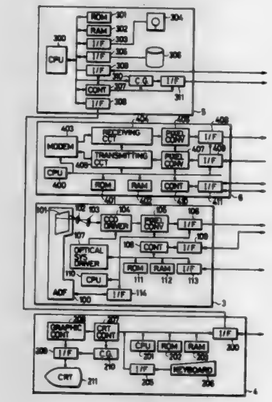
IMAGE FORMATION SYSTEM

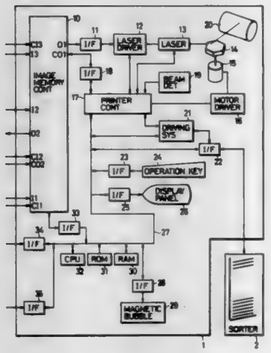
Nao Nagashima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1982, Ser. No. 394,788
Claims priority, application Japan, Jul. 10, 1981, 56-108720
Int. Cl.³ H04M *1/22*
U.S. Cl. 358—296 **7 Claims**

1. An image formation system, comprising:
processing means for processing character data for output as image data;
reading means for reading image data from an original;
recording means for recording the image data output from either said processing means or from said reading means onto a recording medium;
storage means having a plurality of storage sections for storing therein the recording medium from said recording medium; and

control means for controlling said storage means to differentiate a storage mode of the recording medium in accordance with selection of said processing means or said reading means.



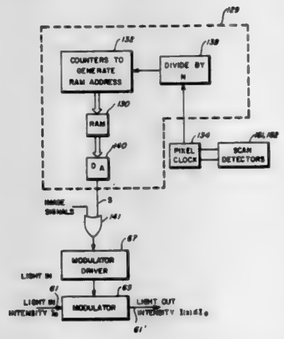


4,524,395

MULTI-MODE REPRODUCTION APPARATUS

Martin E. Banton, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 22, 1983, Ser. No. 487,636
Int. Cl.³ H04N *1/30*; G01D *15/14*
U.S. Cl. 358—300 **6 Claims**



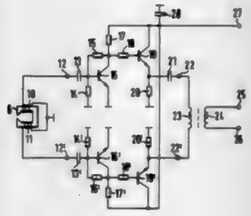
1. In an apparatus for reading a document to provide image signals representative of the document image content wherein the document image content is xerographically processed to provide a developed image of the document image content on a photoreceptor for raster scanning by a high intensity beam of light, with light collecting means disposed in predetermined spaced relation with said photoreceptor for intercepting and collecting light reflections from said photoreceptor when scanning said developed image, said light collecting means including a collector tube, and light detecting means for generating image signals in response to the presence or absence of said light reflections, said collector tube capturing said light reflections and transmitting captured light axially within said collector tube to said light detecting means, the improvement comprising:
means for regulating the intensity of said beam as said beam scans across said photoreceptor to offset internal light transmission losses of said collector tube.

4,524,396

PLAYBACK PREAMPLIFIER FOR MAGNETIC TAPE RECORDINGS

Axel Schulz, Bickenbach, and Josef Sochor, Dieburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 19, 1983, Ser. No. 524,684
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232610
Int. Cl.³ G11B *5/02*
U.S. Cl. 360—67 **5 Claims**



1. Playback preamplifier for a magnetic tape recorder-reproducer equipment of the kind having playback magnetic heads mounted on the periphery of a rotating disk, rotary windings rotating with said disk of an inductive system for transmitting broadband signals from said rotating windings to stationary circuits and preamplifer circuits interposed between said respective winding heads and rotary windings incorporating the improvement wherein:
the preamplifier circuits respectively serving said heads are each constituted of two symmetrical amplifier branches, each said amplifier branch has, in cascade, a grounded emitter stage having broadband negative voltage-feedback and a grounded collector stage having broadband feedback generated by current in an emitter-connected load resistor the outputs of said grounded collector stages of the amplifier branches of each of said preamplifier circuits being connected to a corresponding rotary winding of said inductive transmission system.

4,524,397

HEAD POSITIONING SYSTEM FOR A DISC DATA STORE

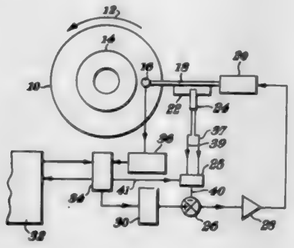
Brian D. Chalmers, 1 Morar Pl., Kinross, Tayside; David S. Ruxton, 2 Banks Crescent, Crieff, both of Scotland, and Kenneth L. Miller, 24108 E. River Rd., Grosse Ile, Mich. 48132

Filed Jan. 27, 1983, Ser. No. 467,126

Claims priority, application United Kingdom, Sep. 19, 1980, 8030338

Int. Cl.³ G11B *21/10*

U.S. Cl. 360—77 **9 Claims**



1. A feedback servomechanism for positioning a head adjacently to a selectable one out of a plurality of concentric, circular, data storage tracks on a rotary disc in a disc data store, said servomechanism comprising;

a head position transducer coupled to said head and providing, as output, a plurality of signals indicative of the radius of interaction of said head on a disc,

a feedback signal selector for providing, in response to a selection signal, a selectable one out of said plurality of output signals from said transducer as the feedback signal for said servomechanism, and,

a controller for examining the accuracy with which said head is positioned relatively to said tracks when each of said plurality of output signals from said transducer is provided as the feedback signal to said servomechanism and for providing said selection signal to said selector to select that one out of said plurality of transducer output signals which positions said head relatively to said tracks with least error, whenever it is required that said head be so positioned.

4,524,398

VELOCITY CONTROL DEVICE FOR MAGNETIC DISC APPARATUS AND METHOD THEREFOR

Masao Fujiki, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 12, 1983, Ser. No. 494,019

Claims priority, application Japan, May 17, 1982, 57-82667

Int. Cl.³ G11B *5/55*

U.S. Cl. 360—78 **2 Claims**

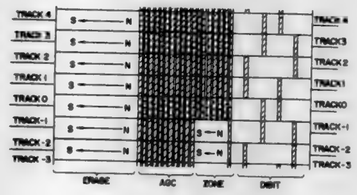
1. A velocity control device for a magnetic disc apparatus for reading out from or writing data on a recording track of a magnetic disc having servo sectors and data sectors, using a magnetic head, comprising:

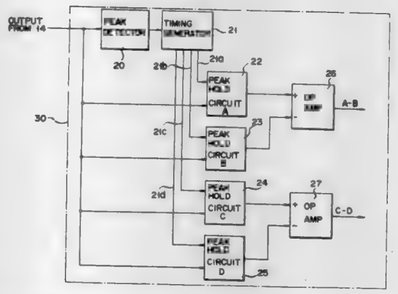
(a) position signal generating means for generating a two-phase signal which determines a target position of said magnetic head;

(b) analog-to-digital signal converting means for converting the two-phase signal to a digital signal;

(c) computing means for computing a target velocity and a real velocity of said magnetic head from the digital signal and for computing a difference between the target velocity and the real velocity;

(d) digital-to-analog signal converting means for converting the difference obtained by said computing means to an analog signal; and





(e) driving means for driving said magnetic head in accordance with the analog signal.

4,524,399

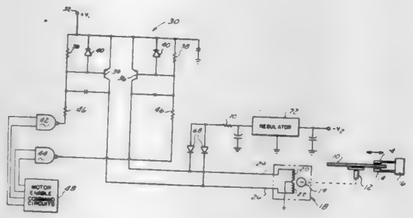
MAGNETIC DISK MEMORY POWER SUPPLY

David B. Jepsen, San Jose, Calif., assignor to Tandon Corporation, Chatsworth, Calif.

Filed Jun. 2, 1982, Ser. No. 384,428

Int. Cl.³ G11B *5/012, 5/45;* **G05B** *19/40;* **G04B** *19/00*

U.S. Cl. 360—97 **6 Claims**



1. A magnetic disk memory apparatus including:

a rotatable magnetic disk;

a transducer operatively associated with the disk for transferring data signals to and from the disk;

a motor for rotating the disk, the motor having terminals;

means for applying electrical energizing pulses to the motor terminals, voltages induced by the action of the motor appearing at the terminals between energizing pulses; and

means for conditioning the induced voltages to provide an output usable as a source of electrical power for various electrical components of the disk memory apparatus.

4,524,400

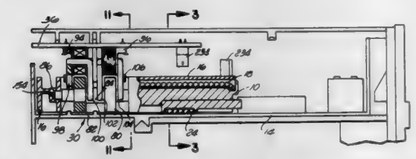
MAGNETIC TRANSDUCER POSITIONING APPARATUS

Gill Cantwell, 2434 Purdue Ave., Los Angeles, Calif. 90064

Filed Feb. 1, 1983, Ser. No. 462,740

Int. Cl.³ G11B *5/55, 21/08*

U.S. Cl. 360—106 **24 Claims**



1. Magnetic transducer positioning apparatus comprising:

(a) a carriage carrying magnetic transducer means;

(b) means for applying a force to said carriage to move said carriage to a predetermined position including:

(1) a first member having a first plurality of force receiving surfaces of a first predetermined spacing;

(2) a second member disposed adjacent said first member and having a second plurality of force receiving surfaces of a second predetermined spacing, said second predetermined spacing being different from said first predetermined spacing;

(3) a driving means disposed adjacent said first and second members;

(4) means for moving said driving means into simultaneous engagement with said first and second surfaces for aligning at least one of said second surfaces with one of said first surfaces; and

(5) one of said first and second members being substantially fixed relative to the other of said first and second members.

4,524,401

MAGNETIC TRANSDUCER HEAD UTILIZING MAGNETO RESISTANCE EFFECT WITH A BIAS FIELD AND PARTIAL SATURATION

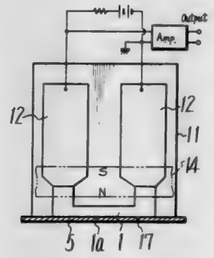
Hiroyuki Uchida; Takehiro Nagaki, both of Yokohama; Shigeyoshi Imakoshi, Atsugi; Yutaka Soda, Yokohama; Junkichi Sugita, Ebina, and Tetsuo Sekiya, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,423

Claims priority, application Japan, Dec. 26, 1980, 55-186502

Int. Cl.³ G11B *5/30*

U.S. Cl. 360—113 **11 Claims**



1. A magnetic transducer head utilizing magneto resistance effect, comprising:

a thin film magneto resistance effect element having an elongated edge arranged to closely confront a record track of a magnetic recording medium for scanning coupling with a signal recorded on the record track, said elongated edge being elongated in a longitudinal direction,

current supplying means connected with said element to produce a current flow in the longitudinal direction in said element,

biasing means coupled with said element to apply a D.C. bias magnetic field to said element, and

means comprising the configuration of said element and the disposition of said elongated edge relative to said biasing means such that a demagnetizing field is produced which is relatively intense in a first region of said element at said elongated edge and is relatively less intense in a second region of said element remote from said elongated edge, with said D.C. bias magnetic field being of a strength to saturate said element at the second region thereof while the first region remains sensitive to a signal magnetic field from said record track of the magnetic recording medium.

4,524,402

ROTARY MAGNETIC HEAD DRUM APPARATUS

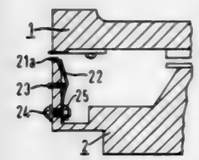
Sachio Ueda, Sagamihara; Shigehiro Toriyama, Yamato, and Yuichi Matsushita, Ebina, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 29, 1982, Ser. No. 393,295

Claims priority, application Japan, Jul. 3, 1981, 56-103202

Int. Cl.³ G11B *5/10, 15/60*

U.S. Cl. 360—130.24 **7 Claims**



1. A rotary magnetic head drum apparatus of a helical scan type video tape recorder comprising a drum at least a portion of which is fixed, said drum having an outer surface around which a magnetic tape is wound for reproduction, at least one rotary magnetic head having a contact surface of a predetermined shape for reproducing a signal from said magnetic tape, said head moving through at least one switching position relative to said drum and which is located substantially adjacent to a position where said magnetic tape tangentially contacts said drum, said contact surface of the head contacting said tape during reproducing; and a member having approximately said predetermined shape of said contact surface of the head and projecting radially from the outer surface of said drum adjacent to said switching position to contact said magnetic tape and locally displace said magnetic tape radially outward from said outer surface thereby to reduce impact error in a signal reproduced from said magnetic tape by said magnetic head.

4,524,403

WASHING MACHINE MOTOR SPEED CONTROL CIRCUIT

Siya V. Seth, Barking, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 21, 1983, Ser. No. 515,734

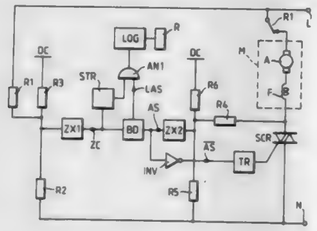
Claims priority, application United Kingdom, Aug. 6, 1982, 8222699

Int. Cl.³ H02H *3/26*

U.S. Cl. 361—86 **13 Claims**

1. A washing machine motor speed control circuit comprising: a semiconductor controlled rectifier (SCR) connected in series with the motor to an AC mains supply voltage, a trigger circuit for firing the SCR at a controllably variable instant in each half cycle of the AC mains supply voltage in order to control the average power applied to the motor, means for detecting a short circuit fault in said SCR comprising a bistable

device arranged to be set to a first state each time the modulus of the mains supply voltage drops below a first value and thereafter to be set to a second state only if the modulus of the voltage across the SCR subsequently rises to a second value greater than the first value, and a logic circuit which causes the



mains supply voltage to the motor to be disconnected if the bistable device is not set to its second state in each half cycle of the mains supply voltage for a given number, exceeding two, of consecutive half cycles of the same polarity or of alternating polarity.

4,524,404

HIGH VOLTAGE INSULATOR ASSEMBLAGE HAVING SPECIALLY-CHOSEN SERIES RESISTANCE

Manoranjan P. Verma, Goethestrasse 5, D-6805 Heddesheim, Fed. Rep. of Germany

Filed Jun. 3, 1982, Ser. No. 384,603

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 3125203; European Pat. Off., Feb. 5, 1982, 82100844.8

Int. Cl.³ H01B *17/42*

U.S. Cl. 361—132 **16 Claims**



1. An insulator assemblage which defines a path between ground and a high voltage electrical line, comprising (a) at least one first body having a plurality of sheds, comprising an insulator material and having a characteristic critical leakage current pulse i; and (b) at least one second body comprised of a resistance material, said second body being conductively connected in series with said first body, the product of the resistance r of said resistance body and i being approximately 5% to 30% of the total line-to-ground voltage across said assemblage.

16. A method for preventing flashover in an insulator exposed to atmospheric pollution, comprising the steps of:

(a) determining a characteristic critical leakage current pulse i for said insulator; and

(b) conductively connecting a resistance body having a predetermined resistance value r in series with said insulator, whereby an insulator assemblage is formed,

the product of r and i being between approximately 5% to 30% of the total line-to-ground voltage across said insulator assemblage.

4,524,405

FAN-SHAPED INDIRECT LIGHTING REFLECTOR

Charles M. Heard, 107 Aribe Dr., San Antonio, Tex. 78216

Filed Sep. 8, 1983, Ser. No. 530,369

Int. Cl.³ G03B *15/02*

U.S. Cl. 362—18 **20 Claims**



1. A collapsable light-reflector apparatus in an improved means for utilization of an idependent light-source of known flashing or constant beam types in producing indirect-lighting effects, as are principally used in photography wherein a unit of said light-source types is secured inversly to an area to be illuminated by the emitted beam being reflected by means of positioned reflective device to thereby indirectly illuminate said area, the improvement reflector apparatus comprises a fan-shape flexible cover having an inner-surface of reflective material and being supported and forward-contoured by a radial array of elongated pre-curved ribs and stays of semi-rigid material, said array being pivotally retained upon the upper-section of a two-sectional support structure, said upper-section structure comprises attaching, positioning and frictional stabilization means for directing the beam of one said light-source to impact said cover's inner-surface at an upward oblique angle to thereby cause the beam to deflect and diffuse into broadened patterns of richochetted rays reflected onto the area to be so illuminated by indirect-lighting effects, said lower-section support comprises means for axially tilting and stabilizing said upper-section as a means of directionally controling said richochetted rays, additionally said lower-section support structure comprises means for mounting and stabilizing said reflector apparatus upon conventional light-support types of equipment, as is in general use by photographers.

4,524,406

COMPACT LASER SIMULATOR

James R. Schaffer, Jr., Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 20, 1983, Ser. No. 515,206

Int. Cl.³ F21V *7/04*

U.S. Cl. 362—32 **9 Claims**

1. A compact laser simulator for simulating a laser spot on or off axis when testing laser range and spot receivers and the like, the simulator comprising:

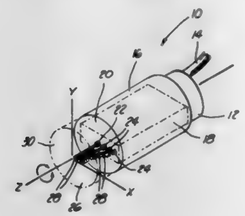
a stationary mount having an electrical power source connected thereto;

an electronic control housing rotatably attached to the mount and the power source, the housing having electronic controls therein;

a light source mounting plate attached to the front of the control housing;

an "on" axis light source mounted in the center of the mounting plate; and

at least one "off" axis light source mounted on the mounting plate and in a spaced relationship to the "on" axis light



source, the "on" axis and "off" axis light sources connected to the electronic controls.

4,524,407

DEVICE FOR ADJUSTING THE INCLINATION OF THE LIGHT AXIS OF A HEADLAMP FOR MOTOR VEHICLES

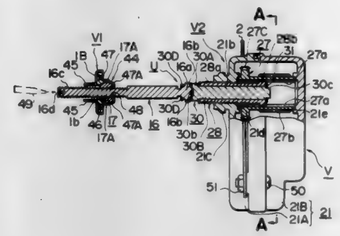
Kenkichi Igura, Fujisawa, Japan, assignor to Ichikoh Industries, Ltd., Tokyo, Japan

Filed Aug. 10, 1984, Ser. No. 639,318

Claims priority, application Japan, Aug. 16, 1983, 58-126165[U]; Aug. 29, 1983, 58-132167[U]

Int. Cl.³ F21V *3/18*

U.S. Cl. 362—66 **6 Claims**



1. A device for adjusting the inclination of the light axis of a headlamp for motor vehicles comprising:

a level-adjusting means including

a casing;

a driver mans having a motor housed in the casing;

a hollow gear means operationally connected to the driver means and located in the casing in such a way that it is rotated at a certain position in the casing by means of the driver means;

a cylindrical means inserted into the hollow gear means and moved linearly when the hollow gear means is rotated;

a converter means for converting the rotation of the hollow gear means to a force which causes the cylindrical body means to move linearly; and

an adjusting rod means arranged through the cylindrical means and reciprocated in association with the movement of the cylindrical body means to adjust the light axis of the headlamp,

and

aim-adjusting means having a connecting rod, which is connected, at one end thereof, to the adjusting rod means of the level-adjusting means through a first universal coupling means, arranged coaxially with the adjusting rod means, arranged coaxially with the adjusting rod means, connected at the middle portion thereof, to the headlamp through a second universal coupling means, and extended, at the ofhter end thereof, from the front side of the headlamp for hand-operated adjustment.

4,524,408

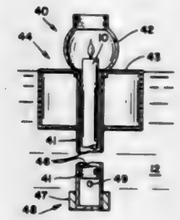
CANDLE HOLDER COMBINATION

Salvador A. Mineta, 1921 Taraval, San Francisco, Calif.

Filed Jun. 21, 1984, Ser. No. 622,962

Int. Cl.³ F21L *19/00*

U.S. Cl. 362—163 **22 Claims**



1. The combination for holding a candle having a specific gravity less than unity with given cross-sectional dimensions and a length which is at least twice as great as said given cross-sectional dimensions; comprising float means including a passageway dimensioned to receive said cross-sectional dimensions of said candle with a close sliding fit and having an axial length of at least about one inch; a container of water for freely receiving said float means with said candle in said passageway; and stabilizing means beneath the surface of said water within said container for maintaining said axial length of said passageway in a substantially vertical position with the upper end of said passageway at the surface of said water in said container when said candle is received in said passageway.

4,524,409

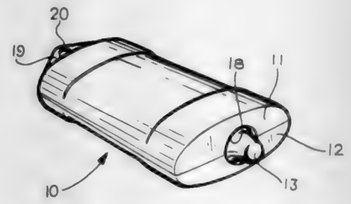
FLASHLIGHT

Louis Yakubek, Berlin, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 21, 1984, Ser. No. 592,043

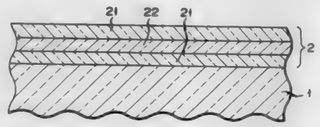
Int. Cl.³ F21L *7/00*

U.S. Cl. 362—189 **8 Claims**



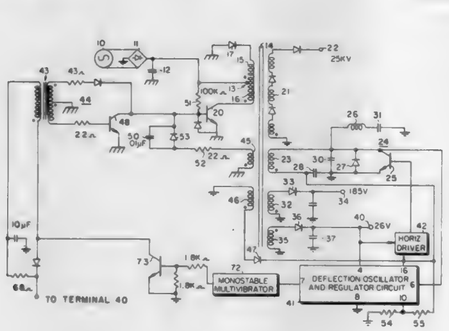
1. In a battery operated flashlight wherein an end portion of a bulb extends through one end of an elongated casing which supports the bulb, a pair of batteries in side-by side, spaced relationship and a circuit which is completed between the batteries and the bulb by compressing the sides of the casing, the improvement wherein said casing is formed of two identical elongated, semi-eliptical, molded plastic halves, marginally sealed together in face-to-face relationship with the end portion of the bulb extending through an opening formed by matching semi-circular walls at the margin of one end of the halves.

4,524,410
INCANDESCENT LAMP WITH FILM OF ALTERNATELY STACKED LAYERS
Akira Kawakatsu, and Fumio Yamamoto, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Sep. 23, 1983, Ser. No. 535,162
Claims priority, application Japan, Sep. 28, 1982, 57-167603
Int. Cl.³ F21M *3/14*
U.S. Cl. 362—255 **4 Claims**



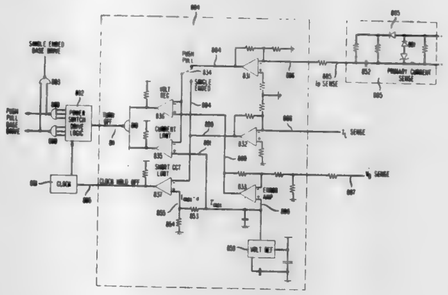
1. An incandescent lamp comprising:
a glass bulb having a built-in filament; and
a transparent film formed on at least one surface of said bulb, said transparent film having a structure containing at least three layers wherein a first layer comprising a non-crystalline metal oxide and having a first reflectivity and a second layer comprising a metal oxide and having a second reflectivity which is different from said first reflectivity are alternately stacked.

4,524,411
REGULATED POWER SUPPLY CIRCUIT
Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.
Filed Sep. 29, 1982, Ser. No. 426,360
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 **9 Claims**



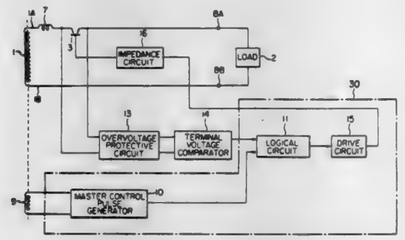
1. A switched mode regulated power supply for a television receiver having a plurality of load circuits comprising:
a source of unregulated potential;
a first transformer winding;
switching means for selectively coupling said source of unregulated potential to said first transformer winding when in a conducting condition and for uncoupling said source of unregulated potential from said first transformer winding when in a nonconducting condition;
at least a second transformer winding magnetically coupled to said first winding for receiving energy from said first winding and coupled to said load circuits for energizing at least one of said load circuits, the amount of said energy received by said second winding being limited by the degree of coupling between said first and second windings;
means coupled to said second transformer winding and to said switching means for causing said switching means to switch between its conducting and nonconducting conditions; and
a supplemental transformer winding magnetically coupled to said first transformer winding more tightly than the coupling between said first and second transformer windings for receiving energy from said first transformer winding in order to provide additional energy to said at least one of said load circuits to supplement energy received by said one load circuit from said second winding.

4,524,412
PEAK CURRENT CONTROLLED CONVERTER WITH ADDITIONAL CURRENT THRESHOLD CONTROL LEVEL TO LIMIT CURRENT TAILOUT DURING OVERLOAD CONDITIONS
Wing K. Eng, Stanhope, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 6, 1983, Ser. No. 501,501
Int. Cl.³ H02H *7/122*
U.S. Cl. 363—56 **6 Claims**



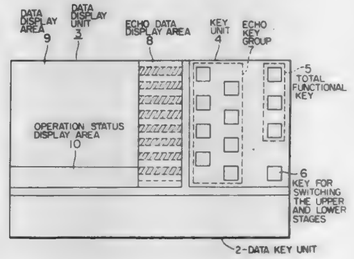
1. A power converter circuit comprising
input means for accepting a DC voltage,
output means for accepting a load,
a power switch connected to couple the input means to the output means,
means for periodically initiating conduction in the power switch,
means for sensing a current in the power switch,
means for sensing a voltage at the output means,
means for comparing a voltage of said means for sensing a voltage and generating an error voltage,
means for converting a current at said means for sensing a current to a representative voltage,
means for comparing the error voltage with the representative voltage and generating a stop signal when the representative voltage equals the error voltage to achieve voltage regulation,
means for terminating conduction in the power switch in response to the stop signal of the means for comparing,
means for establishing a current regulation voltage,
means for comparing the current regulation voltage with the representative voltage and generating a second stop signal when the current regulation voltage equals the representative voltage to achieve current regulation,
means for establishing a tailout control voltage,
means for comparing the representative voltage with the tailout control voltage and generating a disable signal when the representative voltage is greater than the tailout control voltage, and
means for inhibiting operation of the means for periodically initiating conduction in the power switch in response to the disable signal.

4,524,413
AC RECTIFIER HAVING SEMI-CONDUCTOR ACTIVE RECTIFYING ELEMENT
Tsuneo Ikenoue, 14-6, Ichiban-cho 1-chome, Sendai-shi, Miyagi; Shin-yng Liu, Miyagi; Naoki Arai, Tokyo, and Shuichi Umemoto, Kanagawa, all of Japan, assignors to Tsuneo Ikenoue; Tohoku Ricoh Co. Ltd., both of Miyagi; Stanley Electric Co., Ltd. and Micron Kiki Co., Ltd., both of Tokyo, all of, Japan
Continuation-in-part of Ser. No. 216,923, Dec. 16, 1980, Pat. No. 4,356,541. This application Sep. 9, 1982, Ser. No. 416,315
Claims priority, application Japan, Dec. 19, 1979, 54-165011
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclosed.
Int. Cl.³ H02M *7/217*
U.S. Cl. 363—127 **3 Claims**



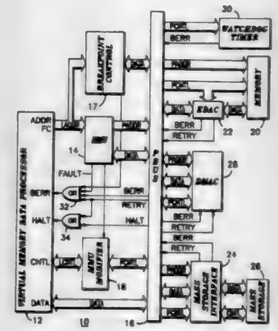
1. A rectifier for an AC input voltage, comprising:
a semiconductor active rectifying element having two main terminals and a control terminal;
a terminal voltage comparator coupled to said main terminals for comparing the input voltage with the output voltage of said semiconductor active rectifying element; and
a pulse control circuit comprising a master control pulse generator coupled to said terminal voltage comparator, an operational circuit and a drive circuit coupled to the control terminal of said semiconductor active element for controlling the same in response to the output from said master control pulse generator.

4,524,414
NUMERICAL CONTROLLER
Morio Kiyokawa, Nagoya, Japan, assignor to Mitsubishi Denki Kanushiki Kaisha, Tokyo, Japan
Filed Dec. 2, 1982, Ser. No. 446,198
Claims priority, application Japan, Dec. 9, 1981, 56-198177
Int. Cl.³ G06F *15/46, 3/14*
U.S. Cl. 364—171 **15 Claims**



1. In a numerical controller comprising an input unit which introduces tool instructions, a memory unit which stores tool instruction numbers introduced through said input unit, an output unit which sends tool instruction numbers stored in said memory unit to a machine tool, an arithmetic unit, a control unit which controls said input unit or memory unit operation, and a setting display unit which sets tool data, machining data, and the like to said memory unit,
said setting display unit comprises:
a display unit which includes an echo display area for displaying a plurality of sets of echo data, each set being composed of a pair of echo data, a data display area for displaying data, and a numerically-controlled operation status display area for displaying the numerically-controlled operation condition;
a total functional key group for selecting pictures that respond to desired functions of said display unit;
a switching key for switching the upper and lower stages such that either the upper stages or the lower stages of each of the sets of echo data displayed on said echo display area will become effective; and
an echo key group which is provided to respond to each of the sets of echo data displayed on said echo display area, and which sets or resets the echo data that are rendered effective by said switching key.

4,524,415
VIRTUAL MACHINE DATA PROCESSOR
Marvin A. Mills, Jr., Indiatlantic, Fla.; William C. Moyer, Austin, Tex.; Douglas B. MacGregor, Austin, Tex., and John E. Zolnowsky, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 7, 1982, Ser. No. 447,721
Int. Cl.³ G06F *9/30*
U.S. Cl. 364—200 **8 Claims**



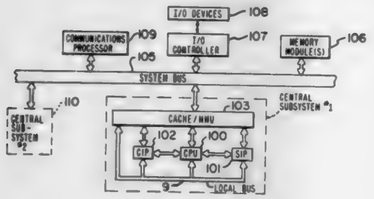
1. A virtual machine data processor comprising:
external access means for providing access to a resource external to said data processor;
instruction execution control means coupled to said external access means, for controlling the execution by said data processor of at least one instruction which requires at least one access to said resource via said external access means;
access fault recovery means coupled to said external access means and to said instruction execution control means, for storing information indicative of the state of said instruction execution control means as of the time a fault is detected with said one access, said access fault recovery means restoring the state of said instruction execution control means using said stored state information after said fault has been corrected and then enabling said instruction execution control means to resume execution of said one instruction from said restored state; and
access rerun control means coupled to said external access means and to said access fault recovery means, for enabling said external access means to rerun said one access upon said access fault recovery means enabling said instruction execution control means to resume execution of said one instruction, except in response to a rerun signal indicating that said one access should not be rerun.

4,524,416

STACK MECHANISM WITH THE ABILITY TO DYNAMICALLY ALTER THE SIZE OF A STACK IN A DATA PROCESSING SYSTEM

Philip E. Stanley, Westboro, and Piotr Szorc, Carlisle, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 140,624, Apr. 15, 1980,. This application Sep. 30, 1982, Ser. No. 430,488
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **8 Claims**



1. In a data processing system having a memory comprised of a plurality of addressable storage locations and a processing unit for executing procedures, each of the procedures including a series of operands, a stack control mechanism comprising:

stack forming means for establishing in said memory a stack of said addressable storage locations for storing said operands;

frame forming means for dynamically altering the number of storage locations in said stack by (1) acquiring a stack frame associated with each procedure to be executed by said processing unit, each of said stack frames comprising one or more storage locations for storing operands and data relating to said associated procedures, (2) modifying the number of storage locations in said acquired stack frame responsive to execution of said associated procedure; and (3) relinquishing each of said storage location in a stack frame after the execution of said associated procedure to make said relinquished storage location available to said processing unit, the most recently acquired stack frame comprising the top stack frame;

a bottom of frame register associated with each of said acquired stack frame for storing the number of storage locations included in said associated stack frames;

stack frame control means for dynamically modifying the size of said top stack frame by adding storage locations thereto or deleting storage locations therefrom in response to said processing unit executing said procedure associated with said top stack frame;

a stack top register for storing the address of the storage location in said top stack frame storing the operand most recently stored in said top stack frame;

a stack base register for storing the address of said storage location immediately preceding a storage location storing the first operand stored in said top stack frame;

means for updating the contents of said stack top register and said stack bottom register whenever a said operand is added to or deleted from said top stack frame; and

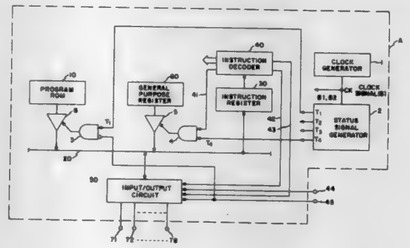
operand accessing means for selectively accessing an operand stored in said top stack frame by indexing relative to the address stored in said stack top register or to the address stored in said stack base register.

4,524,417

TIMING SIGNAL CONTROLLED INFORMATION PROCESSING SYSTEM

Manabu Kimoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,086
Claims priority, application Japan, Jan. 23, 1981, 56-8627
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **6 Claims**



1. An input-output interface circuit coupled to an internal bus in a data processing apparatus, said interface circuit comprising:

at least one first external terminal through which data is transferred;

first gating means coupled to said internal bus and to said first external terminal for transferring data from said internal bus to said first external terminal in response to a first gating signal;

second gating means coupled to said internal bus and to said first external terminal for transferring data from said first external terminal to said internal bus in response to a second gating signal;

a first path for applying said first gating signal to said first gating means;

a second path for applying said second gating signal to said second gating means;

a second external terminal for receiving a first control signal from outside of said data processing apparatus;

a third external terminal for receiving a second control signal from outside of said data processing apparatus;

first control means coupled to said first path for generating said first gating signal in response to either one of said first control signal received at said second external terminal and a reading signal generated within said data processing apparatus, said first control means transferring said first gating signal to said first path; and

second control means coupled to said second path for generating said second gating signal in response to either one of said second control signal received at said third external terminal and a writing signal generated within said data processing apparatus, said second control means transferring said second gating signal to said second path.

4,524,418

DEMAND ESTIMATION APPARATUS

Shinji Araya, Takarazuka, and Shintaro Tsuji, Nagoya, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

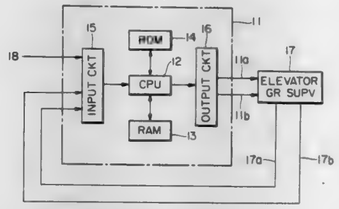
Filed Aug. 12, 1983, Ser. No. 522,696
Claims priority, application Japan, Aug. 24, 1982, 57-146512
Int. Cl.³ B66B *1/20*
U.S. Cl. 364—436 **10 Claims**

1. A demand estimation apparatus for controlling machines wherein a plurality of previous cycles and a present cycle of a fluctuating demand value are divided into a plurality of adjoining sections of given time width wherein the demand value in each section is measured and an stimated demand value is provided based on a measured value, said apparatus comprising:

means for dividing the present cycle of fluctuating demand value to provide adjusting sections between adjoining sections,

means for measuring the demand value in each adjusting section and for providing an estimated demand value based on the measured demand value,

means for comparing the estimated demand value of an adjusting section with the esimated demand values of the two sections adjoining the adjusting section to decide if the estimated demand value of the adjusting section approxi-



mates the estimated demand value of either one of the two adjoining sections in excess of a predetermined reference value, and for moving the whole adjusting section toward the other adjoining section by a predetermined time width to a shifted position with the time widths of the adjoining sections also being revised by the amount of the shift when the approximation holds,

delivering means for delivering the estimated demand values of the revised adjoining sections and the shifted adjusting section as revised estimated values accounting for fluctuations in the demand, and

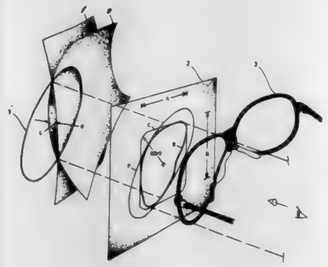
means for controlling machines in accordance with the revised estimated values.

4,524,419

SYSTEM FOR DETERMINING THE OPTIMAL GROUND DEPTH OF AN OPHTHALMIC LENS HAVING A CLOSED HOMEOMORPHIC BOUNDARY

Larry M. Headlund, Brookline; Gary J. Marksteiner, Boston, and Richard S. Sidell, Needham, all of Mass., assignors to Intelab Medical Systems, Inc., Boston, Mass.

Filed Sep. 13, 1982, Ser. No. 417,547
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—474 **4 Claims**



1. A system for determining the optimal ground depth of an ophthalmic lens having a closed homeomorphic boundary, comprising:

means for graphically projecting an orbit of the prescribed lens;

means for superimposing a projection of a spectacle frame onto the graphical projection of said orbit; and

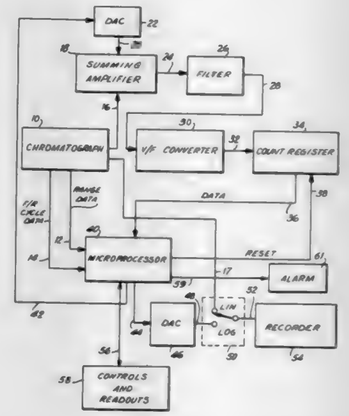
means for dynamically adjusting said orbit to circumscribe the projection of said spectacle frame.

4,524,420

SIGNAL PROCESSING APPARATUS

David O. Glodo, and James McFaddin, both of Dallas, Tex., assignors to Core Laboratories, Inc., Dallas, Tex.

Filed Aug. 25, 1982, Ser. No. 411,522
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—497 **24 Claims**



1. Apparatus for processing an input signal from a chromatograph, comprising:

logarithmic means connected to the chromatograph for receiving said input signal and producing a logarithmic signal which is indicative of the logarithm of said input signal;

detecting means connected to the chromatograph for receiving said input signal, detecting peaks therein, and producing a signal indicating the occurrence of said peaks; and

means connected to said logarithmic and detecting means for providing said logarithmic signal and said indicating signal as outputs of said processing apparatus.

4,524,421

COMPUTERIZED GRAPHICS SYSTEM AND METHOD USING AN ELECTRONICALLY SYNTHESIZED PALETTE

Anthony D. Searby, and Ian C. Walker, both of Newbury, England, assignors to Quantel Limited, Newbury, England

Filed Mar. 22, 1982, Ser. No. 360,732
Claims priority, application United Kingdom, Mar. 11, 1982, 8207084
Int. Cl.³ G06F *3/14, 15/20*; H04N *7/18*
U.S. Cl. 364—521 **26 Claims**

1. A computerized graphics system comprising:

a video screen;

synthesized palette means for generating computer signals defining at least two source colors;

selector means for selecting color-defining signals from the palette means;

processing means for mixing the color-defining signals to generate a blend signal defining the color of a blend of the selected source colors and for causing the video screen to display the blend color; and

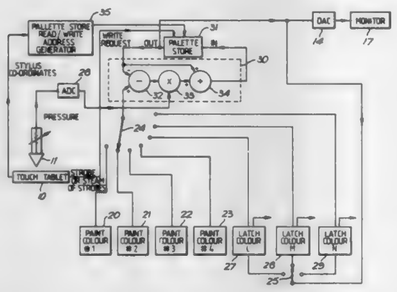
means for storing the blend signal in the palette means for future use as a source color.

26. A system comprising:

(a) a video signal monitor having a display screen;

(b) a palette store having a plurality of storage locations

corresponding to picture points on the palette area on said screen;
(c) means for causing signals from said storage locations in the palette store to be reproduced at the corresponding picture points in the palette area of the screen;
(d) a source of a plurality of color video signals representing different colors;
(e) means for selecting a color video signal from said source;
(f) operator means responsive to operator input to designate selected picture points in said palette area;



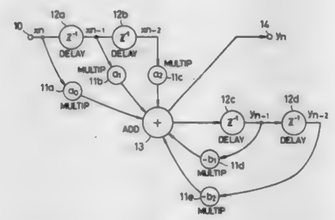
(g) means responsive to the designation of a picture point by the operator means for reading a signal stored in said palette store at a location corresponding to the designated picture point;
(h) processor means for blending the signal read from the palette store with a selected color video signal to generate a blended video signal;
(i) means for storing said blended color video signal in said palette store;
(j) means for reading the blended color signal from the palette store and for selectively storing it in further storage.

4,524,422

DIGITAL EQUALIZER CAPABLE OF VARYING THE CENTER FREQUENCY, QUALITY FACTOR, AND GAIN TO PERFORM VARIOUS FREQUENCY CHARACTERISTICS

Masao Kasuga, Sagamihara, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 15, 1980, Ser. No. 187,328
Claims priority, application Japan, Sep. 14, 1979, 54-118627; Sep. 14, 1979, 54-118628
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—724 **1 Claim**



1. A digital equalizer capable of arbitrarily varying at least one of a center frequency, a quality factor (Q), and a gain of the equalizer to perform various frequency characteristics, said digital equalizer comprising: first delay means for delaying an input digital signal by a sampling period (T);
second delay means for delaying the output signal of said first delay means by the sampling period (T);
first multiplier means for multiplying the input digital signal by a first coefficient (a_0);
second multiplier means for multiplying the output signal of said first delay means by a second coefficient (a_1);
third multiplier means for multiplying the output signal of said second delay means by a third coefficient (a_2);
adding means for adding the output signals of the first, second, and third multiplier means and first and second feedback signals;
third delay means for delaying the output signal of said adding means by the sampling period (T);
fourth delay means for delaying the output signal of said third delay means by the sampling period (T);
fourth multiplier means for multiplying the output signal of said third delay means by a fourth coefficient (b_1) to produce said first feedback signal;
fifth multiplier means for multiplying the output signal of said fourth delay means by a fifth coefficient (b_2) to produce said second feedback signal;
the output signal of said adding means being derived as the output signal of said digital equalizer;
said digital equalizer having a transfer function H (z) which is a z-transform of a transfer function H (s) in Laplace transform expressed by

$$H(s) = k\frac{s^2 + \frac{\omega_{02}}{Q_2}s + {\omega_{02}}^2}{s^2 + \frac{\omega_{01}}{Q_1}s + {\omega_{01}}^2}$$

wherein k is a normalizing coefficient, $\omega_o 1$ and $\omega_o 2$ are angular frequencies of the pole and zero respectively, Q_1 is a quality factor primarily selected for the equalizer to perform a band-pass characteristic, and Q_2 is a quality factor primarily selected for the equalizer to perform a band-elimination characteristic, said transfer function H (s) having conjugate pairs of poles and zeros which lie on positions on the same circle of a radius ω_c in the s-plane, wherein $\omega_o 1$ and $\omega_o 2$ are angular frequencies of the pole and zero respectively, ω_c is a center angular frequency of the band-pass characteristic and the band-elimination characteristic performed respectively by said digital equalizer, an angle (θ_1) between a line passing one of the positions of the conjugate pair of poles from the origin of the s-plane and the negative real axis and an angle (θ_2) between a line passing one of the positions of the conjugate pair of zeros from the origin of the s-plane and the negative real axis being so selected that $\cos\theta_2/\cos\theta_1$ is equal to the gain Q1/Q2 at the center frequency of the band-pass characteristic and band-elimination characteristic of said digital equalizer respectively, said second coefficient, (a_1) being equal to

$$-e^{-\omega_c T p} \times 2\cos(\omega_c T\sqrt{1-p^2})$$

wherein p equals $\cos\theta_2$, said third coefficient (a_2) being equal to $e^{-2\omega_c Tp}$, said fourth coefficient (b_1) being equal to

$$-e^{-\omega_c T q} \times 2\cos(\omega_c T\sqrt{1-q^2})$$

wherein q equals $\cos\theta_1$, said fifth coefficient (b_2) being equal to $e^{-2\omega_c Tq}$, and said first coefficient (a_0) being equal to

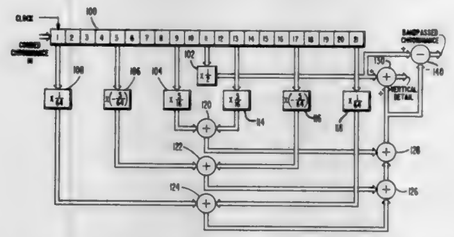
$$\left|\frac{1 + a_1 + a_2}{1 + b_1 + b_2}\right|.$$

4,524,423

DIGITAL SIGNAL SEPARATION FILTERS

Alfonse Acampora, Staten Island, N.Y., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 6, 1981, Ser. No. 319,061
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—724 **10 Claims**



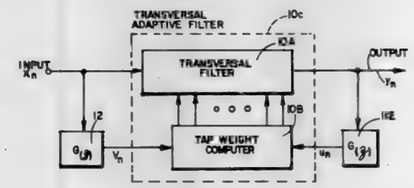
1. A digital filter for separating signals occupying separate frequency portions of a contiguous range of input signal frequencies, comprising:
a source of input signal;
delaying means, including a shift register coupled to said source and having a plurality of signal taps including a center tap;
respective signal weighting means, coupled to ones of said signal taps, including a center tap weighting means, for weighting signals occurring at said taps;
means, coupled to said signal weighting means, excluding said center tap weighting means for producing at a first output port a signal which is a sum of tap-weighted signals;
first signal combining means having a first input coupled to receive said sum of tap-weighted signals and a second input coupled to said center tap weighting means for combining applied signals in a first sense to produce output signals occupying a relatively high frequency portion of said contiguous frequency range; and
second signal combining means having a first input coupled to receive said sum of tap-weighted signals and a second input coupled to said center tap weighting means for combining applied signals in a second sense to produce output signals occupying a relatively low frequency portion of said contiguous frequency range, wherein the frequency responses of said first and second signal combining means are complementary transfer functions.

4,524,424

ADAPTIVE SPECTRUM SHAPING FILTER

Stanley A. White, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 18, 1982, Ser. No. 349,871
Int. Cl.³ H03H *15/02*; G11C *19/28*; G06F *7/38*
U.S. Cl. 364—724 **8 Claims**



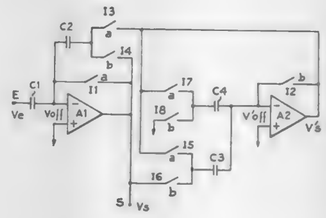
1. An adaptive spectrum shaping filter for selectively passing input signals of a preselected frequency to produce filtered output signals, said spectrum shaping filter comprising:
a transversal filter having an input for receiving said input signals, an output for producing said output signals, and a plurality of adjustable tap weights;
a tap weight computer having first and second inputs and having means for adjusting said tap weights of said transversal filter;
a first spectrum-shaping filter coupled between said computer first input and said transversal filter input for filtering said input signals and providing filtered input signals to said tap weight computer; and
a second spectrum-shaping filter coupled between said computer second input and said transversal filter output for filtering said output signals and providing filtered output signals to said tap weight computer.

4,524,425

HIGH-PASS FILTER OF THE FIRST ORDER AND APPLICATION THEREOF TO TELEPHONY

Jean C. Bertails, Grenoble, France, assignor to Societe Pour L'etude et la Fabrication des Circuits Integres Speciaux E.F.-C.I.S., Grenoble, France

Filed Jan. 10, 1983, Ser. No. 456,848
Claims priority, application France, Jan. 15, 1982, 82 00612
Int. Cl.³ G06G *7/00*; H03H *17/00*; H04B *12/02*
U.S. Cl. 364—825 **6 Claims**



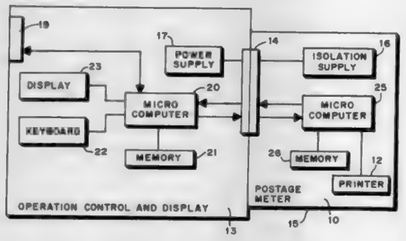
1. A sampled filter including a high-pass filtering element of the first order comprising:
first and second operational amplifiers each having an inverting input, a non-inverting input connected to a fixed potential, and an output,
a filter input,
a first capacitor coupling the filter input to the inverting input of the first amplifier,
a filter output connected to the output of the first amplifier,
a first switch connected between the inverting input and the output of said first amplifier,
a second switch connected between the inverting input and the output of the second amplifier,
a second capacitor having a first terminal coupled to the inverting input of said first amplifier and a second terminal,
a third switch coupling said second terminal of said second capacitor to the output of said second amplifier,
a fourth switch coupling said second terminal of said second capacitor to the output of said first amplifier,
third and fourth capacitors, each having a first terminal coupled to the inverting input of said second amplifier,
fifth and sixth switches respectively coupling the output of said second and first amplifier to said second terminal of said third capacitor,
seventh and eighth switches respectively coupling the second terminal of said fourth capacitor to the ouput of said second amplifier and to a reference potential, and
a switching control circuit for ensuring periodic conduction of the various switches according to two separate phases of each of a plurality of periods, the uneven numbered switches being closed during the first phase and the even numbered switches during the second phase.

4,524,426

ELECTRONIC POSTAGE METER CONTROLLABLE BY MAILING MACHINE

Alton B. Eckert, Norwalk, and Robert B. McFiggans, Stamford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 19, 1983, Ser. No. 467,724
Int. Cl.³ G06F *15/02, 15/20, 3/02*
U.S. Cl. 364—900 **16 Claims**



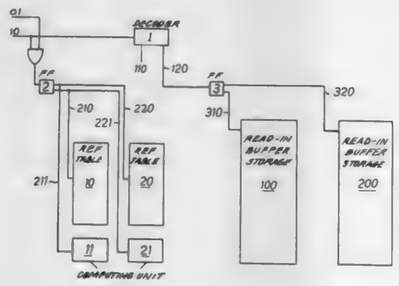
1. A portable postage meter device comprising an electromagnetically secure housing, a postage accounting system having a register and a postage printer coupled thereto within said housing, port means on said housing and comprising the sole external access to enter data in and read data from said accounting system, said port means comprising means inhibiting application of voltages directly to said accounting system from external of said housing, said port means further comprising separable intercoupling means for intercoupling said device with an external device, and serial signal transmission means in said housing for transferring signals between said port and said accounting system solely by serial coded signals, and means responsive to a determined first condition for continuously applying data corresponding to the contents of said register to said port means.

4,524,427

METHOD FOR MAKING COMPARISONS BETWEEN REFERENCE LOGICAL ENTITIES AND LOGICAL ENTITIES PROCEEDING FROM A FILE

Jacques Vidalin, Montpellier, and Jean L. Aucouturier, Gradignan, both of France, assignors to The University of Bordeaux 1, France

Filed Aug. 4, 1982, Ser. No. 404,979
Int. Cl.³ G06F *7/24*
U.S. Cl. 364—900 **9 Claims**



1. A method for sequentially comparing data elements issuing from a stream of information to reference data stored in columns of a reference data table where a comparison computing unit is associated with each of said columns of said reference table, said comparing method providing comparison results in the form of TRUE or FALSE outputs adapted to allow said data elements to be separated and collated, said method comprising the steps of:

(a) recording on a first column of said table an initial reference data and comparing at least a first of said data elements issuing from said stream of information to said reference data;

(b) recording said data elements issuing from said stream of information on a second column of said reference table to provide further reference data, said data elements being recorded simultaneously with said comparing in step (a), said further reference data being recorded to serve as reference data for a subsequent comparison affecting subsequent data elements issuing from said stream of information;

(c) applying said comparison results at the end of each comparison to said subsequent comparison to be executed, said comparison results controlling permutation of sources of data which generate said stream of information into read-out or read-in files, the permutation corresponding to a saving or deletion of data elements of said stream of information in dependence on said TRUE or FALSE outputs, said comparison results also controlling the restart or storage of items of information;

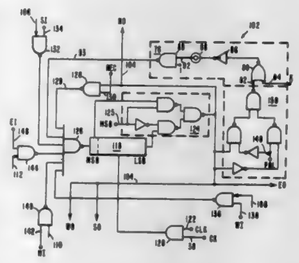
(d) applying said comparison results at the end of each comparison to said subsequent comparison to be executed, said comparison results controlling the permutation of said columns of said reference table into read-out and into read-in categories, and controlling the permutation of said computing units for comparisons corresponding to said reference table columns.

4,524,428

MODULAR INPUT-PROGRAMMABLE LOGIC CIRCUITS FOR USE IN A MODULAR ARRAY PROCESSOR

Jan Grinberg, and Siegfried Hansen, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Jan. 26, 1982, Ser. No. 342,639
Int. Cl.³ G06F *7/48*
U.S. Cl. 364—900 **17 Claims**



1. In a modular array processor associated with a control processor, said array processor being comprised of a plurality of elemental processors, each said elemental processor including a data exchange subsystem and a plurality of modules associated with said data exchange subsystem for the transfer of data thereinbetween, at least one of said modules of each said elemental processor comprising:

(a) a memory register for storing data; and

(b) an input programmable logic circuit having a plurality of control lines operatively associated with said control processor, said logic circuit being responsive to control signals provided thereby, said logic circuit including:

(i) control signal selectable means for serially receiving data from said data exchange subsystems;

(ii) control signal selectable means for combining said serially received data with serial data previously stored in said memory register and for serially storing the resultant serial data from said combination in said memory register in place of the previously stored data; and

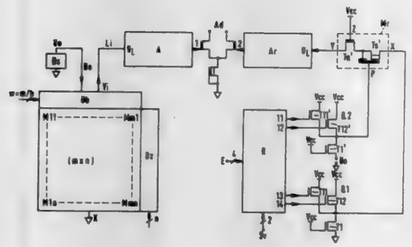
(iii) control signal selectable means for serially transmitting the resultant serial data stored in said memory register to said data exchange subsystem.

4,524,429

INTEGRATED MEMORY MATRIX COMPRISING NONVOLATILE REPROGRAMMABLE STORAGE CELLS

Burkhard Giebel, Denzlingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,349
Claims priority, application European Pat. Off., Mar. 24, 1982, 82102447.8
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—154 **3 Claims**



1. Integrated memory matrix comprising nonvolatile reprogrammable storage (memory) cells arranged in rows and columns, which are each provided with a storage transistor (Ts) from the source-drain current of which, upon selecting the address of the storage cell (M) of the storage transistor (Ts), there is derived a first voltage signal which is applied to the one input of a comparator circuit, whereas from the source-drain current of an identical reference storage transistor of like construction with respect to said storage transistor (Ts) there is derived a second voltage signal which is applied to the other input of said comparator circuit, characterized by the following features:

the first input (1) of said comparator circuit (Ad) is connected to the output of a first read amplifier, with the source-drain current of said storage transistor (Ts) of said storage cell (M) flowing in the input circuit thereof,

to the second input (2) of said comparator circuit (Ad) there is connected the output of a reference read amplifier (Ar) with the source-drain current of the storage transistor (Ts') of a non-programmable reference cell (Mr) of a construction identical to that of said storage cells (M), flowing in the input circuit thereof,

in the circuit containing the input circuit of said reference read amplifier (Ar) and the source-drain line of said storage transistor (Ts') of said reference cell (Mr), there is arranged a first voltage source (Q1) whose voltage is adjustable in a step-by-step manner, and/or the gate electrode of said storage transistor (Ts') of said reference cell (Mr) is connected to the one terminal of a stepwisely adjustable second voltage source (Q2), and

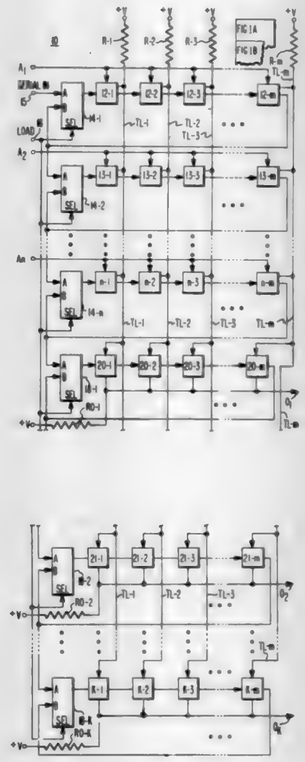
said reference read amplifier (Ar), said reference cell (Mr) and said stepwisely adjustable voltage sources (Q1, Q2) or one of said voltage sources (Q1, Q2) are/is integrated in the semiconductor body of said memory matrix (S) respectively.

4,524,430

DYNAMIC DATA RE-PROGRAMMABLE PLA

David W. Page, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 11, 1983, Ser. No. 457,177
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—189 **16 Claims**



9. A re-programmable logic array comprising:

a. an AND array disposed for receiving n input signals on n input terminals and having m term lines, wherein n and m are integers greater than one, said AND array having n×m cells each of which comprises:

i. first and second transistor means coupled in series between one of said term lines and a reference potential, each of said transistor means having a control element;

ii. a first charge storage element coupled to the control element of said first transistor means;

iii. one of said n input terminals being coupled to the control element of said second transistor means;

b. an OR array providing k output lines and being coupled to said AND array by said term lines wherein k is an integer, said OR array having m×k cells each of which comprises:

i. third and fourth transistor means coupled in series between one of said output lines and a reference potential, each of said transistor means having a control element;

ii. a second charge storage element coupled to the control element of said third transistor means; and,

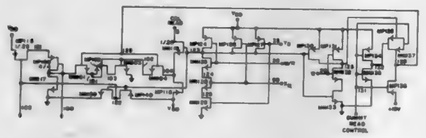
iii. one of said m term lines being coupled to the control element of said fourth transistor means.

4,524,431

HIGH-SPEED NONVOLATILE MEMORY ARRAY

Roger A. Haken, and William E. Feger, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 1, 1982, Ser. No. 344,587
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—222 **7 Claims**



1. A memory array comprising:

a matrix of non-volatile memory cells arranged in rows and columns, each said cell comprising a multi-dielectric transistor having programmable first and second threshold voltage states;

reference voltage means for providing a reference voltage intermediate between those provided by ones of said cells having said first threshold state and said second threshold state;

a plurality of comparators, each having first and second inputs respectively connected to said cells in at least one of said columns of said matrix and to said reference voltage means;

row select means for connecting said cells in one of said rows to respective ones of said comparators, each said comparator providing a digital output in accordance with the threshold voltage state of a respective one of said cells; and

refresh means connected to said matrix for reading out and rewriting said cells of said matrix one row at a time, and said refresh means being periodically actuated.

4,524,432

MEASUREMENT OF POROSITY AND FORMATION FACTOR USING SLOW COMPRESSIONAL WAVES

David L. Johnson, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 15, 1981, Ser. No. 331,059
Int. Cl.³ G01V *1/40, 1/28*
U.S. Cl. 367—25 **6 Claims**

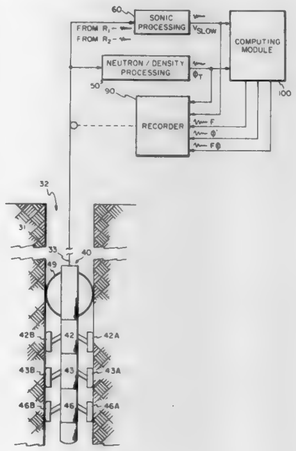
2. A method for determining the formation factor of subsurface formations, comprising the steps of:

deriving a measure of the porosity of the formations;

establishing a slow compressional wave in the formations;

measuring the velocity of the slow compressional wave that has passed through the formations; and

determining the formation factor of said formations from said velocity and said porosity, said formation factor being



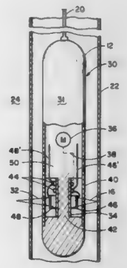
determined as proportional to the inverse of the product of said porosity and the square of said measured velocity.

4,524,433

HIGH SPEED SONIC LOGGING USING MULTIPLE TRANSDUCERS

Robert A. Broding, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 242,501, Mar. 10, 1981, abandoned. This application Aug. 18, 1983, Ser. No. 524,487
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—25 **11 Claims**



8. A method of logging a borehole in a system having a separate cable normally run at a first rate having at least a first signal channel which comprises:

(a) carrying out scanning operations around the wall of said borehole by operating at least a first and a second non-physically coincident transmit/receiver transducer subsystem means: (T/RTS) removed from each other and carried by a sonde and directing sonic energy in a radial plane around the wall of said borehole and receiving return reflected sonic energy from reflecting surfaces and producing at least a first and a second electrical scan signal representative of amplitude and transit time of reflected signals at each of a plurality of downhole locations, spaced around the wall of said borehole;

(b) delaying one of said scan signals until two scan signals obtained at a respective location and representative of amplitude and transit time of reflected signals are coincident in time;

(c) transmitting said time coincident signals representative of amplitude and transit time of reflected signals to the surface; and

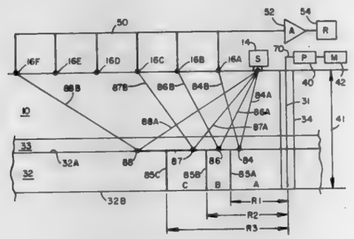
(d) recording said at least two time coincident signals while traversing the borehole with said sonde at a second rate which is higher than said first rate.

4,524,434

METHOD FOR DETERMINING THE AZIMUTH AND LENGTH OF A DEEP VERTICAL FRACTURE IN THE EARTH

Daniel Silverman, 5969 S. Birmingham St., Tulsa, Okla. 74105

Continuation-in-part of Ser. No. 268,787, Jun. 1, 1981, Pat. No. 4,479,204. This application Jun. 25, 1982, Ser. No. 392,146
Int. Cl.³ G01V *1/24*
U.S. Cl. 367—37 **19 Claims**



1. In a mineral recovery program in a selected geological formation in the earth in which said mineral in said formation is a first fluid, and in which a vertical hydraulic fracture has been created in said geological formation, by the injection of a selected pressurized second fluid through a borehole from the surface to said formation, the method of determining the azimuth and length of said fracture, after said fracture is formed, comprising the steps of:

(a) providing at least a first selected source of seismic waves at or near the surface of the earth, at at least one point in the vicinity of the mouth of said borehole;

(b) positioning at or near the surface of the earth an array of a plurality of seismic sensors at selected known positions, said sensors adapted to receive the upward reflection of downwardly directed seismic waves generated by said first source, and to convert them to electrical signals;

(c) after said fracture has been formed, selecting a third selected fluid such that when it is injected into said formation through said borehole and said fracture, there will be two zones, a first zone near to said fracture, having at least a different partial saturation of gas in liquid different from the fluid in the second zone farther from said fracture, which liquid was present before said injection of said third fluid;

(d) injecting said third selected fluid into said formation through said borehole and said fracture for a first selected period of time;

(e) operating said first seismic source a first time and comparing the first electrical signals from each of at least two sensors;

whereby if the two electrical signals are different, the reflections will be from different zones, the first of which has been invaded by said third fluid;

and

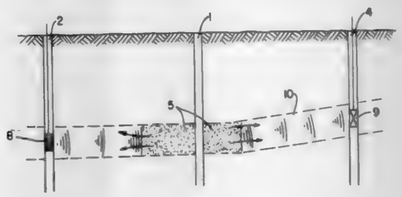
(f) making comparisons between many signals from many sensors to determine the shape, size and orientation of said first zone, which will be symmetrical with respect to said fracture.

4,524,435

METHOD FOR DETERMINING THE DEGREE OF CHANGE OF MATERIAL PROPERTIES OF UNDERGROUND STRATA

Klaus Helbig, Zeist, Netherlands, and Güenther Püsch, Celle, Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 879,430, Feb. 21, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,863
Int. Cl.³ G01V *1/00, 1/14, 1/22*
U.S. Cl. 367—41 **6 Claims**



1. A method of monitoring underground processes in which changes of material properties of underground strata occur in a limited area, especially in regard to in-situ combustions, gasifications in coal and petroleum deposits, in order to localize and determine the degree of change of material properties of underground strata, comprising the steps of:

emitting an exactly reproducible time-sequential seismic signal at different times in each geological stratum where changes are expected to take place,

receiving in the appropriate geological stratum said signals for each emitting step at one or more positions,

recording the received signals,

reversing the polarity sign of the recorded signals so as to provide another record of signals of reverse sign,

stacking the records of said received signals derived from one emitting step with the records of the signals of reverse sign derived from another emitting step to provide composite records, and

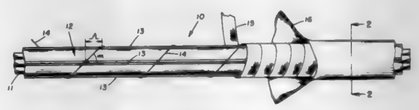
determining the magnitude of the difference signals of the composite records and the propagation time of the received signals.

4,524,436

PRESSURE WAVE FIBER OPTIC TRANSDUCER CABLE

Robert L. Hall, and Lowell T. Wood, both of Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 264,248, May 15, 1981, abandoned. This application Jul. 25, 1983, Ser. No. 517,129
Int. Cl.³ G02B *5/14;* G01H *9/00;* G01S *3/80*
U.S. Cl. 367—169 **6 Claims**



1. A pressure sensor comprising:

elongate optical fiber means for affording the transmission of light over an extended length,

means for supporting said optical fiber means along length and for minimizing the stress applied to said optical fiber means that is not associated with the pressures to be sensed,

at least two ridges extending in substantially parallel fashion along the length of said supporting means and said optical

fiber is helically wound about said support means in contact with said ridges; and

said at least two ridges are spaced from one another and said optical fiber forms a helical angle with said ridges such that the distance between adjacent contacts of the optical fiber and said ridges satisfies the relationship:

$$A = \frac{R_m \theta}{\sin \alpha}$$

where

A=arc length between contacts

$$\theta = \frac{2}{\text{number of ridges}}$$

R_m=radius of core

α=lay angle;

said ridges introducing a controlled microbending of said optic means at predetermined locations chosen to increase sensor sensitivity therealong upon the application of external pressure waves, so as to introduce modal coupling within the light energy being transmitted through said optical fiber means, which coupling corresponds to the intensity and duration of such pressure waves as are to be sensed, and

a protective jacket around and in contact with said optical fiber means, said protective jacket being constructed from a material affording a transmission of pressure therethrough.

4,524,437

SIMPLIFIED SOUND-REPRODUCING DEVICE HAVING AN EXTERNAL OUTPUT SHAFT

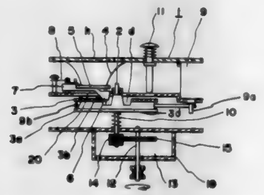
Eishi Koike, Sagamihara, Japan, assignor to Ozen Corporation, Tokyo, Japan

Filed Sep. 29, 1983, Ser. No. 536,867

Claims priority, application Japan, Jun. 24, 1983, 58-113912

Int. Cl.³ A63H *5/00, 29/00;* G11B *25/04*

U.S. Cl. 369—67 **6 Claims**



1. A simplified sound-reproducing device comprising:

a casing,

a center shaft mounted within the casing,

means for axially advancing and retracting the center shaft,

a record disc having a recorded face with starting and end points of sound reproduction, the record disc being rotatably carried by the center shaft and capable of axially advancing or retracting together with said center shaft,

a sound reproducing stylus,

a recess formed in the record disc for allowing a dropping movement thereinto of the sound-reproducting stylus,

a speaker cone tightly attached to an inner face of said casing,

a vibration transmitting member attached to the speaker cone and disposed to be confronted with the record face of said record disc,

a pickup,

a tone arm swingably mounted in the casing and at a forward end, the tone arm being normally interposed between said vibration transmitting member and said recorded face of said record disc for reciprocal movement between the starting point and end point of sound reproduction of said record disc,

a return spring normally urging said tone arm toward such directions that said pickup can move toward said starting point of sound reproduction and away from said recorded face,

a motor coupled to said record disc for driving said record disc,

a stylus force spring normally urging said record disc toward said vibration transmitting member,

a starting bar extending into said casing from outside of said casing to move said record disc against the reslient force imparted by said stylus force spring,

an output shaft projecting outside of said casing from the interior of said casing,

transmission means for coupling said output shaft with said motor via said center shaft, said transmission means comprising:

a driving wheel fixed to a portion of said center shaft and a follower wheel fixed to said output shaft and disposed in parallel with said center shaft so as to be coupled with said driving wheel and

means for causing axial movement of said center shaft and said driving wheel relative to said output shaft and said follower wheel at the end point of sound reproduction to contol the engagement between said driving wheel and said follower wheel and the coupling between said motor and said output shaft via said center shaft.

4,524,438

RECORD PLAYER WITH HINGED DUST COVER

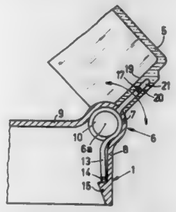
Hermanus F. Einhaus, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1984, Ser. No. 590,127

Claims priority, application Netherlands, Mar. 17, 1983, 8300959

Int. Cl.³ E05D *11/08;* G11B *17/04*

U.S. Cl. 369—75.1 **11 Claims**



1. A record player comprising a housing having an upper side, a rear, and an inner surface; a dust cover; and at least one hinge device defining a hinge axis, and connected to the dust cover and to the housing near the rear, said hinge device including a hinge coil spring arranged such that, when the dust cover is swung to an open position, the dust cover is retained in this position by the hinge spring, characterized in that

said hinge device comprises a hinge wall having an inner surface forming part of said housing inner surface, and an abutment, integral with the housing and spaced from said hinge wall inner surface and a slot formed in the housing adjacent the hinge wall, said slot extending parallel to a plane perpendicular to said hinge axis,

said housing, hinge wall and abutment are a one-piece article,

said spring comprises a first limb having an end portion, and a second limb, and

said spring is arranged such that said end portion abuts said abutment so as to urge turns of the coil of the hinge spring against the hinge wall inner surface and thereby retain said spring, said second limb projecting from the housing through the slot and being coupled directly to the dust cover.

4,524,439

ELECTROMAGNETIC PICKUP CARTRIDGE WITH FLUX SENSORS MOUNTED ABOVE MOVING MAGNET

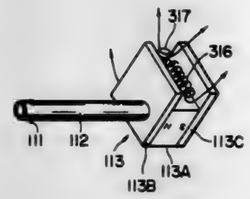
Katsuhiko Oguri, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Continuation of Ser. No. 251,902, Apr. 7, 1981, abandoned. This application Apr. 9, 1984, Ser. No. 597,807

Claims priority, application Japan, Apr. 8, 1980, 55-45947; Apr. 10, 1980, 55-47141

Int. Cl.³ H04R *11/12*

U.S. Cl. 369—136 **2 Claims**



1. An electromagnetic pickup cartridge comprising:

a movably supported flux generating means having a pair of spaced apart parallel portions of opposite polarities for generating parallel magnetic flux lines therebetween;

a cantilever having one end thereof coupled to one of said portions such that the cantilever extends in a direction aligned with the direction of said flux lines; and

a coreless structure having a coil stationarily located between said portions, said coil being wound about an axis perpendicular to the direction of said magnetic flux lines when said flux generating means is in a neutral position for generating a signal exclusively as a function of the angular displacement of said flux generating means from said neutral position.

4,524,440

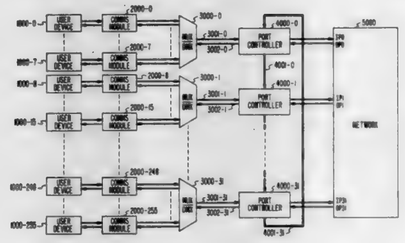
FAST CIRCUIT SWITCHING SYSTEM

Milo Orsic, Lincolnwood, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 6, 1983, Ser. No. 558,630

Int. Cl.³ H04Q *11/00, 11/04*

U.S. Cl. 370—54 **28 Claims**



1. A communications system comprising

a plurality of source channels for conveying information,

a plurality of destination channels for conveying information,

a plurality of communications modules each associated with at least one of said source channels and each comprising transmitter means for transmitting, on the at least one associated source channel, circuit setup request signals and data, each of said circuit setup request signals defining at least one of said destination channels,

a plurality of controllers each comprising storage means for storing one of a plurality of status words each defining the availability of at least one of said destination channels,

means for cycling each of said status words to the storage means of each of said controllers and

a network,

wherein each of said controllers is associated with at least one of said source channels and further comprises

means for receiving information on the at least one associated source channel and

means responsive to one of said circuit setup request signals and to subsequent data, when one of said status words cycled to the storage means of that controller defines as available one of said destination channels that is defined by that circuit setup request signal, for transmitting that circuit setup request signal and said subsequent data to said network, and

wherein said network comprises means responsive to circuit setup request signals received from said controllers for transmitting data received from said controllers to ones of said destination channels defined by those circuit setup request signals.

4,524,441

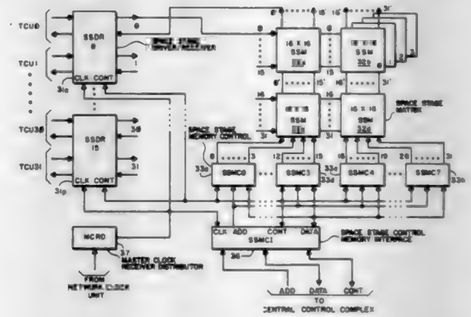
MODULAR SPACE STAGE ARRANGEMENT FOR A T-S-T DIGITAL SWITCHING SYSTEM

Nathaniel Simmons, Downers Grove, Ill.; Sergio E. Puccini, Scottsdale, Ariz.; Stig E. Magnusson, and Kamal I. Parikh, both of Phoenix, Ariz., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Jun. 22, 1983, Ser. No. 506,746

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—63 **5 Claims**



1. In a time-space-time network capable of expanding from one to a plurality of originating time stages and terminating time stages, a space stage comprising:

a switching matrix including a plurality of multiplexer units connected together to form a space stage matrix having a plurality of input lines and a plurality of output lines each of said plurality of multiplexer units including control inputs;

a plurality of space stage driver/receiver interfaces each space stage driver/receiver interface connecting a maximum of two originating time stages and two terminating time stages to a corresponding two of said plurality of input lines and plurality of output lines respectively of said space stage matrix;

a plurality of space stage matrix control units each of said plurality of space stage matrix control units including four control memories, each control memory associated with an individual one of said space stage matrix output lines and said multiplexer units control inputs connected to a respective space stage matrix control unit; and

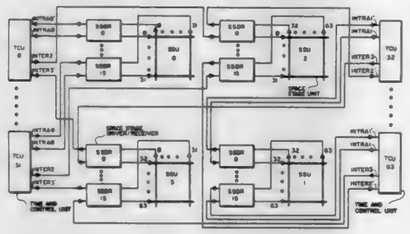
a matrix control interface connecting a central control complex to said matrix control units, said central control complex arranged to write control information to one of said control memories enabling a selected connection through said space stage from one of said plurality of originating time stages to one of said plurality of terminating time stages.

4,524,442

MODULARLY EXPANDABLE SPACE STAGE FOR A T-S-T DIGITAL SWITCHING SYSTEM

Nathaniel Simmons, Downers Grove, Ill.; Sergio E. Puccini, Scottsdale, Ariz.; Stig E. Magnusson, and Kanal I. Parikh, both of Phoenix, Ariz., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Jun. 22, 1983, Ser. No. 506,744
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—63 **24 Claims**



1. In a time-space-time network having a first time group including a plurality of originating time stages and a plurality of terminating time stages, and a second time group including at least one originating time stage and at least one terminating time stage, a space stage comprising:

a first space stage unit including a plurality of space stage matrix units connected together forming a space stage matrix having a plurality of inputs and a plurality of outputs, each space stage matrix unit including control inputs, a plurality of space stage driver/receiver interfaces each including inputs and outputs and each space stage driver/receiver interface input connected to a respective one of said first time group originating time stages and each space stage driver/receiver interface output connected to a respective one of said first time group terminating time stages, said space stage driver/receiver interfaces further connecting each of said first time group originating time stages and terminating time stages to an input and output respectively of said space stage matrix and control means connected to a source of control information for selectively interconnecting each of said first time group terminating time stages to said first time group originating time stages;

a second space stage unit including a space stage matrix unit having a plurality of inputs and a plurality of outputs, said space stage matrix unit including control inputs and a space stage driver/receiver interface including at least one input and output, said input connected to said second time group originating time stage and said output connected to said second time group terminating time stage, said space stage driver/receiver interface further connecting said second time group originating time stage and said second time group terminating time stage to one of said inputs and outputs of said space stage matrix unit and at least one control means connected to a source of control information for selectively interconnecting said second time group terminating time stage to said second time group originating time stage;

a third space stage unit including a plurality of space stage matrix units connected together forming a space stage matrix having a plurality of inputs and a plurality of outputs, each space stage matrix unit including control inputs, a plurality of space stage driver/receiver interfaces each including inputs and outputs and each space stage driver/receiver interface input connected to a respective one of said first time group originating time stages and one of said space stage driver/receiver interface outputs connected to said second time group terminating time stage, said space stage driver/receiver interfaces further connecting each of said first time group originating time stages to a space stage matrix input and said second time group terminating time stage to one of said space stage matrix outputs and at least one control means connected to a source of control information for selectively interconnecting at least one of said second time group terminating time stages to each of said plurality of first time group originating time stages; and

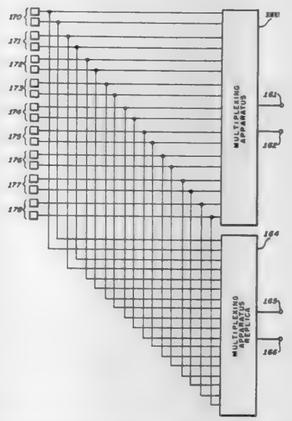
a fourth space stage unit including a plurality of space stage matrix units connected together forming a space stage matrix having a plurality of inputs and a plurality of outputs, each space stage matrix unit including control inputs, a plurality of space stage driver/receiver interfaces each including inputs and outputs one of said space stage driver/receiver interface outputs connected to said second time group originating time stage and each of said space stage driver/receiver outputs connected to a respective one of said first time group originating time stages, said space stage driver/receiver interfaces further connecting said second time group originating time stage to one of said space stage matrix inputs and each of said first time group terminating time stages to respective space stage matrix outputs and control means connected to a source of control information for selectively interconnecting each of said plurality of first time group terminating time stages to at least one of said second time group originating time stages.

4,524,443

HIGH SPEED SOLID STATE MULTIPLEXER

David R. Crocker; Desi D. Stelling, both of Phoenix, Ariz., and Francis W. Larson, Rio Rancho, N. Mex., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 22, 1983, Ser. No. 564,259
Int. Cl.³ H04J *3/04;* **H04K** *19/08*
U.S. Cl. 370—112 **16 Claims**



9. A multiplexing apparatus for receiving a plurality of input signals, having voltages in a predetermined range, from a plurality of input sources, and for outputting at least one input signal selected from said plurality of input signals, comprising:

a unit, including:

a first plurality of transistors, the base of each transistor in said first plurality of transistors for coupling to one of said input sources;

means for applying a predetermined voltage to the collector of each transistor in said first plurality of transistors;

a plurality of diodes, coupled, respectively, to said first plurality of transistors such that the anode of each diode is coupled to the emitter of a corresponding transistor in said first plurality of transistors;

a second plurality of transistors, coupled, respectively, to said first plurality of transistors such that the collector of each transistor in said second plurality of transistors is coupled to the emitter of a corresponding transistor in said first plurality of transistors, the collector of each transistor in said second plurality of transistors being coupled to the anode of the same diode, in said plurality of diodes, to which a corresponding transistor in said first plurality of transistors is coupled;

means for applying a predetermined voltage to the base of a selected transistor in said second plurality of transistors;

means for applying a predetermined current to the emitter of said selected transistor in said second plurality of transistors;

a third plurality of transistors, coupled, respectively, to said first plurality of transistors such that the emitter of each transistor in said third plurality of transistors is coupled to the emitter of a corresponding transistor in said first plurality of transistors, the emitter of each transistor in said third plurality of transistors being coupled to the anode of the same diode, in said plurality of diodes, to which a corresponding transistor in said first plurality of transistors is coupled;

means for applying a predetermined voltage to the collector of each transistor in said third plurality of transistors;

means for applying a predetermined voltage to the base of a selected transistor in said third plurality of transistors;

an output transistor, the base of said output transistor being coupled to the cathode of each diode in said plurality of diodes;

means for applying a predetermined voltage to the collector of said output transistor; and

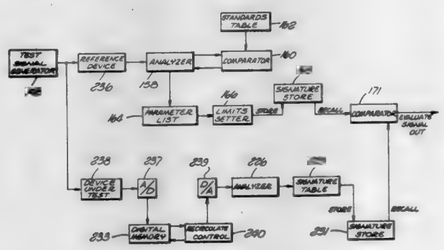
means, coupled to the cathode of each diode in said plurality of diodes, for sinking a predetermined portion of said predetermined current applied to the emitter of said selected transistor in said second plurality of transistors through a diode, in said plurality of diodes, coupled to said selected transistor in said second plurality of transistors.

4,524,444

ANALYZING THE SIGNAL TRANSFER CHARACTERISTICS OF A SIGNAL PROCESSING UNIT

Edward Efron, Irvine; James O. McPherson, Newport Beach, and Young B. Kim, Long Beach, all of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 339,011; Jan. 12, 1982,. This application Sep. 30, 1982, Ser. No. 429,351
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—24 **10 Claims**



1. A method of analyzing the signal transfer characteristics of a signal processing unit comprising the steps of:

(a) establishing an input signal of known content;

(b) measuring selected parameters of selected parts of said input signal;

(c) storing the measurement results of said input signal measuring step to define a stored signature of said input signal comprising said selected parameters of selected parts of said input signal;

(d) feeding said input signal to said signal processing unit;

(e) measuring said parameters of parts of the output signal from said signal processing unit corresponding to said electrical parts of said input signal; and

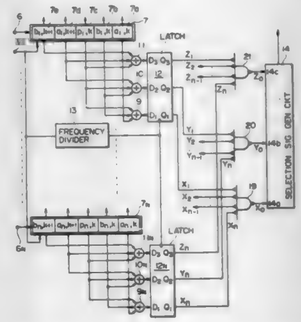
(f) comparing, subsequent to said output signal measurement step, said stored selected input signature parameters with the corresponding parameters of said output signal.

4,524,445

METHOD AND CIRCUIT ARRANGEMENT FOR SYNCHRONOUS DETECTION

Yasuhiko Fujii, Yamato, Japan, assignor to Victor Company of Japan, Limited, Japan

Filed Oct. 14, 1982, Ser. No. 434,532
Claims priority, application Japan, Oct. 15, 1981, 56-164498
Int. Cl.³ G06F *11/10;* **H04L** *7/02*
U.S. Cl. 371—47 **13 Claims**



1. A method of detecting synchronism of input data blocks constituting a digital signal, where each data block comprises a plurality of data words each having "n" bits, wherein "n" is a positive integer, and a parity word generated in such a manner that each bit in said parity word is given by:

$$p_{m,k}=a_{m,k}\oplus b_{m,k}\oplus \cdots$$

wherein

$a_{m,k}$, $b_{m,k}$ . . . are bits in a single row of said plurality of data words;

m is a positive integer and $1 \leqq m \leqq n$, and

$\oplus$ indicates modulo-two summation;

said "n" bits of each word being transmitted in parallel in such a manner that said digital signal comprises "n" rows, said method comprising the steps of:

(a) storing said digital signal into a memory means in such a manner that said bits $a_{m,k}$, $b_{m,k}$ . . . $p_{m,k}$ of each row are stored according to the order of the received words;

(b) reading out from said memory means a plurality of sets forming combinations of consecutive bits, whose number equals the total number of words included in each data block, where the combination of bits in each set is different for each of the plurality of sets of bits;

(c) parity checking simultaneously in connection with said plurality of sets of bits read out from said memory means each time each word is inputted to said memory means;

(d) detecting a state of the absence of parity error to ascertain which set of said bits does not result in parity error; and

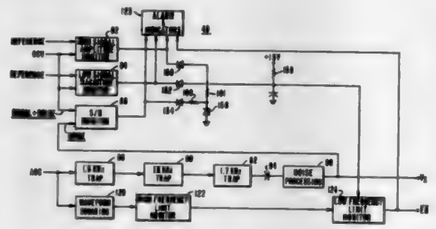
(e) deriving a set of bits from said memory means in connection with each row in accordance with the result of the detection of the absence of parity error to output the set of bits as a single row constituting a synchronized data block.

4,524,446

SIGNAL QUALITY MONITOR FOR PROTECTIVE RELAY SYSTEM

Shan C. Sun, Coral Springs, Fla., and James P. McGivern, Plum Boro, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 13, 1982, Ser. No. 397,753
Int. Cl.³ H04L *1/20*
U.S. Cl. 371—22 **6 Claims**



1. A monitor for monitoring the quality of a communication signal having a frequency in a predetermined frequency range, comprising:

automatic gain control (agc) amplifier means having a signal receiving input connected to receive the communication signal, a gain control input, and an output,

gain control means providing a unidirectional gain control signal for gain control input, with the magnitude of said gain control signal being responsive to the output of said agc amplifier means, to maintain the output signal of said agc amplifier means substantially constant,

and signal quality monitoring means for providing a signal indicative of the quality of the communication signal,

said signal quality monitoring means including reference means and first comparator means,

said first comparator means comparing the magnitude of said gain control signal with said reference means to obtain an indication of whether or not the magnitude of the communication signal is within a predetermined desired range.

4,524,447

DIGITAL SIGNAL PROCESSING APPARATUS HAVING DIGITAL DITHER

Donald H. Willis, Indianapolis, and Jack S. Fuhrer, Carmel, both of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed May 25, 1983, Ser. No. 498,151
Int. Cl.³ H04N *9/50, 9/32*
U.S. Cl. 375—26 **22 Claims**



1. Digital signal processing apparatus comprising:

a source of digital signals having N bits, where N is a positive integer;

dithering means, coupled to said source, for developing dithered digital signals having less than N bits, including first means responsive to the least significant bit of said digital signals for producing said dithered digital signals having successive conditions for successive samples of said digital signals;

processing means, coupled to said dithering means, for digitally processing said dithered digital signals having less than N bits received at an input thereof to develop processed digital signals at an output thereof; and

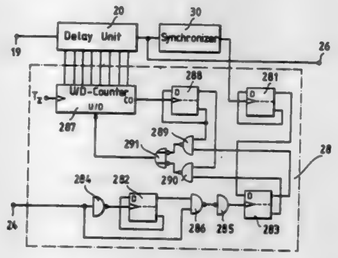
combining means, coupled to said processing means, for combining successive samples of said processed digital signals to produce digital output signals.

4,524,448

VARIABLE DELAY UNIT FOR DATA SYNCHRONIZER USING PHASE-SENSITIVE COUNTER TO VARY THE DELAY

Josef Hüllwegen, Altenbeken, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Fed. Rep. of Germany

Division of Ser. No. 205,038, Nov. 7, 1980, Pat. No. 4,404,681.
This application Sep. 23, 1982, Ser. No. 422,232
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945331
Int. Cl.³ H04L *7/04*
U.S. Cl. 375—118 **2 Claims**



1. A device for phase synchronization between the data received on one terminal and a local receiver timing pulse appearing at another terminal in a data transmission unit, including a variable delay unit having an input connected to said one terminal to receive said data, said variable delay unit also having an output, synchronizer means connected to the delay unit to recover a data timing pulse from said received data, a phase comparator for comparing the relative time-position of the data timing pulse and the time-position of the receiver timing pulse appearing at said another terminal, a source of clock signals having a constant frequency which is higher than the frequency of the timing pulses, a bidirectional counter having an input connected to continuously receive the clock pulses and for storing the phase difference between the data pulse and the receiver pulse in the form of a counter position, the phase comparator being connected to the counter to control the direction of count, said delay unit being connected to the counter to be controlled by the content therein such that the delay depends on the counter contents, whereby the relative time-position can be determined continuously and the counter contents can be correspondingly corrected upward or downward, and that the delay unit delays the transmission of received data to said delay output according to the relative time-position.

4,524,449

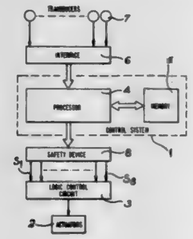
SAFETY DEVICE

Jean M. Colling, Echirolles, France, assignor to Framatome & Cie., France

Filed Sep. 28, 1982, Ser. No. 425,898
Int. Cl.³ G06F *11/28, 15/46*
U.S. Cl. 377—28 **4 Claims**

1. A safety device between a control system for a safety actuator and a logic circuit for controlling said actuator, comprising sequential transmission means connected to the logic control circuit for the transmission of logic signals supplied by the control system to the logic circuit, these transmission means being connected to sequential checking means for applying to the logic circuit release signals, in the case of a failure of the control system or a failure of the transmission means, these checking means being connected to the control system,

the transmission of the signals between the system and the logic circuit taking place after checking that the transmission means have not failed, wherein the sequential checking means comprise timing means connected between the system and the transmission means, and a clock connected to timing means for controlling timing means, the transmission means applying to the logic circuit release signals in the case of a failure of the system if, after a predetermined time interval, the timing means have not recieved a rearming signal from the system, the timing means comprising a counter, whose output connected to



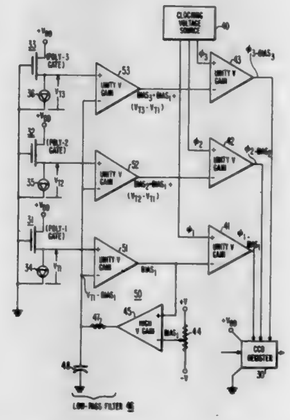
transmission means is in a first logic state during a predetermined time corresponding to the checking of the non-failure of the system and of the transmission means, and corresponding to the transmission of logic signals by the system, said output then being in a second logic state during said predetermined time interval corresponding to the time which has elapsed between the time of switching from the first logic state to the second logic state and the time at which the system applies the rearming signal to the counter, said predetermined time interval being shorter than the response time of the logic circuit.

4,524,450

AUTOMATIC ADJUSTMENT OF THE AMPLITUDES OF PLURAL-PHASE CCD CLOCKING VOLTAGES

Peter A. Levine, West Windsor, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 28, 1982, Ser. No. 426,097
Int. Cl.³ G11C *19/28*
U.S. Cl. 377—62 **3 Claims**



1. In combination:

a charge-coupled-device shift register with plural-phase clocking of sets of gate electrodes, each set in a respective successive layer of conductive material deposited over an intervening insulating layer on the surface of a semiconductor substrate;

a plurality of insulated-gate field effect transistors on the surface of the semiconductor substrate, each having a source electrode and a drain electrode, defining the ends of its conduction channel, and each having a respective gate electrode in a different one of said levels of conductive material;

biasing means connecting each of said field effect transistors, for causing each to have a prescribed level of current flow through its conduction channel, for establishing a respective offset voltage between its source and gate electrodes; and

means for generating, at least at selected times, differentially-biased clocking voltages in respective phases, for application to respective ones of said sets of gate electrodes, including

means for generating during said at least selected times clocking voltages in those phases which are uniformly biased, including

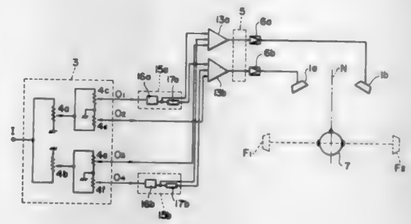
means for combining with each except a selected one of said phases of uniformly biased clocking voltages the difference between the offset voltage associated with the field effect transistor having its gate electrode in the layer of conductive material to which the selected phase of clocking voltage is applied and the offset voltage associated with the field effect transistor having its gate electrode in the layer of conductive material to which the differentially-biased clocking voltage generated by such combining is applied.

4,524,451

SOUND REPRODUCTION SYSTEM HAVING SONIC IMAGE LOCALIZATION NETWORKS

Koji Watanabe, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 18, 1981, Ser. No. 245,146
Claims priority, application Japan, Mar. 19, 1980, 55-35261; Jun. 19, 1980, 55-83619; Jul. 18, 1980, 55-99237; Sep. 24, 1980, 55-136530[U]; Oct. 6, 1980, 55-140324
Int. Cl.³ H04R *5/04*
U.S. Cl. 381—1 **11 Claims**



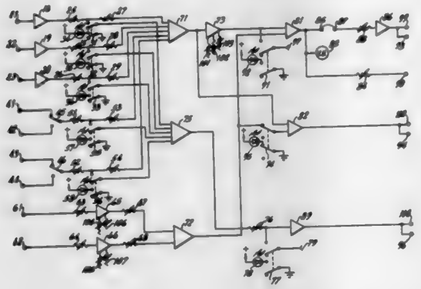
1. A sound reproducing system comprising a pair of spaced apart first and second loudspeakers, at least one sonic localization network for deriving a pair of mutually related localizing audio signals from an input audio signal and applying said localizing signals to said loudspeakers respectively to develop a sound that is perceived by a listener as emanating from a phantom source on one side of said first loudspeaker which is remote from said second loudspeaker, a plurality of potentiometers for separating said input audio signal into a set of at least three audio signals and adjusting the levels of the separated signals relative to each other, two of said separated signals being supplied to said first and second loudspeakers, respectively, said localization network being responsive to the remainder of said separated audio signals to provide localizing signals to said first and second loudspeakers, respectively, so that said phantom sound source is located within an area external to an area which lies intermediate said loudspeakers, whereby the adjustment of one or more of said potentiometers causes a sonic image produced by said phantom source to appear to move continuously with an area including said loudspeakers and said phantom sound source.

4,524,452

AUDIO MIXER/PRE-AMPLIFIER

Michael S. Marshak, 3970 Kumquat Ave., Miami, Fla. 33133

Filed Jul. 20, 1983, Ser. No. 515,459
Int. Cl.³ H04B 1/00
U.S. Cl. 381—28 **7 Claims**



1. A stereo pre-amplifier for mixing audio input signals comprising:

(a) a means for supplying input signals including stereo phonograph signals and stereo auxilary level signals and low impedance signals to said pre-amplifier;

(b) a means for supplying output signals from said pre-amplifier;

(c) a first summing means for combining said phonograph signals and said auxilary level signals;

(d) a second summing means for combining said low impedance signals;

(e) a cueing means for sampling said input signals prior to said signals being input to said first summing amplifier said cueing means including a means to select one or more of said input signals to be sampled;

(f) a third summing means for combining said sampled signals;

(g) a fourth summing means combining the output of said first summing means and said second summing means whereby said fourth summing means provides pre-amplifier output;

(h) a fifth summing means for combining the output of said first summing means and said second summing means whereby said fifth summing means provides an output to auxilary storage means;

(i) a means for disabling the output of said second summing means from inputing into said fifth summing means;

(j) a means for combining both stereo channels of the inputs of said fourth summing means whereby each of the output channels of said fourth summing means are monophonic signals; and

(k) a means for combining both stereo channels of the output of said third summing means whereby each of the output channels of said third summing means are monophonic signals.

4,524,453

POSTAL CODE DISTINGUISHING APPARATUS

Kazunari Egami; Tetsuo Umeda; Naoto Tsukakoshi, and Yasuo Nishijima, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

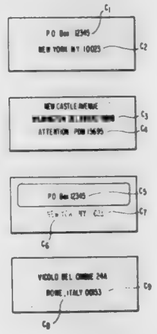
Filed Feb. 18, 1982, Ser. No. 349,938
Claims priority, application Japan, Feb. 18, 1981, 56-22557
Int. Cl.³ G06K 9/00, 9/72, 9/20
U.S. Cl. 382—1 **9 Claims**

1. A code distinguishing apparatus, comprising:

means for recognizing characters existing in an address description on an article, said address description including at least one word and at least one code on the same line;

means for extracting said at least one word from said characters recognized by said recognizing means;

memory means for storing at least one predetermined key word indicating the significance of a code contained on the same line as said key word;



means for comparing said at least one word extracted by said extracting means with said key word stored in said memory means; and

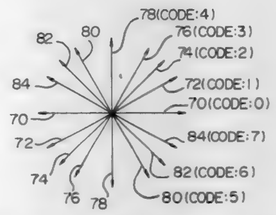
means for determining the significance of said at least one code in response to the output delivered from said comparing means.

4,524,454

METHOD OF ASSIGNING DIRECTION CODE TO BOUNDARY PICTURE ELEMENT IN CHARACTER RECOGNITION SYSTEM

Koichi Ejiri, Narashino, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 14, 1982, Ser. No. 417,962
Claims priority, application Japan, Sep. 22, 1981, 56-149822
Int. Cl.³ G06K 9/48
U.S. Cl. 382—21 **5 Claims**



1. In a character recognition system, a machine method of discriminating the directions of connectivity of boundary picture elements, which form part of a two-level image together with other picture elements, with respect to a plurality of primary directions and assigning to each of the boundary picture elements a direction code corresponding to the discriminated direction of connectivity, comprising the steps of:

(a) discriminating the direction of connectivity of each boundary picture element with respect to the primary directions and a plurality of secondary directions which individually neighbor the primary directions;

(b) assigning to the respective boundary picture elements direction codes which correspond to the discriminated directions of connectivity thereof;

(c) selecting boundary picture elements adjacent to boundary picture elements provided with direction codes which correspond to the primary directions, out of all the boundary picture elements which are assigned with direction codes corresponding to the secondary directions; and

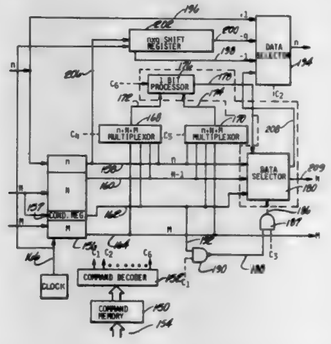
(d) converting the direction codes assigned to said selected boundary picture elements into the direction codes of the adjacent boundary picture elements corresponding to the primary directions.

4,524,455

PIPELINE PROCESSOR

Wlodzimierz Holsztynski, and Stephen S. Wilson, both of Ann Arbor, Mich., assignors to Environmental Research Inst. of Michigan, Ann Arbor, Mich.

Filed Jun. 1, 1981, Ser. No. 269,143
Int. Cl.³ G06K 9/36
U.S. Cl. 382—41 **21 Claims**



1. A system for serially processing spatially oriented data, comprising

a plurality of serially connected processing cells each including a multi-bit memory haing a data input for receiving an N-bit data word from another of said cells, a data output and a control input, and means coupled with said data output of said memory for temporarily storing data output from said memory,

each of said cells further including a processing circuit for operating on selected bits of said data word, said processing circuit having a first input connected with the data output of said memory and a second input connected with said data storing means, said processing circuit having a data output connected with the data input of the neighboring downstream processing cell; and

selecting means operably coupled with the control input of each of the memories and with the processing circuit of each of said cells for selecting the bits of said data word to be operated upon by said processing circuit.

4,524,456

METHOD FOR COMPRESSING DATA OF TWO-VALUE PICTURE IMAGE

Shuichi Araki, and Hideshi Hashiyama, both of Kyoto, Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Nov. 10, 1982, Ser. No. 440,559
Claims priority, application Japan, Nov. 11, 1981, 56-180649
Int. Cl.³ G06K 9/36
U.S. Cl. 382—56 **2 Claims**

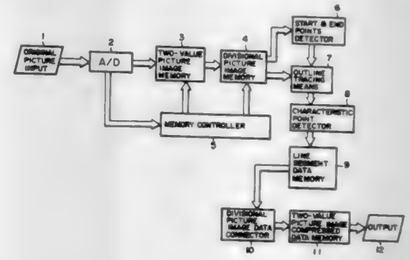
1. A method for compressing data of two-value picture image, comprising the steps of:

(a) storing an original picture image as electric signals in a memory partitioned into a plurality of regions bounded by sets of division lines for receiving divisional picture images, said sets being perpendicular to one another and each set comprising a plurality of lines;

(b) detecting stored electric signals designating intersections between the division lines and outlines of a character area of each divisional picture image, individual ones of said electric signals being found as start and end points of segments of the character outlines;

(c) comparing electric signals designating coordinate values of one part of a character outline with signals designating coordinate values of the locations of changes in slope, such locations being characteristic points; tracing the outlines of the character area of each divisional picture image from the start points to the end points; and

(d) imaging the outlines of the character areas of the adjacent divisional picture images at the start and the end points.



4,524,457

CARGO BAG WITH REINFORCED TRIANGULAR LIFTING PANELS

Frank J. Marino, Hialeah, Fla., assignor to Marino Technologies, Inc., Hialeah, Fla.

Filed Apr. 30, 1984, Ser. No. 605,110
Int. Cl.³ B65D 33/06, 88/16
U.S. Cl. 383—17 **4 Claims**



1. A cargo bag of flexible material for transportation and storage of bulk material and including four upstanding side walls, a bottom, and an upper filling opening, said cargo bag being characterized by four triangular lifting panels formed integrally with and extending upwardly from the upper edge of said side walls, said triangular lifting panels each including wide lower ends, inwardly tapering sides, and substantially pointed upper ends, said substantially pointed upper end of each of said triangular lifting panels being positioned above a corresponding corner of said cargo bag, said wide lower ends of each of said triangular lifting panels being integrally joined with and extending upwardly in substantial alignment with half of the upper edges of two adjacent side walls, and lifting loop means supported by said lifting panels for supporting and moving said cargo bag from one location to another whereby said triangular lifting panels serve to distribute the weight of the material over the width of all of said side walls when said cargo bag is lifted by said lifting loop means, wherein said lifting loop means comprises strap web material extending along and secured to the inwardly tapering sides of said triangular lifting panels, and said strap web material extending up-

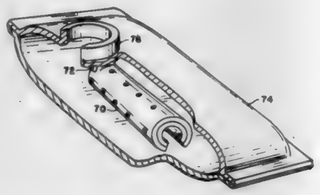
wardly from the substantially pointed upper end of each of said triangular lifting panels and forming a lifting loop thereabove.

4,524,458

MOISTURE RESPONSIVE STIFFENING MEMBERS FOR FLEXIBLE CONTAINERS

Robert G. Pongrass, 122 Ocean St., Woollahra 2025, New South Wales, Australia, and Christopher C. Rutter, 21063 Cabot Blvd., Hayward, Calif. 94545

Filed Nov. 25, 1983, Ser. No. 555,045
Int. Cl.³ B65D *19/20*
U.S. Cl. 383—33 **10 Claims**



1. In combination with a flexible packaging bag having first and second surfaces interconnected at the peripheries thereof, anticlosure means within said bag for preventing entrapment of portions of the bag contents in folds in said bag and by stoppage of a dispensing aperture in said bag as said flexible bag collapses during dispensing of the contents therefrom, said anticlosure means comprising:

a thin elongated stiffening member having one end attached to an inner surface of the flexible bag and near the position of a dispensing aperture in said bag, the long axis of said stiffening member being substantially parallel with the longer axis of said bag, said stiffening member being flexible when dry and becoming stiffened by exposure to moisture.

4,524,459

SQUARE ENDED BAG

Oliver R. Titchenal, North Ridgeville, Ohio, assignor to Basic Packaging Systems, Inc., Avon Lake, Ohio

Division of Ser. No. 301,762, Sep. 14, 1981, Pat. No. 4,453,370. This application Jun. 8, 1984, Ser. No. 618,513
Int. Cl.³ B65D *30/20, 30/00*
U.S. Cl. 383—37 **14 Claims**



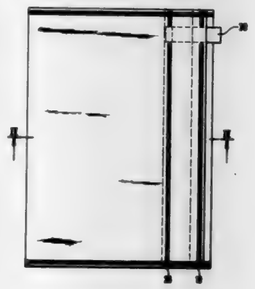
1. In a chain of open mouth square ended bags constructed from an elongated band with each of said bags being defined by front and back walls, top and bottom ends, and fore and aft seal sides with each said seal side consisting of portions of said band extending from each said wall and end and sealed together by a side seal, each said seal side being breakably joined to the nearest seal side of the next adjacent bag in the chain, and elongated longitudinal strip means of said band located along the back walls and the top ends of all the bags and at least partially aligning the respective back wall and top end of each bag, the provision of each said bag having its back wall and top end sealed together with a closing seal leg extending from each seal side towards the opposite seal side a distance less than half the distance between the seal sides and defining therebetween an open mouth through which the bag may be filled from the top and between the back wall and top end.

4,524,460

VALVED SACK

Karl-Heinz Twiehoff, Rheine, and Reinhard Nowag, Georgsmarienhütte, both of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 579,710
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1983, 3305087; Apr. 11, 1983, 3312925
Int. Cl.³ B65D *30/24*
U.S. Cl. 383—45 **15 Claims**



1. A valved sack comprising:

a web of thermoplastic film,

a first marginal zone defined by the web including a marginal strip, said marginal strip having a thickness less than the thickness of the remainder of said web,

a second marginal zone defined by the web, said first marginal zone being laterally opposed to said second marginal zone,

a tube section formed by said second marginal zone overlapping said first marginal zone,

a top weld seam,

a bottom weld seam, said top weld seam and said bottom weld seam extending transversely across said tube section to form said valved sack,

a longitudinal weld seam joining said first marginal zone and said second marginal zone, one end of the longitudinal weld seam terminating spaced from said top weld seam, and

a valve passage defined between the top weld seam and the end of the longitudinal weld seam spaced from the top weld seam, said valve passage being bounded by said second marginal zone and said marginal strip, said marginal strip bounding said valve passage being of reduced thickness for resiliently sealing said sack after said sack is filled through said filling valve passage.

4,524,461

HELMET-SUPPORTED RADIO TRANSCEIVER AND BROADCAST RECEIVER SYSTEM

Raymond G. Kostanty, Wood-Ridge, N.J.; Michael Sciabbarrasi, New York, N.Y., and Walter B. Grossman, Fair Lawn, N.J., assignors to American Transceiver Corp., Fair Lawn, N.J.

Filed Jul. 18, 1983, Ser. No. 514,843
Int. Cl.³ H04B *1/46*
U.S. Cl. 455—79 **13 Claims**

1. A helmet-supported radio transceiver and radio receiver system, comprising:

a flexible, relatively resilient housing having a plurality of interconnected modules, and supported by the helmet;

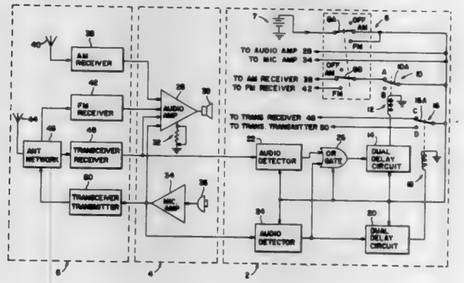
radio receiver means disposed within the modules and normally enabled for receiving radio broadcasts;

radio transceiver means disposed within the modules for transmitting and receiving messages to and from a remote station, the receiver of the radio transceiver means being normally enabled and the transmitter thereof being normally disabled;

circuit means including power supply means disposed within the modules and connected to the radio receiver means and to the transceiver means;

the circuit means being responsive to messages received through the receiver of the transceiver means for disabling the radio receiver means so that said received messages are heard by a user against a background of silence;

the circuit means being operative in a mode so as to be responsive to messages transmitted by the user through the transmitter of the transceiver means for disabling the radio receiver means and the receiver of the transceiver means, and enabling the transmitter of the transceiver



means so that the messages are transmitted to the remote station; and

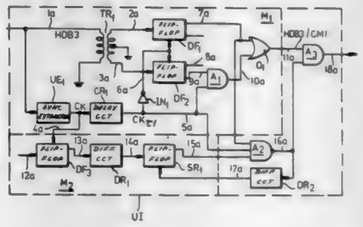
said circuit means including means responsive to the messages received through the receiver of the transceiver means for disabling the radio receiver means after a first predetermined interval and for maintaining said radio receiver means disabled for a second predetermined interval after the received message ends, means operative in one mode and responsive to messages transmitted by the user through the transmitter of the transceiver means for disabling the radio receiver means and the receiver of the transceiver means and for enabling the transmitter of the transceiver means after a third predetermined interval, and for maintaining the transmitter of the transceiver means enabled for a fourth predetermined interval after the transmitted messages end, and means for enabling the radio receiver means after the transmission and reception of messages through the transmitter and the receiver of the transceiver means, respectively, have been absent for a fifth predetermined interval.

4,524,462

SYSTEM FOR JOINTLY TRANSMITTING HIGH-FREQUENCY AND LOW-FREQUENCY DIGITAL SIGNALS OVER A FIBER-OPTICAL CARRIER

Ezio Cottatelucci, Milan, Italy, assignor to Italtel Societa Italiana Telecomunicazzioni S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 507,830, Jun. 24, 1983,. This application Aug. 17, 1983, Ser. No. 524,024
Claims priority, application Italy, Jun. 24, 1982, 22043 A/82; Oct. 27, 1982, 23956 A/82
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—608 **9 Claims**



1. A system for jointly forwarding high-frequency and low-frequency digital signals over a physical carrier linking a transmitting station with a receiving station, comprising:

a first data source at said transmitting station emitting a terntary representation of a primary bit stream;

a second data source at said transmitting station emitting a secondary bit stream with a cycle length substantially greater that that of said primary bit stream;

transcoding means interposed at said transmitting station between said data sources and said physical carrier for converting said ternary representation into a binary configuration of twice the bit rate thereof with three out of four possible two-bit combinations symbolizing respective levels "+1", "−1" and "0" of said ternary representation, said transcoding means substituting a bit pair constituting the fourth of said two-bit combinations for at least one of the two first-mentioned combinations in said binary configuration in response to the presence of a logical "1" in said secondary bit stream;

decoding means at said receiving station coupled to said physical carrier for detecting said bit pair in an incoming pulse train emitted by said transcoding means;

timing means at said receiving station coupled to said decoding means for determining the cycle length of said secondary bit stream from recurrences of said bit pair in said incoming pulse train;

first output means at said receiving station coupled to said decoding means for generating a replica of said primary bit stream from said incoming pulse train; and

second output means at said receiving station coupled to said decoding means and to said timing means for reconstructing said secondary bit stream from the recurrences of said bit pair.

DESIGNS

JUNE 18, 1985

279,230
NOVELTY HAT
Tracie L. R. Talany, 330 Bainbridge St., Apt. 11, Philadelphia, Pa. 19147
Filed Mar. 18, 1983, Ser. No. 477,691
Term of patent 14 years
U.S. Cl. D2—251

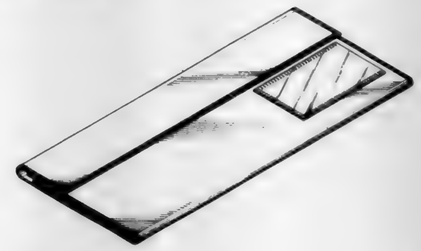


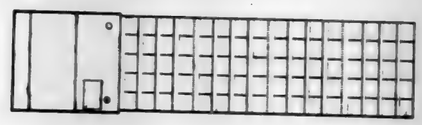
279,231
POCKET ADAPTER FOR FITTING AN ACCESORY TO A SAFETY HELMET
Arne Hellberg, Gråbo, Sweden, assignor to Hellberg Protection AB, Lerum, Sweden
Filed Dec. 22, 1982, Ser. No. 452,033
Term of patent 14 years
U.S. Cl. D2—260

279,232
ATHLETIC SHOE
Robert J. Gamm, St. Louis County, Mo., assignor to Kangaroos U.S.A., Inc., St. Louis, Mo.
Filed Dec. 13, 1982, Ser. No. 449,412
Term of patent 14 years
U.S. Cl. D2—309

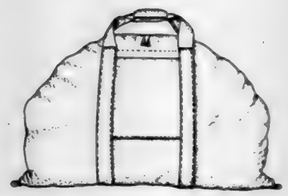


279,233
SLIDE HOLDER
Stanley Z. Feingold, and Irene B. Feingold, both of 355 Warren Ave., Rochester, N.Y. 14618
Filed Jan. 7, 1983, Ser. No. 456,528
Term of patent 14 years
U.S. Cl. D3—35



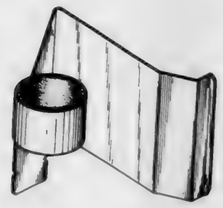


279,234
CARRYING BAG FOR WADER'S BOOTS
Robert A. Heine, P.O. Box 28562, St. Louis, Mo. 63141
Filed Dec. 8, 1982, Ser. No. 447,889
Term of patent 14 years
U.S. Cl. D3—38

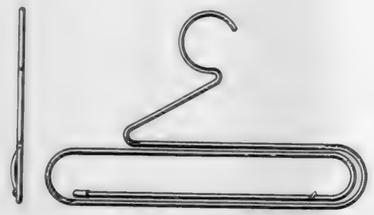




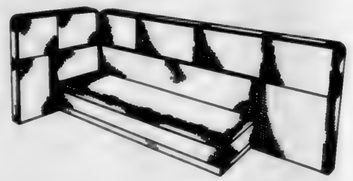
279,235
CONTAINER AND MANUAL HOLDER FOR MOUNTING IN A TRACTOR CAB
Robert Langland, R.R. #1, Bingham Lake, Minn. 56118
Filed Dec. 20, 1982, Ser. No. 451,272
Term of patent 14 years
U.S. Cl. D3—40



279,236
PANTS HANGER
George J. Kupchik, 6803 Archmere Ave., Brooklyn, Ohio 44144
Filed Nov. 9, 1983, Ser. No. 549,898
Term of patent 14 years
U.S. Cl. D6—317



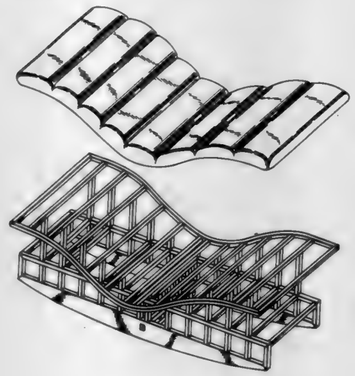
279,237
COMBINED SEAT AND PARTITION UNIT
Robert Balonick, Lake Forest, Ill., assignor to Marden Mfg. Inc., Chicago, Ill.
Filed Jun. 23, 1982, Ser. No. 391,109
Term of patent 14 years
U.S. Cl. D6—335



279,238
WORK STOOL
Irwin J. Ferdinand, Glencoe; Milton E. Handler, Northbrook; Richard Sylvan, Glenview, and Michael Peterson, Evanston, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Nov. 22, 1983, Ser. No. 554,308
Term of patent 14 years
U.S. Cl. D6—350



279,239
CHAISE LONGUE
Richard Meier, New York, N.Y., assignor to Knoll International, Inc., New York, N.Y.
Filed Sep. 15, 1982, Ser. No. 418,476
Term of patent 14 years
U.S. Cl. D6—361



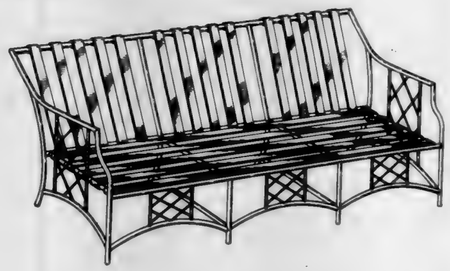
279,240
CHAISE LOUNGE FRAME
Thomas E. Jernigan, 3132 N. Woodridge Rd., Birmingham, Ala. 35223
Filed Sep. 30, 1982, Ser. No. 429,429
Term of patent 14 years
U.S. Cl. D6—361



279,241
CHAIR
Niels Diffrient, New York, N.Y., assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 85,852, Oct. 18, 1979, , which is a continuation-in-part of Ser. No. 47,121, Jun. 11, 1979, , which is a continuation-in-part of Ser. No. 904,327, May 3, 1978,. This application Mar. 2, 1984, Ser. No. 585,904
Term of patent 14 years
U.S. Cl. D6—366



279,242
SEAT FRAME
Thomas E. Jernigan, 3132 North Woodridge Rd., Birmingham, Ala. 35223
Filed Sep. 30, 1982, Ser. No. 429,428
Term of patent 14 years
U.S. Cl. D6—370



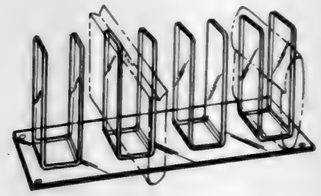
279,243
CHAIR
Robert D. Vanderminden, Court St., Granville, N.Y. 12832
Filed Mar. 31, 1983, Ser. No. 480,749
Term of patent 14 years
U.S. Cl. D6—370



279,244
CHAIR
Gregory D. Bergquist, Mountain Brook, Ala., assignor to Meadowcraft Inc., Birmingham, Ala.
Filed Mar. 16, 1983, Ser. No. 475,907
Term of patent 14 years
U.S. Cl. D6—376



279,245
PURSE HOLDER
Marylin Wohlman, 7367 Radcliffe, West Bloomfied, Mich. 48033
Filed Dec. 13, 1982, Ser. No. 449,303
Term of patent 14 years
U.S. Cl. D6—467



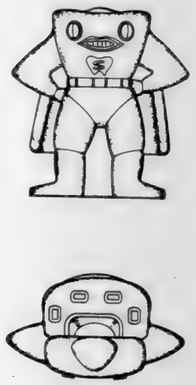
279,246
COMBINED SEAT AND BACKREST UNIT
Edsel E. Murry, Christiana, Tenn., assignor to Samsonite Corporation, Denver, Colo.
Filed May 27, 1982, Ser. No. 382,654
Term of patent 14 years
U.S. Cl. D6—501



279,247
COMBINED SEAT AND BACKREST UNIT
Edsel E. Murry, Christiana, Tenn., assignor to Samsonite Corporation, Denver, Colo.
Filed May 27, 1982, Ser. No. 382,794
The portion of the term of this patent subsequent to Jun. 18, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—501



279,248
TOOTHBRUSH HOLDER
Gloria D. Oliver, 8918 Winding River, Houston, Tex. 77088
Filed Dec. 27, 1983, Ser. No. 565,390
Term of patent 14 years
U.S. Cl. D6—534

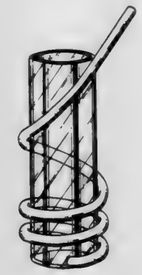


279,249
WALL MOUNTED SHELF OR SIMILAR ARTICLE
Stephen A. Fausel, 2680 S. Main St., Burlington, Iowa 52601
Filed Nov. 3, 1982, Ser. No. 438,467
Term of patent 14 years
U.S. Cl. D6—570





279,250
COMBINED TUMBLER AND DRINKING TUBE
Richard D. Holloway, 02, London, England, assignor to Saltwater International Limited, New York, N.Y.
Filed Jul. 16, 1982, Ser. No. 398,976
Claims priority, application United Kingdom, Apr. 15, 1982, 1006183
Term of patent 14 years
U.S. Cl. D7—6





279,251
COVERED FOOD STORAGE CONTAINER OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 10, 1982, Ser. No. 406,796
Term of patent 14 years
U.S. Cl. D7—79



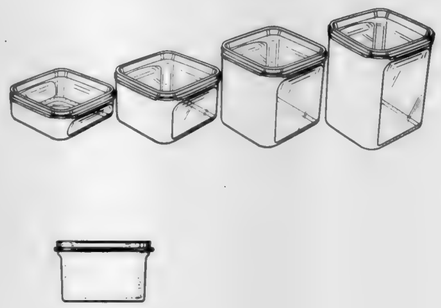




279,252
FOOD STORAGE CONTAINER OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 10, 1982, Ser. No. 406,797
Term of patent 14 years
U.S. Cl. D7—79



279,253
FOOD STORAGE CONTAINER OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 10, 1982, Ser. No. 406,850
Term of patent 14 years
U.S. Cl. D7—79

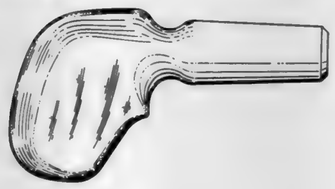




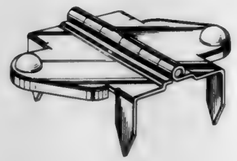




279,254
HAND GRIP FOR HAND TOOLS
Lloyd T. Smith; Loren E. Berry; Glen W. Ediger, all of Newton; Thomas E. Hindman, and Richard E. Ten Eyck, both of Wichita, all of Kans., assignors to Fiskars Manufacturing Corporation, Wausau, Wis.
Filed May 31, 1983, Ser. No. 499,546
Term of patent 14 years
U.S. Cl. D8—107



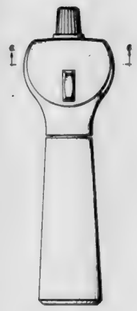
279,255
HINGE
Leo T. Roy, South Attleboro, Mass., assignor to Craft, Inc., South Attleboro, Mass.
Filed Jan. 12, 1983, Ser. No. 457,503
Term of patent 14 years
U.S. Cl. D8—327



279,256
COMBINED BOTTLE AND CAP
Milan Lang, Longueuil, Canada, assignor to Atlantic Promotions, Inc., Longueuil, Canada
Filed Sep. 3, 1982, Ser. No. 414,873
Claims priority, application Canada, Aug. 4, 1982, 04-08-82-6
Term of patent 14 years
U.S. Cl. D9—337



279,257
COMBINED COSMETIC CONTAINER AND APPLICATOR
Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.
Filed Oct. 21, 1982, Ser. No. 435,821
Term of patent 14 years
U.S. Cl. D9—338



279,258
DISPENSING CONTAINER FOR PILLS OR THE LIKE
H. Edward Curtis, Perkasie, Pa., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 23, 1982, Ser. No. 410,675
Term of patent 14 years
U.S. Cl. D9—339



279,259
CARRIER FOR BEVERAGE CUPS
Kenneth D. Bixler, Huntington, and Robert E. Ralphs, Katonah, both of N.Y., assignors to Packaging Corporation of America, Evanston, Ill.
Filed Jan. 12, 1983, Ser. No. 457,544
Term of patent 14 years
U.S. Cl. D9—341



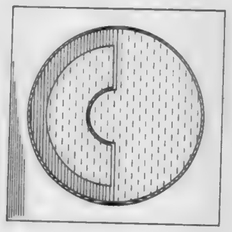
279,260
PACKAGING CUP WITH A PEDESTAL BASE
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Oct. 15, 1982, Ser. No. 434,456
Term of patent 14 years
U.S. Cl. D9—349



279,261
BOTTLE
Dutro Blocksom, and John C. DuPree, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 27, 1982, Ser. No. 412,354
Term of patent 14 years
U.S. Cl. D9—386



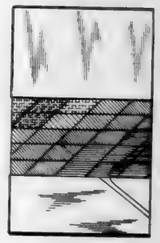
279,262
CARTON
Serge Mansau, Neuilly sur Seine, France, assignor to American Cyanamid Company, Stamford, Conn.
Filed Jun. 18, 1982, Ser. No. 389,810
Term of patent 14 years
U.S. Cl. D9—423



279,263
PACKING BOX FOR VIDEO CASSETTES
Masumi Ujiie, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 19, 1983, Ser. No. 459,201
Claims priority, application Japan, Jul. 19, 1982, 57-32633
Term of patent 14 years
U.S. Cl. D9—432



279,264
PACKING BOX FOR VIDEO CASSETTES
Masumi Ujiie, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 19, 1983, Ser. No. 459,202
Claims priority, application Japan, Jul. 19, 1982, 57-32632
Term of patent 14 years
U.S. Cl. D9—432



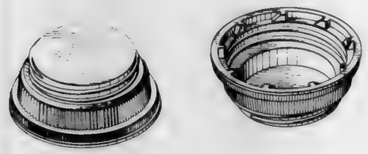
279,265
END CLOSURE FOR A CONTAINER
Timothy L. Turner, Crystal Lake, and Frank R. Pileggi, Bridgeview, both of Ill., assignors to National Can Corporation, Chicago, Ill.
Filed Apr. 14, 1982, Ser. No. 368,080
Term of patent 14 years
U.S. Cl. D9—438



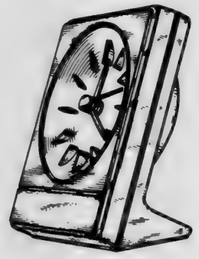
279,266
LID ASSEMBLY FOR CONTAINERS OR THE LIKE
Tord G. I. Johansson, Heimdalsgatan 35, 261 62 Glumslöv, Sweden
Filed Jun. 16, 1983, Ser. No. 505,074
Claims priority, application Sweden, Apr. 11, 1983, 82-2999
Term of patent 14 years
U.S. Cl. D9—450



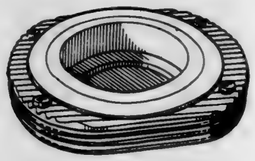
279,267
COMBINED REVERSIBLE CHILD RESISTANT CLOSURE AND SCREW CAP FOR CONTAINERS
Glenn H. Morris, Chattanooga, Tenn., assignor to Brockway Plastics, Inc., Chattanooga, Tenn.
Filed Feb. 9, 1983, Ser. No. 465,322
Term of patent 14 years
U.S. Cl. D9—454



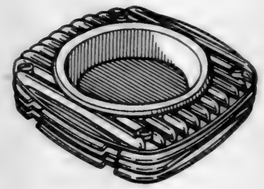
279,268
TABLE CLOCK
Walter Henkels, Holunderweg 1, D-5142 Hückelhoven, Fed. Rep. of Germany
Filed Jun. 27, 1983, Ser. No. 508,200
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1983, MR 144
Term of patent 14 years
U.S. Cl. D10—26



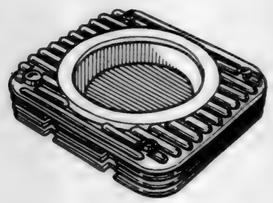
279,269
CASE FOR WRISTWATCH
Eric Bouille, c/o Société Anonyme G.&E. Bouille, Monruz 17, CH-2000 Neuchatel, Switzerland
Filed Jan. 17, 1983, Ser. No. 458,332
Term of patent 14 years
U.S. Cl. D10—30



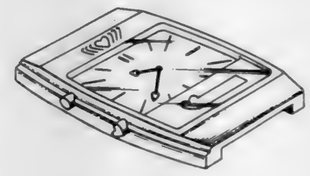
279,270
CASE FOR WRISTWATCH
Eric Bouille, c/o Société Anonyme G.&E. Bouille, Monruz 17, CH-2000 Neuchatel, Switzerland
Filed Jan. 17, 1983, Ser. No. 458,336
Claims priority, application Hague, Jul. 21, 1982, 72523
Term of patent 14 years
U.S. Cl. D10—30



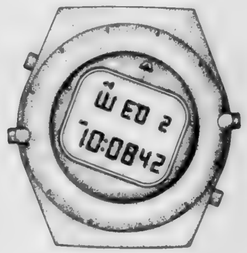
279,271
CASE FOR WRISTWATCH
Eric Bouille, c/o Societe Anonyme G.&E. Bouille, Monruz 17, CH-2000 Neuchatel, Switzerland
Filed Jan. 17, 1983, Ser. No. 458,337
Term of patent 14 years
U.S. Cl. D10—30



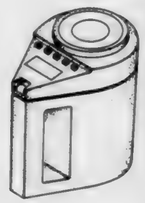
279,272
WATCH
Ronald W. Sharpe, 9465 Wilshire Blvd., Beverly Hills, Calif. 90212
Filed Feb. 18, 1983, Ser. No. 467,660
Term of patent 14 years
U.S. Cl. D10—33



279,273
WRISTWATCH
Giorgetto Giugiaro, Trofarello, Italy, assignor to Kabushiki Kaisha Hattori Seiko, Tokyo, Japan
Filed Jun. 29, 1983, Ser. No. 509,187
Claims priority, application Japan, Jan. 20, 1983, 58-1956
Term of patent 14 years
U.S. Cl. D10—38



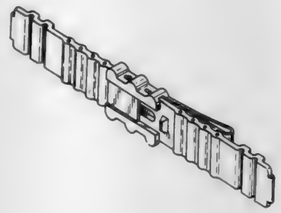
279,274
GRAIN MOISTURE TESTER
Eisaku Emori, Tokyo, Japan, assignor to Kett Electric Laboratory, Tokyo, Japan
Filed Apr. 14, 1983, Ser. No. 485,078
Claims priority, application Japan, Mar. 3, 1983, 58-8397
Term of patent 14 years
U.S. Cl. D10—56



279,275
TRAFFIC CONTROL DRUM
Milton T. Cory, Gastonia, N.C., assignor to Radiator Specialty Company, Incorporated, Charlotte, N.C.
Filed Dec. 5, 1983, Ser. No. 558,751
Term of patent 14 years
U.S. Cl. D10—109



279,276
WATCH BAND
Jiro Matsuo, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Aug. 24, 1983, Ser. No. 526,146
Claims priority, application Japan, Jun. 23, 1983, 58-27179
Term of patent 14 years
U.S. Cl. D11—4



279,277
SNOWFLAKE PIN
Julia Andrus, Salt Lake City, Utah, assignor to Authentica, Inc., Salt Lake City, Utah
Filed Nov. 10, 1982, Ser. No. 440,583
Term of patent 14 years
U.S. Cl. D11—44





279,278
AQUATIC PLANT CONTAINER
Kenneth W. Pink, Unit 36, Middlefields Industrial Estate, Sandy, Bedfordshire SG19 1JZ, England
Filed Aug. 24, 1983, Ser. No. 526,091
Term of patent 14 years
U.S. Cl. D11—143



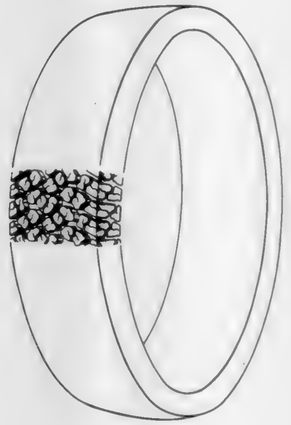
279,279
FLORAL CONTAINER
Curtis D. Wagner, Houston, Tex., assignor to Curtis Wagner Co., Inc., Houston, Tex.
Filed Oct. 24, 1983, Ser. No. 544,581
Term of patent 14 years
U.S. Cl. D11—143



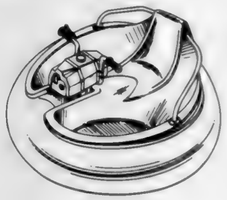
279,280
COMBINED FLOWER HOLDER AND CANDY CONTAINER
Lynda Rae Resnick, Beverly Hills, Calif., assignor to Teleflora, Inc., Los Angeles, Calif.
Filed Apr. 13, 1983, Ser. No. 484,478
Term of patent 14 years
U.S. Cl. D11—146



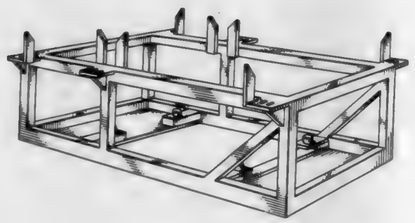
279,281
PNEUMATIC TIRE TREAD AND BUTTRESS
John A. Hutz, Orchard Lake, Mich., assignor to Uniroyal, Inc., Middlebury, Conn.
Filed Aug. 16, 1983, Ser. No. 523,803
Term of patent 14 years
U.S. Cl. D12—149



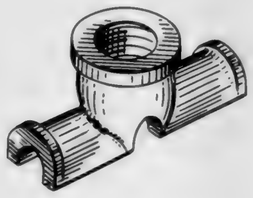
279,282
MOTORIZED BUMPER BOAT
Ralph V. Ball, Laguna Niguel, and James E. Drake, El Cajon, both of Calif., assignors to J&J Recreation, Inc., San Juan Capistrano, Calif.
Filed Nov. 15, 1982, Ser. No. 441,728
Term of patent 14 years
U.S. Cl. D12—307



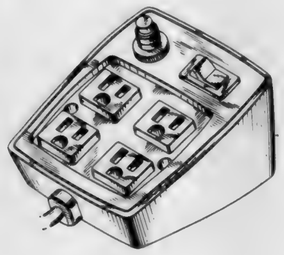
279,283
POWER SUPPLY SUPPORT FRAME
John Tate, 17285 Gehricke Rd., Sonoma, Calif. 95476
Filed May 3, 1982, Ser. No. 373,982
Term of patent 14 years
U.S. Cl. D13—11



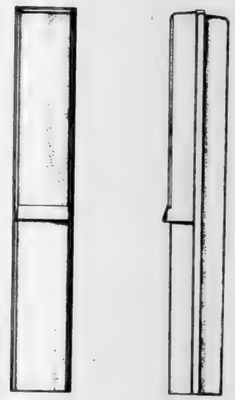
279,284
COMBINED HOUSING FOR ELECTRICAL CABLE TO POWER SOURCE CONNECTOR AND PROTECTIVE CABLE COVER
Kenneth C. Miller, New Braunfels, Tex., assignor to Leavines Electrical Tracing Company, New Braunfels, Tex.
Filed Sep. 24, 1982, Ser. No. 423,108
Term of patent 14 years
U.S. Cl. D13—24



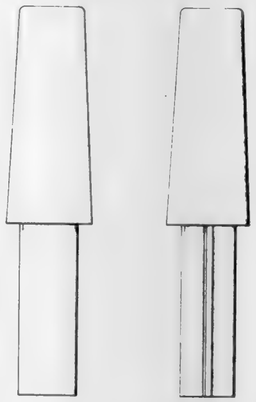
279,285
COMBINED MULTI-OUTLET BOX WITH MASTER SWITCH AND PROTECTIVE COVER THEREFOR
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Apr. 19, 1982, Ser. No. 369,698
Term of patent 14 years
U.S. Cl. D13—30



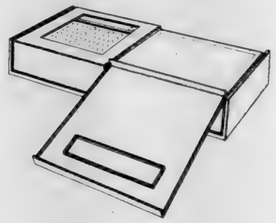
279,286
CABLE PEDESTAL CLOSURE OR SIMILAR ARTICLE
Arnold R. Smith, Chester, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 8, 1982, Ser. No. 439,885
Term of patent 14 years
U.S. Cl. D13—40

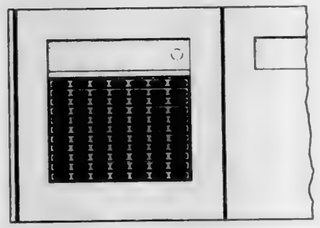


279,287
CABLE PEDESTAL CLOSURE OR SIMILAR ARTICLE
Arnold R. Smith, Chester, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 8, 1982, Ser. No. 439,886
Term of patent 14 years
U.S. Cl. D13—40

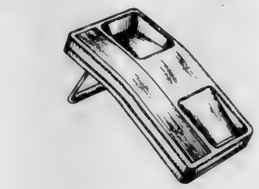


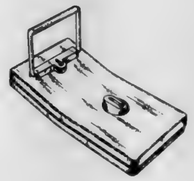
279,288
HOUSING FOR AN AUTOMATIC DIALING TELEPHONE SET OR SIMILAR ARTICLE
Arlan K. Andrews, Sr., Indianapolis; Francis S. Doyle, Oaklandon, both of Ind., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 20, 1982, Ser. No. 450,969
Term of patent 14 years
U.S. Cl. D14—52



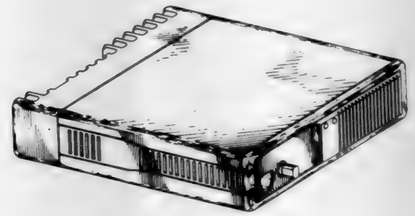


279,289
HANDSET TELEPHONE BASE
Ghanshyam A. Bhat, Marlboro, N.J.; Eric P. P. Chan, New York, N.Y.; John S. Lamancusa, Middletwon, N.J.; Gordon E. Sylvester, Jamaica, N.Y., and Jose R. Varela, Middletown, N.J., assignors to AT&T Information Systems, Holmdel, N.J.
Filed Jun. 5, 1984, Ser. No. 617,517
Term of patent 14 years
U.S. Cl. D14—60

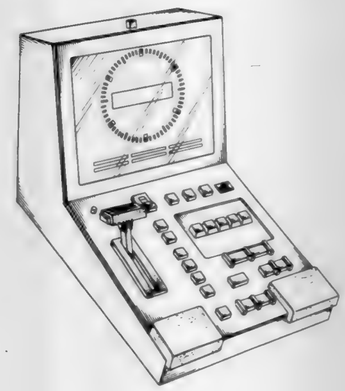




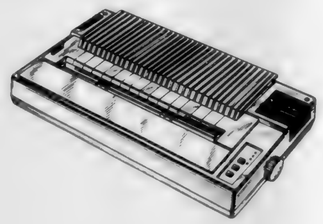
279,290
VEHICULAR TWO-WAY RADIO OR SIMILAR ARTICLE
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 18, 1983, Ser. No. 471,415
Term of patent 14 years
U.S. Cl. D14—68



279,291
CONTROL CONSOLE FOR A VIDEOTAPE RECORDER REMOTE CONTROLLER
Thomas K. Ueda, Foster City, Calif., assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 18, 1983, Ser. No. 485,600
Term of patent 14 years
U.S. Cl. D14—77



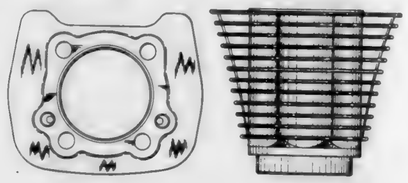
279,292
ELECTRONIC PRINTER
Naoyuki Maruyama, Shiojiri, Japan, assignor to Epson Corporation and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan
Filed Aug. 19, 1983, Ser. No. 524,622
Claims priority, application Japan, Feb. 24, 1983, 58-7312
Term of patent 14 years
U.S. Cl. D14—111



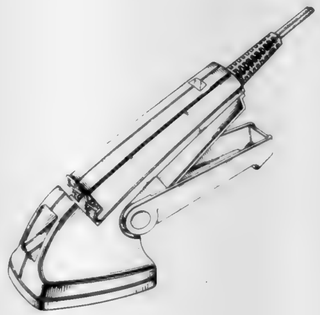
279,293
WINDMILL
Richard K. Sutz, Scottsdale, Ariz., assignor to Wind Baron Corporation, Phoenix, Ariz.
Filed May 27, 1983, Ser. No. 498,708
Term of patent 14 years
U.S. Cl. D15—1



279,294
MOTORCYCLE ENGINE CYLINDER
William G. Davidson, Elm Grove, Wis., assignor to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.
Filed Oct. 3, 1983, Ser. No. 538,206
Term of patent 14 years
U.S. Cl. D15—5



279,295
HAND OPERABLE FABRIC REPAIRING MACHINE
Michael E. Laude, Danbury; Thomas J. Pendleton, N. Wilton, both of Conn.; Douglas W. Smith, Belle Mead, N.J.; Robert E. Dawson, Ridgefield, Conn., and Andrew J. Blance, Rye, N.Y., assignors to The Singer Company, Stamford, Conn.
Filed Jan. 14, 1983, Ser. No. 457,842
Term of patent 14 years
U.S. Cl. D15—66



279,296
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,341
Claims priority, application Japan, Jan. 11, 1983, 58-503
Term of patent 14 years
U.S. Cl. D18—1



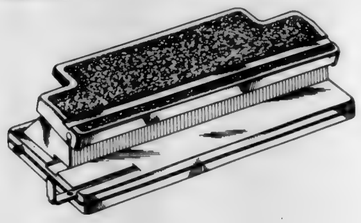
279,297
ERASER
William Rosson, 300 Mercer St., New York, N.Y. 10003
Filed Feb. 1, 1983, Ser. No. 462,883
Term of patent 14 years
U.S. Cl. D19—53



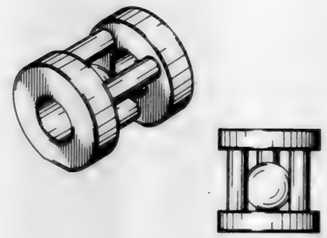
279,298
POWER FACTOR DEMONSTRATOR
Kenneth J. Petrus, Greenwood, S.C., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Nov. 8, 1982, Ser. No. 441,828
Term of patent 14 years
U.S. Cl. D19—62



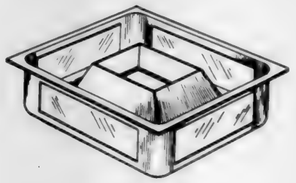
279,299
SHEET PUNCH
Joseph K. Semerjian, Franklin Park, and Glenn R. Lodge, Mt. Prospect, both of Ill., assignors to Wilson Jones Company, New York, N.Y.
Filed Mar. 12, 1982, Ser. No. 357,737
Term of patent 14 years
U.S. Cl. D19—72



279,300
PAPERWEIGHT
Rodney A. Wolf, Rte. 1, Box 63A, Amhurst Junction, Wis. 54407
Filed Jun. 6, 1983, Ser. No. 501,121
Term of patent 14 years
U.S. Cl. D19—97



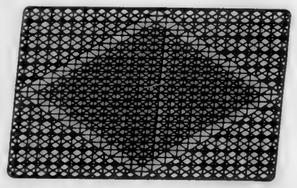
279,301
SUSPENDED CEILING SIGN
Ronald W. Cobb, Atlanta, Ga., assignor to Apco Graphics, Inc., Atlanta, Ga.
Filed Nov. 3, 1983, Ser. No. 548,301
Term of patent 14 years
U.S. Cl. D20—42



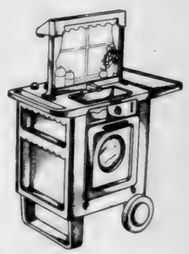
279,302
DART BOARD
Frank L. Wood, 1701-740 Hamilton St., New Westminster, British Columbia, Canada
Filed Dec. 6, 1982, Ser. No. 447,419
Term of patent 14 years
U.S. Cl. D21—6



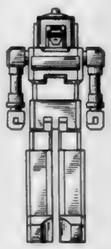
279,303
PASTEBOARD FOR PLAYING CARDS
Wataru Kaga, 1-1-9, Hatta-Aobadai, Higashi-ku, Fukouka-shi, Fukuoka-ken, Japan
Filed Nov. 15, 1982, Ser. No. 441,344
Term of patent 14 years
U.S. Cl. D21—47



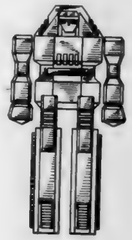
279,304
TOY KITCHEN CART
Alexander Imatt, Oak Brook, and Wayne A. Kuna, Oak Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 19, 1983, Ser. No. 563,094
Term of patent 14 years
U.S. Cl. D21—122



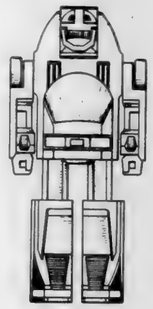
279,305
TOY ROBOT CONVERTIBLE INTO STEAM LOCOMOTIVE
Katsushi Murakami, Tokyo, Japan, assignor to Kabushiki Kaisha Bandai, Japan
Filed Sep. 16, 1982, Ser. No. 418,826
Term of patent 14 years
U.S. Cl. D21—150



279,306
TOY ROBOT CONVERTIBLE INTO A COMBAT CAR
Katsushi Murakami, Tokyo, Japan, assignor to Kabushiki Kaisha Popy, Japan
Filed Sep. 16, 1982, Ser. No. 418,829
Term of patent 14 years
U.S. Cl. D21—150



279,307
TOY ROBOT CONVERTIBLE INTO AN AUTOMOBILE
Katsushi Murakami, Tokyo, Japan, assignor to Kabushiki Kaisha Popy, Japan
Filed Sep. 16, 1982, Ser. No. 418,830
Term of patent 14 years
U.S. Cl. D21—150



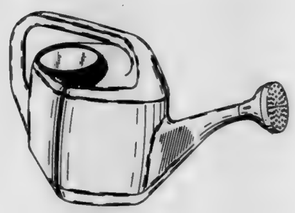
279,308
WATER TOY FIGURE
Claire M. Marschak, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 20, 1983, Ser. No. 459,486
Term of patent 14 years
U.S. Cl. D21—160



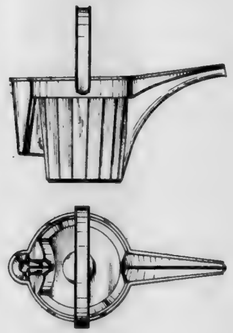
279,309
GOLF CLUB CRADLE
Michael S. Rosen, Richboro, and Gerald Katzoff, Bensalem, both of Pa., assignors to Rokat Enterprises, Inc., Feasterville, Pa.
Filed Feb. 22, 1983, Ser. No. 468,259
Term of patent 14 years
U.S. Cl. D21—234



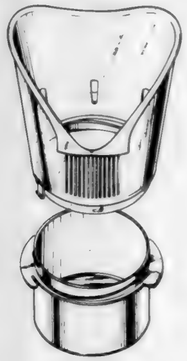
279,310
WATERING CAN
Kent W. Murphy, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Mar. 7, 1983, Ser. No. 473,008
Term of patent 14 years
U.S. Cl. D23—11



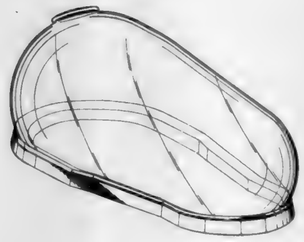
279,311
WATERING CAN
James H. Schwartzburg, Lawrence, Kans., assignor to Packer Plastics, Inc., Lawrence, Kans.
Filed Jul. 29, 1983, Ser. No. 518,697
Term of patent 14 years
U.S. Cl. D23—11



279,312
COMBINED INHALATOR AND FACIAL TREATMENT VAPOR APPLICATOR MASK FOR RESERVOIR
Horst D. Pohlmann, Maintal, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Nov. 10, 1982, Ser. No. 440,591
Term of patent 14 years
U.S. Cl. D23—148



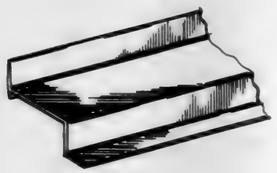
279,313
SUN BED
Derek C. Tolley, Eisteddfa Farm, Llanon, Llanelli, Dyfed, Wales
Filed Feb. 1, 1982, Ser. No. 344,306
Term of patent 14 years
U.S. Cl. D24—39



279,314
TUBING SLIDE CLAMP
Masami Ishida, Osaka, and Keinosuke Isono, Kawaguchi, both of Japan, assignors to Terumo Corporation, Tokyo, Japan
Filed Apr. 26, 1982, Ser. No. 371,993
Claims priority, application Japan, Feb. 16, 1981, 56-5759
Term of patent 14 years
U.S. Cl. D24—53



279,315
BASEBOARD DRAINAGE COLLECTING CHANNEL
Michael F. Smith, P.O. Box 1016, Cumming, Ga. 30130
Filed Sep. 28, 1982, Ser. No. 432,992
Term of patent 14 years
U.S. Cl. D25—74



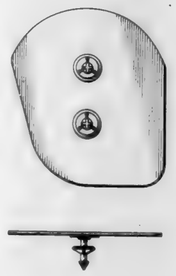
279,316
DECORATIVE LAMP
William Stafford, 101 Wheeler Dr., Hanhan, S.C. 29406
Filed Aug. 6, 1982, Ser. No. 406,069
Term of patent 14 years
U.S. Cl. D26—98



279,317
AQUARIUM ORNAMENT
Jerome Goldman, New York; Marvin Goldman, Great Neck; Gerald Philips, Glen Cove, and Joseph Pesin, Brooklyn, all of N.Y., assignors to Penn Plax Plastics, Garden City, N.Y.
Filed Jun. 2, 1983, Ser. No. 500,454
Term of patent 14 years
U.S. Cl. D30—12



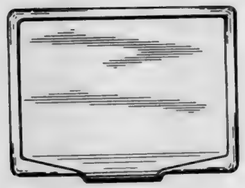
279,318
EAR TAG FOR ANIMALS
Edward E. Dvorak, P.O. Box 79, Manning, N. Dak. 58642
Filed Mar. 19, 1984, Ser. No. 590,855
Term of patent 14 years
U.S. Cl. D30—43



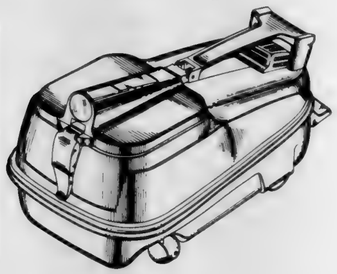
279,319
HAND HELD BLOWER
Donald R. McCloskey, Trappe, and Thornton H. Gogoll, Easton, both of Md., assignors to Black & Decker Inc., Newark, Del.
Filed Apr. 20, 1982, Ser. No. 370,249
Term of patent 14 years
U.S. Cl. D32—15



279,320
DRAINBOARD
Robert L. Ivanusic, 6044 Sayer St., Pittsburgh, Pa. 15201
Filed Aug. 25, 1982, Ser. No. 411,578
Term of patent 14 years
U.S. Cl. D32—56



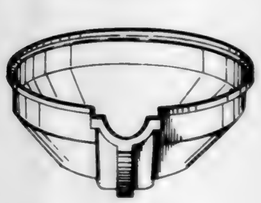
279,321
VACUUM CLEANER
Harold J. Schoettler, 3321 Bounty Cir., Huntington Beach, Calif. 92649
Filed Nov. 7, 1983, Ser. No. 549,677
Term of patent 14 years
U.S. Cl. D32—24



279,322
APPLIQUE FOR WEARING APPAREL
Steven DiMaria, 136 Mohawk Dr., Carol Stream, Ill. 60188
Filed Feb. 14, 1983, Ser. No. 465,834
Term of patent 14 years
U.S. Cl. D33—9 C



279,323
GRAIN HOPPER
James Spenceley, P.O. Box 159, Lethbridge, Alberta, Canada (T1J 3Y5)
Filed Apr. 23, 1982, Ser. No. 371,172
Term of patent 14 years
U.S. Cl. D34—28



279,324
COIN TRAY FOR VEHICLES
Yoshihisa Tanaka, Ichikawa, Japan, assignor to Tanaka Manufacturing Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1983, Ser. No. 458,852
Term of patent 14 years
U.S. Cl. D99—34



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TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF JUNE, 1985

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Bakshi, Kiran R.; Barie, Walter P.; and Sabourin, Edward T., 4,524,171, Cl. 524-376.000.
Barkhoudarian, Sarkis, to Rockwell International Corporation. Lightweight torquemeter and torque-measuring method. 4,523,482, Cl. 73-862.360.
Barmag Barmer Maschinenfabrick AG: *See—*
Schippers, Heinz; Hertell, Siegfried; and Eich, Otwin, 4,523,901, Cl. 417-395.000.
Barmatz, Martin B.; Stoneburner, James D.; Jacobi, Nathan; and Wang, Taylor G., to United States of America, National Aeronautics and Space Administration. Acoustic particle separation. 4,523,682, Cl. 209-638.000.
Barnabeo, Austin E.; and Keogh, Michael J., to Union Carbide Corporation. Reactive organo titanate catalysts. 4,524,201, Cl. 528-395.000.
Barrash, Marshall J., to Coca-Cola Company, The. Multi-container package with optional cover and method for making the same. 4,523,676, Cl. 206-150.000.
Barrows, Kenneth C.; and Divers, Raymond T., to Carrier Corporation. Connector block. 4,523,798, Cl. 339-192.0RL.
Barry, Edward R. Lightweight body respirator having flexible walls. 4,523,579, Cl. 128-30.200.
BASF Aktiengesellschaft: *See—*
Fechner, Wolf D.; Polster, Rudolf; Kranz, Joachim; and Hartmann, Eduard, 4,523,958, Cl. 106-288.00Q.
Hamprecht, Gerhard; Varwig, Juergen; and Wuerzer, Bruno, 4,523,942, Cl. 71-88.000.
Parg, Adolf; Wuerzer, Bruno; and Hamprecht, Gerhard, 4,523,946, Cl. 71-092.000.
Basic Packaging Systems, Inc.: *See—*
Titchenal, Oliver R., 4,524,459, Cl. 383-37.000.
Battelle Development Corporation: *See—*
Hillman, Melville E. D.; Huffman, William J.; Lipinsky, Edward S.; and Stambaugh, Edgel, 4,523,928, Cl. 44-56.000.
Bauer, Armin; Ehrend, Helfried; Morche, Klaus; Nutzel, Karl; and Sauerbier, Michael, to Rhein-Chemie Rhein GmbH. Use of cross-linked epoxidized fatty oils in vulcanizing polymers. 4,524,182, Cl. 525-120.000.
Bauer, Robert, to Miles Laboratories, Inc. Color comparison reference standard and method for using same. 4,523,852, Cl. 356-421.000.
Baumgartner, Werner; Krockow, Dieter; and Tihany, Jeno , to Siemens Aktiengesellschaft. Photo transistor. 4,524,375, Cl. 357-30.000.
Bayer Aktiengesellschaft: *See—*
Bonse, Gerhard; Lantzsch, Reinhard; Dorr, Henning; Kreiss, Wolfgang; Dickore, Karlfried; Ditgens, Klaus; and Kranz, Eckart, 4,524,205, Cl. 544-223.000.
Brandt, Horst; Gehrke, Gunter; Muders, Rolf; Otten, Hans-Gunter; and Wiegner, Dieter, 4,523,926, Cl. 8-639.000.
Kloker, Werner; and Kraft, Klaus, 4,524,177, Cl. 525-14.000.
Steinberger, Helmut; Kirschnek, Helmut; and Pfeiffer, Josef, 4,524,172, Cl. 524-506.000.
Tietze, Lutz-Friedjan; and Fischer, Roland, 4,524,202, Cl. 536-18.500.
Bayer, Ulrich; and Ochs, Siegfried, to Daimler-Benz Aktiengesellschaft. Rotational speed measuring device with economy field. 4,523,457, Cl. 73-114.000.
Bayne, Christopher J.; Lambert, Joseph L.; and Collyer, Graham E., to Heraeus Quarzschmelze GmbH. Apparatus for loading magazines into furnaces. 4,523,885, Cl. 414-156.000.
Bazzi, Giuseppe: *See—*
Strada, Francesco; and Bazzi, Giuseppe, 4,523,648, Cl. 174-26.00R.
BBC Brown, Boveri & Company, Limited: *See—*
Frutschi, Hans-Ulrich, 4,523,432, Cl. 60-659.000.
Beastall, William H.; Ballew, Vernon R.; Collier, Richard D.; and Bagby, John T., to International Steel Company. Radiant energy shielded enclosures. 4,523,417, Cl. 52-273.000.
Beavan, Stuart W.: *See—*
Finch, Timothy D.; and Beavan, Stuart W., 4,524,014, Cl. 252-188.100.
Beck, Marlin E.; and McFarland, Robert W., to Delbar Products, Inc. Mirror swing lock mechanism. 4,523,735, Cl. 248-476.000.
Beckley, Robert A., to World Color Press, Inc. Apparatus for mixing fountain solution. 4,523,854, Cl. 366-132.000.
Becton, Dickinson and Company: *See—*
Wilner, L. Bruce; and Wong, Herbert V., 4,523,964, Cl. 148-33.200.
Bednarczuk, Robert. Portable golf driving net assembly. 4,523,760, Cl. 273-181.00F.
Beecham Group p.l.c.: *See—*
Oduro-Yeboah, Joshua, 4,524,075, Cl. 514-451.000.
Beecham Group p.l.c.: *See—*
Stirling, Irene; Bruton, Gordon; Calvert, Stephen H.; and Clarke, Brian P., 4,524,073, Cl. 514-80.000.
Beghin-Say S.A.: *See—*
Cuel, Jacques, 4,523,388, Cl. 34-35.000.
Behringer, John; and Martin, Pierre, to Robot-Coupe, S.A. Food processor assembly. 4,523,720, Cl. 241-37.500.
Behringwerke Aktiengesellschaft: *See—*
Bohn, Hans, 4,524,027, Cl. 260-112.00R.
Beitler, Bradley D.: *See—*
Richart, Jene A.; Beitler, Bradley D.; and Deeken, David G., 4,523,878, Cl. 405-195.000.
Belanger, Richard W.; and Melendy, Peter S. Mechanism for glue gun. 4,523,705, Cl. 226-127.000.
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, to ITT Industries, Inc. Method for monitoring and controlling hydraulic brake slip control devices supplied with energy from an external source, and an apparatus for implementing this method. 4,523,791, Cl. 303-92.000.
Belart, Juan; and Burgdorf, Jochen, to ITT Industries, Inc. Dual-circuit hydraulic brake system. 4,523,792, Cl. 303-92.000.
Belko, Robert P.: *See—*
Sprecker, Mark A.; Belko, Robert P.; Van Loveren, Augustinus G.; and Hanna, Marie R., 4,524,020, Cl. 252-522.00R.
Belmor Manufacturing Company: *See—*
Kooyumjian, Thomas A., 4,523,657, Cl. 180-68.100.
Bender, Harold C. Drawbar apparatus. 4,523,771, Cl. 280-474.000.
Benenati, Salvatore: *See—*
Lefkowitz, Stephen; Benenati, Salvatore; and Ickowski, Edward S., 4,524,384, Cl. 358-108.000.
Benner, Lester C.: *See—*
Brady, Thomas R.; and Benner, Lester C., 4,523,543, Cl. 118-697.000.
Benoit, Robert L.: *See—*
Arena, Aldo; and Benoit, Robert L., 4,523,872, Cl. 403-274.000.
Berczi, Charles N.; and Hall, Karen, to Milliken Research Corporation. Flame retardant finishing composition for synthetic textiles. 4,524,170, Cl. 524-371.000.
Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., to Hollandse Signaalapparaten B.V. Pulse radar apparatus. 4,524,358, Cl. 343-7.700.
Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., to Hollandse Signaalapparaten B.V. Pulse radar apparatus. 4,524,360, Cl. 343-17.10R.
Bergthaller, Peter; Stolzenburg, Rudolf; Marx, Paul; and Hamprecht, Rainer, to Agfa-Gevaert Aktiengesellschaft. Color photographic recording material containing a thiazole azo dye releaser for cyan dyes. 4,524,124, Cl. 430-241.000.
Bergthaller, Peter: *See—*
Schenk, Gunther; Bergthaller, Peter; Heidenreich, Holger; and Wolfrum, Gerhard, 4,524,123, Cl. 430-241.000.
Berkovitz, Michael A.: *See—*
Sheridon, Nicholas K.; and Berkovitz, Michael A., 4,524,371, Cl. 346-159.000.

Berlec, Ivan, to General Electric Company. General service incandescent lamp with improved efficiency. 4,524,302, Cl. 313-579.000.

Bernhardt, Siegfried: *See*—
Schmiedgen, Hans; Bernhardt, Siegfried; Strobl, Otto; and Menzel, Dietrich, 4,523,350, Cl. 19-98.000.

Berrer, Dagmar: *See*—
Szczepanski, Henry; and Berrer, Dagmar, 4,523,947, Cl. 71-93.000.

Berrey, Harry R.; and Caulier, Paul W., to Genicom Corporation. Bi-directional drive print wire actuator with forward-velocity and reverse-position closed loop feedback control. 4,523,867, Cl. 400-124.000.

Bertails, Jean C., to Societe Pour L'etude et la Fabrication des Circuits Integres Speciaux E.F.C.I.S. High-pass filter of the first order and application thereof to telephony. 4,524,425, Cl. 364-825.000.

Bertolini, Guglielmo: *See*—
Greco, Alberto; Bertolini, Guglielmo; and Zavattini, Omero, 4,524,187, Cl. 525-332.100.

Besemann, Alfred, to E.C.H. Will (GmbH & Co.). Apparatus for accumulating stacks of paper sheets or the like. 4,523,502, Cl. 83-71.000.

Bevan, Christopher G., to C. G. Bevan Associates Limited. Moulding of construction products. 4,524,039, Cl. 264-71.000.

Bhagwat, Anil G.: *See*—
Strutt, John R.; and Bhagwat, Anil G., 4,523,832, Cl. 355-3.0SH.

Biber, Klaus; Grunvogel, Karl; Lemcke, Ulrich; Jakubowski, Heinz; and Schulz, Kurt, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Adjustable stand for optical observation instruments. 4,523,732, Cl. 248-123.100.

Bickler, Donald B.: *See*—
Ross, Bernd, deceased; Bickler, Donald B.; and Gallagher, Brian D., 4,524,237, Cl. 136-261.000.

Bigot, Bernard, to Rhone-Poulenc Industries. Production of concentrated phosphoric acid and hemihydrated calcium sulfate. 4,524,057, Cl. 423-555.000.

Billingsley, James D.; and Moore, Fergus E., to LTV Aerospace and Defense Company. Predetection processing of optical information. 4,524,385, Cl. 358-113.000.

Bills, Kenneth W., Jr.; and Svob, Gerald J., to United States of America, Air Force. Simultaneous incremental strain/incremental temperature analog device for, and method, of testing for stress response. 4,523,475, Cl. 73-781.000.

Bilson, Edward B., to ITT Corporation. Luminaire door hinge. 4,523,693, Cl. 220-337.000.

Binder, Germaine; and Kremer, Bernard, to Thomson-Brandt. Insulated multiwire electric cable having protected solderable and non-heat-sealing conductors. 4,524,241, Cl. 174-119.00R.

Bindernagel, Ali: *See*—
Faste, Heinrich; and Bindernagel, Ali, 4,523,622, Cl. 164-66.100.

Bingley, John D., to RCA Corporation. Cold start surge current limiting system for a hydrazine thruster augmentation heater. 4,523,429, Cl. 60-203.100.

Bio-Specifics N.V.: *See*—
Pinnell, Sheldon R., 4,524,065, Cl. 424-94.000.

Biosound, Inc.: *See*—
Lee, Paul P., 4,523,471, Cl. 73-626.000.

Bishara, William, to Kennecott Corporation. Modular furnace lining having mechanically interlocking attachment means. 4,523,531, Cl. 110-336.000.

Bizard, Andre , to Societe En Nom Collectif. Devices for separating the cleaning bodies of tube exchangers from the fluids which transport them. 4,523,634, Cl. 165-95.000.

Biziere, Kathleen: *See*—
Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, 4,524,070, Cl. 514-230.000.

Bjorklund, Gary C.; and Levenson, Marc D., to International Business Machines Corporation. Frequency modulation-polarization spectroscopy method and device for detecting spectral features. 4,523,847, Cl. 356-349.000.

Blaauw, Cornelis; Naguib, Hussein M.; Ahmed, Syed M.; and Aftab, Ahmad, to Canadian Patents and Development Limited-Societe Canadienne des Brevets et d'Exploitation Limitee. Method of preparing TiO_2 thick film photoanodes for photoelectrochemical cells. 4,524,091, Cl. 427-74.000.

Black & Decker Inc.: *See*—
Alessio, Lorenzo E., 4,523,504, Cl. 83-471.300.

Blackburn, James. Stitch chain cutter for sewing machines. 4,523,535, Cl. 112-288.000.

Blades, Frederick K., to PureCycle Corporation. Ultrasonic transceiver circuit. 4,523,472, Cl. 73-632.000.

Blake, Andy F.: *See*—
Gould, Charles M.; and Blake, Andy F., 4,523,606, Cl. 137-119.000.

Blake, Joseph W., III; and Kaufman, Jack W. Surgical stapler. 4,523,707, Cl. 227-19.000.

Bleckmann, Hans-Wilhelm: *See*—
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,523,791, Cl. 303-92.000.

Bliss, Lawrence: *See*—
Krakauer, Lawrence; and Bliss, Lawrence, 4,524,266, Cl. 235-377.000.

Blizzard Gesellschaft m.b.H.: *See*—
Arnsteiner, Anton, 4,523,772, Cl. 280-610.000.

Blumcraft of Pittsburgh: *See*—
Horgan, William J., Jr., 4,523,414, Cl. 52-204.000.

Bobb, Lloyd C., to United States of America, Navy. Fiber optic system for measuring electric fields. 4,524,322, Cl. 324-72.000.

Boehringer Mannheim GmbH: *See*—
Rosenbladt, Rudolf V.; Nenninger, Klaus; and Schussler, Rudolf, 4,523,853, Cl. 356-446.000.

Boeing Company, The: *See*—
Buitekant, Alan; and Dolliver, David M., 4,523,731, Cl. 244-137.00R.
Schaffer, James R., Jr., 4,524,406, Cl. 362-32.000.

Bohn, Hans, to Behringwerke Aktiengesellschaft. Membrane-associated proteins (MP_2), a process for obtaining them, and their use. 4,524,027, Cl. 260-112.00R.

Bonassi, Luciano. Winch for sheet winding on seacrafts. 4,523,744, Cl. 254-371.000.

Bongartz, Heinz B.: *See*—
Brankamp, Klaus; and Bongartz, Heinz B., 4,523,483, Cl. 73-862.540.

Bonnier, Georges; and Hermier, Yves, to Centre National de la Recherche Scientifique. Sealed unitary thermometric calibration cell connecting different fixed points. 4,523,859, Cl. 374-1.000.

Bonse, Gerhard; Lantzsch, Reinhard; Dorr, Henning; Kreiss, Wolfgang; Dickore, Karlfried; Ditgens, Klaus; and Kranz, Eckart, to Bayer Aktiengesellschaft. Process for the preparation of 1-amino-1,3,5-triazine-2,4(1H,3H)-diones. 4,524,205, Cl. 544-223.000.

Borchardt, John K., to Halliburton Company. Method of viscosifying aqueous fluids and process for recovery of hydrocarbons from subterranean formations. 4,524,003, Cl. 252-8.55R.

Borg-Warner Chemicals, Inc.: *See*—
Vaughan, James M., 4,524,179, Cl. 525-68.000.

Borg-Warner Corporation: *See*—
Boster, Clark S., 4,523,451, Cl. 73-37.600.
Browne, Vance d.; and Kochanek, George E., 4,523,474, Cl. 73-724.000.

Borsoi, Bruno, to Nordica S.p.A. Adjusting device particularly for ski boots. 4,523,395, Cl. 36-119.000.

Bosserhoff, Hartmut; Steinhagen, Wolfgang; and Joeres, Ulrich, to Texas Instruments Incorporated. Circuit arrangement for converting an analog AC voltage signal to a digital signal. 4,524,346, Cl. 340-347.0CC.

Boster, Clark S., to Borg-Warner Corporation. Hydraulic proximity probe. 4,523,451, Cl. 73-37.600.

Bottaccio, Giorgio: *See*—
Paffoni, Camillo; Carlini, Filippo M.; Bottaccio, Giorgio; and Osti, Alberto, 4,523,953, Cl. 106-23.000.

Bottka, Nicholas; Schwartz, Robert W.; and Thun, Wayne E., to United States of America, Navy. Deposition of compounds from multi-component organo-metals. 4,524,090, Cl. 427-53.100.

Bouffard, Jean; Dumoulin, Andre ; and Lederhose, Edgar K., to Northern Telecom Limited. Cradle for a twisting machine. 4,523,423, Cl. 57-59.000.

Bourlier, Claude P.; and Sallot, Louis E. Security apparatus for the passage of objects. 4,523,527, Cl. 109-19.000.

Bower, Allen M.; and Weeks, Gary L., to Emco Wheaton, Inc. Low flow control nozzle. 4,523,700, Cl. 222-505.000.

Bradley, Geoffrey; Hoarty, John T.; and Howarth, Ian M., to Internationale Octrooi Maatschappij "Octropa" B.V. Cementiferous compositions. 4,524,163, Cl. 524-5.000.

Bradshaw, John: *See*—
Price, Barry J.; Clitherow, John W.; Bradshaw, John; Martin-Smith, Michael; Judd, Duncan B.; and Hayes, Roger, 4,524,071, Cl. 514-272.000.

Brady, Michael M.: *See*—
Finn, Lyle D.; Volkert, Bruce C.; Matthews, Jamie F., Jr.; and Brady, Michael M., 4,523,877, Cl. 405-195.000.

Brady, Thomas R.; and Benner, Lester C., to Owens-Corning Fiberglas Corporation. Asphalt shingles - color blend drop sequence randomized by deposition means controlled by random signal generator to obviate stripes on roof. 4,523,543, Cl. 118-697.000.

Braetsch, Hartmut; and Herter, Karl, to Kaltenbach & Voight GmbH & Co. Foot-actuated control arrangment particularly for dental arrangment. 4,523,911, Cl. 433-101.000.

Brajder, Antonio; and Hantke, Klaus, to Siemens Aktiengesellschaft. Triangle waveform generator. 4,524,334, Cl. 331-135.000.

Brand, Peter: *See*—
Kline, James R.; and Brand, Peter, 4,523,713, Cl. 236-1.00C.

Brandt, Horst; Gehrke, Gunter; Muders, Rolf; Otten, Hans-Gunter; and Wiegner, Dieter, to Bayer Aktiengesellschaft. Mixtures of disperse dyestuffs. 4,523,926, Cl. 8-639.000.

Brandt, Maurice W.: *See*—
Spletzer, Barry; Swiatlowski, George J.; and Brandt, Maurice W., 4,523,377, Cl. 29-773.000.

Brankamp, Klaus; and Bongartz, Heinz B., to Brankamp, Klaus. Press apparatus for detecting a force occurring between two oppositely movable machine parts. 4,523,483, Cl. 73-862.540.

Brannen, Wyley W. Post-collision fire prevention device. 4,524,287, Cl. 307-10.00R.

Branscum, Tony E., to Gott Corporation. Combination ice screen and air vent for liquid container. 4,523,699, Cl. 222-189.000.

Braun Aktiengesellschaft: *See*—
Yamac, Yucel, 4,524,263, Cl. 219-249.000.

Braun, Karl; and Fetzer, Jurgen, to Intermedicat GmbH. Surgical stapler. 4,523,695, Cl. 227-8.000.

Braybrook, George E.; Corby, David C.; Shelton, Mark A.; and Shelton, William E. A., to Alan Shelton Limited. Handling of textile yarn. 4,523,441, Cl. 68-5.00C.

Brayman, Semyon. Method of measuring leak rates. 4,523,452, Cl. 73-40.000.

Breckinridge, James B.; and O'Callaghan, Fred G., to United States of America, National Aeronautics and Space Administration. Integrated optics in an electrically scanned imaging Fourier transform spectrometer. 4,523,846, Cl. 356-346.000.

Brentini, Attilio: *See*—
Martin, Jack, 4,523,442, Cl. 70-459.000.

Bretthauer, Hans J.: *See*—
Focke, Heinz; and Bretthauer, Hans J., 4,523,919, Cl. 493-212.000.

Breustedt, Alfred; Taschner, Heinz; Korf, Rainer; and Lorenz, Renate, to VEB Kombinat Medizin-und Labortechnik Leipzig. Mineral tooth with silane-coupled adhesive plastic part. 4,523,912, Cl. 433-202.000.

Briley, Patrick B., to Hybrid Energy Systems, Inc. Vehicle air conditioning system. 4,523,437, Cl. 62-238.400.

Brinegar, Billy W., to Scientific-Atlanta, Inc. Variable amplitude delay equalizer. 4,524,337, Cl. 333-28.00R.

Bristol-Myers Company: *See*—
Matson, James A., 4,524,145, Cl. 514-43.000.

British Aerospace Public Limited Company: *See*—
Frick, Heinz E., 4,523,729, Cl. 244-115.000.

Broding, Robert A., to Standard Oil Company (Indiana). High speed sonic logging using multiple transducers. 4,524,433, Cl. 367-25.000.

Brody, Hal. Gripping aid for the manually disabled. 4,523,781, Cl. 294-1.100.

Brody, Philip S., to United States of America, Army. Ferroelectric photomechanical actuators. 4,524,294, Cl. 310-311.000.

Brokke, Mervin E.; and Magee, Walter L., Jr., to Stauffer Chemical Company. Process for forming esters of glyoxylic acids. 4,524,214, Cl. 560-51.000.

Brooks, Harvey L., to Harrelson, Gary A., a part interest. Conductor identifying probe and voltage supply device. 4,524,320, Cl. 324-66.000.

Broussard, Paul P.: *See*—
Faul, Donald; Broussard, Paul P.; and Granger, Donald W., 4,523,453, Cl. 73-40.700.

Brown, Herbert J.; and Stitt, Thomas D., to General Electric Company. Speed reducing control system with voltage regulation for a polyphase electric motor. 4,524,316, Cl. 318-809.000.

Brown, Kevin E.: *See*—
Dickerson, James, 4,523,774, Cl. 280-655.000.

Browne, Vance d.; and Kochanek, George E., to Borg-Warner Corporation. Capacitive pressure sensor. 4,523,474, Cl. 73-724.000.

Brubaker, Thomas J. Model engine air filter. 4,523,937, Cl. 55-509.000.

Brunson, Welton K.: *See*—
Hubbard, Vance M.; and Brunson, Welton K., 4,523,353, Cl. 24-30.50R.

Brunsting, Albert; and Hogg, Walter R., to Coulter Electronics, Inc. Radiant energy reradiating flow cell system and method. 4,523,841, Cl. 356-73.000.

Brunswick Corporation: *See*—
Staerzl, Richard E., 4,523,572, Cl. 123-494.000.
Swisher, Steven L., 4,523,726, Cl. 242-84.20R.

Bruton, Gordon: *See*—
Stirling, Irene; Bruton, Gordon; Calvert, Stephen H.; and Clarke, Brian P., 4,524,073, Cl. 514-80.000.

Buchel, Urs; and Muther, Paul, to Ciba-Geigy Corporation. Solid disperse dye formulations containing non-ionic dispersants for transfer printing inks. 4,523,923, Cl. 8-524.000.

Buckley, W. D.: *See*—
Duly, Dawn L.; Windischmann, Henry; and Buckley, W. D., 4,523,974, Cl. 156-630.000.

Budai, Zsuzsanna: *See*—
Szejtli, Jozsef; Budai, Zsuzsanna; Radvany nee Hegedus, Erzsebet; Papp, Laszlo ; Kormoczy, Gyorgy; and Pap nee Imrenyi, Gabriella, 4,524,068, Cl. 514-58.000.

Budny, Thomas J.; Hollenbaugh, William H., Jr.; and Gutman, Edward J., to Xerox Corporation. Process for charging toner compositions. 4,524,120, Cl. 430-137.000.

Budzich, Tadeusz, to Caterpillar Tractor Co. Load responsive system. 4,523,431, Cl. 60-431.000.

Bueno, Alfredo, to Dynapac Maskin AB. Vibratory device. 4,523,486, Cl. 74-87.000.

Buitekant, Alan; and Dolliver, David M., to Boeing Company, The. External store release for flight vehicle. 4,523,731, Cl. 244-137.00R.

Bukhman, Yefim, to Motorola, Inc. Method for forming semiconductor devices. 4,523,976, Cl. 156-643.000.

Bukhman, Yefim: *See*—
Balda, Raymond J.; Bukhman, Yefim; and Goodner, Willis R., 4,523,372, Cl. 29-590.000.

Burgdorf, Jochen: *See*—
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,523,791, Cl. 303-92.000.
Belart, Juan; and Burgdorf, Jochen, 4,523,792, Cl. 303-92.000.

Burgmaier, George J.: *See*—
Edwards, Larry D.; Sauter, Frederick J.; and Burgmaier, George J., 4,524,128, Cl. 430-353.000.

Burgyan, Lajos, to Signetics Corporation. Bipolar circuit for amplifying differential signal. 4,524,330, Cl. 330-257.000.

Burk, Ronnie F., to Deere & Company. Position sensing cylinder. 4,523,514, Cl. 92-5.00R.

Burkhardt, Fritz; and Antel, Otto. Locking device for tools in tool magazines. 4,523,367, Cl. 29-568.000.

Burkhardt, Kristin: *See*—
Laba, Dennis; Margres, John J., Jr.; and Burkhardt, Kristin, 4,524,062, Cl. 424-65.000.

Burnham, Stephen R.; and Henry, Paul M., to Burr-Brown Corporation. Band gap voltage reference circuit. 4,524,318, Cl. 323-313.000.

Burr-Brown Corporation: *See*—
Burnham, Stephen R.; and Henry, Paul M., 4,524,318, Cl. 323-313.000.

Burr, John D.: *See*—
Osterhout, Ralph F.; Burr, John D.; and Larson, Eric R., 4,523,379, Cl. 30-151.000.

Burroughs Corporation: *See*—
Page, David W., 4,524,430, Cl. 365-189.000.

Burt, Richard A.: *See*—
Baranyi, Giuseppa; Kazmaier, Peter M.; Hsiao, Cheng-Kuo; and Burt, Richard A., 4,524,218, Cl. 564-307.000.

Butt, Sheldon H., to Olin Corporation. Semiconductor packages. 4,524,238, Cl. 174-52.0FP.

C. G. Bevan Associates Limited: *See*—
Bevan, Christopher G., 4,524,039, Cl. 264-71.000.

C & I Joint Venture: *See*—
Foster, Richard L., 4,523,525, Cl. 104-173.0ST.

Cadbury Schweppes Limited: *See*—
Jeans, Edward L., 4,523,697, Cl. 222-185.000.

Cadillac Meter Company: *See*—
Johnson, Horace J., 4,523,479, Cl. 73-861.350.

Calvert, Stephen H.: *See*—
Stirling, Irene; Bruton, Gordon; Calvert, Stephen H.; and Clarke, Brian P., 4,524,073, Cl. 514-80.000.

Camilleri, Thomas M. Ball kicker. 4,523,756, Cl. 273-49.000.

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Arao, Kozo; and Sato, Tadashi, 4,523,803, Cl. 350-96.130.
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Lang, Walter; Muller, Dieter; Muchel, Franz; Wanner, Roland; and Niesel, Peter, 4,523,821, Cl. 351-214.000.
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Sorenson, Richard W., 4,524,253, Cl. 200-68.200.

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Barrows, Kenneth C.; and Divers, Raymond T., 4,523,798, Cl. 339-192.0RL.
Lord, Richard G., 4,523,435, Cl. 62-212.000.
Schedel, John W.; and Lord, Richard G., 4,523,436, Cl. 62-222.000.

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Draper, David L.; and McKee, Gerald D., 4,523,785, Cl. 296-224.000.

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Semon, William J., 4,523,358, Cl. 27-6.000.

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Budzich, Tadeusz, 4,523,431, Cl. 60-431.000.
Lucas, Victor A., 4,523,397, Cl. 37-118.00R.
Mitchell, Randall M.; and Armstrong, John T., Jr., 4,523,892, Cl. 417-34.000.

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Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, 4,523,945, Cl. 71-92.000.

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Davenport, Kenneth G.; and Hilton, Charles B., 4,524,217, Cl. 564-223.000.
Eickman, Nancy C.; Fabisiak, Walter; and Dix, Robert, 4,524,101, Cl. 428-294.000.

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Isermann, Rolf, 4,523,714, Cl. 236-46.00R.

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Bonnier, Georges; and Hermier, Yves, 4,523,859, Cl. 374-1.000.

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Muggli, Jurg; and Gruber, Peter, 4,524,281, Cl. 250-574.000.

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Chabot, Ferdinand E., to Square D Company. Contact control arrangement for high amperage molded case circuit breaker. 4,524,339, Cl. 335-22.000.

Chaki, Takao; and Mogi, Mamoru, to Clarion Co., Ltd. Cross-arm mechanism in a pushbutton tuner. 4,523,485, Cl. 74-10.330.

Chalmers, Brian D.; Ruxton, David S.; and Miller, Kenneth L. Head positioning system for a disc data store. 4,524,397, Cl. 360-77.000.

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Chamuel, Jacques R., to Charles Stark Draper Laboratory, Inc., The. Magneto-elastic material defect detector. 4,523,473, Cl. 73-643.000.

Chandler, Joseph A., to United States of America, National Aeronautics and Space Administration. Linear motion valve. 4,523,741, Cl. 251-325.000.

Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Hydrothermal zeolite activation. 4,524,140, Cl. 502-61.000.

Chapman, Claude L. Load pickup coupling device and method. 4,523,746, Cl. 258-1.200.

Chapman, Ivan B., Jr., to AT&T Technologies, Inc. Ergonomical in-line tool. 4,523,498, Cl. 81-177.100.

Charles, Robert G.; and Hickam, William M., to Westinghouse Electric Corp. Method of separating cationic from anionic beads in mixed resin beds. 4,523,996, Cl. 210-504.000.

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Chamuel, Jacques R., 4,523,473, Cl. 73-643.000.
De Fazio, Thomas L., 4,523,409, Cl. 51-165.710.

Charlot, Lincoln H., Jr., to Security Tag Systems, Inc. Ball clutch mechanism with two sets of balls in separate radial planes. 4,523,356, Cl. 24-155.0BR.

Chase, Karl L., to Sperry Corporation. Line pattern template generator. 4,524,353, Cl. 340-732.000.

Cheer, David A., to J.P. Products, Inc. Tube joint. 4,523,780, Cl. 285-399.000.

Chemical Process Corporation: *See—*
Viswanathan, Tito; and Richardson, Thomas, 4,524,164, Cl. 524-14.000.

Chemie und Filter GmbH Verfahrenstechnik KG: *See—*
Wally, Michael, 4,523,902, Cl. 417-410.000.

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Pullukat, Thomas J.; Hwang, Yu-Tang; and Dombro, Robert A., 4,524,141, Cl. 502-107.000.

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Allensworth, Dwight L.; and Chen, Peter J., 4,524,295, Cl. 310-328.000.

Cherry, Carl J.: *See—*
Gower, Irving W.; Cherry, Carl J.; and Yang, David S., 4,523,949, Cl. 75-24.000.

Chester, Arthur W.; Garwood, William E.; Lucki, Stanley J.; and Tabak, Samuel A., to Mobil Oil Corporation. Process for producing high viscosity index lubes. 4,524,232, Cl. 585-517.000.

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Chin, Thomas G.; Klaver, Rudy F.; and Alston, Arthur, 4,523,860, Cl. 374-27.000.
Graf, Peter E.; and Goodrich, Judson E., 4,523,957, Cl. 106-277.000.
Thompson, Robert E., 4,523,804, Cl. 350-96.230.

Chia, Joan K.: *See—*
Cockrum, Charles A.; Chia, Joan K.; and Kreider, James F., 4,524,378, Cl. 357-71.000.

Chibnik, Sheldon, to Mobil Oil Corporation. Polyester demulsifiers and compositions thereof. 4,524,007, Cl. 252-56.00R.

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Chisso Corporation: *See—*
Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, 4,524,018, Cl. 252-522.00A.

Cho, James R.; and Johnson, Stephen C., to GAF Corporation. Polymeric sunscreens. 4,524,061, Cl. 424-60.000.

Christianson, Charles L.; and Spurlock, Richard, to United States of America, Navy. Radiation source shield and calibrator. 4,524,279, Cl. 250-497.100.

Christianson Manufacturing Corporation: *See—*
Grady, Clyde C.; and Grady, Clyde C., II, 4,523,601, Cl. 135-22.000.

Ciba-Geigy Corporation: *See—*
Buchel, Urs; and Muther, Paul, 4,523,923, Cl. 8-524.000.
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,523,944, Cl. 71-92.000.
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,524,028, Cl. 260-239.00A.
Lacroix, Roger, 4,523,924, Cl. 8-527.000.
Scheibli, Peter, 4,523,925, Cl. 8-549.000.
Spivack, John D.; and Pastor, Stephen D., 4,524,166, Cl. 524-117.000.
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Szczepanski, Henry; and Berrer, Dagmar, 4,523,947, Cl. 71-93.000.
Wick, Arnold, 4,524,168, Cl. 524-190.000.
Yokoyama, Naokata, 4,524,146, Cl. 514-273.000.

Cilco, Inc.: *See—*
Parker, Donald W., 4,524,271, Cl. 250-233.000.

Citizen Watch Co., Ltd.: *See—*
Yoshioka, Junichi; Koizumi, Koichi; Kanai, Akira; and Shiba, Kazuo, 4,523,410, Cl. 51-166.00R.

Clarion Co., Ltd.: *See—*
Chaki, Takao; and Mogi, Mamoru, 4,523,485, Cl. 74-10.330.

Clarke, Brian P.: *See—*
Stirling, Irene; Bruton, Gordon; Calvert, Stephen H.; and Clarke, Brian P., 4,524,073, Cl. 514-80.000.

Clarke, Roy M.: *See—*
Gilding, Denis K.; and Clarke, Roy M., 4,524,036, Cl. 264-10.000.

Clayfield, Eric J.; Dixon, Arnold G.; and Miller, Richard J. L., to Shell Oil Company. Process for the removal of oil from an oil-in-water dispersion. 4,524,000, Cl. 210-649.000.

Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Process for separating fatty acids. 4,524,029, Cl. 260-419.000.

Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Process for separating fatty acids. 4,524,030, Cl. 260-419.000.

Clement, Gilles; Francois, Daniel; Marchal, Paul; and Moreau, Claude, to Commissariat A L'Energie Atomique. Remote manipulation assembly. 4,523,884, Cl. 414-8.000.

Clitherow, John W.: *See—*
Price, Barry J.; Clitherow, John W.; Bradshaw, John; Martin-Smith, Michael; Judd, Duncan B.; and Hayes, Roger, 4,524,071, Cl. 514-272.000.

Clopay Corporation: *See—*
Mortellite, Robert M., 4,523,620, Cl. 160-315.000.

Cobb, Bernie J., to United States of America, Army. Low cost antitank rocket motor structure. 4,523,524, Cl. 102-374.000.

Coca-Cola Company, The: *See—*
Barrash, Marshall J., 4,523,676, Cl. 206-150.000.

Cockrum, Charles A.; Chia, Joan K.; and Kreider, James F., to Hughes Aircraft Company. Anodizable metallic contacts to mercury cadmium telleride. 4,524,378, Cl. 357-71.000.

Coelho, Wagner C.: *See—*
Abdel-Hehim, Hossam A. A.; Coelho, Wagner C.; and Soares, Gloria M. G., 4,523,941, Cl. 71-37.000.

Cogliano, Joseph A., to W. R. Grace & Co. Asphalt foam. 4,524,156, Cl. 521-83.000.

Cohen, Melvin; and Duyne, Fred V., to Melrose Displays, Inc. Adjustable display apparatus. 4,523,722, Cl. 211-175.000.

Cohen, Sheppard; Barakitis, Nikolaos; Loughridge, Frederick A.; and Marlor, Richard C., to GTE Products Corporation. Compact fluorescent lamps. 4,524,301, Cl. 313-493.000.

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Wixon, Harold E., 4,524,012, Cl. 252-174.000.

Collet, Georges. Attachable toothbrush. 4,523,599, Cl. 132-84.00D.

Collier, Richard D.: *See—*
Beastall, William H.; Ballew, Vernon R.; Collier, Richard D.; and Bagby, John T., 4,523,417, Cl. 52-273.000.

Colling, Jean M., to Framatome & Cie. Safety device. 4,524,449, Cl. 377-28.000.

Collins & Aikman Corp.: *See—*
Scott, Eddie W.; and Seltzer, Errol N., 4,523,426, Cl. 57-247.000.

Collins, George J.: *See—*
Sullivan, Paul A.; and Collins, George J., 4,523,370, Cl. 29-576.00B.

Collyer, Graham E.: *See—*
Bayne, Christopher J.; Lambert, Joseph L.; and Collyer, Graham E., 4,523,885, Cl. 414-156.000.

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Gower, Irving W.; Cherry, Carl J.; and Yang, David S., 4,523,949, Cl. 75-24.000.

Lubin, Barry T.; and Thompson, James P., 4,523,466, Cl. 73-579.000.

Maliszewski, Theodore V.; and Kohler, David E., 4,523,721, Cl. 241-61.000.

Commette, Denis S.; and LaMonica, Eugene R., to Gusmer Corporation. Apparatus for dispensing a mixture of mutually reactive liquids. 4,523,696, Cl. 222-135.000.

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Clement, Gilles; Francois, Daniel; Marchal, Paul; and Moreau, Claude, 4,523,884, Cl. 414-8.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
George, Christopher W.; Sinha, Hari N.; Vujcich, Mary R.; and Walker, Graham S., 4,524,054, Cl. 423-308.000.

Compagnie Generale Des Etablissements Michelin: *See—*
Gouttebessis, Jacques, 4,523,619, Cl. 152-527.000.

Comtech Research Unit Limited: *See—*
Humberstone, Victor C., 4,524,116, Cl. 430-31.000.

Concast AG: *See—*
Navarro, Carlos R., 4,523,672, Cl. 198-461.000.

Conoco Inc.: *See—*
Coon, Julian B.; and Thomas, Bobby J., 4,523,651, Cl. 175-45.000.

Continental Group, Inc., The: *See—*
Walter, John, 4,523,540, Cl. 118-63.000.

Control Data Corporation: *See—*
Rank, William J., 4,523,796, Cl. 339-17.0CF.

Coon, Julian B.; and Thomas, Bobby J., to Conoco Inc. Coal auger guidance system. 4,523,651, Cl. 175-45.000.

Copeland, Robert J., to United States of America, Energy. Method and apparatus for operating an improved thermocline storage unit. 4,523,629, Cl. 165-1.000.

Corby, David C.: *See—*
Braybrook, George E.; Corby, David C.; Shelton, Mark A.; and Shelton, William E. A., 4,523,441, Cl. 68-5.00C.

Core Laboratories, Inc.: *See—*
Glodo, David O.; and McFaddin, James, 4,524,420, Cl. 364-497.000.

Cornelius, Erwin D., to M & W Gear Company. Door operating mechanism for gravity type farm wagon. 4,523,690, Cl. 220-262.000.

Cornell Research Foundation, Inc.: *See—*
Ast, Dieter G., 4,523,625, Cl. 164-461.000.

Cornick, John A., to U.S. Philips Corporation. Corrugated semiconductor device. 4,524,376, Cl. 357-55.000.

Cosper, David R.; and McKay, Gretchen L., to Nalco Chemical Company. Hydrotropes and uses thereof. 4,523,932, Cl. 55-85.000.

Cottatelucci, Ezio, to Italtel Societa Italiana Telecomunicazioni S.p.A. System for jointly transmitting high-frequency and low-frequency digital signals over a fiber-optical carrier. 4,524,462, Cl. 455-608.000.

Cotton, John F., to Westinghouse Electric Corp. Ganged circuit breaker arrangement. 4,524,338, Cl. 335-8.000.

Cottrell, John S.; Turner, Patrick J.; and Kay, David J. Multiple collector mass spectrometers. 4,524,275, Cl. 250-298.000.

Coulter Electronics, Inc.: *See—*
Brunsting, Albert; and Hogg, Walter R., 4,523,841, Cl. 356-73.000.

Couri, Mark S., to Sundstrand Corporation. Protective cover for a limb or a cast. 4,523,586, Cl. 128-82.000.

Courser, Incorporated: *See—*
King, Charles, 4,524,282, Cl. 250-577.000.

Courtis, Andrew: *See—*
Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., 4,524,198, Cl. 526-292.100.

Courtney, Edward, Jr.: *See—*
Hearn, Patrick L.; and Courtney, Edward, Jr., 4,523,375, Cl. 29-605.000.

Courtois, Bernard: *See—*
Letournoux, Alain; and Courtois, Bernard, 4,523,786, Cl. 297-367.000.

Covey, Robert L.; and Gale, Michael T., to RCA Corporation. System for positioning a body. 4,523,850, Cl. 356-375.000.

Crane, Laura J.; and Ramsden, Hugh E., to J. T. Baker Chemical Company. Affinity chromatography matrix with built-in reaction indicator. 4,523,997, Cl. 210-635.000.

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Lhenry, Bernard; and Roustan, Max, 4,523,896, Cl. 417-244.000.

Cristobal, Carlos C.: *See—*
Palacio, Joaquin J.; and Cristobal, Carlos C., 4,523,419, Cl. 52-690.000.

Crocker, David R.; Stelling, Desi D.; and Larson, Francis W., to Sperry Corporation. High speed solid state multiplexer. 4,524,443, Cl. 370-112.000.

Cronin, Michael J., to Lockhead Corporation. All electric environmental control system for advanced transport aircraft. 4,523,517, Cl. 98-1.500.

Cross, Carroll N. Display mount apparatus and method. 4,523,399, Cl. 40-119.000.

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Grego, Giorgio, 4,523,938, Cl. 65-2.000.

Cuel, Jacques, to Beghin-Say S.A. Method for drying by vapor recompression. 4,523,388, Cl. 34-35.000.

Cuomo, Jerome J.; Harper, James M. E.; Kaufman, Harold R.; and Speidell, James L., to International Business Machines Corporation. Programmable ion beam patterning system. 4,523,971, Cl. 156-345.000.

Cuozzo, Anthony; and Achee, John D., to Torrington Company, The. Method of making a roller bearing assembly. 4,523,362, Cl. 29-148.40A.

Curatolo, Joseph A., Jr.: *See—*
Renshaw, Theodore A.; and Curatolo, Joseph A., Jr., 4,523,710, Cl. 228-111.000.

Curti, Paolo. Apparatus for recovery of heat from fumes in a heating system or from the ambient air. 4,523,438, Cl. 62-238.600.

Cushman, Robert H.; and Stout, Charles E., Jr., to AT&T Technologies, Inc. Method of and apparatus for handling crystal ingots. 4,523,972, Cl. 156-617.0SP.

Cygnet Technologies, Inc.: *See—*
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert G.; Ha, Eric P. L.; and Kerman, Stephen, 4,524,244, Cl. 179-2.0DP.

Daftary, Shashikumar H.: *See—*
Streetman, William E.; and Daftary, Shashikumar H., 4,524,105, Cl. 428-364.000.

Daghe, Joseph L.; Sands, Robert E.; and Humes, Dennis W., to Mueller Co. Backflow preventer apparatus. 4,523,607, Cl. 137-218.000.

Daikin Kogyo Co., Ltd.: *See—*
Masuda, Kenji, 4,523,430, Cl. 60-420.000.
Misaki, Susumu; Ishii, Sadamu; and Suefuji, Masahiro, 4,524,032, Cl. 260-465.00F.

Daimler-Benz Aktiengesellschaft: *See—*
Bayer, Ulrich; and Ochs, Siegfried, 4,523,457, Cl. 73-114.000.
Kizler, Wolfgang; Sieder, Wolfgang; Schopf, Hans-Joachim; Dobler, Helmut; and Gluck, Roland, 4,523,916, Cl. 464-98.000.
Schnapper, Martin; and Hufendiek, Ernst W., 4,523,562, Cl. 123-357.000.

Dainippon Screen Manufacturing Co., Ltd.: *See—*
Nagashima, Masato; Katsuyama, Mikizo; and Yamamoto, Masahiro, 4,523,805, Cl. 350-96.240.

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Araki, Shuichi; and Hashiyama, Hideshi, 4,524,456, Cl. 382-56.000.

Dallessandro, Susan M.: *See—*
Tasset, Emmett L.; Dallessandro, Susan M.; and Richey, Warren F., 4,524,011, Cl. 252-171.000.

Dana Corporation: *See—*
Schildt, Walter C., 4,523,917, Cl. 474-19.000.

Danfoss A/S: *See—*
Johansen, Claus J.; Jark, Jens K.; and Stefansson, Thorvardur S., 4,523,739, Cl. 251-139.000.

Daniel, Kelvin J., to Keldan Industries Limited. Injector tester. 4,523,458, Cl. 73-119.00A.

Daniel, Rollin K., to Rollin K. Daniel P.S.C. Anastomotic coupling means capable of end-to-end and end-to-side anastomosis. 4,523,592, Cl. 128-334.00C.

Danner, Helmut: *See—*
Thevis, Paul; Danner, Helmut; and Weisser, Erich, 4,523,509, Cl. 89-129.020.

Dantzig, Jonathan A.; Sevier, Peter E.; and Ungarean, Gary L., to International Telephone and Telegraph Corporation. Cast ingot position control process and apparatus. 4,523,624, Cl. 164-454.000.

Darwall, Edward C. D.: *See—*
Groves, Christopher K.; Duncan, Kevin; and Darwall, Edward C. D., 4,523,975, Cl. 156-643.000.

Das, Jagabandhu; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane thio ethers useful as cardiovascular agents. 4,524,151, Cl. 514-469.000.

da Silva, Edouard F.: *See—*
Delhaye, Michel M.; Dhamelincourt, Paul A.; da Silva, Edouard F.; and Barbillat, Jacques H., 4,523,799, Cl. 350-6.300.

Dassler, Armin A., to Puma-Sportschuhfabriken Rudolf Dassler KG. Athletic shoe having spike or stud-shaped cleats exchangeably arranged at the running sole. 4,523,396, Cl. 36-134.000.

Datafile Limited: *See—*
Barber, Donald T., 4,523,776, Cl. 283-39.000.

Dataproducts Corporation: *See—*
Wolf, Peter H.; Dobson, Thomas A.; and Rozo, Rafael, 4,524,259, Cl. 219-69.00R.

Datwyler, Peter: *See—*
Gfeller, Karl; and Datwyler, Peter, 4,523,824, Cl. 354-161.000.

Davenport, Kenneth G.; and Hilton, Charles B., to Celanese Corporation. Process for producing N-acyl-hydroxy aromatic amines. 4,524,217, Cl. 564-223.000.

Davis, Larry; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Inc. 6-Fluoro-3-[3-(1-heterocyclo)propyl]-1,2-benzisoxazoles. 4,524,209, Cl. 546-148.000.

Debono, Manuel: *See—*
Abbott, Bernard J.; Debono, Manuel; and Fukuda, David S., 4,524,135, Cl. 435-69.000.

De Cock, Etienne M.; De Schamphelaere, Lucien A.; Librecht, Freddy M.; and Van Peteghem, Willy F., to AGFA-Gevaert N.V. Recording apparatus. 4,524,372, Cl. 346-160.000.

Deeken, David G.: *See—*
Richart, Jene A.; Beitler, Bradley D.; and Deeken, David G., 4,523,878, Cl. 405-195.000.

Deere & Company: *See—*
Burk, Ronnie F., 4,523,514, Cl. 92-5.00R.
Dettmer, Larry A., 4,523,766, Cl. 279-4.000.
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Dimock, Jack A., to Sputtered Films, Inc. Wafer processing machine. 4,523,985, Cl. 204-298.000.
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Dixon, Paul H., 4,523,490, Cl. 74-582.000.
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Donovan, Marion. Dental flossing product. 4,523,600, Cl. 132-89.000.
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Meyer, Wilfred C.; and Jakubowski, James J., 4,523,991, Cl. 209-166.000.
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Sun, Yun C., 4,524,180, Cl. 525-71.000.
Tasset, Emmett L.; Dallessandro, Susan M.; and Richey, Warren F., 4,524,011, Cl. 252-171.000.
Dow Corning Corporation: *See—*
Greco, Alberto; Bertolini, Guglielmo; and Zavattini, Omero, 4,524,187, Cl. 525-332.100.
Doyle, Richard H.; and Fiori, Lee B., to Duo-Fast Corporation. Fastener driving tool. 4,523,646, Cl. 173-15.000.
Draper, David L.; and McKee, Gerald D., to Cars & Concepts, Inc. Latch mechanism for hinged panels. 4,523,785, Cl. 296-224.000.
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McGlothen, Jody R., 4,523,643, Cl. 166-297.000.

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Drexhage, Karl H., to Eastman Kodak Company. Process for replacing anions or organic cationic salts. 4,524,204, Cl. 544-103.000.
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Chen, Horng-Yih, 4,524,008, Cl. 252-62.560.
Di Luccio, Robert C., 4,524,099, Cl. 428-213.000.
Farnham, William B.; and Sogah, Dotsevi Y., 4,524,196, Cl. 526-190.000.
Ferretti, August, 4,524,016, Cl. 252-301.40H.
Geltosky, John E., 4,524,025, Cl. 260-112.00R.
Khan, Ausat A., 4,524,197, Cl. 526-206.000.
Levitt, George, 4,523,943, Cl. 71-90.000.
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E.C.H. Will (GmbH & Co.): *See—*
Besemann, Alfred, 4,523,502, Cl. 83-71.000.
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Das, Jagabandhu; and Haslanger, Martin F., 4,524,151, Cl. 514-469.000.
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Andreini, Rockne J.; Farmer, Audley J.; and Yaguchi, Svetlana, 4,523,951, Cl. 75-126.00B.
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Lemke, James U., 4,524,390, Cl. 358-213.000.
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Eberling, Igor L.; Tereschenko, Lev A.; Nikolaev, Nikolai I.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., to Territorialnoe Geolgicheskoe Upravlenie Tsentralnykh Raionov. Method for the determination of kinetics of structure formation in a binder. 4,524,319, Cl. 324-65.00R.
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Edwards, Larry D.; Sauter, Frederick J.; and Burgmaier, George J., to Eastman Kodak Company. Spectrally sensitized silver halide photothermographic material. 4,524,128, Cl. 430-353.000.
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Einhaus, Hermanus F., to U.S. Philips Corporation. Record player with hinged dust cover. 4,524,438, Cl. 369-75.100.
Ejiri, Koichi, to Ricoh Company, Ltd. Method of assigning direction code to boundary picture element in character recognition system. 4,524,454, Cl. 382-21.000.
Ekholm, Carl R., to Standex International Corporation. Chiropractic table cushion drop release mechanism. 4,523,581, Cl. 128-70.000.
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Elliot, Robert B. Vibratory roller with axially spaced zig zag impact bars and wire rope cleaners. 4,523,873, Cl. 404-124.000.
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Ellison, Benjamin L. Carburetor. 4,524,034, Cl. 261-44.00A.
Elmaleh, David R.; and Livni, Eli, to General Hospital Corporation, The. Fatty acid analogs. 4,524,059, Cl. 424-1.100.
Elsass, Henrik: *See—*
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Emco Wheaton, Inc.: *See—*
Bower, Allen M.; and Weeks, Gary L., 4,523,700, Cl. 222-505.000.
Emhart Industries, Inc.: *See—*
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Flasck, James D., 4,524,106, Cl. 428-408.000.
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Ernest, John H.: *See—*
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Andreini, Rockne J.; Farmer, Audley J.; and Yaguchi, Svetlana, 4,523,951, Cl. 75-126.00B.

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Farrell, Charles F., to Texas Instruments Incorporated. Keyboard switch assembly. 4,524,249, Cl. 200-5.00A.

Fasching, George E.; Evans, Donald M.; and Ernest, John H., to United States of America, Energy. Wireless remote liquid level detector and indicator for well testing. 4,523,465, Cl. 73-290.00V.

Faste, Heinrich; and Bindernagel, Ali, to Kocks Technik GmbH & Co. Method of manufacturing hollow metal ingots. 4,523,622, Cl. 164-66.100.

Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., to Masco Corporation of Indiana. Electronic air filtering apparatus. 4,523,463, Cl. 73-204.000.

Faul, Donald; Broussard, Paul P.; and Granger, Donald W., to Testrac, Inc. Method for determining borehole or cavity configuration through inert gas interface. 4,523,453, Cl. 73-40.700.

Faulconer, Mark; and Langton, Allan R., to U.S.D. Corp. Conformable buoyancy compensator. 4,523,914, Cl. 441-108.000.

Fechner, Wolf D.; Polster, Rudolf; Kranz, Joachim; and Hartmann, Eduard, to BASF Aktiengesellschaft. Pigment formulations and their use of pigmenting gravure printing inks and finishes. 4,523,958, Cl. 106-288.00Q.

Federal-Mogul Corporation: *See—*
Hinderer, Robert F., 4,524,185, Cl. 525-328.200.

Feenstra, David D.; Fey, Robert L.; and Goin, Cheryl A., to International Business Machines Corporation. Method and apparatus for in situ purging a xerographic developer. 4,523,615, Cl. 141-1.000.

Feger, William E.: *See—*
Haken, Roger A.; and Feger, William E., 4,524,431, Cl. 365-222.000.

Feist, Wolfgang M., to Raytheon Company. Semiconductor devices and manufacturing methods. 4,523,368, Cl. 29-571.000.

Ferag AG: *See—*
Reist, Walter, 4,523,775, Cl. 283-36.000.

Ferranti Limited: *See—*
Rogers, Douglas J., 4,524,347, Cl. 340-347.00P.

Ferretti, August, to Du Pont de Nemours, E. I., and Company. Process for spheroidal BaFCl:Eu phosphor particles. 4,524,016, Cl. 252-301.40H.

Fester, Walter; and Huber, Bernd, to Hoechst Aktiengesellschaft. Processes for preparing thermostable fibers and filaments. 4,524,041, Cl. 264-182.000.

Fetzer, Jurgen: *See—*
Braun, Karl; and Fetzer, Jurgen, 4,523,695, Cl. 227-8.000.

Feuerhahn, Martin P. O., to Shell Oil Company. Process for preparing aqueous binder compositions. 4,524,161, Cl. 523-414.000.

Fey, Robert L.: *See—*
Feenstra, David D.; Fey, Robert L.; and Goin, Cheryl A., 4,523,615, Cl. 141-1.000.

Finch, Timothy D.; and Beavan, Stuart W., to Lever Brothers Company. Photobleach system, composition and process. 4,524,014, Cl. 252-188.100.

Finn, Lyle D.; Volkert, Bruce C.; Matthews, Jamie F., Jr.; and Brady, Michael M., to Exxon Production Research Co. J-tube method and apparatus. 4,523,877, Cl. 405-195.000.

Finucane, Raymond G.; and Jahns, Hans O., to Exxon Production Research Co. Ice barrier construction. 4,523,879, Cl. 405-217.000.

Finucane, Thomas P.: *See—*
Bardsley, Robert F.; Finucane, Thomas P.; Hebel, Carl; Schoonmaker, Charles D.; Wruk, Philip J.; and Lee, Edward P., deceased, 4,524,078, Cl. 426-112.000.

Fiori, Lee B.: *See—*
Doyle, Richard H.; and Fiori, Lee B., 4,523,646, Cl. 173-15.000.

Firestone Tire & Rubber Company, The: *See—*
Graves, Daniel F., 4,524,052, Cl. 423-277.000.
Hergenrother, William L., 4,524,040, Cl. 264-136.000.

Firmenich, SA: *See—*
Giersch, Wolfgang K.; and Ohloff, Gunther, 4,524,019, Cl. 252-522.00R.

Fischbeck, Kenneth H.: *See—*
Bain, Lee L.; and Fischbeck, Kenneth H., 4,524,364, Cl. 346-1.100.

Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary printing machine with web tear clearing system. 4,523,522, Cl. 101-219.000.

Fischer, Roland: *See—*
Tietze, Lutz-Friedjan; and Fischer, Roland, 4,524,202, Cl. 536-18.500.

Fish, Russell, III; and Yurchenco, James R., to Post Technologies, Inc. Low-cost electronic mail terminal. 4,524,242, Cl. 178-4.000.

Fitzgerald, William C.: *See—*
Allen, Edwin M.; Foust, Eugene C.; Sievert, Steven A.; Fitzgerald, William C.; and Moffitt, Max L., 4,523,842, Cl. 356-124.000.

Flasck, James D., to Energy Conversion Devices, Inc. Decorative carbon coating and method. 4,524,106, Cl. 428-408.000.

Fluid Devices Limited: *See—*
Larner, Donald A., 4,523,476, Cl. 73-744.000.

FMC Corporation: *See—*
Moore, Donald E.; and Olsen, David W., 4,523,686, Cl. 212-152.000.
Titsworth, Raymond; and Lill, Melvin H., 4,523,844, Cl. 356-152.000.

Focke & Co.: *See—*
Focke, Heinz; and Bretthauer, Hans J., 4,523,919, Cl. 493-212.000.

Focke, Heinz; and Bretthauer, Hans J., to Focke & Co. Process and apparatus for attaching small tear-open strips to packaging material or the like. 4,523,919, Cl. 493-212.000.

Foley, Michael S.: *See—*
Petric, Paul F.; and Foley, Michael S., 4,524,261, Cl. 219-121.0EL.

Fontana, Eugenio: *See—*
Drisaldi, Giovanni; Fontana, Eugenio; Manetti, Virgilio; Segu , Franco; Segu , Sandro; and Segu , Bruno, 4,523,908, Cl. 433-8.000.

Ford Aerospace & Communications Corporation: *See—*
Frazer, Alson C., 4,523,728, Cl. 244-3.290.

Forslund, Lennart; and Nilsson, Orjan, to Svenska Rotor Maskiner Aktiebolag. Ejector pump with ringshaped nozzle. 4,523,894, Cl. 417-161.000.

Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, to Ciba-Geigy Corporation. N-Phenylsulfonyl-N'-pyrimidinylureas. 4,523,944, Cl. 71-92.000.

Foss, Warren M.: *See—*
Pall, David B.; Degen, Peter J.; Joffee, Irving B.; Foss, Warren M.; and Gsell, Thomas C., 4,523,995, Cl. 210-504.000.

Foster, Richard L., to C & I Joint Venture. Water skiing tow system. 4,523,525, Cl. 104-173.0ST.

Foster, Stephen R.; and Austin, Peter W., to Baker CAC, Inc. Actuator having Belleville washer configuration operating in concert with a piston cylinder member. 4,523,516, Cl. 92-130.00B.

Foster Wheeler Energy Corporation: *See—*
Banquy, David, 4,524,056, Cl. 423-359.000.

Fouss, James L.; Parker, John J.; Child, James L., Jr.; and Sting, Donald W., to Hancor, Inc. Multi-layered corrugated conduit with "black-eye" like apertures. 4,523,613, Cl. 138-121.000.

Foust, Eugene C.: *See—*
Allen, Edwin M.; Foust, Eugene C.; Sievert, Steven A.; Fitzgerald, William C.; and Moffitt, Max L., 4,523,842, Cl. 356-124.000.

Fowler, James M., Jr.: *See—*
Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., 4,523,463, Cl. 73-204.000.

Fowles, Patrick E.; and Yan, Tsoung-Yuan, to Mobil Oil Corporation. Coproduction of durene and gasoline from synthesis gas and alcohols and separation of durene-gasoline mixtures. 4,524,227, Cl. 585-408.000.

Fowles, Patrick E.; and Yan, Tsoung-Yuan, to Mobil Oil Corporation. Production of durene and gasoline from synthesis gas. 4,524,228, Cl. 585-408.000.

Fowles, Patrick E.; and Yan, Tsoung-Yuan, to Mobil Oil Corporation. Production of durene from alcohols and ethers. 4,524,231, Cl. 585-469.000.

Fox, Duke. Model airplane engine. 4,523,557, Cl. 123-197.0AB.

Fox, Paul W. External coat pocket for luggage. 4,523,678, Cl. 206-287.100.

Foxboro Company, The: *See—*
Miller, Richard W., 4,523,477, Cl. 73-861.020.

Fraige, Richard. Buoyant fiber product used in improved waterbed float with hanging baffle. 4,523,343, Cl. 5-450.000.

Framatome & Cie.: *See—*
Colling, Jean M., 4,524,449, Cl. 377-28.000.

Francois, Daniel: *See—*
Clement, Gilles; Francois, Daniel; Marchal, Paul; and Moreau, Claude, 4,523,884, Cl. 414-8.000.

Franke, Earnest A., to General Electric Company. Wide range reflective phase shifter/modulator. 4,524,336, Cl. 332-16.00R.

Frazer, Alson C., to Ford Aerospace & Communications Corporation. Passive auto-erecting alignment wings for long rod penetrator. 4,523,728, Cl. 244-3.290.

Frazier Precision Instrument Company, Inc.: *See—*
Scrivener, Thomas F.; and Schoonover, Randall M., 4,523,653, Cl. 177-147.000.

Freeman, D. Bruce; Kesse, Bernard G.; and Thiel, Philip P., to Louis G. Freeman Company, The. Apparatus for applying thermoplastic adhesive to flexible die-cut parts. 4,523,541, Cl. 118-202.000.

Freerks, Conrad T., to Minnesota Mining and Manufacturing Company. Wet surface treating device and element therefor. 4,523,411, Cl. 51-170.0MT.

Frey, Max, to Roper Industries, Inc. Impeller pump with self-priming column attachment. 4,523,900, Cl. 417-365.000.

Frey, Otto, to Sulzer Brothers Limited. Retention device for centering an endoprosthesis shank in a bone. 4,523,587, Cl. 128-92.00C.

Frick, Heinz E., to British Aerospace Public Limited Company. Retrieving and/or launching system. 4,523,729, Cl. 244-115.000.

Friedmann, Oswald: *See—*
Maucher, Paul; and Friedmann, Oswald, 4,523,558, Cl. 123-198.00F.

Fritz, Conrad M., to Keystone Engineering Company. High-performance low-torque anti-friction bearing assembly. 4,523,793, Cl. 384-604.000.

Frutschi, Hans-Ulrich, to BBC Brown, Boveri & Company, Limited. Air storage power station. 4,523,432, Cl. 60-659.000.

Fuchs, Francis J., Jr. Methods of and apparatus for controlling the gap between a mandrel and die during extrusion. 4,523,444, Cl. 72-21.000.

Fuchs, Uwe, to Linde Aktiengesellschaft. Process for the compressive regeneration of flexible, porous materials. 4,524,139, Cl. 502-22.000.

Fuhrer, Jack S.: *See—*
Willis, Donald H.; and Fuhrer, Jack S., 4,524,447, Cl. 375-26.000.

Fuji Electric Co., Ltd.: *See—*
Kondo, Kazuo; Imamura, Seiji; Saito, Shigemasa; Akimoto, Mamoru; and Sunaga, Mitsuo, 4,523,711, Cl. 228-198.000.

Fuji Photo Film Co., Ltd.: *See—*
Aoki, Kozo; Umemoto, Makoto; and Ogawa, Akira, 4,524,132, Cl. 430-552.000.
Iwasa, Yasuo; and Ishimaru, Shingo, 4,524,130, Cl. 430-505.000.
Kishimoto, Shinzo; Ohno, Shigeru; and Tsujikawa, Teruaki, 4,524,129, Cl. 430-393.000.
Konishi, Masahiro, 4,524,381, Cl. 358-29.000.
Nishizawa, Junichi; Tamamushi, Takashige; Shimanuki, Koji; and Inuiya, Masafumi, 4,524,391, Cl. 358-213.000.

Fuji Photo Optical Co., Ltd.: *See—*
Eguchi, Mitsuo; Tagawa, Kiyoharu; Ogawa, Hitoshi; Bandai, Mikio; and Nagashima, Nobuharu, 4,523,829, Cl. 354-406.000.
Kojima, Takuo; and Ishibashi, Kuniaki, 4,523,806, Cl. 350-96.250.

Fuji Xerox Co., Ltd.: *See—*
Inui, Toshiharu; and Moriguchi, Haruhiko, 4,524,368, Cl. 346-76.0PH.

Fujii, Hirofumi: *See—*
Kimura, Tetsuo; Fujii, Hirofumi; Yuasa, Hayami; and Yonezawa, Tatuo, 4,524,351, Cl. 340-629.000.

Fujii, Yasuhiko, to Victor Company of Japan, Limited. Method and circuit arrangement for synchronous detection. 4,524,445, Cl. 371-47.000.

Fujiki, Masao, to Tokyo Shibaura Denki Kabushiki Kaisha. Velocity control device for magnetic disc apparatus and method therefor. 4,524,398, Cl. 360-78.000.

Fujikura Kasei Co., Ltd.: *See—*
Nagase, Hiroshi, 4,524,186, Cl. 525-328.800.

Fujimura, Takashi; and Nishizawa, Masahiro, to Hitachi, Ltd. Extra-high pressure mercury discharge lamp. 4,524,306, Cl. 315-326.000.

Fujita, Shuichi: *See—*
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; Ueda, Katsuhiko; and Nakamura, Hitoshi, 4,524,046, Cl. 419-8.000.

Fujitsu Limited: *See—*
Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, 4,524,333, Cl. 331-17.000.

Fukatsu, Hiroshi: *See—*
Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,523,670, Cl. 198-403.000.

Fukatsu, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic bank note transaction system. 4,524,268, Cl. 235-379.000.

Fukuda, David S.: *See—*
Abbott, Bernard J.; Debono, Manuel; and Fukuda, David S., 4,524,135, Cl. 435-69.000.

Fukui, Hirokazu: *See—*
Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, 4,524,333, Cl. 331-17.000.

Fukunaga, Takao, to Kabushiki Kaisha Daikin Seisakusho. Automatic controlling method of transmission. 4,523,496, Cl. 74-866.000.

Fukutome, Michio: *See—*
Yoshida, Hatsuyoshi; Fukutome, Michio; Ohuchi, Makoto; and Ohta, Jyun, 4,524,254, Cl. 200-83.00R.

Fullenkamp, Eugene H.; and Lohrey, Cecil R., to Hill-Rom Company, Inc. Medical service column and mounting bracket. 4,523,683, Cl. 211-190.000.

Funabashi, Kiyomi; Takagi, Toshio; Kawamura, Fumio; and Kikuchi, Makoto, to Hitachi, Ltd. Method of and system for regenerating powdery ion-exchange resin. 4,524,153, Cl. 521-26.000.

Furukawa, Hiroshi: *See—*
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.

Furukawa, Kenji; and Wakabayashi, Shinji, to Diesel Kiki Co., Ltd. Heater unit for automotive vehicles, permitting easy removal and fitting of heater core from and into casing. 4,523,633, Cl. 165-76.000.

Futagawa, Toshinobu, to Advanced Technology Business Creation, Inc. Apparatus for driving tapes. 4,523,725, Cl. 242-58.000.

G. Siempelkamp GmbH & Co.: *See—*
Huydts, Eduard J. C., 4,523,521, Cl. 100-259.000.

Gabrielli, Andrea, to Lange International S.A. Inner lining for sports footwear having a rigid or semi-rigid shell structure. 4,523,392, Cl. 36-10.000.

Gaddi, Bruno, to Piaggio & C. S.p.A. Bearing body for motorcycle. 4,523,660, Cl. 180-228.000.

GAF Corporation: *See—*
Cho, James R.; and Johnson, Stephen C., 4,524,061, Cl. 424-60.000.
Hashem, Mohamed M., 4,524,002, Cl. 252-8.50C.

Gaia, Aldino J., to McGraw-Edison Company. Electric fuse. 4,524,344, Cl. 337-159.000.

Gale, Michael T.: *See—*
Covey, Robert L.; and Gale, Michael T., 4,523,850, Cl. 356-375.000.

Gallagher, Brian D.: *See—*
Ross, Bernd, deceased; Bickler, Donald B.; and Gallagher, Brian D., 4,524,237, Cl. 136-261.000.

Gang-Nail Systems, Inc.: *See—*
Palacio, Joaquin J.; and Cristobal, Carlos C., 4,523,419, Cl. 52-690.000.

GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Holbein, Hans J.; and Maurer, Thomas, 4,523,777, Cl. 283-67.000.

Garner, Ronald S., Sr. Game apparatus. 4,523,762, Cl. 273-411.000.

Gartner, Georg, to U.S. Philips Corporation. Thermionic cathode and method of manufacturing same. 4,524,297, Cl. 313-346.00R.

Gartner, Karl, to Yoshida Kogyo K.K. Apparatus for controlling temperature in a unit type curtain wall. 4,523,518, Cl. 98-31.000.

Gartner, Karl, to Yoshida Kogyo K.K. Cooling and heating air jet device in building interior or exterior structure. 4,523,716, Cl. 237-56.000.

Garwood, William E.: *See—*
Chester, Arthur W.; Garwood, William E.; Lucki, Stanley J.; and Tabak, Samuel A., 4,524,232, Cl. 585-517.000.

Gass, Karl: *See—*
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,523,944, Cl. 71-92.000.

Gateway Scientific, Inc.: *See—*
Todd, Carl D., 4,524,304, Cl. 315-156.000.

Gault, Roger T., to Ingersoll Equipment Company. Ground drive control. 4,523,489, Cl. 74-474.000.

Gay, Michael J., to Motorola, Inc. Integrated notch filter. 4,524,332, Cl. 330-294.000.

Gaynor, Joseph: *See—*
Luly, Matthew H.; Lockyer, George D., Jr.; Eibeck, Richard E.; and Gaynor, Joseph, 4,524,119, Cl. 430-108.000.

GBC Closed Circuit TV Corp.: *See—*
Lefkowitz, Stephen; Benenati, Salvatore; and Ickowski, Edward S., 4,524,384, Cl. 358-108.000.

Gehrke, Gunter: *See—*
Brandt, Horst; Gehrke, Gunter; Muders, Rolf; Otten, Hans-Gunter; and Wiegner, Dieter, 4,523,926, Cl. 8-639.000.

Geltosky, John E., to Du Pont de Nemours, E. I., and Company. Hybridoma cell lines and monoclonal antibodies to theophylline. 4,524,025, Cl. 260-112.00R.

Genba, Tsuneo; Mizobe, Akio; and Okazaki, Masaki, to Kuraray Co., Ltd. Process for producing hydraulically setting extruding materials. 4,524,042, Cl. 264-211.000.

General Electric Company: *See—*
Berlec, Ivan, 4,524,302, Cl. 313-579.000.
Brown, Herbert J.; and Stitt, Thomas D., 4,524,316, Cl. 318-809.000.
Franke, Earnest A., 4,524,336, Cl. 332-16.00R.
Haag, Donald L., 4,524,255, Cl. 200-83.00R.
Kim, Bang M., 4,523,998, Cl. 210-638.000.
Magoon, Inder K., 4,523,507, Cl. 89-7.000.
Mayer, Robert E.; Magoon, Inder K.; and West, Herbert J., 4,523,508, Cl. 89-7.000.
Thibault, William C.; and Pate, Paul E., 4,523,376, Cl. 29-623.200.

General Electric Environmental Services, Inc.: *See*—
Miller, Richard L.; and Estela, Carlos, 4,523,931, Cl. 55-80.000.

General Foods Corporation: *See*—
Bardsley, Robert F.; Finucane, Thomas P.; Hebel, Carl; Schoonmaker, Charles D.; Wruk, Philip J.; and Lee, Edward P., deceased, 4,524,078, Cl. 426-112.000.

General Hospital Corporation, The: *See*—
Elmaleh, David R.; and Livni, Eli, 4,524,059, Cl. 424-1.100.

General Motors Corporation: *See*—
Thompson, Douglas K., 4,523,890, Cl. 416-95.000.

Genicom Corporation: *See*—
Berrey, Harry R.; and Caulier, Paul W., 4,523,867, Cl. 400-124.000.

Gentex Corporation: *See*—
Scalzo, John P.; and Aileo, Jackson A., 4,523,661, Cl. 181-129.000.

George, Christopher W.; Sinha, Hari N.; Vujcich, Mary R.; and Walker, Graham S., to Commonwealth Scientific and Industrial Research Organization; and Queensland Phosphate Limited. Process for the production of dicalcium phosphate. 4,524,054, Cl. 423-308.000.

Gerber Products Company: *See*—
Spletzer, Barry; Swiatlowski, George J.; and Brandt, Maurice W., 4,523,377, Cl. 29-773.000.

Germanas, Dalia: *See*—
Qualeatti, Gail M.; Rosen, Bruce I.; Arena, Blaise J.; and Germanas, Dalia, 4,524,225, Cl. 568-885.000.

Gewerkschaft Eisenhutte Westfalia: *See*—
Hessel, Heinz; and Plester, Karl Heinz, 4,523,512, Cl. 91-168.000.

Gfeller, Karl; and Datwyler, Peter, to Sinar AG Schaffhausen. Device for a photographic camera. 4,523,824, Cl. 354-161.000.

Giacomini, Gian F., to Applied Power Inc. Method and apparatus for measuring deviations in vehicle bodies or frames. 4,523,384, Cl. 33-180.0AT.

Giebel, Burkhard, to ITT Industries, Inc. Integrated memory matrix comprising nonvolatile reprogrammable storage cells. 4,524,429, Cl. 365-154.000.

Giersch, Wolfgang K.; and Ohloff, Gunther, to Firmenich, SA. Spirolactone derivatives, their use as perfuming agents, and perfuming composition containing same. 4,524,019, Cl. 252-522.00R.

Gilardini S.p.A.: *See*—
Mariani, Lauro, 4,523,790, Cl. 301-64.0SD.

Gilding, Denis K.; and Clarke, Roy M., to University of Liverpool; and Vascor Inc. Process for the manufacture of polyurethane resin for electrostatic spinning. 4,524,036, Cl. 264-10.000.

Giovanola, Massimo, to Albe S.A. Piece-holder table revolving intermittently in machine tools. 4,523,360, Cl. 29-38.00C.

Gippa, Michelangelo, to Azypatent AG. Machine with an intermittently rotating table for the preformance of work operations. 4,523,359, Cl. 29-38.00A.

Glaser, Roger M.; Petrofsky, Jerrold S.; and DuFour, Howard R., to Wright State University. Wheelchair and drive system therefor. 4,523,769, Cl. 280-252.000.

Glasgow, D. Gerald; and Satanek, Joseph, to United States of America, Navy. Process for preparation of cross-linked poly(tri-n-butyltin)methacrylate with simultaneous particle size reduction. 4,524,190, Cl. 525-370.000.

Glaxo Group Limited: *See*—
Price, Barry J.; Clitherow, John W.; Bradshaw, John; Martin-Smith, Michael; Judd, Duncan B.; and Hayes, Roger, 4,524,071, Cl. 514-272.000.

Gleim, Robert D.; and de Grandpre, Mark P., to Rohm and Haas Company. Positive photoresists containing preformed polyglutarimide polymer. 4,524,121, Cl. 430-176.000.

Glodo, David O.; and McFaddin, James, to Core Laboratories, Inc. Signal processing apparatus. 4,524,420, Cl. 364-497.000.

Gluck, Roland: *See*—
Kizler, Wolfgang; Sieder, Wolfgang; Schopf, Hans-Joachim; Dobler, Helmut; and Gluck, Roland, 4,523,916, Cl. 464-98.000.

Gockel, Karl-Heinz; Anhauser, Dieter; Hoffmann, Hans R.; and Reinhold, Karl-Heinz, to Lohmann GmbH & Co. KG; and Sanol Schwarz GmbH. Laminate including an adhesive-coated substrate and a removable cover layer having means to form grasp parts upon bending. 4,524,095, Cl. 428-43.000.

Godfrey, Jollie D., Jr.: *See*—
Gordon, Eric M.; and Godfrey, Jollie D., Jr., 4,524,212, Cl. 548-533.000.

Goin, Cheryl A.: *See*—
Feenstra, David D.; Fey, Robert L.; and Goin, Cheryl A., 4,523,615, Cl. 141-1.000.

Goldstein, Andrew D.: *See*—
Strickler, Steven E.; Simmons, Jerry C.; Golladay, James; and Goldstein, Andrew D., 4,523,460, Cl. 73-200.000.

Golladay, James: *See*—
Strickler, Steven E.; Simmons, Jerry C.; Golladay, James; and Goldstein, Andrew D., 4,523,460, Cl. 73-200.000.

Golombeck, Paul: *See*—
Wolff, Siegfried; and Golombeck, Paul, 4,524,169, Cl. 524-263.000.

Gonda, Richard: *See*—
Cans, Yves; Gonda, Richard; and Tavernier, Marc, 4,523,627, Cl. 164-467.000.

Goodner, Willis R.: *See*—
Balda, Raymond J.; Bukhman, Yefim; and Goodner, Willis R., 4,523,372, Cl. 29-590.000.

Goodrich, Judson E.: *See*—
Graf, Peter E.; and Goodrich, Judson E., 4,523,957, Cl. 106-277.000.

Goodyear Tire & Rubber Company, The: *See*—
Hsu, Wen-Liang; Maly, Neil A.; Matrana, Barry A.; Strozier, Robert W.; and Wideman, Lawson G., 4,524,233, Cl. 585-606.000.

Gordon, Eric M.; and Godfrey, Jollie D., Jr., to E. R. Squibb & Sons, Inc. Acyloxyketone substituted imino and amino acids. 4,524,212, Cl. 548-533.000.

Gorman, Barry; and Hearn, Edwin J., to National Research Development Corporation. Polariscope. 4,523,848, Cl. 356-368.000.

Goss, Willis C.; Nelson, Mark D.; and McLauchlan, John M., to United States of America, National Aeronautics and Space Administration. Optical fiber coupling method and apparatus. 4,523,810, Cl. 350-320.000.

Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., to Ciba-Geigy Corporation. Monocyclic intermediates for thia-aza compounds with a β-lactam ring. 4,524,028, Cl. 260-239.00A.

Goto, Tukasa: *See*—
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,523,552, Cl. 123-143.00B.

Gott Corporation: *See*—
Branscum, Tony E., 4,523,699, Cl. 222-189.000.

Gould, Charles M.; and Blake, Andy F., to Shasta Industries, Inc. Distribution valve. 4,523,606, Cl. 137-119.000.

Gouttebessis, Jacques, to Compagnie Generale Des Etablissements Michelin. Protective ply for tire crown of three-dimensional structure. 4,523,619, Cl. 152-527.000.

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Graham, Thomas, to Reed International, PLC. Wallcovering in roll form. 4,524,097, Cl. 428-141.000.

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Merkli, Peter, 4,523,751, Cl. 270-60.000.

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Grinberg, Jan; and Hansen, Siegfried, to Hughes Aircraft Company. Modular input-programmable logic circuits for use in a modular array processor. 4,524,428, Cl. 364-900.000.

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Reneau, Bobby J., 4,523,742, Cl. 254-29.00A.

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Grossman, Walter B.: *See*—
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Muggli, Jurg; and Gruber, Peter, 4,524,281, Cl. 250-574.000.

Grumman Aerospace Corporation: *See*—
Arena, Aldo; and Benoit, Robert L., 4,523,872, Cl. 403-274.000.

Grunbeck Wasseraufbereitung GmbH: *See*—
Arens, Hans, 4,523,903, Cl. 417-489.000.

Grunvogel, Karl: *See*—
Biber, Klaus; Grunvogel, Karl; Lemcke, Ulrich; Jakubowski, Heinz; and Schulz, Kurt, 4,523,732, Cl. 248-123.100.

Gsell, Thomas C.: *See*—
Pall, David B.; Degen, Peter J.; Joffee, Irving B.; Foss, Warren M.; and Gsell, Thomas C., 4,523,995, Cl. 210-504.000.

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Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., 4,524,441, Cl. 370-63.000.
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Melman, Paul; and Carlsen, W. John, 4,523,843, Cl. 356-127.000.

GTE Products Corporation: *See*—
Cohen, Sheppard; Barakitis, Nikolaos; Loughridge, Frederick A.; and Marlor, Richard C., 4,524,301, Cl. 313-493.000.
Jenkins, Robert G.; and Shinn, Dennis B., 4,523,939, Cl. 65-32.000.
Johnson, Stephen G.; and Labadini, William M., 4,523,795, Cl. 315-97.000.

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Guendling, Fred W., Jr. Golf club putter. 4,523,758, Cl. 273-77.00R.

Gugel, Georg: *See*—
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Gulf Oil Corporation: *See*—
Bakshi, Kiran R.; Barie, Walter P.; and Sabourin, Edward T., 4,524,171, Cl. 524-376.000.

Gunduz, Dincer H.: *See*—
Gunduz, Nurten N.; and Gunduz, Dincer H., 4,523,826, Cl. 354-337.000.

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Commette, Denis S.; and LaMonica, Eugene R., 4,523,696, Cl. 222-135.000.

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Budny, Thomas J.; Hollenbaugh, William H., Jr.; and Gutman, Edward J., 4,524,120, Cl. 430-137.000.

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Payne, Harold J. W.; and Payne, Ghislaine R. L., 4,523,416, Cl. 52-221.000.

H. Krantz GmbH & Co.: *See*—
Weck, Franz, 4,523,609, Cl. 137-499.000.

H. Weidmann, AG: *See*—
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Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert G.; Ha, Eric P. L.; and Kerman, Stephen, 4,524,244, Cl. 179-2.0DP.

Haag, Donald L., to General Electric Company. Control device and method of operating such. 4,524,255, Cl. 200-83.00R.

Hadtke, Frederick B.: *See*—
Paikoff, Myron; Hain, Robert W.; and Hadtke, Frederick B., 4,523,679, Cl. 206-370.000.

Haensel, Vladimir, to UOP Inc. Preparation of alkylaromatic compounds. 4,524,230, Cl. 585-467.000.

Haffer, Gregor: *See*—
Sauer, Gerhard; and Haffer, Gregor, 4,524,208, Cl. 546-69.000.

Hagedorn-Olsen, Jens, to Oce-Helioprint AS. Device for bringing sheets into flat position. 4,523,840, Cl. 355-91.000.

Hagerdal, Barbel G. R.; and Mosbach, Klaus H. Preparation of catalysts for biochemical conversion reactions. 4,524,137, Cl. 435-178.000.

Hagio, Shigeru; and Kawachi, Youji, to Sanyo Chemical Industries, Ltd. Adhesive composition and laminates therefrom. 4,524,104, Cl. 428-341.000.

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Masumoto, Tsuyoshi; Inoue, Akihisa; and Hagiwara, Michiaki, 4,523,626, Cl. 164-463.000.

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Takahashi, Masahiro; Hagiwara, Toshio; Nishizaki, Takao; and Niizeki, Kinya, 4,523,433, Cl. 62-60.000.

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Hain, Robert W.: *See*—
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Halcon SD Group, Inc., The: *See*—
Barber, James J., 4,523,980, Cl. 204-59.00R.

Haley, Norman S. Automatic batten setter. 4,523,706, Cl. 227-7.000.

Hall, Karen: *See*—
Berczi, Charles N.; and Hall, Karen, 4,524,170, Cl. 524-371.000.

Hall, Robert L.; and Wood, Lowell T., to Schlumberger Technology Corporation. Pressure wave fiber optic transducer cable. 4,524,436, Cl. 367-169.000.

Halliburton Company: *See*—
Borchardt, John K., 4,524,003, Cl. 252-8.55R.
Moore, Robert A.; and Karisch, Edward P., 4,524,325, Cl. 324-375.000.

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Bergthaller, Peter; Stolzenburg, Rudolf; Marx, Paul; and Hamprecht, Rainer, 4,524,124, Cl. 430-241.000.

Hancor, Inc.: *See*—
Fouss, James L.; Parker, John J.; Child, James L., Jr.; and Sting, Donald W., 4,523,613, Cl. 138-121.000.

Hanna, Marie R.: *See*—
Sprecker, Mark A.; Belko, Robert P.; Van Loveren, Augustinus G.; and Hanna, Marie R., 4,524,020, Cl. 252-522.00R.

Hans Grohe GmbH & Co. KG: *See*—
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Brajder, Antonio; and Hantke, Klaus, 4,524,334, Cl. 331-135.000.

Haque, Reza; and Smith, Edward F., III, to Olin Corporation. Three-step plasma treatment of copper foils to enhance their laminate adhesion. 4,524,089, Cl. 427-38.000.

Harada, Nozomu; Ito, Hiroshi; and Adachi, Toshikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for glow discharge deposition of a thin film. 4,523,544, Cl. 118-702.000.

Harada, Shoji: *See*—
Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, 4,524,098, Cl. 428-156.000.
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Harley-Davidson Motor Co., Inc.: *See*—
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Harnischfeger Corporation: *See*—
Reiff, Donald P., 4,523,887, Cl. 414-664.000.

Harper, David C.: *See*—
Temple, Russell A.; Wesseler, Martin G.; Harper, David C.; Eiland, Harry F.; and Tellkamp, Robert G., 4,523,837, Cl. 355-51.000.

Harper, James M. E.: *See*—
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Harrelson, Gary A.: *See*—
Brooks, Harvey L., 4,524,320, Cl. 324-66.000.

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Hartman, Robert L.; Koszi, Louis A.; Williams, Richard S.; and Zilko, John L., to AT&T Bell Laboratories. Method of improving current confinement in semiconductor lasers by inert ion bombardment. 4,523,961, Cl. 148-1.500.

Hartmann, Eduard: *See*—
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Harvey, Ian J.: *See*—
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Hascall, James G.: *See*—
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Hashem, Mohamed M., to GAF Corporation. Foaming agent. 4,524,002, Cl. 252-8.50C.

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Hashiyama, Hideshi: *See*—
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Hassler, Andreas. Holder and method of firing ceramic briquettes. 4,523,907, Cl. 432-258.000.

Hastings, Joe R., to Atlantic Richfield Company. Method for performing step rate tests on injection wells. 4,523,459, Cl. 73-155.000.

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Hastings, Otis H.; and Hastings, Otis M., 4,523,528, Cl. 109-42.000.

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Haug, Walter: *See*—
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Haugen, Gary; and Amundson, Everett, to Impact Roller, Inc. Impact roller structure. 4,523,674, Cl. 198-843.000.

Hayashi, Yoshiaki; Haraguchi, Kouichi; and Koshidaka, Yukio, to Yoshino Kogyosho Co., Ltd. Method of fabricating bottle-shaped container of saturated polyester. 4,524,045, Cl. 264-521.000.

Hayes, Roger: *See—*
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Rehfuss, John W.; Hazelwood, Louis S.; and Price, Martin B., 4,524,173, Cl. 524-512.000.

Headlund, Larry M.; Marksteiner, Gary J.; and Sidell, Richard S., to Intelab Medical Systems, Inc. System for determining the optimal ground depth of an ophthalmic lens having a closed homeomorphic boundary. 4,524,419, Cl. 364-474.000.

Heard, Charles M. Fan-shaped indirect lighting reflector. 4,524,405, Cl. 362-18.000.

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Hebel, Carl: *See—*
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Hedrick, Harold M., II, to Apache Equipment, Inc. Apparatus and method for producing virgin and/or reclaiming used abrasives. 4,523,988, Cl. 209-11.000.

Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., to Janssen Pharmaceutica N.V. Antimicrobial imidazole derivatives. 4,524,110, Cl. 428-537.100.

Hefner, Robert E., Jr.; Martin, Patrick H.; and Stevens, Gregory A., to Dow Chemical Company, The. Compositions of unsaturated polyesters or polyesteramides and efficient flexibilizers therefor. 4,524,178, Cl. 525-28.000.

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Heilmann, Steven M.; Krepski, Larry R.; and Rasmussen, Jerald K., to Minnesota Mining and Manufacturing Company. Process for the production of acyloins. 4,524,221, Cl. 568-322.000.

Heinemann, Wolfgang; Noack, Rainer; and Weyl, Helmut, to Robert Bosch GmbH. Method of making a vibration-resistant electrical component and connection lead combination, particularly exhaust gas composition sensor. 4,524,038, Cl. 264-61.000.

Helbig, Klaus; and Pusch, Guenther, to Deutsche Texaco Aktiengesellschaft. Method for determining the degree of change of material properties of underground strata. 4,524,435, Cl. 367-41.000.

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Hemphill, Dean P., to Shell Oil Company. Ice slot maintenance. 4,523,876, Cl. 405-158.000.

Hengesbach, Robert W. Drill press with overhead mount. 4,523,882, Cl. 408-236.000.

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Henry, Paul M.: *See—*
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Hensenne, Joseph: *See—*
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Herter, Karl: *See—*
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Hickam, William M.: *See—*
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Higashiguchi, Teruaki: *See—*
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Hill-Rom Company, Inc.: *See—*
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Hillman, Melville E. D.; Huffman, William J.; Lipinsky, Edward S.; and Stambaugh, Edgel, to Battelle Development Corporation. Gasohol production from thermochemical conversion of biomass to ethanol. 4,523,928, Cl. 44-56.000.

Hilton, Charles B.: *See—*
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Himmelmann, Wolfgang; Sackmann, Gunter; and Meyer, Rudolf, to Agfa-Gevaert Aktiengesellschaft. Photographic silver halide recording material with graft copolymer particles in outer layer. 4,524,131, Cl. 430-523.000.

Hinderer, Robert F., to Federal-Mogul Corporation. Halogen-containing elastomer composition, and vulcanizing process using dimercaptothiodiazole and dithiocarbamate curing system. 4,524,185, Cl. 525-328.200.

Hiromori, Kunio; and Tsuda, Kiyoshi, to Nippon Electric Co., Ltd. Apparatus for feeding flat articles. 4,523,753, Cl. 271-31.100.

Hirose, Masayoshi: *See—*
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Hirzinger, Peter; and Vatterott, Karl-Heinz, to Triumph-Adler A.G. fur Buro- und Informationstechnik. Wire print head having piezoelectric drive elements. 4,523,866, Cl. 400-124.000.

Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, to Mita Industrial Co., Ltd. Paper guiding device in a copying apparatus. 4,523,754, Cl. 271-264.000.

Hisatake, Michio; Yamamoto, Kazuji; Hyodo, Toru; and Takahashi, Yoshitaka. Safety control device of commutator motors. 4,524,309, Cl. 318-434.000.

Hitachi Koki Co., Ltd.: *See—*
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Funabashi, Kiyomi; Takagi, Toshio; Kawamura, Fumio; and Kikuchi, Makoto, 4,524,153, Cl. 521-26.000.
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Kuge, Toshio; Yokoyama, Hiroshi; Nogita, Shunsuke; Nakamura, Yoichi; and Muroi, Katsumi, 4,523,927, Cl. 44-1.00B.
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Shimura, Yoshimasa; Kakiuchi, Hideyuki; Minamikawa, Yoshihisa; and Kawasaki, Katsuhiro, 4,524,277, Cl. 250-397.000.
Uematsu, Takao; Honma, Yoshiharu; Tanno, Seikichi; Ito, Ran; Matsubayashi, Jun; and Yoshida, Tomio, 4,523,668, Cl. 192-107.00M.
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Hiza, Misao: *See—*
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Hoarty, John T.: *See—*
Bradley, Geoffrey; Hoarty, John T.; and Howarth, Ian M., 4,524,163, Cl. 524-5.000.

Hoechst Aktiengesellschaft: *See—*
Fester, Walter; and Huber, Bernd, 4,524,041, Cl. 264-182.000.
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Strupczewski, Joseph T., 4,524,074, Cl. 514-321.000.

Hoeks, Gerardus P. F.: *See—*
Rutten, Joseph; Hoeks, Gerardus P. F.; and van Kemenade, Johannes T. C., 4,524,300, Cl. 313-487.000.

Hofbauer, August: *See—*
Dorsch, Heinz; Hofbauer, August; and Steinbeck, Herbert, 4,523,568, Cl. 123-453.000.

Hoffmann, Hans R.: *See—*
Gockel, Karl-Heinz; Anhauser, Dieter; Hoffmann, Hans R.; and Reinhold, Karl-Heinz, 4,524,095, Cl. 428-43.000.

Hofmann, Gunter A., to Maxwell Laboratories, Inc. Deactivation of microorganisms by an oscillating magnetic field. 4,524,079, Cl. 426-234.000.

Hofmann, Karl, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,523,719, Cl. 239-533.120.

Hofmann, Richard E.; and Hofmann, Robert G., Jr., to North Side Packing Company. Meat processing equipment. 4,523,520, Cl. 99-352.000.

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Hofmann, Richard E.; and Hofmann, Robert G., Jr., 4,523,520, Cl. 99-352.000.

Hogg, Walter R.: *See—*
Brunsting, Albert; and Hogg, Walter R., 4,523,841, Cl. 356-73.000.

Hol, Willem A.: *See—*
Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., 4,524,358, Cl. 343-7.700.
Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., 4,524,360, Cl. 343-17.10R.

Holbein, Hans J.; and Maurer, Thomas, to GAO Gesellschaft fur Automation und Organisation mbH. Identification card and a method of producing same. 4,523,777, Cl. 283-67.000.

Hollandse Signaalapparaten B.V.: *See—*
Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., 4,524,358, Cl. 343-7.700.
Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., 4,524,360, Cl. 343-17.10R.
Teulings, Wilhelmus A., 4,524,361, Cl. 343-17.2PC.

Holleis, Gunter; and Wiesinger, Horst, to Voest-Alpine Aktiengesellschaft. Plate mould for continuous casting. 4,523,623, Cl. 164-436.000.

Hollenbaugh, William H., Jr.: *See—*
Budny, Thomas J.; Hollenbaugh, William H., Jr.; and Gutman, Edward J., 4,524,120, Cl. 430-137.000.

Hollimon, Marshall H. Electronic tuning aid. 4,523,506, Cl. 84-454.000.

Hollmann, Martin; and Waclawik, Francis J., to Westinghouse Electric Corp.; and United States of America, Navy. Torpedo launcher. 4,523,538, Cl. 114-238.000.

Holmes, David S.: *See—*
Mughal, Ahmed S.; and Holmes, David S., 4,524,060, Cl. 424-19.000.

Holometrics, Inc.: *See—*
Scrivener, Thomas F.; and Schoonover, Randall M., 4,523,653, Cl. 177-147.000.

Holsztynski, Wlodzimierz; and Wilson, Stephen S., to Environmental Research Inst. of Michigan. Pipeline processor. 4,524,455, Cl. 382-41.000.

Holtz, Gilbert J. Luggage cart. 4,523,773, Cl. 280-654.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Matsuura, Masaaki, 4,523,550, Cl. 123-90.160.
Nakamura, Yukinobu; Tagami, Katsutoshi; and Takahashi, Tsuneo, 4,524,357, Cl. 340-995.000.
Yamamoto, Kazuhiro; and Isono, Tokio, 4,523,659, Cl. 180-227.000.
Yamato, Akihiro; and Kishi, Noriyuki, 4,523,571, Cl. 123-492.000.

Honeywell Inc.: *See—*
Orrico, Mario M. V., 4,523,610, Cl. 137-512.150.
Wentworth, Milo R., 4,523,737, Cl. 251-4.000.

Honeywell Information Systems Inc.: *See—*
Stanley, Philip E.; and Szorc, Piotr, 4,524,416, Cl. 364-200.000.

Honma, Yoshiharu: *See—*
Uematsu, Takao; Honma, Yoshiharu; Tanno, Seikichi; Ito, Ran; Matsubayashi, Jun; and Yoshida, Tomio, 4,523,668, Cl. 192-107.00M.

Hoover, Donald R. Universal ring traveler. 4,523,424, Cl. 57-125.000.

Horgan, William J., Jr., to Blumcraft of Pittsburgh. Glass door assembly with transom bar. 4,523,414, Cl. 52-204.000.

Horiya, Keiichi; and Miyazaki, Naoki, to Tokyo Electric Co., Ltd. Thermal printer. 4,524,367, Cl. 346-76.0PH.

Hornschu, Joachim: *See—*
Lang, Walter H.; and Hornschu, Joachim, 4,523,818, Cl. 350-579.000.

Horodysky, Andrew G., to Mobil Oil Corporation. Borated N-hydrocarbyl-hydrocarbylene diamines as multifunctional lubricant/fuel additives and compositions thereof. 4,524,004, Cl. 252-32.70E.

Horodysky, Andrew G., to Mobil Oil Corporation. Borated dihydrocarbylenetriamine amides and lubricant and fuel compositions containing same. 4,524,005, Cl. 252-49.600.

Hostettler, Fritz. Microcellular polyurethane foams having integral skin. 4,524,102, Cl. 428-318.800.

House, David W., to UOP Inc. Resolution of alcohols using amino acids. 4,524,223, Cl. 568-715.000.

House Food Industrial Company Limited: *See—*
Sugisawa, Ko; Yamamoto, Masanori; Shibuki, Masaru; Nomura, Yukihiro; Sengoku, Kouji; and Higashine, Seiji, 4,524,080, Cl. 426-236.000.

Howard, Roland M., Jr., to Koomey Blowout Preventers, Inc. Ram type blowout preventers. 4,523,639, Cl. 166-55.000.

Howarth, Ian M.: *See—*
Bradley, Geoffrey; Hoarty, John T.; and Howarth, Ian M., 4,524,163, Cl. 524-5.000.

Hristov, Hristomir D.: *See—*
Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; Angelov, Mihail H.; and Yordanov, Nikolay V., 4,523,708, Cl. 228-37.000.

Hsiao, Cheng-Kuo: *See—*
Baranyi, Giuseppa; Kazmaier, Peter M.; Hsiao, Cheng-Kuo; and Burt, Richard A., 4,524,218, Cl. 564-307.000.

Hsu, Chao-Yang; Lyons, James E.; and Ellis, Paul E., Jr., to Sun Tech, Inc. Platinum (O) complex-based hydroformylation catalyst. 4,524,142, Cl. 502-153.000.

Hsu, Wen-Liang; Maly, Neil A.; Matrana, Barry A.; Strozier, Robert W.; and Wideman, Lawson G., to Goodyear Tire & Rubber Company, The. Process for the production of dienes from aldehydes. 4,524,233, Cl. 585-606.000.

Huang, Jen-chi, to Polychrome Corporation. Chemical etching of lithographic aluminum substrate. 4,524,125, Cl. 430-302.000.

Hubbard, Vance M.; and Brunson, Welton K., to Tecnol, Inc. Small ice packs and method of manufacturing the same. 4,523,353, Cl. 24-30.50R.

Huber, Bernd: *See—*
Fester, Walter; and Huber, Bernd, 4,524,041, Cl. 264-182.000.

Hubler, Lawrence C., to Xerox Corporation. Copier/duplicator with finishing apparatus having low staple control features. 4,523,750, Cl. 270-53.000.

Hubner, Bernard G., to Dresser Industries, Inc. Method and apparatus for gamma ray well logging. 4,524,273, Cl. 250-269.000.

Hufendiek, Ernst W.: *See—*
Schnapper, Martin; and Hufendiek, Ernst W., 4,523,562, Cl. 123-357.000.

Huffman, William J.: *See—*
Hillman, Melville E. D.; Huffman, William J.; Lipinsky, Edward S.; and Stambaugh, Edgel, 4,523,928, Cl. 44-56.000.

Hughes Aircraft Company: *See—*
Cockrum, Charles A.; Chia, Joan K.; and Kreider, James F., 4,524,378, Cl. 357-71.000.
Grinberg, Jan; and Hansen, Siegfried, 4,524,428, Cl. 364-900.000.

Hughes, Richard E., to Badger Company, Inc., The. Processes of recovering fatty acids and sterols from tall oil pitch. 4,524,024, Cl. 260-97.600.

Hughes Tool Company: *See—*
Manderscheid, Phillip H., 4,523,641, Cl. 166-208.000.

Hullihen, John. Non-refillable pourer. 4,523,687, Cl. 215-25.000.

Hullwegen, Josef, to Nixdorf Computer AG. Variable delay unit for data synchronizer using phase-sensitive counter to vary the delay. 4,524,448, Cl. 375-118.000.

Humberstone, Victor C., to Comtech Research Unit Limited. Electrophotographic contact printing and master therefore. 4,524,116, Cl. 430-31.000.

Humes, Dennis W.: *See—*
Daghe, Joseph L.; Sands, Robert E.; and Humes, Dennis W., 4,523,607, Cl. 137-218.000.

Hunold, Klaus: *See—*
Schwetz, Karl A.; Reinmuth, Klaus; Hunold, Klaus; and Isemann, Franz, 4,524,138, Cl. 501-90.000.

Hunter, Warwick A.: *See—*
Robinson, Allan F.; and Hunter, Warwick A., 4,523,385, Cl. 33-296.000.

Huscher, Georg. Method and apparatus for rating hits on targets. 4,523,761, Cl. 273-371.000.

Husqvarna Aktiebolag: *See—*
Larsen, Leif U., 4,523,534, Cl. 112-231.000.

Hutto, Joe D., to Masco Corporation of Indiana. Diverter valve. 4,523,604, Cl. 137-102.000.

Huydts, Eduard J. C., to G. Siempelkamp GmbH & Co. Spindle press. 4,523,521, Cl. 100-259.000.

Hwang, Yu-Tang: *See—*
Pullukat, Thomas J.; Hwang, Yu-Tang; and Dombro, Robert A., 4,524,141, Cl. 502-107.000.

Hyatt, David R., to Nel-Tech Development, Inc. Security system having detector sensing and identification. 4,524,349, Cl. 340-500.000.

Hybrid Energy Systems, Inc.: *See—*
Briley, Patrick B., 4,523,437, Cl. 62-238.400.

Hyder, Richard J.: *See—*
Walker, Bertice E., Jr.; and Hyder, Richard J., 4,523,373, Cl. 29-593.000.

Hyodo, Toru: *See—*
Hisatake, Michio; Yamamoto, Kazuji; Hyodo, Toru; and Takahashi, Yoshitaka, 4,524,309, Cl. 318-434.000.

IBP Pietzsch GmbH: *See—*
Pietzsch, Ludwig; Kauer, Harald; Duren, Johannes; and Kuhn, Hugo, 4,523,487, Cl. 74-378.000.

Ichikawa, Kenichi: *See—*
Kakeno, Sadao; Ameyama, Minoru; Ichikawa, Kenichi; Umezawa, Michio; and Yamaguchi, Tomoyuki, 4,524,365, Cl. 346-75.000.

Ichikoh Industries, Ltd.: *See—*
Igura, Kenkichi, 4,524,407, Cl. 362-66.000.

Ickowski, Edward S.: *See—*
Lefkowitz, Stephen; Benenati, Salvatore; and Ickowski, Edward S., 4,524,384, Cl. 358-108.000.

Igarashi, Lawrence Y. Golf club. 4,523,759, Cl. 273-169.000.

Igura, Kenkichi, to Ichikoh Industries, Ltd. Device for adjusting the inclination of the light axis of a headlamp for motor vehicles. 4,524,407, Cl. 362-66.000.

Ih, Charles S.: *See—*
Scott, William R.; and Ih, Charles S., 4,523,469, Cl. 73-603.000.

Iida, Yoshikazu; Hagyuda, Nobuyoshi; and Hasegawa, Hiroshi, to Nippon Kogaku K.K. Automatic control type electronic flash apparatus. 4,523,830, Cl. 354-416.000.

Ikeda, Yasunari: *See—*
Okada, Takashi; Ikeda, Yasunari; and Tanaka, Yutaka, 4,524,379, Cl. 358-11.000.

Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, to Ikenoue, Tsuneo; Tohoku Ricoh Co. Ltd.; Stanley Electric Co., Ltd.; and Micron Kiki Co., Ltd. AC rectifier having semi-conductor active rectifying element. 4,524,413, Cl. 363-127.000.

Illinois Tool Works Inc.: *See—*
Levko, Fred, 4,524,248, Cl. 200-5.00B.
Peterson, Francis C.; Rodseth, William G.; and Spring, William A., 4,523,883, Cl. 411-171.000.

Ilsemann, Heino. Apparatus for introducing tape cassettes or the like and supplements into hinged boxes. 4,523,422, Cl. 53-566.000.

Imahori, Jumpei; and Sugie, Yutaka, to Sumitomo Gomu Kogyo Kabushiki Kaisha. Paving apparatus for a travelling path for vehicles of guide rail system. 4,523,542, Cl. 118-663.000.

Imai, Akio: *See—*
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.

Imai, Kouichi: *See—*
Sawabe, Mitsuo; and Imai, Kouichi, 4,523,374, Cl. 29-597.000.

Imakoshi, Shigeyoshi: *See—*
Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, 4,524,401, Cl. 360-113.000.

Imamura, Seiji: *See—*
Kondo, Kazuo; Imamura, Seiji; Saito, Shigemasa; Akimoto, Mamoru; and Sunaga, Mitsuo, 4,523,711, Cl. 228-198.000.

Impact Roller, Inc.: *See—*
Haugen, Gary; and Amundson, Everett, 4,523,674, Cl. 198-843.000.

Imperial Chemical Industries Limited: *See—*
Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., 4,524,198, Cl. 526-292.100.
Carr, Paul L. I., 4,523,427, Cl. 57-248.000.

Imperial Chemical Industries, PLC: *See—*
Moss, Keith G.; Smith, Peter J.; and Woolhouse, Robin A., 4,523,984, Cl. 204-296.000.

Indicator Controls Corp.: *See—*
Martin, Marshal H., 4,524,305, Cl. 315-221.000.

Ingenieria del Calzado, S.A. (I.C.A.S.A.): *See—*
Orea Mateo, Fernando, 4,523,345, Cl. 12-133.00R.

Ingersoll Equipment Company: *See—*
Gault, Roger T., 4,523,489, Cl. 74-474.000.

Innovex Oy: *See—*
Latvus, Vaino P., 4,524,283, Cl. 290-1.00E.

Inohara, Masanobu, to Asics Corporation. Sport shoe sole. 4,523,393, Cl. 36-29.000.

Inoue, Akihisa: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; and Hagiwara, Michiaki, 4,523,626, Cl. 164-463.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,523,480, Cl. 73-861.560.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Mass flow rotameter. 4,523,480, Cl. 73-861.560.

Inoue, Yoshiaki: *See—*
Takahashi, Hideyuki; Komatsu, Toshio; and Inoue, Yoshiaki, 4,524,015, Cl. 252-188.280.

Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, to Nippon Petrochemicals Co., Ltd. Derivatives of norbornanes having hydrocarbon side chains and perfume compositions containing the same. 4,524,017, Cl. 252-522.00R.

Institut Fiziki Akademii Nauk Estonskoi SSR: *See—*
Erme, Enn K.; Lepasaar, Tiit P.; Ummer, Jury E.; and Kink, Rein A., 4,523,845, Cl. 356-333.000.

Institut Textile de France: *See—*
Voisin, Eugene J.; Matthelie , Jean-Pierre A.; and Mesny, Jacques A., 4,523,440, Cl. 66-146.000.

Institute Po Metaloznanie I Technologia Na Metalite: *See—*
Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; Angelov, Mihail H.; and Yordanov, Nikolay V., 4,523,708, Cl. 228-37.000.

Intelab Medical Systems, Inc.: *See—*
Headlund, Larry M.; Marksteiner, Gary J.; and Sidell, Richard S., 4,524,419, Cl. 364-474.000.

Intermedicat GmbH: *See—*
Braun, Karl; and Fetzer, Jurgen, 4,523,695, Cl. 227-8.000.

International Business Machines Corporation: *See—*
Bjorklund, Gary C.; and Levenson, Marc D., 4,523,847, Cl. 356-349.000.
Cuomo, Jerome J.; Harper, James M. E.; Kaufman, Harold R.; and Speidell, James L., 4,523,971, Cl. 156-345.000.
Feenstra, David D.; Fey, Robert L.; and Goin, Cheryl A., 4,523,615, Cl. 141-1.000.
Greeson, James C., Jr., 4,524,352, Cl. 340-714.000.
Marinace, John C.; and McGibbon, Ralph C., 4,524,126, Cl. 430-311.000.
Shadwick, David T., 4,523,868, Cl. 400-208.000.

International Construction Equipment, Inc.: *See—*
Last, Anthony E. W., 4,523,647, Cl. 173-133.000.

International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A.; Belko, Robert P.; Van Loveren, Augustinus G.; and Hanna, Marie R., 4,524,020, Cl. 252-522.00R.
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,524,021, Cl. 252-522.00R.

International Minerals & Chemical Corp.: *See—*
Seeney, Charles E., 4,524,053, Cl. 423-306.000.

International Steel Company: *See—*
Beastall, William H.; Ballew, Vernon R.; Collier, Richard D.; and Bagby, John T., 4,523,417, Cl. 52-273.000.

International Telephone and Telegraph Corporation: *See—*
Dantzig, Jonathan A.; Sevier, Peter E.; and Ungarean, Gary L., 4,523,624, Cl. 164-454.000.

Internationale Octrooi Maatschappij "Octropa" B.V.: *See—*
Bradley, Geoffrey; Hoarty, John T.; and Howarth, Ian M., 4,524,163, Cl. 524-5.000.

Inui, Toshiharu; and Moriguchi, Haruhiko, to Fuji Xerox Co., Ltd. Thermal head drive circuit. 4,524,368, Cl. 346-76.0PH.

Inuiya, Masafumi: *See—*
Nishizawa, Junichi; Tamamushi, Takashige; Shimanuki, Koji; and Inuiya, Masafumi, 4,524,391, Cl. 358-213.000.

Iowa State University Research Foundation, Inc.: *See—*
McClelland, John F., 4,523,577, Cl. 126-430.000.

Irie, Yoichiro: *See—*
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.

Isemann, Franz: *See—*
Schwetz, Karl A.; Reinmuth, Klaus; Hunold, Klaus; and Isemann, Franz, 4,524,138, Cl. 501-90.000.

Isermann, Rolf, to Centra-Burkle GmbH & Co. Heating apparatus. 4,523,714, Cl. 236-46.00R.

Ishibashi, Kuniaki: *See—*
Kojima, Takuo; and Ishibashi, Kuniaki, 4,523,806, Cl. 350-96.250.

Ishii, Kenjiro: *See—*
Nakatani, Keiji; Yamagishi, Seiichi; and Ishii, Kenjiro, 4,524,315, Cl. 318-603.000.

Ishii, Sadamu: *See—*
Misaki, Susumu; Ishii, Sadamu; and Suefuji, Masahiro, 4,524,032, Cl. 260-465.00F.

Ishikawa, Mitsuaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for detecting displacement of semiconductor device. 4,524,280, Cl. 250-548.000.

Ishimaru, Shingo: *See—*
Iwasa, Yasuo; and Ishimaru, Shingo, 4,524,130, Cl. 430-505.000.

Isler, Erwin, to H. Weidmann, AG. Tie rod assembly for rock borehole anchor. 4,523,880, Cl. 405-259.000.

Isobe, Mitsuo; Kutsuki, Tetsuo; Yamaguchi, Namio; and Tanaka, Toshihide, to Matsushita Electric Industrial Co., Ltd. Synchronous video detector circuit using phase-locked loop. 4,524,389, Cl. 358-188.000.

Isogai, Kiyoshi: *See—*
Asano, Masumi; Ugajin, Mitsuyuki; and Isogai, Kiyoshi, 4,523,763, Cl. 277-1.000.

Isono, Tokio: *See—*
Yamamoto, Kazuhiro; and Isono, Tokio, 4,523,659, Cl. 180-227.000.

Italtel Societa Italiana Telecomunicazioni S.p.A.: *See—*
Cottatelucci, Ezio, 4,524,462, Cl. 455-608.000.

Ito, Akihiko: *See—*
Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, 4,524,333, Cl. 331-17.000.

Ito, Hiroshi: *See—*
Harada, Nozomu; Ito, Hiroshi; and Adachi, Toshikazu, 4,523,544, Cl. 118-702.000.

Ito, Katsutsune: *See—*
Nishioka, Nobuaki; Makio, Tatsumi; and Ito, Katsutsune, 4,524,370, Cl. 346-155.000.

Ito, Kazuhiko: *See—*
Miyata, Hiroyasu; and Ito, Kazuhiko, 4,524,256, Cl. 200-86.00R.

Ito, Ran: *See—*
Uematsu, Takao; Honma, Yoshiharu; Tanno, Seikichi; Ito, Ran; Matsubayashi, Jun; and Yoshida, Tomio, 4,523,668, Cl. 192-107.00M.

ITT Corporation: *See—*
Bilson, Edward B., 4,523,693, Cl. 220-337.000.

ITT Industries, Inc.: *See—*
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,523,791, Cl. 303-92.000.
Belart, Juan; and Burgdorf, Jochen, 4,523,792, Cl. 303-92.000.
Giebel, Burkhard, 4,524,429, Cl. 365-154.000.

Ivy, Jim S.; and Gray, Willie C. Fishing device. 4,523,403, Cl. 43-17.000.

Iwakura, Hideaki: *See—*
Oka, Joji; Iwakura, Hideaki; Ando, Narumi; Iwasaki, Kiyotoshi; and Shindow, Yoshio, 4,524,111, Cl. 428-551.000.

Iwasa, Yasuo; and Ishimaru, Shingo, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive materials. 4,524,130, Cl. 430-505.000.

Iwasaki, Hiroshi: *See—*
Kondo, Mitsuru; Iwasaki, Hiroshi; Kanda, Nobuo; Omatsu, Masayuki; and Omura, Haruo, 4,524,373, Cl. 346-221.000.

Iwasaki, Kiyotoshi: *See—*
Oka, Joji; Iwakura, Hideaki; Ando, Narumi; Iwasaki, Kiyotoshi; and Shindow, Yoshio, 4,524,111, Cl. 428-551.000.

Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, to Nippon Telegraph & Telephone Public Corporation; and Fujitsu Limited. Phase-locked loop using integrated switched filter. 4,524,333, Cl. 331-17.000.

Iwata, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Ignition timing control system for internal-combustion engine. 4,523,567, Cl. 123-425.000.

J. E. Hanger & Company Limited: *See—*
May, Denis R. W., 4,523,338, Cl. 3-21.000.

J.P. Products, Inc.: *See—*
Cheer, David A., 4,523,780, Cl. 285-399.000.

J. T. Baker Chemical Company: *See—*
Crane, Laura J.; and Ramsden, Hugh E., 4,523,997, Cl. 210-635.000.

Jablway, Ali N.; and Mitchell, Alexander M., to AT&T Technologies, Inc. Method and apparatus for testing cable wire connected to terminals at a remote location. 4,524,321, Cl. 324-66.000.

Jacobi, Nathan: *See—*
Barmatz, Martin B.; Stoneburner, James D.; Jacobi, Nathan; and Wang, Taylor G., 4,523,682, Cl. 209-638.000.

Jahns, Hans O.: *See—*
Finucane, Raymond G.; and Jahns, Hans O., 4,523,879, Cl. 405-217.000.

Jakubowski, Heinz: *See—*
Biber, Klaus; Grunvogel, Karl; Lemcke, Ulrich; Jakubowski, Heinz; and Schulz, Kurt, 4,523,732, Cl. 248-123.100.

Jakubowski, James J.: *See—*
Meyer, Wilfred C.; and Jakubowski, James J., 4,523,991, Cl. 209-166.000.

Janssen Pharmaceutica N.V.: *See—*
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,524,110, Cl. 428-537.100.

Jark, Jens K.: *See—*
Johansen, Claus J.; Jark, Jens K.; and Stefansson, Thorvardur S., 4,523,739, Cl. 251-139.000.

Jeans, Edward L., to Cadbury Schweppes Limited. Liquid dispensing package. 4,523,697, Cl. 222-185.000.

Jenkins, Robert G.; and Shinn, Dennis B., to GTE Products Corporation. Method for reducing striations in fused silica. 4,523,939, Cl. 65-32.000.

Jepsen, David B., to Tandon Corporation. Magnetic disk memory power supply. 4,524,399, Cl. 360-97.000.

Joeres, Ulrich: *See—*
Bosserhoff, Hartmut; Steinhagen, Wolfgang; and Joeres, Ulrich, 4,524,346, Cl. 340-347.0CC.

Joffee, Irving B.: *See—*
Pall, David B.; Degen, Peter J.; Joffee, Irving B.; Foss, Warren M.; and Gsell, Thomas C., 4,523,995, Cl. 210-504.000.

Johansen, Claus J.; Jark, Jens K.; and Stefansson, Thorvardur S., to Danfoss A/S. Magnetic valve for refrigeration plant. 4,523,739, Cl. 251-139.000.

John Wyeth & Brother Limited: *See—*
Mughal, Ahmed S.; and Holmes, David S., 4,524,060, Cl. 424-19.000.

Johnson, David L., to Schlumberger Technology Corporation. Measurement of porosity and formation factor using slow compressional waves. 4,524,432, Cl. 367-25.000.

Johnson, Horace J., to Cadillac Meter Company. Fluid flow measuring device. 4,523,479, Cl. 73-861.350.

Johnson, Stephen C.: *See—*
Cho, James R.; and Johnson, Stephen C., 4,524,061, Cl. 424-60.000.

Johnson, Stephen G.; and Labadini, William M., to GTE Products Corporation. Discharge lamp operating apparatus and method. 4,523,795, Cl. 315-97.000.

Johnson, Thomas H., to Shell Oil Company. Arene alkylation with metal oxide-niobium halide/oxide catalysts. 4,524,229, Cl. 585-463.000.

Johnson, Wilfred B. Heating and cooling system using ground air. 4,523,519, Cl. 98-31.000.

Johst, Willy; and Elsass, Henrik. Liquid ring pump. 4,523,893, Cl. 417-68.000.

Jones, Thomas B., to Xerox Corporation. Developer roller metering blade. 4,523,833, Cl. 355-3.0DD.

Joshua, Henry. Filter-degasser. 4,523,934, Cl. 55-189.000.

Joubert, Philippe, to Uranium Pechiney. Method of purifying uraniferous aqueous solutions. 4,524,001, Cl. 210-713.000.

Judd, Duncan B.: *See—*
Price, Barry J.; Clitherow, John W.; Bradshaw, John; Martin-Smith, Michael; Judd, Duncan B.; and Hayes, Roger, 4,524,071, Cl. 514-272.000.

Julian, John C.; Sloan, Jerry L.; and Wheeler, Lee A., to Lamb-Weston, Inc. Apparatus for making waffle-cut potato. 4,523,503, Cl. 83-403.000.

K. A. Schmersal GmbH & Co.: *See—*
Schulz, Siegfried, 4,524,251, Cl. 200-42.00R.

Kaakinen, Kari A. Procedure and means for establishing and recording errors of the eye. 4,523,820, Cl. 351-206.000.

Kaburagi, Katsuhiko: *See—*
Kaminaka, Motofumi; Takashima, Hiroyuki; and Kaburagi, Katsuhiko, 4,523,530, Cl. 110-264.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Fukunaga, Takao, 4,523,496, Cl. 74-866.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Ezawa, Sadaaki; and Kitagawa, Hiroshi, 4,524,269, Cl. 235-449.000.

Kabushiki Kaisha Maruyama Seisakucho: *See—*
Shimizu, Yoichi, 4,523,614, Cl. 139-355.000.

Kabushiki Kaisha Nakajima Seisakujo: *See—*
Ogasawara, Shingo; and Nakajima, Hideo, 4,523,547, Cl. 119-52.00B.

Kabushiki Kaisha Orii Jidoki Seisakusho: *See—*
Orii, Masaru, 4,523,889, Cl. 414-752.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Ota, Tadashi, 4,523,811, Cl. 350-333.000.
Ushikoshi, Kenichi, 4,523,857, Cl. 368-157.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Yoshida, Hatsuyoshi; Fukutome, Michio; Ohuchi, Makoto; and Ohta, Jyun, 4,524,254, Cl. 200-83.00R.

Kabushiki Kaisha Toshiba: *See—*
Abou, Shouji, 4,524,329, Cl. 330-253.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kuno, Toshitaka; Moribe, Hiroshi; and Kamiya, Atsushi, 4,524,313, Cl. 318-563.000.
Takeuchi, Takashi; Takahashi, Hideaki; and Kondo, Haruyoshi, 4,524,264, Cl. 219-497.000.

Kadota, Toshimi; Suzuki, Jugoro; and Matsui, Shigeki, to Shimadzu Corporation. Dilution pipetter. 4,523,484, Cl. 73-864.120.

Kaino, Jon C. Buoyant emergency life saving device. 4,523,913, Cl. 441-81.000.

Kaiser, Steven W., to Union Carbide Corporation. Production of hydrocarbons with aluminophosphate molecular sieves. 4,524,234, Cl. 585-638.000.

Kajita, Shunsuke: *See—*
Ohsawa, Eiji; and Kajita, Shunsuke, 4,523,715, Cl. 236-49.000.

Kajiya, Seitaro: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.

Kakeno, Sadao; Ameyama, Minoru; Ichikawa, Kenichi; Umezawa, Michio; and Yamaguchi, Tomoyuki, to Ricoh Company, Ltd. Receptacle for waste ink collection in ink jet recording apparatus. 4,524,365, Cl. 346-75.000.

Kakiuchi, Hideyuki: *See—*
Shimura, Yoshimasa; Kakiuchi, Hideyuki; Minamikawa, Yoshihisa; and Kawasaki, Katsuhiro, 4,524,277, Cl. 250-397.000.

Kaltenbach & Voight GmbH & Co.: *See—*
Braetsch, Hartmut; and Herter, Karl, 4,523,911, Cl. 433-101.000.

Kaminaka, Motofumi; Takashima, Hiroyuki; and Kaburagi, Katsuhiko, to Sumitomo Metal Industries, Ltd. Powdery coal burner. 4,523,530, Cl. 110-264.000.

Kamiya, Atsushi: *See—*
Kuno, Toshitaka; Moribe, Hiroshi; and Kamiya, Atsushi, 4,524,313, Cl. 318-563.000.

Kamiya, Masashi: *See—*
Yamashita, Mitsuo; Oda, Goro; and Kamiya, Masashi, 4,523,800, Cl. 350-6.700.

Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, to Sanofi. Aminated derivatives of pyridazine substituted in 6 position by a heterocycle or an alicycle and compositions, said derivatives being active on the central nervous system. 4,524,070, Cl. 514-230.000.

Kanai, Akira: *See—*
Yoshioka, Junichi; Koizumi, Koichi; Kanai, Akira; and Shiba, Kazuo, 4,523,410, Cl. 51-166.00R.

Kanda, Nobuo: *See—*
Kondo, Mitsuru; Iwasaki, Hiroshi; Kanda, Nobuo; Omatsu, Masayuki; and Omura, Haruo, 4,524,373, Cl. 346-221.000.

Kane, James, to RCA Corporation. Method of fabricating a silicon lens array. 4,524,127, Cl. 430-321.000.

Kaneda, Aizo: *See—*
Sato, Masaaki; Kaneda, Aizo; and Watanabe, Makio, 4,524,369, Cl. 346-135.100.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Maeda, Hirofumi; Nakamura, Kyoichi; and Hatamoto, Toshihiro, 4,524,154, Cl. 521-58.000.
Yamazaki, Kaoru; Kurioka, Shunichiro; Sakata, Mitsuya; and Ogawa, Takahiro, 4,524,193, Cl. 526-79.000.

Kaneko, Takao: *See—*
Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, 4,524,333, Cl. 331-17.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See—*
Kondo, Mitsuru; Iwasaki, Hiroshi; Kanda, Nobuo; Omatsu, Masayuki; and Omura, Haruo, 4,524,373, Cl. 346-221.000.

Kaplan, Donald S.; and Muth, Ross R. Polymers for injection molding of absorbable surgical devices. 4,523,591, Cl. 128-334.00R.

Kapoor, Deepak: *See—*
Wan, Chung-Chu; Wang, Rong Y.; and Kapoor, Deepak, 4,523,950, Cl. 75-123.00B.

Karisch, Edward P.: *See—*
Moore, Robert A.; and Karisch, Edward P., 4,524,325, Cl. 324-375.000.

Karl Kassbohrer Fahrzeugwerke GmbH: *See—*
Scheibel, Horst; and Haug, Walter, 4,523,398, Cl. 37-220.000.

Karsunky, Ulrich: *See—*
Ong, Sienling; Karsunky, Ulrich; and Schmidt, Helmut, 4,523,922, Cl. 8-471.000.

Kass, John J.: *See—*
Keenan, Thomas F.; and Kass, John J., 4,523,655, Cl. 180-9.100.

Kasuga, Masao, to Victor Company of Japan, Limited. Equalizer capable of varying the center frequency, quality factor, and gain to perform various frequency characteristics. 4,524,422, Cl. 364-724.000.

Katada, Keiichiro: *See—*
Nishiyama, Masao; Katada, Keiichiro; and Akimoto, Yoshiteru, 4,524,044, Cl. 264-328.600.

Kataoka, Hiroshi. Method and apparatus for wrapping metal coil. 4,523,421, Cl. 53-399.000.

Kato Hatsujo Kaisha Ltd.: *See—*
Ohkata, Ichizo, 4,523,605, Cl. 137-62.000.

Kato, Mamoru: *See—*
Maekawa, Kouji; Kato, Mamoru; Nakagama, Syoji; and Sano, Yumiko, 4,524,117, Cl. 430-44.000.

Kato, Masatake, to Canon Kabushiki Kaisha. Focus detecting device. 4,523,828, Cl. 354-403.000.

Katsuyama, Mikizo: *See—*
Nagashima, Masato; Katsuyama, Mikizo; and Yamamoto, Masahiro, 4,523,805, Cl. 350-96.240.

Kauer, Harald: *See—*
Pietzsch, Ludwig; Kauer, Harald; Duren, Johannes; and Kuhn, Hugo, 4,523,487, Cl. 74-378.000.

Kaufman, Harold R.: *See—*
Cuomo, Jerome J.; Harper, James M. E.; Kaufman, Harold R.; and Speidell, James L., 4,523,971, Cl. 156-345.000.

Kaufman, Jack W.: *See—*
Blake, Joseph W., III; and Kaufman, Jack W., 4,523,707, Cl. 227-19.000.

Kawachi, Youji: *See—*
Hagio, Shigeru; and Kawachi, Youji, 4,524,104, Cl. 428-341.000.

Kawakami, Yoshio, to TDK Corporation. Magnetic recording medium. 4,524,108, Cl. 428-480.000.

Kawakatsu, Akira; and Yamamoto, Fumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Incandescent lamp with film of alternately stacked layers. 4,524,410, Cl. 362-255.000.

Kawakita, Tetsuya: *See—*
Toyoshi, Seiji; Tanegawa, Tetsuo; Saeki, Masaru; and Kawakita, Tetsuya, 4,523,999, Cl. 210-639.000.

Kawamura, Fumio: *See—*
Funabashi, Kiyomi; Takagi, Toshio; Kawamura, Fumio; and Kikuchi, Makoto, 4,524,153, Cl. 521-26.000.

Kawasaki, Kanji: *See—*
Okazaki, Tetuji; Kawasaki, Kanji; and Hirose, Masayoshi, 4,524,252, Cl. 200-38.00E.

Kawasaki, Katsuhiro: *See—*
Shimura, Yoshimasa; Kakiuchi, Hideyuki; Minamikawa, Yoshihisa; and Kawasaki, Katsuhiro, 4,524,277, Cl. 250-397.000.

Kawazura, Hiroshi: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.

Kay, David J.: *See—*
Cottrell, John S.; Turner, Patrick J.; and Kay, David J., 4,524,275, Cl. 250-298.000.

Kayser, Harald; and Pfeiffer, Wilfried, to U.S. Philips Corporation. X-ray examination apparatus having at least one film storage magazine. 4,523,420, Cl. 53-266.00R.

Kazmaier, Peter M.: *See—*
Baranyi, Giuseppa; Kazmaier, Peter M.; Hsiao, Cheng-Kuo; and Burt, Richard A., 4,524,218, Cl. 564-307.000.

Kazuoka, Koji: *See—*
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; Ueda, Katsuhiko; and Nakamura, Hitoshi, 4,524,046, Cl. 419-8.000.

Keenan, Thomas F.; and Kass, John J., to Deere & Company. Vehicle frame transmission mounting assembly. 4,523,655, Cl. 180-9.100.

Keene Engineering, Inc.: *See—*
Graefe, Ralph G., 4,523,989, Cl. 209-44.000.

Keldan Industries Limited: *See—*
Daniel, Kelvin J., 4,523,458, Cl. 73-119.00A.

Kennecott Corporation: *See—*
Bishara, William, 4,523,531, Cl. 110-336.000.

Kennedy, John M.; and Kennedy, William R. Door frame and door assembly for a mine stopping. 4,523,406, Cl. 49-254.000.

Kennedy, Joseph P.; and Hiza, Misao, to University of Akron. Synthesis and copolymerization of asymmetric polymers. 4,524,188, Cl. 525-333.700.

Kennedy, William R.: *See—*
Kennedy, John M.; and Kennedy, William R., 4,523,406, Cl. 49-254.000.

Keogh, Michael J.: *See—*
Barnabeo, Austin E.; and Keogh, Michael J., 4,524,201, Cl. 528-395.000.

Kerman, Stephen: *See—*
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert G.; Ha, Eric P. L.; and Kerman, Stephen, 4,524,244, Cl. 179-2.0DP.

Kesse, Bernard G.: *See—*
Freeman, D. Bruce; Kesse, Bernard G.; and Thiel, Philip P., 4,523,541, Cl. 118-202.000.

Keystone Engineering Company: *See—*
Fritz, Conrad M., 4,523,793, Cl. 384-604.000.

Khan, Ausat A., to Du Pont de Nemours, E. I., and Company. Process for making vinylidene fluoride containing fluoroelastomers. 4,524,197, Cl. 526-206.000.

Kienlein, Kurt; and Reese, Ralph D., to Porter, W. Duncan. Beer keg accessories. 4,523,698, Cl. 222-185.000.

Kigawa, Shuji; and Otake, Eiji, to Konishiroku Photo Industry Co., Ltd. Original document inserting device for copying apparatus. 4,523,752, Cl. 271-9.000.

Kikuchi, Atsuo: *See—*
Sakai, Hiromu; Ezaki, Sazo; and Kikuchi, Atsuo, 4,523,448, Cl. 72-185.000.

Kikuchi, Juro, to Olympus Optical Co., Ltd. Lens system for optically recorded disks. 4,523,817, Cl. 350-465.000.

Kikuchi, Makoto: *See—*
Funabashi, Kiyomi; Takagi, Toshio; Kawamura, Fumio; and Kikuchi, Makoto, 4,524,153, Cl. 521-26.000.

Killman, David L.; and Killman, Loraine C. Protector for lazy-tong fence. 4,523,745, Cl. 256-1.000.

Killman, Loraine C.: *See—*
Killman, David L.; and Killman, Loraine C., 4,523,745, Cl. 256-1.000.

Kim, Bang M., to General Electric Company. Continuous ion exchange process using thermally regenerable liquid ion exchangers. 4,523,998, Cl. 210-638.000.

Kim, Chang K.: *See—*
Lee, Byung S.; and Kim, Chang K., 4,524,136, Cl. 435-139.000.

Kim, Young B.: *See—*
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,524,444, Cl. 371-24.000.

Kimberly-Clark Corporation: *See—*
Truman, Charles L., 4,523,336, Cl. 2-69.000.

Kimmelman, Samuel, to Parker Hannifin Corporation. Connector adaptor. 4,523,797, Cl. 339-147.00R.

Kimoto, Manabu, to Nippon Electric Co., Ltd. Timing signal controlled information processing system. 4,524,417, Cl. 364-200.000.

Kimura, Hiroshi: *See—*
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.

Kimura, Keiichi: *See—*
Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, 4,523,994, Cl. 210-500.200.

Kimura, Tetsuo; Fujii, Hirofumi; Yuasa, Hayami; and Yonezawa, Tatuo, to Nittan Company, Limited. Smoke detector. 4,524,351, Cl. 340-629.000.

Kindgren, Lee; Scott, William B.; and Voges, Robert W., to W. A. Whitney Corp. Hole forming machine with adjustable work clamps. 4,523,749, Cl. 269-32.000.

King, Charles, to Courser, Incorporated. Electro-optical level detector. 4,524,282, Cl. 250-577.000.

Kink, Rein A.: *See—*
Erme, Enn K.; Lepasaar, Tiit P.; Ummer, Jury E.; and Kink, Rein A., 4,523,845, Cl. 356-333.000.

Kircher, Dieter: *See—*
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,523,791, Cl. 303-92.000.

Kirschnek, Helmut: *See—*
Steinberger, Helmut; Kirschnek, Helmut; and Pfeiffer, Josef, 4,524,172, Cl. 524-506.000.

Kishi, Noriyuki: *See—*
Yamato, Akihiro; and Kishi, Noriyuki, 4,523,571, Cl. 123-492.000.

Kishimoto, Shinzo; Ohno, Shigeru; and Tsujikawa, Teruaki, to Fuji Photo Film Co., Ltd. Method for processing color photographic light-sensitive material. 4,524,129, Cl. 430-393.000.

Kita, Nobuyuki: *See—*
Sawa, Seiji; and Kita, Nobuyuki, 4,523,597, Cl. 128-652.000.

Kitagawa, Hiroshi: *See—*
Ezawa, Sadaaki; and Kitagawa, Hiroshi, 4,524,269, Cl. 235-449.000.

Kitagawa Iron Works Co. Ltd.: *See—*
Nobukawa, Akira; and Sawaguchi, Tatsue, 4,523,632, Cl. 165-47.000.

Kitano, Hisao: *See—*
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,524,017, Cl. 252-522.00R.

Kitano, Kissho: *See—*
Duvdevani, Ilan; Eckert, John A.; Schulz, Donald N.; and Kitano, Kissho, 4,523,929, Cl. 44-62.000.

Kiyokawa, Morio, to Mitsubishi Denki Kanushiki Kaisha. Numerical controller. 4,524,414, Cl. 364-171.000.

Kizler, Wolfgang; Sieder, Wolfgang; Schopf, Hans-Joachim; Dobler, Helmut; and Gluck, Roland, to Daimler-Benz Aktiengesellschaft. Axially flexible drive disc. 4,523,916, Cl. 464-98.000.

Klatt, Alfred: *See—*
Gudat, Wolfgang; Klatt, Alfred; and Sebesta, Gunter, 4,523,513, Cl. 91-427.000.

Klaver, Rudy F.: *See—*
Chin, Thomas G.; Klaver, Rudy F.; and Alston, Arthur, 4,523,860, Cl. 374-27.000.

Klein, Jerry A.: *See—*
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert G.; Ha, Eric P. L.; and Kerman, Stephen, 4,524,244, Cl. 179-2.0DP.

Klein, Joseph T.: *See—*
Davis, Larry; and Klein, Joseph T., 4,524,209, Cl. 546-148.000.

Klein-Wanner Societe Anonyme: *See—*
Schirmann, Francis, 4,524,084, Cl. 426-590.000.

Kleinophorst Geb. Schadel, Edith; and Grosskreuz, Gerhard. Apparatus for controlling the filling of containers. 4,523,616, Cl. 141-83.000.

Kline, James R.; and Brand, Peter, to Acutherm, Ltd. Thermally actuated diffuser. 4,523,713, Cl. 236-1.00C.

Kloker, Werner; and Kraft, Klaus, to Bayer Aktiengesellschaft. Use of 1,4-dihydroxynaphthalene in the hardening of ethylenically unsaturated compounds. 4,524,177, Cl. 525-14.000.

Knor, Bernhard: *See—*
Payrhammer, Bernd; and Knor, Bernhard, 4,523,839, Cl. 355-68.000.

Knox, Granville S. Pipe coupling and sealing device therefor. 4,523,779, Cl. 285-294.000.

Knox, Kenneth H.: *See—*
Larkin, Mark E.; and Knox, Kenneth H., 4,523,691, Cl. 220-266.000.

Koban, Hans G.: *See—*
Drauz, Karlheinz; Koban, Hans G.; Martens, Jurgen; and Schwarze, Werner, 4,524,211, Cl. 548-111.000.

Kobayashi, Tatsuo, to Toyota Jidosha Kabushiki Kaisha. Knocking control system in engine. 4,523,566, Cl. 123-425.000.

Kochanek, George E.: *See—*
Browne, Vance d.; and Kochanek, George E., 4,523,474, Cl. 73-724.000.

Kocks Technik GmbH & Co.: *See—*
Faste, Heinrich; and Bindernagel, Ali, 4,523,622, Cl. 164-66.100.
Zacharias, Theodor, 4,523,455, Cl. 73-49.500.

Kodama, Hisashi: *See—*
Arai, Fuminao; Kodama, Hisashi; and Ono, Takuro, 4,523,551, Cl. 123-90.460.

Kodera, Masao; Akita, Shigeyuki; and Yoshino, Yasuhisa, to Nippon Soken, Inc. Obstacle detecting device for vehicles. 4,524,356, Cl. 340-904.000.

Kohler, David E.: *See—*
Maliszewski, Theodore V.; and Kohler, David E., 4,523,721, Cl. 241-61.000.

Kohlpoth, Walter: *See—*
Schmidt, Gerhard; and Kohlpoth, Walter, 4,524,048, Cl. 422-159.000.

Kohzai, Tetsuo: *See—*
Terayama, Fusaji; Kohzai, Tetsuo; and Murai, Naoyuki, 4,523,685, Cl. 212-247.000.

Koike, Eishi, to Ozen Corporation. Simplified sound-reproducing device having an external output shaft. 4,524,437, Cl. 369-67.000.

Koizumi, Koichi: *See—*
Yoshioka, Junichi; Koizumi, Koichi; Kanai, Akira; and Shiba, Kazuo, 4,523,410, Cl. 51-166.00R.

Kojima, Noboru: *See—*
Shibata, Akira; Komatsu, Keiichi; Kuroyanagi, Tomomitsu; and Kojima, Noboru, 4,524,380, Cl. 358-316.000.

Kojima, Takuo; and Ishibashi, Kuniaki, to Fuji Photo Optical Co., Ltd. Method and apparatus for restoring the light transmittance of an image-transmitting optical fiber bundle used in a fiber optic endoscope. 4,523,806, Cl. 350-96.250.

Kojima, Teiryo: *See—*
Negishi, Takao; Kojima, Teiryo; and Tomiita, Kazuo, 4,523,428, Cl. 57-288.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Okada, Akira, 4,523,802, Cl. 350-96.120.

Kolodjski, Kenneth J., to TSI Incorporated. Constant temperature anemometer having an enhanced frequency response. 4,523,462, Cl. 73-204.000.

Komatsu, Fumito. 4-Pole electric motor. 4,524,293, Cl. 310-46.000.

Komatsu, Keiichi: *See—*
Shibata, Akira; Komatsu, Keiichi; Kuroyanagi, Tomomitsu; and Kojima, Noboru, 4,524,380, Cl. 358-316.000.

Komatsu, Toshio: *See—*
Takahashi, Hideyuki; Komatsu, Toshio; and Inoue, Yoshiaki, 4,524,015, Cl. 252-188.280.

Kominek, Leo A.; and Wolf, Holly J., to Upjohn Company, The. Process for preparing 1,2-dehydro steroids. 4,524,134, Cl. 435-61.000.

Kondo, Haruyoshi: *See—*
Takeuchi, Takashi; Takahashi, Hideaki; and Kondo, Haruyoshi, 4,524,264, Cl. 219-497.000.

Kondo, Kazuo; Imamura, Seiji; Saito, Shigemasa; Akimoto, Mamoru; and Sunaga, Mitsuo, to Fuji Electric Co., Ltd. Method for bonding silver-based contact. 4,523,711, Cl. 228-198.000.

Kondo, Mitsuru; Iwasaki, Hiroshi; Kanda, Nobuo; Omatsu, Masayuki; and Omura, Haruo, to Kanzaki Paper Manufacturing Co., Ltd. Fluoran derivatives as new compounds, process for preparing the same and recording system utilizing the same as colorless chromogenic material. 4,524,373, Cl. 346-221.000.

Konishi, Masahiro, to Fuji Photo Film Co., Ltd. Image reproducing apparatus. 4,524,381, Cl. 358-29.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Abe, Yoshinori; and Matsunawa, Masahiko, 4,524,388, Cl. 358-163.000.
Kigawa, Shuji; and Otake, Eiji, 4,523,752, Cl. 271-9.000.

Konneker, Reinhard: *See—*
Mezger, Hans; and Konneker, Reinhard, 4,523,555, Cl. 123-193.00C.

Koomey Blowout Preventers, Inc.: *See—*
Howard, Roland M., Jr., 4,523,639, Cl. 166-55.000.

Kooyumjian, Thomas A., to Belmor Manufacturing Company. Winterfront with adjustable center opening. 4,523,657, Cl. 180-68.100.

Koppenberg, Bruce G. Hanger fastener. 4,523,413, Cl. 52-139.000.

Kordomenos, Panagiotis I.: *See—*
Alexander, Delores J.; Kurple, Kenneth R.; and Kordomenos, Panagiotis I., 4,524,192, Cl. 525-440.000.

Korf, Rainer: *See—*
Breustedt, Alfred; Taschner, Heinz; Korf, Rainer; and Lorenz, Renate, 4,523,912, Cl. 433-202.000.

Kormoczy, Gyorgy: *See—*
Szejtli, Jozsef; Budai, Zsuzsanna; Radvany nee Hegedus, Erzsebet; Papp, Laszlo ; Kormoczy, Gyorgy; and Pap nee Imrenyi, Gabriella, 4,524,068, Cl. 514-58.000.

Korody, Robert G.: *See—*
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert G.; Ha, Eric P. L.; and Kerman, Stephen, 4,524,244, Cl. 179-2.0DP.

Koshidaka, Yukio: *See—*
Hayashi, Yoshiaki; Haraguchi, Kouichi; and Koshidaka, Yukio, 4,524,045, Cl. 264-521.000.

Kostanty, Raymond G.; Sciabbarrasi, Michael; and Grossman, Walter B., to American Transceiver Corp. Helmet-supported radio transceiver and broadcast receiver system. 4,524,461, Cl. 455-79.000.

Kosuge, Tokuo, to Hitachi, Ltd. Apparatus and method for controlling air amount upon engine start. 4,523,561, Cl. 123-339.000.

Koszi, Louis A.: *See—*
Hartman, Robert L.; Koszi, Louis A.; Williams, Richard S.; and Zilko, John L., 4,523,961, Cl. 148-1.500.

Kotzur, Frank W., to Windings, Inc. Winding flexible material with layer shifting. 4,523,723, Cl. 242-43.00R.

Kotzur, Joachim: *See—*
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,523,764, Cl. 277-3.000.

Kovalenko, Vitaly I.: *See—*
Eberling, Igor L.; Tereschenko, Lev A.; Nikolaev, Nikolai I.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,524,319, Cl. 324-65.00R.

Kovalsky, Stephen J., to Sun Chemical Corporation. Manufacture of printing inks. 4,523,952, Cl. 106-20.000.

Kowol, Adelheid. Twin or forked boom for a sailing surfboard. 4,523,537, Cl. 114-97.000.

Koyo Seiko Company Limited: *See—*
Yasui, Hiroyoshi; Yoshida, Teruo; Ueno, Hiroshi; and Tsumura, Katsunori, 4,523,862, Cl. 384-564.000.

Kraft, Klaus: *See—*
Kloker, Werner; and Kraft, Klaus, 4,524,177, Cl. 525-14.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Muller, Thomas; Lehner, Gunter; and Gugel, Georg, 4,523,470, Cl. 73-623.000.

Krajcovic, John: *See—*
Diggle, Edmund A., Jr.; and Krajcovic, John, 4,523,389, Cl. 34-105.000.

Krakauer, Lawrence; and Bliss, Lawrence, to Kronos, Inc. Method of and apparatus for discriminating between various types of check-out periods in employee time-recording systems and the like. 4,524,266, Cl. 235-377.000.

Kranz, Eckart: *See—*
Bonse, Gerhard; Lantzsch, Reinhard; Dorr, Henning; Kreiss, Wolfgang; Dickore, Karlfried; Ditgens, Klaus; and Kranz, Eckart, 4,524,205, Cl. 544-223.000.

Kranz, Joachim: *See—*
Fechner, Wolf D.; Polster, Rudolf; Kranz, Joachim; and Hartmann, Eduard, 4,523,958, Cl. 106-288.00Q.

Krauser, Robert S. Method and apparatus for treating ailments. 4,523,589, Cl. 128-203.270.

Krautkramer-Branson, Inc.: *See—*
Diederichs, Rolf; and Volkmann, Klaus, 4,523,467, Cl. 73-573.000.

Kreeger, Elsmer W., to Pinckney Molded Plastics, Inc. Multilevel stacking container. 4,523,681, Cl. 206-507.000.

Kreider, James F.: *See—*
Cockrum, Charles A.; Chia, Joan K.; and Kreider, James F., 4,524,378, Cl. 357-71.000.

Kreiss, Wolfgang: *See—*
Bonse, Gerhard; Lantzsch, Reinhard; Dorr, Henning; Kreiss, Wolfgang; Dickore, Karlfried; Ditgens, Klaus; and Kranz, Eckart, 4,524,205, Cl. 544-223.000.

Kreitzer, Melvyn H., to Vivitar Corporation. Catadioptric lens. 4,523,816, Cl. 350-444.000.

Kremer, Bernard: *See—*
Binder, Germaine; and Kremer, Bernard, 4,524,241, Cl. 174-119.00R.

Kremer, Manfred, to Still GmbH. Drive units for motor vehicles with internal combustion engine electric drives. 4,524,286, Cl. 290-45.000.

Krepski, Larry R.: *See—*
Heilmann, Steven M.; Krepski, Larry R.; and Rasmussen, Jerald K., 4,524,221, Cl. 568-322.000.

Kretschmer, Frank F., to United States of America, Navy. P2 Polyphase code expander-compressor. 4,524,363, Cl. 343-17.2PC.

Krockow, Dieter: *See—*
Baumgartner, Werner; Krockow, Dieter; and Tihany, Jeno , 4,524,375, Cl. 357-30.000.

Kronos, Inc.: *See—*
Krakauer, Lawrence; and Bliss, Lawrence, 4,524,266, Cl. 235-377.000.

Krupp-Koppers GmbH: *See—*
Petrovic, Vladan, 4,523,906, Cl. 432-197.000.

Kuge, Toshio; Yokoyama, Hiroshi; Nogita, Shunsuke; Nakamura, Yoichi; and Muroi, Katsumi, to Hitachi, Ltd. Method of coal upgrading. 4,523,927, Cl. 44-1.00B.

Kuhls, Jurgen: *See—*
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Juergen, 4,524,155, Cl. 521-64.000.

Kuhn, Hugo: *See—*
Pietzsch, Ludwig; Kauer, Harald; Duren, Johannes; and Kuhn, Hugo, 4,523,487, Cl. 74-378.000.

Kukes, Simon G.: *See—*
Banks, Robert L.; and Kukes, Simon G., 4,524,235, Cl. 585-646.000.

Kuklo, Thomas C., to United States of America, Energy. Apparatus and method for suppressing vibration and displacement of a bellows. 4,523,612, Cl. 138-30.000.

Kulprathipanja, Santi: *See—*
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,524,029, Cl. 260-419.000.
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,524,030, Cl. 260-419.000.

Kumakura, Mikio: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.

Kummer Electronics B.V.: *See—*
Kummer, Jan, 4,523,545, Cl. 119-14.080.

Kummer, Jan, to Kummer Electronics B.V. Apparatus for removing a milking set of a milking machine, particularly for a cow-shed. 4,523,545, Cl. 119-14.080.

Kuno, Akira: *See—*
Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, 4,523,386, Cl. 33-357.000.

Kuno, Toshitaka; Moribe, Hiroshi; and Kamiya, Atsushi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Error detecting mechanism for servosystem. 4,524,313, Cl. 318-563.000.

Kuraray Co., Ltd.: *See—*
Genba, Tsuneo; Mizobe, Akio; and Okazaki, Masaki, 4,524,042, Cl. 264-211.000.

Kurioka, Shunichiro: *See—*
Yamazaki, Kaoru; Kurioka, Shunichiro; Sakata, Mitsuya; and Ogawa, Takahiro, 4,524,193, Cl. 526-79.000.

Kuroyanagi, Tomomitsu: *See—*
Shibata, Akira; Komatsu, Keiichi; Kuroyanagi, Tomomitsu; and Kojima, Noboru, 4,524,380, Cl. 358-316.000.

Kurple, Kenneth R.: *See—*
Alexander, Delores J.; Kurple, Kenneth R.; and Kordomenos, Panagiotis I., 4,524,192, Cl. 525-440.000.

Kutsuki, Tetsuo: *See—*
Isobe, Mitsuo; Kutsuki, Tetsuo; Yamaguchi, Namio; and Tanaka, Toshihide, 4,524,389, Cl. 358-188.000.

Kuznetz, Lawrence. Stretchable textile heat-exchange jacket. 4,523,594, Cl. 128-402.000.

Laba, Dennis; Margres, John J., Jr.; and Burkhardt, Kristin, to Armour Pharmaceutical Company. Antiperspirant/deodorant stick compositions. 4,524,062, Cl. 424-65.000.

Labadini, William M.: *See—*
Johnson, Stephen G.; and Labadini, William M., 4,523,795, Cl. 315-97.000.

Lacroix, Roger, to Ciba-Geigy Corporation. Process for the preparation of stable aqueous solutions of water-soluble reactive dyes by membrane separation. 4,523,924, Cl. 8-527.000.

Lacy, James W. Internal combustion engine. 4,523,549, Cl. 123-58.0BC.

Lama, William L.: *See—*
Hammond, Thomas J.; and Lama, William L., 4,524,289, Cl. 307-110.000.

Lamb, Steve R.; and Moore, Robert R. Anatomic fracture brace for the knee. 4,523,585, Cl. 128-80.00C.

Lamb-Weston, Inc.: *See—*
Julian, John C.; Sloan, Jerry L.; and Wheeler, Lee A., 4,523,503, Cl. 83-403.000.

Lambert, Joseph L.: *See—*
Bayne, Christopher J.; Lambert, Joseph L.; and Collyer, Graham E., 4,523,885, Cl. 414-156.000.

Lamberti, Vincent, to Lever Brothers Company. Powdered nonionic-based detergent compositions containing sodium acetate trihydrate. 4,524,013, Cl. 252-174.210.

Lamm, Foster P.: *See—*
Pike, Roscoe A.; and Lamm, Foster P., 4,524,176, Cl. 525-12.000.

LaMonica, Eugene R.: *See—*
Commette, Denis S.; and LaMonica, Eugene R., 4,523,696, Cl. 222-135.000.

Lang, Walter; Muller, Dieter; Muchel, Franz; Wanner, Roland; and Niesel, Peter, to Carl-Zeiss-Stiftung. Device for examining anterior sections of the eye. 4,523,821, Cl. 351-214.000.

Lang, Walter H.; and Hornschu, Joachim, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Ocular eyecups for wearers of glasses. 4,523,818, Cl. 350-579.000.

Lange International S.A.: *See—*
Gabrielli, Andrea, 4,523,392, Cl. 36-10.000.

Langton, Allan R.: *See—*
Faulconer, Mark; and Langton, Allan R., 4,523,914, Cl. 441-108.000.

Lantzsch, Reinhard: *See—*
Bonse, Gerhard; Lantzsch, Reinhard; Dorr, Henning; Kreiss, Wolfgang; Dickore, Karlfried; Ditgens, Klaus; and Kranz, Eckart, 4,524,205, Cl. 544-223.000.

Larkin, Mark E.; and Knox, Kenneth H., to Abbott Laboratories. Port structure for I.V. container. 4,523,691, Cl. 220-266.000.

Larner, Donald A., to Fluid Devices Limited. Pressure transducer. 4,523,476, Cl. 73-744.000.

Larsen, Leif U., to Husqvarna Aktiebolag. Looptaker mechanism. 4,523,534, Cl. 112-231.000.

Larson, David A.: *See—*
Sparks, Gregory E.; and Larson, David A., 4,523,494, Cl. 74-710.500.

Larson, Eric R.: *See—*
Osterhout, Ralph F.; Burr, John D.; and Larson, Eric R., 4,523,379, Cl. 30-151.000.

Larson, Francis W.: *See—*
Crocker, David R.; Stelling, Desi D.; and Larson, Francis W., 4,524,443, Cl. 370-112.000.

Larson, Michael E., to AMCA International Corp. Digitally-driven sine/cosine generator and modulator. 4,524,326, Cl. 328-14.000.

Last, Anthony E. W., to International Construction Equipment, Inc. Power hammer. 4,523,647, Cl. 173-133.000.

Latham, Peter A., to Opus, Inc. Squirrel-proof bird feeder. 4,523,546, Cl. 119-51.00R.

Latsch, Reinhard; Linder, Ernst; and Moser, Winfried, to Robert Bosch GmbH. Internal combustion engine. 4,523,559, Cl. 123-306.000.

Latter, Richard, to R & D Associates. Very high pressure apparatus for quenching. 4,523,748, Cl. 266-249.000.

Latvus, Vaino P., to Innovex Oy. Energy converter. 4,524,283, Cl. 290-1.00E.

Laub, Herman. Reusable tamper-proof container. 4,523,689, Cl. 215-232.000.

Laush, Frank I.; and Parker, Vernon L., to Scott Paper Company. Apparatus for conveying particulate material. 4,523,933, Cl. 55-97.000.

Lavash, Bruce W.; to Procter & Gamble Company, The. Disposable bib having fibrous topsheet wherein mother's-bond zone is impregnated with bonding material. 4,523,334, Cl. 2-49.00R.

Laviana, Lawrence J., to M. H. Rhodes, Inc. Adjustable stop time switch. 4,524,250, Cl. 200-33.00R.

Lavoie, Gerard. Sink drain valve. 4,523,339, Cl. 4-191.000.

Law, Kock-Yee, to Xerox Corporation. Process for squaraine compositions from half esters of squaric acid. 4,524,219, Cl. 564-307.000.

Law, Kock-Yee, to Xerox Corporation. Process for the preparation of squaraine compositions in presence of amine component. 4,524,220, Cl. 564-307.000.

Laws, Harold H.; Caruso, Bart P.; and Hascall, James G., to Olin Corporation. High speed production of multiple gauge strip. 4,523,364, Cl. 29-33.00S.

Lazarus, Harry J. Plastic dental matrix and method of manufacturing same. 4,523,909, Cl. 433-39.000.

Lederhose, Edgar K.: *See—*
Bouffard, Jean; Dumoulin, Andre ; and Lederhose, Edgar K., 4,523,423, Cl. 57-59.000.

Lee, Bang W. Roller bicycle. 4,523,770, Cl. 280-266.000.

Lee, Byung S.; and Kim, Chang K., to Pacific Chemical Industrial Co., Ltd. Process for preparing a cosmetic material. 4,524,136, Cl. 435-139.000.

Lee, Edward P., deceased: *See—*
Bardsley, Robert F.; Finucane, Thomas P.; Hebel, Carl; Schoonmaker, Charles D.; Wruk, Philip J.; and Lee, Edward P., deceased, 4,524,078, Cl. 426-112.000.

Lee, George A.; and Rains, Randall C., to Dow Chemical Company, The. Electron rich aromatics as cure promoters for radiation curable compositions. 4,523,982, Cl. 204-159.150.

Lee, Janice N., executrix: *See—*
Bardsley, Robert F.; Finucane, Thomas P.; Hebel, Carl; Schoonmaker, Charles D.; Wruk, Philip J.; and Lee, Edward P., deceased, 4,524,078, Cl. 426-112.000.

Lee, Paul P., to Biosound, Inc. Composite transducer structure. 4,523,471, Cl. 73-626.000.

Lefkowitz, Leonard R. Control interface. 4,524,348, Cl. 340-365.00R.

Lefkowitz, Stephen; Benenati, Salvatore; and Ickowski, Edward S., to GBC Closed Circuit TV Corp. Video and audio security system. 4,524,384, Cl. 358-108.000.

Lehner, Gunter: *See—*
Muller, Thomas; Lehner, Gunter; and Gugel, Georg, 4,523,470, Cl. 73-623.000.

Lehning, Heinz, to Motorola, Inc. Transition detector circuit. 4,524,291, Cl. 307-354.000.

Leibowitz, Martin N. Contoured apparel. 4,523,337, Cl. 2-237.000.

Leifeld, Ferdinand, to Trutzschler GmbH & Co. KG. Fiber lap producing apparatus with lap width varying device. 4,523,351, Cl. 19-105.000.

Lemcke, Ulrich: *See—*
Biber, Klaus; Grunvogel, Karl; Lemcke, Ulrich; Jakubowski, Heinz; and Schulz, Kurt, 4,523,732, Cl. 248-123.100.

Lemke, James U., to Eastman Kodak Company. Imaging apparatus. 4,524,390, Cl. 358-213.000.

Lemkin, Jack. Reversible security cover for stackable and nestable tote box. 4,523,692, Cl. 220-306.000.

Leng, Douglas E.: *See—*
Akers, James B., Jr.; Leng, Douglas E.; and Normand, Randall J., 4,524,189, Cl. 525-35.00G.

Le Page, Steven W. Three wheeled roller skate. 4,523,767, Cl. 280-11.190.

Lepasaar, Tiit P.: *See—*
Erme, Enn K.; Lepasaar, Tiit P.; Ummer, Jury E.; and Kink, Rein A., 4,523,845, Cl. 356-333.000.

Le Poole, Jan B. Charged particle beam exposure device incorporating beam splitting. 4,524,278, Cl. 250-398.000.

Lesher, George Y.; and Singh, Baldev, to Sterling Drug Inc. 5-Alkanoyl-6-alkyl-2(1H)-pyridinones, their preparation and their cardiotonic use. 4,524,149, Cl. 514-350.000.

Lesieur, Roger R., to United Technologies Corporation. Direct use of methanol fuel in a molten carbonate fuel cell. 4,524,113, Cl. 429-16.000.

L'Esperance, Paul M.: *See—*
Nikkel, Ronnie D.; and L'Esperance, Paul M., 4,523,575, Cl. 126-418.000.

Letournoux, Alain; and Courtois, Bernard, to Societe Industrielle Bertrand Faure. Hinge devices for seat-backs. 4,523,786, Cl. 297-367.000.

Levenson, Marc D.: *See—*
Bjorklund, Gary C.; and Levenson, Marc D., 4,523,847, Cl. 356-349.000.

Lever Brothers Company: *See—*
Finch, Timothy D.; and Beavan, Stuart W., 4,524,014, Cl. 252-188.100.
Lamberti, Vincent, 4,524,013, Cl. 252-174.210.

Levine, Peter A., to RCA Corporation. Automatic adjustment of the amplitudes of plural-phase CCD clocking voltages. 4,524,450, Cl. 377-62.000.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal N-(heterocyclic)-aminocarbonyl thiophenesulfonamides. 4,523,943, Cl. 71-90.000.

Levko, Fred, to Illinois Tool Works Inc. Alternate action headlamp switch with mechanical logic. 4,524,248, Cl. 200-5.00B.

Lewis, Bernard L., to United States of America, Navy. Phase coded pulse expander-compressor. 4,524,362, Cl. 343-17.2PC.

Lewis, David, to Nu-Way Energy Limited. Burner for gaseous fuels. 4,523,905, Cl. 431-351.000.

Lhenry, Bernard; and Roustan, Max, to Creusot-Loire. Centrifugal compressor. 4,523,896, Cl. 417-244.000.

Librecht, Freddy M.: *See—*
De Cock, Etienne M.; De Schamphelaere, Lucien A.; Librecht, Freddy M.; and Van Peteghem, Willy F., 4,524,372, Cl. 346-160.000.

Liebscher, Anton: *See—*
Auberry, Horace; Liebscher, Anton; and Oberg, Sven, 4,523,346, Cl. 12-133.00R.

Life Products, Inc.: *See—*
Dolsky, Thomas P., 4,523,588, Cl. 128-201.250.

Lifeline Systems, Inc.: *See—*
Shapiro, L. Dennis, 4,524,243, Cl. 179-5.00R.

Lill, Melvin H.: *See—*
Titsworth, Raymond; and Lill, Melvin H., 4,523,844, Cl. 356-152.000.

Lin, Shiow C., to W. R. Grace & Co. Reactive plastisol dispersion. 4,523,983, Cl. 204-159.150.

Linde Aktiengesellschaft: *See—*
Fuchs, Uwe, 4,524,139, Cl. 502-22.000.

Linden, Gerbert: *See—*
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, 4,523,945, Cl. 71-92.000.

Lindenberger, W. Stewart; Poteat, Tommy L.; and West, James E., to AT&T Bell Laboratories. Integrated electroacoustic transducer with built-in bias. 4,524,247, Cl. 179-111.00R.

Linder, Ernst: *See—*
Latsch, Reinhard; Linder, Ernst; and Moser, Winfried, 4,523,559, Cl. 123-306.000.

Lindh, Kjell E.; and Sundin, Kjell H. Ankle ligament protective device. 4,523,394, Cl. 36-89.000.

Lindstrom, Robert; and Allen, Robert J., to Prototech Company. Self-supporting catalytic sleeve formed of interwoven loosely packed multi-fiber strands for receiving air-combustible gas mixtures for flameless catalytic combustion along the sleeve. 4,524,094, Cl. 428-36.000.

Liot, Roger, to Roger Liot, S.A. Highly concentrated egg white or salted whole egg product and its method of preparation. 4,524,082, Cl. 426-312.000.

Liot, Roger, to Roger Liot, S.A. Reserved liquid eggs and method of preparation. 4,524,083, Cl. 426-330.100.

Lipatov, Nikolai K.: *See—*
Eberling, Igor L.; Tereschenko, Lev A.; Nikolaev, Nikolai I.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,524,319, Cl. 324-65.00R.

Lipinsky, Edward S.: *See—*
Hillman, Melville E. D.; Huffman, William J.; Lipinsky, Edward S.; and Stambaugh, Edgel, 4,523,928, Cl. 44-56.000.

Lippert, Bruce J.: *See—*
Metcalf, Brian W.; and Lippert, Bruce J., 4,524,076, Cl. 514-472.000.

Littlefield, Bruce G., to Redcom Laboratories Inc. Ring trip detection system. 4,524,245, Cl. 179-18.0HB.

Liu, Shin-yng: *See—*
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, 4,524,413, Cl. 363-127.000.

Livni, Eli: *See—*
Elmaleh, David R.; and Livni, Eli, 4,524,059, Cl. 424-1.100.

Lockhead Corporation: *See—*
Cronin, Michael J., 4,523,517, Cl. 98-1.500.

Lockyer, George D., Jr.: *See—*
Luly, Matthew H.; Lockyer, George D., Jr.; Eibeck, Richard E.; and Gaynor, Joseph, 4,524,119, Cl. 430-108.000.

Lodge, Daniel A.; and Wheeler, Donald D., to Meteor Manufacturing & Machinery Co. Automated pipet plugging machine. 4,523,366, Cl. 29-564.600.

Lohmann GmbH & Co. KG: *See—*
Gockel, Karl-Heinz; Anhauser, Dieter; Hoffmann, Hans R.; and Reinhold, Karl-Heinz, 4,524,095, Cl. 428-43.000.

Lohrey, Cecil R.: *See—*
Fullenkamp, Eugene H.; and Lohrey, Cecil R., 4,523,683, Cl. 211-190.000.

Lok, Kar P.; and Ober, Christopher K., to Xerox Corporation. Stable polymeric dispersion and methods for making. 4,524,199, Cl. 527-313.000.

Long, David J.; and Oxenrider, Bryce C., to Allied Corporation. Fluorinated esters of 3,3,4,4-benzophenone tetracarboxylic dianhydride. 4,524,215, Cl. 560-052.000.

Lord, Richard G., to Carrier Corporation. Method and apparatus for controlling a refrigerant expansion valve in a refrigeration system. 4,523,435, Cl. 62-212.000.

Lord, Richard G.: *See—*
Schedel, John W.; and Lord, Richard G., 4,523,436, Cl. 62-222.000.

L'Oreal: *See—*
Sebag, Henri; and Vanlerberghe, Guy, 4,523,921, Cl. 8-405.000.

Lorenz, Renate: *See—*
Breustedt, Alfred; Taschner, Heinz; Korf, Rainer; and Lorenz, Renate, 4,523,912, Cl. 433-202.000.

Loughridge, Frederick A.: *See—*
Cohen, Sheppard; Barakitis, Nikolaos; Loughridge, Frederick A.; and Marlor, Richard C., 4,524,301, Cl. 313-493.000.

Louis G. Freeman Company, The: *See—*
Freeman, D. Bruce; Kesse, Bernard G.; and Thiel, Philip P., 4,523,541, Cl. 118-202.000.

Lower, Ralph C.; and Murray, Gary P., to Robinair Division. Two stage vacuum pump. 4,523,897, Cl. 417-244.000.

LQ Corporation: *See—*
Martin, Samuel W., 4,523,869, Cl. 400-629.000.

LTV Aerospace and Defense Company: *See—*
Billingsley, James D.; and Moore, Fergus E., 4,524,385, Cl. 358-113.000.

Lubin, Barry T.; and Thompson, James P., to Combustion Engineering, Inc. Acoustic monitoring of tube vibration. 4,523,466, Cl. 73-579.000.

Lucas Industries public limited company: *See—*
Moore, John H.; and Harvey, Ian J., 4,523,563, Cl. 123-359.000.
Richmond, Anthony J. C., 4,523,365, Cl. 29-527.400.
Seilly, Alec H.; and Murray, Andrew E., 4,523,569, Cl. 123-458.000.

Lucas, Victor A., to Caterpillar Tractor Co. High strength bucket. 4,523,397, Cl. 37-118.00R.

Lucasfilm Ltd.: *See—*
Stock, Rodney D.; and Newman, Gary H., 4,524,240, Cl. 174-68.500.

Lucki, Stanley J.: *See—*
Chester, Arthur W.; Garwood, William E.; Lucki, Stanley J.; and Tabak, Samuel A., 4,524,232, Cl. 585-517.000.

Luitpold-Werk Chemisch-pharmazeutische Fabrik: *See—*
Wolf, Karl H., 4,524,066, Cl. 514-23.000.

Luk Lamellen und Kupplungsbau GmbH: *See—*
Maucher, Paul; and Friedmann, Oswald, 4,523,558, Cl. 123-198.00F.

Luly, Matthew H.; Lockyer, George D., Jr.; Eibeck, Richard E.; and Gaynor, Joseph, to Allied Corporation. Electrophotographic carriers incorporating fluorinated carbon and process of using same. 4,524,119, Cl. 430-108.000.

Lunden, Charles K., Jr. Ladder attachment for use by painters. 4,523,733, Cl. 248-210.000.

Lust, Sigmund: *See—*
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, 4,523,945, Cl. 71-92.000.

Lyman, John R., to University of Maine, Board of Trustees of the. High carbon steel microcracking control during hardening. 4,523,965, Cl. 148-143.000.

Lynch, Henry W.: *See—*
Yachia, Daniel; and Lynch, Henry W., 4,523,584, Cl. 128-79.000.

Lyons, James E.: *See—*
Hsu, Chao-Yang; Lyons, James E.; and Ellis, Paul E., Jr., 4,524,142, Cl. 502-153.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,523,764, Cl. 277-3.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,523,522, Cl. 101-219.000.

M. H. Rhodes, Inc.: *See—*
Laviana, Lawrence J., 4,524,250, Cl. 200-33.00R.

M & W Gear Company: *See—*
Cornelius, Erwin D., 4,523,690, Cl. 220-262.000.

MacFarlane, James L.: *See—*
Soubry, Garry V.; and MacFarlane, James L., 4,523,664, Cl. 182-233.000.

MacGregor, Douglas B.: *See—*
Mills, Marvin A., Jr.; Moyer, William C.; MacGregor, Douglas B.; and Zolnowsky, John E., 4,524,415, Cl. 364-200.000.

Macovski, Albert. Blood vessel projection imaging system using nuclear magnetic resonance. 4,523,596, Cl. 128-653.000.

Madonia, Ciro. Support stake for plants. 4,523,405, Cl. 47-47.000.

Maeda, Hirofumi; Nakamura, Kyoichi; and Hatamoto, Toshihiro, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Pre-expanding process and apparatus for the same. 4,524,154, Cl. 521-58.000.

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Brokke, Mervin E.; and Magee, Walter L., Jr., 4,524,214, Cl. 560-51.000.

Magnetic Technologies Corp.: *See—*
Fagen, Ben W., Jr.; and Cappon, Douglas W., 4,524,088, Cl. 427-10.000.

Magnusson, Stig E.: *See—*
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., 4,524,441, Cl. 370-63.000.
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Magoon, Inder K., to General Electric Company. In-line annular piston fixed bolt regenerative liquid propellant gun. 4,523,507, Cl. 89-7.000.

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Mayer, Robert E.; Magoon, Inder K.; and West, Herbert J., 4,523,508, Cl. 89-7.000.

Mahan, Douglas P. Microwave treating mechanism. 4,523,387, Cl. 34-1.000.

Mahdjuri Sabet, Faramarz. Solar radiation collector. 4,523,578, Cl. 126-443.000.

Maheras, George; and Hayworth, Hubert O., to NCR Corporation. Precision IC alignment keys and method. 4,523,851, Cl. 356-399.000.

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Nishioka, Nobuaki; Makio, Tatsumi; and Ito, Katsutsune, 4,524,370, Cl. 346-155.000.

Makovich, Joseph J. Method and apparatus for injecting medication into a body through a tooth. 4,523,910, Cl. 433-80.000.

Maliszewski, Theodore V.; and Kohler, David E., to Combustion Engineering, Inc. Bowl mill with primary classifier assembly. 4,523,721, Cl. 241-61.000.

Maly, Neil A.: *See—*
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Sakagami, Yoshio; and Manabe, Hofumi, 4,524,026, Cl. 260-112.00B.

Manderscheid, Phillip H., to Hughes Tool Company. Liner hanger with channel guides. 4,523,641, Cl. 166-208.000.

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Drisaldi, Giovanni; Fontana, Eugenio; Manetti, Virgilio; Segu , Franco; Segu , Sandro; and Segu , Bruno, 4,523,908, Cl. 433-8.000.

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Schnitzer, Heinrich; and Wronka, Bodo, 4,523,747, Cl. 266-44.000.

Manzoni, Stephane, to Societe Manzoni-Bouchot. Device for mounting a rearview mirror casing on a support member. 4,523,736, Cl. 248-483.000.

Marc, Michel. Method and apparatus for forming a flexible thermoplastic resin foam article using an RF field. 4,524,037, Cl. 264-26.000.

Marchal, Paul: *See—*
Clement, Gilles; Francois, Daniel; Marchal, Paul; and Moreau, Claude, 4,523,884, Cl. 414-8.000.

Marchetti, Joseph R.; and Sanjana, Zal N., to Westinghouse Electric Corp. Toughened thermoset laminates. 4,524,107, Cl. 428-413.000.

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Mariani, Lauro, to Gilardini S.p.A. Light weight wheel formed from sheet metal. 4,523,790, Cl. 301-64.0SD.

Marinace, John C.; and McGibbon, Ralph C., to International Business Machines Corporation. Adhesion of a photoresist to a substrate. 4,524,126, Cl. 430-311.000.

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Seely, James R., 4,523,400, Cl. 40-156.000.

Marksteiner, Gary J.: *See—*
Headlund, Larry M.; Marksteiner, Gary J.; and Sidell, Richard S., 4,524,419, Cl. 364-474.000.

Marlor, Richard C.: *See—*
Cohen, Sheppard; Barakitis, Nikolaos; Loughridge, Frederick A.; and Marlor, Richard C., 4,524,301, Cl. 313-493.000.

Marshak, Michael S. Audio mixer/pre-amplifier. 4,524,452, Cl. 381-28.000.

Marshall, Glenn E. Load-absorbing mount for electromagnets. 4,523,782, Cl. 294-65.500.

Martens, Jurgen: *See—*
Drauz, Karlheinz; Koban, Hans G.; Martens, Jurgen; and Schwarze, Werner, 4,524,211, Cl. 548-111.000.

Martin, Hans, to Emhart Industries, Inc. Apparatus for reading a line marking fixed to a carrier. 4,524,270, Cl. 235-494.000.

Martin, Jack, to Brentini, Attilio. Key-holder. 4,523,442, Cl. 70-459.000.

Martin, Joel L. Process and catalyst for olefin polymerization. 4,524,195, Cl. 526-114.000.

Martin, John C.: *See—*
Martin, Paul H.; and Martin, John C., 4,523,898, Cl. 417-269.000.

Martin, John S., to Engineering Patents and Equipment Limited. Energy-absorbing seat arrangement. 4,523,730, Cl. 244-122.00R.

Martin, Marshal H., to Indicator Controls Corp. Solid state regulated power supply system for cold cathode luminescent tube. 4,524,305, Cl. 315-221.000.

Martin, Merritt W., to Owens-Illinois, Inc. Blow molding apparatus. 4,523,904, Cl. 425-539.000.

Martin, Patrick H.: *See—*
Hefner, Robert E., Jr.; Martin, Patrick H.; and Stevens, Gregory A., 4,524,178, Cl. 525-28.000.

Martin, Paul H.; and Martin, John C., to Diesel Equipment Limited. Hydraulic wobble pumps. 4,523,898, Cl. 417-269.000.

Martin, Pierre: *See—*
Behringer, John; and Martin, Pierre, 4,523,720, Cl. 241-37.500.

Martin, Samuel W., to LQ Corporation. Sheet feeder. 4,523,869, Cl. 400-629.000.

Martin-Smith, Michael: *See—*
Price, Barry J.; Clitherow, John W.; Bradshaw, John; Martin-Smith, Michael; Judd, Duncan B.; and Hayes, Roger, 4,524,071, Cl. 514-272.000.

Maruyama, Kimio, to Nippondenso Co., Ltd. Method and apparatus for cutting continuous corrugated member. 4,523,500, Cl. 83-37.000.

Marx, Paul: *See—*
Bergthaller, Peter; Stolzenburg, Rudolf; Marx, Paul; and Hamprecht, Rainer, 4,524,124, Cl. 430-241.000.

Mas, Joseph, to Allied Corporation. Toroidal core electromagnetic device. 4,524,342, Cl. 336-182.000.

Masco Corporation of Indiana: *See—*
Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., 4,523,463, Cl. 73-204.000.
Hutto, Joe D., 4,523,604, Cl. 137-102.000.

Mason, Edwin E.: *See—*
Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., 4,523,463, Cl. 73-204.000.

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Masuda, Kenji, to Daikin Kogyo Co., Ltd. Fluid flow control system. 4,523,430, Cl. 60-420.000.

Masumoto, Tsuyoshi; Inoue, Akihisa; and Hagiwara, Michiaki, to Masumoto, Tsuyoshi; and Unitika, Limited. Amorphous metal filaments and process for producing the same. 4,523,626, Cl. 164-463.000.

Masunaga, Makoto; and Taka, Hideo, to Canon Kabushiki Kaisha. Camera. 4,523,827, Cl. 354-400.000.

Matay, Istvan M.: *See—*
Derkacs, Thomas; Matay, Istvan M.; Murphy, Stephan D.; and Touhalisky, John, 4,523,468, Cl. 73-598.000.

Matrana, Barry A.: *See—*
Hsu, Wen-Liang; Maly, Neil A.; Matrana, Barry A.; Strozier, Robert W.; and Wideman, Lawson G., 4,524,233, Cl. 585-606.000.

Matson, James A., to Bristol-Myers Company. 4'-Deschlororebeccamycin pharmaceutical composition and method of use. 4,524,145, Cl. 514-43.000.

Matsubayashi, Jun: *See—*
Uematsu, Takao; Honma, Yoshiharu; Tanno, Seikichi; Ito, Ran; Matsubayashi, Jun; and Yoshida, Tomio, 4,523,668, Cl. 192-107.00M.

Matsui, Shigeki: *See—*
Kadota, Toshimi; Suzuki, Jugoro; and Matsui, Shigeki, 4,523,484, Cl. 73-864.120.

Matsumoto, Akio; and Yokota, Mitsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Control for pumping devices used in vehicles. 4,524,312, Cl. 318-481.000.

Matsumoto, Akio: *See—*
Yokota, Mitsuyoshi; and Matsumoto, Akio, 4,524,311, Cl. 318-481.000.

Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, to Nippon Soken, Inc. Heading detecting apparatus. 4,523,386, Cl. 33-357.000.

Matsunawa, Masahiko: *See—*
Abe, Yoshinori; and Matsunawa, Masahiko, 4,524,388, Cl. 358-163.000.

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Matsuoka, Kazuhiko: *See—*
Baba, Takeshi; Nose, Noriyuki; Yoshikawa, Hideo; Minoura, Kazuo; Hasu, Akinori; Minami, Setsuo; and Matsuoka, Kazuhiko, 4,523,801, Cl. 350-6.800.

Matsushita Electric Industrial Co., Ltd.: *See—*
Isobe, Mitsuo; Kutsuki, Tetsuo; Yamaguchi, Namio; and Tanaka, Toshihide, 4,524,389, Cl. 358-188.000.
Maeda, Nobuhisa; Sakairi, Tadashi; and Wakahata, Tamotsu, 4,524,160, Cl. 523-200.000.
Watanabe, Koji, 4,524,451, Cl. 381-1.000.

Matsushita, Yuichi: *See—*
Ueda, Sachio; Toriyama, Shigehiro; and Matsushita, Yuichi, 4,524,402, Cl. 360-130.240.

Matsuura, Masaaki, to Honda Giken Kogyo Kabushiki Kaisha. Valve disabling device for internal combustion engines. 4,523,550, Cl. 123-90.160.

Matsuyama, Shinzo: *See—*
Miki, Shinji; Nishio, Toyokazu; Matsuyama, Shinzo; and Yamazaki, Shinichi, 4,523,874, Cl. 405-43.000.

Matthelie , Jean-Pierre A.: *See—*
Voisin, Eugene J.; Matthelie , Jean-Pierre A.; and Mesny, Jacques A., 4,523,440, Cl. 66-146.000.

Matthews, Jamie F., Jr.: *See—*
Finn, Lyle D.; Volkert, Bruce C.; Matthews, Jamie F., Jr.; and Brady, Michael M., 4,523,877, Cl. 405-195.000.

Maucher, Paul; and Friedmann, Oswald, to Luk Lamellen und Kupplungsbau GmbH. Internal combustion engine and clutch therefor. 4,523,558, Cl. 123-198.00F.

Maurer, Thomas: *See—*
Holbein, Hans J.; and Maurer, Thomas, 4,523,777, Cl. 283-67.000.

Max Widenmann, Armaturenfabrik: *See—*
Ebert, Karl, 4,523,778, Cl. 285-73.000.

Maxwell Laboratories, Inc.: *See—*
Hofmann, Gunter A., 4,524,079, Cl. 426-234.000.

May, Denis R. W., to J. E. Hanger & Company Limited. Demountable joint. 4,523,338, Cl. 3-21.000.

Mayer, Robert E.; Magoon, Inder K.; and West, Herbert J., to General Electric Company. In-line annular piston fixed bolt regenerative liquid propellant gun. 4,523,508, Cl. 89-7.000.

McCain, James H., to Union Carbide Corporation. Process for oxydehydrogenation of ethane to ethylene. 4,524,236, Cl. 585-658.000.

McCarthy, Richard A., to Aer-Overly Corporation. Peripheral exhaust system for high velocity dryer. 4,523,390, Cl. 34-115.000.

McClelland, John F., to Iowa State University Research Foundation, Inc. Semi-transparent solar energy thermal storage device. 4,523,577, Cl. 126-430.000.

McClure, Gerald B.: *See—*
Sehnert, Steven D.; McClure, Gerald B.; and McPhee, William A., 4,523,650, Cl. 175-4.560.

McConnell, Dale K. Door light. 4,523,408, Cl. 49-502.000.

McCool, George W., to Sherwood Medical Company. Tube and fitting assembly and method of making same. 4,523,968, Cl. 156-73.500.

McCormick, Ronald W.: *See—*
Arndt, Kim E.; McCormick, Ronald W.; and Rogers, Richard B., 4,523,940, Cl. 71-11.000.

McCoy, David R.; and Naylor, Carter G., to Texaco Inc. Bicyclodecyl ether sulfonates and compositions containing the same. 4,524,023, Cl. 252-548.000.

McDougal, John R. Process for the manufacture of products from reinforced polyester resins. 4,524,043, Cl. 264-320.000.

McFaddin, James: *See—*
Glodo, David O.; and McFaddin, James, 4,524,420, Cl. 364-497.000.

McFarland, Robert W.: *See—*
Beck, Marlin E.; and McFarland, Robert W., 4,523,735, Cl. 248-476.000.

McFiggans, Robert B.: *See—*
Eckert, Alton B.; and McFiggans, Robert B., 4,524,426, Cl. 364-900.000.

McGibbon, Ralph C.: *See—*
Marinace, John C.; and McGibbon, Ralph C., 4,524,126, Cl. 430-311.000.

McGivern, James P.: *See—*
Sun, Shan C.; and McGivern, James P., 4,524,446, Cl. 371-22.000.

McGlothen, Jody R., to Dresser Industries, Inc. Well perforating and completion apparatus and associated method. 4,523,643, Cl. 166-297.000.

McGraw-Edison Company: *See—*
Gaia, Aldino J., 4,524,344, Cl. 337-159.000.

McHugh, Larry F.; and Barchers, Daniel E., to Amax Inc. Roasting of molybdenite concentrates containing flotation oils. 4,523,948, Cl. 75-7.000.

McKay, Gretchen L.: *See—*
Cosper, David R.; and McKay, Gretchen L., 4,523,932, Cl. 55-85.000.

McKee, Gerald D.: *See—*
Draper, David L.; and McKee, Gerald D., 4,523,785, Cl. 296-224.000.

McKenna, George T. Coat pack. 4,523,703, Cl. 224-224.000.

McKinney, David A. Vehicle air conditioning and heating system. 4,523,631, Cl. 165-43.000.

McLauchlan, John M.: *See—*
Goss, Willis C.; Nelson, Mark D.; and McLauchlan, John M., 4,523,810, Cl. 350-320.000.

McLaughlin, Jon R. Modular construction system. 4,523,418, Cl. 52-284.000.

McMurtry, David R.: *See—*
Rogers, Michael J.; and McMurtry, David R., 4,523,383, Cl. 33-558.000.

McPhee, William A.: *See—*
Sehnert, Steven D.; McClure, Gerald B.; and McPhee, William A., 4,523,650, Cl. 175-4.560.

McPherson, James O.: *See—*
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,524,444, Cl. 371-24.000.

Mead Johnson & Company: *See—*
New, James S.; and Yevich, Joseph P., 4,524,206, Cl. 544-230.000.

Medical Engineering Corporation: *See—*
Yachia, Daniel; and Lynch, Henry W., 4,523,584, Cl. 128-79.000.

Medtronic, Inc.: *See—*
Rueter, John C., 4,523,593, Cl. 128-419.0PG.

Meeker, C. Irving: *See—*
Roth, Wilfred; and Meeker, C. Irving, 4,523,590, Cl. 128-325.000.

Meijer, Roelf J.; and Ziph, Benjamin, to Stirling Thermal Motors, Inc. Heat pipe. 4,523,636, Cl. 165-104.260.

Melendy, Peter S.: *See—*
Belanger, Richard W.; and Melendy, Peter S., 4,523,705, Cl. 226-127.000.

Melman, Paul; and Carlsen, W. John, to GTE Laboratories Incorporated. Optical test set-up for expanded beam connector. 4,523,843, Cl. 356-127.000.

Melrose Displays, Inc.: *See—*
Cohen, Melvin; and Duyne, Fred V., 4,523,722, Cl. 211-175.000.

Mengel, Ronald E., to Oscar Mayer Foods Corporation. Slicer feed mechanism. 4,523,501, Cl. 83-42.000.

Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, to Celamerck, Gesellschaft mit beschrankter Haftung & Co. KG. 2-Amino-6-(cyclopropyl-methyl-amino)-pyrimidines useful as herbicides and microbicides. 4,523,945, Cl. 71-92.000.

Menzel, Dietrich: *See—*
Schmiedgen, Hans; Bernhardt, Siegfried; Strobl, Otto; and Menzel, Dietrich, 4,523,350, Cl. 19-98.000.

Merkel, Paul B.: *See—*
Weber, Lynda D.; Merkel, Paul B.; and Warren, Harold C., III, 4,524,122, Cl. 430-223.000.

Merkli, Peter, to GRAPHA-Holding AG. Apparatus for convoluting sheets of paper on a core. 4,523,751, Cl. 270-60.000.

Merrell Dow Pharmaceuticals Inc.: *See—*
Metcalf, Brian W.; and Lippert, Bruce J., 4,524,076, Cl. 514-472.000.

Merritt, George: *See—*
Raftis, Spiros G.; and Merritt, George, 4,523,738, Cl. 251-4.000.

Mesny, Jacques A.: *See—*
Voisin, Eugene J.; Matthelie , Jean-Pierre A.; and Mesny, Jacques A., 4,523,440, Cl. 66-146.000.

Metamora Products Corp.: *See—*
Schiedegger, Charles E.; and Elfes, Vean, 4,524,096, Cl. 428-68.000.

Metcalf, Brian W.; and Lippert, Bruce J., to Merrell Dow Pharmaceuticals Inc. Novel γ-aminobutyric acid transaminase inhibitors. 4,524,076, Cl. 514-472.000.

Meteor Manufacturing & Machinery Co.: *See—*
Lodge, Daniel A.; and Wheeler, Donald D., 4,523,366, Cl. 29-564.600.

Meyer, Cyril G. Electrically heated sewer vent line defroster. 4,524,262, Cl. 219-213.000.

Meyer, Rudolf: *See—*
Himmelmann, Wolfgang; Sackmann, Gunter; and Meyer, Rudolf, 4,524,131, Cl. 430-523.000.

Meyer, Wilfred C.; and Jakubowski, James J., to Dow Chemical Company, The. Carrier particle for the froth flotation of fine ores. 4,523,991, Cl. 209-166.000.

Meyer, Willy: *See—*
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,523,944, Cl. 71-92.000.

Meza, Peter J., to Harris Corporation. SLIC II—common-mode current rejection. 4,524,246, Cl. 179-18.0FA.

Mezger, Hans; and Konneker, Reinhard, to Harley-Davidson Motor Co., Inc. Reciprocating internal combustion engine with a wet cylinder sleeve inserted into a cylinder crank housing. 4,523,555, Cl. 123-193.00C.

Miale, Joseph N.: *See—*
Chang, Clarence D.; and Miale, Joseph N., 4,524,140, Cl. 502-61.000.

Michel, Wolfgang: *See—*
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Juergen, 4,524,155, Cl. 521-64.000.

Michigan Consolidated Gas Company: *See—*
Engel, Larry J.; and Turko, John W., 4,523,548, Cl. 123-1.00A.

Micron Kiki Co., Ltd.: *See—*
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, 4,524,413, Cl. 363-127.000.

Miki, Shinji; Nishio, Toyokazu; Matsuyama, Shinzo; and Yamazaki, Shinichi, to Takiron Co., Ltd. Plastic underdrainage tube. 4,523,874, Cl. 405-43.000.

Mikropul Corporation: *See—*
Duyckinck, Robert W., 4,523,990, Cl. 209-138.000.

Miles Laboratories, Inc.: *See—*
Bauer, Robert, 4,523,852, Cl. 356-421.000.
Tyhach, Richard J., 4,524,133, Cl. 435-14.000.

Millard, Leff. Precision, dynamic low voltage measurement system. 4,524,317, Cl. 323-224.000.

Millauer, Hans; Siegemund, Gunter; and Schwertfeger, Werner, to Hoechst Aktiengesellschaft. Fluorosulfatoperfluorocarbonyl compounds. 4,524,031, Cl. 260-456.00F.

Miller, Ann S., executrix: *See—*
Miller, Charles G., deceased; Stephens, James B.; and Youngberg, Charles, 4,523,808, Cl. 350-146.000.

Miller, Charles G., deceased (by Miller, Ann S., executrix); Stephens, James B.; and Youngberg, Charles, to Wilson Sales Company, Inc. Welding helmets with auxiliary optical vision systems. 4,523,808, Cl. 350-146.000.

Miller, Dorothy W.: *See—*
Miller, Fred L. B., deceased, 4,523,407, Cl. 49-465.000.

Miller, Dorothy W., personal representative: *See—*
Miller, Fred L. B., deceased, 4,523,407, Cl. 49-465.000.

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Miller, Ivan O., to Shafco Industries Inc. Rotary ball valve assembly. 4,523,608, Cl. 137-315.000.

Miller, Kenneth L.: *See—*
Chalmers, Brian D.; Ruxton, David S.; and Miller, Kenneth L., 4,524,397, Cl. 360-77.000.

Miller, Richard J. L.: *See—*
Clayfield, Eric J.; Dixon, Arnold G.; and Miller, Richard J. L., 4,524,000, Cl. 210-649.000.

Miller, Richard L.; and Estela, Carlos, to General Electric Environmental Services, Inc. Fabric filter system with improved gas bypass means for removing particulate matter from gases. 4,523,931, Cl. 55-80.000.

Miller, Richard W., to Foxboro Company, The. Planar-measuring vortex-shedding mass flowmeter. 4,523,477, Cl. 73-861.020.

Milliken Research Corporation: *See—*
Berczi, Charles N.; and Hall, Karen, 4,524,170, Cl. 524-371.000.

Milla, Marvin A., Jr.; Moyer, William C.; MacGregor, Douglas B.; and Zolnowsky, John E., to Motorola, Inc. Virtual machine data processor. 4,524,415, Cl. 364-200.000.

Minami, Setsuo: *See—*
Baba, Takeshi; Nose, Noriyuki; Yoshikawa, Hideo; Minoura, Kazuo; Hasu, Akinori; Minami, Setsuo; and Matsuoka, Kazuhiko, 4,523,801, Cl. 350-6.800.

Minamikawa, Yoshihisa: *See—*
Shimura, Yoshimasa; Kakiuchi, Hideyuki; Minamikawa, Yoshihisa; and Kawasaki, Katsuhiro, 4,524,277, Cl. 250-397.000.

Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; Angelov, Mihail H.; and Yordanov, Nikolay V., to Institute Po Metaloznanie I Technologia Na Metalite. Apparatus for soldering the winding to the commutator of an electric machine. 4,523,708, Cl. 228-37.000.

Mine Roof Support Systems, Inc.: *See—*
Ringe, Thomas, 4,523,881, Cl. 405-259.000.

Minera, Salvador A. Candle holder combination. 4,524,408, Cl. 362-163.000.

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Ausnit, Steven, 4,523,918, Cl. 493-198.000.

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Adam, Randall E.; and Schultz, William J., 4,524,181, Cl. 525-107.000.
Engel, Michael R., 4,524,087, Cl. 427-2.000.
Freerks, Conrad T., 4,523,411, Cl. 51-170.0MT.
Heilmann, Steven M.; Krepaki, Larry R.; and Rasmussen, Jerald K., 4,524,221, Cl. 568-322.000.
Morioka, Eddie T., 4,523,727, Cl. 242-192.000.
Nepper, Robert F.; Solyntjes, Alan J.; and Abrahamson, Carl W., 4,523,836, Cl. 355-16.000.

Minolta Camera Kabushiki Kaisha: *See—*
Nakatani, Keiji; Yamagishi, Seiichi; and Ishii, Kenjiro, 4,524,315, Cl. 318-603.000.
Nishioka, Nobuaki; Makio, Tatsumi; and Ito, Katsutsune, 4,524,370, Cl. 346-155.000.
Sawa, Seiji; and Kita, Nobuyuki, 4,523,597, Cl. 128-652.000.

Minoura, Kazuo: *See—*
Baba, Takeshi; Nose, Noriyuki; Yoshikawa, Hideo; Minoura, Kazuo; Hasu, Akinori; Minami, Setsuo; and Matsuoka, Kazuhiko, 4,523,801, Cl. 350-6.800.

Misaki, Susumu; Ishii, Sadamu; and Suefuji, Masahiro, to Daikin Kogyo Co., Ltd. Direct fluorination of etherified or unetherified hydroxy group bearing aromatic compounds. 4,524,032, Cl. 260-465.00F.

Mita Industrial Co., Ltd.: *See—*
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.
Maekawa, Kouji; Kato, Mamoru; Nakagama, Syoji; and Sano, Yumiko, 4,524,117, Cl. 430-44.000.
Nakatani, Kaname; Miyakawa, Nobuhiro; Higashiguchi, Teruaki; and Edo, Tomomi, 4,524,118, Cl. 430-56.000.

Mitchell, Alexander M.: *See—*
Jablway, Ali N.; and Mitchell, Alexander M., 4,524,321, Cl. 324-66.000.

Mitchell, Randall M.; and Armstrong, John T., Jr., to Caterpillar Tractor Co. Hydrostatic vehicle control. 4,523,892, Cl. 417-34.000.

Mitel Corporation: *See—*
Groves, Christopher K.; Duncan, Kevin; and Darwall, Edward C. D., 4,523,975, Cl. 156-643.000.

Mitsubishi Denki K.K.: *See—*
Denda, Masahiko; and Tsubouchi, Natsuro, 4,524,374, Cl. 357-15.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Araya, Shinji; and Tsuji, Shintaro, 4,524,418, Cl. 364-436.000.
Iwata, Toshio, 4,523,567, Cl. 123-425.000.
Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,524,312, Cl. 318-481.000.
Nishimura, Tadashi, 4,523,962, Cl. 148-1.500.
Shima, Ichiji; Yoshibayashi, Shigeru; and Taniguti, Ryosuke, 4,524,355, Cl. 340-870.130.
Tanaka, Hideharu; Sekiya, Mutsuo; and Uchikawa, Fusaoki, 4,523,662, Cl. 181-249.000.
Tsuji, Shintaro, 4,523,665, Cl. 187-29.00R.
Yokota, Mitsuyoshi; and Matsumoto, Akio, 4,524,311, Cl. 318-481.000.

Mitsubishi Denki Kanushiki Kaisha: *See—*
Kiyokawa, Morio, 4,524,414, Cl. 364-171.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Takahashi, Hideyuki; Komatsu, Toshio; and Inoue, Yoshiaki, 4,524,015, Cl. 252-188.280.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.

Miyakawa, Nobuhiro: *See—*
Nakatani, Kaname; Miyakawa, Nobuhiro; Higashiguchi, Teruaki; and Edo, Tomomi, 4,524,118, Cl. 430-56.000.

Miyamoto, Kazuaki: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, 4,523,635, Cl. 165-104.120.

Miyamoto, Minoru: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, 4,523,635, Cl. 165-104.120.

Miyata, Hiroyasu; and Ito, Kazuhiko, to Alps Electric Co., Ltd. Pressure-sensitive element. 4,524,256, Cl. 200-86.00R.

Miyazaki, Naoki: *See—*
Horiya, Keiichi; and Miyazaki, Naoki, 4,524,367, Cl. 346-76.0PH.

Mizobe, Akio: *See—*
Genba, Tsuneo; Mizobe, Akio; and Okazaki, Masaki, 4,524,042, Cl. 264-211.000.

Mizuno, Toru: *See—*
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,523,552, Cl. 123-143.00B.

Mizutani, Shinichi; and Ajiki, Harumi, to Toyota Jidosha Kabushiki Kaisha. Bush mounting equipment with lubricating oil applying mechanism. 4,523,363, Cl. 29-235.000.

Moban B.V.: *See—*
Schimmelpennink, Laurens M. H.; and Spaanenburg, Lambertus, 4,524,288, Cl. 307-40.000.

Mobil Oil Corporation: *See—*
Chang, Clarence D.; and Miale, Joseph N., 4,524,140, Cl. 502-61.000.
Chester, Arthur W.; Garwood, William E.; Lucki, Stanley J.; and Tabak, Samuel A., 4,524,232, Cl. 585-517.000.
Chibnik, Sheldon, 4,524,007, Cl. 252-56.00R.
Fowles, Patrick E.; and Yan, Tsoung-Yuan, 4,524,227, Cl. 585-408.000.
Fowles, Patrick E.; and Yan, Tsoung-Yuan, 4,524,228, Cl. 585-408.000.
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Horodysky, Andrew G., 4,524,004, Cl. 252-32.70E.
Horodysky, Andrew G., 4,524,005, Cl. 252-49.600.
Murray, James G., 4,524,184, Cl. 525-314.000.
Penick, Joe E., 4,523,987, Cl. 208-157.000.
Venkatesan, Valadi N., 4,523,642, Cl. 166-272.000.

Moffitt, Max L.: *See—*
Allen, Edwin M.; Foust, Eugene C.; Sievert, Steven A.; Fitzgerald, William C.; and Moffitt, Max L., 4,523,842, Cl. 356-124.000.

Mogi, Mamoru: *See—*
Chaki, Takao; and Mogi, Mamoru, 4,523,485, Cl. 74-10.330.

Momemers, Wilhelmus M. A. Key keeper. 4,523,443, Cl. 70-459.000.

Monsanto Company: *See—*
Ruest, Dennis A.; Takano, Masaharu; and Wolf, Lawrence R., 4,524,077, Cl. 514-557.000.

Montech Systems Incorporated: *See—*
Strickler, Steven E.; Simmons, Jerry C.; Golladay, James; and Goldstein, Andrew D., 4,523,460, Cl. 73-200.000.

Montedison S.p.A.: *See—*
Paffoni, Camillo; Carlini, Filippo M.; Bottaccio, Giorgio; and Osti, Alberto, 4,523,953, Cl. 106-23.000.

Moore, Boyd B. Method of and apparatus for moving reeled material into and retrieving it from the upper end of a well bore in the earth's surface. 4,523,645, Cl. 166-385.000.

Moore, Donald E.; and Olsen, David W., to FMC Corporation. Anti-two block system. 4,523,686, Cl. 212-152.000.

Moore, Fergus E.: *See—*
Billingsley, James D.; and Moore, Fergus E., 4,524,385, Cl. 358-113.000.

Moore, George G. I., to Riker Laboratories, Inc. 2,6-Di(t-butyl)-4-hydroxy-4-pyridyl-2,5-cyclohexadien-1-one intermediates. 4,524,210, Cl. 546-340.000.

Moore, John H.; and Harvey, Ian J., to Lucas Industries public limited company. Electronic control system for a fuel pump. 4,523,563, Cl. 123-359.000.

Moore, Robert A.; and Karisch, Edward P., to Halliburton Company. Dual guard type resistivity measuring apparatus. 4,524,325, Cl. 324-375.000.

Moore, Robert R.: *See—*
Lamb, Steve R.; and Moore, Robert R., 4,523,585, Cl. 128-80.00C.

Morche, Klaus: *See—*
Bauer, Armin; Ehrend, Helfried; Morche, Klaus; Nutzel, Karl; and Sauerbier, Michael, 4,524,182, Cl. 525-120.000.

Moreau, Claude: *See—*
Clement, Gilles; Francois, Daniel; Marchal, Paul; and Moreau, Claude, 4,523,884, Cl. 414-8.000.

Morgan, Jack B. Apparatus and method for monitoring remote security zones. 4,524,354, Cl. 340-825.360.

Morgan, Robert K.; and Yaeger, John R., to Raychem Corporation. Self-regulated actuator. 4,524,343, Cl. 337-140.000.

Moriarty, Michael P., to Rockwell International Corporation. Combustion method. 4,523,532, Cl. 110-347.000.

Moribe, Hiroshi: *See—*
Kuno, Toshitaka; Moribe, Hiroshi; and Kamiya, Atsushi, 4,524,313, Cl. 318-563.000.

Moriguchi, Haruhiko: *See—*
Inui, Toshiharu; and Moriguchi, Haruhiko, 4,524,368, Cl. 346-76.0PH.

Morimoto, Kiyoshi: *See—*
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.

Morioka, Eddie T., to Minnesota Mining and Manufacturing Company. Non-oscillating spool for belt driven cartridge. 4,523,727, Cl. 242-192.000.

Morita, Akitaka: *See—*
Nishimura, Toshio; and Morita, Akitaka, 4,523,858, Cl. 368-272.000.

Morita Fire Pump Mfg. Co., Ltd.: *See—*
Terayama, Fusaji; Kohzai, Tetsuo; and Murai, Naoyuki, 4,523,685, Cl. 212-247.000.

Moriyama, Yukinori; and Ozaki, Tsukasa, to Teijin Seiki Company Limited. Grip-feed machines used with stamping and bending machines. 4,523,449, Cl. 72-421.000.

Mortellite, Robert M., to Clopay Corporation. Window shade clutch assembly. 4,523,620, Cl. 160-315.000.

Mosbach, Klaus H.: *See—*
Hagerdal, Barbel G. R.; and Mosbach, Klaus H., 4,524,137, Cl. 435-178.000.

Moser, Winfried: *See—*
Latsch, Reinhard; Linder, Ernst; and Moser, Winfried, 4,523,559, Cl. 123-306.000.

Moss, Keith G.; Smith, Peter J.; and Woolhouse, Robin A., to Imperial Chemical Industries, PLC. Treatment of ion-exchange membrane. 4,523,984, Cl. 204-296.000.

Mostmans, Joseph H.: *See—*
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,524,110, Cl. 428-537.100.

Motor Wheel Corporation: *See—*
Murray, Scott L., 4,523,666, Cl. 188-218.0XL.

Motorola, Inc.: *See—*
Baida, Raymond J.; Bukhman, Yefim; and Goodner, Willis R., 4,523,372, Cl. 29-590.000.
Bukhman, Yefim, 4,523,976, Cl. 156-643.000.
Gay, Michael J., 4,524,332, Cl. 330-294.000.
Lehning, Heinz, 4,524,291, Cl. 307-354.000.
Mills, Marvin A., Jr.; Moyer, William C.; MacGregor, Douglas B.; and Zolnowsky, John E., 4,524,415, Cl. 364-200.000.

Motosugi, Katsuhiko; and Sasaki, Yoshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Intake device of an internal combustion engine. 4,523,560, Cl. 123-308.000.

Moyer, William C.: *See—*
Mills, Marvin A., Jr.; Moyer, William C.; MacGregor, Douglas B.; and Zolnowsky, John E., 4,524,415, Cl. 364-200.000.

Muchel, Franz: *See—*
Lang, Walter; Muller, Dieter; Muchel, Franz; Wanner, Roland; and Niesel, Peter, 4,523,821, Cl. 351-214.000.

Muders, Rolf: *See—*
Brandt, Horst; Gehrke, Gunter; Muders, Rolf; Otten, Hans-Gunter; and Wiegner, Dieter, 4,523,926, Cl. 8-639.000.

Mueller Co.: *See—*
Daghe, Joseph L.; Sands, Robert E.; and Humes, Dennis W., 4,523,607, Cl. 137-218.000.

Muggli, Jurg; and Gruber, Peter, to Cerberus AG. Optical smoke detector with sensitivity adjustment. 4,524,281, Cl. 250-574.000.

Mughal, Ahmed S.; and Holmes, David S., to John Wyeth & Brother Limited. Slow release pharmaceutical composition. 4,524,060, Cl. 424-19.000.

Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Ignition system for engine. 4,523,552, Cl. 123-143.00B.

Muller, Dieter: *See—*
Lang, Walter; Muller, Dieter; Muchel, Franz; Wanner, Roland; and Niesel, Peter, 4,523,821, Cl. 351-214.000.

Muller, Roger, to Elermetal. Machine for the deep slitting of the periphery of non planar discs used for providing wheels having a pneumatic tire. 4,523,446, Cl. 72-71.000.

Muller, Thomas; Lehner, Gunter; and Gugel, Georg, to Kraftwerk Union Aktiengesellschaft. Probe for the nondestructive testing of cylindrical cavities, especially of steam generator tubes. 4,523,470, Cl. 73-623.000.

Municipal Industries, Inc.: *See—*
Dittmann, Fred M., Jr., 4,523,491, Cl. 74-360.000.

Murai, Naoyuki: *See—*
Terayama, Fusaji; Kohzai, Tetsuo; and Murai, Naoyuki, 4,523,685, Cl. 212-247.000.

Muramatsu, Motoyasu: *See—*
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,523,570, Cl. 123-478.000.

Muroi, Katsumi: *See—*
Kuge, Toshio; Yokoyama, Hiroshi; Nogita, Shunsuke; Nakamura, Yoichi; and Muroi, Katsumi, 4,523,927, Cl. 44-1.00B.

Murphy, Stephan D.: *See—*
Derkacs, Thomas; Matay, Istvan M.; Murphy, Stephan D.; and Touhalisky, John, 4,523,468, Cl. 73-598.000.

Murray, Andrew E.: *See—*
Seilly, Alec H.; and Murray, Andrew E., 4,523,569, Cl. 123-458.000.

Murray, Gary P.: *See—*
Lower, Ralph C.; and Murray, Gary P., 4,523,897, Cl. 417-244.000.

Murray, James G., to Mobil Oil Corporation. Impact polymer composition. 4,524,184, Cl. 525-314.000.

Murray, Royce W.: *See—*
Samuels, George J.; Schmitkons, Thomas A.; Streeter, Terry L.; and Murray, Royce W., 4,524,114, Cl. 429-42.000.

Murray, Scott L., to Motor Wheel Corporation. Brake rotor with vibration harmonic suppression, and method of manufacture. 4,523,666, Cl. 188-218.0XL.

Musser, Harry R.; Strickland, Thomas H.; and Zannucci, Joseph S., to Eastman Kodak Company. Stabilized copolyesterether compositions suitable for outdoor applications. 4,524,165, Cl. 524-99.000.

Muth, Ross R.: *See—*
Kaplan, Donald S.; and Muth, Ross R., 4,523,591, Cl. 128-334.00R.

Muther, Paul: *See—*
Buchel, Urs; and Muther, Paul, 4,523,923, Cl. 8-524.000.

Mutschler, Ulrich, to Staubli-Verdol. Reverse weaving mechanisms. 4,523,915, Cl. 464-3.000.

Nagaki, Takehiro: *See—*
Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, 4,524,401, Cl. 360-113.000.

Nagakubo, Yoshihide, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device. 4,523,369, Cl. 29-576.00W.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Analog arithmetic operation circuit. 4,524,292, Cl. 307-494.000.

Nagase, Hiroshi, to Fujikura Kasei Co., Ltd. Process for producing water-absorbing resins. 4,524,186, Cl. 525-328.800.

Nagase, Hiroshi; and Okuyama, Toshiaki, to Hitachi, Ltd. Method and apparatus of controlling induction motors. 4,524,310, Cl. 318-808.000.

Nagashima, Masato; Katsuyama, Mikizo; and Yamamoto, Masahiro, to Dainippon Screen Manufacturing Co., Ltd. Device for transferring information through fiberoptic bundles without distortion of information transferred therethrough. 4,523,805, Cl. 350-96.240.

Nagashima, Nao, to Canon Kabushiki Kaisha. Image formation system. 4,524,394, Cl. 358-296.000.

Nagashima, Nobuharu: *See—*
Eguchi, Mitsuo; Tagawa, Kiyoharu; Ogawa, Hitoshi; Bandai, Mikio; and Nagashima, Nobuharu, 4,523,829, Cl. 354-406.000.

Nagashima, Takashi: *See—*
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.

Naguib, Hussein M.: *See—*
Blaauw, Cornelis; Naguib, Hussein M.; Ahmed, Syed M.; and Aftab, Ahmad, 4,524,091, Cl. 427-74.000.

Nakagama, Syoji: *See—*
Maekawa, Kouji; Kato, Mamoru; Nakagama, Syoji; and Sano, Yumiko, 4,524,117, Cl. 430-44.000.

Nakajima, Hideo: *See—*
Ogasawara, Shingo; and Nakajima, Hideo, 4,523,547, Cl. 119-52.00B.

Nakamura, Hitoshi: *See—*
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; Ueda, Katsuhiko; and Nakamura, Hitoshi, 4,524,046, Cl. 419-8.000.

Nakamura, Katuyuki; and Neki, Kazuya, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyester composition and production thereof. 4,524,191, Cl. 525-425.000.

Nakamura, Kyoichi: *See—*
Maeda, Hirofumi; Nakamura, Kyoichi; and Hatamoto, Toshihiro, 4,524,154, Cl. 521-58.000.

Nakamura, Yoichi: *See—*
Kuge, Toshio; Yokoyama, Hiroshi; Nogita, Shunsuke; Nakamura, Yoichi; and Muroi, Katsumi, 4,523,927, Cl. 44-1.00B.

Nakamura, Yukinobu; Tagami, Katsutoshi; and Takahashi, Tsuneo, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for visually indicating the current location of an automotive vehicle. 4,524,357, Cl. 340-995.000.

Nakata, Yasushi: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, 4,523,635, Cl. 165-104.120.

Nakatani, Kaname; Miyakawa, Nobuhiro; Higashiguchi, Teruaki; and Edo, Tomomi, to Mita Industrial Co., Ltd. Electrophotographic photosensitive material with ozone inhibitor. 4,524,118, Cl. 430-56.000.

Nakatani, Keiji; Yamagishi, Seiichi; and Ishii, Kenjiro, to Minolta Camera Kabushiki Kaisha. Roll film carrier used in reader or reader printer. 4,524,315, Cl. 318-603.000.

Nakatomi, Yoshitsugu: *See—*
Yokoo, Makoto; Nakatomi, Yoshitsugu; and Hashimoto, Shinichi, 4,523,831, Cl. 355-3.00R.

Nakayama, Shouji; Takanashi, Yukio; Higuchi, Toshiharu; and Yakabe, Touru, to Tokyo Shibaura Denki Kabushiki Kaisha. Cathode structure for electron tube. 4,524,296, Cl. 313-270.000.

Nalco Chemical Company: *See—*
Cosper, David R.; and McKay, Gretchen L., 4,523,932, Cl. 55-85.000.

Nambu, Masao, to Nippon Oil Company, Limited. Wound-covering materials. 4,524,064, Cl. 424-81.000.

Nambudiri, Easwaran C. N.: *See—*
Abellana, Jovito N.; and Nambudiri, Easwaran C. N., 4,523,523, Cl. 101-235.000.

Napintas Pty. Ltd.: *See—*
Robinson, Allan F.; and Hunter, Warwick A., 4,523,385, Cl. 33-296.000.

Narimatsu, Akihisa; and Ohkubo, Hiroyuki, to Sony Magnescale Incorporation. Scaling device. 4,523,381, Cl. 33-125.00C.

National Research Development Corporation: *See—*
Gorman, Barry; and Hearn, Edwin J., 4,523,848, Cl. 356-368.000.

Navarro, Carlos R., to Concast AG. Method for the transverse conveying of strand sections of a multi-strand continuous casting installation and transverse conveying apparatus for a multi-strand casting installation. 4,523,672, Cl. 198-461.000.

Naylor, Carter G., to Texaco Inc. Dicyclopentadiene sulfonate liquid detergent formulations. 4,524,022, Cl. 252-548.000.

Naylor, Carter G.: *See—*
McCoy, David R.; and Naylor, Carter G., 4,524,023, Cl. 252-548.000.

NCR Corporation: *See—*
Maheras, George; and Hayworth, Hubert O., 4,523,851, Cl. 356-399.000.
Sullivan, Paul A.; and Collins, George J., 4,523,370, Cl. 29-576.00B.

NEC Corporation: *See—*
Eguchi, Hirotugu, 4,524,377, Cl. 357-59.000.

Necchi S.p.A.: *See—*
Bar, Alfredo, 4,523,663, Cl. 181-403.000.

Neefe, Charles W. Method of making bifocal lens blanks. 4,524,035, Cl. 264-1.800.

Negishi, Takao; Kojima, Teiryo; and Tomiita, Kazuo, to Toray Industries, Inc. Process for manufacturing textured multifilament yarn having alternating twist. 4,523,428, Cl. 57-288.000.

Neki, Kazuya: *See—*
Nakamura, Katuyuki; and Neki, Kazuya, 4,524,191, Cl. 525-425.000.

Nel-Tech Development, Inc.: *See—*
Hyatt, David R., 4,524,349, Cl. 340-500.000.

Nelson, Carl, to Aerochem, Inc. Method and apparatus for automated chemical milling of compound curved surfaces. 4,523,973, Cl. 156-626.000.

Nelson, Mark D.: *See—*
Goss, Willis C.; Nelson, Mark D.; and McLauchlan, John M., 4,523,810, Cl. 350-320.000.

Nenninger, Klaus: *See—*
Rosenbladt, Rudolf V.; Nenninger, Klaus; and Schussler, Rudolf, 4,523,853, Cl. 356-446.000.

Nepper, Robert F.; Solyntjes, Alan J.; and Abrahamson, Carl W., to Minnesota Mining and Manufacturing Company. Continuous copier. 4,523,836, Cl. 355-16.000.

Nesheiwat, Afif M.: *See—*
Sherk, Fred T.; Nesheiwat, Afif M.; and Senatore, Guy, 4,524,200, Cl. 528-388.000.

Neuhaus, Gunter: *See—*
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,523,764, Cl. 277-3.000.

Neuzil, Richard W.: *See—*
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,524,029, Cl. 260-419.000.
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,524,030, Cl. 260-419.000.

New, James S.; and Yevich, Joseph P., to Mead Johnson & Company. 1-Heteroaryl-4-(2,5-pyrrolidinedion-1-yl)alkyl)piperazine derivatives. 4,524,206, Cl. 544-230.000.

Newman, Gary H.: *See—*
Stock, Rodney D.; and Newman, Gary H., 4,524,240, Cl. 174-68.500.

Niel, Michel: *See—*
Pichat, Philippe; Niel, Michel; and Sinn, Robert, 4,523,954, Cl. 106-110.000.

Niesel, Peter: *See—*
Lang, Walter; Muller, Dieter; Muchel, Franz; Wanner, Roland; and Niesel, Peter, 4,523,821, Cl. 351-214.000.

Nihon Radiotor Co., Ltd.: *See—*
Sawabe, Mitsuo; and Imai, Kouichi, 4,523,374, Cl. 29-597.000.

Niizeki, Kinya: *See—*
Takahashi, Masahiro; Hagiwara, Toshio; Nishizaki, Takao; and Niizeki, Kinya, 4,523,433, Cl. 62-60.000.

Nikkan Industries Co., Ltd.: *See—*
Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, 4,524,098, Cl. 428-156.000.
Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, 4,524,100, Cl. 428-283.000.

Nikkel, Ronnie D.; and L'Esperance, Paul M. Collector means for solar energy collecting system. 4,523,575, Cl. 126-418.000.

Nikolaev, Nikolai I.: *See—*
Eberling, Igor L.; Tereschenko, Lev A.; Nikolaev, Nikolai I.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,524,319, Cl. 324-65.00R.

Nilsson, Orjan: *See—*
Forslund, Lennart; and Nilsson, Orjan, 4,523,894, Cl. 417-161.000.

Nippon Electric Co., Ltd.: *See—*
Egami, Kazunari; Umeda, Tetsuo; Tsukakoshi, Naoto; and Nishijima, Yasuo, 4,524,453, Cl. 382-1.000.
Hiromori, Kunio; and Tsuda, Kiyoshi, 4,523,753, Cl. 271-31.100.
Kimoto, Manabu, 4,524,417, Cl. 364-200.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Yokoyama, Kenji, 4,524,335, Cl. 332-9.00R.

Nippon Kogaku K.K.: *See—*
Iida, Yoshikazu; Hagyuda, Nobuyoshi; and Hasegawa, Hiroshi, 4,523,830, Cl. 354-416.000.

Nippon Light Metal Co., Ltd.: *See—*
Takahashi, Masahiro; Hagiwara, Toshio; Nishizaki, Takao; and Niizeki, Kinya, 4,523,433, Cl. 62-60.000.

Nippon Oil Company, Limited: *See—*
Nambu, Masao, 4,524,064, Cl. 424-81.000.

Nippon Petrochemicals Co., Ltd.: *See—*
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,524,017, Cl. 252-522.00R.

Nippon Seiko Kabushiki Kaisha: *See—*
Okoshi, Hideo, 4,523,863, Cl. 384-609.000.

Nippon Soken, Inc.: *See—*
Kodera, Masao; Akita, Shigeyuki; and Yoshino, Yasuhisa, 4,524,356, Cl. 340-904.000.
Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, 4,523,386, Cl. 33-357.000.
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,523,552, Cl. 123-143.00B.
Takagi, Shigeru; and Tomita, Masahiro, 4,523,935, Cl. 55-282.000.

Nippon Steel Corporation: *See—*
Oka, Joji; Iwakura, Hideaki; Ando, Narumi; Iwasaki, Kiyotoshi; and Shindow, Yoshio, 4,524,111, Cl. 428-551.000.

Nippon Telegraph & Telephone Public Corporation: *See—*
Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, 4,524,333, Cl. 331-17.000.

Nippondenso Co., Ltd.: *See—*
Maruyama, Kimio, 4,523,500, Cl. 83-37.000.
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,523,552, Cl. 123-143.00B.

Nirdosh, Inderjit: *See—*
Baird, Malcolm H. I.; and Nirdosh, Inderjit, 4,523,456, Cl. 73-64.400.

Nishida, Minoru: *See—*
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,523,552, Cl. 123-143.00B.

Nishijima, Yasuo: *See—*
Egami, Kazunari; Umeda, Tetsuo; Tsukakoshi, Naoto; and Nishijima, Yasuo, 4,524,453, Cl. 382-1.000.

Nishimura, Katsuji; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Cash accounting system having data compiling capability. 4,524,267, Cl. 235-379.000.

Nishimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Method for fabricating monocrystalline semiconductor layer on insulating layer by laser crystallization using a grid of anti-reflection coating disposed on poly/amorphous semiconductor. 4,523,962, Cl. 148-1.500.

Nishimura, Toshio; and Morita, Akitaka, to Sharp Kabushiki Kaisha. Combined electronic calculator and electronic alarm timepiece. 4,523,858, Cl. 368-272.000.

Nishio, Toyokazu: *See—*
Miki, Shinji; Nishio, Toyokazu; Matsuyama, Shinzo; and Yamazaki, Shinichi, 4,523,874, Cl. 405-43.000.

Nishioka, Nobuaki; Makio, Tatsumi; and Ito, Katsutsune, to Minolta Camera Kabushiki Kaisha. Electrostatic recording apparatus. 4,524,370, Cl. 346-155.000.

Nishiyama, Masao; Katada, Keiichiro; and Akimoto, Yoshiteru, to UBE Industries, Ltd. Reaction injection molding method. 4,524,044, Cl. 264-328.600.

Nishizaki, Takao: *See—*
Takahashi, Masahiro; Hagiwara, Toshio; Nishizaki, Takao; and Niizeki, Kinya, 4,523,433, Cl. 62-60.000.

Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Metal hydride heat pump system. 4,523,635, Cl. 165-104.120.

Nishizawa, Junichi; Tamamushi, Takashige; Shimanuki, Koji; and Inuiya, Masafumi, to Fuji Photo Film Co., Ltd. Two-dimensional solid-state image sensor device. 4,524,391, Cl. 358-213.000.

Nishizawa, Masahiro: *See—*
Fujimura, Takashi; and Nishizawa, Masahiro, 4,524,306, Cl. 315-326.000.

Nissan Chemical Industries Ltd.: *See—*
Suzuki, Hideo; Ohtsuka, Kanji; and Adachi, Masami, 4,524,213, Cl. 549-235.000.

Nissan Motor Company, Limited: *See—*
Ohsawa, Eiji; and Kajita, Shunsuke, 4,523,715, Cl. 236-49.000.

Nittan Company, Limited: *See—*
Kimura, Tetsuo; Fujii, Hirofumi; Yuasa, Hayami; and Yonezawa, Tatuo, 4,524,351, Cl. 340-629.000.

Nixdorf Computer AG: *See—*
Hullwegen, Josef, 4,524,448, Cl. 375-118.000.

Noack, Rainer: *See—*
Heinemann, Wolfgang; Noack, Rainer; and Weyl, Helmut, 4,524,038, Cl. 264-61.000.

Noble, James R. Back exercising device. 4,523,583, Cl. 128-71.000.

Nobukawa, Akira; and Sawaguchi, Tatsue, to Kitagawa Iron Works Co. Ltd. Cooling system of rotary fluid pressure cylinder for chucking in machine tools. 4,523,632, Cl. 165-47.000.

Nocon, Gene. Photographic timer. 4,524,290, Cl. 307-141.400.

Nogita, Shunsuke: *See—*
Kuge, Toshio; Yokoyama, Hiroshi; Nogita, Shunsuke; Nakamura, Yoichi; and Muroi, Katsumi, 4,523,927, Cl. 44-1.00B.

Nomura, Yukihiro: *See—*
Sugisawa, Ko; Yamamoto, Masanori; Shibuki, Masaru; Nomura, Yukihiro; Sengoku, Kouji; and Higashine, Seiji, 4,524,080, Cl. 426-236.000.

Nordica S.p.A.: *See—*
Borsoi, Bruno, 4,523,395, Cl. 36-119.000.

Normand, Randall J.: *See—*
Akers, James B., Jr.; Leng, Douglas E.; and Normand, Randall J., 4,524,189, Cl. 525-35.00G.

Norris, Philip, to Polaroid Corporation. Film processing apparatus and system. 4,523,825, Cl. 354-301.000.

North American Philips Consumer Electronics Corp.: *See—*
Pawlikowski, Stanley L.; and Tamburrino, Richard A., 4,524,298, Cl. 313-405.000.

North American Philips Corporation: *See—*
Preston, George V., III, 4,524,299, Cl. 313-487.000.

North Side Packing Company: *See—*
Hofmann, Richard E.; and Hofmann, Robert G., Jr., 4,523,520, Cl. 99-352.000.

Northern Telecom Limited: *See—*
Bouffard, Jean; Dumoulin, Andre ; and Lederhose, Edgar K., 4,523,423, Cl. 57-59.000.

Norton Christensen, Inc.: *See—*
Heidemann, Gerhard, 4,523,765, Cl. 277-165.000.

Norton Company: *See—*
Williston, William H., 4,523,930, Cl. 51-293.000.

Nose, Noriyuki: *See—*
Baba, Takeshi; Nose, Noriyuki; Yoshikawa, Hideo; Minoura, Kazuo; Hasu, Akinori; Minami, Setsuo; and Matsuoka, Kazuhiko, 4,523,801, Cl. 350-6.800.

Nowag, Reinhard: *See—*
Twiehoff, Karl-Heinz; and Nowag, Reinhard, 4,524,460, Cl. 383-45.000.

Nu-Way Energy Limited: *See—*
Lewis, David, 4,523,905, Cl. 431-351.000.

Nukem GmbH: *See—*
Schmidt, Gerhard; and Kohlpoth, Walter, 4,524,048, Cl. 422-159.000.

Numata, Koji: *See—*
Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, 4,523,386, Cl. 33-357.000.

Nusonics, Inc.: *See—*
Zacharias, Ellis M., Jr., 4,523,478, Cl. 73-861.280.

Nutzel, Karl: *See—*
Bauer, Armin; Ehrend, Helfried; Morche, Klaus; Nutzel, Karl; and Sauerbier, Michael, 4,524,182, Cl. 525-120.000.

Ober, Christopher K.: *See—*
Lok, Kar P.; and Ober, Christopher K., 4,524,199, Cl. 527-313.000.

Oberg, Sven: *See—*
Auberry, Horace; Liebscher, Anton; and Oberg, Sven, 4,523,346, Cl. 12-133.00R.

O'Callaghan, Fred G.: *See—*
Breckinridge, James B.; and O'Callaghan, Fred G., 4,523,846, Cl. 356-346.000.

Oce-Helioprint AS: *See—*
Hagedorn-Olsen, Jens, 4,523,840, Cl. 355-91.000.

Ochs, Siegfried: *See—*
Bayer, Ulrich; and Ochs, Siegfried, 4,523,457, Cl. 73-114.000.

Oda, Goro: *See—*
Yamashita, Mitsuo; Oda, Goro; and Kamiya, Masashi, 4,523,800, Cl. 350-6.700.

Oduro-Yeboah, Joshua, to Beecham Group p.l.c. Pharmaceutical formulations containing pseudomonic acid. 4,524,075, Cl. 514-451.000.

Ogasawara, Shingo; and Nakajima, Hideo, to Kabushiki Kaisha Nakajima Seisakujo. Device supplying constant amount of feed. 4,523,547, Cl. 119-52.00B.

Ogata, Yasuzi, to Olympus Optical Co., Ltd. Zoom lens system. 4,523,813, Cl. 350-426.000.

Ogawa, Akira: *See—*
Aoki, Kozo; Umemoto, Makoto; and Ogawa, Akira, 4,524,132, Cl. 430-552.000.

Ogawa, Hitoshi: *See—*
Eguchi, Mitsuo; Tagawa, Kiyoharu; Ogawa, Hitoshi; Bandai, Mikio; and Nagashima, Nobuharu, 4,523,829, Cl. 354-406.000.

Ogawa, Takahiro: *See—*
Yamazaki, Kaoru; Kurioka, Shunichiro; Sakata, Mitsuya; and Ogawa, Takahiro, 4,524,193, Cl. 526-79.000.

Oguri, Katsuhiko, to Victor Company of Japan, Limited. Electromagnetic pickup cartridge with flux sensors mounted above moving magnet. 4,524,439, Cl. 369-136.000.

Ohkata, Ichizo, to Kato Hatsujo Kaisha Ltd. Freeze preventing valve. 4,523,605, Cl. 137-62.000.

Ohkubo, Hiroyuki: *See—*
Narimatsu, Akihisa; and Ohkubo, Hiroyuki, 4,523,381, Cl. 33-125.00C.

Ohloff, Gunther: *See—*
Giersch, Wolfgang K.; and Ohloff, Gunther, 4,524,019, Cl. 252-522.00R.

Ohno, Junichi: *See—*
Ohta, Takao; and Ohno, Junichi, 4,523,963, Cl. 148-1.500.

Ohno, Shigeru: *See—*
Kishimoto, Shinzo; Ohno, Shigeru; and Tsujikawa, Teruaki, 4,524,129, Cl. 430-393.000.

Ohsawa, Eiji; and Kajita, Shunsuke, to Nissan Motor Company, Limited. Method and apparatus for air conditioner control. 4,523,715, Cl. 236-49.000.

Ohta, Jyun: *See—*
Yoshida, Hatsuyoshi; Fukutome, Michio; Ohuchi, Makoto; and Ohta, Jyun, 4,524,254, Cl. 200-83.00R.

Ohta, Takao; and Ohno, Junichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of fabricating MOS device on a SOS wafer by stabilizing interface region with silicon and oxygen implant. 4,523,963, Cl. 148-1.500.

Ohtombe, Ko, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for detecting a security thread embedded in a paper-like material. 4,524,276, Cl. 250-338.000.

Ohtsuka, Kanji: *See—*
Suzuki, Hideo; Ohtsuka, Kanji; and Adachi, Masami, 4,524,213, Cl. 549-235.000.

Ohuchi, Makoto: *See—*
Yoshida, Hatsuyoshi; Fukutome, Michio; Ohuchi, Makoto; and Ohta, Jyun, 4,524,254, Cl. 200-83.00R.

Ohzeki, Yoshiaki, to Ricoh Company, Ltd. Facsimile communication system. 4,524,393, Cl. 358-257.000.

Oka, Joji; Iwakura, Hideaki; Ando, Narumi; Iwasaki, Kiyotoshi; and Shindow, Yoshio, to Nippon Steel Corporation. Weldable paint-coated steel sheets having excellent corrosion resistance. 4,524,111, Cl. 428-551.000.

Okada, Akira: *See—*
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Okada, Akira, 4,523,802, Cl. 350-96.120.

Okada, Takashi; Ikeda, Yasunari; and Tanaka, Yutaka, to Sony Corporation. Double-scanning non-interlace television receiver with vertical aperture correction circuit. 4,524,379, Cl. 358-11.000.

Okada, Takashi: *See—*
Tanaka, Yutaka; and Okada, Takashi, 4,524,382, Cl. 358-31.000.

Okamoto, Yasushi: *See—*
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.

Okazaki, Masaki: *See—*
Genba, Tsuneo; Mizobe, Akio; and Okazaki, Masaki, 4,524,042, Cl. 264-211.000.

Okazaki, Tetuji; Kawasaki, Kanji; and Hirose, Masayoshi, to Omron Tateisi Electronics Co. Motor-driven electric timer. 4,524,252, Cl. 200-38.00E.

Okazaki, Yutaka: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.

Okoshi, Hideo, to Nippon Seiko Kabushiki Kaisha. Thrust ball bearing. 4,523,863, Cl. 384-609.000.

Okudaira, Sadao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens. 4,523,814, Cl. 350-427.000.

Okuyama, Toshiaki: *See—*
Nagase, Hiroshi; and Okuyama, Toshiaki, 4,524,310, Cl. 318-808.000.

Olin Corporation: *See—*
Butt, Sheldon H., 4,524,238, Cl. 174-52.0FP.
Haque, Reza; and Smith, Edward F., III, 4,524,089, Cl. 427-38.000.
Laws, Harold H.; Caruso, Bart P.; and Hascall, James G., 4,523,364, Cl. 29-33.00S.
Sandel, Bonnie B., 4,524,006, Cl. 252-51.50A.

Olsen, David W.: *See—*
Moore, Donald E.; and Olsen, David W., 4,523,686, Cl. 212-152.000.

Olympus Optical Co., Ltd.: *See—*
Kikuchi, Juro, 4,523,817, Cl. 350-465.000.
Ogata, Yasuzi, 4,523,813, Cl. 350-426.000.
Saito, Shoichi; and Shirako, Hideo, 4,523,680, Cl. 206-387.000.

Omatsu, Masayuki: *See—*
Kondo, Mitsuru; Iwasaki, Hiroshi; Kanda, Nobuo; Omatsu, Masayuki; and Omura, Haruo, 4,524,373, Cl. 346-221.000.

Omitsu, Takashi, to Aisin Seiki Kabushiki Kaisha. Control system and method for a fuel delivery system. 4,523,565, Cl. 123-399.000.

Omron Tateisi Electronics Co.: *See—*
Okazaki, Tetuji; Kawasaki, Kanji; and Hirose, Masayoshi, 4,524,252, Cl. 200-38.00E.

Omura, Haruo: *See—*
Kondo, Mitsuru; Iwasaki, Hiroshi; Kanda, Nobuo; Omatsu, Masayuki; and Omura, Haruo, 4,524,373, Cl. 346-221.000.

O'Neill, Hugh, to Sling-All Ltd. Hanging strapped shelves. 4,523,526, Cl. 108-149.000.

Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., to Hoechst-Roussel Pharmaceuticals Inc. Process for preparing substituted 1,3-dihydrospiro[benzo(c)thiophene]s. 4,524,207, Cl. 546-17.000.

Ong, Sienling; Karsunky, Ulrich; and Schmidt, Helmut, to Hoechst Aktiengesellschaft. Thickener mixtures, process for the manufacturing of transfer printing paper sheets using these mixtures, and paper sheets so obtained. 4,523,922, Cl. 8-471.000.

Ono, Takuro: *See—*
Arai, Fuminao; Kodama, Hisashi; and Ono, Takuro, 4,523,551, Cl. 123-90.460.

Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, to Teijin Petrochemical Industries Ltd. Crystalline aluminosilicate zeolite and process for production thereof. 4,524,055, Cl. 423-328.000.

Optyl Eyewear Fashion International Corporation: *See—*
Dianitsch, Franz; and Pschebezin, Anton, 4,523,819, Cl. 351-106.000.

Opus, Inc.: *See—*
Latham, Peter A., 4,523,546, Cl. 119-51.00R.

Orea Mateo, Fernando, to Ingenieria del Calzado, S.A. (I.C.A.S.A.). Last with a replaceable tip. 4,523,345, Cl. 12-133.00R.

Orii, Masaru, to Kabushiki Kaisha Orii Jidoki Seisakusho. Apparatus for automatically delivering workpiece. 4,523,889, Cl. 414-752.000.

Orion Industries, Inc.: *See—*
Faith, Richard W., 4,524,331, Cl. 330-292.000.

Orrico, Mario M. V., to Honeywell Inc. Check valve. 4,523,610, Cl. 137-512.150.

Orsic, Milo, to AT&T Bell Laboratories. Fast circuit switching system. 4,524,440, Cl. 370-54.000.

Osaka Chemical Laboratory Co., Ltd.: *See—*
Arichi, Shigeru; and Uchida, Yoshihiro, 4,524,067, Cl. 514-33.000.

Oscar Mayer Foods Corporation: *See—*
Mengel, Ronald E., 4,523,501, Cl. 83-42.000.

Osterhout, Ralph F.; Burr, John D.; and Larson, Eric R., to Tekna. Knife with retractable sheath. 4,523,379, Cl. 30-151.000.

Osti, Alberto: *See—*
Paffoni, Camillo; Carlini, Filippo M.; Bottaccio, Giorgio; and Osti, Alberto, 4,523,953, Cl. 106-23.000.
Ota, Tadashi, to Kabushiki Kaisha Suwa Seikosha. Liquid crystal display matrix including a non-linear device. 4,523,811, Cl. 350-333.000.
Otake, Eiji: *See—*
Kigawa, Shuji; and Otake, Eiji, 4,523,752, Cl. 271-9.000.
Otte, Joseph N. A., to Dow Chemical, Belgium, S.A. Method for the production of high fructose corn syrup. 4,523,960, Cl. 127-46.200.
Otten, Hans-Gunter: *See—*
Brandt, Horst; Gehrke, Gunter; Muders, Rolf; Otten, Hans-Gunter; and Wiegner, Dieter, 4,523,926, Cl. 8-639.000.
Ouchi, Kiyoshi, to Ebara Corporation. Submergible motor pump assembly. 4,523,899, Cl. 417-360.000.
Owen, Donald W. Transformer with series-parallel-series winding between split winding. 4,524,341, Cl. 336-147.000.
Owens-Corning Fiberglas Corporation: *See—*
Brady, Thomas R.; and Benner, Lester C., 4,523,543, Cl. 118-697.000.
Helser, Jerry L., 4,523,955, Cl. 106-120.000.
Owens-Illinois, Inc.: *See—*
Martin, Merritt W., 4,523,904, Cl. 425-539.000.
Yakubek, Louis, 4,524,409, Cl. 362-189.000.
Oxenrider, Bryce C.: *See—*
Long, David J.; and Oxenrider, Bryce C., 4,524,215, Cl. 560-052.000.
Ozaki, Tsukasa: *See—*
Moriyama, Yukinori; and Ozaki, Tsukasa, 4,523,449, Cl. 72-421.000.
Ozen Corporation: *See—*
Koike, Eishi, 4,524,437, Cl. 369-67.000.
Paap, Hans J., to Texaco Inc. Behind casing water flow detector. 4,524,272, Cl. 250-265.000.
Pacific Chemical Industrial Co., Ltd.: *See—*
Lee, Byung S.; and Kim, Chang K., 4,524,136, Cl. 435-139.000.
Paffoni, Camillo; Carlini, Filippo M.; Bottaccio, Giorgio; and Osti, Alberto, to Montedison S.p.A. Photostable yellow composite pigments and process for their preparation. 4,523,953, Cl. 106-23.000.
Page, David W., to Burroughs Corporation. Dynamic data re-programmable PLA. 4,524,430, Cl. 365-189.000.
Paikoff, Myron; Hain, Robert W.; and Hadtke, Frederick B., to Sterling Drug Inc. Pre-sterilized medical procedure kit packages. 4,523,679, Cl. 206-370.000.
Paitchell, Harold, to Hayward Industries. Rotatable unitary ball valve. 4,523,740, Cl. 251-315.000.
Palacio, Joaquin J.; and Cristobal, Carlos C., to Gang-Nail Systems, Inc. Ribbed connector and joist structure. 4,523,419, Cl. 52-690.000.
Pall Corporation: *See—*
Pall, David B.; Degen, Peter J.; Joffee, Irving B.; Foss, Warren M.; and Gsell, Thomas C., 4,523,995, Cl. 210-504.000.
Pall, David B.; Degen, Peter J.; Joffee, Irving B.; Foss, Warren M.; and Gsell, Thomas C., to Pall Corporation. Charge-modified microfiber filter sheets. 4,523,995, Cl. 210-504.000.
Pap nee Imrenyi, Gabriella: *See—*
Szejtli, Jozsef; Budai, Zsuzsanna; Radvany nee Hegedus, Erzsebet; Papp, Laszlo ; Kormoczy, Gyorgy; and Pap nee Imrenyi, Gabriella, 4,524,068, Cl. 514-58.000.
Paper Converting Machine Company: *See—*
Campbell, James F., 4,523,671, Cl. 198-422.000.
Spencer, Harvey J., 4,523,969, Cl. 156-161.000.
Papp, Laszlo : *See—*
Szejtli, Jozsef; Budai, Zsuzsanna; Radvany nee Hegedus, Erzsebet; Papp, Laszlo ; Kormoczy, Gyorgy; and Pap nee Imrenyi, Gabriella, 4,524,068, Cl. 514-58.000.
Parg, Adolf; Wuerzer, Bruno; and Hamprecht, Gerhard, to BASF Aktiengesellschaft. Substituted 4,5-dimethoxypyridazones and their use for controlling undesirable plant growth. 4,523,946, Cl. 71-092.000.
Parikh, Kamal I.: *See—*
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., 4,524,441, Cl. 370-63.000.
Parikh, Kanal I.: *See—*
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kanal I., 4,524,442, Cl. 370-63.000.
Parker, Donald W., to Cilco, Inc. Laser blocking shutter. 4,524,271, Cl. 250-233.000.
Parker Hannifin Corporation: *See—*
Kimmelman, Samuel, 4,523,797, Cl. 339-147.00R.
Parker, John J.: *See—*
Fouss, James L.; Parker, John J.; Child, James L., Jr.; and Sting, Donald W., 4,523,613, Cl. 138-121.000.
Parker, Vernon L.: *See—*
Laush, Frank I.; and Parker, Vernon L., 4,523,933, Cl. 55-97.000.
Pastor, Stephen D.: *See—*
Spivack, John D.; and Pastor, Stephen D., 4,524,166, Cl. 524-117.000.
Spivack, John D.; and Pastor, Stephen D., 4,524,167, Cl. 524-121.000.
Pate, Paul E.: *See—*
Thibault, William C.; and Pate, Paul E., 4,523,376, Cl. 29-623.200.
Patel, Chandrakant M.: *See—*
Vessey, John R.; Patel, Chandrakant M.; and Armstrong, Jack, 4,523,673, Cl. 198-486.000.
Patterson, Paul L. Thermionic detector with multiple layered ionization source. 4,524,047, Cl. 422-98.000.
Paulson, John W.; and Schulz, David J., to Rayovac Corporation. Voltage stabilizing agents for cells. 4,524,115, Cl. 429-50.000.
Pawlikowski, Stanley L.; and Tamburrino, Richard A., to North American Philips Consumer Electronics Corp. Color cathode ray tube incorporating improved thermal compensation type aperture mask supporting means. 4,524,298, Cl. 313-405.000.
Payne, Ghislaine R. L.: *See—*
Payne, Harold J. W.; and Payne, Ghislaine R. L., 4,523,416, Cl. 52-221.000.
Payne, Harold J. W.; and Payne, Ghislaine R. L., to H. H. Robertson (U.K.) Limited. Flooring system with service trunking provision. 4,523,416, Cl. 52-221.000.
Payrhammer, Bernd; and Knor, Bernhard, to Agfa-Gevaert Aktiengesellschaft. Method and arrangement for evaluating a series of originals for copying. 4,523,839, Cl. 355-68.000.
Pearson, H. Alton. Showerhead. 4,523,718, Cl. 239-106.000.
Pedersen, David R.; and Tong, Curtis M., to Dow Chemical Company, The. Flowmeter with no moving parts. 4,523,464, Cl. 73-216.000.
Peikert, Jurgen. Air intake control for an adjustable air inlet, particularly two-dimensional oblique shock diffuser for gas turbine jet engines for the propulsion of high performance aircraft. 4,523,603, Cl. 137-15.200.
Pelda, Frederick J.; and Schmaling, Roderick N., to Pitney Bowes Inc. Dry toner replenishing apparatus. 4,523,834, Cl. 355-3.0DD.
Penick, Joe E., to Mobil Oil Corporation. Feed mixing techique for fluidized catalytic cracking of hydrocarbon oil. 4,523,987, Cl. 208-157.000.
Pennwalt Corporation: *See—*
Riggi, Stephen J.; and Haszeldine, Robert N., 4,524,152, Cl. 514-609.000.
Penz, Perry A., to Texas Instruments Incorporated. Plastic liquid crystal devices with unequal substrate thicknesses. 4,523,812, Cl. 350-334.000.
Perkin-Elmer Corporation, The: *See—*
Duly, Dawn L.; Windischmann, Henry; and Buckley, W. D., 4,523,974, Cl. 156-630.000.
Peterman, Robert J., to Spacesaver Corporation. Lock for manual mobile storage system. 4,523,794, Cl. 312-201.000.
Peterson, Francis C.; Rodseth, William G.; and Spring, William A., to Illinois Tool Works Inc. Printed circuit board fastener. 4,523,883, Cl. 411-171.000.
Petric, Paul F.; and Foley, Michael S., to Varian Associates, Inc. Localized vacuum processing apparatus. 4,524,261, Cl. 219-121.0EL.
Petrie, Colleen Y. Nurse's mitt. 4,523,348, Cl. 15-227.000.
Petrofsky, Jerrold S.: *See—*
Glaser, Roger M.; Petrofsky, Jerrold S.; and DuFour, Howard R., 4,523,769, Cl. 280-252.000.
Petroleo Brasileiro S.A. - Petrobras: *See—*
Abdel-Hehim, Hossam A. A.; Coelho, Wagner C.; and Soares, Gloria M. G., 4,523,941, Cl. 71-37.000.
Petrovic, Vladan, to Krupp-Koppers GmbH. Device for drying gypsum. 4,523,906, Cl. 432-197.000.
Pezzner, Richard S.; and Rader, George L., to RSP Innovation Design Mfg., Inc. Combined engine-handling and metalworking machine. 4,523,888, Cl. 414-680.000.
Pfeiffer, Josef: *See—*
Steinberger, Helmut; Kirschnek, Helmut; and Pfeiffer, Josef, 4,524,172, Cl. 524-506.000.
Pfeiffer, Wilfried: *See—*
Kayser, Harald; and Pfeiffer, Wilfried, 4,523,420, Cl. 53-266.00R.
Phillips Petroleum Company: *See—*
Sherk, Fred T.; Nesheiwat, Afif M.; and Senatore, Guy, 4,524,200, Cl. 528-388.000.
Piaggio & C. S.p.A.: *See—*
Gaddi, Bruno, 4,523,660, Cl. 180-228.000.
Pichat, Philippe; Niel, Michel; and Sinn, Robert, to CDF Chimie, S.A. Process for manufacturing cellular plaster and molded plaster articles. 4,523,954, Cl. 106-110.000.
Pietzsch, Ludwig; Kauer, Harald; Duren, Johannes; and Kuhn, Hugo, to IBP Pietzsch GmbH. Device for positioning and position stabilizing. 4,523,487, Cl. 74-378.000.
Pike, Roscoe A.; and Lamm, Foster P., to United Technologies Corporation. Acrylic modified polyester anaerobic adhesive. 4,524,176, Cl. 525-12.000.
Pinckney Molded Plastics, Inc.: *See—*
Kreeger, Elsmer W., 4,523,681, Cl. 206-507.000.
Pinnell, Sheldon R., to Bio-Specifics N.V. Method for the prevention and treatment of scars with enzymes. 4,524,065, Cl. 424-94.000.
Pitney Bowes Inc.: *See—*
Abellana, Jovito N.; and Nambudiri, Easwaran C. N., 4,523,523, Cl. 101-235.000.
Eckert, Alton B.; and McFiggans, Robert B., 4,524,426, Cl. 364-900.000.
Pelda, Frederick J.; and Schmaling, Roderick N., 4,523,834, Cl. 355-3.0DD.
Player, Kenneth W.; and Wilson, Lonny L., to SCM Corporation. Hard butters and compositions made therewith. 4,524,086, Cl. 426-607.000.
Plester, Karl Heinz: *See—*
Hessel, Heinz; and Plester, Karl Heinz, 4,523,512, Cl. 91-168.000.
Plumb, William W.: *See—*
Smith, Donald P.; and Plumb, William W., 4,523,391, Cl. 34-225.000.
Poetsch, Dieter, to Robert Bosch GmbH. Cine film-video scanner system. 4,524,392, Cl. 358-214.000.
Polaroid Corporation: *See—*
Norris, Philip, 4,523,825, Cl. 354-301.000.

Poll, Ian, to Shell Oil Company. Process and burner for the partial combustion of solid fuel. 4,523,529, Cl. 110-263.000.
Polson, Steven S. Food feed chute apparatus. 4,523,505, Cl. 83-713.000.
Polster, Rudolf: *See—*
Fechner, Wolf D.; Polster, Rudolf; Kranz, Joachim; and Hartmann, Eduard, 4,523,958, Cl. 106-288.00Q.
Polychrome Corporation: *See—*
Huang, Jen-chi, 4,524,125, Cl. 430-302.000.
Pongrass, Robert G.; and Rutter, Christopher C. Moisture responsive stiffening members for flexible containers. 4,524,458, Cl. 383-33.000.
Poovey, Homer F., to Hickory Springs Manufacturing Company. Folding bed frame structure for sofa beds or the like. 4,523,342, Cl. 5-250.000.
PORTEC: *See—*
Walker, Jack A., 4,524,314, Cl. 318-587.000.
Porter, W. Duncan: *See—*
Kienlein, Kurt; and Reese, Ralph D., 4,523,698, Cl. 222-185.000.
Post Technologies, Inc.: *See—*
Fish, Russell, III; and Yurchenco, James R., 4,524,242, Cl. 178-4.000.
Poteat, Tommy L.: *See—*
Lindenberger, W. Stewart; Poteat, Tommy L.; and West, James E., 4,524,247, Cl. 179-111.00R.
Prasad, Keni K., to Deere & Company. Lift and dump mechanism for a lawn debris collection box. 4,523,788, Cl. 298-11.000.
Preformed Line Products Company: *See—*
Rosa, Aristheu A., 4,523,355, Cl. 24-115.00N.
Preston, George V., III, to North American Philips Corporation. Fluorescent sunlamp having controlled ultraviolet output. 4,524,299, Cl. 313-487.000.
Price, Barry J.; Clitherow, John W.; Bradshaw, John; Martin-Smith, Michael; Judd, Duncan B.; and Hayes, Roger, to Glaxo Group Limited. Pyrimidone derivatives. 4,524,071, Cl. 514-272.000.
Price, Martin B.: *See—*
Rehfuss, John W.; Hazelwood, Louis S.; and Price, Martin B., 4,524,173, Cl. 524-512.000.
Prime Computer, Inc.: *See—*
Sybel, Randall; and Schwarzkopf, Daniel, 4,524,345, Cl. 340-146.200.
Priola, Aldo: *See—*
Cesca, Sebastiano; Priola, Aldo; and Renzi, Fiorenzo, 4,524,092, Cl. 427-388.200.
Procter & Gamble Company, The: *See—*
Lavash, Bruce W., 4,523,334, Cl. 2-49.00R.
Purves, Edward R.; and Thomas, Robert F., 4,524,085, Cl. 426-601.000.
Spangler, Richard A., 4,523,333, Cl. 2-49.00R.
Profitt, James A.: *See—*
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., 4,524,207, Cl. 546-17.000.
Progressive Dynamics, Inc.: *See—*
Eccleston, Larry, 4,524,350, Cl. 340-572.000.
Prototech Company: *See—*
Lindstrom, Robert; and Allen, Robert J., 4,524,094, Cl. 428-36.000.
Pschebezin, Anton: *See—*
Dianitsch, Franz; and Pschebezin, Anton, 4,523,819, Cl. 351-106.000.
Puccini, Sergio E.: *See—*
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., 4,524,441, Cl. 370-63.000.
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kanal I., 4,524,442, Cl. 370-63.000.
Pullinen, Martti, to Valmet Oy. Forming shoe for a former in a paper machine. 4,523,978, Cl. 162-300.000.
Pullukat, Thomas J.; Hwang, Yu-Tang; and Dombro, Robert A., to Chemplex Company. Polymerization catalysts and methods. 4,524,141, Cl. 502-107.000.
Puma-Sportschuhfabriken Rudolf Dassler KG: *See—*
Dassler, Armin A., 4,523,396, Cl. 36-134.000.
PureCycle Corporation: *See—*
Blades, Frederick K., 4,523,472, Cl. 73-632.000.
Puresevic, Peter J.; and Taylor, Julian D. Child-proof closure for a container. 4,523,688, Cl. 215-220.000.
Purves, Edward R.; and Thomas, Robert F., to Procter & Gamble Company, The. Lecithin containing cooking fats with reduced thermal discoloration. 4,524,085, Cl. 426-601.000.
Pusch, Guenther: *See—*
Helbig, Klaus; and Pusch, Guenther, 4,524,435, Cl. 367-41.000.
Quaker Oats Company, The: *See—*
Bansal, Arun K., 4,524,081, Cl. 426-249.000.
Qualeatti, Gail M.; Rosen, Bruce I.; Arena, Blaise J.; and Germanas, Dalia, to UOP Inc. Acid resistant catalyst supports; reduction of fatty acids to fatty alcohols. 4,524,225, Cl. 568-885.000.
Quantel Limited: *See—*
Searby, Anthony D.; and Walker, Ian C., 4,524,421, Cl. 364-521.000.
Quayle, Stanley F.; and Schlosser, Philip A., to Scriptel Corporation. Electrographic system. 4,523,654, Cl. 178-19.000.
Queen, Carl J. Bathing cabinet with transporter cart. 4,523,341, Cl. 4-555.000.
Queensland Phosphate Limited: *See—*
George, Christopher W.; Sinha, Hari N.; Vujcich, Mary R.; and Walker, Graham S., 4,524,054, Cl. 423-308.000.
Quillaud, Gerard: *See—*
Dejaifve, Pierre E.; and Quillaud, Gerard, 4,524,058, Cl. 423-656.000.
R & D Associates: *See—*
Latter, Richard, 4,523,748, Cl. 266-249.000.
R. H. Burton Company: *See—*
Thurston, Marlin O., 4,523,822, Cl. 351-234.000.
Rader, George L.: *See—*
Pezzner, Richard S.; and Rader, George L., 4,523,888, Cl. 414-680.000.
Radvany nee Hegedus, Erzsebet: *See—*
Szejtli, Jozsef; Budai, Zsuzsanna; Radvany nee Hegedus, Erzsebet; Papp, Laszlo ; Kormoczy, Gyorgy; and Pap nee Imrenyi, Gabriella, 4,524,068, Cl. 514-58.000.
Raftis, Spiros G.; and Merritt, George, to Red Valve Co. Inc. Deformable sleeve for a pinch valve. 4,523,738, Cl. 251-4.000.
Rains, Randall C.: *See—*
Lee, George A.; and Rains, Randall C., 4,523,982, Cl. 204-159.150.
Ramsden, Hugh E.: *See—*
Crane, Laura J.; and Ramsden, Hugh E., 4,523,997, Cl. 210-635.000.
Rank, William J., to Control Data Corporation. Connector assembly for mounting leadless chip carriers. 4,523,796, Cl. 339-17.0CF.
Ranken, Paul F.: *See—*
Walter, Thomas J.; and Ranken, Paul F., 4,524,203, Cl. 544-94.000.
Rasmussen GmbH: *See—*
Wachter, Gerhard, 4,523,352, Cl. 24-20.0TT.
Rasmussen, Jerald K.: *See—*
Heilmann, Steven M.; Krepski, Larry R.; and Rasmussen, Jerald K., 4,524,221, Cl. 568-322.000.
Rauch, Hans G. Hydro-current energy converter. 4,524,285, Cl. 290-43.000.
Ray, Ranjan, to Allied Corporation. Method for making metallic glass powder. 4,523,621, Cl. 164-46.000.
Raychem Corporation: *See—*
Morgan, Robert K.; and Yaeger, John R., 4,524,343, Cl. 337-140.000.
Toy, Lester T., 4,523,970, Cl. 156-244.110.
Rayovac Corporation: *See—*
Paulson, John W.; and Schulz, David J., 4,524,115, Cl. 429-50.000.
Raytheon Company: *See—*
Feist, Wolfgang M., 4,523,368, Cl. 29-571.000.
RCA Corporation: *See—*
Acampora, Alfonse, 4,524,423, Cl. 364-724.000.
Bingley, John D., 4,523,429, Cl. 60-203.100.
Covey, Robert L.; and Gale, Michael T., 4,523,850, Cl. 356-375.000.
Desai, Nitin V., 4,524,109, Cl. 428-523.000.
Kane, James, 4,524,127, Cl. 430-321.000.
Levine, Peter A., 4,524,450, Cl. 377-62.000.
Tamer, Gregory G., 4,524,387, Cl. 358-154.000.
Willis, Donald H., 4,524,411, Cl. 363-21.000.
Willis, Donald H.; and Fuhrer, Jack S., 4,524,447, Cl. 375-26.000.
Recker, Florian B. Automatic lock open U-joint coupler. 4,523,871, Cl. 403-12.000.
Red Valve Co. Inc.: *See—*
Raftis, Spiros G.; and Merritt, George, 4,523,738, Cl. 251-4.000.
Redcom Laboratories Inc.: *See—*
Littlefield, Bruce G., 4,524,245, Cl. 179-18.0HB.
Reed International, PLC: *See—*
Graham, Thomas, 4,524,097, Cl. 428-141.000.
Reese, Ralph D.: *See—*
Kienlein, Kurt; and Reese, Ralph D., 4,523,698, Cl. 222-185.000.
Reeves, Jerry L., to Towmotor Corporation. Container handler with programmed electro-hydraulic control circuit. 4,523,886, Cl. 414-641.000.
Rehfuss, John W.; Hazelwood, Louis S.; and Price, Martin B., to Reliance Universal, Inc. Aqueous coating composition comprising a dispersion of polymerized unsaturated monomers, a nonionic surfactant and crosslinking agent. 4,524,173, Cl. 524-512.000.
Reiff, Donald P., to Harnischfeger Corporation. Stacker crane for narrow aisles. 4,523,887, Cl. 414-664.000.
Reinhold, Karl-Heinz: *See—*
Gockel, Karl-Heinz; Anhauser, Dieter; Hoffmann, Hans R.; and Reinhold, Karl-Heinz, 4,524,095, Cl. 428-43.000.
Reinmuth, Klaus: *See—*
Schwetz, Karl A.; Reinmuth, Klaus; Hunold, Klaus; and Isemann, Franz, 4,524,138, Cl. 501-90.000.
Reist, Walter, to Ferag AG. Folded printed sheet or printed sheet intended to be folded and method and apparatus for fabrication thereof. 4,523,775, Cl. 283-36.000.
Reliance Universal, Inc.: *See—*
Rehfuss, John W.; Hazelwood, Louis S.; and Price, Martin B., 4,524,173, Cl. 524-512.000.
Reneau, Bobby J., to Gripper, Inc. Apparatus for tensioning a stud and method of doing same. 4,523,742, Cl. 254-29.00A.
Renishaw Electrical Limited: *See—*
Rogers, Michael J.; and McMurtry, David R., 4,523,383, Cl. 33-558.000.
Renshaw, Theodore A.; and Curatolo, Joseph A., Jr., to Fairchild Industries, Inc. Method for fabricating a fastener plate. 4,523,710, Cl. 228-111.000.
Renzi, Fiorenzo: *See—*
Cesca, Sebastiano; Priola, Aldo; and Renzi, Fiorenzo, 4,524,092, Cl. 427-388.200.
Rerolle, Yves, to Societe Anonyme dite-les Cables de Lyon. Semi-automatic fixed position machine for coiling down a cable. 4,523,724, Cl. 242-54.00R.
Resource Associates International Corp.: *See—*
Farber, Mark I., 4,523,993, Cl. 210-297.000.

Reuter, Herbert; Seiter, Wolfgang; and Wegener, Ingo, to Henkel Kommanditgesellschaft (KGaA). High-sudsing, granular detergent composition with greater granulate stability and process for its preparation. 4,524,010, Cl. 252-135.000.

Rhein-Chemie Rhein GmbH: *See—*
Bauer, Armin; Ehrend, Helfried; Morche, Klaus; Nutzel, Karl; and Sauerbier, Michael, 4,524,182, Cl. 525-120.000.

Rhone-Poulenc Industries: *See—*
Bigot, Bernard, 4,524,057, Cl. 423-555.000.
Exertier, Michel, 4,523,959, Cl. 127-46.200.

Richardson, Thomas: *See—*
Viswanathan, Tito; and Richardson, Thomas, 4,524,164, Cl. 524-14.000.

Richart, Jene A.; Beitler, Bradley D.; and Deeken, David G., to Exxon Production Research Co. Remotely replaceable guidepost method and apparatus. 4,523,878, Cl. 405-195.000.

Richey, Warren F.: *See—*
Tasset, Emmett L.; Dallessandro, Susan M.; and Richey, Warren F., 4,524,011, Cl. 252-171.000.

Richmond, Anthony J. C., to Lucas Industries public limited company. Method of manufacturing bearing blocks. 4,523,365, Cl. 29-527.400.

Ricoh Company, Ltd.: *See—*
Ejiri, Koichi, 4,524,454, Cl. 382-21.000.
Kakeno, Sadao; Ameyama, Minoru; Ichikawa, Kenichi; Umezawa, Michio; and Yamaguchi, Tomoyuki, 4,524,365, Cl. 346-75.000.
Ohzeki, Yoshiaki, 4,524,393, Cl. 358-257.000.

Riggi, Stephen J.; and Haszeldine, Robert N., to Pennwalt Corporation. 1-Cyano-3-(fluoroalkyl)guanidines for lowering blood pressure. 4,524,152, Cl. 514-609.000.

Riker Laboratories, Inc.: *See—*
Moore, George G. I., 4,524,210, Cl. 546-340.000.
Stern, Richard M., 4,524,148, Cl. 514-294.000.

Ringe, Thomas, to Mine Roof Support Systems, Inc. Lateral force system and support for supporting mine roofs. 4,523,881, Cl. 405-259.000.

Ritzl, Hermann. Glow discharge tube for spectral-analytical tests. 4,524,303, Cl. 315-111.810.

Ro-Search, Incorporated (Ro-Search): *See—*
Auberry, Horace; Liebscher, Anton; and Oberg, Sven, 4,523,346, Cl. 12-133.00R.

Robert Bosch GmbH: *See—*
Heinemann, Wolfgang; Noack, Rainer; and Weyl, Helmut, 4,524,038, Cl. 264-61.000.
Hofmann, Karl, 4,523,719, Cl. 239-533.120.
Latsch, Reinhard; Linder, Ernst; and Moser, Winfried, 4,523,559, Cl. 123-306.000.
Poetsch, Dieter, 4,524,392, Cl. 358-214.000.
Schulz, Axel; and Sochor, Josef, 4,524,396, Cl. 360-67.000.

Robinair Division: *See—*
Lower, Ralph C.; and Murray, Gary P., 4,523,897, Cl. 417-244.000.

Robinson, Allan F.; and Hunter, Warwick A., to Napintas Pty. Ltd. Latch. 4,523,385, Cl. 33-296.000.

Robinson, Wilfred R. Furniture construction. 4,523,787, Cl. 297-440.000.

Robot-Coupe, S.A.: *See—*
Behringer, John; and Martin, Pierre, 4,523,720, Cl. 241-37.500.

Rockwell International Corporation: *See—*
Barkhoudarian, Sarkis, 4,523,482, Cl. 73-862.360.
Moriarty, Michael P., 4,523,532, Cl. 110-347.000.
Rosman, Irwin E.; and Wagner, William R., 4,523,638, Cl. 165-167.000.
White, Stanley A., 4,524,424, Cl. 364-724.000.

Rodseth, William G.: *See—*
Peterson, Francis C.; Rodseth, William G.; and Spring, William A., 4,523,883, Cl. 411-171.000.

Roger Liot, S.A.: *See—*
Liot, Roger, 4,524,082, Cl. 426-312.000.
Liot, Roger, 4,524,083, Cl. 426-330.100.

Rogers, Douglas J., to Ferranti Limited. Position encoder. 4,524,347, Cl. 340-347.00P.

Rogers, Michael J.; and McMurtry, David R., to Renishaw Electrical Limited. Position sensing apparatus. 4,523,383, Cl. 33-558.000.

Rogers, Richard B.: *See—*
Arndt, Kim E.; McCormick, Ronald W.; and Rogers, Richard B., 4,523,940, Cl. 71-11.000.

Rohm and Haas Company: *See—*
Gleim, Robert D.; and de Grandpre, Mark P., 4,524,121, Cl. 430-176.000.

Rollin K. Daniel P.S.C.: *See—*
Daniel, Rollin K., 4,523,592, Cl. 128-334.00C.

Roope, Mary E. F. Light blocking panel for overhead projectors. 4,523,823, Cl. 353-97.000.

Roper Industries, Inc.: *See—*
Frey, Max, 4,523,900, Cl. 417-365.000.

Rosa, Aristheu A., to Preformed Line Products Company. Fitting for joining an elongate body to a support. 4,523,355, Cl. 24-115.00N.

Rosberg, Carl H.; and Rosberg, Hazel N. Apparatus for removing container caps. 4,523,497, Cl. 81-3.440.

Rosberg, Hazel N.: *See—*
Rosberg, Carl H.; and Rosberg, Hazel N., 4,523,497, Cl. 81-3.440.

Rosen, Bruce I.: *See—*
Qualeatti, Gail M.; Rosen, Bruce I.; Arena, Blaise J.; and Germanas, Dalia, 4,524,225, Cl. 568-885.000.

Rosen, Milton. One-piece building panel for walls and like structures. 4,523,415, Cl. 52-220.000.

Rosenbladt, Rudolf V.; Nenninger, Klaus; and Schussler, Rudolf, to Boehringer Mannheim GmbH. Medical test reaction area reflected light photometric device. 4,523,853, Cl. 356-446.000.

Rosman, Irwin E.; and Wagner, William R., to Rockwell International Corporation. Internally manifolded unibody plate for a plate/fin-type heat exchanger. 4,523,638, Cl. 165-167.000.

Ross, Bernd, deceased; Bickler, Donald B.; and Gallagher, Brian D., to United States of America, National Aeronautics and Space Administration. Increased voltage photovoltaic cell. 4,524,237, Cl. 136-261.000.

Rossi AG Wetzikon, Werkzeug- Und Spezialmaschinenbau: *See—*
Rossi, Claudio, 4,523,709, Cl. 228-48.000.

Rossi, Claudio, to Rossi AG Wetzikon, Werkzeug- Und Spezialmaschinenbau. Apparatus for aligning and supporting similar bodies. 4,523,709, Cl. 228-48.000.

Roth, Wilfred; and Meeker, C. Irving. Method and device for reversible sterilization in mammals. 4,523,590, Cl. 128-325.000.

Rotilio, James V. Adapter kit for tungsten-inert-gas torches. 4,524,260, Cl. 219-75.000.

Rouge, Francois. Multi-layer electric circuit board and blanks therefor. 4,524,239, Cl. 174-68.500.

Roustan, Max: *See—*
Lhenry, Bernard; and Roustan, Max, 4,523,896, Cl. 417-244.000.

Rozo, Rafael: *See—*
Wolf, Peter H.; Dobson, Thomas A.; and Rozo, Rafael, 4,524,259, Cl. 219-69.00R.

RSP Innovation Design Mfg., Inc.: *See—*
Pezzner, Richard S.; and Rader, George L., 4,523,888, Cl. 414-680.000.

Ruest, Dennis A.; Takano, Masaharu; and Wolf, Lawrence R., to Monsanto Company. Liquid 2-hydroxy-4-methylthiobutyric acid and process for the preparation thereof. 4,524,077, Cl. 514-557.000.

Rueter, John C., to Medtronic, Inc. Constant A-A interval control for DVI and DDD cardiac pacemakers. 4,523,593, Cl. 128-419.0PG.

Russo, Ronald D., to SIL-FAB Corporation. Surgical suction drain. 4,523,920, Cl. 604-93.000.

Rutten, Joseph; Hoeks, Gerardus P. F.; and van Kemenade, Johannes T. C., to U.S. Philips Corporation. Luminescent screen and lamp containing the same. 4,524,300, Cl. 313-487.000.

Rutter, Christopher C.: *See—*
Pongrass, Robert G.; and Rutter, Christopher C., 4,524,458, Cl. 383-33.000.

Ruxton, David S.: *See—*
Chalmers, Brian D.; Ruxton, David S.; and Miller, Kenneth L., 4,524,397, Cl. 360-77.000.

Rylicki, Edward J.: *See—*
Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., 4,523,463, Cl. 73-204.000.

Ryu, Hideo, to Usui Kokusai Sangyo Kabushiki Kaisha. Metal and ceramic assembly. 4,523,554, Cl. 123-193.00C.

S.I.R.P. Studi Industriali Realizzazione Prototipi S.p.A.: *See—*
Sala, Silvio, 4,523,495, Cl. 74-714.000.

S.T. Chemical Co., Ltd.: *See—*
Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, 4,524,018, Cl. 252-522.00A.

Sabourin, Edward T.: *See—*
Bakshi, Kiran R.; Barie, Walter P.; and Sabourin, Edward T., 4,524,171, Cl. 524-376.000.

Sackett, James T. Filter assembly. 4,523,992, Cl. 210-232.000.

Sackmann, Gunter: *See—*
Himmelmann, Wolfgang; Sackmann, Gunter; and Meyer, Rudolf, 4,524,131, Cl. 430-523.000.

Saeki, Masaru: *See—*
Toyoshi, Seiji; Tanegawa, Tetsuo; Saeki, Masaru; and Kawakita, Tetsuya, 4,523,999, Cl. 210-639.000.

Saito, Shigemasa: *See—*
Kondo, Kazuo; Imamura, Seiji; Saito, Shigemasa; Akimoto, Mamoru; and Sunaga, Mitsuo, 4,523,711, Cl. 228-198.000.

Saito, Shoichi; and Shirako, Hideo, to Olympus Optical Co., Ltd. Tape cassette storage box coupling accessory. 4,523,680, Cl. 206-387.000.

Saito, Tadahiro: *See—*
Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, 4,524,333, Cl. 331-17.000.

Saito, Yuichi: *See—*
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.

Sakagami, Yoshio; and Manabe, Hofumi. Novel proteinous cancer-cell proliferation inhibitory factors. 4,524,026, Cl. 260-112.00B.

Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Okada, Akira, to Kokusai Denshin Denwa Kabushiki Kaisha. Unitary mounting structure for semiconductor laser and optical fiber. 4,523,802, Cl. 350-96.120.

Sakai, Hiromu; Ezaki, Sazo; and Kikuchi, Atsuo, to Toyoda Gosei Co., Ltd. Method and apparatus for continuously producing a core member of a trim. 4,523,448, Cl. 72-185.000.

Sakai, Tokuji: *See—*
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,524,055, Cl. 423-328.000.

Sakairi, Tadashi: *See—*
Maeda, Nobuhisa; Sakairi, Tadashi; and Wakahata, Tamotsu, 4,524,160, Cl. 523-200.000.

Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, to Mitsui Toatsu Chemicals, Incorporated. Uracil derivatives, process for preparing same, and pharmaceutical compositions comprising same. 4,524,147, Cl. 514-274.000.

Sakata, Mitsuya: *See—*
Yamazaki, Kaoru; Kurioka, Shunichiro; Sakata, Mitsuya; and Ogawa, Takahiro, 4,524,193, Cl. 526-79.000.

Sala, Silvio, to S.I.R.P. Studi Industriali Realizzazione Prototipi S.p.A. Differential assembly for distribution of torque between the front and rear axles of an automotive vehicle. 4,523,495, Cl. 74-714.000.

Sallot, Louis E.: *See—*
Bourlier, Claude P.; and Sallot, Louis E., 4,523,527, Cl. 109-19.000.

Samcoe Holding Corporation: *See—*
Diggle, Edmund A., Jr.; and Krajcovic, John, 4,523,389, Cl. 34-105.000.

Sammells, Anthony F.: *See—*
Ang, Peter G. P.; and Sammells, Anthony F., 4,523,981, Cl. 204-72.000.

Sampson, Christopher F.: *See—*
Wright, Christopher J.; and Sampson, Christopher F., 4,524,051, Cl. 423-247.000.

Samuels, George J.; Schmitkons, Thomas A.; Streeter, Terry L.; and Murray, Royce W., to Allied Corporation. Bifunctional air electrode. 4,524,114, Cl. 429-42.000.

Sandel, Bonnie B., to Olin Corporation. Selected alkylhydrazine and hydroxyalkylhydrazine adducts of diisocyanates and their use as antioxidants. 4,524,006, Cl. 252-51.50A.

Sands, Robert E.: *See—*
Daghe, Joseph L.; Sands, Robert E.; and Humes, Dennis W., 4,523,607, Cl. 137-218.000.

Sanjana, Zal N.: *See—*
Marchetti, Joseph R.; and Sanjana, Zal N., 4,524,107, Cl. 428-413.000.

Sankaran, Perumalagaram S.: *See—*
Wilson, Herbert C.; and Sankaran, Perumalagaram S., 4,523,640, Cl. 166-64.000.

Sano, Yumiko: *See—*
Maekawa, Kouji; Kato, Mamoru; Nakagama, Syoji; and Sano, Yumiko, 4,524,117, Cl. 430-44.000.

Sanofi: *See—*
Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, 4,524,070, Cl. 514-230.000.

Sanol Schwarz GmbH: *See—*
Gockel, Karl-Heinz; Anhauser, Dieter; Hoffmann, Hans R.; and Reinhold, Karl-Heinz, 4,524,095, Cl. 428-43.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Suzuki, Masayuki, 4,523,556, Cl. 123-196.00W.

Sanyo Chemical Industries, Ltd.: *See—*
Hagio, Shigeru; and Kawachi, Youji, 4,524,104, Cl. 428-341.000.

Sasaki, Itsuo: *See—*
Abou, Shouji; and Sasaki, Itsuo, 4,524,328, Cl. 330-253.000.

Sasaki, Yoshio: *See—*
Motosugi, Katsuhiko; and Sasaki, Yoshio, 4,523,560, Cl. 123-308.000.

Satanek, Joseph: *See—*
Glasgow, D. Gerald; and Satanek, Joseph, 4,524,190, Cl. 525-370.000.

Sato, Kunihiko: *See—*
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,523,570, Cl. 123-478.000.

Sato, Masaaki; Kaneda, Aizo; and Watanabe, Makio, to Hitachi, Ltd. Plastic information-recording medium. 4,524,369, Cl. 346-135.100.

Sato, Tadashi: *See—*
Arao, Kozo; and Sato, Tadashi, 4,523,803, Cl. 350-96.130.

Sauer, Gerhard; and Haffer, Gregor, to Schering Aktiengesellschaft. Process for the preparation of lysergic acid esters. 4,524,208, Cl. 546-69.000.

Sauerbier, Michael: *See—*
Bauer, Armin; Ehrend, Helfried; Morche, Klaus; Nutzel, Karl; and Sauerbier, Michael, 4,524,182, Cl. 525-120.000.

Sauter, Frederick J.: *See—*
Edwards, Larry D.; Sauter, Frederick J.; and Burgmaier, George J., 4,524,128, Cl. 430-353.000.

Sawa, Seiji; and Kita, Nobuyuki, to Minolta Camera Kabushiki Kaisha. Apparatus and method for measuring the intraocular pressure of an eyeball and auxiliary device for using therewith. 4,523,597, Cl. 128-652.000.

Sawabe, Mitsuo; and Imai, Kouichi, to Nihon Radiotor Co., Ltd.; and Toho Tekko Co., Ltd. Commutator for flat motor. 4,523,374, Cl. 29-597.000.

Sawaguchi, Tatsue: *See—*
Nobukawa, Akira; and Sawaguchi, Tatsue, 4,523,632, Cl. 165-47.000.

Scalzo, John P.; and Aileo, Jackson A., to Gentex Corporation. Earphone system for use in large-cavity earcups. 4,523,661, Cl. 181-129.000.

Schacht, Roy A. Marking and engraving machine. 4,523,865, Cl. 400-18.000.

Schaffer, James R., Jr., to Boeing Company, The. Compact laser simulator. 4,524,406, Cl. 362-32.000.

Schedel, John W.; and Lord, Richard G., to Carrier Corporation. Incrementally adjustable electronic expansion valve. 4,523,436, Cl. 62-222.000.

Scheibel, Horst; and Haug, Walter, to Karl Kassbohrer Fahrzeugwerke GmbH. Track former for cross country ski tracks with means to move former to transport position. 4,523,398, Cl. 37-220.000.

Scheibli, Peter, to Ciba-Geigy Corporation. Process for dyeing or printing cellulose textile fiber materials with reactive dyes containing fluoro-triazine. 4,523,925, Cl. 8-549.000.

Schenk, Gunther; Bergthaller, Peter; Heidenreich, Holger; and Wolfrum, Gerhard, to Agfa-Gevaert Aktiengesellschaft. Chelatable 4-thienyl imidazole azo dyes, their use in color photographic recording material. 4,524,123, Cl. 430-241.000.

Schering Aktiengesellschaft: *See—*
Sauer, Gerhard; and Haffer, Gregor, 4,524,208, Cl. 546-69.000.

Schiedegger, Charles E.; and Elfes, Vean, to Metamora Products Corp. Heat bonded composite plastic article and method and apparatus for making same. 4,524,096, Cl. 428-68.000.

Schild, Franz; and Weidenhaupt, Wolfgang, to Akzo NV. Reinforcement cable for elastomeric conduits. 4,523,425, Cl. 57-212.000.

Schildt, Walter C., to Dana Corporation. Variable pitch diameter torque sensing pulley assembly. 4,523,917, Cl. 474-19.000.

Schimmelpennink, Laurens M. H.; and Spaanenburg, Lambertus, to Moban B.V. System for power supply to and switching of a number of electrical appliances. 4,524,288, Cl. 307-40.000.

Schippers, Heinz; Hertell, Siegfried; and Eich, Otwin, to Barmag Barmer Maschinenfabrick AG. Control apparatus for a positive displacement reciprocating pump. 4,523,901, Cl. 417-395.000.

Schirmann, Francis, to Klein-Wanner Societe Anonyme. Process for the obtention of an algae beverage. 4,524,084, Cl. 426-590.000.

Schlosser, Erich J., to Weber-Stephen Products Co. Support structure for grill cover. 4,523,574, Cl. 126-25.00R.

Schlosser, Philip A.: *See—*
Quayle, Stanley F.; and Schlosser, Philip A., 4,523,654, Cl. 178-19.000.

Schlumberger Technology Corporation: *See—*
Hall, Robert L.; and Wood, Lowell T., 4,524,436, Cl. 367-169.000.
Johnson, David L., 4,524,432, Cl. 367-25.000.
Scott, Hubert D., 4,524,274, Cl. 250-269.000.

Schmaling, Roderick N.: *See—*
Pelda, Frederick J.; and Schmaling, Roderick N., 4,523,834, Cl. 355-3.0DD.

Schmidt, Gerhard; and Kohlpoth, Walter, to Nukem GmbH. Apparatus for compacting bioinjurious wastes. 4,524,048, Cl. 422-159.000.

Schmidt, Hans-Georg, to Dynamit Nobel AG. Method of preparing p-orsellinic acid esters. 4,524,216, Cl. 560-70.000.

Schmidt, Helmut: *See—*
Ong, Sienling; Karsunky, Ulrich; and Schmidt, Helmut, 4,523,922, Cl. 8-471.000.

Schmidt, Jimmy Q., to United States of America, Army. Ceramic coated differential sensor coil for use on a gun muzzle velocimeter. 4,524,323, Cl. 324-179.000.

Schmiedgen, Hans; Bernhardt, Siegfried; Strobl, Otto; and Menzel, Dietrich, to Spinnbau GmbH. Carder for manufacturing non-woven, formed fabric from fibrous substances. 4,523,350, Cl. 19-98.000.

Schmitkons, Thomas A.: *See—*
Samuels, George J.; Schmitkons, Thomas A.; Streeter, Terry L.; and Murray, Royce W., 4,524,114, Cl. 429-42.000.

Schnapper, Martin; and Hufendiek, Ernst W., to Daimler-Benz Aktiengesellschaft. Method for controlling the fuel metering for an internal combustion engine. 4,523,562, Cl. 123-357.000.

Schneider, Gerhart: *See—*
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, 4,523,945, Cl. 71-92.000.

Schnitzer, Heinrich; and Wronka, Bodo, to Mannesmann Ag. Discharging molten metal from a smelting furnace. 4,523,747, Cl. 266-44.000.

Schoonmaker, Charles D.: *See—*
Bardsley, Robert F.; Finucane, Thomas P.; Hebel, Carl; Schoonmaker, Charles D.; Wruk, Philip J.; and Lee, Edward P., deceased, 4,524,078, Cl. 426-112.000.

Schoonover, Randall M.: *See—*
Scrivener, Thomas F.; and Schoonover, Randall M., 4,523,653, Cl. 177-147.000.

Schopf, Hans-Joachim: *See—*
Kizler, Wolfgang; Sieder, Wolfgang; Schopf, Hans-Joachim; Dobler, Helmut; and Gluck, Roland, 4,523,916, Cl. 464-98.000.

Schroder, Ludwig: *See—*
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, 4,523,945, Cl. 71-92.000.

Schroter + Bake GmbH & Co., KG: *See—*
Schroter, Stefan, 4,523,675, Cl. 206-44.00R.

Schroter, Stefan, to Schroter + Bake GmbH & Co., KG. Collapsible display stand with attached tray. 4,523,675, Cl. 206-44.00R.

Schuh, Frank J., to Atlantic Richfield Company. Drainhole drilling assembly and method. 4,523,652, Cl. 175-61.000.

Schultz, William J.: *See—*
Adam, Randall E.; and Schultz, William J., 4,524,181, Cl. 525-107.000.

Schulz, Axel; and Sochor, Josef, to Robert Bosch GmbH. Playback preamplifier for magnetic tape recordings. 4,524,396, Cl. 360-67.000.

Schulz, David J.: *See—*
Paulson, John W.; and Schulz, David J., 4,524,115, Cl. 429-50.000.

Schulz, Donald N.: *See—*
Duvdevani, Ilan; Eckert, John A.; Schulz, Donald N.; and Kitano, Kissho, 4,523,929, Cl. 44-62.000.

Schulz, Kurt: *See—*
Biber, Klaus; Grunvogel, Karl; Lemcke, Ulrich; Jakubowski, Heinz; and Schulz, Kurt, 4,523,732, Cl. 248-123.100.

Schulz, Siegfried, to K. A. Schmersal GmbH & Co. Electrical switch. 4,524,251, Cl. 200-42.00R.

Schurmann, Heiner J., to American Ka-ro Corporation. Bottle holder. 4,523,677, Cl. 206-158.000.

Schurter, Rolf: *See—*
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,523,944, Cl. 71-92.000.

Schussler, Rudolf: *See—*
Rosenbladt, Rudolf V.; Nenninger, Klaus; and Schussler, Rudolf, 4,523,853, Cl. 356-446.000.

Schwab, Richard J. Animal trail marker and scent container. 4,523,717, Cl. 239-56.000.

Schwankhart, Gerhard: *See—*
Sticht, Walter; and Schwankhart, Gerhard, 4,523,447, Cl. 72-144.000.

Schwartz, Robert A.; and Duchesneau, Jerome G., to United Technologies Corporation. Propeller pitch change actuation system. 4,523,891, Cl. 416-157.00R.

Schwartz, Robert W.: *See—*
Bottka, Nicholas; Schwartz, Robert W.; and Thun, Wayne E., 4,524,090, Cl. 427-53.100.

Schwarz, James. Wheel cover and retention clip. 4,523,789, Cl. 301-37.00P.

Schwarze, Werner: *See—*
Drauz, Karlheinz; Koban, Hans G.; Martens, Jurgen; and Schwarze, Werner, 4,524,211, Cl. 548-111.000.

Schwarzkopf, Daniel: *See—*
Sybel, Randall; and Schwarzkopf, Daniel, 4,524,345, Cl. 340-146.200.

Schwertfeger, Werner: *See—*
Millauer, Hans; Siegemund, Gunter; and Schwertfeger, Werner, 4,524,031, Cl. 260-456.00F.

Schwetz, Karl A.; Reinmuth, Klaus; Hunold, Klaus; and Isemann, Franz, to Elektroschmelzwerk Kempten GmbH. Substantially pore-free sintered polycrystalline articles of α-silicon carbide, boron carbide and free carbon and process for their manufacture. 4,524,138, Cl. 501-90.000.

Sciabbarrasi, Michael: *See—*
Kostanty, Raymond G.; Sciabbarrasi, Michael; and Grossman, Walter B., 4,524,461, Cl. 455-79.000.

Scientific-Atlanta, Inc.: *See—*
Brinegar, Billy W., 4,524,337, Cl. 333-28.00R.

SCM Corporation: *See—*
Player, Kenneth W.; and Wilson, Lonny L., 4,524,086, Cl. 426-607.000.

Scott, Eddie W.; and Seltzer, Errol N., to Collins & Aikman Corp. High temperature resistant sewing thread and method of making. 4,523,426, Cl. 57-247.000.

Scott, Edward A., to United States of America, Army. Thermal target display system. 4,524,386, Cl. 358-113.000.

Scott, Hubert D., to Schlumberger Technology Corporation. Methods and apparatus for investigating an earth formation and compensating for borehole environmental effects. 4,524,274, Cl. 250-269.000.

Scott Paper Company: *See—*
Laush, Frank I.; and Parker, Vernon L., 4,523,933, Cl. 55-97.000.

Scott, William B.: *See—*
Kindgren, Lee; Scott, William B.; and Voges, Robert W., 4,523,749, Cl. 269-32.000.

Scott, William R.; and Ih, Charles S., to United States of America, Navy. Laser generation of ultrasonic waveform reconstructions. 4,523,469, Cl. 73-603.000.

Scriptel Corporation: *See—*
Quayle, Stanley F.; and Schlosser, Philip A., 4,523,654, Cl. 178-19.000.

Scrivener, Thomas F.; and Schoonover, Randall M., to Frazier Precision Instrument Company, Inc.; and Holometrics, Inc. Load cell mass comparator. 4,523,653, Cl. 177-147.000.

Scrivens, George W., to Surgikos, Inc. Surgical gown. 4,523,335, Cl. 2-51.000.

Seager, Nigel J., to Whatman Reeve Angel Public Limited Company. Filter paper. 4,524,103, Cl. 428-338.000.

Searby, Anthony D.; and Walker, Ian C., to Quantel Limited. Computerized graphics system and method using an electronically synthesized palette. 4,524,421, Cl. 364-521.000.

Sebag, Henri; and Vanlerberghe, Guy, to L'Oreal. Surface-active polysiloxanes. 4,523,921, Cl. 8-405.000.

Sebesta, Gunter: *See—*
Gudat, Wolfgang; Klatt, Alfred; and Sebesta, Gunter, 4,523,513, Cl. 91-427.000.

Security Tag Systems, Inc.: *See—*
Charlot, Lincoln H., Jr., 4,523,356, Cl. 24-155.0BR.

Seely, James R., to Marketing Displays, Inc. Plastic biased poster frame. 4,523,400, Cl. 40-156.000.

Seeney, Charles E., to International Minerals & Chemical Corp. Process for preparing cores and molds. 4,524,053, Cl. 423-306.000.

Segu , Bruno: *See—*
Drisaldi, Giovanni; Fontana, Eugenio; Manetti, Virgilio; Segu , Franco; Segu , Sandro; and Segu , Bruno, 4,523,908, Cl. 433-8.000.

Segu , Franco: *See—*
Drisaldi, Giovanni; Fontana, Eugenio; Manetti, Virgilio; Segu , Franco; Segu , Sandro; and Segu , Bruno, 4,523,908, Cl. 433-8.000.

Segu , Sandro: *See—*
Drisaldi, Giovanni; Fontana, Eugenio; Manetti, Virgilio; Segu , Franco; Segu , Sandro; and Segu , Bruno, 4,523,908, Cl. 433-8.000.

Sehnert, Steven D.; McClure, Gerald B.; and McPhee, William A., to Dresser Industries, Inc. Explosive safe/arm system for oil well perforating guns. 4,523,650, Cl. 175-4.560.

Seifried, Walter: *See—*
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Juergen, 4,524,155, Cl. 521-64.000.

Seilly, Alec H.; and Murray, Andrew E., to Lucas Industries public limited company. Liquid fuel pumping apparatus. 4,523,569, Cl. 123-458.000.

Seiter, Wolfgang: *See—*
Reuter, Herbert; Seiter, Wolfgang; and Wegener, Ingo, 4,524,010, Cl. 252-135.000.

Seki, Norio: *See—*
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Okada, Akira, 4,523,802, Cl. 350-96.120.

Seki, Tomoaki: *See—*
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, 4,523,635, Cl. 165-104.120.

Sekiya, Mutsuo: *See—*
Tanaka, Hideharu; Sekiya, Mutsuo; and Uchikawa, Fusaoki, 4,523,662, Cl. 181-249.000.

Sekiya, Tetsuo: *See—*
Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, 4,524,401, Cl. 360-113.000.

Seltzer, Errol N.: *See—*
Scott, Eddie W.; and Seltzer, Errol N., 4,523,426, Cl. 57-247.000.

Semon, William J., to Casket Shells, Inc. Stamped casket. 4,523,358, Cl. 27-6.000.

Senatore, Guy: *See—*
Sherk, Fred T.; Nesheiwat, Afif M.; and Senatore, Guy, 4,524,200, Cl. 528-388.000.

Sengoku, Kouji: *See—*
Sugisawa, Ko; Yamamoto, Masanori; Shibuki, Masaru; Nomura, Yukihiro; Sengoku, Kouji; and Higashine, Seiji, 4,524,080, Cl. 426-236.000.

Seth, Siya V., to U.S. Philips Corporation. Washing machine motor speed control circuit. 4,524,403, Cl. 361-86.000.

Seufert, Frederick B., to Texaco Development Corporation. Liquefaction of coal. 4,523,986, Cl. 208-10.000.

Sevier, Peter E.: *See—*
Dantzig, Jonathan A.; Sevier, Peter E.; and Ungarean, Gary L., 4,523,624, Cl. 164-454.000.

Shadwick, David T., to International Business Machines Corporation. Ribbon feed cartridge. 4,523,868, Cl. 400-208.000.

Shafco Industries Inc.: *See—*
Miller, Ivan O., 4,523,608, Cl. 137-315.000.

Shapiro, L. Dennis, to Lifeline Systems, Inc. Personal alarm system. 4,524,243, Cl. 179-5.00R.

Sharp, Bruce R. External jacket system as secondary containment for storage tanks. 4,523,454, Cl. 73-49.200.

Sharp Kabushiki Kaisha: *See—*
Nishimura, Katsuji; and Yamamoto, Hachizou, 4,524,267, Cl. 235-379.000.
Nishimura, Toshio; and Morita, Akitaka, 4,523,858, Cl. 368-272.000.

Shasta Industries, Inc.: *See—*
Gould, Charles M.; and Blake, Andy F., 4,523,606, Cl. 137-119.000.

Shell Oil Company: *See—*
Clayfield, Eric J.; Dixon, Arnold G.; and Miller, Richard J. L., 4,524,000, Cl. 210-649.000.
Dejaifve, Pierre E.; and Quillaud, Gerard, 4,524,058, Cl. 423-656.000.
Feuerhahn, Martin P. O., 4,524,161, Cl. 523-414.000.
Hemphill, Dean P., 4,523,876, Cl. 405-158.000.
Johnson, Thomas H., 4,524,229, Cl. 585-463.000.
Poll, Ian, 4,523,529, Cl. 110-263.000.

Shelton, Mark A.: *See—*
Braybrook, George E.; Corby, David C.; Shelton, Mark A.; and Shelton, William E. A., 4,523,441, Cl. 68-5.00C.

Shelton, William E. A.: *See—*
Braybrook, George E.; Corby, David C.; Shelton, Mark A.; and Shelton, William E. A., 4,523,441, Cl. 68-5.00C.

Sheridon, Nicholas K.; and Berkovitz, Michael A., to Xerox Corporation. Modulation structure for fluid jet assisted ion projection printing apparatus. 4,524,371, Cl. 346-159.000.

Sherk, Fred T.; Nesheiwat, Afif M.; and Senatore, Guy, to Phillips Petroleum Company. Granular poly(arylene sulfide) recovery using evaporation. 4,524,200, Cl. 528-388.000.

Sherwin, Martin B.: *See—*
Wang, Shu-Chieh P.; and Sherwin, Martin B., 4,524,226, Cl. 562-948.000.

Sherwood Medical Company: *See—*
McCool, George W., 4,523,968, Cl. 156-73.500.

Shiba, Kazuo: *See—*
Yoshioka, Junichi; Koizumi, Koichi; Kanai, Akira; and Shiba, Kazuo, 4,523,410, Cl. 51-166.00R.

Shibata, Akira; Komatsu, Keiichi; Kuroyanagi, Tomomitsu; and Kojima, Noboru, to Hitachi, Ltd. Chroma signal recording and reproducing circuit. 4,524,380, Cl. 358-316.000.

Shibuki, Masaru: *See—*
Sugisawa, Ko; Yamamoto, Masanori; Shibuki, Masaru; Nomura, Yukihiro; Sengoku, Kouji; and Higashine, Seiji, 4,524,080, Cl. 426-236.000.

Shigemura, Yutaka: *See—*
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.

Shima, Ichiji; Yoshibayashi, Shigeru; and Taniguti, Ryosuke, to Mitsubishi Denki Kabushiki Kaisha; Shima, Ichiji; and Yoshibayashi, Shigeru. Abnormal vibration monitor. 4,524,355, Cl. 340-870.130.

Shimadzu Corporation: *See—*
Kadota, Toshimi; Suzuki, Jugoro; and Matsui, Shigeki, 4,523,484, Cl. 73-864.120.
Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, 4,523,994, Cl. 210-500.200.

Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,523,492, Cl. 74-594.400.

Shimano, Keizo, to Shimano Industrial Company Limited. Pedal for a bicycle. 4,523,492, Cl. 74-594.400.

Shimanuki, Koji: *See—*
Nishizawa, Junichi; Tamamushi, Takashige; Shimanuki, Koji; and Inuiya, Masafumi, 4,524,391, Cl. 358-213.000.

Shimizu, Noriyuki: *See—*
Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, 4,524,098, Cl. 428-156.000.
Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, 4,524,100, Cl. 428-283.000.

Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, to Nikkan Industries Co., Ltd. Board for additive circuits. 4,524,098, Cl. 428-156.000.

Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, to Nikkan Industries Co., Ltd. Inorganic composite and the preparation thereof. 4,524,100, Cl. 428-283.000.

Shimizu, Yoichi, to Kabushiki Kaisha Maruyama Seisakucho. Apparatus for detection of end breakage in heddle frame. 4,523,614, Cl. 139-355.000.

Shimura, Yoshimasa; Kakiuchi, Hideyuki; Minamikawa, Yoshihisa; and Kawasaki, Katsuhiro, to Hitachi, Ltd. Charged particle beam apparatus. 4,524,277, Cl. 250-397.000.

Shindow, Yoshio: *See—*
Oka, Joji; Iwakura, Hideaki; Ando, Narumi; Iwasaki, Kiyotoshi; and Shindow, Yoshio, 4,524,111, Cl. 428-551.000.

Shinn, Dennis B.: *See—*
Jenkins, Robert G.; and Shinn, Dennis B., 4,523,939, Cl. 65-32.000.

Shirako, Hideo: *See—*
Saito, Shoichi; and Shirako, Hideo, 4,523,680, Cl. 206-387.000.

Shirley, Ian M.: *See—*
Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., 4,524,198, Cl. 526-292.100.

Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, to Shimadzu Corporation. Bis-crown-ether derivatives and their use. 4,523,994, Cl. 210-500.200.

Sidell, Richard S.: *See—*
Headlund, Larry M.; Marksteiner, Gary J.; and Sidell, Richard S., 4,524,419, Cl. 364-474.000.

Sieder, Wolfgang: *See—*
Kizler, Wolfgang; Sieder, Wolfgang; Schopf, Hans-Joachim; Dobler, Helmut; and Gluck, Roland, 4,523,916, Cl. 464-98.000.

Siegemund, Gunter: *See—*
Millauer, Hans; Siegemund, Gunter; and Schwertfeger, Werner, 4,524,031, Cl. 260-456.00F.

Sielaff, Ulrich, to United Steel Products Company. Hanger bracket and method of using same. 4,523,412, Cl. 52-81.000.

Siemens Aktiengesellschaft: *See—*
Baumgartner, Werner; Krockow, Dieter; and Tihany, Jeno , 4,524,375, Cl. 357-30.000.
Brajder, Antonio; and Hantke, Klaus, 4,524,334, Cl. 331-135.000.

Sievert, Steven A.: *See—*
Allen, Edwin M.; Foust, Eugene C.; Sievert, Steven A.; Fitzgerald, William C.; and Moffitt, Max L., 4,523,842, Cl. 356-124.000.

Signetics Corporation: *See—*
Burgyan, Lajos, 4,524,330, Cl. 330-257.000.

SIL-FAB Corporation: *See—*
Russo, Ronald D., 4,523,920, Cl. 604-93.000.

Silva, Ethan A. Fluid intensifier. 4,523,895, Cl. 417-225.000.

Silverman, Daniel. Method for determining the azimuth and length of a deep vertical fracture in the earth. 4,524,434, Cl. 367-37.000.

Simmons, Jerry C.: *See—*
Strickler, Steven E.; Simmons, Jerry C.; Golladay, James; and Goldstein, Andrew D., 4,523,460, Cl. 73-200.000.

Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., to GTE Automatic Electric Inc. Modular space stage arrangement for a T-S-T digital switching system. 4,524,441, Cl. 370-63.000.

Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kanal I., to GTE Automatic Electric Inc. Modularly expandable space stage for a T-S-T digital switching system. 4,524,442, Cl. 370-63.000.

Simmons U.S.A. Corporation: *See—*
Stumpf, Walter; and Dillon, Paul, 4,523,344, Cl. 5-477.000.

Sinar AG Schaffhausen: *See—*
Gfeller, Karl; and Datwyler, Peter, 4,523,824, Cl. 354-161.000.

Singh, Baldev: *See—*
Lesher, George Y.; and Singh, Baldev, 4,524,149, Cl. 514-350.000.

Sinha, Hari N.: *See—*
George, Christopher W.; Sinha, Hari N.; Vujcich, Mary R.; and Walker, Graham S., 4,524,054, Cl. 423-308.000.

Sinn, Robert: *See—*
Pichat, Philippe; Niel, Michel; and Sinn, Robert, 4,523,954, Cl. 106-110.000.

Sit, Song-P., to Zimpro Inc. Process for concurrent steam generation and metal recovery. 4,524,049, Cl. 423-65.000.

Slamecka, Ernst. High-voltage gas-blast puffer type circuit-breaker. 4,524,257, Cl. 200-148.00A.

Sling-All Ltd.: *See—*
O'Neill, Hugh, 4,523,526, Cl. 108-149.000.

Sloan, Jerry L.: *See—*
Julian, John C.; Sloan, Jerry L.; and Wheeler, Lee A., 4,523,503, Cl. 83-403.000.

Sluyterman, Albertus A. S., to U.S. Philips Corporation. Device for displaying television pictures. 4,524,340, Cl. 335-212.000.

Smith, David A., to APV Company Limited. Valve operating cylinder unit. 4,523,515, Cl. 92-59.000.

Smith, Donald L. Retractable conveyor belt. 4,523,669, Cl. 198-313.000.

Smith, Donald P.; and Plumb, William W., to Smith, Donald P. High efficiency impingement heating and cooling apparatus. 4,523,391, Cl. 34-225.000.

Smith, Edward F., III: *See—*
Haque, Reza; and Smith, Edward F., III, 4,524,089, Cl. 427-38.000.

Smith, Peter J.: *See—*
Moss, Keith G.; Smith, Peter J.; and Woolhouse, Robin A., 4,523,984, Cl. 204-296.000.

Smoot, Mark H. Energy efficient power driven marine vessel boat. 4,523,536, Cl. 114-67.00R.

Smyth, Robert R., to Eaton Corporation. Throttle modulation mechanism. 4,523,667, Cl. 192-0.092.

Snyder, David E., to Axelson, Inc. Pressure controller. 4,523,602, Cl. 137-467.000.

Soares, Gloria M. G.: *See—*
Abdel-Hehim, Hossam A. A.; Coelho, Wagner C.; and Soares, Gloria M. G., 4,523,941, Cl. 71-37.000.

Sochor, Josef: *See—*
Schulz, Axel; and Sochor, Josef, 4,524,396, Cl. 360-67.000.

Societa Cavi Pirelli S.p.A.: *See—*
Strada, Francesco; and Bazzi, Giuseppe, 4,523,648, Cl. 174-26.00R.

Societe Anonyme dite-les Cables de Lyon: *See—*
Rerolle, Yves, 4,523,724, Cl. 242-54.00R.

Societe de Vente de L'Aluminium Pechiney: *See—*
Cans, Yves; Gonda, Richard; and Tavernier, Marc, 4,523,627, Cl. 164-467.000.

Societe En Nom Collectif: *See—*
Bizard, Andre , 4,523,634, Cl. 165-95.000.

Societe Industrielle Bertrand Faure: *See—*
Letournoux, Alain; and Courtois, Bernard, 4,523,786, Cl. 297-367.000.

Societe Laitiere de Veron: *See—*
Denisot, Bernard A., 4,523,439, Cl. 62-251.000.

Societe Manzoni-Bouchot: *See—*
Manzoni, Stephane, 4,523,736, Cl. 248-483.000.

Societe Pour L'etude et la Fabrication des Circuits Integres Speciaux E.F.C.I.S.: *See—*
Bertails, Jean C., 4,524,425, Cl. 364-825.000.

Societe Suisse pour l'Industrie Horlogere Management Services: *See—*
Gygax, Claude-Andre , 4,523,856, Cl. 368-72.000.

Soda, Yutaka: *See—*
Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, 4,524,401, Cl. 360-113.000.

Sogah, Dotsevi Y.: *See—*
Farnham, William B.; and Sogah, Dotsevi Y., 4,524,196, Cl. 526-190.000.

Solvay & Cie. (Societe Anonyme): *See—*
Dumoulin, Joseph, 4,524,194, Cl. 526-84.000.

Solyntjes, Alan J.: *See—*
Nepper, Robert F.; Solyntjes, Alan J.; and Abrahamson, Carl W., 4,523,836, Cl. 355-16.000.

Sony Corporation: *See—*
Okada, Takashi; Ikeda, Yasunari; and Tanaka, Yutaka, 4,524,379, Cl. 358-11.000.
Suzuki, Manabu, 4,524,308, Cl. 315-368.000.
Tanaka, Yutaka; and Okada, Takashi, 4,524,382, Cl. 358-31.000.
Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, 4,524,401, Cl. 360-113.000.
Ueda, Sachio; Toriyama, Shigehiro; and Matsushita, Yuichi, 4,524,402, Cl. 360-130.240.

Sony Magnescale Incorporation: *See—*
Narimatsu, Akihisa; and Ohkubo, Hiroyuki, 4,523,381, Cl. 33-125.00C.

Sorenson, Richard W., to Carlingswitch, Inc. Three position switch construction. 4,524,253, Cl. 200-68.200.

Soubry, Garry V.; and MacFarlane, James L. Safety descent device. 4,523,664, Cl. 182-233.000.

Spaanenburg, Lambertus: *See—*
Schimmelpennink, Laurens M. H.; and Spaanenburg, Lambertus, 4,524,288, Cl. 307-40.000.

Spacesaver Corporation: *See—*
Peterman, Robert J., 4,523,794, Cl. 312-201.000.

Spangler, Richard A., to Procter & Gamble Company, The. Disposable bib having tape-tab fastener. 4,523,333, Cl. 2-49.00R.

Sparks, Gregory E.; and Larson, David A., to Deere & Company. Steering pressure responsive differential lock control system. 4,523,494, Cl. 74-710.500.

Spector, Donald. Aroma-dispensing cartridge and holder assembly for automobiles. 4,523,870, Cl. 98-2.110.

Speidell, James L.: *See—*
Cuomo, Jerome J.; Harper, James M. E.; Kaufman, Harold R.; and Speidell, James L., 4,523,971, Cl. 156-345.000.

Spencer, Harvey J., to Paper Converting Machine Company. Method and apparatus for manufacturing a product having elastic means disposed in a direction transverse to product movement. 4,523,969, Cl. 156-161.000.

Spencer Wright Industries, Inc.: *See—*
Aldridge, R. Warren, Jr., 4,523,499, Cl. 82-4.00A.

Sperry Corporation: *See—*
Chase, Karl L., 4,524,353, Cl. 340-732.000.
Crocker, David R.; Stelling, Desi D.; and Larson, Francis W., 4,524,443, Cl. 370-112.000.

Spinnbau GmbH: *See—*
Schmiedgen, Hans; Bernhardt, Siegfried; Strobl, Otto; and Menzel, Dietrich, 4,523,350, Cl. 19-98.000.

Spivack, John D.; and Pastor, Stephen D., to Ciba-Geigy Corporation. Primary or secondary amino substituted dibenzo dioxaphosphepins and dioxaphosphocins. 4,524,166, Cl. 524-117.000.

Spivack, John D.; and Pastor, Stephen D., to Ciba-Geigy Corporation. Polymeric hindered phosphonate stabilizers. 4,524,167, Cl. 524-121.000.

Spletzer, Barry; Swiatlowski, George J.; and Brandt, Maurice W., to Gerber Products Company. Baby bottle cap assembler. 4,523,377, Cl. 29-773.000.

Sprecker, Mark A.; Belko, Robert P.; Van Loveren, Augustinus G.; and Hanna, Marie R., to International Flavors & Fragrances Inc. Isopropyl substituted cyclohexenyl methyl ketones and perfumery uses thereof. 4,524,020, Cl. 252-522.00R.

Sprecker, Mark A.: *See—*
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,524,021, Cl. 252-522.00R.

Spring, William A.: *See—*
Peterson, Francis C.; Rodseth, William G.; and Spring, William A., 4,523,883, Cl. 411-171.000.

Spurlock, Richard: *See—*
Christianson, Charles L.; and Spurlock, Richard, 4,524,279, Cl. 250-497.100.

Sputtered Films, Inc.: *See—*
Dimock, Jack A., 4,523,985, Cl. 204-298.000.

Square D Company: *See—*
Chabot, Ferdinand E., 4,524,339, Cl. 335-22.000.

Staerzl, Richard E., to Brunswick Corporation. Fuel flow monitor for an electronic fuel injection circuit. 4,523,572, Cl. 123-494.000.

Stambaugh, Edgel: *See—*
Hillman, Melville E. D.; Huffman, William J.; Lipinsky, Edward S.; and Stambaugh, Edgel, 4,523,928, Cl. 44-56.000.

Stamberger, Paul, to Union Carbide Corporation. Adducts and polymer-polyols useful in the preparation of improved plastics, including polyurethane foams, elastomers and the like. 4,524,157, Cl. 521-156.000.

Standard Oil Company (Indiana): *See—*
Broding, Robert A., 4,524,433, Cl. 367-25.000.

Standex International Corporation: *See—*
Ekholm, Carl R., 4,523,581, Cl. 128-70.000.

Stanley Electric Co., Ltd.: *See—*
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, 4,524,413, Cl. 363-127.000.

Stanley, Frederick W., Jr., to Dow Chemical Company, The. Water-in-oil emulsions of hydrophobe association polymers. 4,524,175, Cl. 524-831.000.

Stanley, Philip E.; and Szorc, Piotr, to Honeywell Information Systems Inc. Stack mechanism with the ability to dynamically alter the size of a stack in a data processing system. 4,524,416, Cl. 364-200.000.

Staubli-Verdol: *See—*
Mutschler, Ulrich, 4,523,915, Cl. 464-3.000.

Stauffer Chemical Company: *See—*
Brokke, Mervin E.; and Magee, Walter L., Jr., 4,524,214, Cl. 560-51.000.

Steen, Gunnar, to Stifab AB. Measurement unit for determining gas flow through a conduit and measuring means designed to be included in such a measuring unit. 4,523,481, Cl. 73-861.610.

Stefansson, Thorvardur S.: *See—*
Johansen, Claus J.; Jark, Jens K.; and Stefansson, Thorvardur S., 4,523,739, Cl. 251-139.000.

Steinbeck, Herbert: *See—*
Dorsch, Heinz; Hofbauer, August; and Steinbeck, Herbert, 4,523,568, Cl. 123-453.000.

Steinberger, Helmut; Kirschnek, Helmut; and Pfeiffer, Josef, to Bayer Aktiengesellschaft. Preparation of aqueous silicone dispersions for treating textiles. 4,524,172, Cl. 524-506.000.

Steinhagen, Wolfgang: *See—*
Bosserhoff, Hartmut; Steinhagen, Wolfgang; and Joeres, Ulrich, 4,524,346, Cl. 340-347.0CC.

Stella, Leo, to Torrington Company, The. Bearing with a lubrication fitting. 4,523,861, Cl. 384-475.000.

Stelling, Desi D.: *See—*
Crocker, David R.; Stelling, Desi D.; and Larson, Francis W., 4,524,443, Cl. 370-112.000.

Stephens, James B.: *See—*
Miller, Charles G., deceased; Stephens, James B.; and Youngberg, Charles, 4,523,808, Cl. 350-146.000.

Sterling Drug Inc.: *See—*
Lesher, George Y.; and Singh, Baldev, 4,524,149, Cl. 514-350.000.
Paikoff, Myron; Hain, Robert W.; and Hadtke, Frederick B., 4,523,679, Cl. 206-370.000.

Stern, Richard M., to Riker Laboratories, Inc. Antimicrobial 8,9-dihalobenzo[ij]quinolizine carboxylic acids. 4,524,148, Cl. 514-294.000.

Stevens, Gregory A.: *See—*
Hefner, Robert E., Jr.; Martin, Patrick H.; and Stevens, Gregory A., 4,524,178, Cl. 525-28.000.

Sticht, Walter; and Schwankhart, Gerhard, to Stiwa-Fertigungstechnik Sticht Gesellschaft m.b.H. Wire coiler. 4,523,447, Cl. 72-144.000.

Stifab AB: *See—*
Steen, Gunnar, 4,523,481, Cl. 73-861.610.

Still GmbH: *See—*
Kremer, Manfred, 4,524,286, Cl. 290-45.000.

Sting, Donald W.: *See—*
Fouss, James L.; Parker, John J.; Child, James L., Jr.; and Sting, Donald W., 4,523,613, Cl. 138-121.000.

Stirling, Irene; Bruton, Gordon; Calvert, Stephen H.; and Clarke, Brian P., to Beecham Group p.l.c. β-Lactam compounds. 4,524,073, Cl. 514-80.000.

Stirling Thermal Motors, Inc.: *See—*
Meijer, Roelf J.; and Ziph, Benjamin, 4,523,636, Cl. 165-104.260.

Stitt, Thomas D.: *See—*
Brown, Herbert J.; and Stitt, Thomas D., 4,524,316, Cl. 318-809.000.

Stiwa-Fertigungstechnik Sticht Gesellschaft m.b.H.: *See—*
Sticht, Walter; and Schwankhart, Gerhard, 4,523,447, Cl. 72-144.000.

Stock, Rodney D.; and Newman, Gary H., to Lucasfilm Ltd. Universal circuit prototyping board. 4,524,240, Cl. 174-68.500.

Stogner, Claude R.: *See—*
Walter, Jerry D.; and Stogner, Claude R., 4,523,864, Cl. 384-613.000.

Stolzenburg, Rudolf: *See—*
Bergthaller, Peter; Stolzenburg, Rudolf; Marx, Paul; and Hamprecht, Rainer, 4,524,124, Cl. 430-241.000.

Stone, William J., to United States of America, Energy. Front lighted optical tooling method and apparatus. 4,523,849, Cl. 356-369.000.

Stoneburner, James D.: *See—*
Barmatz, Martin B.; Stoneburner, James D.; Jacobi, Nathan; and Wang, Taylor G., 4,523,682, Cl. 209-638.000.

Stout, Charles E., Jr.: *See—*
Cushman, Robert H.; and Stout, Charles E., Jr., 4,523,972, Cl. 156-617.0SP.

Stout, Gregg W., to Baker Oil Tools, Inc. Rotational alignment method and apparatus for tubing conveyed perforating guns. 4,523,649, Cl. 175-4.510.

Strada, Francesco; and Bazzi, Giuseppe, to Societa Cavi Pirelli S.p.A. Sheathed, multi-core, oil filled, electric cable with oil duct exterior to the cores. 4,523,648, Cl. 174-26.00R.

Stransky, Werner: *See—*
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, 4,523,945, Cl. 71-92.000.

Streeter, Terry L.: *See—*
Samuels, George J.; Schmitkons, Thomas A.; Streeter, Terry L.; and Murray, Royce W., 4,524,114, Cl. 429-42.000.

Streetman, William E.; and Daftary, Shashikumar H., to American Cyanamid Company. Melt-spun acrylonitrile polymer fiber of improved properties. 4,524,105, Cl. 428-364.000.

Strickland, Thomas H.: *See—*
Musser, Harry R.; Strickland, Thomas H.; and Zannucci, Joseph S., 4,524,165, Cl. 524-99.000.

Strickler, Steven E.; Simmons, Jerry C.; Golladay, James; and Goldstein, Andrew D., to Montech Systems Incorporated. Fluid measuring, testing and accounting system. 4,523,460, Cl. 73-200.000.

Strobl, Otto: *See—*
Schmiedgen, Hans; Bernhardt, Siegfried; Strobl, Otto; and Menzel, Dietrich, 4,523,350, Cl. 19-98.000.

Strozier, Robert W.: *See—*
Hsu, Wen-Liang; Maly, Neil A.; Matrana, Barry A.; Strozier, Robert W.; and Wideman, Lawson G., 4,524,233, Cl. 585-606.000.

Strupczewski, Joseph T., to Hoechst-Roussel Pharmaceuticals Inc. 3-(4-Piperidinyl)-1,2-benzisothiazoles. 4,524,074, Cl. 514-321.000.

Strutt, John R.; and Bhagwat, Anil G., to Xerox Corporation. Sheet transport. 4,523,832, Cl. 355-3.0SH.

Stumpf, Walter; and Dillon, Paul, to Simmons U.S.A. Corporation. Independent block assembly of springs. 4,523,344, Cl. 5-477.000.

Sturdy, Harry D., to Sturdy Truck Equipment, Inc. Road and engine speed governor. 4,523,564, Cl. 123-361.000.

Sturdy Truck Equipment, Inc.: *See—*
Sturdy, Harry D., 4,523,564, Cl. 123-361.000.

Suefuji, Masahiro: *See—*
Misaki, Susumu; Ishii, Sadamu; and Suefuji, Masahiro, 4,524,032, Cl. 260-465.00F.

Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; Ueda, Katsuhiko; and Nakamura, Hitoshi, to Toyota Jidosha Kabushiki Kaisha. Method for manufacturing a cam-cam shaft assembly. 4,524,046, Cl. 419-8.000.

Sugie, Yutaka: *See—*
Imahori, Jumpei; and Sugie, Yutaka, 4,523,542, Cl. 118-663.000.

Sugisawa, Ko; Yamamoto, Masanori; Shibuki, Masaru; Nomura, Yukihiro; Sengoku, Kouji; and Higashine, Seiji, to House Food Industrial Company Limited. Method of improving quality of wheat flour. 4,524,080, Cl. 426-236.000.

Sugita, Junkichi: *See—*
Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, 4,524,401, Cl. 360-113.000.

Sullivan, Paul A.; and Collins, George J., to NCR Corporation. Process for fabricating a bipolar transistor with a thin base and an abrupt base-collector junction. 4,523,370, Cl. 29-576.00B.

Sulzer Brothers Limited: *See—*
Frey, Otto, 4,523,587, Cl. 128-92.00C.

Sumitani, Koji: *See—*
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,524,055, Cl. 423-328.000.

Sumitomo Chemical Company, Ltd.: *See—*
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.

Sumitomo Gomu Kogyo Kabushiki Kaisha: *See—*
Imahori, Jumpei; and Sugie, Yutaka, 4,523,542, Cl. 118-663.000.

Sumitomo Metal Industries, Ltd.: *See—*
Kaminaka, Motofumi; Takashima, Hiroyuki; and Kaburagi, Katsuhiko, 4,523,530, Cl. 110-264.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.

Sun Chemical Corporation: *See—*
Kovalsky, Stephen J., 4,523,952, Cl. 106-20.000.

Sun, Shan C.; and McGivern, James P., to Westinghouse Electric Corp. Signal quality monitor for protective relay system. 4,524,446, Cl. 371-22.000.

Sun Tech, Inc.: *See—*
Hsu, Chao-Yang; Lyons, James E.; and Ellis, Paul E., Jr., 4,524,142, Cl. 502-153.000.

Sun, Yun C., to Dow Chemical Company, The. Rubber-modified, impact-resistant polymeric compositions. 4,524,180, Cl. 525-71.000.

Sunaga, Mitsuo: *See—*
Kondo, Kazuo; Imamura, Seiji; Saito, Shigemasa; Akimoto, Mamoru; and Sunaga, Mitsuo, 4,523,711, Cl. 228-198.000.

Sundin, Kjell H.: *See—*
Lindh, Kjell E.; and Sundin, Kjell H., 4,523,394, Cl. 36-89.000.

Sundstrand Corporation: *See—*
Couri, Mark S., 4,523,586, Cl. 128-82.000.

Surgikos, Inc.: *See—*
Scrivens, George W., 4,523,335, Cl. 2-51.000.

Suzuki, Hideo; Ohtsuka, Kanji; and Adachi, Masami, to Nissan Chemical Industries Ltd. Dicyclopentadiene dicarboxylic acid derivatives and process for their preparation. 4,524,213, Cl. 549-235.000.

Suzuki, Jugoro: *See—*
Kadota, Toshimi; Suzuki, Jugoro; and Matsui, Shigeki, 4,523,484, Cl. 73-864.120.

Suzuki, Manabu, to Sony Corporation. Circuits for accomplishing electron beam convergence in color cathode ray tubes. 4,524,308, Cl. 315-368.000.

Suzuki, Masayuki, to Sanshin Kogyo Kabushiki Kaisha. Four-stroke internal combustion engine for outboard motors. 4,523,556, Cl. 123-196.00W.

Suzuki, Takashi, to Canon Kabushiki Kaisha. Method for making a member having microstructure elements arranged thereon. 4,523,807, Cl. 350-128.000.

Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, to Toyota Jidosha Kabushiki Kaisha. Fuel injection control in internal combustion engine. 4,523,570, Cl. 123-478.000.

Svenska Rotor Maskiner Aktiebolag: *See—*
Forslund, Lennart; and Nilsson, Orjan, 4,523,894, Cl. 417-161.000.

Svob, Gerald J.: *See—*
Bills, Kenneth W., Jr.; and Svob, Gerald J., 4,523,475, Cl. 73-781.000.

Swett, Richard E.: *See—*
Swett, Robert C.; and Swett, Richard E., 4,523,757, Cl. 273-63.00E.

Swett, Robert C.; and Swett, Richard E. Bowling ball weight exchanger. 4,523,757, Cl. 273-63.00E.

Swiatlowski, George J.: *See—*
Spletzer, Barry; Swiatlowski, George J.; and Brandt, Maurice W., 4,523,377, Cl. 29-773.000.

Swisher, Steven L., to Brunswick Corporation. Anti-reverse mechanism. 4,523,726, Cl. 242-84.20R.

Sybel, Randall; and Schwarzkopf, Daniel, to Prime Computer, Inc. Serial comparison flag detector. 4,524,345, Cl. 340-146.200.

Szczepanski, Henry; and Berrer, Dagmar, to Ciba-Geigy Corporation. Use of triazine derivatives for protecting maize and sorghum plants. 4,523,947, Cl. 71-93.000.

Szejtli, Jozsef; Budai, Zsuzsanna; Radvany nee Hegedus, Erzsebet; Papp, Laszlo ; Kormoczy, Gyorgy; and Pap nee Imrenyi, Gabriella, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Cyclodextrin inclusion complex of piperonyl butoxide. 4,524,068, Cl. 514-58.000.

Szenger, Franz: *See—*
Werner, Walter; Herzog, Klaus; and Szenger, Franz, 4,523,382, Cl. 33-169.00R.

Szorc, Piotr: *See—*
Stanley, Philip E.; and Szorc, Piotr, 4,524,416, Cl. 364-200.000.

Tabak, Samuel A.: *See—*
Chester, Arthur W.; Garwood, William E.; Lucki, Stanley J.; and Tabak, Samuel A., 4,524,232, Cl. 585-517.000.

Taboada, John; and Altschuler, Bruce R., to United States of America, Air Force. Method and apparatus for generating a structured light beam array. 4,523,809, Cl. 350-163.000.

Tagami, Katsutoshi: *See—*
Nakamura, Yukinobu; Tagami, Katsutoshi; and Takahashi, Tsuneo, 4,524,357, Cl. 340-995.000.

Tagawa, Kiyoharu: *See—*
Eguchi, Mitsuo; Tagawa, Kiyoharu; Ogawa, Hitoshi; Bandai, Mikio; and Nagashima, Nobuharu, 4,523,829, Cl. 354-406.000.

Taihoo Seiki Co., Ltd.: *See—*
Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,523,670, Cl. 198-403.000.

Taka, Hideo: *See—*
Masunaga, Makoto; and Taka, Hideo, 4,523,827, Cl. 354-400.000.

Takagi, Shigeru; and Tomita, Masahiro, to Nippon Soken, Inc. Electrical heater retained in a porous ceramic structure. 4,523,935, Cl. 55-282.000.

Takagi, Toshio: *See—*
Funabashi, Kiyomi; Takagi, Toshio; Kawamura, Fumio; and Kikuchi, Makoto, 4,524,153, Cl. 521-26.000.

Takahashi, Hideaki: *See—*
Takeuchi, Takashi; Takahashi, Hideaki; and Kondo, Haruyoshi, 4,524,264, Cl. 219-497.000.

Takahashi, Hideyuki; Komatsu, Toshio; and Inoue, Yoshiaki, to Mitsubishi Gas Chemical Company, Inc. Oxygen absorbent. 4,524,015, Cl. 252-188.280.

Takahashi, Masahiro; Hagiwara, Toshio; Nishizaki, Takao; and Niizeki, Kinya, to Nippon Light Metal Co., Ltd. Cold storage body. 4,523,433, Cl. 62-60.000.

Takahashi, Tsuneo: *See—*
Nakamura, Yukinobu; Tagami, Katsutoshi; and Takahashi, Tsuneo, 4,524,357, Cl. 340-995.000.

Takahashi, Yoshitaka: *See—*
Hisatake, Michio; Yamamoto, Kazuji; Hyodo, Toru; and Takahashi, Yoshitaka, 4,524,309, Cl. 318-434.000.
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; Ueda, Katsuhiko; and Nakamura, Hitoshi, 4,524,046, Cl. 419-8.000.

Takanashi, Yukio: *See—*
Nakayama, Shouji; Takanashi, Yukio; Higuchi, Toshiharu; and Yakabe, Touru, 4,524,296, Cl. 313-270.000.

Takano, Masaharu: *See—*
Ruest, Dennis A.; Takano, Masaharu; and Wolf, Lawrence R., 4,524,077, Cl. 514-557.000.

Takashima, Hiroyuki: *See—*
Kaminaka, Motofumi; Takashima, Hiroyuki; and Kaburagi, Katsuhiko, 4,523,530, Cl. 110-264.000.

Takeuchi, Takashi; Takahashi, Hideaki; and Kondo, Haruyoshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Temperature control apparatus. 4,524,264, Cl. 219-497.000.

Takeuchi, Toshio: *See—*
Tsuya, Noboru; Arai, Kenichi; and Takeuchi, Toshio, 4,523,966, Cl. 148-171.000.

Takiron Co., Ltd.: *See—*
Miki, Shinji; Nishio, Toyokazu; Matsuyama, Shinzo; and Yamazaki, Shinichi, 4,523,874, Cl. 405-43.000.

Tamamushi, Takashige: *See—*
Nishizawa, Junichi; Tamamushi, Takashige; Shimanuki, Koji; and Inuiya, Masafumi, 4,524,391, Cl. 358-213.000.

Tamburrino, Richard A.: *See—*
Pawlikowski, Stanley L.; and Tamburrino, Richard A., 4,524,298, Cl. 313-405.000.

Tamer, Gregory G., to RCA Corporation. Synchronization input for television receiver on-screen alphanumeric display. 4,524,387, Cl. 358-154.000.

Tames, Esther R. Disposable floor mop. 4,523,347, Cl. 15-104.940.

Tanaka, Hideharu; Sekiya, Mutsuo; and Uchikawa, Fusaoki, to Mitsubishi Denki Kabushiki Kaisha. Muffler for exhaust gas from an internal combustion engine. 4,523,662, Cl. 181-249.000.

Tanaka, Toshihide: *See—*
Isobe, Mitsuo; Kutsuki, Tetsuo; Yamaguchi, Namio; and Tanaka, Toshihide, 4,524,389, Cl. 358-188.000.

Tanaka, Yutaka; and Okada, Takashi, to Sony Corporation. Filter circuits. 4,524,382, Cl. 358-31.000.

Tanaka, Yutaka: *See—*
Okada, Takashi; Ikeda, Yasunari; and Tanaka, Yutaka, 4,524,379, Cl. 358-11.000.

Tandon Corporation: *See—*
Jepsen, David B., 4,524,399, Cl. 360-97.000.

Tanegawa, Tetsuo: *See—*
Toyoshi, Seiji; Tanegawa, Tetsuo; Saeki, Masaru; and Kawakita, Tetsuya, 4,523,999, Cl. 210-639.000.

Taniguti, Ryosuke: *See—*
Shima, Ichiji; Yoshibayashi, Shigeru; and Taniguti, Ryosuke, 4,524,355, Cl. 340-870.130.

Tanimoto, Fumio: *See—*
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,524,017, Cl. 252-522.00R.

Tanno, Seikichi: *See—*
Uematsu, Takao; Honma, Yoshiharu; Tanno, Seikichi; Ito, Ran; Matsubayashi, Jun; and Yoshida, Tomio, 4,523,668, Cl. 192-107.00M.

Tarao, Ryokichi: *See—*
Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, 4,524,018, Cl. 252-522.00A.

Taschner, Heinz: *See—*
Breustedt, Alfred; Taschner, Heinz; Korf, Rainer; and Lorenz, Renate, 4,523,912, Cl. 433-202.000.

Tasset, Emmett L.; Dallessandro, Susan M.; and Richey, Warren F., to Dow Chemical Company, The. Flux removal solvent blend. 4,524,011, Cl. 252-171.000.

Tatevosian, Ruben A.: *See—*
Eberling, Igor L.; Tereschenko, Lev A.; Nikolaev, Nikolai I.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,524,319, Cl. 324-65.00R.

Tavernier, Marc: *See—*
Cans, Yves; Gonda, Richard; and Tavernier, Marc, 4,523,627, Cl. 164-467.000.

Taylor, Glenn A.; and Wolf, Philip F., to Union Carbide Corporation. Hydrolysis of alkylene carbonates to aklylene glycols. 4,524,224, Cl. 568-858.000.

Taylor, Julian D.: *See—*
Puresevic, Peter J.; and Taylor, Julian D., 4,523,688, Cl. 215-220.000.

TDK Corporation: *See—*
Kawakami, Yoshio, 4,524,108, Cl. 428-480.000.

Tecnol, Inc.: *See—*
Hubbard, Vance M.; and Brunson, Welton K., 4,523,353, Cl. 24-30.50R.

Teijin Petrochemical Industries Ltd.: *See—*
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,524,055, Cl. 423-328.000.

Teijin Seiki Company Limited: *See—*
Moriyama, Yukinori; and Ozaki, Tsukasa, 4,523,449, Cl. 72-421.000.

Tekna: *See—*
Osterhout, Ralph F.; Burr, John D.; and Larson, Eric R., 4,523,379, Cl. 30-151.000.

Tektronix, Inc.: *See—*
Wahlquist, Clayton C., 4,524,307, Cl. 315-368.000.

Tellkamp, Robert G.: *See—*
Temple, Russell A.; Wesseler, Martin G.; Harper, David C.; Eiland, Harry F.; and Tellkamp, Robert G., 4,523,837, Cl. 355-51.000.

Temple, Russell A.; Wesseler, Martin G.; Harper, David C.; Eiland, Harry F.; and Tellkamp, Robert G., to Xerox Corporation. Document handling system to enable large document copying on a standard office copier. 4,523,837, Cl. 355-51.000.

Terayama, Fusaji; Kohzai, Tetsuo; and Murai, Naoyuki, to Morita Fire Pump Mfg. Co., Ltd. Revolving block for high place working vehicle. 4,523,685, Cl. 212-247.000.

Tereschenko, Lev A.: *See—*
Eberling, Igor L.; Tereschenko, Lev A.; Nikolaev, Nikolai I.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,524,319, Cl. 324-65.00R.

Territorialnoe Geolgicheskoe Upravlenie Tsentralnykh Raionov: *See—*
Eberling, Igor L.; Tereschenko, Lev A.; Nikolaev, Nikolai I.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,524,319, Cl. 324-65.00R.

Testrac, Inc.: *See—*
Faul, Donald; Broussard, Paul P.; and Granger, Donald W., 4,523,453, Cl. 73-40.700.

Teulings, Wilhelmus A., to Hollandse Signaalapparaten B.V. Radar systems employing two kinds of pulses. 4,524,361, Cl. 343-17.2PC.

Texaco Development Corporation: *See—*
Seufert, Frederick B., 4,523,986, Cl. 208-10.000.

Texaco Inc.: *See—*
Ang, Peter G. P.; and Sammells, Anthony F., 4,523,981, Cl. 204-72.000.
McCoy, David R.; and Naylor, Carter G., 4,524,023, Cl. 252-548.000.
Naylor, Carter G., 4,524,022, Cl. 252-548.000.
Paap, Hans J., 4,524,272, Cl. 250-265.000.
Vanderpool, Steven H., 4,524,143, Cl. 502-208.000.

Texas Instruments Incorporated: *See—*
Bosserhoff, Hartmut; Steinhagen, Wolfgang; and Joeres, Ulrich, 4,524,346, Cl. 340-347.0CC.
Evans, Thomas E., 4,523,378, Cl. 29-881.000.
Farrell, Charles F., 4,524,249, Cl. 200-5.00A.
Haken, Roger A.; and Feger, William E., 4,524,431, Cl. 365-222.000.
Penz, Perry A., 4,523,812, Cl. 350-334.000.

Thevis, Paul; Danner, Helmut; and Weisser, Erich, to Heckler & Koch GmbH. Shoulder arm. 4,523,509, Cl. 89-129.020.

Thibault, William C.; and Pate, Paul E., to General Electric Company. Method for sealing a rechargable cell. 4,523,376, Cl. 29-623.200.

Thiel, Philip P.: *See—*
Freeman, D. Bruce; Kesse, Bernard G.; and Thiel, Philip P., 4,523,541, Cl. 118-202.000.

Thomas, Bobby J.: *See—*
Coon, Julian B.; and Thomas, Bobby J., 4,523,651, Cl. 175-45.000.

Thomas, Robert F.: *See—*
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Thompson, Douglas K., to General Motors Corporation. End seal for turbine blade base. 4,523,890, Cl. 416-95.000.

Thompson, James P.: *See—*
Lubin, Barry T.; and Thompson, James P., 4,523,466, Cl. 73-579.000.

Thompson, Robert E., to Chevron Research Company. Armored optical fiber cable. 4,523,804, Cl. 350-96.230.

Thomson-Brandt: *See—*
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Thun, Wayne E.: *See—*
Bottka, Nicholas; Schwartz, Robert W.; and Thun, Wayne E., 4,524,090, Cl. 427-53.100.

Thurlow, John F., to Dennison Manufacturing Company. Transfer coating methods, compositions and products. 4,523,956, Cl. 106-243.000.

Thurston, Marlin O., to R. H. Burton Company. Refractor with optically encoded cylinder axis position. 4,523,822, Cl. 351-234.000.

Tiedemann, George V. Three-in-one work station. 4,523,617, Cl. 144-286.00A.

Tietze, Lutz-Friedjan; and Fischer, Roland, to Bayer Aktiengesellschaft. Process for the preparation of 1,1'-diacetals. 4,524,202, Cl. 536-18.500.

Tihany, Jeno : *See—*
Baumgartner, Werner; Krockow, Dieter; and Tihany, Jeno , 4,524,375, Cl. 357-30.000.

Titchenal, Oliver R., to Basic Packaging Systems, Inc. Square ended bag. 4,524,459, Cl. 383-37.000.

Titov, Mikhail Y.: *See—*
Eberling, Igor L.; Tereschenko, Lev A.; Nikolaev, Nikolai I.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,524,319, Cl. 324-65.00R.

Titsworth, Raymond; and Lill, Melvin H., to FMC Corporation. Determining toe of rear and front vehicle wheels. 4,523,844, Cl. 356-152.000.

Todd, Carl D., to Gateway Scientific, Inc. Smoke alarm activated light. 4,524,304, Cl. 315-156.000.

Toho Tekko Co., Ltd.: *See—*
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Tohoku Ricoh Co. Ltd.: *See—*
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, 4,524,413, Cl. 363-127.000.

Tohoku University: *See—*
Tsuya, Noboru; Arai, Kenichi; and Takeuchi, Toshio, 4,523,966, Cl. 148-171.000.

Tokuda, Hiroshi: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.

Tokyo Electric Co., Ltd.: *See—*
Horiya, Keiichi; and Miyazaki, Naoki, 4,524,367, Cl. 346-76.0PH.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Abou, Shouji; and Sasaki, Itsuo, 4,524,328, Cl. 330-253.000.
Aoki, Masayuki, 4,524,258, Cl. 219-10.55B.
Fujiki, Masao, 4,524,398, Cl. 360-78.000.
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Harada, Nozomu; Ito, Hiroshi; and Adachi, Toshikazu, 4,523,544, Cl. 118-702.000.
Ishikawa, Mitsuaki, 4,524,280, Cl. 250-548.000.
Kawakatsu, Akira; and Yamamoto, Fumio, 4,524,410, Cl. 362-255.000.
Masuda, Eiji; and Matsuo, Kenji, 4,524,327, Cl. 330-253.000.
Nagakubo, Yoshihide, 4,523,369, Cl. 29-576.00W.
Nagano, Katsumi, 4,524,292, Cl. 307-494.000.
Nakayama, Shouji; Takanashi, Yukio; Higuchi, Toshiharu; and Yakabe, Touru, 4,524,296, Cl. 313-270.000.
Ohta, Takao; and Ohno, Junichi, 4,523,963, Cl. 148-1.500.
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Yamashita, Mitsuo; Oda, Goro; and Kamiya, Masashi, 4,523,800, Cl. 350-6.700.
Yokoo, Makoto; Nakatomi, Yoshitsugu; and Hashimoto, Shinichi, 4,523,831, Cl. 355-3.00R.

Toman, George M., to Union Special Corporation. Force transfer means. 4,523,533, Cl. 112-199.000.

Tomiita, Kazuo: *See—*
Negishi, Takao; Kojima, Teiryo; and Tomiita, Kazuo, 4,523,428, Cl. 57-288.000.

Tomita, Masahiro: *See—*
Takagi, Shigeru; and Tomita, Masahiro, 4,523,935, Cl. 55-282.000.

Tomori, Yasumasa, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens barrel for macrofocusing. 4,523,815, Cl. 350-430.000.

Tong, Curtis M.: *See—*
Pedersen, David R.; and Tong, Curtis M., 4,523,464, Cl. 73-216.000.

Toray Industries, Inc.: *See—*
Negishi, Takao; Kojima, Teiryo; and Tomiita, Kazuo, 4,523,428, Cl. 57-288.000.

Toriyama, Shigehiro: *See—*
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Torrington Company, The: *See—*
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Stella, Leo, 4,523,861, Cl. 384-475.000.

Touhalisky, John: *See—*
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Towmotor Corporation: *See—*
Reeves, Jerry L., 4,523,886, Cl. 414-641.000.

Toy, Lester T., to Raychem Corporation. Process for manufacturing sealant coated articles. 4,523,970, Cl. 156-244.110.

Toyoda Gosei Co., Ltd.: *See—*
Sakai, Hiromu; Ezaki, Sazo; and Kikuchi, Atsuo, 4,523,448, Cl. 72-185.000.

Toyoshi, Seiji; Tanegawa, Tetsuo; Saeki, Masaru; and Kawakita, Tetsuya, to Ajinomoto Co., Inc. Ultrafiltration method. 4,523,999, Cl. 210-639.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Asano, Masumi; Ugajin, Mitsuyuki; and Isogai, Kiyoshi, 4,523,763, Cl. 277-1.000.
Kobayashi, Tatsuo, 4,523,566, Cl. 123-425.000.
Mizutani, Shinichi; and Ajiki, Harumi, 4,523,363, Cl. 29-235.000.
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; Ueda, Katsuhiko; and Nakamura, Hitoshi, 4,524,046, Cl. 419-8.000.
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,523,570, Cl. 123-478.000.
Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,523,670, Cl. 198-403.000.
Yoshida, Hatsuyoshi; Fukutome, Michio; Ohuchi, Makoto; and Ohta, Jyun, 4,524,254, Cl. 200-83.00R.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Motosugi, Katsuhiko; and Sasaki, Yoshio, 4,523,560, Cl. 123-308.000.

Transaction Security, Inc.: *See—*
Hastings, Otis H.; and Hastings, Otis M., 4,523,528, Cl. 109-42.000.

Triumph-Adler A.G. fur Buro- und Informationstechnik: *See—*
Hirzinger, Peter; and Vatterott, Karl-Heinz, 4,523,866, Cl. 400-124.000.

Truman, Charles L., to Kimberly-Clark Corporation. Method for manufacture of sleeved garments outside out. 4,523,336, Cl. 2-69.000.

Trutzschler GmbH & Co. KG: *See—*
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TRW Inc.: *See—*
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TSI Incorporated: *See—*
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Tsubouchi, Natsuro: *See—*
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Tsuji, Shintaro, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for elevators. 4,523,665, Cl. 187-29.00R.

Tsuji, Shintaro: *See—*
Araya, Shinji; and Tsuji, Shintaro, 4,524,418, Cl. 364-436.000.

Tsujikawa, Teruaki: *See—*
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Tsukakoshi, Naoto: *See—*
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Tsukamoto, Tatuzo. Clip for sheet material. 4,523,354, Cl. 24-67.900.

Tsumura, Katsunori: *See—*
Yasui, Hiroyoshi; Yoshida, Teruo; Ueno, Hiroshi; and Tsumura, Katsunori, 4,523,862, Cl. 384-564.000.

Tsuya, Noboru; Arai, Kenichi; and Takeuchi, Toshio, to Tohoku University. Process of producing silicon ribbon with p-n junction. 4,523,966, Cl. 148-171.000.

Turba, Egon. Surface for sports areas, particularly tennis courts, and its manufacture. 4,523,755, Cl. 272-3.000.

Tureaud, Aloysius K. Apparatus for treating human feet. 4,523,580, Cl. 128-52.000.

Turko, John W.: *See—*
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Turner, Patrick J.: *See—*
Cottrell, John S.; Turner, Patrick J.; and Kay, David J., 4,524,275, Cl. 250-298.000.

Twiehoff, Karl-Heinz; and Nowag, Reinhard, to Windmoller & Holscher. Valved sack. 4,524,460, Cl. 383-45.000.

Tyhach, Richard J., to Miles Laboratories, Inc. Test device for lactase activity in a meconium sample. 4,524,133, Cl. 435-14.000.

U.S.D. Corp: *See—*
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UBE Industries, Ltd.: *See—*
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Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, to Sony Corporation. Magnetic transducer head utilizing magneto resistance effect with a bias field and partial saturation. 4,524,401, Cl. 360-113.000.

Uchida, Yoshihiro: *See—*
Arichi, Shigeru; and Uchida, Yoshihiro, 4,524,067, Cl. 514-33.000.

Uchikawa, Fusaoki: *See—*
Tanaka, Hideharu; Sekiya, Mutsuo; and Uchikawa, Fusaoki, 4,523,662, Cl. 181-249.000.

Ueda, Katsuhiko: *See—*
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; Ueda, Katsuhiko; and Nakamura, Hitoshi, 4,524,046, Cl. 419-8.000.

Ueda, Sachio; Toriyama, Shigehiro; and Matsushita, Yuichi, to Sony Corporation. Rotary magnetic head drum apparatus. 4,524,402, Cl. 360-130.240.

Uematsu, Takao; Honma, Yoshiharu; Tanno, Seikichi; Ito, Ran; Matsubayashi, Jun; and Yoshida, Tomio, to Hitachi, Ltd. Power controlling apparatus using friction material. 4,523,668, Cl. 192-107.00M.

Ueno, Hiroshi: *See—*
Yasui, Hiroyoshi; Yoshida, Teruo; Ueno, Hiroshi; and Tsumura, Katsunori, 4,523,862, Cl. 384-564.000.

Ugajin, Mitsuyuki: *See—*
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Ulrich, Jorn: *See—*
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Umeda, Tetsuo: *See—*
Egami, Kazunari; Umeda, Tetsuo; Tsukakoshi, Naoto; and Nishijima, Yasuo, 4,524,453, Cl. 382-1.000.

Umemoto, Makoto: *See—*
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Umemoto, Shuichi: *See—*
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Umezawa, Michio: *See—*
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Ummer, Jury E.: *See—*
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Ungarean, Gary L.: *See—*
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Union Carbide Corporation: *See—*
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Barber, Alan G., 4,524,159, Cl. 523-177.000.
Barnabeo, Austin E.; and Keogh, Michael J., 4,524,201, Cl. 528-395.000.
Domeier, Linda A., 4,524,162, Cl. 523-438.000.
Kaiser, Steven W., 4,524,234, Cl. 585-638.000.
McCain, James H., 4,524,236, Cl. 585-658.000.
Stamberger, Paul, 4,524,157, Cl. 521-156.000.
Taylor, Glenn A.; and Wolf, Philip F., 4,524,224, Cl. 568-858.000.
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Union Oil Company of California: *See—*
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Union Special Corporation: *See—*
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United Kingdom Atomic Energy Authority: *See—*
Wright, Christopher J.; and Sampson, Christopher F., 4,524,051, Cl. 423-247.000.

United States of America
Air Force: *See—*
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Champagne, Edwin B., 4,524,359, Cl. 343-16.00M.
Taboada, John; and Altschuler, Bruce R., 4,523,809, Cl. 350-163.000.

Army: *See—*
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Cobb, Bernie J., 4,523,524, Cl. 102-374.000.
Drzewiecki, Tadeusz, 4,523,611, Cl. 137-804.000.
Schmidt, Jimmy Q., 4,524,323, Cl. 324-179.000.
Scott, Edward A., 4,524,386, Cl. 358-113.000.

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Copeland, Robert J., 4,523,629, Cl. 165-1.000.
Fasching, George E.; Evans, Donald M.; and Ernest, John H., 4,523,465, Cl. 73-290.00V.
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Breckinridge, James B.; and O'Callaghan, Fred G., 4,523,846, Cl. 356-346.000.
Chandler, Joseph A., 4,523,741, Cl. 251-325.000.
Goss, Willis C.; Nelson, Mark D.; and McLauchlan, John M., 4,523,810, Cl. 350-320.000.
Ross, Bernd, deceased; Bickler, Donald B.; and Gallagher, Brian D., 4,524,237, Cl. 136-261.000.

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Bobb, Lloyd C., 4,524,322, Cl. 324-72.000.
Bottka, Nicholas; Schwartz, Robert W.; and Thun, Wayne E., 4,524,090, Cl. 427-53.100.
Christianson, Charles L.; and Spurlock, Richard, 4,524,279, Cl. 250-497.100.
Glasgow, D. Gerald; and Satanek, Joseph, 4,524,190, Cl. 525-370.000.

Hollmann, Martin; and Waclawik, Francis J., 4,523,538, Cl. 114-238.000.
Kretschmer, Frank F., 4,524,363, Cl. 343-17.2PC.
Lewis, Bernard L., 4,524,362, Cl. 343-17.2PC.
Scott, William R.; and Ih, Charles S., 4,523,469, Cl. 73-603.000.

U.S. Philips Corporation: *See—*
Cornick, John A., 4,524,376, Cl. 357-55.000.
de Rooij, Jacobus A. G., 4,524,383, Cl. 358-55.000.
Einhaus, Hermanus F., 4,524,438, Cl. 369-75.100.
Gartner, Georg, 4,524,297, Cl. 313-346.00R.
Kayser, Harald; and Pfeiffer, Wilfried, 4,523,420, Cl. 53-266.00R.
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United Steel Products Company: *See—*
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United Technologies Corporation: *See—*
Lesieur, Roger R., 4,524,113, Cl. 429-16.000.
Pike, Roscoe A.; and Lamm, Foster P., 4,524,176, Cl. 525-12.000.
Schwartz, Robert A.; and Duchesneau, Jerome G., 4,523,891, Cl. 416-157.00R.
Walter, Jerry D.; and Stogner, Claude R., 4,523,864, Cl. 384-613.000.

Unitika, Limited: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; and Hagiwara, Michiaki, 4,523,626, Cl. 164-463.000.

University of Akron: *See—*
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Vidalin, Jacques; and Aucouturier, Jean L., 4,524,427, Cl. 364-900.000.

University of Liverpool: *See—*
Gilding, Denis K.; and Clarke, Roy M., 4,524,036, Cl. 264-10.000.

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Lyman, John R., 4,523,965, Cl. 148-143.000.

University of Pittsburgh: *See—*
Gunduz, Nurten N.; and Gunduz, Dincer H., 4,523,826, Cl. 354-337.000.

University of Waterloo: *See—*
Baird, Malcolm H. I.; and Nirdosh, Inderjit, 4,523,456, Cl. 73-64.400.

UOP Inc.: *See—*
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,524,029, Cl. 260-419.000.
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,524,030, Cl. 260-419.000.
Haensel, Vladimir, 4,524,230, Cl. 585-467.000.
House, David W., 4,524,223, Cl. 568-715.000.
Qualeatti, Gail M.; Rosen, Bruce I.; Arena, Blaise J.; and Germanas, Dalia, 4,524,225, Cl. 568-885.000.

Upjohn Company, The: *See—*
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Ushikoshi, Kenichi, to Kabushiki Kaisha Suwa Seikosha. Multi-function analog electronic timepiece. 4,523,857, Cl. 368-157.000.

Usui Kokusai Sangyo Kabushiki Kaisha: *See—*
Ryu, Hideo, 4,523,554, Cl. 123-193.00C.

Valenty, Vivian B., to A. E. Staley Manufacturing Company. Detergent builder. 4,524,009, Cl. 252-89.100.

Valmet Oy: *See—*
Pullinen, Martti, 4,523,978, Cl. 162-300.000.

van der Lely, Cornelis. Tractor for agricultural purposes. 4,523,656, Cl. 180-24.000.

Vanderpool, Steven H., to Texaco Inc. Catalyst for preparation of linear polyethylenepolyamines. 4,524,143, Cl. 502-208.000.

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Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., 4,524,360, Cl. 343-17.10R.

van Kemenade, Johannes T. C.: *See—*
Rutten, Joseph; Hoeks, Gerardus P. F.; and van Kemenade, Johannes T. C., 4,524,300, Cl. 313-487.000.

Vanlerberghe, Guy: *See—*
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Van Loveren, Augustinus G.: *See—*
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Vascor Inc.: *See—*
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Vatterott, Karl-Heinz: *See—*
Hirzinger, Peter; and Vatterott, Karl-Heinz, 4,523,866, Cl. 400-124.000.

Vaughan, James M., to Borg-Warner Chemicals, Inc. Polyphenylene ether compositions having improved processability. 4,524,179, Cl. 525-68.000.

VEB Kombinat Medizin-und Labortechnik Leipzig: *See—*
Breustedt, Alfred; Taschner, Heinz; Korf, Rainer; and Lorenz, Renate, 4,523,912, Cl. 433-202.000.

Veltri, Douglas F. Dispensing cap. 4,523,694, Cl. 221-265.000.

Venkatesan, Valadi N., to Mobil Oil Corporation. Oil recovery process employing CO_2 produced in situ. 4,523,642, Cl. 166-272.000.

Verma, Manoranjan P. High voltage insulator assemblage having specially-chosen series resistance. 4,524,404, Cl. 361-132.000.

Vessey, John R.; Patel, Chandrakant M.; and Armstrong, Jack, to Excel Corporation. Transfer device. 4,523,673, Cl. 198-486.000.

Victor Company of Japan, Limited: *See—*
Fujii, Yasuhiko, 4,524,445, Cl. 371-47.000.
Kasuga, Masao, 4,524,422, Cl. 364-724.000.
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Vidalin, Jacques; and Aucouturier, Jean L., to University of Bordeaux 1, The. Method for making comparisons between reference logical entities and logical entities proceeding from a file. 4,524,427, Cl. 364-900.000.

Viio, Matti. Tool holder. 4,523,702, Cl. 224-101.000.

Viswanathan, Tito; and Richardson, Thomas, to Chemical Process Corporation. Thermosetting adhesive resins. 4,524,164, Cl. 524-14.000.

Vives, Charles, to Aluminium Pechiney. Process for casting metals in which magnetic fields are employed. 4,523,628, Cl. 164-468.000.

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Voest-Alpine Aktiengesellschaft: *See—*
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Voges, Robert W.: *See—*
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Voisin, Eugene J.; Matthelie , Jean-Pierre A.; and Mesny, Jacques A., to Institut Textile de France. Regulating device for the length of thread absorbed by a knitting machine. 4,523,440, Cl. 66-146.000.

Volkert, Bruce C.: *See—*
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Volkmann, Klaus: *See—*
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Vujcich, Mary R.: *See—*
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Wang, Shu-Chieh P.; and Sherwin, Martin B., 4,524,226, Cl. 567 948.000.

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Hollmann, Martin; and Waclawik, Francis J., 4,523,538, Cl. 114-238.000.

Wagner, William R.: *See—*
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Wahlquist, Clayton C., to Tektronix, Inc. Convergence control system for multigun CRT. 4,524,307, Cl. 315-368.000.

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Wakashima, Yoshiaki. Method of fabricating a resin mold type semiconductor device. 4,523,371, Cl. 29-588.000.

Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Juergen, to Hoechst Aktiengesellschaft. Open-cell/microporous molded article. 4,524,155, Cl. 521-64.000.

Walker, Bertice E., Jr.; and Hyder, Richard J., to Allied Corporation. Method of assembling an actuating lever to a potentiometer. 4,523,373, Cl. 29-593.000.

Walker, Graham S.: *See—*
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Searby, Anthony D.; and Walker, Ian C., 4,524,421, Cl. 364-521.000.

Walker, Jack A., to PORTEC. Rear travel guidance system. 4,524,314, Cl. 318-587.000.

Walker, Robert L. Shaker. 4,523,855, Cl. 366-211.000.

Wally, Michael, to Chemie und Filter GmbH Verfahrenstechnik KG. Diaphragm pump for use in an explosive atmosphere. 4,523,902, Cl. 417-410.000.

Walter, Jerry D.; and Stogner, Claude R., to United Technologies Corporation. Tandem bearing construction. 4,523,864, Cl. 384-613.000.

Walter, John, to Continental Group, Inc., The. Adhesive applicator. 4,523,540, Cl. 118-63.000.

Walter, Thomas J.; and Ranken, Paul F., to Ethyl Corporation. 4-(4-Pyridinyl)isatoic anhydride. 4,524,203, Cl. 544-94.000.

Wan, Chung-Chu; Wang, Rong Y.; and Kapoor, Deepak, to Allied Corporation. Boron containing rapid solidification alloy and method of making the same. 4,523,950, Cl. 75-123.00B.

Wang, Rong Y.: *See—*
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Wang, Shu-Chieh P.; and Sherwin, Martin B., to W. R. Grace & Co. Preparation of nitro compounds by vapor phase nitration of aldehydes. 4,524,226, Cl. 562-948.000.

Wang, Taylor G.: *See—*
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Wang, Tweng-Huang. Automatic pneumatic hydraulic jack. 4,523,743, Cl. 254-93.00H.

Wanner, Roland: *See—*
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Warren, Harold C., III: *See—*
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Warren, Wiley W. Crab meat extractor and method of extraction. 4,523,349, Cl. 17-46.000.

Waschow, Dale T. Solar heating apparatus with solar heat receiving means and heat storage and distribution means. 4,523,576, Cl. 126-422.000.

Washington, Leonard. Car top rod and reel carrier apparatus. 4,523,704, Cl. 224-328.000.

Watanabe, Koji, to Matsushita Electric Industrial Co., Ltd. Sound reproduction system having sonic image localization networks. 4,524,451, Cl. 381-1.000.

Watanabe, Makio: *See—*
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Watkins, Dennis W., to Air Sensors, Inc. Hot wire anemometer. 4,523,461, Cl. 73-204.000.

Watkins, Jonathan, to Watkins Manufacturing Co. Means providing moving water stream ejecting into spa tank. 4,523,340, Cl. 4-542.000.

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Watson, Stewart C., to Watson Bowman Associates. Reinforced elastomer products. 4,524,174, Cl. 524-566.000.

Weber, Lynda D.; Merkel, Paul B.; and Warren, Harold C., III, to Eastman Kodak Company. Substituted 4-nitrophenylazo-1-naphthol cyan dyes having improved light stability. 4,524,122, Cl. 430-223.000.

Weber, Robert J., Jr., to Union Carbide Corporation. High solids acrylic coating systems. 4,524,183, Cl. 525-162.000.

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Weck, Franz, to H. Krantz GmbH & Co. Volume flow or pressure regulating device. 4,523,609, Cl. 137-499.000.

Weeks, Gary L.: *See—*
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Weidenhaupt, Wolfgang: *See—*
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Wermuth, Camille-Georges: *See—*
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Werner, Walter; Herzog, Klaus; and Szenger, Franz, to Carl-Zeiss-Stiftung. Work-contact probe head for coordinate-measuring instruments. 4,523,382, Cl. 33-169.00R.

Wesseler, Martin G.: *See—*
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Wheeler, Lee A.: *See—*
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Wick, Arnold, to Ciba-Geigy Corporation. Process for the mass coloration of polymers. 4,524,168, Cl. 524-190.000.

Widditsch, H. Robert. Hook assembly. 4,523,357, Cl. 24-230.50R.

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Wiegers, Wilhelmus J.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Perfumery uses of esters of phenyl alkanols. 4,524,021, Cl. 252-522.00R.

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Wilhelm, Gary, to Demro Products, Inc. Combined selector, safety and trigger assembly for automatic firearms. 4,523,510, Cl. 89-141.000.

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Willis, Donald H., to RCA Corporation. Regulated power supply circuit. 4,524,411, Cl. 363-21.000.

Willis, Donald H.; and Fuhrer, Jack S., to RCA Corporation. Digital signal processing apparatus having digital dither. 4,524,447, Cl. 375-26.000.

Williston, William H., to Norton Company. Method of manufacturing composite grinding wheel. 4,523,930, Cl. 51-293.000.

Wilner, L. Bruce; and Wong, Herbert V., to Becton, Dickinson and Company. High temperature layered silicon structures. 4,523,964, Cl. 148-33.200.

Wilson, Herbert C.; and Sankaran, Perumalagaram S., to Dresser Industries, Inc. Arm release system for well logging apparatus. 4,523,640, Cl. 166-64.000.

Wilson, Lonny L.: *See—*
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Wilson Sales Company, Inc.: *See—*
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Wilson, Stephen S.: *See—*
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Windischmann, Henry: *See—*
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Windmoller & Holscher: *See—*
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Wixon, Harold E., to Colgate-Palmolive Company. Fabric softening and fluffing detergent composition. 4,524,012, Cl. 252-174.000.

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Wolf, Peter H.; Dobson, Thomas A.; and Rozo, Rafael, to Dataproducts Corporation. Print hammer assembly method. 4,524,259, Cl. 219-69.00R.
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Wright, David A. Measuring apparatus. 4,523,380, Cl. 33-1.00M.
Wright State University: *See—*
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Yamac, Yucel, to Braun Aktiengesellschaft. Electric travel iron using portable hair-dryer as the heat source. 4,524,263, Cl. 219-249.000.
Yamada, Takahiro, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Ink jet charge phasing apparatus. 4,524,366, Cl. 346-75.000.
Yamada, Yoshiyasu. Window mould. 4,523,783, Cl. 296-93.000.
Yamada, Yu, to Canon Kabushiki Kaisha. Image forming apparatus. 4,523,838, Cl. 355-66.000.
Yamagishi, Seiichi: *See—*
Nakatani, Keiji; Yamagishi, Seiichi; and Ishii, Kenjiro, 4,524,315, Cl. 318-603.000.
Yamaguchi, Namio: *See—*
Isobe, Mitsuo; Kutsuki, Tetsuo; Yamaguchi, Namio; and Tanaka, Toshihide, 4,524,389, Cl. 358-188.000.
Yamaguchi, Takaharu: *See—*
Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,523,670, Cl. 198-403.000.
Yamaguchi, Tomoyuki: *See—*
Kakeno, Sadao; Ameyama, Minoru; Ichikawa, Kenichi; Umezawa, Michio; and Yamaguchi, Tomoyuki, 4,524,365, Cl. 346-75.000.
Yamaji, Katsuhiko: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, 4,523,635, Cl. 165-104.120.
Yamamoto, Fumio: *See—*
Kawakatsu, Akira; and Yamamoto, Fumio, 4,524,410, Cl. 362-255.000.
Yamamoto, Hachizou: *See—*
Nishimura, Katsuji; and Yamamoto, Hachizou, 4,524,267, Cl. 235-379.000.
Yamamoto, Kazuhiro; and Isono, Tokio, to Honda Giken Kogyo Kabushiki Kaisha. Rear suspension for a motorcycle. 4,523,659, Cl. 180-227.000.
Yamamoto, Kazuji: *See—*
Hisatake, Michio; Yamamoto, Kazuji; Hyodo, Toru; and Takahashi, Yoshitaka, 4,524,309, Cl. 318-434.000.
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, to Sumitomo Chemical Company, Ltd.; and Sumitomo Rubber Industries, Ltd. Branched polymer, process for the preparation thereof, tire tread rubber composition and tire. 4,523,618, Cl. 152-209.00R.
Yamamoto, Masahiro: *See—*
Nagashima, Masato; Katsuyama, Mikizo; and Yamamoto, Masahiro, 4,523,805, Cl. 350-96.240.
Yamamoto, Masanori: *See—*
Sugisawa, Ko; Yamamoto, Masanori; Shibuki, Masaru; Nomura, Yukihiro; Sengoku, Kouji; and Higashine, Seiji, 4,524,080, Cl. 426-236.000.
Yamamoto, Shu: *See—*
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Okada, Akira, 4,523,802, Cl. 350-96.120.
Yamamoto, Yoshio: *See—*
Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, 4,524,018, Cl. 252-522.00A.
Yamasaki, Yasuo: *See—*
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,524,055, Cl. 423-328.000.
Yamashita, Mitsuo; Oda, Goro; and Kamiya, Masashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Polygonal mirror optical deflector. 4,523,800, Cl. 350-6.700.
Yamato, Akihiro; and Kishi, Noriyuki, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply control method for internal combustion engines at acceleration. 4,523,571, Cl. 123-492.000.
Yamazaki, Kaoru; Kurioka, Shunichiro; Sakata, Mitsuya; and Ogawa, Takahiro, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Mod-acrylic synthetic fiber having an excellent devitrification preventing property and a process for preparing the same. 4,524,193, Cl. 526-79.000.
Yamazaki, Shinichi: *See—*
Miki, Shinji; Nishio, Toyokazu; Matsuyama, Shinzo; and Yamazaki, Shinichi, 4,523,874, Cl. 405-43.000.
Yan, Tsoung-Yuan: *See—*
Fowles, Patrick E.; and Yan, Tsoung-Yuan, 4,524,227, Cl. 585-408.000.
Fowles, Patrick E.; and Yan, Tsoung-Yuan, 4,524,228, Cl. 585-408.000.
Fowles, Patrick E.; and Yan, Tsoung-Yuan, 4,524,231, Cl. 585-469.000.
Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, to Toyota Jidosha Kabushiki Kaisha; and Taihoo Seiki Co., Ltd. Workpiece transferring apparatus. 4,523,670, Cl. 198-403.000.
Yang, David S.: *See—*
Gower, Irving W.; Cherry, Carl J.; and Yang, David S., 4,523,949, Cl. 75-24.000.
Yasui, Hiroyoshi; Yoshida, Teruo; Ueno, Hiroshi; and Tsumura, Katsunori, to Koyo Seiko Company Limited. Tapered roller bearing. 4,523,862, Cl. 384-564.000.
Yazolino, Lauren F.: *See—*
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert G.; Ha, Eric P. L.; and Kerman, Stephen, 4,524,244, Cl. 179-2.0DP.
Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, to Chisso Corporation; and S.T. Chemical Co., Ltd. Lasting fragrant article using gradually decomposing perfume. 4,524,018, Cl. 252-522.00A.
Yevich, Joseph P.: *See—*
New, James S.; and Yevich, Joseph P., 4,524,206, Cl. 544-230.000.
Yokoo, Makoto; Nakatomi, Yoshitsugu; and Hashimoto, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Copying apparatus with openable upper housing. 4,523,831, Cl. 355-3.00R.
Yokota, Mitsuyoshi; and Matsumoto, Akio, to Mitsubishi Denki Kabushiki Kaisha. Control for pumping devices used in vehicles. 4,524,311, Cl. 318-481.000.
Yokota, Mitsuyoshi: *See—*
Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,524,312, Cl. 318-481.000.
Yokoyama, Hiroshi: *See—*
Kuge, Toshio; Yokoyama, Hiroshi; Nogita, Shunsuke; Nakamura, Yoichi; and Muroi, Katsumi, 4,523,927, Cl. 44-1.00B.

Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Pulse-width modulation circuit with carrier signal frequency control. 4,524,335, Cl. 332-9.00R.
Yokoyama, Naokata, to Ciba-Geigy Corporation. Certain -2-heterocycle substituted pyrazoloquinolines. 4,524,146, Cl. 514-273.000.
Yokoyama, Tatsuro: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.
Yonezawa, Tatuo: *See—*
Kimura, Tetsuo; Fujii, Hirofumi; Yuasa, Hayami; and Yonezawa, Tatuo, 4,524,351, Cl. 340-629.000.
Yoo, Byung E. Air ventilator. 4,523,434, Cl. 62-116.000.
Yordanov, Nikolay V.: *See—*
Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; Angelov, Mihail H.; and Yordanov, Nikolay V., 4,523,708, Cl. 228-37.000.
Yoshibayashi, Shigeru: *See—*
Shima, Ichiji; Yoshibayashi, Shigeru; and Taniguti, Ryosuke, 4,524,355, Cl. 340-870.130.
Yoshida, Hatsuyoshi; Fukutome, Michio; Ohuchi, Makoto; and Ohta, Jyun, to Kabushiki Kaisha Tokai Rika Denki Seisakusho; and Toyota Jidosha Kabushiki Kaisha. Pressure switch. 4,524,254, Cl. 200-83.00R.
Yoshida, Keiichiro. Hot working method and apparatus in the swaging working technology. 4,523,445, Cl. 72-69.000.
Yoshida, Ken: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, 4,523,635, Cl. 165-104.120.
Yoshida Kogyo K.K.: *See—*
Gartner, Karl, 4,523,518, Cl. 98-31.000.
Gartner, Karl, 4,523,716, Cl. 237-56.000.
Yoshida, Nobuyuki: *See—*
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.
Yoshida, Teruo: *See—*
Yasui, Hiroyoshi; Yoshida, Teruo; Ueno, Hiroshi; and Tsumura, Katsunori, 4,523,862, Cl. 384-564.000.
Yoshida, Tomio: *See—*
Uematsu, Takao; Honma, Yoshiharu; Tanno, Seikichi; Ito, Ran; Matsubayashi, Jun; and Yoshida, Tomio, 4,523,668, Cl. 192-107.00M.
Yoshikawa, Hideo: *See—*
Baba, Takeshi; Nose, Noriyuki; Yoshikawa, Hideo; Minoura, Kazuo; Hasu, Akinori; Minami, Setsuo; and Matsuoka, Kazuhiko, 4,523,801, Cl. 350-6.800.
Yoshino Kogyosho Co., Ltd.: *See—*
Hayashi, Yoshiaki; Haraguchi, Kouichi; and Koshidaka, Yukio, 4,524,045, Cl. 264-521.000.
Yoshino, Yasuhisa: *See—*
Kodera, Masao; Akita, Shigeyuki; and Yoshino, Yasuhisa, 4,524,356, Cl. 340-904.000.
Yoshioka, Junichi; Koizumi, Koichi; Kanai, Akira; and Shiba, Kazuo, to Citizen Watch Co., Ltd. Composite guide mechanism. 4,523,410, Cl. 51-166.00R.
Youngberg, Charles: *See—*
Miller, Charles G., deceased; Stephens, James B.; and Youngberg, Charles, 4,523,808, Cl. 350-146.000.
Yuasa, Hayami: *See—*
Kimura, Tetsuo; Fujii, Hirofumi; Yuasa, Hayami; and Yonezawa, Tatuo, 4,524,351, Cl. 340-629.000.
Yurchenco, James R.: *See—*
Fish, Russell, III; and Yurchenco, James R., 4,524,242, Cl. 178-4.000.
Zacharias, Ellis M., Jr., to Nusonics, Inc. Sonic flow meter having improved flow straighteners. 4,523,478, Cl. 73-861.280.
Zacharias, Theodor, to Kocks Technik GmbH & Co. Tube testing presses. 4,523,455, Cl. 73-49.500.
Zado, Frank M., to AT&T Technologies, Inc. Soldering composition and method of soldering therewith. 4,523,712, Cl. 228-207.000.
Zannucci, Joseph S.: *See—*
Musser, Harry R.; Strickland, Thomas H.; and Zannucci, Joseph S., 4,524,165, Cl. 524-99.000.
Zavattini, Omero: *See—*
Greco, Alberto; Bertolini, Guglielmo; and Zavattini, Omero, 4,524,187, Cl. 525-332.100.
Zibell, J. Scott. Method and apparatus for automatic detection and treatment of ventricular fibrillation. 4,523,595, Cl. 128-419.00D.
Zilko, John L.: *See—*
Hartman, Robert L.; Koszi, Louis A.; Williams, Richard S.; and Zilko, John L., 4,523,961, Cl. 148-1.500.
Zimpro Inc.: *See—*
Sit, Song-P., 4,524,049, Cl. 423-65.000.
Ziph, Benjamin: *See—*
Meijer, Roelf J.; and Ziph, Benjamin, 4,523,636, Cl. 165-104.260.
Zivin, Justin A. Reduction of stroke damage. 4,524,072, Cl. 514-280.000.
Zolnowsky, John E.: *See—*
Mills, Marvin A., Jr.; Moyer, William C.; MacGregor, Douglas B.; and Zolnowsky, John E., 4,524,415, Cl. 364-200.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF JUNE, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Becton Dickinson & Company: *See—*
Oswin, Harry G.; and Blurton, Keith F., Re. 31,914, Cl. 204-1.00T.
Oswin, Harry G.; and Blurton, Keith F., Re. 31,915, Cl. 204-412.000.
Oswin, Harry G.; and Blurton, Keith F., Re. 31,916, Cl. 204-412.000.
Blurton, Keith F.: *See—*
Oswin, Harry G.; and Blurton, Keith F., Re. 31,914, Cl. 204-1.00T.
Oswin, Harry G.; and Blurton, Keith F., Re. 31,915, Cl. 204-412.000.
Oswin, Harry G.; and Blurton, Keith F., Re. 31,916, Cl. 204-412.000.
Butter, Stephen A.; and Chester, Arthur W., to Mobil Oil Corporation. Aromatics processing catalysts. Re. 31,919, Cl. 502-66.000.
Chester, Arthur W.: *See—*
Butter, Stephen A.; and Chester, Arthur W., Re. 31,919, Cl. 502-66.000.
Guillaume, Emile A. H., to Zelacolor Systems Establishment. Photographic color separation equipment. Re. 31,918, Cl. 354-100.000.
Mitchell, Stephen W. Valve timing mechanisms. Re. 31,917, Cl. 123-90.150.
Mobil Oil Corporation: *See—*
Butter, Stephen A.; and Chester, Arthur W., Re. 31,919, Cl. 502-66.000.
Oswin, Harry G.; and Blurton, Keith F., to Becton Dickinson & Company. Electrochemical gas detection method. Re. 31,914, Cl. 204-1.00T.
Oswin, Harry G.; and Blurton, Keith F., to Becton Dickinson & Company. Gas detecting and measuring device. Re. 31,915, Cl. 204-412.000.
Oswin, Harry G.; and Blurton, Keith F., to Becton Dickinson & Company. Electrochemical detection cell. Re. 31,916, Cl. 204-412.000.
Zelacolor Systems Establishment: *See—*
Guillaume, Emile A. H., Re. 31,918, Cl. 354-100.000.

LIST OF DESIGN PATENTEES

American Cyanamid Company: *See—*
Mansau, Serge, 279,262, Cl. D9-423.000.
American Home Products Corporation: *See—*
Curtis, H. Edward, 279,258, Cl. D9-339.000.
Andrews, Arlan K., Sr.; Doyle, Francis S.; and McGarvey, John N., to AT&T Bell Laboratories. Housing for an automatic dialing telephone set or similar article. 279,288, 6-18-85, Cl. D14-52.000.
Andrus, Julia, to Authentica, Inc. Snowflake pin. 279,277, 6-18-85, Cl. D11-44.000.
Apco Graphics, Inc.: *See—*
Cobb, Ronald W., 279,301, Cl. D20-42.000.
AT&T Bell Laboratories: *See—*
Andrews, Arlan K., Sr.; Doyle, Francis S.; and McGarvey, John N., 279,288, Cl. D14-52.000.
Smith, Arnold R., 279,286, Cl. D13-40.000.
Smith, Arnold R., 279,287, Cl. D13-40.000.
AT&T Information Systems: *See—*
Bhat, Ghanshyam A.; Chan, Eric P. P.; Lamancusa, John S.; Sylvester, Gordon E.; and Varela, Jose R., 279,289, Cl. D14-60.000.
Atlantic Promotions, Inc.: *See—*
Lang, Milan, 279,256, Cl. D9-337.000.
Authentica, Inc.: *See—*
Andrus, Julia, 279,277, Cl. D11-44.000.
Ball, Ralph V.; and Drake, James E., to J&J Recreation, Inc. Motorized bumper boat. 279,282, 6-18-85, Cl. D12-307.000.
Balonick, Robert, to Marden Mfg. Inc. Combined seat and partition unit. 279,237, 6-18-85, Cl. D6-335.000.
Bergquist, Gregory D., to Meadowcraft Inc. Chair. 279,244, 6-18-85, Cl. D6-376.000.
Berry, Loren E.: *See—*
Smith, Lloyd T.; Berry, Loren E.; Ediger, Glen W.; Hindman, Thomas E.; and Ten Eyck, Richard E., 279,254, Cl. D8-107.000.
Bhat, Ghanshyam A.; Chan, Eric P. P.; Lamancusa, John S.; Sylvester, Gordon E.; and Varela, Jose R., to AT&T Information Systems. Handset telephone base. 279,289, 6-18-85, Cl. D14-60.000.
Bixler, Kenneth D.; and Ralphs, Robert E., to Packaging Corporation of America. Carrier for beverage cups. 279,259, 6-18-85, Cl. D9-341.000.
Black & Decker Inc.: *See—*
McCloskey, Donald R.; and Gogoll, Thornton H., 279,319, Cl. D32-15.000.
Blance, Andrew J.: *See—*
Laude, Michael E.; Pendleton, Thomas J.; Smith, Douglas W.; Dawson, Robert E.; and Blance, Andrew J., 279,295, Cl. D15-66.000.
Blocksom, Dutro; and DuPree, John C., to Procter & Gamble Company, The. Bottle. 279,261, 6-18-85, Cl. D9-386.000.
Bouille, Eric. Case for wristwatch. 279,269, 6-18-85, Cl. D10-30.000.
Bouille, Eric. Case for wristwatch. 279,270, 6-18-85, Cl. D10-30.000.
Bouille, Eric. Case for wristwatch. 279,271, 6-18-85, Cl. D10-30.000.
Brockway Plastics, Inc.: *See—*
Morris, Glenn H., 279,267, Cl. D9-454.000.
Brother Kogyo Kabushiki Kaisha: *See—*
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 279,296, Cl. D18-1.000.
Cable Electric Products, Inc.: *See—*
Schwartz, Frederic W., 279,285, Cl. D13-30.000.
Chan, Eric P. P.: *See—*
Bhat, Ghanshyam A.; Chan, Eric P. P.; Lamancusa, John S.; Sylvester, Gordon E.; and Varela, Jose R., 279,289, Cl. D14-60.000.
Citizen Watch Co., Ltd.: *See—*
Matsuo, Jiro, 279,276, Cl. D11-4.000.
Cobb, Ronald W., to Apco Graphics, Inc. Suspended ceiling sign. 279,301, 6-18-85, Cl. D20-42.000.
Conti, Rino: *See—*
Daenen, Robert H. C. M.; and Conti, Rino, 279,251, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, 279,252, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, 279,253, Cl. D7-79.000.
Cory, Milton T., to Radiator Specialty Company, Incorporated. Traffic control drum. 279,275, 6-18-85, Cl. D10-109.000.
Cosden Technology, Inc.: *See—*
Fortuna, Vincent E., 279,260, Cl. D9-349.000.
Craft, Inc.: *See—*
Roy, Leo T., 279,255, Cl. D8-327.000.
Curtis, H. Edward, to American Home Products Corporation. Dispensing container for pills or the like. 279,258, 6-18-85, Cl. D9-339.000.
Curtis Wagner Co., Inc.: *See—*
Wagner, Curtis D., 279,279, Cl. D11-143.000.
Daenen, Robert H. C. M.; and Conti, Rino, to Dart Industries Inc. Covered food storage container or the like. 279,251, 6-18-85, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, to Dart Industries Inc. Food storage container or the like. 279,252, 6-18-85, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, to Dart Industries Inc. Food storage container or the like. 279,253, 6-18-85, Cl. D7-79.000.
Dart Industries Inc.: *See—*
Daenen, Robert H. C. M.; and Conti, Rino, 279,251, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, 279,252, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, 279,253, Cl. D7-79.000.
Davidson, William G., to Harley-Davidson Motor Co., Inc. Motorcycle engine cylinder. 279,294, 6-18-85, Cl. D15-5.000.
Dawson, Robert E.: *See—*
Laude, Michael E.; Pendleton, Thomas J.; Smith, Douglas W.; Dawson, Robert E.; and Blance, Andrew J., 279,295, Cl. D15-66.000.
Degussa Aktiengesellschaft: *See—*
Pohlmann, Horst D., 279,312, Cl. D23-148.000.
Diffrient, Niels, to Knoll International, Inc. Chair. 279,241, 6-18-85, Cl. D6-366.000.
DiMaria, Steven. Applique for wearing apparel. 279,322, 6-18-85, Cl. D33-9.00C.
Doyle, Francis S.: *See—*
Andrews, Arlan K., Sr.; Doyle, Francis S.; and McGarvey, John N., 279,288, Cl. D14-52.000.
Drake, James E.: *See—*
Ball, Ralph V.; and Drake, James E., 279,282, Cl. D12-307.000.
DuPree, John C.: *See—*
Blocksom, Dutro; and DuPree, John C., 279,261, Cl. D9-386.000.
Dvorak, Edward E. Ear tag for animals. 279,318, 6-18-85, Cl. D30-43.000.

Ediger, Glen W.: *See—*
Smith, Lloyd T.; Berry, Loren E.; Ediger, Glen W.; Hindman, Thomas E.; and Ten Eyck, Richard E., 279,254, Cl. D8-107.000.
Emori, Eisaku, to Kett Electric Laboratory. Grain moisture tester. 279,274, 6-18-85, Cl. D10-56.000.
Epson Corporation: *See—*
Maruyama, Naoyuki, 279,292, Cl. D14-111.000.
Fausel, Stephen A. Wall mounted shelf or similar article. 279,249, 6-18-85, Cl. D6-570.000.
Feingold, Irene B.: *See—*
Feingold, Stanley Z.; and Feingold, Irene B., 279,233, Cl. D3-35.000.
Feingold, Stanley Z.; and Feingold, Irene B. Slide holder. 279,233, 6-18-85, Cl. D3-35.000.
Ferdinand, Irwin J.; Handler, Milton E.; Sylvan, Richard; and Peterson, Michael, to Hirsh Company. Work stool. 279,238, 6-18-85, Cl. D6-350.000.
Fiskars Manufacturing Corporation: *See—*
Smith, Lloyd T.; Berry, Loren E.; Ediger, Glen W.; Hindman, Thomas E.; and Ten Eyck, Richard E., 279,254, Cl. D8-107.000.
Fortuna, Vincent E., to Cosden Technology, Inc. Packaging cup with a pedestal base. 279,260, 6-18-85, Cl. D9-349.000.
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, to Brother Kogyo Kabushiki Kaisha. Typewriter. 279,296, 6-18-85, Cl. D18-1.000.
Gamm, Robert J., to Kangaroos U.S.A., Inc. Athletic shoe. 279,232, 6-18-85, Cl. D2-309.000.
Giugiaro, Giorgetto, to Kabushiki Kaisha Hattori Seiko. Wristwatch. 279,273, 6-18-85, Cl. D10-38.000.
Gogoll, Thornton H.: *See—*
McCloskey, Donald R.; and Gogoll, Thornton H., 279,319, Cl. D32-15.000.
Goldman, Jerome; Goldman, Marvin; Philips, Gerald; and Pesin, Joseph, to Penn Plax Plastics. Aquarium ornament. 279,317, 6-18-85, Cl. D30-12.000.
Goldman, Marvin: *See—*
Goldman, Jerome; Goldman, Marvin; Philips, Gerald; and Pesin, Joseph, 279,317, Cl. D30-12.000.
Handler, Milton E.: *See—*
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Harley-Davidson Motor Co., Inc.: *See—*
Davidson, William G., 279,294, Cl. D15-5.000.
Heine, Robert A. Carrying bag for wader's boots. 279,234, 6-18-85, Cl. D3-38.000.
Hellberg, Arne, to Hellberg Protection AB. Pocket adapter for fitting an accesory to a safety helmet. 279,231, 6-18-85, Cl. D2-260.000.
Hellberg Protection AB: *See—*
Hellberg, Arne, 279,231, Cl. D2-260.000.
Henkels, Walter. Table clock. 279,268, 6-18-85, Cl. D10-26.000.
Hindman, Thomas E.: *See—*
Smith, Lloyd T.; Berry, Loren E.; Ediger, Glen W.; Hindman, Thomas E.; and Ten Eyck, Richard E., 279,254, Cl. D8-107.000.
Hirsh Company: *See—*
Ferdinand, Irwin J.; Handler, Milton E.; Sylvan, Richard; and Peterson, Michael, 279,238, Cl. D6-350.000.
Holloway, Richard D., to Saltwater International Limited. Combined tumbler and drinking tube. 279,250, 6-18-85, Cl. D7-6.000.
Hutz, John A., to Uniroyal, Inc. Pneumatic tire tread and buttress. 279,281, 6-18-85, Cl. D12-149.000.
Imatt, Alexander; and Kuna, Wayne A., to Marvin Glass & Associates. Toy kitchen cart. 279,304, 6-18-85, Cl. D21-122.000.
Ishida, Masami; and Isono, Keinosuke, to Terumo Corporation. Tubing slide clamp. 279,314, 6-18-85, Cl. D24-53.000.
Isono, Keinosuke: *See—*
Ishida, Masami; and Isono, Keinosuke, 279,314, Cl. D24-53.000.
Itoh, Masafumi: *See—*
Funato, Toshiaki; Morishita, Masayuki; and Itoh, Masafumi, 279,296, Cl. D18-1.000.
Ivanusic, Robert L. Drainboard. 279,320, 6-18-85, Cl. D32-56.000.
J&J Recreation, Inc.: *See—*
Ball, Ralph V.; and Drake, James E., 279,282, Cl. D12-307.000.
Jernigan, Thomas E. Chaise lounge frame. 279,240, 6-18-85, Cl. D6-361.000.
Jernigan, Thomas E. Seat frame. 279,242, 6-18-85, Cl. D6-370.000.
Johansson, Tord G. I. Lid assembly for containers or the like. 279,266, 6-18-85, Cl. D9-450.000.
Kabushiki Kaisha Bandai: *See—*
Murakami, Katsushi, 279,305, Cl. D21-150.000.
Kabushiki Kaisha Hattori Seiko: *See—*
Giugiaro, Giorgetto, 279,273, Cl. D10-38.000.
Kabushiki Kaisha Popy: *See—*
Murakami, Katsushi, 279,306, Cl. D21-150.000.
Murakami, Katsushi, 279,307, Cl. D21-150.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Maruyama, Naoyuki, 279,292, Cl. D14-111.000.
Kangaroos U.S.A., Inc.: *See—*
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52 FP 4,524,238
68.5 4,524,239
4,524,240
119 R 4,524,241

CLASS 175
4.51 4,523,649
4.56 4,523,650
45 4,523,651
61 4,523,652

CLASS 177
147 4,523,653

CLASS 178
4 4,524,242
19 4,523,654

CLASS 179
2 DP 4,524,244
5 R 4,524,243
18 FA 4,524,246
18 HB 4,524,245
111 R 4,524,247

CLASS 180

9.1	4,523,655
24	4,523,656
68.1	4,523,657
68.5	4,523,658
227	4,523,659
228	4,523,660

CLASS 181

129	4,523,661
249	4,523,662
403	4,523,663

CLASS 182

233	4,523,664

CLASS 187

29 R	4,523,665

CLASS 188

218 XL	4,523,666

CLASS 192

0.092	4,523,667
107 M	4,523,668

CLASS 198

313	4,523,669
403	4,523,670
422	4,523,671
461	4,523,672
486	4,523,673
843	4,523,674

CLASS 200

5 B	4,524,248
5A	4,524,249
33 R	4,524,250
38 E	4,524,252
42 R	4,524,251
68.2	4,524,253
83 R	4,524,254
	4,524,255
86 R	4,524,256
148 A	4,524,257

CLASS 202

99	4,523,979

CLASS 204

1 T	Re.31,914
59 R	4,523,980
72	4,523,981
159.15	4,523,982
	4,523,983
296	4,523,984
298	4,523,985
412	Re.31,915
	Re.31,916

CLASS 206

44 R	4,523,675
150	4,523,676
158	4,523,677
287.1	4,523,678
370	4,523,679
387	4,523,680
507	4,523,681

CLASS 208

10	4,523,986
157	4,523,987

CLASS 209

11	4,523,988
44	4,523,989
138	4,523,990
166	4,523,991
638	4,523,682

CLASS 210

232	4,523,992
297	4,523,993
500.2	4,523,994
504	4,523,995
	4,523,996
635	4,523,997
638	4,523,998
639	4,523,999
649	4,524,000
713	4,524,001

CLASS 211

175	4,523,722
190	4,523,683

CLASS 212

152	4,523,686
175	4,523,684
247	4,523,685

CLASS 215

25	4,523,687
220	4,523,688
232	4,523,689

CLASS 219

10.55 B	4,524,258
69 R	4,524,259
75	4,524,260
121 EL	4,524,261
213	4,524,262
249	4,524,263
497	4,524,264

CLASS 220

262	4,523,690
266	4,523,691
306	4,523,692
337	4,523,693

CLASS 221

265	4,523,694

CLASS 222

135	4,523,696
185	4,523,697
	4,523,698
189	4,523,699
505	4,523,700

CLASS 223

94	4,523,701

CLASS 224

101	4,523,702
224	4,523,703
328	4,523,704

CLASS 226

127	4,523,705

CLASS 227

7	4,523,706
8	4,523,695
19	4,523,707

CLASS 228

37	4,523,708
48	4,523,709
111	4,523,710
198	4,523,711
207	4,523,712

CLASS 235

95 R	4,524,265
377	4,524,266
379	4,524,267
	4,524,268
449	4,524,269
494	4,524,270

CLASS 236

1 C	4,523,713
46 R	4,523,714
49	4,523,715

CLASS 237

56	4,523,716

CLASS 239

	4,523,717
106	4,523,718
533.12	4,523,719

CLASS 241

37.5	4,523,720
61	4,523,721

CLASS 242

43 R	4,523,723
54 R	4,523,724
58	4,523,725
84.2 R	4,523,726
192	4,523,727

CLASS 244

3.29	4,523,728
115	4,523,729
122 R	4,523,730
137 R	4,523,731

CLASS 248

123.1	4,523,732
210	4,523,733
251	4,523,734
476	4,523,735
483	4,523,736

CLASS 250

233	4,524,271
265	4,524,272
269	4,524,273
	4,524,274
298	4,524,275
338	4,524,276
397	4,524,277
398	4,524,278
497.1	4,524,279
548	4,524,280
574	4,524,281
577	4,524,282

CLASS 251

4	4,523,737
	4,523,738
139	4,523,739
315	4,523,740
325	4,523,741

CLASS 252

8.5 C	4,524,002
8.55 R	4,524,003
32.7 E	4,524,004
49.6	4,524,005
51.5 A	4,524,006
56 R	4,524,007
62.56	4,524,008
89.1	4,524,009
135	4,524,010
171	4,524,011
174	4,524,012
174.21	4,524,013
188.1	4,524,014
188.28	4,524,015
301.4 H	4,524,016
522 A	4,524,018
522 R	4,524,017
	4,524,019
	4,524,020
	4,524,021
548	4,524,022
	4,524,023

CLASS 254

29 A	4,523,742
93 H	4,523,743
371	4,523,744

CLASS 256

1	4,523,745

CLASS 258

1.2	4,523,746

CLASS 260

97.6	4,524,024
112 B	4,524,026
112 R	4,524,025
	4,524,027
239 A	4,524,028
419	4,524,029
	4,524,030
456 F	4,524,031
465 F	4,524,032

CLASS 261

18 B	4,524,033
44 A	4,524,034

CLASS 264

1.8	4,524,035
10	4,524,036
26	4,524,037
61	4,524,038
71	4,524,039
136	4,524,040
182	4,524,041
211	4,524,042
320	4,524,043
328.6	4,524,044
521	4,524,045

CLASS 266

44	4,523,747
249	4,523,748

CLASS 269

32	4,523,749

CLASS 270

53	4,523,750
60	4,523,751

CLASS 271

9	4,523,752
31.1	4,523,753
264	4,523,754

CLASS 272

3	4,523,755

CLASS 273

49	4,523,756
63 E	4,523,757
77 R	4,523,758
169	4,523,759
181 F	4,523,760
371	4,523,761
411	4,523,762

CLASS 277

1	4,523,763
3	4,523,764
165	4,523,765

CLASS 279

4	4,523,766

CLASS 280

11.19	4,523,767
42	4,523,768
252	4,523,769
266	4,523,770
474	4,523,771
610	4,523,772
654	4,523,773
655	4,523,774

CLASS 283

36	4,523,775
39	4,523,776
67	4,523,777

CLASS 285

73	4,523,778
294	4,523,779
399	4,523,780

CLASS 290

1 E	4,524,283
43	4,524,285
45	4,524,286

CLASS 294

1.1	4,523,781
65.5	4,523,782

CLASS 296

93	4,523,783
100	4,523,784
224	4,523,785

CLASS 297

367	4,523,786
440	4,523,787

CLASS 298

11	4,523,788

CLASS 301

37 P	4,523,789
64 SD	4,523,790

CLASS 303

92	4,523,791
	4,523,792

CLASS 307

10 R	4,524,287
40	4,524,288
110	4,524,289
141.4	4,524,290
354	4,524,291
494	4,524,292

CLASS 310

46	4,524,293
311	4,524,294
328	4,524,295

CLASS 312

201	4,523,794

CLASS 313

270	4,524,296
346 R	4,524,297
405	4,524,298
487	4,524,299
	4,524,300
493	4,524,301
579	4,524,302

CLASS 315

97	4,523,795
111.81	4,524,303
156	4,524,304
221	4,524,305
326	4,524,306
368	4,524,307
	4,524,308

CLASS 318

434	4,524,309
481	4,524,311
	4,524,312
563	4,524,313
587	4,524,314
603	4,524,315
808	4,524,310
809	4,524,316

CLASS 323

224	4,524,317
313	4,524,318

CLASS 324

65 R	4,524,319
66	4,524,320
	4,524,321
72	4,524,322
179	4,524,323
323	4,524,324
375	4,524,325

CLASS 328

14	4,524,326

CLASS 330

253	4,524,327
	4,524,328
	4,524,329
257	4,524,330
292	4,524,331
294	4,524,332

CLASS 331

17	4,524,333
135	4,524,334

CLASS 332

9 R	4,524,335
16 R	4,524,336

CLASS 333

28 R	4,524,337

CLASS 335

8	4,524,338
22	4,524,339
212	4,524,340

CLASS 336

147	4,524,341
182	4,524,342

CLASS 337

140	4,524,343
159	4,524,344

CLASS 339

17 CF	4,523,796
147 R	4,523,797
192 RL	4,523,798

CLASS 340

146.2	4,524,345
347 CC	4,524,346
347 P	4,524,347
365 R	4,524,348
500	4,524,349
572	4,524,350
629	4,524,351
714	4,524,352
732	4,524,353
825.36	4,524,354
870.13	4,524,355
904	4,524,356
995	4,524,357

CLASS 343

7.7	4,524,358
16 M	4,524,359
17.1 R	4,524,360
17.2 PC	4,524,361
	4,524,362
	4,524,363

CLASS 346

1.1	4,524,364
75	4,524,365
	4,524,366
76 PH	4,524,367
	4,524,368
135.1	4,524,369
155	4,524,370
159	4,524,371
160	4,524,372
221	4,524,373

CLASS 350

6.3	4,523,799
6.7	4,523,800
6.8	4,523,801
96.12	4,523,802
96.13	4,523,803
96.23	4,523,804
96.24	4,523,805
96.25	4,523,806
128	4,523,807
146	4,523,808
163	4,523,809
320	4,523,810
333	4,523,811
334	4,523,812
426	4,523,813
427	4,523,814
430	4,523,815
444	4,523,816
465	4,523,817
579	4,523,818

CLASS 351

106	4,523,819
206	4,523,820
214	4,523,821
234	4,523,822

CLASS 353

97	4,523,823

CLASS 354

100	Re.31,918
161	4,523,824
301	4,523,825
337	4,523,826
400	4,523,827
403	4,523,828
406	4,523,829
416	4,523,830

CLASS 355

3 DD	4,523,833
	4,523,834
3 R	4,523,831
3 SH	4,523,832
16	4,523,836
51	4,523,837
66	4,523,838
68	4,523,839
91	4,523,840

CLASS 356

73	4,523,841
124	4,523,842
127	4,523,843
152	4,523,844
333	4,523,845
346	4,523,846
349	4,523,847
368	4,523,848
369	4,523,849
375	4,523,850
399	4,523,851
421	4,523,852
446	4,523,853

CLASS 357

15	4,524,374
30	4,524,375
55	4,524,376
59	4,524,377
71	4,524,378

CLASS 358

11	4,524,379
29	4,524,381
31	4,524,382
55	4,524,383
108	4,524,384
113	4,524,385
	4,524,386
154	4,524,387
163	4,524,388
188	4,524,389
213	4,524,390
	4,524,391
214	4,524,392
257	4,524,393
296	4,524,394
300	4,524,395
316	4,524,380

CLASS 360

67	4,524,396
77	4,524,397
78	4,524,398
97	4,524,399
106	4,524,400
113	4,524,401
130.24	4,524,402

CLASS 361

86	4,524,403
132	4,524,404

CLASS 362

18	4,524,405
32	4,524,406
66	4,524,407
163	4,524,408
189	4,524,409
255	4,524,410

CLASS 363

21	4,524,411
56	4,524,412
127	4,524,413

CLASS 364

171	4,524,414
200	4,524,415
	4,524,416
	4,524,417
436	4,524,418
474	4,524,419
497	4,524,420
521	4,524,421
724	4,524,422
	4,524,423
	4,524,424
825	4,524,425
900	4,524,426
	4,524,427
	4,524,428

CLASS 365

154	4,524,429
189	4,524,430
222	4,524,431

CLASS 366

132	4,523,854
211	4,523,855

CLASS 367

25	4,524,432
	4,524,433
37	4,524,434
41	4,524,435

169	4,524,436

CLASS 368

72	4,523,856
157	4,523,857
272	4,523,858

CLASS 369

67	4,524,437
75.1	4,524,438
136	4,524,439

CLASS 370

54	4,524,440
63	4,524,441
	4,524,442
112	4,524,443

CLASS 371

22	4,524,446
24	4,524,444
47	4,524,445

CLASS 374

1	4,523,859
27	4,523,860

CLASS 375

26	4,524,447
118	4,524,448

CLASS 377

28	4,524,449
62	4,524,450

CLASS 381

1	4,524,451
28	4,524,452

CLASS 382

1	4,524,453
21	4,524,454
41	4,524,455
56	4,524,456

CLASS 383

17	4,524,457
33	4,524,458
37	4,524,459
45	4,524,460

CLASS 384

475	4,523,861
564	4,523,862
604	4,523,793
609	4,523,863
613	4,523,864

CLASS 400

18	4,523,865
124	4,523,866
	4,523,867
208	4,523,868
629	4,523,869

CLASS 403

12	4,523,871
274	4,523,872

CLASS 404

124	4,523,873

CLASS 405

43	4,523,874
50	4,523,875
158	4,523,876
195	4,523,877
	4,523,878
217	4,523,879
259	4,523,880
	4,523,881

CLASS 408

236	4,523,882

CLASS 411

171	4,523,883

CLASS 414

8	4,523,884
156	4,523,885
641	4,523,886
664	4,523,887
680	4,523,888
752	4,523,889

CLASS 416

95	4,523,890
157 R	4,523,891

CLASS 417

34	4,523,892
68	4,523,893
161	4,523,894
225	4,523,895
244	4,523,896
	4,523,897
269	4,523,898
360	4,523,899
365	4,523,900
395	4,523,901
410	4,523,902
489	4,523,903

CLASS 419

8	4,524,046

CLASS 422

98	4,524,047
159	4,524,048

CLASS 423

65	4,524,049
243	4,524,050
247	4,524,051
277	4,524,052
306	4,524,053
308	4,524,054
328	4,524,055
359	4,524,056
555	4,524,057
656	4,524,058

CLASS 424

1.1	4,524,059
19	4,524,060
60	4,524,061
65	4,524,062
78	4,524,063
81	4,524,064
94	4,524,065

CLASS 425

539	4,523,904

CLASS 426

112	4,524,078
234	4,524,079
236	4,524,080
249	4,524,081
312	4,524,082
330.1	4,524,083
590	4,524,084
601	4,524,085
607	4,524,086

CLASS 427

2	4,524,087
10	4,524,088
38	4,524,089
53.1	4,524,090
74	4,524,091
388.2	4,524,092
389.9	4,524,093

CLASS 428

36	4,524,094
43	4,524,095
68	4,524,096
141	4,524,097
156	4,524,098
213	4,524,099
283	4,524,100
294	4,524,101
318.8	4,524,102
338	4,524,103
341	4,524,104
364	4,524,105
408	4,524,106
413	4,524,107
480	4,524,108
523	4,524,109
537.1	4,524,110
551	4,524,111
595	4,524,112

CLASS 429

16	4,524,113
42	4,524,114
50	4,524,115

CLASS 430

31	4,524,116
44	4,524,117
56	4,524,118
108	4,524,119
137	4,524,120
176	4,524,121
223	4,524,122
241	4,524,123
	4,524,124
302	4,524,125
311	4,524,126
321	4,524,127
353	4,524,128
393	4,524,129
505	4,524,130
523	4,524,131
552	4,524,132

CLASS 431

351	4,523,905

CLASS 432

197	4,523,906
258	4,523,907

CLASS 433

8	4,523,908
39	4,523,909
80	4,523,910
101	4,523,911
202	4,523,912

CLASS 435

14	4,524,133
67	4,524,134
69	4,524,135
139	4,524,136
178	4,524,137

CLASS 441

81	4,523,913
108	4,523,914

CLASS 455

79	4,524,461
608	4,524,462

CLASS 464

3	4,523,915
98	4,523,916

CLASS 474

19	4,523,917

CLASS 493

198	4,523,918
212	4,523,919

CLASS 501

90	4,524,138

CLASS 502

22	4,524,139
61	4,524,140
66	Re.31,919
107	4,524,141
153	4,524,142
208	4,524,143
342	4,524,144

CLASS 514

23	4,524,066
33	4,524,067
43	4,524,145
58	4,524,068
80	4,524,073
230	4,524,070
272	4,524,071
273	4,524,146
274	4,524,147
280	4,524,072
294	4,524,148
321	4,524,074
350	4,524,149
451	4,524,075
469	4,524,150
	4,524,151
472	4,524,076
557	4,524,077
609	4,524,152

CLASS 521

26	4,524,153
58	4,524,154
64	4,524,155
83	4,524,156
156	4,524,157

CLASS 523

130	4,524,158
177	4,524,159
200	4,524,160
414	4,524,161
438	4,524,162

CLASS 524

5	4,524,163
14	4,524,164
99	4,524,165
117	4,524,166
121	4,524,167
190	4,524,168
263	4,524,169
371	4,524,170
376	4,524,171
506	4,524,172
512	4,524,173
566	4,524,174
581	4,524,175

CLASS 525

12	4,524,176
14	4,524,177
28	4,524,178
35 G	4,524,189
68	4,524,179
71	4,524,180
107	4,524,181
120	4,524,182
162	4,524,183
314	4,524,184
328.2	4,524,185
328.8	4,524,186
332.1	4,524,187
333.7	4,524,188
370	4,524,190
425	4,524,191
440	4,524,192

CLASS 526

79	4,524,193
84	4,524,194
114	4,524,195
190	4,524,196
206	4,524,197
292.1	4,524,198

CLASS 527

313	4,524,199

CLASS 528

388	4,524,200
395	4,524,201

CLASS 536

18.5	4,524,202

CLASS 544

94	4,524,203
103	4,524,204
223	4,524,205
230	4,524,206

CLASS 546

17	4,524,207
69	4,524,208
148	4,524,209
340	4,524,210

CLASS 548

111	4,524,211
533	4,524,212

CLASS 549

235	4,524,213

CLASS 560

51	4,524,214
70	4,524,216
052	4,524,215

CLASS 562

948	4,524,226

CLASS 564

223	4,524,217
307	4,524,218
	4,524,219
	4,524,220

CLASS 568

322	4,524,221
711	4,524,222
715	4,524,223
858	4,524,224
885	4,524,225

CLASS 585

408	4,524,227
	4,524,228
463	4,524,229
467	4,524,230
469	4,524,231
517	4,524,232
606	4,524,233
638	4,524,234
646	4,524,235
658	4,524,236

CLASS 604

93	4,523,920

CLASSIFICATION OF DESIGNS

D2—	251	279,230		501	279,246		423	279,262		143	279,278		5	279,294	D23—	11	279,310
	260	279,231			279,247		432	279,263			279,279		66	279,295			279,311
	309	279,232		534	279,248			279,264		146	279,280	D18—	1	279,296		148	279,312
D3—	35	279,233		570	279,249		438	279,265	D12—	149	279,281	D19—	53	279,297	D24—	39	279,313
	38	279,234	D7—	6	279,250		450	279,266		307	279,282		62	279,298		53	279,314
	40	279,235		79	279,251		454	279,267	D13—	11	279,283		72	279,299	D25—	74	279,315
D6—	317	279,236			279,252	D10—	26	279,268		24	279,284		97	279,300	D26—	98	279,316
	335	279,237			279,253		30	279,269		30	279,285	D20—	42	279,301	D30—	12	279,317
	350	279,238	D8—	107	279,254			279,270		40	279,286	D21—	6	279,302		43	279,318
	361	279,239		327	279,255			279,271			279,287		47	279,303	D32—	15	279,319
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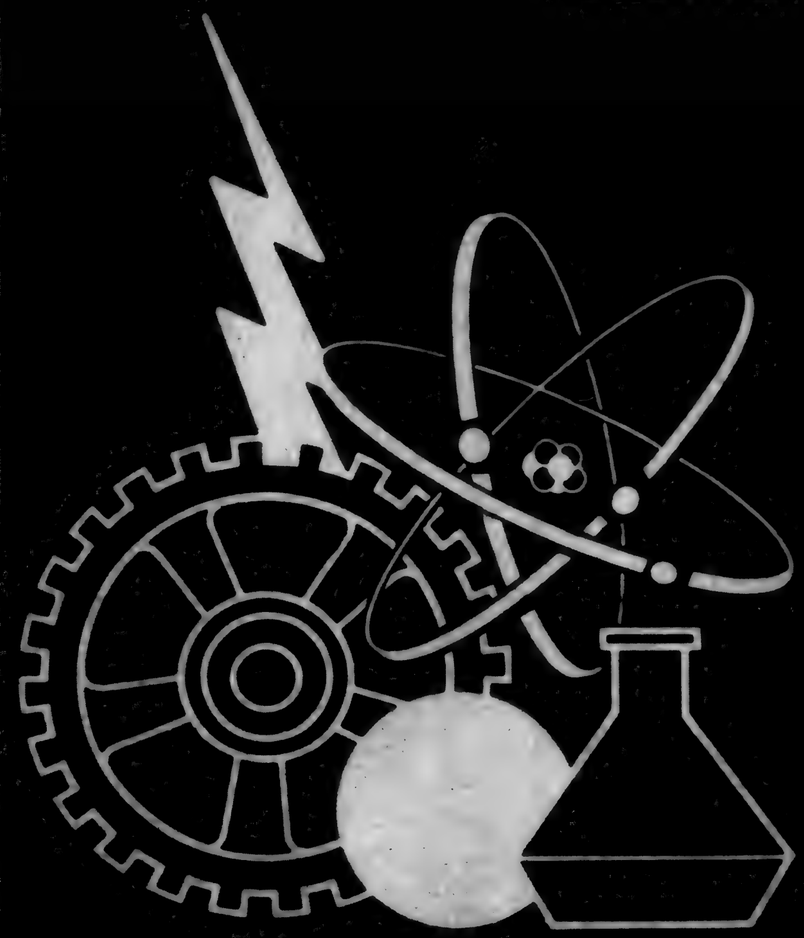
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June 25, 1985



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Donald J. Quigg, *Acting Commissioner*

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of May 7, 1985 and was published in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

International PCT fees were changed effective May 28, 1985 and were announced in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International fees	
Basic fee (first 30 pages)	230.00
Basic Supplemental fee (for each page over 30)	4.00
Designation fee (for the first 10 national or regional offices)	55.00
Designation fee for 11th and subsequent designations	No charge

May 7, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on June 22, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,335,471 through 4,336,616

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,702,519, Re. S.N. 714,984, Filed Mar. 22, 1985, Cl. 051/310, METHOD FOR THE REMOVAL OF UNWANTED PORTIONS OF AN ARTICLE BY SPRAYING WITH HIGH VELOCITY DRY ICE PARTICLES, Edwin E. Rice, et al., Owner of Record: *Charles H. Franklin, Clarence S. Vinton, et al., Ann Arbor, Mich.,* Attorney or Agent: Ian C. McCleod, Ex. Gp.: 323

4,065,664, Re. S.N. 731,777, Filed May 8, 1985, Cl. 364/487, FLOATING POINT REGISTERS FOR PROGRAMMED DIGITAL INSTRUMENTS, Paul J. Kristof, et al., Owner of Record: *Norland Corp., Fort Atkinson, Wis.,* Attorney or Agent: Henry W. Collins, et al., Ex. Gp.: 234

4,072,851, Re. S.N. 731,874, Filed May 8, 1985, Cl. 364/487, WAVEFORM MEASURING INSTRUMENT WITH RESIDENT PROGRAMMED PROCESSOR FOR CONTROLLED WAVEFORM DISPLAY AND WAVEFORM DATA REDUCTION AND CALCULATION, Frederick A. Rose, Owner of Record: *Norland Corp., Fort Atkinson, Wis.,* Attorney or Agent: Henry W Collins, et al., Ex. Gp.: 234

4,134,149, Re. S.N. 731,914, Filed May 8, 1985, Cl. 364/900, HIGH SWEEP RATE WAVEFORM DISPLAY CONTROL FOR DIGITAL RECORDING WAVEFORM DEVICES, Russell H. Nord, Owner of Record: *Norland Corp., Fort Atkinson, Wis.,* Attorney or Agent: Henry W. Collins, et al., Ex. Gp.: 237

4,234,620, Re. S.N. 732,088, Filed May 9, 1985, Cl. 426/656, WATER-SOLUBLE VEGETABLE PROTEIN AGGREGATES, Paulette A. Howard, et al., Owner of Record: *A. E. Staley Manufacturing Co., Decatur, Ill.,* Attorney or Agent: Forrest L. Collins, et al., Ex. Gp.: 132

4,381,013, Re. S.N. 723,698, Filed Apr. 16, 1985, Cl. 128/785, "J" STYLET WIRE, Robert G. Dutcher, Owner of Record: *Medtronic, Inc., Minneapolis, Minn.,* Attorney or Agent: Reed A. Duthler, Ex. Gp.: 335

4,383,219, Re. S.N. 732,079, Filed May 9, 1985, Cl. 324/309, NUCLEAR MAGNETIC RESONANCE SPATIAL MAPPING, Jerome I. Kaplan, Owner of Record: *Indiana University Foundation, Bloomington, Ind.,* Attorney or Agent: Daniel W. Vittum, Jr., et al., Ex. Gp.: 267

4,416,330, Re. S.N. 724,471, Filed Apr. 17, 1985, Cl. 228/173.4, SIDE POCKET MANDREL, David T. Merritt, et al., Owner of Record: *Otis Engineering Corp., Carrollton, Tex.,* Attorney or Agent: Albert W. Carroll, Ex. Gp.: 355

4,461,342, Re. S.N. 733,752, Filed May 13, 1985, Cl. 165/104.32, METHOD AND APPARATUS FOR AUTOMATICALLY REFILLING A LEAKING LIQUID COOLING SYSTEM AS AN ENGINE OPERATES BY UTILIZING A RADIATOR AND A REMOTE COOLANT RESERVOIR, Walter C. Avrea, Owner of Record: *Inventor,* Attorney or Agent: Don J. Flickinger, et al., Ex. Gp.: 346

4,471,770, Re. S.N. 724,291, Filed Apr. 17, 1985, Cl. 128/132R, PROTECTIVE COVER FOR HUMAN LIMB JOINTS, Susan Pompa, Owner of Record: *S. J. Kaplan and Associates, Inc., Lincolnwood, Ill.,* Attorney or Agent: Paul H. Gallagher, Ex. Gp.: 335

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,399,545, Reexam. No. 90/000,786, Requested: May 20, 1985, Cl. 62/237, APPARATUS FOR CONNECTING A STATIONARY AIR-CONDITIONING UNIT TO AIRCRAFT, Gordon K. Anderson, et al., Owner of Record: *Lear Siegler, Inc., Santa Monica, Calif.,* Attorney or Agent: Christie, Parker, et al., Ex. Gp.: 344, Requester: Lear Siegler, Inc., Santa Monica, Calif.

3,631,434, Reexam. No. 90/000,785, Requested: May 17, 1985, Cl. 340/568, PASSIVE INTRUSION DETECTOR, Frank Schwartz, Owner of Record: *Barnes Engineering Co., Stamford, Conn.,* Attorney or Agent: Brumbaugh, Graves, et al., Ex. Gp.: 260, Requester: Owner

4,084,381, Reexam. No. 90/000,783, Requested: May 20, 1985, Cl. 61/36, STABILIZATION OF EARTH SUBSURFACE LAYERS, Gene Cain, et al., Owner of Record: *Woodbine Corp., Fort Worth, Tex.,* Attorney or Agent: Wofford, Fails, et al., Ex. Gp.: 350, Requester: Holland Soil Stabilizers, Inc., Houston, Tex.

4,233,015, Reexam. No. 90/000,784, Requested: May 20, 1985, Cl. 405/263, EMPLOYING QUICKLIME IN STABILIZING EARTH, Joe D. Teague, et al., Owner of Record: *Woodbine Corp., Fort Worth, Tex.,* Attorney or Agent: William T. Wofford, Ex. Gp.: 351, Requester: Holland Soil Stabilizers, Inc., Houston, Tex.

4,288,929, Reexam. No. 90/000,781, Requested: May 14, 1985, Cl. 36/69, MOTION CONTROL DEVICE FOR ATHLETIC SHOE, Edward J. Norton, et al., Owner of Record: *New Balance Athletic Shoe, Inc., Lawrence, Mass.,* Attorney or Agent: Samuel B. Smith, Ex. Gp.: 350, Requester: Owner

4,381,379, Reexam. No. 90/000,790 Requested: May 28, 1985, Cl. 525/424, POLYESTER CONTAINING 2-METHYL-1,3-PROPYLENE TEREPHTHALATE UNITS, Yuzo Toga, et al., Owner of Record: *Daicel Chemical Industries, Ltd., Sakai-Shi, Osaka, Japan,* Attorney or Agent: L. Martin Flynn, Ex. Gp.: 151, Requester: Owner

4,405,881, Reexam. No. 90/000,788, Requested: May 24, 1985, Cl. 313/480, COLOR CATHODE RAY TUBE INCLUDING DN_2O_3 AND CR_2O_3 IN FACE GLASS, Hiroo Kobayashi, Owner of Record: *Mitsubishi Denki Kabushiki Kaisha,* Attorney or Agent: Oblon, Fisher, et al., Ex. Gp.: 266 Requester: Owner

4,481,555, Reexam. No. 90/000,782, Requested: May 20, 1985, Cl. 361/155, ELECTROMAGNETIC CONTACT DEVICE, Masayuki Yoshida, et al., Owner of Record: *Mitsubishi Denki Kabushiki Kaisha,* Attorney or Agent: Oblon, Fisher, et al., Ex. Gp.: 214, Requester: Owner

United States Patent and Trademark Office
Before the Commissioner of Patents and Trademarks

Joseph F. Nakamura,

Solicitor, U.S. Patent and Trademark Office,
v.

Proceeding No. 84-2
Horace S. Harper, Jr.,
Respondent.

Notice by Publication

Notice is hereby given to the above named respondent, that proceedings under 35 U.S.C. §32 have been instituted against him. A copy of the *NOTICE OF PROCEEDINGS UNDER 35 U.S.C. §32,* including the charges against respondent, was twice mailed to the respondent's address of record. The notice was twice returned by the U.S. Postal Service.

Respondent may obtain of copy of the above-mentioned notice from:

Richard E. Schafer
Associate Solicitor
U.S. Patent and Trademark Office
P.O. Box 15667
Arlington, Va. 22215
(703) 557-4035

This notice will appear in the Official Gazette for four consecutive weeks beginning with the issue of June 11,

1985. Respondent has thirty days from the date of the last notice to file an answer to the charges against him. Failure to file an answer will be taken as an admission of the charges. 37 CFR §1.348 (c).

JOSEPH F. NAKAMURA,
Solicitor

By: RICHARD E. SCHAFER
Associate Solicitor.

Registration Numbers Omitted

The following registration numbers, were omitted from the sequential assignment of numbers and, thus, did not appear in the "Trademark Registrations Issued" section of the Trademark Official Gazette of Apr. 2, 1985.

1,328,515	TM 204	Apr. 2, 1985
1,328,516	TM 204	Apr. 2, 1985

No certificates of registration bearing the above-identified numbers were issued on the date indicated.

May 13, 1985. PATRICIA M. DAVIS,
Administrator for Trademark Operations.

Erratum

In the "Trademark Registrations Renewed" section of the Trademark Official Gazette of Aug. 7, 1984, the mark for Registration No. 182,585 was incorrectly identified as LE NAZCISE NOIR AND DESIGN. The mark as corrected is LE NARCISSE NOIR AND DESIGN.

May 17, 1985. PATRICIA M. DAVIS,
Administrator for Trademark Operations.

Errata

The following registration numbers, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of Apr. 2, 1985, were listed inadvertently:

1,327,912	TM 192	Apr. 2, 1985
1,327,999	TM 193	Apr. 2, 1985
1,328,545	TM 204	Apr. 2, 1985
1,328,675	TM 207	Apr. 2, 1985
1,328,697	TM 208	Apr. 2, 1985
1,328,700	TM 208	Apr. 2, 1985
1,328,746	TM 209	Apr. 2, 1985
1,328,967	TM 214	Apr. 2, 1985
1,329,122	TM 223	Apr. 2, 1985

Consequently, the certificates of registration bearing the above-identified numbers were not issued on the date indicated, and the registration numbers have been vacated.

May 13, 1985. PATRICIA M. DAVIS,
Administrator for Trademark Operations.

Errata

The following registration numbers, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of Apr. 9, 1985, were listed inadvertently:

1,329,578	TM 427	Apr. 9, 1985
1,329,585	TM 427	Apr. 9, 1985

Consequently, the certificates of registration bearing the above-identified numbers were not issued on the date indicated, and the registration numbers have been vacated.

May 17, 1985. PATRICIA M. DAVIS,
Administrator for Trademark Operations.

Errata

The following registration numbers, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of Apr. 23, 1985, were listed inadvertently:

1,331,578	TM 863	Apr. 23, 1985
1,332,133	TM 874	Apr. 23, 1985
1,332,157	TM 874	Apr. 23, 1985
1,332,463	TM 881	Apr. 23, 1985
1,332,487	TM 881	Apr. 23, 1985

Consequently, the certificates of registration bearing the above-identified numbers were not issued on the date indicated, and the registration numbers have been vacated.

May 17, 1985. PATRICIA M. DAVIS,
Administrator for Trademark Operations.

Errata

The following registration numbers, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of Apr. 30, 1985, were listed inadvertently:

1,332,785	TM 1082	Apr. 30, 1985
1,332,786	TM 1082	Apr. 30, 1985
1,332,787	TM 1082	Apr. 30, 1985
1,332,792	TM 1083	Apr. 30, 1985
1,332,794	TM 1083	Apr. 30, 1985
1,332,806	TM 1083	Apr. 30, 1985
1,332,820	TM 1083	Apr. 30, 1985
1,332,969	TM 1086	Apr. 30, 1985
1,333,013	TM 1088	Apr. 30, 1985
1,333,057	TM 1088	Apr. 30, 1985
1,333,065	TM 1088	Apr. 30, 1985
1,333,137	TM 1090	Apr. 30, 1985
1,333,138	TM 1090	Apr. 30, 1985
1,333,145	TM 1090	Apr. 30, 1985
1,333,304	TM 1093	Apr. 30, 1985
1,333,335	TM 1094	Apr. 30, 1985
1,333,345	TM 1094	Apr. 30, 1985
1,333,455	TM 1097	Apr. 30, 1985
1,333,457	TM 1097	Apr. 30, 1985
1,333,458	TM 1097	Apr. 30, 1985
1,333,459	TM 1097	Apr. 30, 1985
1,333,461	TM 1097	Apr. 30, 1985
1,333,495	TM 1097	Apr. 30, 1985
1,333,499	TM 1098	Apr. 30, 1985
1,333,500	TM 1098	Apr. 30, 1985
1,333,509	TM 1098	Apr. 30, 1985
1,333,510	TM 1098	Apr. 30, 1985
1,333,573	TM 1099	Apr. 30, 1985
1,333,673	TM 1102	Apr. 30, 1985
1,333,675	TM 1102	Apr. 30, 1985
1,333,684	TM 1102	Apr. 30, 1985
1,333,693	TM 1102	Apr. 30, 1985
1,333,871	TM 1113	Apr. 30, 1985

Consequently, the certificates of registration bearing the above-identified numbers were not issued on the date indicated, and the registration numbers have been vacated.

May 17, 1985. PATRICIA M. DAVIS,
Administrator for Trademark Operations.

Status of PTO Services

The following is an update of the status of PTO services for May 1985:

Service Item	FY 1985 Performance Goal (Calendar Days)	Monthly Average	Comment
Filing Receipts:			
Patents	22	25	Reduced by 8 days since last month.
Trademarks	30	34	Tapes received late from contractor.
Patent/Trademark Copies:			
Window Coupons	5	97% within 5 days	
Mail Coupons	29	99% within 29 days*	
Letter Orders	34	99% within 34 days*	
Date of oldest unfilled order		May 10, 1985	
Current Mail Date being processed		May 23, 1985	
Certified Copies:			
Trademark Registrations	30	30	
Applications-As-Filed	20	99% within 7 days	
File-Wrapper/Contents	N/A	99% within 7 days	
Walk-up Certification	1	98% within 24 hours	
Trademark Search Library:			
Filing Pending Marks	21	20	Reduced 7 days since last month.
Filing Reg. Certificates	3	8	
Assignments:			
Patents	25	15	
Trademarks	25	15	
Avg. Days from Issue Fee Payment to Issue Date	90–100	87	
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On schedule	
Patent Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	On schedule	
Trademark Official Gazette:			
In Bookstore	Issue Date	Issue Date	
Mailed	Issue Date	Issue Date	
Trademark Regs. Mailed	Issue Date	3 days late	
Patent Copies Available	Issue Date	91% on Issue Date	
Trademark Copies Available	Issue Date	99% on Issue Date	

*Figures include postal processing and delivery time.

HELPFUL HINTS FROM THE PTO

- In the May 28, 1985, Official Gazette "HELPFUL HINTS FROM THE PTO", conflicting direction was given on marking initial or substitute file drawings:

  — *Application File Drawings* —Application Branch personnel are having some difficulty matching drawings with applications during pre-examination processing. It would be helpful if the applicant's name, docket number, and the title of the invention were put on the back of the drawings. This may be done by writing lightly on the drawings or by using gum labels.

  — When the Office receives formal or substitute drawings, a cover letter identifying the application by serial number should accompany them. It is extremely difficult to associate the drawings with the files when this information is missing. The application serial number should be placed on the sheet of drawing in accordance with 37 CFR 1.84 (1).

  According to 37 CFR 1.84 (1), identifying indicia (such as the attorney's docket number, inventor's name, number of sheets, etc.) not to exceed 2¾ inches may be placed in a centered location between the side edges within three-fourths inch of the top edge. Either this marking technique on the front of the drawing or the

placement of this information on the back of the drawing is acceptable. However, for identification of the serial number, the PTO prefers that it be placed on the front.

- *Patent Applications* — We are trying to expedite and improve preliminary processing of patent applications. Please help by putting patent applications and associated papers (e.g. assignments) in a separate envelope from all other mail. Identify on the outside of the envelope "PATENT APPLICATIONS". For example, if you are submitting two patent applications with associated assignment papers, they would all be placed in an envelope marked "PATENT APPLICATIONS". Any other papers being submitted, such as amendments to other applications, appeals, and patent copy requests, would be placed in another envelope.

- *File Wrapper Continuation Applications* — Many continuation applications filed under 37 CFR 1.62 (FWC) contain no preliminary amendment to the claims which were finally rejected in the parent application. The result is a first action final rejection of these claims. Applicants should file any desired amendments at the time the application is filed under 37 CFR 1.62, since the Office is treating these applications as "Special" and an action on the merits will be rendered quite promptly.

- *Surcharge for Filing a Patent Application* — Filing dates are accorded to applications filed without the basic filing fee and without the oath or declaration. In such cases, a notice is mailed by Application Division requiring at least the basic filing fee and the oath or declaration, accompanied by a surcharge (37 CFR 1.16(E)). In numerous instances, applicants fail to submit the surcharge causing the application to become abandoned. See 37 CFR 1.53(D) and MPEP §506.

Small Entity Statements — Verified statements claiming small entity status, where appropriate, would best be signed and submitted at the time the application oath or declaration is signed to permit filing of the statement with the applications. This would reduce correspondence between attorney and client, reduce paper handling by the PTO support staff and the PTO Finance Branch, and greatly simplify the processing of subsequent papers involving fees. If small entity status is being claimed for the first time at the time of payment, a verified statement claiming small entity status should be submitted with the issue fee. See MPEP §509.03.

June 3, 1985.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of June 25, 1985

D. 275,733	4,458,198	4,478,392	4,492,798
D. 277,088	4,459,395	4,478,409	4,493,020
D. 277,527	4,460,687	4,478,422	4,493,203
3,702,833	4,461,028	4,478,438	4,493,421
4,214,899	4,461,759	4,478,662	4,493,977
4,253,076	4,461,828	4,478,967	4,494,105
4,264,782	4,463,054	4,479,226	4,494,607
4,301,560	4,463,270	4,479,432	4,494,671
4,313,758	4,464,178	4,479,617	4,494,703
4,323,068	4,464,802	4,479,756	4,494,851
4,327,730	4,464,814	4,481,609	4,495,308
4,348,654	4,465,746	4,482,556	4,495,393
4,349,409	4,470,669	4,482,581	4,495,823
4,371,647	4,470,714	4,482,616	4,496,569
4,381,335	4,473,077	4,485,147	4,496,690
4,386,970	4,473,085	4,485,585	4,497,119
4,393,158	4,473,951	4,485,689	4,497,454
4,400,188	4,475,173	4,485,711	4,497,572
4,409,550	4,475,392	4,485,911	4,497,706
4,410,368	4,476,214	4,486,128	4,497,725
4,413,233	4,476,642	4,486,198	4,497,862
4,418,098	4,476,678	4,486,313	4,498,275
4,421,057	4,476,764	4,486,377	4,498,845
4,427,660	4,476,798	4,486,574	4,498,962
4,427,714	4,476,808	4,486,616	4,500,232
4,431,664	4,476,813	4,486,641	4,500,417
4,433,674	4,476,820	4,486,858	4,500,561
4,434,244	4,476,879	4,487,436	4,500,961
4,434,654	4,476,996	4,488,268	4,501,136
4,438,257	4,477,138	4,488,701	4,501,152
4,441,108	4,477,145	4,489,177	4,501,464
4,446,018	4,477,297	4,489,342	4,501,515
4,446,086	4,477,510	4,489,570	4,501,982
4,447,521	4,477,514	4,489,664	4,502,463
4,447,711	4,477,556	4,489,786	4,502,468
4,449,943	4,477,572	4,490,918	4,502,725
4,450,284	4,477,583	4,491,036	4,502,814
4,450,488	4,477,590	4,491,100	4,502,891
4,454,357	4,477,606	4,491,179	4,503,678
4,455,427	4,477,679	4,491,922	4,503,899
4,455,625	4,477,774	4,492,233	4,504,098
4,457,161	4,477,782	4,492,673	4,504,500
4,457,987	4,477,930	4,492,759	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4243
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 11, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	3-08-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	11-05-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	1-04-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	5-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-23-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	4-30-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-03-83
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	5-26-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-08-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-14-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-17-83

Expiration of patents: The patents within the range of numbers indicated below expire during May 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,381,303 to 3,386,102, inclusive

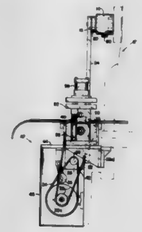
Plant Patents . . . . . Numbers 2,811 to 2,813 inclusive

REEXAMINATIONS

JUNE 25, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 29,795 (360th)
SELF-CONTAINED FEED ROLL FOR POWER PUNCH PRESSES
Harry Eyberger, Pittsburgh, Pa., assignor to Vamco Machine and Tool, Inc., Pittsburgh, Pa.
Reexamination Request No. 90/000,192, Apr. 27, 1982.
Reexamination Certificate for Reissue Patent Re. 29,795, issued Oct. 10, 1978, Ser. No. 861,190, Dec. 16, 1977.
Original No. 3,483,782, dated Dec. 16, 1969, Ser. No. 651,295, Jul. 5, 1967.
Int. Cl.[3] B26D *5/20*
U.S. Cl. 83—245



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–9** are cancelled.

[**1**. A self-contained feed roll unit for a power punch press having a crankshaft rotating in timed relation to the pressing portion of the operating cycle of said punch press, said feed roll unit comprising:

(a) a power driven feed roll;

(b) an idler feed roll rotatably supported on a movable frame and normally urged toward said power driven feed roll, said idler feed roll being periodically moved away from said power driven feed roll by feed roll release means to free stock being fed to said power pass during the pressing portion of said power press operating cycle;

(c) an index drive having an input shaft to receive continuous, uniform rotary motion and an output shaft transmitting non-continuous, incremental rotary motion;

(d) first positive drive means drivingly connecting said index drive input shaft to said power press crankshaft; and

(e) second positive drive means including a first drive member connected to said index drive output shaft, a driven member connected to said power driven feed roll, an idler member drivingly connected to said first drive member and said driven member to thereby drivingly connect said index drive output shaft to said power driven feed roll, said second positive drive means being adjustable to vary the ratio of the angular velocity of said index drive output shaft relative to said power driven roll.]

B1 3,742,723 (361st)
PIPE FREEZING DEVICE
Frederick G. J. Grisé , Box 12, West Brookfield, Mass. 01506
Reexamination Request No. 90/000,398, Jun. 8, 1983.
Reexamination Certificate for Patent No. 3,742,723, issued Jul. 3, 1973, Ser. No. 195,980, Nov. 5, 1971.
Int. Cl.[3] F25D *3/00*
U.S. Cl. 62—293



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **5** and **8** are determined to be patentable as amended.

Claims **2–4**, **6**, **7** and **9**, dependent on an amended claim, are determined to be patentable.

1. A pipe freezing device comprising an annular chamber having an outer circumferential wall and side walls thereon, and an open inside aspect, means removably securing the chamber about the pipe to be frozen, with the open inside aspect of the chamber contiguous with respect to the pipe and the side walls closely embracing the pipe, *the annular chamber being open adjacent the outer wall in both circumferential directions over the entire length of the outer wall,*

a source of gas-forming liquid under pressure, a tube adapted to connect the source to a wall of the chamber, and a vent in the chamber for the gas, said vent being remote from the tube so that the gas-forming liquid and gas formed therefrom extend about the pipe to be frozen, the gas escaping freely to the atmosphere through the vent.

REISSUES

JUNE 25, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,920

FISHING REEL HAVING SUPPORT FOR A DEFLECTED SPOOL SHAFT

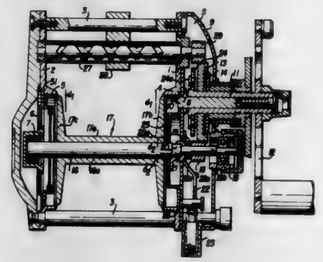
Hideo Noda, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Original No. 4,232,842, dated Nov. 11, 1980, Ser. No. 19,144, Mar. 9, 1979. Application for reissue Nov. 5, 1982, Ser. No. 439,592

Claims priority, application Japan, Mar. 14, 1978, 54-33064

Int. Cl.[3] **A01K** *89/015*

U.S. Cl. 242—212 **14 Claims**



7. A fishing reel comprising:

(a) first and second opposed side plates, each of said side plates having an annular frame extending axially inwardly and being connected by a plurality of connecting rods to the other side plate;

(b) a gear cover fixed at the outside of the first side plate of said pair, said gear cover and first side plate having a space therebetween;

(c) a handle shaft rotatably supported between said first side plate and said gear cover, said handle shaft projecting outwardly of said gear cover and carrying a handle bar at the projecting end of said handle shaft;

(d) a master gear supported to said handle shaft, said master gear being arranged within said space;

(e) a spool shaft journaled at respective opposite ends to a first bearing supported adjacent said second side plate and a second bearing supported by said gear cover, said spool shaft having a first engaging portion;

(f) a spool fixed to said spool shaft, said spool comprising a trunk and a pair of flanges which extend from both axial ends of said trunk radially outwardly thereof, said flanges having slightly smaller outer diameters than the inner diameters of said annular frames, the outer periphery of said flanges opposing the inner peripheries of said annular frames;

(g) a pinion supported to said spool shaft to be axially slidable therealong said pinion being arranged within said space, meshed with said master gear, and provided at one axial end with a second engaging portion engageable with said first engaging portion of said spool shaft;

(h) control means for controlling the sliding motion of said pinion; and,

(i) support means provided at said first side plate and having a support portion for supporting said spool shaft at a substantially intermediate portion thereof, said support portion of said support means being adapted to be normally free from said spool shaft but to support said spool shaft by contact therewith when said spool shaft deflects a predetermined amount.

Re. 31,921

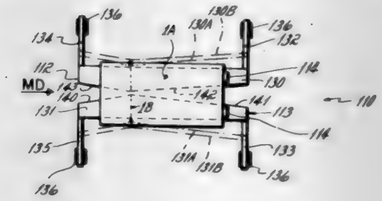
METHODS AND APPARATUS FOR STACKING CEMENTITIOUS REINFORCED PANELS

Theodore E. Clear, 429 S. Washington Blvd., Hamilton, Ohio 45013, and Robert Miller, 6318 Osage Rd., Fairfield, Ohio 45015

Original No. 4,281,952, dated Aug. 4, 1981, Ser. No. 78,932, Sep. 26, 1979. Division of Ser. No. 887,324, Mar. 16, 1978, Pat. No. 4,203,788. Application for reissue May 19, 1982, Ser. No. 379,633

Int. Cl.[3] **B65G** *57/00*

U.S. Cl. 414—82 **5 Claims**



1. A method of stacking flexible assemblies, each comprising an uncured cementitious panel carried on a carrier sheet, one atop another, comprising the steps of:

conveying an assembly onto a drop table, said drop table comprising a plurality of drop panels supporting said carrier sheet and withdrawable therefrom to drop said assembly onto a stack of assemblies, said drop plates having tapered edges beneath said carrier sheets;

withdrawing support from said carrier sheet, first from corners thereof and then from central portions thereof, to drop said assembly, all by sliding said drop plates horizontally from beneath said carrier sheet.

Re. 31,922

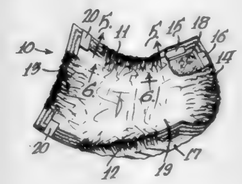
CONFORMABLE DISPOSABLE DIAPERS HAVING ABSORBENT PANEL WITH BULGED SIDE MEMBERS

Frederick K. Mesek, and Virginia R. Mesek, both of San Diego, Calif., assignors to Johnson & Johnson, New Brunswick, N.J.

Original No. 4,324,245, dated Apr. 13, 1982, Ser. No. 106,182, Dec. 21, 1979. Continuation of Ser. No. 862,309, Dec. 20, 1977, abandoned. Application for reissue Sep. 23, 1983, Ser. No. 535,088

Int. Cl.[3] **A41B** *13/02*

U.S. Cl. 604—385 A **34 Claims**



24. A disposable diaper comprising: a first outer layer in the form of a moisture-impervious backing; an absorbent batt positioned in superposed relationship with respect to said backing, said batt being smaller than said backing and spaced inwardly from the sides and ends thereof; a second outer layer in the form of a moisture-pervious facing positioned in superposed relationship with

respect to said batt, said facing being larger than said batt and being substantially coterminous with said backing; side margins and end margins provided by the space between the edge of said batt and the edge of said diaper; an elastic member in each side margin of the diaper; means securing each elastic member to at least one of said outer layers to effect gathering in the side margins of the diaper when the elastic members are relaxed; and gasketing means provided by each elastic member being positioned sufficiently close to one side of the batt to at least in part effect gasketing action by the side of the batt and to produce controlled pillows at the side of the batt while the central region of the outer layers and the batt remains generally smooth and ungathered thus forming a bowl-like configuration, said pillows consisting of bulges formed in said moisture-pervious facing by the interaction of said elastic member with said moisture-impervious backing and with said moisture-pervious facing, each elastic member being at least about ¼ inch in width and having a recovery force sufficient to overcome the resistance to deformation offered by the absorbent batt.

Re. 31,923

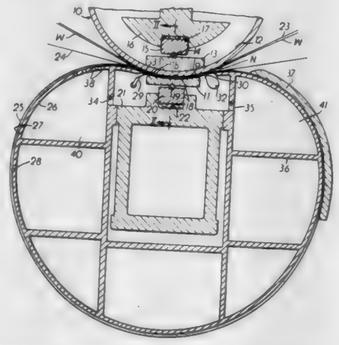
EXTENDED NIP PRESS

Edgar J. Justus, and Arnold J. Roerig, both of Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Original No. 4,287,021, dated Sep. 1, 1981, Ser. No. 69,869, Aug. 27, 1979. Continuation of Ser. No. 403,122, Jul. 29, 1982, abandoned. Application for reissue Aug. 1, 1983, Ser. No. 519,369

Int. Cl.³ D21F *3/06, 3/08*

U.S. Cl. 162—358 **8 Claims**



1. An extended nip press for removing water from a traveling web in a paper machine comprising in combination:

a press roll;

an elongate shoe forming a press nip with said press roll and having a concave surface to conform to said roll so that the press nip is formed elongate in the direction of web travel through the nip;

[a first endless felt trained over said roll to travel through said nip;**]**

an endless belt trained over said shoe for passing through said nip;

[a second endless felt trained over said belt to travel through said nip with the web passing through the nip between said felts;**]**

means for receiving water pressed from the web in said press nip;

means for providing a lubricant between said shoe and belt; and

guide means within said belt guiding and supporting the belt on the shoe;

said guide means having an outer smooth curved surface of a circumference slightly smaller than the belt to provide a continual smooth sliding surface for the belt so that the belt **[**operates under zero tension and**]** is self-aligning wherein the belt is guided **[**substantially**]** along *substantially* the entire circumference of the guide means.

Re. 31,924

COMPOSITION AND METHOD FOR STIMULATION OF BACTERIA

Jerry Starr, deceased, late of Holtville, Calif. (by Walter C. Williams, administrator), assignor to Biohumus, Inc., Holtville, Calif.

Original No. 4,321,142, dated Mar. 23, 1982, Ser. No. 184,401, Sep. 15, 1980. Continuation-in-part of Ser. No. 86,934, Oct. 22, 1979, Pat. No. 4,246,100. Application for reissue Mar. 21, 1984, Ser. No. 592,393

The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

Int. Cl.³ C02F *3/00*

U.S. Cl. 210—610 **7 Claims**

1. A composition for addition to sewage or soil to stimulate the growth of **[**aerobic**]** bacteria comprising the product of combining (1) the liquid product of a first digestion of milch cow excrement under mild acid conditions and further digestion of liquid portions from the first digestion by the action of algae and solar radiation, (2) at least 0.02% by weight of each of thiamine, riboflavin and niacin based on the weight of said liquid digestion product to activate a**[**n aerobic**]** bacteria-stimulating action and (3) at least 0.4% by weight of magnesium chloride.

Re. 31,925

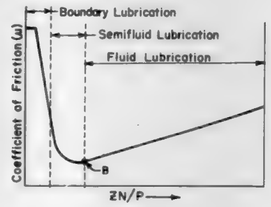
PROCESS FOR COMPRESSION ROLLING OF POLYMERIC FILMS

Richard H. Jenks, Saquoit, N.Y., and Egbert M. Kipp, Devon, Pa., assignors to Revere Copper and Brass Incorporated, New York, N.Y.

Original No. 4,085,187, dated Apr. 18, 1978, Ser. No. 684,970, May 10, 1976. Continuation of Ser. No. 140,656, Apr. 15, 1980, abandoned. Application for reissue Jan. 26, 1983, Ser. No. 461,169

Int. Cl.³ B29C *15/00*

U.S. Cl. 264—280 **10 Claims**



9. A process for compression rolling of thermoplastic sheet material comprising:

a. passing the material between cylindrical rollers with a semi-boundary lubricant applied to the surfaces of the material to establish and maintain frictional contact between surfaces;

b. adjusting the circumferential speed of the rollers and the pressure between the rollers to achieve and maintain a semi-boundary lubrication condition and to effect a reduction in the original thickness of the material of between about 5 and 95 percent in a single pass;

c. maintaining the circumferential speed of the roller in step a. essentially equal to the linear speed of the thermoplastic sheet material passsing between said rollers; and

d. maintaining the film rewind tension so as not to exceed the elastic limit of the material exiting from the rollers.

Re. 31,926

PENICILLINS AND SALTS THEREOF

Bernd Wetzel, Biberach an der Riss; Wolfgang Reuter, Laupertshausen; Eberhard Woitun; Roland Maier, both of Biberach an der Riss; Uwe Lechner, Ummendorf; Hanns Goeth, and Rolf Werner, both of Biberach an der Riss, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

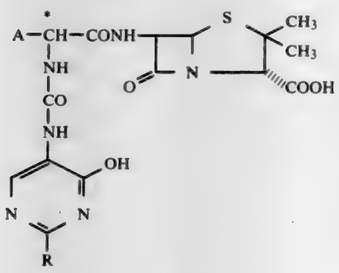
Original No. 4,241,056, dated Dec. 23, 1980, Ser. No. 13,006, Feb. 21, 1979. Application for reissue Sep. 21, 1982, Ser. No. 420,804

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808153; Nov. 27, 1978, 2851226; Nov. 27, 1978, 2851270

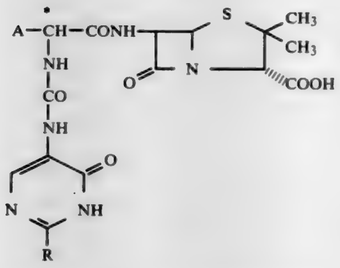
Int. Cl.³ A61K *31/655, 31/43;* **C07D** *499/68, 499/70*

U.S. Cl. 514—157 **8 Claims**

1. A compound of the tautomeric formulas

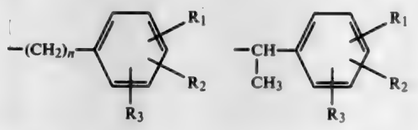


and

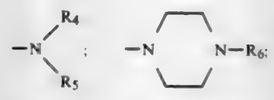


wherein A is phenyl; 4-hydroxyphenyl; 2-thienyl; 3-thienyl; cyclohexyl; cyclohexen-1-yl; cyclohexa-1,4-dien-1-yl; phenyl disubstituted in 3,4-position, where the substituents are each chlorine, hydroxyl or methoxy;

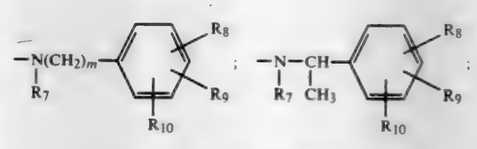
R is hydrogen; aliphatic hydrocarbyl of 1 to 8 carbon atoms optionally containing one to two double bonds or a triple bond; cyclopropyl, which may optionally be substituted with one to two methyl groups, an ethyl group or a phenyl group; cycloalkyl of 4 to 8 carbon atoms optionally containing one or more double bonds;

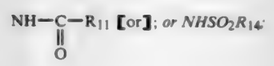


β-phenylethyl; γ-phenyl-propyl; β-phenylethylidine; cyclopropyl-methyl; 1-cyclopropylethyl; hydroxyl; alkoxy of 1 to 8 carbon atoms; alkenyloxy of 1 to 8 carbon atoms; cycloalkoxy of 3 to 6 carbon atoms; phenoxy; benzyloxy; mercapto; alkylmercapto of 1 to 8 carbon atoms; cycloalkylmercapto of 3 to 6 carbon atoms; phenylmercapto; benzylmercapto; p-chlorobenzylmercapto; alkylsulfinyl of 1 to 4 carbon atoms;



morpholino; thiomorpholino; thiomorpholino-S-oxide; thiomorpholino-S,S-dioxide;





n is 0 or 1;

R_1, R_2 and R_3 are each hydrogen; halogen; amino; alkylamino; dialkylamino of 1 to 4 carbon atoms; hydroxy; alkoxy of 1 to 4 carbon atoms; nitro; formylamino; aliphatic acylamino of 1 to 4 carbon atoms in the alkyl moiety; alkylsulfonylamino of 1 to 4 carbon atoms; alkylcarbonyl of 1 to 4 carbon atoms in the alkyl moiety; alkylcarbonyloxy of 1 to 4 carbon atoms in the alkyl moiety; alkoxycarbonyl of 1 to 4 carbon atoms in the alkyl moiety; aminocarbonyl, optionally substituted by one to two alkyl groups of 1 to 3 carbon atoms; cyano; alkylmercapto of 1 to 4 carbon atoms; alkylsulfoxy of 1 to 4 carbon atoms; alkylsulfonyl of 1 to 4 carbon atoms; aminosulfonyl; alkylaminosulfonyl of 1 to 4 carbon atoms; dialkylaminosulfonyl of 1 to 4 carbon atoms in the alkyl moiety; trifluoromethylsulfonyl; alkyl of 1 to 4 carbon atoms; trifluoromethyl; or phenyl;

R_4 and R_5 are each hydrogen; aliphatic hydrocarbyl of 1 to 8 carbon atoms optionally containing one to two double bonds or a triple bond; cycloalkyl of 3 to 8 carbon atoms which may be substituted with one to two methyl or ethyl groups and may contain one or more double bonds; or cycloalkyl-substituted alkyl of 3 to 8 carbon atoms in the cycloalkyl moiety and 1 to 3 carbon atoms in the alkyl moiety;

R_4 and R_5 together can also form an alkylene chain of 2 to 7 carbon atoms, so that a 3- to 8-membered heterocyclic ring is formed, which may optionally be substituted with one to two alkyl groups of 1 to 3 carbon atoms or a benzyl group, or may contain one to two double bonds or may be fused with a phenyl ring;

R_6 is hydrogen; formyl; acetyl; ethoxycarbonyl; benzyloxycarbonyl; methyl; ethyl; phenyl; or benzyl;

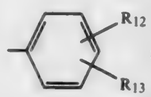
R_7 is hydrogen**[**,**]**; methyl; or ethyl;

m is 0, 1 or 2;

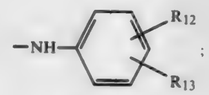
R_8, R_9 and R_{10} are each hydrogen; halogen; amino; alkylamino of 1 to 6 carbon atoms; dialkylamino, where each alkyl moiety contains 1 to 6 carbon atoms; pyrrolidyl; piperidyl; hydroxyl; alkoxy of 1 to 6 carbon atoms; formylamino; formylalkylamino of 1 to 3 carbon atoms in the alkyl moiety; aliphatic acylamino of 1 to 3 carbon atoms; acylalkylamino of 1 to 4 carbon atoms in the alkyl moiety and 1 to 3 carbon atoms in the acyl moiety; trifluoroacetylamino; aminocarbonylamino; alkylaminocarbonylamino of 1 to 6 carbon atoms in the alkyl moiety; dialkylaminocarbonylamino of 1 to 6 carbon atoms in each alkyl moiety; nitro; alkylsulfonylamino of 1 to 4 carbon atoms in the alkyl moiety; alkylsulfonylalkylamino of 1 to 4 carbon atoms in each alkyl moiety; hydroxysulfonylamino; hydroxysulfonylalkylamino of 1 to 3 carbon atoms in the alkyl moiety; amidino; guanidino**[**,**]**; formyl**[**,**]**; alkylcarbonyl of 1 to 6 carbon atoms; benzoyl; alkylcarbonyloxy; alkoxycarbonyl or alkoxycarbonyloxy **[**groups**]** of 1 to 6 carbon atoms; formyloxy; carboxyl; aminocarbonyl; alkylaminocarbonyl of 1 to 4

carbon atoms in the alkyl moiety; dialkylaminocarbonyl of 1 to 4 carbon atoms in each alkyl moiety; aminocarboxyl; alkylaminocarboxyl of 1 to 4 carbon atoms in the alkyl moiety; dialkylaminocarboxyl of 1 to 4 carbon atoms in each alkyl moiety; alkoxycarbonylamino of 1 to 4 carbon atoms in the alkoxy moiety; alkoxycarbonylalkylamino of 1 to 4 carbon atoms in each alkyl moiety; cyano; mercapto, alkylmercapto of 1 to 6 carbon atoms; trifluoromethylmercapto; alkylsulfoxy of 1 to 6 carbon atoms; alkylsulfonyl of 1 to 6 carbon atoms; trifluoromethylsulfonyl; aminosulfonyl; alkylaminosulfonyl of 1 to 4 carbon atoms; dialkylaminosulfonyl of 1 to 4 carbon atoms; hydroxysulfonyl [of 1 to 4 carbon atoms]; alkoxysulfonyl of 1 to 4 carbon atoms; aminosulfonyloxy[,]; alkylaminosulfonyloxy of 1 to 4 carbon atoms[,]; dialkylaminosulfonyloxy [groups] of 1 to 4 carbon atoms in each alkyl moiety; straight or branched alkyl of 1 to 6 carbon atoms, which may contain double bonds or may *further* be halo-substituted; azido; dialkylmethyleneimino of 2 to 6 carbon atoms in the alkyl moieties; dialkylaminomethylideneimino groups of 2 to 6 carbon atoms in the alkyl moieties; or phenyl;

R_{11} is hydrogen[,]; alkyl of 1 to 8 carbon atoms; alkenyl of 1 to 8 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; phenyl; benzyl;



C_xF_{2x+1}, where x is 1, 2, 3, or 4; alkoxy of 1 to 4 carbon atoms; benzyloxy[,]; cycloalkyloxy of 3 to 6 carbon atoms; amino[,]; alkylamino of 1 to 8 carbon atoms; dialkylamino of 1 to 8 carbon atoms in each alkyl moiety; cycloalkylamino of 3 to 6 carbon atoms; cycloalkyleneamino of 3 to 6 carbon atoms; [or]



or benzylamino;

R_{12} and R_{13} are each hydrogen; chlorine[,]; methoxy; *or* methyl; [or benzylamino;] and

R_{14} is alkyl of 1 to 6 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; benzyl; phenyl, optionally substituted with one to three methyl groups; amino; alkylamino of 1 to 6 carbon atoms; or dialkylamino of 1 to 6 carbon [atons] *atoms* in each alkyl moiety; or a non-toxic, pharmacologically acceptable salt thereof.

4. An antibiotic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective antibiotic amount of a compound of claim **1**.

Re. 31,927

ELECTROSTATICALLY SPRAYABLE INSECTICIDAL FORMULATIONS

Ronald A. Coffee, Haslemere; Brian W. Young, Emmer Green, and Michael R. Middleton, Arborfield Cross, all of England, assignors to Imperial Chemical Industries PLC, London, England

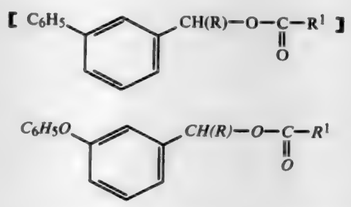
Original No. 4,316,914, dated Feb. 23, 1982, Ser. No. 137,781, Apr. 7, 1980. Continuation of Ser. No. 969,434, Dec. 14, 1978, abandoned. Application for reissue Nov. 29, 1982, Ser. No. 445,223

Claims priority, application United Kingdom, Dec. 20, 1977, 52970/77

Int. Cl.[3] **A01N** *37/00, 37/08, 37/34*

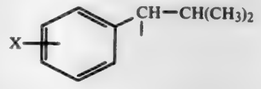
U.S. Cl. 514—521 **4 Claims**

1. An electrostatically sprayable insecticidal formulation suitable for use in an electrostatic spraying apparatus to spray plants to give an even coating of the insecticide on the leaves of said plants, the formulation having after spraying a spray droplet size in the range of from about 50 to about 200 microns in diameter, and consisting essentially of a solution of from 0.5 to 50% by weight of an insecticide in an inert organic solvent medium, said medium being a mixture of inert organic solvents or a mixture of inert organic solvents and an antistatic agent, formulated so that the formulation has a resistivity at 20° C. in the range 1×10^6 to 1×10^{10} ohm centimeters, and a viscosity at 20° C. in the range 5 to 50 centistokes, and the insecticide being of formula:



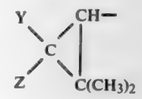
where R is hydrogen *or cyano*, and R^1 is selected from the group consisting of:

(i) a group of formula:



where X is selected from hydrogen, chlorine and methyl, and

(ii) a group of formula:



where Y and Z are selected from halogen[,] *and* methyl, [and] *or Y is hydrogen and Z is methyl or* a group of formula $R^2R^3C{=}CH{-}$, where R^2 and R^3 are selected from chlorine, bromine, methyl, ethyl, halo-substituted methyl and halo-substituted ethyl.

Re. 31,928

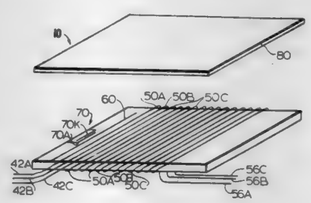
DISPLAY PANEL FOR DISPLAYING A BAR OF LIGHT

Donald E. Miller, Stockton, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Original No. 4,017,759, dated Apr. 12, 1977, Ser. No. 600,838, Jul. 31, 1975. Application for reissue Oct. 11, 1977, Ser. No. 841,230

Int. Cl.[3] **H01J** *17/04;* **H05B** *37/00*

U.S. Cl. 313—631 **4 Claims**



3. A gas discharge panel comprising

a substrate having a front surface;

a plurality of continuous electrode wires wound around said substrate in alternating sequence, each turn of each of said plurality of wires around said substrate having a portion adjacent said front surface of said substrate, each of said turns being in alternating sequence with a turn of another of said wires to form a ladder array of said portions, each of said portions of an individual wire of each of said plurality of wires being electrically interconnected by the winding configuration of each of said plurality of wires around said substrate;

second electrode means positioned in operative relation to said electrode wires;

means forming a thin sealed envelope enclosing said front surface of said substrate; and

an ionizable gas contained in said envelope, to provide a glow discharge between said second electrode and any one of said wires for transfer along said ladder array by external electrical potential means connected to said second electrode and said wires to apply electrical potential in repeating sequence to said plurality of wires.

Re. 31,929

ELECTRONIC PACKAGE AND ACCESSORY COMPONENT ASSEMBLY

Charles J. Donaher, Los Altos Hills, and Gordon D. Christensen, San Jose, both of Calif., assignors to Thomas & Betts Corporation, Raritan, N.J.

Original No. 4,356,532, dated Oct. 26, 1982, Ser. No. 170,014, Jul. 18, 1980. Application for reissue May 27, 1983, Ser. No. 499,095

Int. Cl.[3] **H05K** *7/20*

U.S. Cl. 361—393 **10 Claims**

1. An electronic assembly comprising:

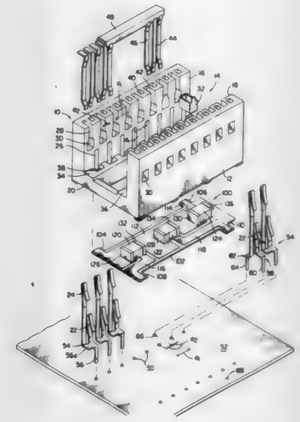
an electronic package having electrical contacts;

accessory component means for said package having electrical contacts for connection with said package contacts, said component means including a substrate and a component supported by said substrate, said substrate defining said component means contacts;

receptacle means having an upstanding housing defining a top opening removably receiving said package, a bottom opening removably receiving said component [means] and a channel extending between such top and bottom openings providing for residence of said package and said component [means] in vertically spaced relation in said receptacle means, said substrate being juxtaposed with a housing surface adjacent said bottom opening;

a plurality of contact elements having first portions fixedly supported in said housing, said first portions extending through said bottom opening and exteriorly thereof for engagement externally of said assembly and second portions vertically spaced from said first portions and electrically engaging said package contacts;

said substrate further including ear portions extending horizontally outwardly thereof, said contact element first portions including horizontally extending lands adjacent said housing surface, said substrate ear portions and said lands being electrically connected adjacent said housing surface.



PLANT PATENTS

GRANTED JUNE 25, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,498

CARNATION NAMED STANPIRAN

Jacob van Andel, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij, M. C. van Staaveren, Aalsmeer, Netherlands

Filed Nov. 30, 1983, Ser. No. 556,682
Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—73 **1 Claim**

1. A new and distinct carnation cultivar, suostantially as herein shown and described, characterized by its continuous production of relatively large and solid light red flowers and by its ability to retain the same flower color production through all seasons.

5,499

CARNATION NAMED STANBLANCA

Jacob van Andel, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij, M. C. van Staaveren, Aalsmeer, Netherlands

Filed Nov. 30, 1983, Ser. No. 556,612
Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. The new and distinct variety of carnation plant, substantially as herein shown and described, characterized by its continuous production of light yellow flowers of medium size and large quantity of loosely imbricated petals.

5,500

CARNATION NAMED MUREDO

Jacob van Andel, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij and M. C. van Staaveren, both of Aalsmeer, Netherlands

Filed Nov. 30, 1983, Ser. No. 556,456
Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—73 **1 Claim**

1. The new and distinct variety of miniature carnation, substantially as herein shown and described, characterized in particular by rapid production of blooms and a larger number of blooms per flower stem.

5,501

ALSTROEMERIA NAMED STALROBU

Jacob van Andel, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij and M. C. van Staaveren, both of Aalsmeer, Netherlands

Filed Aug. 11, 1983, Ser. No. 522,314
Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. The new and distinct variety of alstroemeria plant, substantially as herein shown and described, characterized by the distinctive red-purple coloration of its large flowers carried by sturdy, long and generally straight umbel stems.

5,502

CHRYSANTHEMUM PLANT NAMED CHARM

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 21, 1983, Ser. No. 506,505
Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., named Charm, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; light lavender pink ray floret color; diameter across face of capitulum ranging from 90 to 110 mm. at maturity; uniform eight week photoperiodic flowering response; medium plant height, and spreading branching pattern.

PATENTS

GRANTED JUN. 25, 1985

ERRATA

For CLASS	See PATENT NO.
294–099	4,524,647
367–167	4,524,693
106–035	4,524,824
280–081	4,524,841
423–235	4,525,142
604–028	4,525,156
604–052	4,525,157
556–182	4,525,307
514–210	4,525,355
514–234	4,525,356
514–258	4,525,357
514–255	4,525,358
514–653	4,525,359
514–277	4,525,360
514–689	4,525,361
514–712	4,525,362
536–028	4,525,736

PATENTS

GRANTED JUNE 25, 1985

GENERAL AND MECHANICAL

4,524,463
WRAP AROUND GARMENT
Danny W. Ogden, 1605 19th, Woodward, Okla. 73801
Filed Sep. 13, 1982, Ser. No. 417,077
Int. Cl.³ A41D *1/22;* A41B *9/14*
U.S. Cl. 2—105 **5 Claims**



1. A wrap-around garment comprising a back section having a right front section and left front section extending outwardly from opposite sides thereof, and a single body encircling means secured to only one of said front sections and extending transversely outwardly therefrom for wrapping completely around the body in a position against the outer surface only of the garment and securable in said wrapped position for securely retaining the front sections in an overlapping relationship during wearing of the garment.

4,524,464
SAFETY GLOVE WITH MODIFIED DORSAL THUMB SPICA BRACE
George A. Primiano, 125 S. Green St., E. Stroudsburg, Pa. 18301, and Frank P. Primiano, Jr., 4901 Hartley Dr., Lyndhurst, Ohio 44124
Filed Sep. 14, 1984, Ser. No. 650,629
Int. Cl.³ A41D *19/00*
U.S. Cl. 2—161 A **19 Claims**



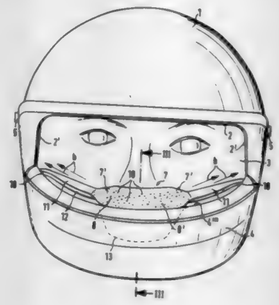
1. In a reinforced glove adapted to overfit the human hand including at least an inner layer for the engagement of the human hand and an outer layer for protection of the human hand, an improvement comprising:

(a) a modified dorsal thumb spica brace beginning distal to the wrist and extending to generally the end of the thumb including the interphalangeal joint of said thumb, thereby allowing flexion and extension of said wrist, said brace extending across said dorsal side of said hand at least proximate the ulnar border, said brace terminating distally from said wrist on the palmar side proximate the palmar crease, and on said dorsal side proximate the junction of proximal two-thirds and distal one-third of the metacarpals thus allowing free range of motion of the metacarpophalangeal joints of the second through fifth digits, said thumb portion also contoured to prevent thumb hyperextension at said metacarpophalangeal joint, and at said interphalangeal joint of said thumb, so that a wearer may retain a pole-like object in his palm by opposition; and,

(b) a pocket adapted to overfit and retain said brace between said inner and said outer layer,

whereby said brace will decrease the ulnar collateral ligament injuries involving the metacarpophalangeal joint of the thumb and adjacent bony structures of a wearer who is attempting to break the force of a fall with his open hand.

4,524,465
SAFETY HELMET, ESPECIALLY FOR MOTORCYCLISTS
Siegfried Huber, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany
Filed Jul. 21, 1983, Ser. No. 515,899
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1982, 3227410
Int. Cl.³ A42B *1/08*
U.S. Cl. 2—424 **10 Claims**



1. A safety helmet having a viewing opening comprising pivotably mounted visor means for the viewing opening, a chin protector, and an air duct member disposed generally in the center of the chin protector of the helmet, said air duct member projecting upwardly from an upper rim of the chin protector, the air duct member being formed from an elastomeric material and having an edge zone facing the visor means, said edge zone being adapted to project past the contact area of the visor means at the chin protector whereby the air duct member is in intimate contact with the visor when the visor is opened a crack.

4,524,466
CONTINUOUS ROTATION REVERSIBLE PITCH AXIAL THRUST HEART PUMP
Charles W. Hall, and Orin M. Anderson, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.
Filed Nov. 30, 1983, Ser. No. 556,654
Int. Cl.³ A61F *1/00, 1/24;* A61M *1/03*
U.S. Cl. 603—3 **8 Claims**

1. A continuous rotation reversible pitch impeller heart pump comprising,

a housing,

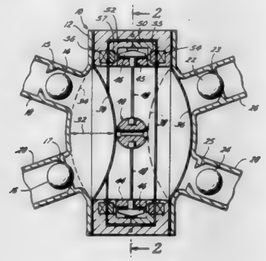
a first inlet and outlet valve connected to the housing,

a second inlet and outlet valve connected to the housing,

a first diaphragm movable in the housing for alternately

pumping fluid from the first inlet and out of the first outlet valve,

a second diaphragm movable in the housing for alternately pumping fluid from the second inlet and out of the second outlet valve,



a continuous rotation impeller thrust pump positioned in the housing between the first and second diaphragms, said impeller including a plurality of rotating blades, and

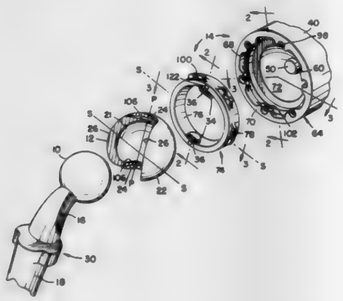
means for alternately reversing the pitch angle of said blades for alternately applying a pressure and suction stroke to each of the diaphragms for alternately pumping fluid into and out of the housing by each of the diaphragms.

4,524,467

APPARATUS FOR CONSTRAINING A SOCKET BEARING IN AN ARTIFICIAL JOINT

Alfred F. DeCarlo, Jr., Stamford, Conn., assignor to Joint Medical Products Corp., Stamford, Conn.

Filed Nov. 21, 1983, Ser. No. 553,518
Int. Cl.³ A61F *1/04*
U.S. Cl. 603—22 **1 Claim**



1. A ball and socket joint for implanting in the body which comprises:

a ball;

a cup with a spherical cavity, said cup including first and second elements, the first element to be affixed to bone and the second element having associated therewith two spaced apart coaxial pin members which extend into the spherical cavity and whose common axis defines an axis of rotation, said second element being moveable with respect to the first element to provide a plurality of possible orientations for said axis of rotation, said cup having a projection in the form of an axially symmetric pin extending into the spherical cavity at the geometric pole of the cavity; and

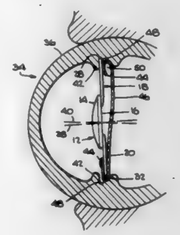
a bearing member surrounding a portion of the ball and rotatable within said spherical cavity about said coaxial pin members, the axis of rotation of the bearing member being the axis of rotation defined by the common axis of the pin members, said bearing member including an aperture for receiving the projection, said aperture having end walls and side walls, the projection and the aperture being sized so that the projection can be received in the aperture for each of the possible orientations of the axis of rotation, the rotation of the bearing being constrained by engagement of an end wall of the aperture with the projection.

4,524,468

INTRAOCULAR LENSES

Charles D. Kelman, North Shore Towers, 269 Grand Central Pkwy. Bldg. 3, Floral Park, N.Y. 11005

Filed May 13, 1983, Ser. No. 494,306
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 603—6 **10 Claims**



1. An intraocular lens suitable for use as an artificial lens implant, the lens comprising:

a medial, light-focusing, lens body intended to be positioned adjacent to the pupil in the posterior chamber of the eye, and a pair of position fixation members connected with said lens body;

one of said position fixation members extending generally laterally outwardly from a first region of the periphery of said lens body and intended to extend to and seat adjacent to the periphery of the iris in the vascular tissue of the ciliary sulcus;

the other of said position fixation members extending generally laterally outwardly from a second region of the periphery of said lens body and intended to extend to and resiliently seat in the non-vascular tissue of the cul-de-sac formed between the anterior and posterior capsules of the eye;

said one position fixation member comprising a first material which is substantially biologically inert to the environment within the eye and exhibits a given springiness and said other position fixation member comprising a second material which is substantially less biologically inert to the environment within the eye than said first material and exhibits a substantially greater springiness than said first material;

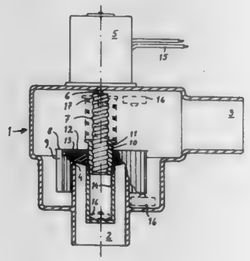
whereby, when the lens is seated in the eye, the vascular tissue of the ciliary sulcus will be in contact only with said substantially biologically inert material and said substantially less biologically inert material will be in contact only with the non-vascular tissue of the posterior capsule of the eye.

4,524,469

COMBINED FAN AND VALVE

Per-Erik Magnusson, V. Frölunda, Sweden, assignor to Lagerstedt & Krantz AB, Gothenburg, Sweden

PCT No. PCT/EP82/00006, § 371 Date Sep. 8, 1982, § 102(e) Date Sep. 8, 1982, PCT Pub. No. WO82/02568, PCT Pub. Date Aug. 5, 1982
PCT Filed Jan. 18, 1982, Ser. No. 417,116
Claims priority, application Sweden, Jan. 22, 1981, 8100360
Int. Cl.³ E03D *9/02*
U.S. Cl. 4—216 **2 Claims**



1. A combined fan and valve suitable for use with a water closet, comprising:

a substantially vertical motor-driven drive shaft having spindle threads; and

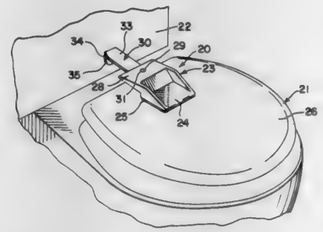
a fan wheel having an electric sealing membrane attached thereto adapted to seal against a valve seat positioned in the housing and a hub including spindle threads for cooperation with the threads of the drive shaft, the drive shaft threads and the hub threads having a pitch sufficiently large to overcome frictional forces between the drive shaft threads and the hub threads by the force of gravity on said fan wheel when the drive shaft is standing still, whereby said fan wheel and said sealing membrane continue to rotate after the shaft has stopped and move downwardly, screwing said sealing membrane tightly against the valve seat.

4,524,470

TOILET LID LOCK MECHANISM

David J. Grenell, 1396 Hadden Cir., Akron, Ohio 44313

Filed Oct. 9, 1984, Ser. No. 659,010
Int. Cl.³ A47K *13/24*
U.S. Cl. 4—253 **2 Claims**



1. For use, in combination with a hinged toilet lid and an apron surface disposed substantially perpendicular with respect to the plane of said lid a lock mechanism normally restraining a manual raising movement of said toilet lid about a lid hinge;

said lock mechanism having a lid control shoe with an outer portion having an under surface adapted for attachment to an upper surface on said lid and a shelf portion projecting toward said toilet apron surface above said lid upper surface, the under side of said shoe shelf having a medially positioned pivot;

said lock mechanism further having a lid control arm movably rotatably mounted at said shoe shelf pivot, said arm having, when in a locking position, a short portion on one side of said pivot extending toward said shoe outer portion and a long portion on the other side of said pivot extending toward an area adjacent said toilet apron surface, said control arm long portion having an inwardly directed side at the end thereof, away from said pivot, said control arm long portion carrying a vertical flange extending substantially parallel to said apron surface;

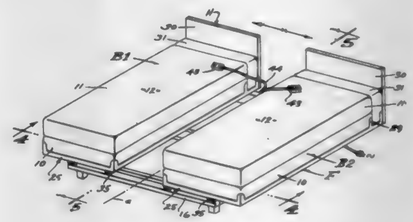
said lock shoe shelf carrying a tension means and a stop means to normally position said control arm vertical flange in proximity to said toilet apron surface and to allow movement of said flange away from said apron when said arm is manually pivoted.

4,524,471

POWER OPERATED SEPARABLE BEDS AND SUPPORT THEREFOR

Mansour N. Mansouri, 1717 Sanysidro Dr., Beverly Hills, Calif. 90210; Masoud N. Mansouri, 1110 N. Bundy Dr., Los Angeles, Calif. 90049, and Kambiz Imani, 11667 Ohio Ave., Los Angeles, Calif. 90025

Filed Jan. 5, 1984, Ser. No. 568,347
Int. Cl.³ A47C *19/00*
U.S. Cl. 5—8 **6 Claims**



1. A composite bedding unit comprised of two like and adjoining single bed units and each having a head and foot rail and adapted to be juxtaposed to a median line in a primary double bed condition and to be separated from the median line to a secondary single bed condition, and including;

transverse horizontally disposed guide tracks upstanding from a floor supported base at both the head rail and foot rail of and extending parallel one with the other and substantially coextensively beneath the widths of the two single bed units when they are adjacently juxtaposed at the median line in said double bed condition,

laterally spaced support rollers carried by the head and foot rails and engageable over the guide tracks to individually carry each of the two single bed units for transverse movement toward and away each other,

transverse downwardly disposed stabilizing tracks parallel with and overlying a portion of each of the guide tracks and each stabilizing track extending from the median line a distance less than the extent of the guide tracks and substantially equal to the travel of the single bed unit,

each bed unit having at least one roller carried at the inner ends of the head and foot rails to engage upwardly against the stabilizing tracks when the bed unit is cantilevered,

and transport means for positioning either and both of the two single bed units by transverse movement into either of said primary double bed condition and said single bed condition.

4,524,472

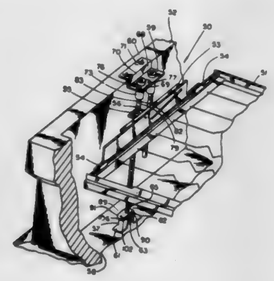
COFFIN BED ADJUSTING APPARATUS

Robert K. Foust, 301 Mary Kay, Connersville, Ind. 47331

Continuation-in-part of Ser. No. 405,993, Aug. 6, 1982, Pat. No. 4,404,716. This application Aug. 25, 1983, Ser. No. 526,170

Int. Cl.³ A61G *7/00*

U.S. Cl. 5—62 **23 Claims**



1. An apparatus for elevating a bed in a burial casket, said apparatus comprising:

an elevating support member;

a bed support member pivotally mounted to said elevating support member, said bed support member including an elongated slot which has a first slot end and a second opposite slot end, said first slot end being closer to said pivoting point than said second opposite slot end;

tilting means mounted to said elevating support member, said tilting means including an arm which is slidably received in said elongated slot so that the sliding of the arm causes contact with the walls of the slot resulting in pivoting of the bed support member about its pivoting point;

a bracket in fixed relation with said elevating support member, said bracket including an internally threaded channel;

a vertical threaded rod threadedly engaged with said internally threaded channel of said bracket, the rotation of said rod vertically adjusting the position of said bracket along said threaded rod, said threaded rod further having a keyway along the lower portion of said rod;

mounting means for vertically mounting said threaded rod to said casket in free rotation, said mounting means including a first mounting member attachable to the casket at the base of the casket, said first mounting member defining an aperture through which said lower end of said threaded rod is insertable;

a first stop member having a threaded aperture threadedly received on said rod above said first mounting member;

a second stop member defining a key aperture received on said rod above said first mounting member, said second stop member engaging said keyway to be slidable along said rod and to be immobile in a rotational direction about said rod;

stop member locking means for locking said first stop member to said second stop member to form a stop assembly which engages with said first mounting member to maintain a fixed length of said rod inserted into said aperture.

4,524,473

FOAM MATERIAL BODY FOR A PAD, PARTICULARLY A MATTRESS

Hansruedi Fanti, Flüh, Switzerland, assignor to Matra AG, Flüh, Switzerland

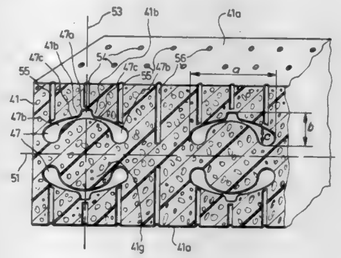
Continuation-in-part of Ser. No. 188,595, Sep. 19, 1980, Pat. No. 4,397,053. This application Jan. 10, 1983, Ser. No. 456,759

Claims priority, application Switzerland, Sep. 20, 1979, 8481/79

Int. Cl.³ A47C *27/14*

U.S. Cl. 5—481 **20 Claims**

1. A foam material body for a pad, particularly a mattress, comprising a body part having in a position lying on a horizontal surface, a longitudinal inner plane and two supporting surfaces located at both sides of the latter, said body part having a plurality of channels located at both sides of said longitudinal inner plane and extending parallel to one another, each of said channels having a transverse plane of symmetry extending normal to said longitudinal inner plane of said body part, and each of said channels having a middle channel portion arranged at said plane of symmetry of the same channel, two deep channel portions located at opposite sides of said transverse plane of symmetry of the same channel and each including an end distant from said middle channel portion and



a constriction between said end and said middle channel portion of the same channel, each of said deep channel portions of each of said channels being elongated and having a depth measured from the respective supporting surface and increasing in a direction away from said transverse plane of symmetry, each of said deep channel portions of each of said channels having a side facing toward said longitudinal inner plane and being limited at said side by a body part portion which forms a limiting face, said limiting face of each of said deep channel portions of each of said channels being curved in a direction away from said transverse plane of symmetry at least partially toward said longitudinal inner plane.

4,524,474

ABSORPTION PAD

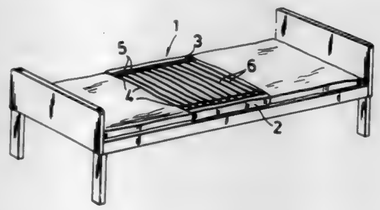
Sven A. T. Svensson, Halmstad, Sweden, assignor to Duni Bila AB, Sweden

Filed Apr. 26, 1983, Ser. No. 488,742

Claims priority, application Sweden, Apr. 29, 1982, 8202716

Int. Cl.³ A47G *9/02;* **A61G** *9/00*

U.S. Cl. 5—484 **9 Claims**



1. An absorption pad for protecting a bed, furniture, or the like, the pad comprising:

a liquid impervious material layer, a liquid absorbent layer affixed over the impervious layer;

a liquid resistant agent impregnated into the absorbent material layer; the impregnated agent being arrayed over the absorbent material layer in a plurality of strings of the agent for defining a pattern of compartments separated by the strings for limiting the spread of liquid over the pad the layers being laminated together in such a manner that liquid migration under the strings is prevented, whereby after a compartment is saturated with liquid, the liquid overflows over the strings into adjacent compartments.

4,524,475

HOSPITAL BED STEP

Pearl T. Valentino, 5002 - 9 Ave., Rear Ground, Brooklyn, N.Y. 11220

Filed Mar. 22, 1984, Ser. No. 592,265

Int. Cl.³ A47C *19/22*

U.S. Cl. 5—507 **1 Claim**



1. A hospital bed step, comprising in combination:

(a) an adjustable step support rod which has a multiplicity of diametrically opposed holes placed at different heights along said support rod;

(b) a rail clamp which is attached to said adjustable step support rod, for securement to a top rail on a hospital bed which has three sides which are perpendicular to each other, wherein when said rail clamp is placed upon said top rail the top of said top rail and the front and back of said top rail are in direct contact with said rail clamp;

(c) means for locking said rail clamp to, said top rail on said hospital bed, which is a pair of threaded thumbscrews with mating thumbscrew bushings mounted to one side of said rail clamp wherein said thumbscrews force said top rail and said rail clamp together.

(d) a step upon which a patient may step in order to climb into said hospital bed;

(e) a step support bracket rigidly welded to said step;

(f) a step support clamp which is a length of tubing with at least one pair of diametrically opposed holes rigidly welded to said step support bracket;

(g) means for locking said step clamp with associated attached said step support bracket and said step, to said adjustable step support rod such that said step is rigidly fixed when a patient steps upon said step, which comprises a locking bar which passes through both said diametrically opposed holes in said step support clamp and through said diametrically opposed holes in said adjustable step support rod, an end stop on one end of said locking bar and a latch and pivot on the opposing end wherein once said locking bar has been inserted through said diametrically opposed holes, said latch which is shaped to pass through said holes may be rotated by ninety degrees thereby preventing the removal of said locking bar without first rotating said latch another ninety degrees; and

(h) means for storing said step under said hospital bed without removing said rail clamp from said top rail of said hospital bed.

4,524,476

BEE SHIPPING BOX AND HIVE

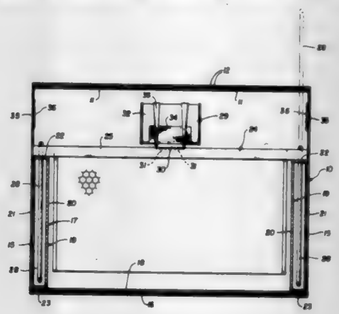
John Q. Adams, IV, 1206 Foxcroft Rd., Richmond, Va. 23229

Filed Feb. 14, 1984, Ser. No. 580,124

Int. Cl.³ A01K *47/00*

U.S. Cl. 6—1 **7 Claims**

1. A bee shipping box and beehive unit comprising a rectangular open top box body having hinged top closure flaps, a reinforcing insert removably mounted in the box body and resting on the bottom wall thereof and including end hollow spacing members adjacent to the end walls of the box body and having top support surfaces, plural frames having top bars resting on said support surfaces, flexible handles connected with the spacing members by means of which the insert and



frames are liftable bodily from the box body, a feeder assembly mounted removably on the frame top bars within the top portion of the box body, and a screen closure section within the box body above the frames and having end bars adapted to be releasably secured to the side walls of the box body.

4,524,477

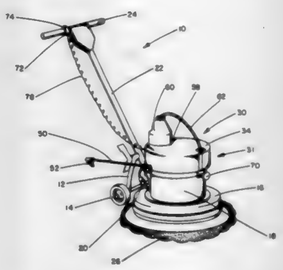
CLEANING SOLUTION DISPENSER ATTACHMENT FOR ROTARY FLOOR CLEANING MACHINE

Robert C. Williams, III, Raleigh, and Stephen R. Williams, Cary, both of N.C., assignors to U.S. Floor Systems, Inc., Raleigh, N.C.

Filed May 21, 1984, Ser. No. 612,449

Int. Cl.³ B05B *15/06;* **A47L** *11/34*

U.S. Cl. 15—50 R **10 Claims**



1. A floor cleaning solution applicator attachment for attachment to an individually propelled rotary floor cleaning machine of the type having a mobile main frame, an electric motor supported by said mobile main frame and having a motor housing structure surrounding the same, a rotary floor cleaning assembly operatively connected and driven by said electric motor and operative to drive a bonnet type cleaner, and a handle assembly operatively connected to said mobile main frame and extending therefrom, said floor cleaning applicator attachment, comprising:

A. a pump housing structure;

B. adjustable connecting means for attaching and detaching said pump housing structure to the top of said electric motor housing structure;

C. electric pump means mounted within said pump housing structure and including an inlet and outlet;

D. container receiving means associated with said pump housing structure for receiving and holding a container;

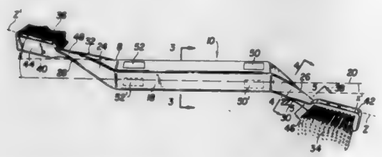
E. container means for being received by said container receiving means of said pump housing structure in order that said container means may be supported and held by said pump housing structure;

F. connecting line means operatively interconnected between said container means and said inlet of said pump means;

G. dispensing means operatively connected to said outlet of said pump means and extending outwardly from said pump housing structure for dispensing a carpet cleaning solution contained within said container means onto an underlying floor area; and

H. on-demand control means adapted to be mounted on said handle assembly of said rotary floor machine for selectively actuating said pump means and dispensing carpet cleaning solution as desired as the rotary floor machine is moved over an area.

4,524,478
TOOTHBRUSH
L. Wayne Ross, 1107 Church St., Bastrop, Tex. 78602
Filed Jun. 17, 1983, Ser. No. 505,433
Int. Cl.[3] A46B *9/04*
U.S. Cl. 15—106 **3 Claims**



1. A toothbrush comprising:

an enlongated generally square handle with an intermediate portion having a longitudinal axis, and,

said handle containing four labels clearly indicating locations of intended usage, said four labels being prominently displayed and being located at or near ends of said handle, with two of said labels being at each end of said handle, and two labels at each end of said handle being located on opposite sides thereof, and,

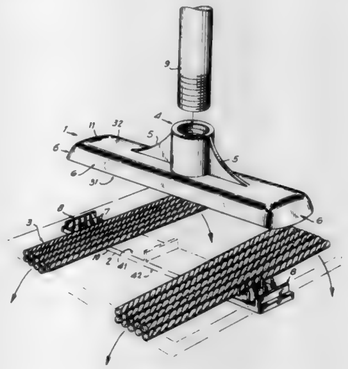
a pair of neck portions respectively secured to opposite ends of said handle, said neck portions extending in substantially parallel planes but with curved sides bringing ends of said neck portions most remote from said handle completely out of and at opposite angles to said longitudinal axis, and

a pair of neck ends respectively secured to opposite ends of said handle by means of said neck portions, said neck ends extending in nonparallel planes by virtue of placement on said neck portions at opposite angles of approximately 45 degrees to and rotated around said longitudinal axis, and,

said neck ends having bristle tufts secured thereto so as to form bristle arrangements that extend perpendicularly from said neck ends, with said neck ends oriented so said bristle arrangements generally oppose each other in direction, and

said bristle arrangements each consisting of three component portions of bristle tufts, said three portions of bristle tufts generally arranged in rows and extending the entire lengths of said neck ends, said three portions of bristle tufts generally perpendicular to said neck ends, said bristle arrangements being diametrically opposed to each other in arrangement on said neck ends, whereby said bristle arrangements can be more specialized and improved in the effective removal of plaque from user's teeth and gumline.

4,524,479
REPLACEABLE PLASTIC MOPHEAD
Paul O. Wright, Schenectady, N.Y., assignor to White Mop Wringer Company, Fultonville, N.Y.
Filed Oct. 28, 1983, Ser. No. 546,722
Int. Cl.[3] A47L *13/24*
U.S. Cl. 15—147 R **13 Claims**



1. A mophead comprising:

a first element having a rigid base and a plurality of substantially uniform fingers, the fingers being spaced apart in two dimensions along and projecting from one side of the base in a first spaced relationship, the distance between two adjacent fingers measured perpendicular to the longitudinal axis of a predetermined size mopstrand being less than the diameter of a mopstrand;

a second element having a rigid base and a plurality of substantially uniform fingers, the fingers being spaced apart in two dimensions along and projecting from one side of the base in a second spaced relationship, the distance between two adjacent fingers measured perpendicular to the longitudinal axis of a predetermined size mopstrand being less than the diameter of a mopstrand;

a water-absorbent mop material comprising a plurality of individual strands substantially uniformly dispersed along and between the first and second elements wherein each strand has a diameter greater than the distance between two adjacent fingers; and

a first means for permanently securing the first and second elements together and for securing the water absorbent mop material between the first and second elements, wherein the first spaced relationship corresponds to the second spaced relationship so that the fingers of the first and second elements project in opposition, and collectively contact, penetrate, and displace local areas of the individual strands of water-absorbent mop material adjacent each finger penetration to provide substantially the sole means for holding the strands together and in the mophead and for preventing any strand from being pulled out of the mophead.

4,524,480
WIRE WHEEL COVER BRUSH
Stephen R. Bloom, Bloomfield Hills, Mich., assignor to Perfection Automotive Products Corp., Livonia, Mich.
Filed Aug. 1, 1983, Ser. No. 519,048
Int. Cl.[3] A46B *9/02*
U.S. Cl. 15—159 A **1 Claim**

1. A wire wheel cover brush for cleaning a vehicle wire wheel cover having a plurality of wire wheel cover spokes and a spaced apart wire wheel cover back-up plate, comprising:

a handle portion adapted for being gripped by a user;

a tapering head portion having a rounded front edge and two rounded side edges, said head portion including first and second side surfaces tapering from said side edges to said front edge to form a first corner at said front edge and to allow said edges to get between said wire wheel cover spokes, said head portion converging from said two side edges, opposite said front edge, towards said handle portion to prevent said head portion from being hung up between said wire wheel cover spokes upon removal from behind the plane of said wire wheel cover spokes, third and fourth side surfaces tapering from said side edges to said handle portion, said third side surface and said first side surface converging to one of said side edges to form a second corner at said one side edge, and said fourth side surface and second side surface converging to the other side edge to form a third corner at said other side edge;

a brush bristle portion projecting from the upper surface of said head portion, wherein said brush bristle portion having at least two different lengths of brush bristles so that said longer brush bristles will get through said wire wheel cover spokes to said back-up plate and some of said shorter brush brustles will contact and fold around said wire wheel cover spokes, and said brush bristle portion having a plurality of U-shaped bristles gathered together in a plurality of tufts, and said tufts positioned in only three circular groupings of sufficient density to prevent undue bending of said brush bristles upon contacting said back-up plate, a plurality of tuft anchoring holes formed in said brush head portion upper surface normal to said brush head portion upper surface, said anchoring holes positioned only in said three circular groupings and fastening means for anchoring said tufts in said tuft anchoring holes, a first circular grouping positioned at said first corner, said first grouping substantially occupying the space defined between said first and second side surfaces adjacent said front edge, a second circular grouping positioned at said second corner, said second grouping substantially occupying the space defined between said first and third side surfaces adjacent said one side edge, and a third circular grouping positioned at said third corner, said third grouping substantially occupying the space defined between said second and fourth side surfaces adjacent said other side edge;

said front edge and said side edges of said head portion being slightly rounded to allow further penetration of said bristle portion beyond the plane of said wire wheel spokes; and

said groupings being positioned in a triangular arrangement, a predetermined space separating said groupings sufficient to allow said wire spokes to pass between said groupings whereby said groupings can penetrate between said wire spokes to said back-up plate and simultaneously clean both said wire spokes and said back-up plate without said brush bristles within each grouping being separated by said spokes.

4,524,481
DUAL BLADE WINDSHIELD WIPER
Pieter C. Koomen, 132 W. Surrey, Phoenix, Ariz. 85029
Filed Nov. 28, 1983, Ser. No. 555,585
Int. Cl.[3] B60S *1/38*
U.S. Cl. 15—250.41 **12 Claims**



1. A flexible wiper attachable to a harness for wiping fluids from a surface, said wiper comprising in combination:

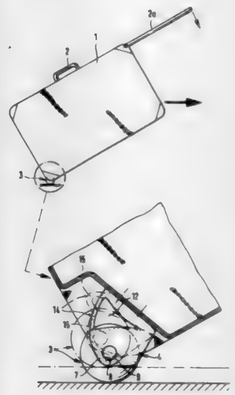
(a) a flexible body portion;

(b) a flexible U-shaped membrane formed as part of said body portion and having a pair of opposed sides depending from said body portion and a base section interconnecting said depending opposed sides;

(c) a central rib and two lateral ribs bracketing said central rib formed as part of and extending from said base section; and

(d) means formed as part of and depending from said body portion intermediate said opposed sides for exerting a force directly upon said base section during operation of said wiper.

4,524,482
UNITARY RESILIENT BEARING SUPPORT
Christoph Mueller, Kleiner Muristalden 28, CH-3006 Bern, Switzerland
Filed Jan. 14, 1983, Ser. No. 457,902
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3202007
Int. Cl.[3] B60B *33/00*
U.S. Cl. 16—44 **5 Claims**



1. Bearing support for a container which is adapted to be rolled along a support surface via transport roller means disposed on rotatable axle means at the bottom of the container comprising:

a unitary resilient bearing part having upper and lower portions and a cavity of substantially triangular cross section extending therethrough at a position between said upper and lower portions, said cavity being delimited by three cavity walls and three parallel apices formed by the respective intersection of said cavity walls, wherein said triangular cavity has one short side and two other sides

longer than said short side, said short side positioned on a rear position of the bearing support when said support is in a forward travelling condition, wherein one of said walls at said short side is curved slightly outward with respect to points within said triangular cavity so that a compression of the bearing part results in a bending flexure of said one wall, wherein the other two walls of the triangular cavity are curved to arch in a convex shape relative to points within the triangular cavity, wherein the other two walls are configured to increasingly abuttingly engage one another from the apex toward said short side in response to increased compression of the bearing part and resulting shortening of said short side, whereby the resistance to compression of said bearing support is increased as the compression forces are increased,

roller bearing means integral with said lower portion of said resilient bearing part for rotatably supporting said axle means, and

connecting means integral with said upper portion of said resilient bearing part for connecting said bearing part to container frame means,

wherein, in use, said one wall of said cavity is substantially perpendicular to said supporting surface and the apices of said cavity are parallel to said axle means whereby shock forces effecting relative movement of said roller means and said frame means are resiliently absorbed by compression of said resilient bearing part, by flexural bending of said one wall of said triangular cavity and by elastic pivoting movement of the remaining two walls of said cavity about their respective apex.

4,524,483

ADJUSTABLE LENGTH FLEXIBLE HANDLE

Thomas F. Lynham, and Lee J. Curtis, both of c/o MacNeills Warehouse, Newhams Row, 175 Bermondsey St., London, SE1, England

Filed Jan. 19, 1984, Ser. No. 572,004

Claims priority, application United Kingdom, Jan. 20, 1983, 8301496

Int. Cl.³ A47B *95/02*

U.S. Cl. 16—114 R **9 Claims**



1. An article of furniture comprising a door and/or a drawer which are openable and closeable by a handle, the handle comprising a hollow elongate body made of a flexible material, a pair of end collar members which are a sliding fit one over each end portion of the body, and a pair of screw members for screwing one into each end portion of the body to secure the body to the door or the drawer with the end collar members abutting the door or the drawer, the end collar members being slideable along the entire length of the body so that the body can be cut to any desired length to fit any existing handle holes in the door or the drawer and to have any desired curvature permitted by the flexible material, the end collar members being a sufficiently tight sliding fit that they act to try and prevent outward expansion of the end portions of the body as the screw members are screwed into position in the end portions of the body so that the end portions become firmly sandwiched between the collar members and the screw members, and the body having a bore which is of a size that enables the screw members to bite into the flexible material as the screw members are screwed into position and which is of a uniform size along its length so that the screw members can be screwed into the end portions of the body irrespective of where the body may have been cut without the need for bore enlargement to receive the screw members.

4,524,484

EXTENSION HANDLE HAVING COOPERATING MALE AND FEMALE LOCKING SLEEVES

John W. Graham, Simpsonville, S.C., assignor to Swiss-Tex, Incorporated, Piedmont, S.C.

Filed Jun. 15, 1983, Ser. No. 504,627

Int. Cl.³ B25G *1/04*

U.S. Cl. 16—115 **4 Claims**



1. An extension handle for manipulating a tool, such as a window washing device, and comprising first and second tubular pole members each formed of relatively thin material formed into a tube with the edges joined by a lock seam of multiple layers of material extending longitudinally of the tube and located on the interior surface thereof, said lock seam defining a reinforcing rib on each of said pole members, said second pole member having a smaller external diameter than the internal diameter of said first pole member and having an inner end portion thereof telescopically received within said first pole member and another portion thereof extending outwardly from one end of said first pole member, and locking means carried by said one end of said first pole member and slidably receiving said second pole member therein for locking said second pole member in one of a number of extended or retracted positions, said locking means comprising a first tubular member including a mounting sleeve on one end and including a beveled free end to aid in inserting and providing a snug fit in said one end of said first pole member, an internal bore extending throughout the length of said first tubular member for slidably and guidingly receiving said second pole member therein, an externally threaded medial portion, and a gripping portion at its other end, said gripping portion having a plurality of longitudinally extending slots defining a plurality of gripping fingers such that said second pole member may be grippingly and lockingly engaged thereby, the outer end portion of said gripping portion being beveled on its exterior surface to define a cam surface, said locking means further comprising a second tubular member being internally threaded to mate with the externally threaded medial portion of said first tubular locking member and having an internally beveled portion at its outer end to define a mating cam surface for the cam surface on said gripping portion of said first locking member, whereby said gripping fingers are inwardly compressed into gripping engagement with said second pole member when said second tubular member is threaded onto said first tubular member to lock said second pole member in adjusted position relative to said first pole member, whereby said gripping fingers are released from gripping engagement with said second pole member when said second tubular member is unthreaded to permit adjustment of said first pole member relative to said second pole member, wherein said mounting sleeve on said one end of said first tubular member is provided with a slot extending longitudinally from the free end thereof and being wider adjacent the free end thereof, the narrower end of said slot being of sufficient width and depth to closely straddle said reinforcing rib extending interiorly of said first pole member, and wherein said mounting sleeve of said first tubular member is pressed into said one end of said first pole member so that said beveled free end causes the wider end of said slot to narrow and engage opposite sides of said reinforcing rib, said longitudinal slot preventing rotation of said first tubular member in said first pole member when said second tubular member is threaded onto said first tubular member.

4,524,485

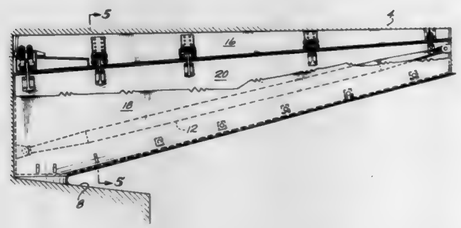
HINGE STRUCTURE WITH CONTROLLED TRANSLATION OF HINGE AXIS

Alfred W. Harris, Redmond, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 27, 1983, Ser. No. 498,948

Int. Cl.³ E05D *15/06*

U.S. Cl. 16—364 **39 Claims**



1. For use in a system in which a hinge knuckle is rigidly mounted on a first structure and a hinge pin having a longitudinal axis is carried by a second structure for pivotally engaging the hinge knuckle with the knuckle being pivotable about said axis, means for allowing controlled translational movement of one of said structures relative to the other of said structures to prevent excessive hinge loads, comprising:

a hinge pin carrier to which the hinge pin is attached;

mounting means for slidably mounting the carrier onto the second structure to allow movement of the carrier relative to the second structure in either direction along a line essentially perpendicular to the longitudinal axis of the hinge pin; and

spring means positioned between a portion of the second structure and a portion of the carrier for controlling said movement of the carrier and for biasing the carrier into an intermediate set position;

wherein the first structure, hinge knuckle, hinge pin, and carrier move as a unit with respect to the second structure when one of said structures is subjected to a load tending to move it along said line; and

wherein the spring means is positioned to be compressed by movement of the carrier relative to the second structure, caused by such a load on one of said structures, away from said intermediate set position in either direction along said line, and to return the carrier to said intermediate set position upon removal of said load.

4,524,486

SELF-LOCKING, SELF-ALIGNING STEPPED SPRING HINGE PIN

Victor Rios, Little Neck, and Henry W. Wolf, Malba, both of N.Y., assignors to Pivot Metal Works, Inc., Brooklyn, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,412

Int. Cl.³ E05D *5/12*

U.S. Cl. 16—381 **1 Claim**

1. A substantially rigid, self-aligning, self-locking spring hinge pin comprising,

(a) a leading section having a cylindrical section and a truncated section, the cylindrical section having a first diameter, said leading section tapering away from the cylindrical section to a rounded section, wherein the rounded section has a second diameter which is smaller than the first diameter, the truncated section has a taper which is angled to a longitudinal axis of the pin,

(b) a stepped mid-section having one end being directly connected to said cylindrical section, said stepped mid-section having a surface extending along the longitudinal axis,



(c) a stopping element being directly connected to the other end of the stepped mid-section, said stopping element having a radial dimension greater than that of the stepped mid-section, and

(d) a raised step is formed at the connection between said cylindrical section and the stepped mid-section, said step being inclined from the stepped mid-section toward the stopping element and away from the rounded section at an acute angle to the surface of said stepped mid-section to form a brim on the cylindrical section.

4,524,487

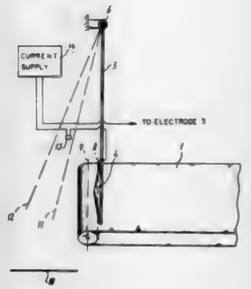
APPARATUS FOR THE AUTOMATIC STUNNING OF SLAUGHTER CATTLE

Jan B. R. Goossens, St. Lievens-Houtem, Belgium, assignor to Machinefabriek G.J. Nijhuis B.V., Winterswijk, Netherlands

Filed Jun. 11, 1982, Ser. No. 387,619

Int. Cl.³ A22B *3/00*

U.S. Cl. 17—1 E **14 Claims**



1. An apparatus for the automatic stunning of animals to be slaughtered, comprising:

two endless conveyors having their operative surfaces arranged with respect to each other such that a V-shaped passage is formed, the conveyors being parallel to each other, the conveyors being adapted to run synchronously; and,

two electrodes insulated with respect to each other and extending into the V-shaped passage from above, said electrodes being swingable about a horizontal transverse axis mounted above the conveyors, the electrodes being mounted upon a pendulum suspended from the transverse axis placed high above the position where an animal

would be located in the V-shaped passage during stunning, the electrodes having an initial position where the pendulum is positioned vertically in a transverse plane located closely in front of the transverse plane through the axes of reversing wheels of the conveyors at an outlet end of the conveyors so that the animal is permitted to drop from the conveyors to a receiving surface without moving the electrodes to a substantially displaced position, the electrodes being operative to engage the animal's head for stunning, the pendulum being long enough that the electrodes swing through an arc to a displaced position as the animal is carried by the conveyors such that vertical movement of the electrodes while engaging the animal's head is not substantial, the pendulum being operative to return to its initial position from said displaced position solely under the force of gravity.

4,524,488

APPARATUS FOR DISSECTING SLAUGHTERED ANIMALS

Andries J. E. van den Bogert, Hondsmesstraat 1, Hedel, Netherlands

Filed Aug. 23, 1982, Ser. No. 410,457
Claims priority, application Netherlands, Jan. 25, 1982, 8200252
Int. Cl.³ A22C *21/00*
U.S. Cl. 17—11 **12 Claims**



1. An apparatus for dissecting slaughtered animals comprising:

a conveyor adapted to transport a slaughtered animal along a transport path through plural treating stations;

a pair of spaced parallel rails extending along the transport path of said conveyor;

a lamellar element disposed and adapted for movement between said rails, said lamellar elements having a first end mounted to said conveyor to engage said rails to rotate said lamellar element for guiding said slaughtered animal along said conveyor in predetermined orientational positions through each of said plural treating staions;

a hook depending from a second end of said lamellar element for suspending the slaughtered animal;

motor driven knives positioned at each of said plural treating stations for cutting off particular parts of said slaughtered animal when said salughtered animal is positioned in each of said predetermined orientation positions;

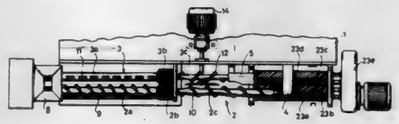
said lamellar element including a twisted central portion and said pair of rails being disposed in a generally horizontal plane along the transport path of said conveyor except adjacent each of said plural treating stations wherein said pair of rails are disposed at an angular orientation relative said horizontal plane, so that transport of said lamellar element between said pair of rails along the transport path of said conveyor rotates said slaughtered animal about said lamellar element into each of said predetermined orientation positions.

4,524,489

DEVICE FOR SEPARATING AND PROCESSING THE GIZZARDS OF SLAUGHTERED POULTRY

Martinus P. G. van Mil, Boxmeer, Netherlands, assignor to Stork PMT B.V., Netherlands

Division of Ser. No. 347,531, Feb. 10, 1982, Pat. No. 4,434,526. This application Feb. 29, 1984, Ser. No. 584,863
Claims priority, application Netherlands, Mar. 4, 1981, 8101055
Int. Cl.³ A22C *17/14, 21/00*
U.S. Cl. 17—11 **7 Claims**



1. A device for separating gizzards from the connected intestines of slaughtered poultry comprising a parallel pair of synchronously counter-rotating elongated cylindrical bar elements, a continuous helical ribbon for the conveyance of gizzards on one of said bar elements, plural circumferentially equidistantly spaced longitudinal rows of ribs on the other bar element, the ribs in the rows being adapted to enter into spaces between adjacent convolutions of said continuous helical ribbon, a pair of gizzard separating pinching roll elements on the downstream ends of said bar elements in coaxial relationship therewith and counter-rotating therewith, said pinching roll elements having engaging helical teeth of mutually opposite pitch on their peripheries, means to convey separated gizzards downstream from said pinching roll elements and to cut the gizzards lengthwise of the axes of the pinching roll elements, and means downstream from the last-named means to clean the interiors of the cut gizzards.

4,524,490

CRAWFISH PEELER

Randy Newville, 12102 Falcon St., Apt. D., Lafayette, La. 70506

Filed Oct. 6, 1983, Ser. No. 539,706
Int. Cl.³ A22C *29/02*
U.S. Cl. 17—48 **4 Claims**



4. A method for removing intact meat from the tail of a crustacean, comprising the steps of:

a. removing the tail from the body of the crustacean;

b. providing a tong means attached to a handle, with an upper tong means having a portion with a convex cross section and a lower tong means having an opposing portion with a convex cross-section with a relatively large radius than that of the upper tong portion;

c. inserting tip sections of the upper and lower tongs between the meat within the crustacean tail and a shell of the tail;

d. inserting convex portions of the upper and lower tong means between the meat and shell of the tail, thereby breaking ligamentary points of attachment of the meat to the shell and straightening the shell;

e. squeezing the tongs together, thereby gripping the meat between the tongs;

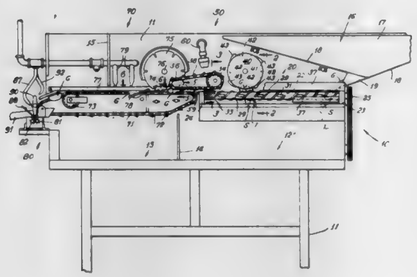
f. withdrawing the squeezed together tongs, forcibly removing thereby the meat from the tail of the crustacean, breaking the remaining tail attachment point at the nether end of the meat.

4,524,491

GIZZARD HARVESTING APPARATUS AND PROCESS

William J. Hill, Rte. 3, Box 230, Ball Ground, Ga. 30107; Carl J. Hill, deceased, late of Ball Ground, Ga., and by Hazel R. Hill, heiress, Rte. 3, Box 229, Ball Ground, Ga. 30107

Filed May 4, 1982, Ser. No. 374,771
Int. Cl.³ A22C *21/00*
U.S. Cl. 17—52 **42 Claims**



1. In the processing of gizzards from poultry using a gizzard processing apparatus, the improvement for feeding and positioning the gizzards for slitting comprising the steps of:

detaching the gizzards from the poultry with portions including the stomachs attached and directing the gizzards and portions toward a processing station;

applying an initial orienting force to each gizzard at the processing station through the attached portions to move the gizzard into an initial predetermined orientation;

applying a second orienting force directly to each gizzard while maintaining said first force applied to said attached portions to thereby move the gizzard into a second predetermined orientation relative to and while maintaining said initial orientation so that said first and second forces cooperate to orient the gizzard into a selected position in preparation for further processing;

securing each gizzard in said selected position; and

thereafter removing said portions including the stomach from the gizzard.

11. In a poultry gizzard harvesting apparatus the improvement comprising a feeding and aligning station for processing a plurality of gizzards having portions including the stomach attached, said station comprising:

means for directing a plurality of said gizzards to said station in a random arrangement;

feed roll means for engaging the attached portions of each of said gizzards to apply an initial orienting force to each gizzard which moves the gizzards from a random arrangement into an initial predetermined orientation, said feed roll means being further adapted to transport each gizzard within said station;

orienting means adjacent to and independent of said feed roll means and adapted to engage each gizzard and apply a second orienting force thereto while the feed roll means maintains said first orienting force and moves the gizzards in said station to thereby move the gizzard into a second predetermined orientation relative to and while maintaining said initial orientation, said orienting means and feed roll means cooperating to orient each gizzard into a preselected position within said station in preparation for further processing;

means for securing each gizzard in said preselected position; and

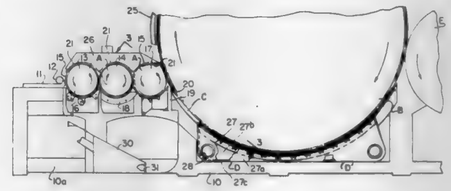
means for removing said portions including the stomach from each gizzard after each gizzard is secured in said preselected position.

4,524,492

CARDING APPARATUS AND METHOD

Olin S. Elliott, P.O. Box 8675, Greenville, S.C. 29604

Filed Dec. 23, 1982, Ser. No. 452,745
Int. Cl.³ D01G *15/42, 15/76*
U.S. Cl. 19—107 **9 Claims**



1. In a carding machine having a plurality of lickerin rolls and a cylinder receiving opened fibers from said lickerin rolls, the improvement including:

a card screen extending partially about said cylinder;

said card screen having spaced sides and a bottom defining a plurality of circumferentially spaced transverse slots thereacross for relieving air currents generated by the action of said cylinder during carding; and

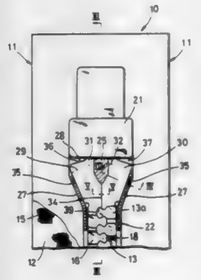
an air suction plenum extending substantially thereacross and circumferentially of said screen for relieving pressure generated by said air currents through a plurality of said spaced transverse slots.

4,524,493

WATERTIGHT SLIDE FASTENER

Akio Inamura, Nyuzen, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed May 26, 1983, Ser. No. 498,519
Claims priority, application Japan, May 26, 1982, 57-77258[U]
Int. Cl.³ A44B *19/32*
U.S. Cl. 24—389 **9 Claims**



1. A watertight slide fastener comprising:

(a) a pair of rows of coupling elements mounted on a pair of opposed waterproof stringer tapes along their respective inner longitudinal edges;

(b) a slider having a slider body including a pair of spaced wings joined at their front end by a neck so as to define therebetween a Y-shaped guide channel for the passage therethrough of said rows of coupling elements, each said wing having a pair of side flanges jointly defining a portion of said Y-shaped guide channel; and

(c) a resilient bifurcated seal member mounted on said stringer tapes adjacent to one end of said rows of coupling elements and snugly receivable in said Y-shaped guide channel, said seal member having a pair of resilient tongues, respectively, extending from said one end of said rows of coupling elements along said longitudinal tape

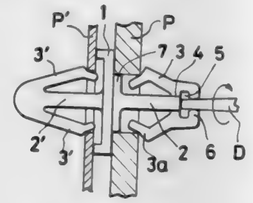
edges and a head interconnecting said tongues at their upper end so as to define therebetween a first slot facing toward said one end of said rows of coupling elements and snugly, sealingly receptive of said neck of said slider body, said tongues having outer sidewalls sealingly engageable with said side flanges of said slider body and opposed inner sidewalls sealingly engageable together when said slider is in its uppermost position.

4,524,494

DETACHABLE FASTENER

Youji Sato, Yokohama; Nobuaki Omata, and Sakuzo Shimbara, both of Hiroshima, all of Japan, assignors to Nifco Inc., Yokohama, Japan

Filed Jul. 5, 1983, Ser. No. 510,509
Claims priority, application Japan, Jul. 5, 1982, 57-115550
Int. Cl.³ A44B *17/00*
U.S. Cl. 24—453 **10 Claims**



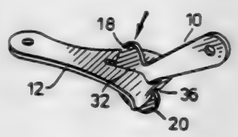
1. A one-piece plastic detachable fastener comprising a central shank provided at one end thereof with a head portion, a pair of elongated diverging leg pieces resiliently connected intermediate their extremities through respective hinges to the other end of said central shank, the diverging ends of said legs forming the trailing ends while the opposite ends form the leading ends, said leading ends extending beyond said other end of said shank and being spaced from each other, and a receiving part adapted to receive an external spreading force and formed as flange means connected to the leading ends of said pair of leg pieces, whereby said receiving part on receiving said external spreading force bends said leg pieces about said hinges and brings the free ends of said pair of leg pieces toward each other.

4,524,495

SEPARABLE FASTENER

Herman A. Hess, 10 Eddystone Ave., Downsview, Ontario, Canada M3H 1H4

Continuation-in-part of Ser. No. 513,825, Jul. 15, 1983,. This application Oct. 21, 1983, Ser. No. 544,226
Int. Cl.³ A44B *19/00*
U.S. Cl. 24—590 **6 Claims**



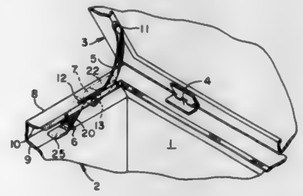
1. A separable fastener comprising:
a male member having a stem portion and a T-shaped head portion with two arms projecting sidewards from the stem portion,
and a female member constituted by an elongated body with a tail portion and a forward portion that is bent with respect to the tail portion, the elongated body having an opening therethrough adjacent the bent forward portion, the opening being of sufficient length to permit insertion of one arm of said T-shaped head portion of the male member, said bent forward portion of the female member terminating at an edge which interferes with complete passage of the T-shaped head portion through the opening in any but one particular orientation of the male member with respect to the female member, said edge having an indentation adapted to receive the T-shaped head portion when in said one particular orientation in order to avoid interference and permit complete passage of the T-shaped head portion through the opening, the opening further having a part wide enough to permit swivelling of the stem portion after passage of the T-shaped head portion through the opening,
the T-shaped head portion of the male member being curved when seen in section taken in a plane normal to the main extent of said stem portion, thereby to decrease the likelihood that the said two arms will simultaneously register in the opening of the female member and the indentation, respectively.

4,524,496

CASKET STAY MECHANISM

Tehmtan J. Tehsildar, West Lawn, and Robert R. Colbert, Lititz, both of Pa., assignors to Boyertown Casket Company, Boyertown, Pa.

Filed Dec. 13, 1982, Ser. No. 449,305
Int. Cl.³ A61G *17/00*; **F16C** *11/00*; **F24H** *3/00*
U.S. Cl. 27—18 **11 Claims**



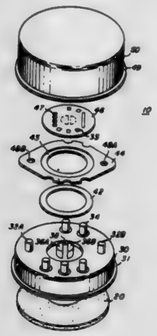
1. A stay mechanism for a first member hingedly connected to a second member for relative movement of the members between first and second positions, the stay mechanism yieldably retaining said members in the second of said positions, said mechanism comprising:
an arm pivotally attached at one end to the first member at a point on the first member offset from the hinged connection, and having a sidewise protrusion at its other end;
a guide means on the second member for guiding the protrusion into and out of the second position, said guide means comprising a resilient strip secured at one end to said second member and having a resilient pocket shaped to receive the protrusion, said pocket being adjacent said one end of the resilient strip, said guide means further comprising a camming surface fixed with respect to the second member, said camming surface facing the open pocket, said resilient strip having a portion inclined away from the pocket and the camming surface, said inclined portion serving to guide the protrusion towards the pocket as the members are moved towards the second position, the camming surface being spaced relative to the pocket to define an entrance to the pocket which is expanded by yieldable movement of the pocket in an interaction of forces between the protrusion, the pocket and the camming surface, as the protrusion enters and leaves the pocket and as the members are moved into and out of the second position, said pocket and the camming surface yieldably retaining the protrusion within the pocket when the members are in the second position, the end of the strip remote from the pocket being free for limited movement during said yieldable movement of the pocket.

4,524,497

METHOD OF MAKING A LOW-PROFILE CRYSTAL PACKAGE WITH AN IMPROVED CRYSTAL-MOUNTING ARRANGEMENT

Gary M. Rapps, Sunrise, and Alvin Feder, Lauderhill, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 377,289, May 12, 1982, Pat. No. 4,453,104.
This application Feb. 15, 1984, Ser. No. 565,438
Int. Cl.³ H01L *41/22*
U.S. Cl. 29—25.35 **4 Claims**



1. A method of mounting and making electrical wire connections to a multi-electrode crystal wafer, comprising the steps of:
providing a base member with an upstanding support post and a plurality of spaced terminal elements and locating pins thereon;
placing a ring of conductive material, which is conducive to melting and of a predetermined thickness, on said base member overlying said support post;
placing said crystal wafer on a carrier member, having an aperture less than the diameter of said crystal wafer so as to support an edge portion thereof;
placing a small amount of conductive paste material to the top surface of said support post;
placing said carrier member with said crystal wafer on said base member in a manner keyed to said locating pins and resting on said ring of conductive material whereby the crystal wafer is unsupported by the support post of said base member;
making wire bonds from the crystal electrodes to the respective base member terminal elements while the edge of said crystal wafer is fully supported; and
temporarily applying downward pressure to the top of said carrier member and raising the ambient temperature to a level to melt the ring of conductive material whereby said carrier moves downwardly and said crystal wafer is fastened and supported solely on said support post.

4,524,498

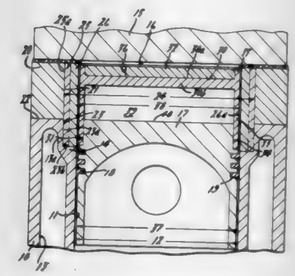
METHOD AND APPARATUS FOR MODIFYING THE COMBUSTION CHAMBER OF AN ENGINE TO ACCEPT CERAMIC LINERS

Dale L. Hartsock, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/02040, § 371 Date Dec. 27, 1983, § 102(e) Date Dec. 27, 1983
PCT Filed Dec. 27, 1983, Ser. No. 589,936
Int. Cl.³ B23P *15/00*
U.S. Cl. 29—156.4 WL **22 Claims**

1. A method of modifying a conventional internal combustion engine to accept ceramic, said engine having an engine block with a wall defining a bore opening, an engine head, and a piston in said bore opening, the piston having a top and sealing rings which together cooperate with the engine block and head to define a combustion chamber, comprising:
(a) joining an extension member to said engine block, said extension member having a wall defining a bore opening aligned with but larger than the bore opening of the engine block;
(b) enlarging the diameter of the upper portion of said wall in the engine block defining a bore opening to form an annular shoulder with a radially outer surface substantially axially aligned with said wall of the extension member defining a bore opening;
(c) securing a cylindrical ceramic liner commonly along both said wall of the extension member and the radially outer surface of said shoulder in said block, said liner being comprised of a material having a coefficient of thermal expansion differing from the coefficient of thermal expansion of the block by up to 2.0×10^{-6} in/in/°F.; and
(d) attaching a cap to the top of the piston to extend the effective piston top a distance commensurate with the effective height of the extension member.

16. A conventional engine apparatus modified to accept ceramic facing material, comprising:



(a) an engine housing have a block with a wall defining a bore opening, an engine head, and a piston in the bore opening, the piston having a top and sealing rings cooperating to define a combustion chamber with said block and head, said block wall having an annular groove at its upper end enlarging said bore opening, said groove defining a radially outer cylindrical surface;
(b) an extension member joined to said block having a wall defining a bore opening aligned axially with but larger than the bore opening of the block, said extension member wall being substantially axially aligned with said radially inner cylindrical surface of said bore opening of said block;
(c) a ceramic liner secured along said wall of the extension member and along said radially outer cylindrical surface of said block, said liner being comprised of a material having a coefficient of thermal expansion differing from the coefficient of thermal expansion of the block by up to about 2.0×10^{-6} in/in/°F.; and
(d) a cap attached to said piston to extend the effective piston top a distance commensurate with the effective height of the extension member.

4,524,499

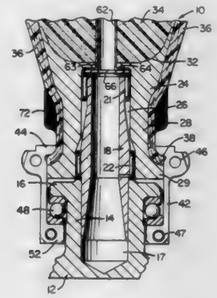
METHOD OF FABRICATING AN AIRCRAFT PROPELLER ASSEMBLY WITH COMPOSITE BLADES

Richard V. Grimes; W. Benjamin Harlamert, both of Piqua, Ohio, and David F. Thompson, Prospect Park, Pa., assignors to TRW Inc., Cleveland, Ohio

Division of Ser. No. 321,771, Nov. 16, 1981, Pat. No. 4,407,635, and a continuation of Ser. No. 1,961, Jan. 8, 1979, Pat. No. 4,302,155. This application Apr. 11, 1983, Ser. No. 483,732

Int. Cl.³ B21K *3/04;* **B23P** *15/04*

U.S. Cl. 29—156.8 B **12 Claims**



1. A method of making an aircraft propeller assembly having a rotatable propeller hub supporting a plurality of radially extending composite propeller blades, comprising the steps of forming an elongated core of substantially rigid material for each of the composite blades, surrounding the core of each blade with a skin of plastic resin impregnated material, supporting the core of each blade with a rigid base member having an outwardly projecting inner flange portion integrally connected to a neck portion of reduced outside diameter, continuing the skin material on the core of each blade radially inwardly along the neck portion of the corresponding base member in overlying relation and forming an annular skin flange portion projecting laterally outwardly and radially overlying the flange portion of the base member, securing the skin material surrounding the reduced neck portion of each blade to the neck portion with securing means located radially outwardly from the skin flange portion of the corresponding blade for forming a first rigid connection of the skin material to the base member, providing the propeller hub with means forming an inwardly projection annular lip portion substantially surrounding the base member of each blade, positioning the annular lip portion of each blade radially outwardly of the corresponding skin flange portion and around the skin material of the blade, and retaining the annular skin flange portion of each blade with the corresponding radially overlying annular lip portion of the propeller hub to form a second rigid connection of the skin material to the base member of each blade.

4,524,500

PROCESS FOR CONVERTING A CERAMIC TOILET COMMODE INTENDED TO BE SUPPLIED WITH AN INDEPENDENT WATER SUPPLY PIPE INTO A TOILET COMMODE ADAPTED TO BE SUPPLIED WITH WATER BY AN ASSOCIATED TANK

Michel Genetay, and Gérard Dangers, both of Selles-sur-Cher, France, assignors to Societe Anonyme des Produits Ceramiques de Touraine, Selles-sur-Cher, France

Filed Mar. 17, 1983, Ser. No. 476,375

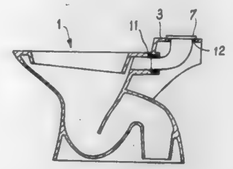
Claims priority, application France, Mar. 24, 1982, 82 04994

Int. Cl.³ B21D *53/00;* **B21K** *29/00;* **B23P** *15/26*

U.S. Cl. 29—157 R **6 Claims**

1. A process for converting a ceramic toilet commode intended to be supplied with water by way of an independent water supply pipe and comprising a rear cylindrical receiving cavity for the water supply pipe and a horizontal platform vertically above the rear of the receiving cavity, into a toilet commode intended to be supplied with water by an adjoining cistern, said process comprising:

boring in said platform a central aperture having a diameter exceeding the diameter of said cavity;



inserting into said bored aperture an elbow pipe element which has adjacent to one of its ends a flange applied against the edge of said aperture and which has a diameter decreasing in a direction toward the other end of said elbow pipe element; and

inserting said smaller other end of said elbow pipe into said receiving cavity of said toilet commode.

4,524,501

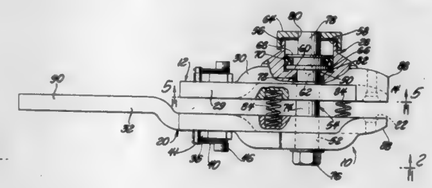
APPARATUS FOR JOINING FLARED ENDED TUBES

William L. Pringle, Grosse Pointe Shores, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 31, 1982, Ser. No. 363,958

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—237 **20 Claims**



1. An apparatus (**10**) for joining two tubes (**16,24**), each having flared ends (**96**) with a first of the tubes (**16**) having a ferrule (**18**) with a frustoconical portion (**102**) engaging the outside of the flared end (**96**) thereof and a cylindrical portion (**26**) extending therefrom to be crimped over the outside of the flared end of the second tube (**24**), said apparatus (**10**) comprising; first tube support means (**12**) having a pocket (**14**) for receiving the first tube (**16**) with the ferrule (**18**) disposed thereon, second tube support means (**20**) having a pocket (**22**) for receiving the second tube (**24**), actuator means (**28**) for moving said first and second tube support means (**12,20**) between an open position for receiving the first and second tubes (**16,24**) in said pockets (**14,22**) and a closed position to crimp the cylindrical portion (**28**) of the ferrule (**18**) over the outside of the flared end (**96**) of the second tube (**24**), and at least one of said first and second tube support means (**12,20**) being defined by a pair of arms (**29,30,32,34**) pivotally connected together along their respective lengths for scissor-like movement between a receiving position opening said pocket (**14,22**) therein and a retaining position closing said pocket (**14,22**) therein, said assembly including locking means for locking said arms (**29,30,32,34**) in said retaining position, said locking means including a hook member (**36**) mounted for pivotal movement on one side of said arms (**30,32**) and a pin (**38**) projecting from the other of said arms (**29,34**), said hook member (**36**) removably engaging said pin (**38**) for locking said arms (**29,30,32,34**) in said retaining position.

4,524,502

TONGS FOR INSERTING A CURTAIN-CARRYING SLIDING MEMBER INTO A PROFILED CURTAIN RAIL

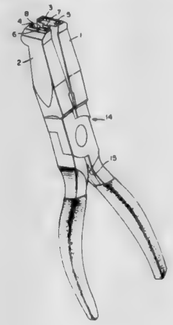
Alfred Bachmann, 6, Sandackerweg, 3363 Oberoenz, Switzerland

Continuation-in-part of Ser. No. 284,220, filed as PCT CH80/00057 May 9, 1980, published as WO81/01360, May 28, 1981, §102(e) date Jul. 17, 1981, abandoned. This application Aug. 29, 1983, Ser. No. 527,488

Claims priority, application Switzerland, Nov. 21, 1979, 10368/79

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—268 **4 Claims**



1. A tongs adapted for inserting a curtain-carrying glider member comprising a track part having a T-shaped profile and consisting essentially of an upright bar portion, a cross bar portion to the center of the underside of which the upper end of said upright bar portion is attached, and a ring part having a ring opening and depending from the lower end of said upright bar portion, into a curtain rail having a longitudinal extending opening in the bottom part thereof and shoulders of said rail bottom part to the right and to the left of said bottom opening, in such a manner that said cross bar portion of said glider member rests upon the shoulders of said rail bottom part, and the upright bar portion of said glider member track part extends downwardly through said rail bottom opening and protrudes with its lower end from the underside thereof, said ring part being located below said rail,

which tongs comprise two tong arms having arm ends, one of said arm ends having an inward arm face turned toward an opposite inward arm face of the other arm end, said arm ends being adapted for engaging between them said glider member,

each of said arm ends having a recess open at the top and having a bottom contact face extending transversely to and above the inward arm face of that arm end, and a recess sidewall about said bottom contact face on three sides thereof, said sidewall being open on the side thereof located above the inward face of that arm end,

whereby, when said lower end of said upright bar portion of said glider member rests on said bottom contact faces of said recesses in said arm ends, extending through the open sides of said recess sidewalls, and said glider member ring part extends between the opposite inward faces of said arm ends underneath said recesses, said glider member is held between said arm ends, upon closing of said tongs; and

each of said arm ends comprises elongated centering means protruding from the face of said arm end turned toward the opposite face of the other arm end, centrally below said open side of said sidewall and below the flat bottom face of said recess, whereby, when said glider member is in said position between said arm ends of the tongs closed thereon, said centering means are located with their free ends in said ring opening of said ring part.

4,524,503

METHOD AND APPARATUS FOR HYDRAULICALLY ASSEMBLING A DRIVEN SHAFT AND A DRIVE MEMBER

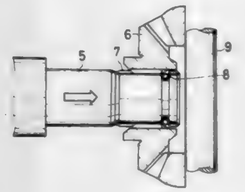
Hideo Nakamata, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 20, 1983, Ser. No. 459,597

Claims priority, application Japan, Jan. 20, 1982, 57-7205

Int. Cl.³ B23Q *17/00*

U.S. Cl. 29—407 **8 Claims**



1. A method for inserting an end of a driven shaft having a snap ring disposed in a circumferential groove adjacent to said end into a mating opening in a driving member, the method including aligning the end of the driven shaft with the inlet to the opening of the driving member, pressing the end of the driven shaft into the opening of the driving member by means of a hydraulic actuator until the snap ring engages a groove provided inside the opening of the driving member, and detecting a stroke position of the actuator corresponding to the fully inserted state of the driven shaft, wherein the improvement comprises: measuring the supply pressure to the hydraulic actuator during the press-in operation;

providing a first indication if the supply pressure rises when the fully inserted state of the driven shaft is detected; and

providing a second indication if the supply pressure rises when the fully inserted state of the driven shaft is not detected, whereby information as to the supply pressure of the hydraulic actuator is combined with the information as to the stroke of the hydraulic actuator to determine whether or not the driven shaft is normally fitted into the driving member.

4,524,504

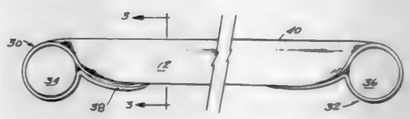
METHOD OF REPLACING WORN AND/OR DAMAGED SURFACES

Clayton J. Hemmerle, 116 NE. 16th Ct., Ft. Lauderdale, Fla. 33305, and Richard A. Basinger, 6318 SW. 26th St., Miramar, Fla. 33023

Division of Ser. No. 352,102, Feb. 25, 1982, Pat. No. 4,438,800. This application Sep. 13, 1983, Ser. No. 531,647

Int. Cl.³ B23P *11/02*

U.S. Cl. 29—450 **5 Claims**



1. A method for replacing at least a portion of a worn and/or damaged surface on an article of furniture having a frame which includes at least a pair of opposing generally parallel spaced frame members, said surface adapted to supporting at least a portion of a person's weight thereon, said method comprising the steps of:

(a) selecting a slat comprising support means for supporting a load placed thereon having generally opposing ends, each of said ends including attachment means defining a closed cavity for receiving a portion of one of said frame members, and biasing means for providing a bias force thereby biasing said attachment means in a normal substantially closed position and for allowing access to said cavity upon application of a force in a direction generally opposing the bias force;

(b) applying a force to said attachment means at one end of said slat in a direction generally opposing the bias force of said biasing means thereby opening and providing access to the cavity;

(c) then positioning the opened one end around a portion of a predetermined one of said frame members so that said attachment means substantially surrounds said one frame member thereby allowing said one frame member to be accepted by said cavity;

(d) then releasing the force applied according to step (b) so that said attachment means returns to a normal substantially closed position thereby securing said one end in position; and repeating steps (b)–(d) utilizing the other end of said ends and the other one of said opposing frame members.

4. A method of replacing at least a portion of a worn and/or damaged surface bridging a pair of opposing separated surface support members said method comprising the steps of:

(a) selecting a surface-defining member of the type including opposing ends each having an attachment means defining a closed cavity for receiving a portion of one of said support members therein, and biasing means for providing a bias force to bias said attachment means into a normal substantially closed position and for allowing access to said cavity upon application of a force in a direction generally opposing said bias force;

(b) applying a force to the attachment means at one end of said surface-defining member in a direction generally opposing the bias force of the biasing means to open the attachment means thereby providing access to the cavity;

(c) then positioning the one end having its respective attachment means opened according to step (b) so that a predetermined one of the pair of surface support members is accepted into the cavity;

(d) then releasing the force applied according to step (b) to permit the attachment means to assume the normal closed position around said one of the pair of surface support members; and repeating steps (b)–(d) utilizing the other one of said ends and the other one of said pair of surface support members.

4,524,505

METHOD OF ASSEMBLING A PIPE JOINT

Randall C. Conner, Birmingham, Ala., assignor to American Cast Iron Pipe Company, Birmingham, Ala.

Division of Ser. No. 242,925, Mar. 12, 1981, Pat. No. 4,428,604. This application Nov. 1, 1983, Ser. No. 547,680

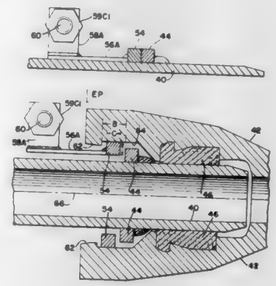
Int. Cl.³ B23P *11/02*

U.S. Cl. 29—453 **14 Claims**

8. A method of assembling a pipe joint having a first pipe with a cylindrical socket, said cylindrical socket having a radially inward retaining lip adjacent a retaining groove; a second pipe with a cylindrical spigot, said cylindrical spigot having an outwardly projecting portion; a ring assembly including a bearing ring having two ends at a split, said bearing ring uniquely defining a plane, two transverse pieces, each transverse piece attached to one end of said bearing ring and extending away and outside from the plane defined by said bearing ring, a threaded rod mounted to extend between said two transverse pieces, a first closure nut on said threaded rod, said first closure nut operable to contract the diameter of said bearing ring; the steps comprising:

(a) contracting said bearing ring around said spigot adjacent to said outwardly projecting portion by adjusting said first closure nut to bring said transverse pieces closer together and to lie on an outer surface of said spigot, each of said transverse pieces touching said outer surface along its entire length;

(b) positioning said spigot and said contracted bearing ring within said socket, said transverse pieces extending out from said socket;



(c) loosening said bearing ring from said spigot such that the natural resilience of said bearing ring expands it to seat within said retaining groove to lock said pipe joint against axial separation by said bearing ring bearing between said retaining lip and said outwardly projecting portion.

4,524,506

METHOD FOR ATTACHING AN ARTICLE TO A WALL

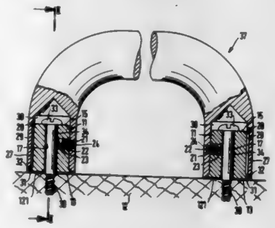
Rudolf Wilke, Marsberger Strasse 2, 3548 Arolsen, Fed. Rep. of Germany

Filed Feb. 12, 1982, Ser. No. 348,574

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105347

Int. Cl.³ B23P *11/02*

U.S. Cl. 29—453 **5 Claims**



1. A method of attaching an article with one or more holders to a wall, the holder having a wall contact surface provided with a covered, self-adhesive layer and an aperture adapted to receive a member for mechanically connecting the holder to the wall, the method comprising steps of:

provisionally securing at least one holder to an article in the holder's intended permanent position on the article;

baring the covered, self-adhesive layer provided on the wall contact surface of the holder;

aligning the article carrying the provisionally secured holder in a predetermined position on the wall;

adhering the self-adhesive layer of the holder to the wall;

removing the aritcle from the holder such that the holder remains adhered to the wall in a position determined by the aligning and adhering steps;

drilling an attachment hole for the holder through the aperture into the wall by using each holder as a drilling jig;

attaching each holder to the wall with a mechanical fastening member extending through the aperture; and

resecuring the article to each holder; whereby the article is firmly secured in the predetermined position on the wall.

4,524,507

LAMINATED CORE PRODUCING APPARATUS

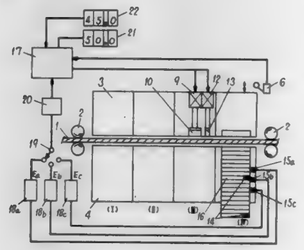
Yoshihumi Hara, Hirakata; Hiroji Takano, Yawata; Shoshi Kabashima, Hirakata, and Mikio Hasegawa, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP81/00072, § 371 Date Nov. 30, 1982, § 102(e) Date Nov. 30, 1982, PCT Pub. No. WO82/03491, PCT Pub. Date Oct. 14, 1982

PCT Filed Mar. 31, 1981, Ser. No. 451,209

Int. Cl.³ B23Q *15/00*

U.S. Cl. 29—564.2 **4 Claims**



1. A laminated core product producing apparatus wherein a projection is formed on part of a strip of core sheet material and core sheets with said projection are punched out of the strip and assembled in a linearly moving stack into the laminated core product by making use of the mutual fitting and crimping of the projections on the core sheets, the thickness of the laminated core product in the direction of the thickness of the core sheets being determined by controlling the intermittent punching out of said projections, said apparatus comprising:

a marking mechanism for selectively marking a portion of the lateral side edge of a core sheet to be punched out;

at least one proximity sensor provided adjacent the stacked core sheets being assembled into the core product for producing a signal corresponding to the distance of a marked core sheet from the head of the stack during movement of the marked core sheet along the stack;

means for generating a timing signal each time said core product producing apparatus punches out one core sheet and assembles it on the stack;

means for presetting the target value of the thickness of the core product in the direction of the thickness of the laminations;

memory means for storing information about the distance of said proximity sensor from the head of the stack;

an intermittent projection punching mechanism capable of being electrically controlled for forming or not forming the projection; and

a control device connected to said timing signal generating means, said proximity sensor, said memory means and said target value presetting means and having an output connected to said intermittent punching mechanism for, using the count of said timing signals after actuating of said marking mechanism as being the number of sheets in the assembly of core sheets, calculating the thickness of the assembly of core sheets from the information provided by the proximity sensor detecting said marked core sheet and from the information about the distance of said proximity sensor from the head of the stack and dividing by the number of sheets counted to find the average thickness of one core sheet and adding the value of such average thickness for the number of core sheets to provide a cumulative value for each said timing signal and providing an output signal for controlling the operation of said punching mechanism when said cumulative value excceds said target value.

4,524,508

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

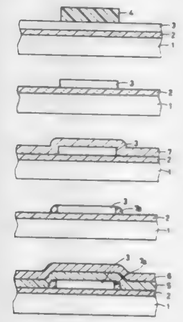
Shinichi Sato, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1983, Ser. No. 517,984

Claims priority, application Japan, Aug. 25, 1982, 57-148701

Int. Cl.³ H01L *21/22, 21/306*

U.S. Cl. 29—571 **6 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

forming a first conductive layer (**3**) over a semiconductor substrate (**1**),

masking a predetermined pattern on said first conductive layer (**3**) and then physically etching said first conductive layer (**3**) to provide side surfaces of said predetermined pattern substantially perpendicular to the surface of the said semiconductor substrate (**1**),

forming a first insulating layer (**7**) over the surface of said semiconductor substrate (**1**) and directly on said first conductive layer (**3**) after removal of the mask on said predetermined pattern,

physically etching said first insulating layer (**7**) until said first conductive layer is exposed in said first insulating layer (**7**) formed over said semiconductor substrate (**1**), so that a portion of said first insulating layer (**7***a*) is left in a stepped portion at the side surfaces of said first conductive layer (**3**),

forming a second insulating layer (**5**) over the surface of said semiconductor substrate (**1**) and on said left portion of said first insulating layer (**7***a*) and on said first conductive layer (**3**) etched to the predetermined pattern, and

forming a second conductive layer (**6**) over a whole upper surface of said second insulating layer (**5**).

4,524,509

ENVELOPING A BATTERY PLATE BY A DIP PROCESS AND PRODUCT PRODUCED THEREBY

Paul C. Wegner, San Carlos, Calif., assignor to Tiegel Manufacturing Co., Belmont, Calif.

Continuation-in-part of Ser. No. 482,874, Apr. 7, 1983, abandoned, which is a continuation of Ser. No. 253,283, Apr. 13, 1981, abandoned. This application Apr. 6, 1984, Ser. No. 597,475

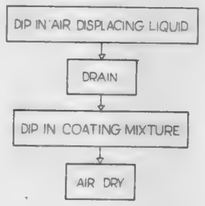
Int. Cl.³ H01M *2/18*

U.S. Cl. 29—623.5 **18 Claims**

1. A dip method of enveloping a battery plate with a commercially acceptable separator material, comprising the steps of:

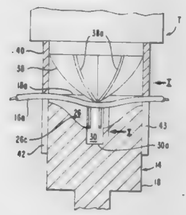
(a) displacing the air from the plate by dipping in a first liquid;

(b) then dipping the plate in a second liquid comprising a polymer dissolved in a solvent/nonsolvent mixture and a filler in suspension; and then



(c) removing the plate and allowing the solvent/nonsolvent to evaporate and form, about said plate, an envelope of porous separator material free from commercially unacceptable pinholes.

4,524,510
METHOD OF MAKING WIRE TERMINATIONS
Edward P. Brandeau, Martinsville, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.
Filed Dec. 7, 1982, Ser. No. 447,592
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—861 **6 Claims**



1. A method of reliably terminating fine insulated wires on very close centers comprising: providing a plurality of contact devices having upper faces each with a plurality of radially extending wire receiving slots, indexing a wire relative to the end of a stuffing tool, indexing the tool laterally on a contact device and vertically thereagainst with the wire lying across the upper face of the device, radially indexing the wire relative to a selected slot to seat the wire in the top of the slot, progressively forcing the wire into the slot deeper near the center of the device than at the outer edge, the wire being inserted sufficiently deep near the center to skive away the insulation along the sides of the wire conductor, and forcibly seating the wire with a portion of the wire insulation tightly compacted between the bottom of the wire conductor and a bottom wall of the slot, the wire conductor being substantially deformed and wedged tightly in the slot.

4,524,511
ADJUSTABLE INTERIOR PIPE CUTTER
Richard Montiero, Lake Worth, Fla., assignor to Remcut International Inc., Fort Lee, N.J.
Continuation of Ser. No. 470,057, Feb. 28, 1983, Pat. No. 4,466,185. This application Jul. 18, 1984, Ser. No. 631,994
The portion of the term of this patent subsequent to Aug. 21, 2001, has been disclaimed.
Int. Cl.³ B23D *21/14*
U.S. Cl. 30—108 **2 Claims**

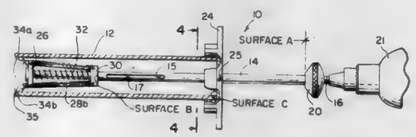
1. A pipe cutter for cutting pipe from the inside out which comprises:

(a) two pivoted sliding guides having guides;

(b) a guide pivot post wherein a first end of two pivoted sliding guides are pivoted mounted;

(c) a cutter for cutting the inside of the pipe fixed to the end of each pivoted sliding guide and being generally perpendicular to the pipe to be cut;

(d) a driving slide member that slides within the guides of the pivoted sliding guide and imparts to the pivoted sliding guides a rotational force so that the cutters will have the necessary force to cut into the pipe;

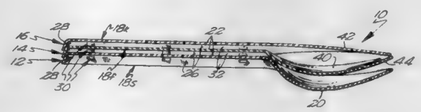


(e) a drive shaft that has a first end firmly attached to said driving slide member and a second end whereby a driving force may be exerted;

(f) a draw bar that has an aperture through its center whereby said drive shaft is inserted, said draw bar rotatably attached to said driving slide member;

(g) a spacer bar having an aperture through its center whereby said spacer bar is inserted over said draw bar.

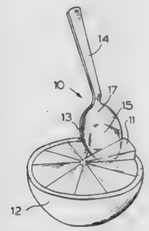
4,524,512
NESTABLE, STACKABLE CUTLERY
Jerome L. Formo, St. Paul, Minn.; Albert C. Lasher, New York, N.Y., and Robert W. White, Oklahoma City, Okla., assignors to O Tray Corporation, Oklahoma City, Okla.
Filed Apr. 25, 1983, Ser. No. 488,564
Int. Cl.³ A47J *43/28, 45/06*
U.S. Cl. 30—147 **15 Claims**



1. Nestable, stackable cutlery comprising, in combination: a spoon having a handle portion and a bowl portion; a fork having a handle portion and a tine portion; a knife having a handle portion and a blade portion, with the handle portions of the spoon, fork, and knife having a substantially identical construction, with the handle portions of the spoon, fork, and knife including a generally U-shaped cross section comprising, in combination: a flat top portion having a first end, a second end, a first edge, a second edge, an outside surface, and an inside surface; and first and second leg portions, with the first and second leg portions including a first end, a second end, a first edge, a second edge, an outside surface, and an inside surface, with the first edge of the first leg portion being attached at an obtuse angle to the first edge of the top portion and with the first edge of the second leg portion being attached at an obtuse angle to the second edge of the top portion, with the distance between the second edges of the first and second leg portions being greater than the distance between the first and second edges of the top portion allowing the handle portions of the spoon, fork, and knife to be stacked and nested together, with the handle portions further including means for supporting the handle portion along its entire length on the handle portion of another piece of cutlery in the their stacked, nested positions comprising lugs formed on the inside surfaces of the first and second leg portions for abutting with and support on the outside surface of the top portion of the handle portion of the other piece of cutlery, with the lugs being wedge shaped and including an inside surface and an abutment surface, with the abutment surface having a shape complementary to and for abutment with the outside surfaces of the top portion and the first and second leg portions at their intersections, and wherein the inside surface of the lugs extend at an angle less than 90° from the top portion of the handle portion to form an inverse taper for holding onto the punch of an injection mold during

formation of the cutlery, with the bowl portion of the spoon being attached to the second ends of the top portion and the first and second leg portions of the handle portion and being of an elongated oval shape having a length, a width, and a depth, with the tine portion of the fork being attached to the second ends of the top portion and the first and second leg portions of the handle portion and having a length, a width, and a depth equal to the length, the width, and the depth of the bowl portion of the spoon, with the tine portion of the fork including a first tine, a second tine, and a third tine, with the first and third tines being located on opposite sides of the second tine, with the first and third tines being shorter than the second tine allowing the tine portion of the fork to remain in the outline of the bowl portion of the spoon for protecting the tines against breakage due to catching on external objects and for preventing the tines from poking through the packaging in which the cutlery is located when the fork is stacked on top of the spoon, with the blade portion of the knife being attached to the second ends of the top portion and the first and second leg portions of the handle portion and having a length generally equal to the length of the bowl portion of the spoon and tine portion of the fork, with the width of the blade portion of the knife being less than the width of the bowl portion of the spoon and the tine portion of the fork, with the blade portion having a shape which remains in the outline of the bowl portion of the spoon and the tine portion of the fork when the knife is stacked on top of the spoon or on top of the fork for preventing the blade portion from cutting through the packaging of the cutlery.

4,524,513
FLAT TIP SPOON
Anthony V. Intini, Jr., 3468 Whirlaway Dr., Northbrook, Ill. 60062
Filed Apr. 15, 1983, Ser. No. 485,403
Int. Cl.³ A47J *43/28*
U.S. Cl. 30—149 **14 Claims**



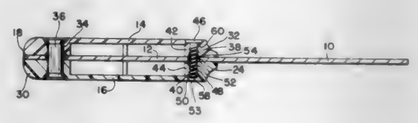
1. In a flatware or culinary spoon having a bowl with a front tip end portion and a rearwardly extending handle:

said tip end portion being flat and having a forwardly extending planar front edge;

the remainder of said bowl merging with said flat tip end portion and providing a receptacle for material directed thereinto by means of said flat tip end portion; and

said bowl having upturned sides with side edges thereof merging with and terminating a substantial distance rearwardly from the forwardly extending edge of the flat tip end portion, so that sides of the flat tip end portion forwardly from the side edges of the bowl are unobstructed by the side edges of said bowl.

4,524,514
COMBINATION OF A TOOL AND A HOLLOW TOOL SECTIONAL HANDLE
David H. Mallalieu, Springfield; Samuel N. Apostola, Southbridge, and Douglas C. DeVries, Webster, all of Mass., assignors to Hyde Mfg. Co., Southbridge, Mass.
Filed Jun. 9, 1983, Ser. No. 502,558
Int. Cl.³ B25G *3/30, 3/32*
U.S. Cl. 30—169 **12 Claims**



1. The combination of a tool and hollow sectional handle, said tool comprising a blade with a flat elongated blade-like tang extending from said blade, said tang having two opposite broad flat faces along its length, two opposite longitudinal side edges and an end edge remote from said blade joining said pair of flat faces, said tang being indented along a major portion of said longitudinal side edges to form indented side edge portions, said tang having an intermediate portion bordered by said indented side edges and two broad opposite end portions joined by said intermediate portion, one of said two broad end portions merging with said tool blade and the other broad end portion being at the free end of said tang remote from said blade, and a pair of longitudinally spaced holes extending through said tang normal to said opposite flat faces,

said hollow sectional handle comprising two complementary mating elongated shell-like halves which are secured together with one-half contiguous to one of said flat tang faces and the other half contiguous to the other of said flat tang faces,

each handle half having an elongated main part and a rim about the main part,

the rim of each handle half having transversely spaced opposite longitudinal side rim portions with flat edge surfaces and opposite end rim portions with flat edge surfaces which are offset from the flat edge surfaces of the longitudinal side rim portion in the direction of said main part,

said handle halves having the flat faces of said opposite end rim portions pressed against the flat tang face to which the respective halves are contiguous in the area of said tang end portions and bordering same leaving the edges of said tang end portions exposed,

said opposite longitudinal side rim portions of one handle half facing and mating with the opposite longitudinal side rim portions of the other handle half, the mating longitudinal side rim portions on the opposite sides of said handle halves fitting within the indentations formed in the opposite longitudinal side edges of said tang and being contiguous to said indented side edge portions of said tang,

interlocking means on the opposite longitudinal side rim portions of the handle halves,

said interlocking means being in the form of projections and complementary mating holes,

each handle half further having two longitudinally spaced solid wall projections projecting from said main part,

said solid wall projections having end surfaces contiguous with one of the flat faces of the tang,

a bore in each of said solid wall projections, said solid wall projections being located in said handle halves so that the bores therein are longitudinally spaced and axially aligned with the two longitudinally spaced holes in said tang and are axially aligned with the longitudinally spaced bores of the mating handle half,

there being two pairs of axially aligned bores in said mating handle halves,

and fastener means in each pair of axially aligned bores in

said mating handle halves for securing said mating halves together with said tang sandwiched between them,

said opposite longitudinal side rim portions of said handle halves having ribs projecting laterally inwardly therefrom for reinforcing said side rim portions, said ribs providing supports for the handle tang.

4,524,515

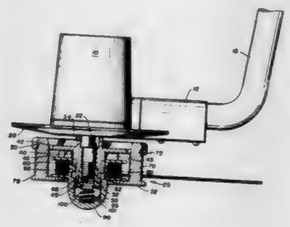
ROTARY CUTTING ASSEMBLY WITH FILAMENT FEED

Gary R. Oberg, Spirit Lake, Iowa, assignor to The Toro Company, Minneapolis, Minn.

Continuation of Ser. No. 733,286, Oct. 18, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,248

Int. Cl.³ A01D *50/00*

U.S. Cl. 30—276 **13 Claims**



1. A rotary cutting assembly comprising, in combination: a member rotatable about a drive axis, said member including a spool storage receptacle therein; a spool with a cutting line wound therearound, said spool located in said spool storage receptacle in either a first or a second axial location along said drive axis, said spool being rotatable with said member while in said first axial location and rotatable relative to said member and said drive axis when moved between said first axial location and said second axial location; spring means for urging said spool into said first axial location; ground engaging means for moving said spool against said spring means from said first axial location position to said second axial location when said ground engaging means is moved axially along the drive axis; and, indexing means for limiting rotation of said spool about said drive axis relative to said member when said spool is moved from said first axial location to said second axial location in response to the action of said ground engaging means to unwind a predetermined incremental length of cutting line from said spool.

4,524,516

MOLDED PLASTIC ARTICLE HAVING METALLIC INSERTS

Charles A. Wiechard, Tucker, Ga., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Division of Ser. No. 191,628, Sep. 29, 1980, Pat. No. 4,354,995. This application Jul. 14, 1982, Ser. No. 398,452

Int. Cl.³ B26B *29/00;* **B32B** *15/08, 15/04*

U.S. Cl. 30—290 **4 Claims**

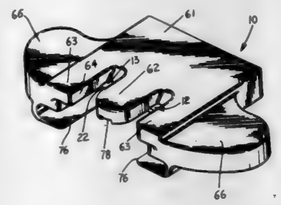
1. A tool which comprises a plastic portion and a metallic member, said tool comprising:

an insert assembly which comprises:

a metallic member; and

a locating framework which is made of a plastic material and which is molded about at least a portion of said metalic member to support said metallic member with a portion of said metallic member extending from said locating framework, said metallic member being positioned in a predetermined manner with respect to reference points of said framework; and

a housing which is made of a plastic material and which encloses said insert assembly, said reference points of said locating framework being positioned in a predetermined manner with respect to external surfaces of said housing to cause said metallic member to be positioned in a predetermined manner with respect to said housing



and to expose at least a surface of said portion of said metallic member which extends from said locating framework.

4,524,517

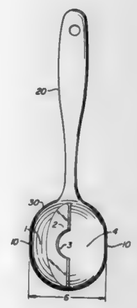
SANITARY TASTING SPOON

Iris A. Rupe, 3460 Eastside Calpella Rd., Ukiah, Calif. 95482

Filed May 31, 1983, Ser. No. 499,196

Int. Cl.³ A47J *43/28*

U.S. Cl. 30—324 **4 Claims**



1. In a spoon for the sanitary tasting of liquid food products having a bowl and handle connected thereto, the improvement comprising providing a baffle located substantially within the bowl and being characterized as emanating from an inner side wall of the bowl and extending away from the bowl at an angle to a line of geometric centers of the spoon and being further characterized as having an opening located proximate the edge of the baffle remote from the inner surface of the bowl.

4,524,518

UTILITY KNIFE

Robert F. West, West Simsbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Jun. 13, 1983, Ser. No. 503,749

Int. Cl.³ B26B *1/00*

U.S. Cl. 30—330 **18 Claims**

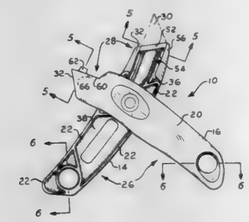
14. A knife holder for a utility knife employing a detachable blade of a type having a primary cutting edge and an opposite back edge, comprising:

a pair of complementary opposing elongated body sections adapted for mating engagement along a parting line and having exterior surfaces forming a handle portion and a blade enclosure means to interiorly receive and at least partially enclose said detachable blade;

connecting means intermediate said blade enclosure means and handle portion to securely connect said body sections in a closed position;

said body sections cooperating in the closed position to provide said blade enclosure means, said enclosure means terminating in the front tip of said sections to define a blade opening;

one of said body sections having an elongated shoulder projecting transversely across the parting line and extending rearwardly from said tip to form a blade canopy, said canopy shoulder having a first exterior surface generally conforming with the exterior surfaces of said sections when said holder is in the closed position, said canopy having a second interior surface generally opposite said first surface partially defining said blade enclosure portion



and being abuttable by the back edge of a blade received in said enclosure portion, and a slot on the opposite side of said parting line from said one body section so as to overlie said other body section in the closed position; and

the exterior surface of said other body section forming a recess complementary with said canopy shoulder for mating reception therewith, a freely projecting tongue extending outwardly from said recess forming exterior surface toward said shoulder for cooperative reception in said slot to interlock said body sections in close interfitting relationship.

4,524,519

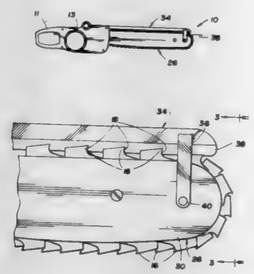
CONTINUOUS LOOP FLEXIBLE SAW

Anthony A. Muehling, 14583 Maddelein, Detroit, Mich. 48205

Filed Mar. 19, 1984, Ser. No. 590,918

Int. Cl.³ B27B *17/02*

U.S. Cl. 30—382 **14 Claims**



1. A chain saw comprising:

a plurality of toothed cutting links forming a flexible continuous loop having upper and lower reaches and being arranged in two side-by-side rows with the links in a staggered relationship; the links of each row each having opposite ends respectively aligned with the opposite ends of a pair of adjacent links of the other row; pivotal connections that connect the aligned ends of the cutting links directly to each other; a guide bar on which the flexible loop is mounted, the links of each row of the saw each having a cutting tooth that extends away from the links of the other row to define a space that separates the teeth of the two rows of links, and a safety bar at least a portion of which is located in the space that separates the teeth of the two rows of links on the upper reach to provide protection against accidental cutting.

4,524,520

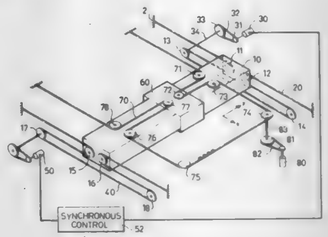
CARRIAGE POSITIONING SYSTEM

Nessim I. Levy, 13 Habrosh St., Savyon, Israel

Filed Feb. 24, 1983, Ser. No. 469,158

Int. Cl.³ G01D *15/16;* **F16H** *55/52*

U.S. Cl. 33—1 M **11 Claims**



1. A carriage positioning system for positioning a first carriage movable along a first axis with respect to a frame, and a second carriage carried by and movable with respect to said first carriage along a second axis perpendicular to said first axis; characterized in that said positioning system includes two flexible coupling elements each for coupling one of the opposite ends of said first carriage for movement with respect to the frame; each of said two flexible coupling elements having its opposite ends fixed to the frame on the opposite sides of the respective end of said first carriage and being trained over a pulley carried by said first carriage on each of the two opposite sides of the carriage, and over a further pulley carried by the frame on each of the two opposite sides of said first carriage; each of said two flexible coupling elements being coupled to a first member for driving same or for being driven thereby; said second carriage including a single flexible coupling element fixed at its two ends to said frame at one side of said two carriages; said single flexible coupling element being trained over two pulleys carried by each of said first carriage, a further pulley carried by each end of said second carriage between the associated last mentioned two pulleys, and a still further pulley carried by said frame at the side thereof opposite to that to which the two ends of the single flexible coupling element are fixed; said single flexible coupling element being coupled to a second member for driving same or for being driven thereby.

4,524,521

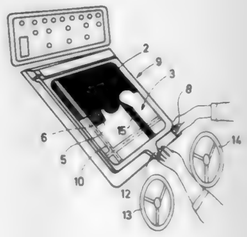
PROJECTION TABLE FOR AN OPTICAL PROJECTION PATTERN GRINDING MACHINE

Alfred Kolb, Haus am Tannenberg, D-6980 Wertheim, Fed. Rep. of Germany

Filed Apr. 20, 1983, Ser. No. 486,825

Int. Cl.³ G03B *23/00*

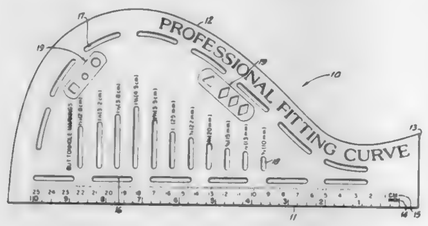
U.S. Cl. 33—1 AA **8 Claims**



1. Projection table of an optical projection form grinding

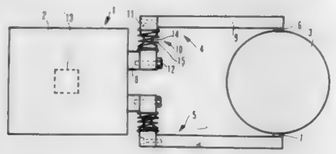
machine, comprising a transparent holder for a form pattern drawing, wherein said drawing bears insertion marks, and a transparent cover, wherein said cover can be moved between an open position in which the holder is accessible for insertion of the form pattern drawing, and a closed position, in which the cover lies flat on the form pattern drawing, and fixes it in position on the holder, and wherein said cover surface is made nonreflecting or reflection-reducing in the areas not above the insertion marks on the form pattern drawing.

4,524,522
FITTING CURVE AND RULER
Patricia Perry, Mt. Vernon, N.Y., assignor to Butterick Company, Inc., New York, N.Y.
Filed Mar. 16, 1984, Ser. No. 590,219
Int. Cl.³ A41H *1/00*; A42C *3/06*
U.S. Cl. 33—11 **7 Claims**



1. A fitting curve and rule to measure and mark patterns and fabric comprising:
a flat unitary panel member having first and second opposite side edges;
said first edge having a segment of a curve and said second edge being a straight edge;
ruler indicia on said panel along said straight edge;
a first series, in tandem, of elongated slots through said panel, parallel to said curve and spaced therefrom to locate a seam allowance;
a second series, in tandem, of elongated slots through said panel, parallel to said straight edge and spaced therefrom to locate a seam allowance;
a third series of slots through said panel to mark buttonhole lengths, the slots of said third series having different lengths; and
printed indicia on said panel associated with each of said third slots to indicate the length of each of said third slots.

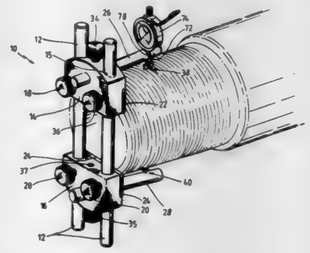
4,524,523
PROBE FOR CHECKING LINEAR DIMENSIONS OF MECHANICAL PIECES
Guido Golinelli, Bologna, and Carlo Dall'Aglio, Volta Reno Di Argelato, both of Italy, assignors to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy
Filed Jul. 13, 1983, Ser. No. 513,309
Claims priority, application Italy, Mar. 25, 1983, 3379 A/83
Int. Cl.³ G01B *7/02*
U.S. Cl. 33—143 L **18 Claims**



1. A probe for checking linear dimensions of mechanical pieces, comprising: a support; an arm movable with respect to the support and including a first element, a second element and a third intermediate element connected in a removable way to the first and second elements; a feeler fixed to the first element of the movable arm for contacting a piece to be checked; and detection means adapted for providing a signal responsive to the position of the movable arm; wherein said intermediate element includes a breakable section for protecting the probe from accidental impacts against the feeler and the first element of the movable arm, said section defining a geometrical axis located apart from the feeler and in a substantially different position with respect to the first element of the movable arm, for protecting the probe from blows striking along any direction.

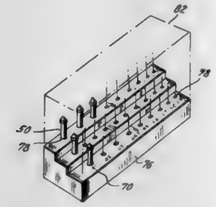
15. A probe for performing measurements on a piece, comprising: a casing; an arm movably coupled to the casing, said arm including a first element arranged outside the casing, a second element partially arranged within the casing and a third element removably connecting said first element to said second element, said first element and said second element defining substantially a common geometrical axis; a feeler fixed at a free end of said first element for contacting the piece; and detecting means for detecting the displacement of the arm from a reference position; wherein said third element includes a breakable section for protecting the probe from accidental impacts suffered by said feeler or said first element, said section defining a geometrical axis lying substantially in a position different from that of said common geometrical axis.

4,524,524
GAGE FOR MEASURING DIAMETERS
Jimmy I. Frank, and John R. Wolfe, III, both of Pasadena, Tex., assignors to Gagemaker, Inc., Pasadena, Tex.
Filed Oct. 5, 1983, Ser. No. 539,168
Int. Cl.³ G01B *5/08, 5/12*
U.S. Cl. 33—147 M **21 Claims**



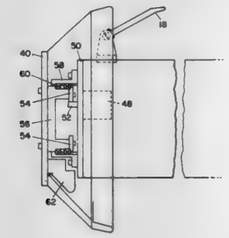
19. A gage for measuring the inside or outside pitch diameter of a straight or tapered threaded product at a selected distance from the end of the product comprising:
a. a vertical bearing surface contactable with the end of the product;
b. upper and lower pivotable flat thread contact surfaces lying in a vertical plane, the vertical plane being perpendicular to the vertical bearing surface, the thread contact surfaces both being spaced from the vertical bearing surface at a horizontal distance based on the selected distance from the end of the product, the vertical distance between the upper thread contact surface and the lower thread contact surface being variable from an initial vertical distance based on the specified diameter at the selected distance to a vertical distance in which the upper and lower thread contact surfaces are in contact with the thread crests of the product at diametrically opposed points thereon; and
c. means for registering the difference between the initial vertical distance and the vertical distance between the upper and lower thread contact surfaces when in contact with the thread crests of the product at diametrically opposed points thereon.

4,524,525
DIAMOND GAUGE WITH THREE-DIMENSIONAL STONE SIMULANT
Saul M. Finkler, East Meadow, N.Y., assignor to Centennial Jewelers, Inc., New York, N.Y.
Filed Feb. 14, 1984, Ser. No. 580,080
Int. Cl.³ G01B *3/46, 5/12*
U.S. Cl. 33—178 B **20 Claims**



1. A diamond gauge, comprising:
a three-dimensional stone simulant having a central axis and having sections corresponding generally to the culet, the girdle and the table of a cut diamond; and
a handle connected to said section corresponding to the table of a cut diamond and extending in a direction generally parallel to said central axis.

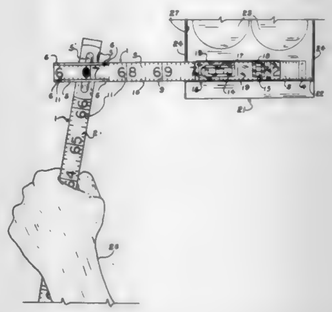
4,524,526
APPARATUS AND METHOD FOR INERTIAL MEASUREMENT OF PIPELINE DEFLECTION
Seymour Levine, Topanga, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Nov. 22, 1982, Ser. No. 443,481
Int. Cl.³ E21B *7/00*
U.S. Cl. 33—312 **13 Claims**



5. Apparatus for monitoring curvature along a pipeline comprising, in combination:
(a) means for taking a plurality of measurements of the inertial attitude of said pipeline said means including (i) a pig, (ii) means for measuring the attitude of said pig with respect to inertial space, (iii) means for measuring the attitude of said pig with respect to said pipeline and (iv) means for transporting said pig through said pipeline; and
(b) means for comparing said measurements to locate changes in attitude along said pipeline.

4,524,527
COMBINATION LEVEL SYSTEM FOR A THIN RULE
Jewell W. Jeffrey, Florence, Ala., assignor to Lloyd James Lewis, Florence, Ala., a part interest
Filed Sep. 17, 1982, Ser. No. 419,236
Int. Cl.³ G01B *3/06*
U.S. Cl. 33—451 **10 Claims**

1. A level system for a thin rule comprising, in combination:
a measured section of said rule, including manipulative front and back sides, having
a lengthwise axially disposed aperture for a level extending through said section;
a transversely disposed aperture for a level extending through said section in juxtaposition to said lengthwise aperture;
a lengthwise level cylinder and a transverse level cylinder located respectively in said apertures, each said cylinder being so sized as to centrally dispose the same in its aperture in spaced relation to the sides of its opening;
an encapsulating casting of molded transparent material encompassing said rule section and apertures, enveloping said respective levels in their relative disposed positions;
said casting having a formed section on the front side of said rule section of thickness sufficient to cover said levels and

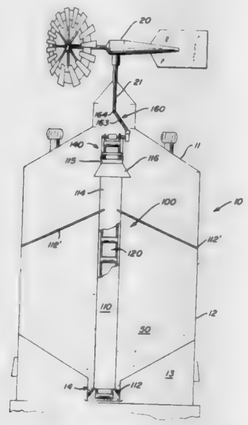


of length sufficient to extensively cover said apertures and measured section of said rule;
said casting having a formed section on the back side of said rule coextensive with the front side thereof covering said apertures and levels with material of a less thickness than the front side configurated to lie in flat occlusive contact with an adjacent surface; and
said cast further having for its extended length a formed section of rigid material along at least one edge of said rule adjacent to said apertures, said material of relatively small thickness sufficient to provide a structural reinforcement, independent and proportional relationship to the excised aperture rule material, at the linear surface of said edge coextendive and adjacent to each said aperture.

4,524,528
WIND POWERED GRAIN DRYING APPARATUS
Thomas G. Ehlers, 1875 Adair, Dubuque, Iowa 52001
Filed Feb. 8, 1983, Ser. No. 464,816
Int. Cl.³ F26B *13/22*
U.S. Cl. 34—102 **10 Claims**

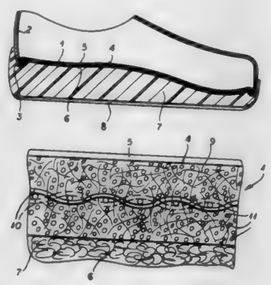
1. In a grain bin having a roof portion, a walled portion, and a sloping floor forming a grain sump, an improved wind powered grain drying apparatus comprising:
a windmill mounted on said roof portion, and having an output shaft extending into the interior of said grain bin,
an elongated conduit disposed in said grain bin, having one end disposed in, but spaced from the grain sump floor, and the other end disposed in the general vicinity of said output shaft, wherein the said other end of said elongated conduit is provided with a cap member and a downwardly depending conical skirt, and
a conveyor system operatively connected to said output shaft, and comprising a conveyor member mounted in said

elongated conduit for raising grain through said elongated conduit and means for rotating said conveyor as a whole



about a vertical axis extending along the axis of said elongated conduit.

4,524,529
INSOLE FOR SHOES
Helmut Schaefer, Winzlerstrasse 114, D-6780 Pirmasens, Fed. Rep. of Germany
Filed Aug. 24, 1983, Ser. No. 526,112
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1982, 3231971
Int. Cl.³ A43B *23/16*
U.S. Cl. 36—98 **33 Claims**



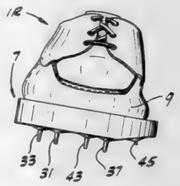
1. A shoe insole assembly comprising:
an insole consisting of a fleece substantially formed of synthetic fibers and having arranged therein a reinforcing insert extending in approximately parallel relation to an upper side of the insole supporting the foot, and at least at an upper portion of the fleece which adjacent to the upper side of the insole supporting the foot is a dispersion or emulsion containing at least one percent by weight of hollow microspheres impregnating said fleece, said microspheres having thin shells of a vinylidene chloride copolymer and a hollow core of which contains a gas; and
a body of foam polyurethane bonded to a bottom side of said insole.

4,524,530
SPUR EQUIPPED BOOT
Peter R. Greenway, 5105 Mount Nemo Rd., R.R. #2, Milton, Ontario, Canada (L9T 2X6)
Filed Apr. 13, 1983, Ser. No. 485,387
Claims priority, application Canada, Jan. 6, 1983, 418964
Int. Cl.³ A43B *3/00*
U.S. Cl. 36—113 **5 Claims**



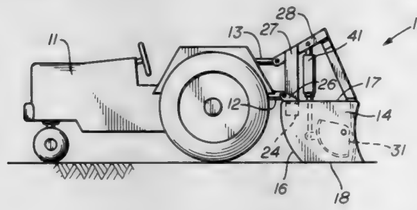
1. A lineman's climbing aid comprising an outer boot adapted to be worn over a standard workboot and a replaceable steel gaff rigidly fastened exteriorly against an inside wall portion of the outer boot, wherein the outer boot comprises a one-piece molding of electrically insulating, water-impermeable, plastics material defining a rigid shell and a steel reinforcing plate embedded within said inside wall portion of the shell, the gaff being fastened to the reinforcing plate by fastening means extending through said inside wall portion whereby said inside wall portion is rigidly clamped between the reinforcing plate and the gaff.

4,524,531
GOLF SHOES
Donald R. VanDeripe, 8 Auvergne Dr., Lake Saint Louis, Mo. 63367
Filed Dec. 2, 1982, Ser. No. 446,424
Int. Cl.³ A43C *15/00*
U.S. Cl. 36—127 **9 Claims**



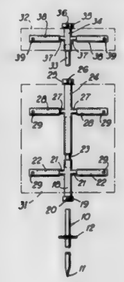
1. A pair of golf shoes, each shoe comprising a sole and an upper, the sole having a heel section for the bottom of the heel of the foot, an arch section forward of the heel section for the bottom of the arch of the foot, and a front section forward of the arch section for the portion of the foot forward of the arch and for the toes, spikes in the bottom of the heel and front sections, the bottom of the heel and front sections having relatively wide flat beveled surfaces along their inner sides inclined inwardly and downwardly from the inner edge of the sole whereby when the weight of a person wearing the shoe shifts to the inner side of the foot, as during the address and backstroke stages of the golf swing, the shoe is adapted to roll inwardly about the central longitudinal axis of the shoe to a position in which said beveled surfaces are in engagement with the ground for stably supporting the golfer during said swing, the sole, as viewed from the bottom of the shoe, being beveled along a line extending generally longitudinally of the sole, said line being generally tangent to the inner edge of the arch section at about its narrowest point.

4,524,532
BOX BLADE WITH MOVABLE CLOSURE BLADE
James E. Browning, 10149 Hammerly, Ste. 167, Houston, Tex. 77080
Filed Aug. 24, 1984, Ser. No. 644,196
Int. Cl.³ E02F *3/76*
U.S. Cl. 37—117.5 **15 Claims**



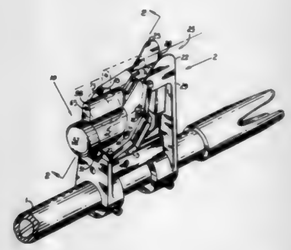
1. A box blade assembly for attachment to earth-moving vehicles comprising:
a box blade frame having two spaced parallel side walls, an open top and bottom, an open front end, a horizontal crossbeam extending transversely between said side walls near said open top and front ends, and a rear wall extending transversely between said side walls, the bottom edge of said rear wall terminating above the bottom edge of said side walls,
an inwardly facing scraper member secured on said box blade rear wall and extending below the bottom edge of said side walls, and
a trailing back fill member pivotally mounted on and carried by said rear wall,
a closure member extending transversely between said side walls and movably supported thereon and movable between an open position substantially exposing said open bottom and a closed position substantially enclosing said open bottom, and
means supported on said box blade frame and operatively connected to said closure member to move the same between said open and said closed positions.

4,524,533
REALTOR SIGN SYSTEM
Samuel A. Still, Jr., P.O. Box 8, Still Rd., Ft. Motte, S.C. 29050
Filed Dec. 12, 1983, Ser. No. 560,246
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—607 **3 Claims**



1. A sign system for realtors and like comprising an elongated sign support standard adapted to be driven in the soil for anchorage therein and having a driving element between its ends adapted to contact the surface of soil into which the standard is driven, a first sleeve engageable telescopically and adjustably over the top of the standard and having a lower end locking set screw adapted to engage the standard for locking the first sleeve thereon at a prescribed height, a cross bar on the first sleeve between its ends substantially at right angles thereto and projecting equidistantly on opposite sides thereof, a pair of sign panel support sleeves telescopically and adjustably mounted on said cross bar on opposite sides of the first sleeve and having transverse apertures formed therethrough near their outer ends, a bar fixed coaxially within the first sleeve and extending beyond one end of the first sleeve, a second sleeve engaged telescopically and adjustably with the last-named bar and being coaxial therewith and being extendable and retractable on the last-named bar away from and toward the cross bar, a second cross bar on the second sleeve between its ends substantially at right angles thereto and parallel to the first-named cross bar and projecting equidistantly on opposite sides of the second sleeve, another pair of sign panel support sleeves telescopically and adjustably mounted on the last-named cross bar on opposite sides of the second sleeve and having transverse apertures formed therethrough near their outer ends, the second sleeve having an upper end locking set screw, a comparatively short bar coaxially telescopically engageable within the second sleeve and adapted to be locked therein by the last-named set screw, a comparatively short sleeve coaxially receiving one end of the comparatively short bar and fixed thereto and having a set screw near one end thereof away from the comparatively short bar, whereby the comparatively short sleeve can receive telescopically and be locked to another coaxial bar of an auxiliary sign support structure, a third cross bar on the comparatively short sleeve between its ends substantially at right angles thereto and projecting equidistantly on opposite sides thereof, and a pair of auxiliary sign panel support sleeves telescopically and adjustably mounted on the third cross bar on opposite sides of the comparatively short sleeve and having transverse apertures formed therethrough near their outer ends.

4,524,534
POSITION ACTUATED ILLUMINATED GUNSIGHT
Gordon E. Kaye, Garrison, and Joseph A. Agnello, Jr., Peekskill, both of N.Y., assignors to Univention Incorporated, Garrison, N.Y.
Filed Dec. 20, 1982, Ser. No. 451,476
Int. Cl.³ F41G *1/34*
U.S. Cl. 42—1 S **1 Claim**



1. An illuminated gunsight for an M-16 rifle having an elevated ramp sight terminating at its upper end in a platform with wing sections extending upwardly from said platform which platform and wing sections form a target framing area, said sight further comprising a ramp section, said gunsight comprising a peripheral skirt adapted for seating engagement with the ramp section of said sight, and extension elements for engagement with said wing sections, said gunsight further comprising anchoring means for fixed engagement of said gunsight with

said ramp section, said gunsight further comprising a moveable illumination member having a light emitting diode and an electric battery, having positive and negative terminals, contained therein, with electrical connections between said light emitting diode and the terminals of said battery, said light emitting diode being visible to the rear of said firearm, said illumination member including said light emitting diode being moveable in a direction up and down said ramp into and out of aligment with said target framing area, means electrically disconnecting one of said electrical connections from said battery when said illumination member with light emitting diode is moved down said ramp and out of alignment with said target framing area without removal of said gunsight from the rifle, and wherein said gunsight further comprises a moveable activation member which forces said disconnected electrical contact into electrical contact with said battery when said illumination member is moved up said ramp and into alignment with said target framing area, whereby said contained light emitting diode is electrically activated for sighting.

4,524,535
TROLLING METHOD AND APPARATUS
Robert L. Bates, Tucson, Ariz., assignor to Agro Land & Cattle Company, Inc., Tucson, Ariz.
Filed Jan. 31, 1983, Ser. No. 462,567
Int. Cl.³ A01K *79/00*
U.S. Cl. 43—4.5 **22 Claims**



1. A trolling array comprising a pair of running lines adapted to be towed astern of a moving fishing vessel, spacing bars connecting said running lines at spaced intervals for maintaining separation between said running lines, means detachably connecting said bars to said running lines to permit the bars to be separated from the running lines when the latter are hauled aboard the vessel, and shearing means for controlling the position of the array in the water as the array is towed through the water.

13. A method of trolling comprising setting a first pair of running lines to one side and astern of a vessel, detachably securing a plurality of spacing bars at spaced intervals along said running lines to maintain separation between the lines of the first pair, detachably securing a plurality of branch lines to the running lines of said first pair, said branch lines having jigs attached thereto, hauling in said first pair of running lines while setting a second pair of running lines from the other side of the vessel, removing fish from the jigs as they approach the vessel and transferring branch lines and spacing bars from said first pair of running lines to said second pair of running lines.

4,524,536
FISHING LURE RETRIEVER
Richard L. Eckerson, 415 Corunna Ave., Owosso, Mich. 48867
Filed Oct. 17, 1983, Ser. No. 542,753
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—17.2 **16 Claims**

1. A fishing lure retriever for disengaging a lure with fish hooks from an obstacle comprising

a heavy main body,

a fishing line guide extending from same main body and engageable by the fishing line for guiding the main body along the fishing line,

means for attaching a handling line to the body at a point spaced from the guide,

a post extending outwardly from said main body at a point spaced from said guide and said means for attachment of the handling line,

a hook engaging body being telescoped over said post,

said hook engaging body defining a surface extending radially outwardly from the main body such that when the fish lure is lodged in an obstruction, the retriever is first engaged with a fishing line by engaging the guide with the



fishing line, the handling line is then utilized to lower the retriever under the weight of the main body downwardly along the fishing line and when the main body approaches the fishing lure is applies a force tending to dislodge the fishing lure from the obstruction and to move the hook engaging body into engagement with the hooks of the fish lure so that the fish lure can be retrieved by lifting the handling line.

4,524,537
BARBLESS FISHHOOK
Arthur F. Malchert, Sr., 2030 S. 1st Ave., Maywood, Ill. 60153
Continuation-in-part of Ser. No. 495,919, May 23, 1983, abandoned, which is a continuation of Ser. No. 267,351, May 26, 1981, abandoned, which is a continuation-in-part of Ser. No. 178,838, Aug. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 92,211, Nov. 7, 1979, abandoned. This application Aug. 16, 1983, Ser. No. 523,603
Int. Cl.³ A01K *83/02*
U.S. Cl. 43—36 **2 Claims**



1. A reversible, springless, barbless fishhook comprising:

(A.) a pair of generally similar wire hook halves, each half being formed of a single length of wire bent into:

(i) a generally straight center shank portion;

(ii) a barbless hook portion at one end of said generally straight center shank portion;

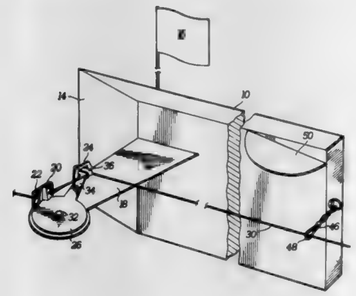
(iii) a first loop at the opposite end of said straight portion; and

(iv) an offset upper portion, offset at an angle between about 30 degrees and 50 degrees toward and generally in the plane of said hook portion and said center shank portion, extending from said loop and terminating in a leader-receiving eye portion,

(B.) means for allowing center shank portions of said hook halves to pass each other upon tong-like movement of said hook halves comprising: a pivot pin including means for adjusting tension joining said hook halves at the loops and said hook halves being in parallel planes, said pivot pin providing a sole means for holding said hook halves with controlled tension while permitting tong-like movement of both said hook halves toward each other from an initial position with the hook portions splayed inwardly or away from each other from an initial position with the hook portions splayed outwardly, and

(C.) a leader extending movably through both said leader-receiving eyes, said leader forming a fixed bight, so that tension applied to a hook by a fish urges said offset upper portions together, and either moves said barbless fishhook portions apart when the hook portions are initially splayed outwardly and baited or moves said barbless hook portions together when the hook portions are initially splayed inwardly and baited.

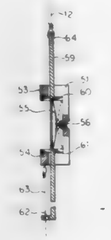
4,524,538
TROLLING BOARD
Stephen H. Halvorsen, 2935 Alabama Ave., Minneapolis, Minn. 55416
Filed Apr. 5, 1983, Ser. No. 482,070
Int. Cl.³ A01K *91/00*
U.S. Cl. 43—43.13 **4 Claims**



1. A trolling board adapted to be towed on a fishing line behind a boat comprising a flat elongated buoyant body member, weighted and therefore heavier on one side and having an oblique surface adapted to cause said device to move toward one side when towed in water, said trolling board being provided means adapted to engage a fishing line towed behind a boat, said engaging means being provided with a trip mechanism which releases said line when a fish strikes the baited end thereof, said mechanism including a stationary surface and a rotatable member having an eccentric surface which upon rotation will engage said stationary surface so that a line placed between the stationary surface and rotatable member will be squeezed therebetween in a direction such that pulling on the line from the reel urges the same to engage the line more tightly, said rotatable member having a trip lever attached integrally thereto adapted to engage the line at a point nearer the baited end of said line so that a strike on said bait will rotate the locking mechanism in a direction to disengage the line therefrom.

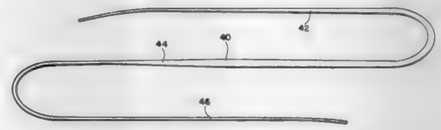
4,524,539
THERMOSTATIC FISHING DEVICE
Robert C. Morris, 98 Emmans Rd., Ledgewood, N.J. 07852, and Russell S. Shelton, 9 Park Ave., Flanders, N.J. 07836
Continuation-in-part of Ser. No. 229,134, Sep. 3, 1981, abandoned. This application Dec. 13, 1983, Ser. No. 560,879
Int. Cl.³ A01K *91/06, 97/00*
U.S. Cl. 43—44.87 **9 Claims**

1. In a fishing assembly to be located in a water environment including a sinker in said water and connecting means extending from the surface of said water to said sinker, a frame which encloses a portion of said connecting means to loosely engage said portion, a bimetallic member supported by said frame, said bimetallic member adapted for changing state between two states in response to the temperature of said water environment



in which said assembly is located, and means responsive to said change of state of said bimetallic member for engaging said connecting means between said member and said frame in one of said states and for disengaging from said connecting member in the other of said states.

4,524,540
FLY LINE
Lee Wulff, Beaverkill Rd., Lew Beach, N.Y. 12753
Filed Jul. 26, 1982, Ser. No. 402,151
Int. Cl.³ A01K *91/00*
U.S. Cl. 43—44.98 **7 Claims**



1. A fly line for fly casting comprising a certain length of line having a forward portion for attachment of a leader and a rear portion for attachment to a spool of a reel, less than one-half of the line at the forward end thereof tapering from a thickest portion adjacent the center of the line to a narrowest portion adjacent to the forward terminal end of the line to which the leader is to be applied, a short reverse taper beginning at the thickest portion of the tapering forward end of the line, and the remainder of the line following said reverse taper being generally of constant diameter less than the tapered forward portion of the fly line.

4,524,541
BLOOMING PLANT IMPLANT WITH MESSAGE HOLDER
Albert F. Geiges, Jr., 3157 Mechanicsville Rd., Bensalem, Pa. 19020
Continuation-in-part of Ser. No. 502,291, Jun. 8, 1983,. This application Mar. 8, 1984, Ser. No. 587,448
Int. Cl.³ A01B *79/00*
U.S. Cl. 47—58 **6 Claims**

1. A method for implanting an object within a blossom capable of blooming, said blossom having a receptacle and a plurality of petals and said object provided with a signal device adapted to provide a signal for indicating the presence of said object, and wherein said method comprises:

removing a plug member from said plant so as to form a channel leading into an interior portion of said blossom;

placing said object within said signal device so as to retain said object therein;

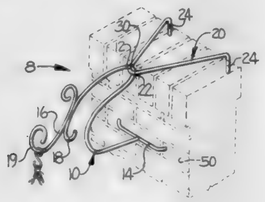
inserting said signal device and said object retained therein

through said channel into said interior portion of said blossom such that said object is removed from open sight; and



replacing said plug member within said channel whereby upon opening of the blossom the signaling device signals the presence of the object.

4,524,542
ORNAMENTAL FIXTURE FOR SUSPENDING POTTED PLANTS
James J. Elliott, 700 Museum Dr., Charlotte, N.C. 28207
Filed Nov. 28, 1983, Ser. No. 555,665
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—67 **1 Claim**



1. An ornamental fixture for suspendingly supporting potted plants or the like alongside a vertical surface such as the vertical surface of a supporting wall, fence or the like, and comprising:

an elongate skeletal bracket formed of rod-like material having a sinuous configuration including first and second end portions and a loop portion formed therein between said end portions,

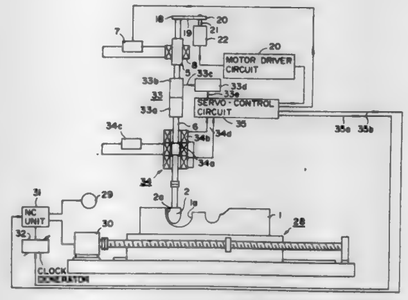
mounting means formed of rod-like material and adapted to be carried by said vertical surface and having a generally V-shaped configuration with the apex of the V forming a loop portion extending through said loop portion of the sinuous elongate skeletal bracket with the respective loop portions of said bracket and mounting means being at substantially right angles to each other and with the bights of the loops in detachable interengagement for mounting the bracket alongside the vertical surface,

said mounting means also having a pair of wall engaging feet remote from said loop portion of the mounting means and adapted to engage the opposite vertical surface of the wall, fence or the like from the vertical surface alongside of which the bracket is supported,

said elongate skeletal bracket including abutting means carried by said first end portion and being positioned below the point of detachable engagement of said loop portion of said bracket with said mounting means and extending laterally on remote opposite sides of the point of detachable engagement of said bracket to said mounting means for abuttingly engaging said vertical surface and stabilizing and positioning said bracket to extend in an outwardly projecting manner from said vertical surface, and

said bracket including hook means carried by said second end portion and being positioned beneath and outwardly of and remote from said point of engagement of the bracket with the mounting means for suspendingly receiving thereon a potted plant or the like so that the potted plant will be suspendingly supported alongside the vertical surface.

4,524,543
VIBRATORY ABRASIVE CONTOUR-FINISHING METHOD AND APPARATUS
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan
Filed Oct. 13, 1983, Ser. No. 541,667
Claims priority, application Japan, Oct. 18, 1982, 57-181258
Int. Cl.³ B24B *7/00*
U.S. Cl. 51—34 R **4 Claims**



1. A method of abrasively finishing a shaped workpiece surface with a vibratory axial tool by means of abrasive grits, the method comprising the steps of:

(a) rotating the axial tool about a longitudinal axis thereof while vibrating it in the direction of said axis to provide a reciprocatingly revolving active tool surface;

(b) bringing the reciprocatingly revolving active tool surface into pressure engagement with a portion of said shaped surface of the workpiece in the presence of the abrasive grits therebetween;

(c) relatively displacing said axial tool and said workpiece generally translationally and transverse to said longitudinal axis so that the reciprocatingly revolving active tool surface sweeps starting with said portion and successively over an entire area of said shaped surface while maintaining the abrasive pressure engagement therewith;

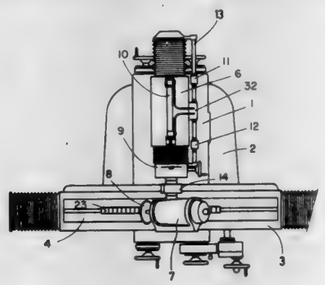
(d) instantaneously sensing a load encountered by said reciprocatingly revolving active tool surface in the abrasive pressure engagement with said shaped surface to produce an output signal representing an instantaneous change in said load; and

(e) in response to said output signal, controlling said relative translational displacement between the tool and the workpiece so as to maintain the load exerted on said reciprocatingly revolving active tool surface substantially constant.

4,524,544
MACHINE FOR BACKING-OFF AND/OR GRINDING DRIFTING SPINDLES PROVIDED WITH TEETH
Robert Habib, 36, Quai Gustave Adord, 1207 Geneva, Switzerland
Filed Feb. 9, 1983, Ser. No. 465,256
Claims priority, application Switzerland, Mar. 5, 1982, 1351/82
Int. Cl.³ B24B *3/22*
U.S. Cl. 51—92 R **1 Claim**

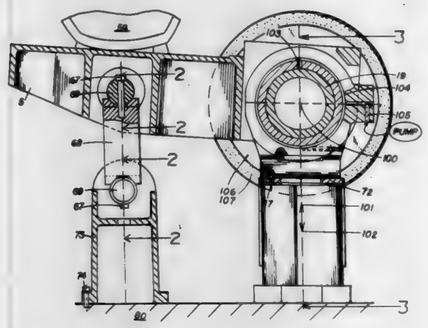
1. A machine for backing-off and grinding drifting spindles provided with teeth comprising a sliding table and a grinding spindle and associated conical grinding wheel mounted on a support on said table, with said support being oriented and

movable transversely with respect to said table, mounting of said grinding spindle to said support including a pivotable slide having a sliding plane vertical and parallel to said grinding spindle's axis with a sliding direction being oriented in said plane, said slide having a fixed part and a movable part, said fixed part comprising a cylindrical bore perpendicular to said sliding plane and cooperating with a first journal of a first drum integral with said support of said grinding spindle which allows positioning of said slide in a desired sliding direction by rotation about said journal and further providing a locking



means for locking said slide in a desired angular position, said grinding spindle being further supported by a second drum fixed to said movable part of said slide, said second drum having an axis perpendicular to said spindle and comprising a second journal cooperating with a bore in said movable part of said slide in order to allow angular positioning of said grinding spindle with respect to said sliding table in a plane parallel to the sliding plane of said slide, by rotation of said second journal in said bore of said movable part of the slide, said locking means also provided for locking said second drum in a desired angular position.

4,524,545
GRINDING MACHINE
Karl-Heinz Giebmanns, Westport, Conn., assignor to ITM International Tool Machines Inc., Westport, Conn.
Continuation-in-part of Ser. No. 284,410, Jul. 17, 1981, Pat. No. 4,468,892. This application Nov. 15, 1983, Ser. No. 551,715
Int. Cl.³ B24B *7/00*
U.S. Cl. 51—99 **10 Claims**



1. In a grinding machine, an improved grinding wheel support arrangement, comprising in combination,

a support table;

a first post threadably adjustably mounted in a direction normal to said support table;

a pair of second posts fixedly mounted on said support table;

a first support shaft rotatably supported in said pair of second posts;

an intermediate member secured to said first support shaft at one of its two ends and having a second support shaft secured to its other end;

a housing for supporting a drive motor;

a grinding wheel shaft rotatable in said housing;

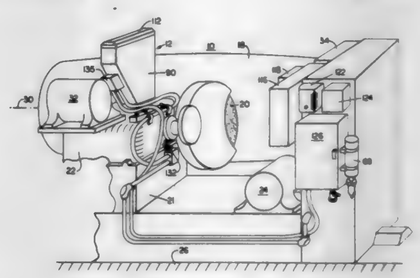
a grinding wheel coaxially mounted on said grinding wheel shaft;

said first post being connected to said grinding wheel shaft so that their respective axes intersect each other;

a second support shaft being rotatably mounted in said housing and being parallel to said grinding wheel shaft; and

said housing being pivotally connected to said intermediate member via said second support shaft.

4,524,546
ROLL PROFILE GAUGE
Bradley R. Hoover, 661 Schultz, Hamilton, Ohio 45013, and Karl T. Bagdal, 2014 Erie Ave., Middletown, Ohio 45042
Filed Jun. 6, 1983, Ser. No. 501,644
Int. Cl.³ B24B *49/04*
U.S. Cl. 51—165 R **25 Claims**



1. In a conventional roll grinding apparatus of the type having a head stock and a tail stock mounting a roll to be ground, a grinding wheel mounted on a housing, means to traverse the housing longitudinally of said roll, means to shift the housing toward and away from said roll in a direction substantially perpendicular to the roll axis, and means for rotating said roll, a gauge mounted on said housing, said gauge having a sensor for continuously sensing the distance between said sensor and the roll surface as said housing traverses said roll, means to move said sensor toward and away from said roll relative to said housing, transducer means for converting said sensor output into an electric output, a chart recorder having circuitry driving a pen and an input and output, the output of said chart recorder producing a chart recording, the improvement in combination therewith comprising:

an electronic processor having inputs and outputs, an output of said transducer being connected to an input of said processor;

means within said processor that determines the diameter of roll being measured and adjusts the gain of said circuitry driving said pen of said chart recorder;

input means within said processor to read the output signal from said transducer and measure the distance between the transducer signal and an established reference voltage;

means within said processor whereupon to multiply the signal from said transducer by the magnification factor derived from the number of sensor positioning steps to move said sensor from its home position to its reference location near the surface of the roll;

means within the processor to thereupon generate an output signal to said chart recorder comprising the average of a plurality of individual signal readings to provide a smooth chart recording which ignores minor variations in roll diameters; and

the output of said chart recorder producing a chart recording which has a linear scale to profile the surface of the roll traversed by said sensor;

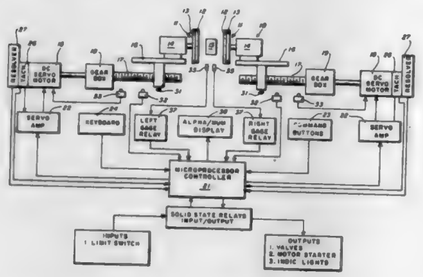
whereby to improve the resolution, accuracy and ease of profile gauging worn and ground rolls of various diameters.

4,524,547

AUTOMATIC DOUBLE DISC GRINDER CONTROL CYCLE

Gaylord E. Heaston, Beloit, Wis., and Edward A. Farazandeh, Aurora, Ill., assignors to Litton Industrial Products, Inc., South Beloit, Ill.

Filed Sep. 6, 1983, Ser. No. 529,625
Int. Cl.³ B24B *49/18*
U.S. Cl. 51—165.77 **2 Claims**



1. A surface grinding machine comprising

a wheelhead assembly including an abrasive disc having a flat stock removal surface,

means for supporting said wheelhead assembly for movement in a selected axial direction,

means for axially displacing said wheelhead assembly including

means for defining a selected infeed program for said wheelhead assembly having at least an initial infeed distance, at an initial feed rate, and a finish infeed distance at a finish feed rate wherein the total infeed distance extends from a retracted position to the finish size position whereat a workpiece has been ground to size, and

means for disabling said axially displacing means in the event said wheelhead assembly is axially advanced to a predetermined location a selected distance beyond said finish size position.

4,524,548

CONTINUOUS DEFLASHING SYSTEM

David J. Klee, Emmanus, and Donald J. Ehnot, Coopersburg, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 22, 1983, Ser. No. 487,679
Int. Cl.³ B24C *1/00*
U.S. Cl. 51—322 **5 Claims**



1. In the pellet blasting of molded articles for removal of embrittled flash therefrom, wherein said articles are contacted with a high velocity stream of blasting media while said articles are being continuously conveyed on the upper surface of an endless belt in a longitudinal travel path through a chilling tunnel from an article entrance end to an article discharge end of said tunnel, the improved operating method which comprises:

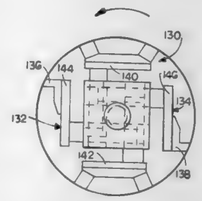
spraying liquefied gas coolant into said tunnel at a plurality of locations along the travel path of said articles within the tunnel, directing the liquefied gas spray from opposed directions tranversely of the travel path from an elevated position sufficiently above the conveyed articles such that the sprayed liquefied gas is evaporated before any of the liquefied gas spray contacts the articles in liquid form, and setting the relative quantity of liquefied gas spray at each of said plurality of locations selectively to provide a biased positive flow of most of the evaporated coolant towards the article entrance end of the tunnel to effect gradual cooling of articles introduced at said entrance end.

4,524,549

HONING HEAD CONSTRUCTION

Robert M. Sunnen, Frontenac, and Morton B. Estes, St. Louis County, both of Mo., assignors to Sunnen Products Company, St. Louis, Mo.

Continuation of Ser. No. 414,472, Sep. 2, 1982, abandoned. This application Nov. 15, 1984, Ser. No. 671,040
Int. Cl.³ B24B *33/02*
U.S. Cl. 51—347 **15 Claims**



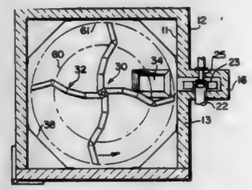
1. A honing mandrel having six circumferentially spaced work engaging members thereon comprising a body portion having a bore extending therethrough, a pinion gear mounted for rotational movement in the bore, at least four sets of spaced transverse body bores, the bores in each set extending through the body in positions to intersect the bore in which the pinion gear is located at spaced locations therealong, said four sets of transverse bores being arranged in first and second angularly related opposed sets on the body portion, a pair of opposed honing assemblies each including an elongated member having opposite surfaces, a set of rack gears extending from one of the opposite surfaces on each honing assembly at locations for positioning in the respective bore sets of the first opposed sets whereby the honing assemblies are arranged in opposed relation on opposite sides of the body portion, each of said rack gears having rack gear teeth thereon for engaging the pinion gear, two circumferentially spaced honing members mounted on the other opposite surface of each elongated member to engage a work surface at circumferentially spaced locations thereon, a pair of opposed guide assemblies each including an elongated support member having opposite surfaces, a set of rack gears extending from one of the opposite surfaces of each support member at locations for positioning in the respective bore sets of the second opposed sets whereby the guide assemblies are arranged in opposed relation on opposite sides of the body portion at locations intermediate circumferentially between the honing assemblies for movement in diametrically opposite directions, each of said rack gears on the guide on the guide assemblies having rack gear teeth thereon engageable with the pinion gear, and a single work engaging guide member mounted on the opposite surface of each elongated support member, the rack gears for the respective guide assemblies and the respective work engaging guide member thereon being located on the respective guide assemblies on opposite sides of the diameters along which the respective guide assemblies move when the pinion gear rotates, the two work engaging honing members on each of the honing assemblies and the work engaging guide member on each of the guide assemlies establishing said six circumferentially spaced work engaging members on the honing mandrel.

4,524,550

DISCHARGE OF BLASTING MEDIA FROM A TREATING CHAMBER

Thomas W. Burke, Allentown, and David J. Klee, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 30, 1982, Ser. No. 445,603
Int. Cl.³ B24C *9/00*
U.S. Cl. 51—424 **4 Claims**



1. In apparatus for pellet blasting of articles to remove molding flash or coatings therefrom by projecting a high velocity stream of such pellets against the articles within a thermally insulated enclosure containing gaseous coolant; wherein the resulting mixture of pellets and refuse comprising fragments of removal flash or coating material is collected at the bottom of said enclosure and is screened to recover separated reusable pellets for recycling to the blasting apparatus, the improvement which comprises:

a rotating sweep device within said enclosure above the bottom thereof, said sweep device having a plurality of outwardly extending sweep arms traversing the bottom of said enclosure;

each of said sweep arms being attached to a central hub and shaped to approximate an ogee curve, with the innermost portion of each arm being displaced rearwardly away from the direction of rotation and the outermost portion being displaced forwardly in the direction of rotation, whereby respective portions of the mixture at the bottom of said enclosure are caused to move through adjoining paths, the innermost path being defined by a central circular area and the outermost path being defined by an annulus surrounding said circular area, such that the mixture within said circular area during rotation of said sweep device is caused to move radially outward and the mixture within said annulus is caused to move radially inward; and

an opening in the bottom of said enclosure into which the mixture of pellets and refuse swept by said sweep device is discharged for transport to separation means for said mixture;

wherein said sweep device is driven by a shaft attached to said central hub, which shaft extends through said bottom of said enclosure and is surrounded by a tubular sleeve extending through said bottom to a level within said enclosure above said bottom and forming an annular space, and means for introducing a purge gas to expel solids, liquids and condensable gases from said annular space.

4,524,551

CONSTRUCTION UNITS FOR THE ERECTION OF WALLS AND METHOD OF UTILIZATION

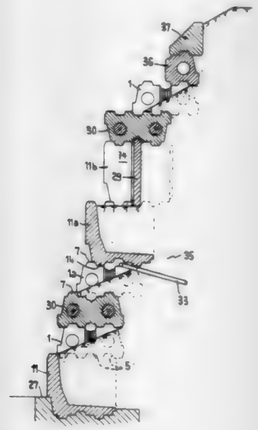
Rolf Scheiwiller, Beichelacker, 3115 Gerzensee, Switzerland

Filed Mar. 8, 1982, Ser. No. 356,909
Claims priority, application European Pat. Off., Mar. 10, 1981, 81810089.3
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—98 **36 Claims**

1. A kit comprising a plurality of construction units capable of being assembled for the construction of walls, at least some of said units having structural features including:

a rectangular base face having a longitudinal axis parallel to a first rectangular dimension, a lateral axis parallel to a second rectangular dimension, and at least one longitudinal rib oriented parallel to said longitudinal axis and projecting outwardly from said base face, said rib being adapted for engagement with other units;

lateral faces adjoining the full length of one of each of the opposite ends of said base face that are parallel to the lateral axis, each lateral face having a corresponding trapezoidal profile with two parallel unequal-length base lines, a longer base line and a shorter base line, each of said shorter base lines adjoining said ends of said base face,



each of said longer base lines defining at least one longitudinal slot oriented parallel to said longitudinal axis, said slot being adapted for engagement with the ribs of other units for assembly of units into a wall;

a circumscribing surrounding trapezoidal central groove defined by said unit and positioned symmetrically with the longitudinal centerline of said base face and perpendicular to said base lines of said lateral faces; and

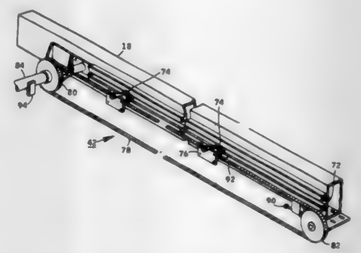
said kit further including a plurality of generally planar panels adapted to be retained in said trapezoidal groove.

4,524,552

MECHANISM FOR DEPLOYING A DEPLOYABLE TRUSS BEAM

Edward J. Hujsak, La Jolla, Calif., assignor to General Dynamics Corporation/Convair Div., San Diego, Calif.

Filed Oct. 9, 1981, Ser. No. 310,195
Int. Cl.³ E04H *12/18*
U.S. Cl. 52—108 **7 Claims**



1. Means for moving tube node fittings along a rail from first closely spaced positions to second widely spaced positions which comprises:

at least one guide rail including means for guiding tube

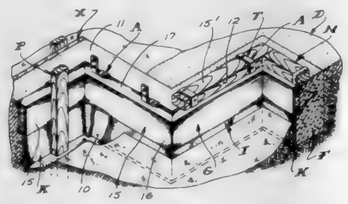
fittings for movement therealong from a first locked position to a second position;
an endless tape threaded around a drive sprocket and an idler sprocket, said tape between said sprockets being substantially parallel to said guide rail;
drive means to selectively move said tape in either direction;
unlocking means on said tape for unlocking means locking said fittings in said first position as said unlocking mean is moved with said tape past said fitting;
latch means on said tape for engaging said fitting so that said fitting is moved from said first position to said second position as said tape is moved;
said latching mean adapted to release said fitting upon reversal of tape movement direction when said fitting has reached said second position;
wherein all fittings may sequentially be unlocked and moved along said guide rail from first to second positions.

4,524,553

THERMAL INSULATED BUILDING SLAB

John H. Hacker, 714 Eugene Rd., Palm Springs, Calif. 92264

Filed May 19, 1983, Ser. No. 496,197
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—169.11 **12 Claims**



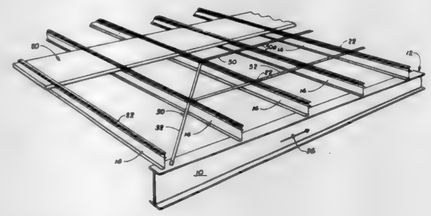
1. A thermally insulated foundation structure comprising a monolithic concrete foundation with a lower portion set in the ground, an upper portion projecting up from the surface of the ground and having a multiplicity of straight sides about its perimeter with horizontal top and vertical outside surfaces; a thermal insulating girdle comprising a plurality of elongate horizontal, U-shaped channel sections in end to end relationship about the perimeter of the upper portion of the foundation at the outside surfaces thereof, said channel sections have vertical, outside walls, vertically spaced horizontal top and bottom walls projecting inward from the outside walls and vertically spaced upper and lower flanges projecting up and projecting down from rear edges of the top and bottom walls; and cores of thermal insulating material within and carried by the channel sections; and a plurality of anchoring units in spaced relationship about the foundation securing the channel sections to the foundation, said anchor units include deadman portions set in the foundation inward of the channel sections and including elongate upper and lower legs extending inward from the channel sections and having formed outside ends engaged with related upper and lower flanges of said channel sections, an elongate wood mud sill on and projecting up from the top surfaces of the foundation adjacent the sides thereof, said mud sill has vertical outside surfaces and horizontal top surfaces, said anchoring units include tie means to orient and secure the mud sill on and to the foundation, said tie means includes elongate extensions on the outer ends of the upper legs, said extensions have vertical lower portions engaging the outside surfaces of the mud sill and horizontal upper portions engaging and fastened to the top surfaces of said mud sill.

4,524,554

STRUCTURAL BRACING SYSTEM

Harold G. Simpson, Oklahoma City, Okla., assignor to Encon Products, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 93,173, Nov. 3, 1979, Pat. No. 4,329,823. This application Sep. 29, 1981, Ser. No. 306,662
Int. Cl.³ E04C *3/02*
U.S. Cl. 52—693 **17 Claims**



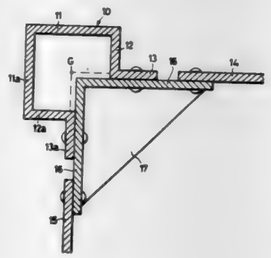
1. A building assembly comprising:
a primary structure;
a first secondary structural member, having a first end and a second end, the first secondary structural member supported at its first and second ends by the primary structure; diagonal bracing means, connected to and extending obliquely from the primary structure and the first secondary structural member, for increasing the load carrying capacity of the first secondary structural member by substantially restricting the horizontal translation and the rotation of the first secondary structural member;
a second secondary structural member having a first end and a second end, the second secondary structural member supported at its first and second ends by the primary structure and extending substantially parallel to the first secondary structural member; and
first parallel bracing means for laterally stablilizing the second secondary structural member, the first parallel bracing means connected to the first secondary structural member and to the second secondary structural member, the first parallel bracing means attached to the first secondary structural member adjacent the point of attachment of the diagonal bracing means thereto.

4,524,555

SECTION-IRON FOR BRACES OR UPRIGHTS FOR LATTICE GIRDERS AND LIKE STRUCTURES

Antonio Pantalone, Via Carpaccio 4, Milan, Italy 20133

Filed Jul. 23, 1980, Ser. No. 171,351
Claims priority, application Italy, Jul. 26, 1979, 24717 A/79
Int. Cl.³ E04C *3/06, 3/32;* **E04H** *12/10*
U.S. Cl. 52—738 **2 Claims**



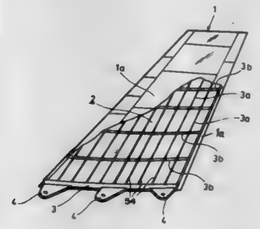
1. A section-iron for braces or uprights of lattice girders, comprising an equal-sided angle iron, characterized in that each side of the angle iron is equal in length and is extended at its free end by a first extension having a length equal to one half the length of a side and extending angularly at 90° with respect to the associated side, and in the same direction as the other side of the angle iron, and by a second extension which has also a length equal to one half of the side length of the angle iron and which extends angularly at 90° with respect to the first extension, and in the direction away of said other side of the angle iron.

4,524,556

SURFACE TYPE STRUCTURAL COMPONENT, ESPECIALLY FOR AIRCRAFT

Branko Sarh, Hamburg, and Hartmut Pasenau, Bremen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 228,680, Jan. 26, 1981,. This application Oct. 11, 1983, Ser. No. 540,705
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003552
Int. Cl.³ E04C *2/36;* **B64C** *1/00*
U.S. Cl. 52—807 **5 Claims**



1. A surface type structural shell component, particularly suited for aircraft, comprising a grid structure of longitudinal ribs and curved cross ribs of fiber reinforced compound material, said grid structure defining a main plane, said grid structure comprising a plurality of wound box frames, each box frame including two longitudinal wall members and two cross wall members, said wall members having a width extending substantially perpendicularly to said main plane of the grid structure, said box frames being assembled and bonded together to form the reinforcing grid structure wherein the longitudinal wall members in their end-to-end relationship define said longitudinal ribs, said cross wall members being sufficiently short relative to said longitudinal wall members for forming said curved cross ribs by the end-to-end relationship of said cross wall members of the grid structure for reinforcing the surface type structural shell component, and a laminated planking (**1***a*) bonded to said reinforcing grid structure, each of said wall members of said box frames comprising multiple layers of a tape of fiber reinforced compound material forming each box frame, said layers forming said box frame wall members extending substantially perpendicularly to said main plane, said tape being wider than the width of said longitudinal wall members of the box frame and forming bent over longitudinal flanges (**23** and **24**) extending substantially in parallel to said main plane, said component further comprising tapes (**54**) bonded to said longitudinal flanges (**23**, **24**) with the tapes (**54**) extending over two adjacent longitudinal flanges (**23**, **24**).

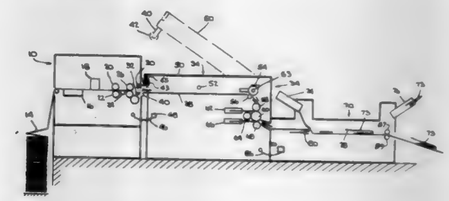
4,524,557

SHEET PROCESSING APPARATUS

Harold Silverman, Wilton; James S. Ramsey, Shelton, and Robert Irvine, Riverside, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 9, 1984, Ser. No. 569,413
Int. Cl.³ B65B *11/48*
U.S. Cl. 53—55 **5 Claims**

1. Sheet processing apparatus for bursting discreet sheets from a continuous web of paper having equally spaced perforation lines thereacross, folding the discreet sheets and inserting the sheets into envelopes, said apparatus comprising:
A. a bursting machine having means for feeding a continuous web of paper and means for bursting discreet sheets from said continuous web across the perforation lines;
B. a folding machine having means for receiving said discreet sheets from said bursting machine and for folding said sheets;
C. an inserting machine having means for receiving said folded sheets from said folding machine, means for inserting said folded sheets into envelopes at an inserting station, and means for feeding said envelopes to said inserting station;
D. (i) means for removably connecting said bursting machine to said folding machine, (ii) means for removably connecting said folding machine to said inserting machine and (iii) means for removably connecting said bursting machine directly to said inserting machine in the absence of said folding machine;



E. control means operatively interconnected between said inserting machine and said folding machine for controlling the sequential operation of said folding machine with the cyclical operation of said inserting machine so that said folding machine operates on demand from said inserting machine;
F. control means operatively interconnected between said folding machine and said bursting machine for controlling the sequential operation of said bursting machine in timed relationship with the cyclical operation of said folding machine so that said bursting machine operates on demand from said folding machine;
G. control means operatively interconnected between said bursting machine and said inserting machine for controlling the operation of said bursting machine by said inserting machine in the absence of said folding machine; and
H. control means in the bursting machine for controlling the operation of said bursting machine in the absence of both the folding machine and the inserting machine.

4,524,558

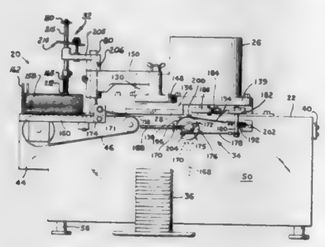
SHEET HOLDER FOR FOOD DISPENSER

Bernard Miles, 119 Trenton Ave., Point Pleasant Beach, N.J. 08742

Filed Aug. 5, 1983, Ser. No. 520,575
Int. Cl.³ B65B *25/08, 35/50, 41/02*
U.S. Cl. 53—157 **15 Claims**

1. Apparatus for holding and feeding sheets along a conveying means to be interleaved with a stack of formed food patties and actuated by a vertically oscillating shaft comprising:
a feed arm having means at one end for connection to the vertically oscillating shaft,
a vertical rod having a pressure foot at the lower end,
a slidable tube enclosing the upper portion of said rod, said tube and rod passing through the other end of said feed arm,
a spring around the lower end of said rod between the bottom of said tube and said pressure foot, said pressure foot being adapted to rest on the top of a stack of sheets supported over the conveying means below said foot, and

pivotable locking means mounted on said feed arm adjacent said slidable tube and having an opening in one end for receiving said tube, said locking means normally resting in a horizontal position and pivoting to an angular position upon downward movement of said vertically oscillating shaft and arm, said locking means and opening in said



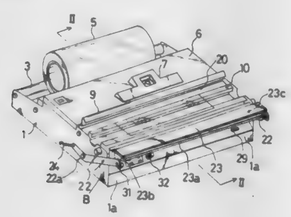
angular position gripping said tube and moving said tube downwardly against said spring to urge said rod and pressure foot against said stack of sheets and cause the lowermost sheet to be forced against said conveying means to be pulled from said stack and fed along said conveying means for interleaving with said food patties.

4,524,559

HAND WRAPPING APPARATUS

Shigeru Ikemoto, 36-banchi, Honmaeda-cho, Nakagawa-ku, Nagoya, Japan

Filed Aug. 4, 1983, Ser. No. 520,507
Claims priority, application Japan, Aug. 27, 1982, 57-130135[U]
Int. Cl.³ B65B *11/02*
U.S. Cl. 53—219 **5 Claims**



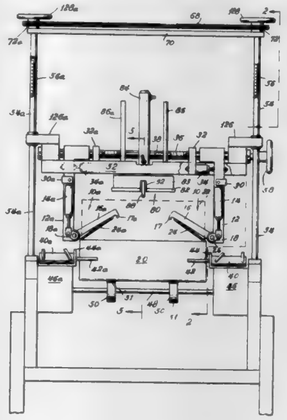
1. A hand wrapping apparatus packages comprising
a frame;
a pair of transverse rollers carried by the frame and rotatively supporting a roll of film thereon,
film from the roll being adapted to be wrapped around the package;
a lid plate supported by the frame forwardly of the rollers, the lid plate having a product rest supported thereon;
a cross extension pivotally mounted on the frame forwardly of the lid plate, a film withdrawal slot being defined between the lid plate and the cross extension to permit film from the roll to be pulled therethrough,
the cross extension comprising foward and rearward film snubbers,
the cross extension being pivotal relative to the frame between an initial position that is substantially horizontal and a wrapping position that is slated from the horizontal,
one of the said snubbers being provided with an elongated opening therein,
the cross extension comprising means to normally bias the cross extension to the said initial position;
a severing tool means transversely secured in the frame adjacent to the cross extension to sever the film,
the severing tool means being protected by a film snubber when the cross extension is in its initial position,
the severing tool means being exposed through the elongated opening when the cross extension is pivoted to the wrapping position;
a rocker arm pivotally mounted upon the frame, the rocker arm comprising a free end that is rotatively movable about the frame from an initial position to a wrapping position,
the rocker arm comprising spring means to normally bias the free end toward the initial position,
the wrapped package pivoting the free end to the wrapping position by overcoming the bias of the spring means; and
heat panel means secured to the free end of the rocker arm to receive the package and to thermally weld the film when contacted by the film wrapped package,
portions of the film simultaneously contacting the heat panel means and the severing tool means when the rocker arm free end is pivoted to the said wrapping position;
whereby the film about the wrapped package will simultaneously be thermally welded by the heat panel means and other portions of the film will be simultaneously cut by the severing tool means.

4,524,560

CASE TOP FOLDER AND FLAP SUPPORTER

James A. Goodman, Glencoe, Ill., assignor to Prototype Equipment Company, Deerfield, Ill.

Filed Sep. 3, 1982, Ser. No. 414,638
Int. Cl.³ B65B *7/20*
U.S. Cl. 53—374 **11 Claims**



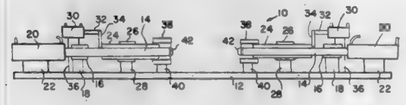
1. Apparatus for closing a case of the type having a first pair of opposed top flaps and a second pair of opposed top flaps, said second pair of opposed top flaps being dimensioned to define a slot between the outer edges thereof when in closed position, comprising:
means for folding each first flap inwardly to a closed position;
means for folding each second flap inwardly over and in firm contact with the surface of each folded first flap; and
means for supporting each said first flap through the slot between said second flaps while in said closed position so as to prevent substantial movement thereof because of said second flaps being folded into contact therewith, whereby said first and second flaps are supported in said closed position so that the engaged surfaces of said first and second flaps are adapted to be joined to close said case.

4,524,561

METHOD AND APPARATUS FOR PACKAGING SHEATHED TUBULAR STRANDS

J. Alfons F. Liekens, Olen, and Ivo G. M. Hendriks, Overpelt, both of Belgium, assignors to Teepak, Inc., Oak Brook, Ill.

Division of Ser. No. 331,404, Dec. 16, 1981, Pat. No. 4,484,679.
This application Aug. 8, 1984, Ser. No. 638,817
Int. Cl.³ B65B *19/00, 51/24, 53/02*
U.S. Cl. 53—397 **11 Claims**



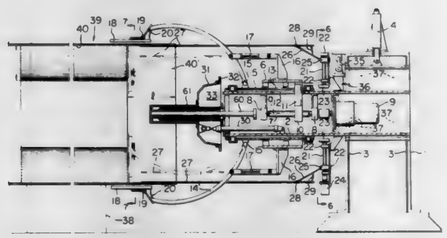
7. A method of wrapping a compressed casing strand, said method comprising the steps of telescoping a tubular wrap over a casing strand with the wrap having end portions extending beyond ends of the casing strand, supporting the so wrapped casing strands at opposite ends thereof by opposed supports partially entering ends of the casing strand and defining inner mold members, heating the wrap end portions to effect an initial shrinkage of the wrap end portions in a radially inward direction, and then axially compressing and folding the heated wrap end portions towards ends of the casing strands and about said inner mold members to define rigid end caps at the ends of the casing strand integral with the tubular wrap.

4,524,562

METHOD AND APPARATUS FOR MAKING A CYLINDRICAL PACKAGE FOR STEEL STRIP COIL

Yoshio Yagi; Toshihiko Kondo; Norio Matsubara; Shoichiro Miyazaki; Hajime Kashiyama, and Makoto Shibata, all of Kitakyushu, Japan, assignors to Yuwa Sangyo KK, Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,445
Claims priority, application Japan, Dec. 14, 1981, 56-203225
Int. Cl.³ B65B *7/14, 11/54, 25/24*
U.S. Cl. 53—409 **6 Claims**



1. A method of using an apparatus for wrapping with a sheet of wrapping material different sized cylindrically shaped coils of steel strip having a cylindrical peripheral surface, two end surfaces and a hollow cylindri cal central space, said apparatus having a cylindrical member having a horizontal axis mounted on a frame and projecting therefrom, a horizontal rotatable member rotatably mounted on said cylindrical member for rotation therearound, a plurality of arms having their base ends mounted on the periphery of said rotatable member and having free ends extending beyond the end of said cylindrical member away from said frame and movable in a path from a position corresponding to the outer peripheral surface of the largest size coil to be wrapped to a position near the center of the smallest size coil to be wrapped, a plurality of pusher plates, one pivotably mounted on the free end of each of said arms at a point along the length of the pusher plate adjacent the end thereof closer to said cylindrical member and pivotable between a rest position substantially parallel to the axis of said cylindrical member to a position substantially perpendicular to said axis, spring means connected to each of said pusher plates for pivotally urging each of said pusher plates to said rest position, and
a plurality of pleat forming rods on said apparatus extending parallel to the axis of said cylindrical member with a pleat forming rod midway between each pair of adjacent pusher plates, said pleat forming rods being movable radially of the axis of said cylindrical member, said method comprising:
wrapping a sheet of the wrapping material around the cylindrical peripheral surface of the coil to be wrapped with the ends of the sheet projecting beyond both ends of the coil a distance which is greater than the thickness of the coil between the peripheral surface and the hollow space;
moving the apparatus to a position opposed to the end of the coil and moving said arms for moving the ends along said path until said pusher plates are brought into contact with the outer peripheral surface of the wrapper around the coil at a position where a substantial portion of the length thereof is against the wrapper on the peripheral surface of the coil and the pivotal mounting point of said plates is spaced axially away from the end surface of the coil toward said cylindrical member;
inserting the plurality of pleat forming rods into the inside of one projecting end of the wrapping material in a direction parallel to the cylindrical axis of the coil, and bringing the pleat forming rods into contact with the inside of the projecting end of the wrapping material;
moving said arms further for further moving said pusher plates for pivoting the pusher plates around said points from their parallel position to the perpendicular position against the coil end surface while they remain substantially in contact with the wrapper and the corner of the coil to draw the wrapper over the corner of the coil and fold it against the end surface of the coil and causing the pleat forming rods to form radial pleats in the wrapping material; and
moving said arms circumferentially of the end of the coil for sliding the pusher plates circumferentially of the end surface of the coil for flattening all the pleats against the end surface in the same direction.

4,524,563

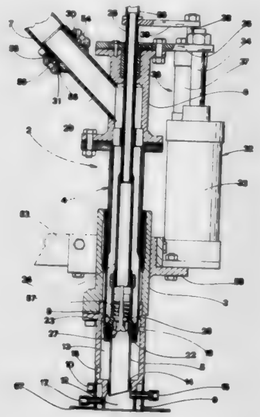
PROCESS AND PLANT FOR ASEPTIC FILLING OF PRE-STERILIZED, NON-RIGID CONTAINERS

Carlo Sassi, Parma, Italy, assignor to Tito Manzini & Figli S.p.A., Parma, Italy

Filed Dec. 10, 1981, Ser. No. 329,294
Int. Cl.³ B65B *3/16, 7/06, 43/26, 43/36*
U.S. Cl. 53—426 **19 Claims**

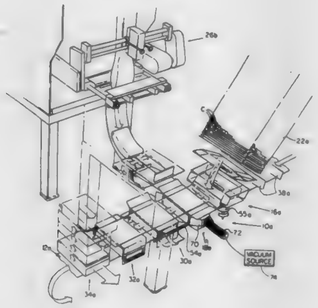
1. A process for aseptic filling of pre-sterilized, non-rigid containers comprising attaching a workhead to the outer surface of a small portion of the container, sterilizing the outer surface of the small portion and the attached parts of the workhead, piercing the small portion of the container, introducing sterile gas into the container through the pierced portion, introducing a feeder tube through the pierced portion, introducing foodstuff into the container through the feeder tube while permitting sterile gas to be expelled from the container

through the pierced portion, terminating the flow of foodstuff into the container, withdrawing the feeder tube, hermetically



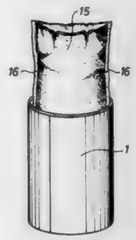
sealing the container, separating the workhead from the container, and cleaning the workhead.

4,524,564
CARTONING METHOD
James S. Groom, Wales, Mass., and Robert W. McIntyre, Kennewick, Wash., assignors to Package Machinery Company, East Longmeadow, Mass.
Division of Ser. No. 123,824, Feb. 22, 1980, Pat. No. 4,358,918. This application Aug. 30, 1982, Ser. No. 413,170
Int. Cl.³ B65B *5/04, 35/28*
U.S. Cl. 53—449 **3 Claims**



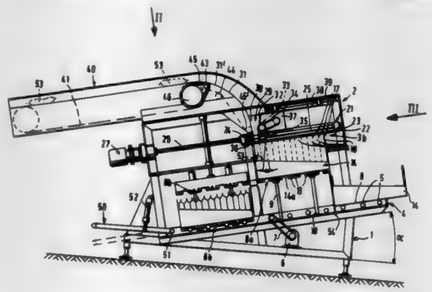
1. A method for making a bag-in-carton package including a carton sleeve, a bag, and a product contained within the bag, and comprising the steps of depositing a carton sleeve within a sleeve confining receptacle, conveying the confined carton sleeve to a filling station and aligning the open near end of the confined carton sleeve with a constricting bag guide at the carton filling station, delivering a bag containing a product to a vacuum belt conveyor, applying vacuum to the belt conveyor to hold the bag in engagement with the belt conveyor, advancing the belt conveyor to accelerate the bag through the bag guide at a rate sufficient to cause shifting of the product within and relative to the bag, interrupting the applied vacuum to release the bag from the conveyor as the bag enters the near end of the carton sleeve, applying vacuum to the far end of the carton sleeve to draw the bag into the sleeve, and arresting movement of the bag when the bag is wholly disposed within the carton sleeve.

4,524,565
PACKING CONTAINER FOR PRESSURIZED CONTENTS AND A METHOD FOR MANUFACTURING THE SAME
Lars-Erik Palm, Staffanstorp, Sweden, assignor to Tetra Pak International AB, Lund, Sweden
Filed Jun. 7, 1983, Ser. No. 501,914
Claims priority, application Sweden, Jun. 17, 1982, 8203763
Int. Cl.³ B65B *31/02*
U.S. Cl. 53—449 **8 Claims**



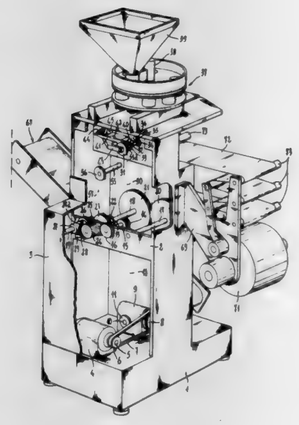
1. A method for the manufacture of a packing container for pressurized contents having an outer casing and a liquid-tight inner container, the method comprising the steps of introducing the inner container and its contents into the outer casing, through open ends provided in said outer casing, the outer casing circumferentially enclosing the inner container in a non-gastight manner, placing end plates at the open ends of the outer casing, vibrating the packing container so as to promote the contents to give off gas and expand the inner container to force out any air present in the outer casing, and sealing the end plates in a gas-tight manner to the outer casing after release of the gas and after the inner container has expanded.

4,524,566
PACKAGING MACHINE
Manfred Hauers, Viersen, and Walter Baur, Gründau, both of Fed. Rep. of Germany, assignors to Rovema Verpackungsmaschinen GmbH & Co. KG, Fernwald, Fed. Rep. of Germany
Filed Mar. 24, 1982, Ser. No. 361,171
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3113045
Int. Cl.³ B65B *35/24, 35/44*
U.S. Cl. 53—534 **12 Claims**



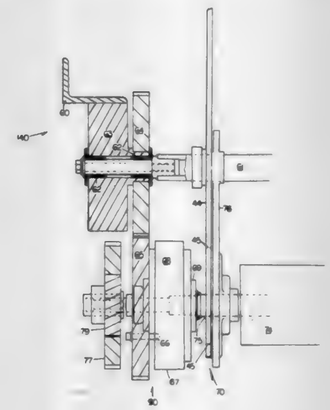
1. In a packaging machine for introducing individual packages into a container, including a feed mechanism for feeding the individual packages to means defining a passage, a magazine with plural compartments for receiving the individual packages therein and from said passage, said magazine compartments being constructed as chutes which are open on both top and bottom, means for moving said container to and from said magazine, said means for moving said container including a liftable and lowerable container support for said container being arranged below said magazine, said container being guided from below toward said magazine by raising said container support, the improvement comprising wherein said container is moved up to receive said magazine therein and to close off the bottom of said chutes, wherein support means are provided for supporting said feed mechanism and said magazine for relative movement with respect to each other, wherein said container support is divided into two support parts which can be raised and lowered independently, namely into a first support part which lies below said passage for said individual packages and a second support part adjacent the first support part, and wherein said container is moved, during the course of its being filled, from the first support part to the second support part.

4,524,567
MACHINE FOR MAKING, FILLING AND SEALING BAGS
Ferruccio Patelli, Bologna, Italy, assignor to MAPA - Società Per Azioni, Bologna, Italy
Filed Aug. 31, 1982, Ser. No. 413,235
Claims priority, application Italy, Sep. 11, 1981, 3524 A/81
Int. Cl.³ B65B *9/12*
U.S. Cl. 53—552 **3 Claims**



1. In a machine for making, filling and sealing bags, the latter being obtained from a band of material which is heat-sealable in the usual manner, and filling them with liquid, pulverulent, or granular and other noncoherent products, which comprises an operating structure extending in the vertical direction and including base, a vertical mandrel tube on said base and a profiling collar disposed around said mandrel tube to form a drawing device, means for supporting a reel of heat-sealable material and for conveying said material from top to bottom through the aforesaid annular space between said profiling collar member and said mandrel tube, folding said material in tubular form around and along said vertical mandrel tube with two longitudinal edges superimposed, metering means for a product to be packed disposed above the vertical mandrel tube, advancing means below said profiling collar member and in contact with the said mandrel tube for pulling said band downwards along said vertical mandrel tube, heat-sealing means disposed along said mandrel tube for the heat-sealing of the said superimposed longitudinal edges of the band and below said mandrel tube transversely to the tube of heat-sealable material thus obtained, and means adapted to operate said heat-sealing means in a cyclic phase, the improvement wherein said advancing means and the said heat-sealing means for heat-sealing transversely to the tube of heat-sealable material are associated with support means controlled by continuous motion operating means below the said vertical mandrel tube, the advancing means comprising two sector members having cylindrical surfaces and contrarotating tangentially to a plane containing the axis of descent of the said tube of heat-sealable material, the said continuous motion operating means comprising a cyclic differentiator device, said cyclic differentiator device comprising a first gear having helically inclined teeth meshing with a loose gear having corresponding teeth and of greater axial dimension forming part of said continuous motion operating means, a cam member fixed to said first gear, and a second gear, the said first gear and the said cam member being slidably keyed on the shaft on which the said second gear is keyed, a roller carried loose by fixed support means being engaged in the operating groove of said cam member.

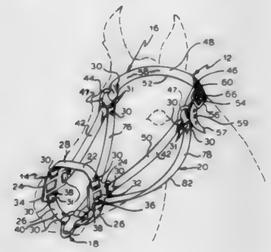
4,524,568
POWER ASSISTED ROTATABLE FILM WRAPPING APPARATUS
Patrick R. Lancaster, and William G. Lancaster, both of Louisville, Ky., assignors to Lantech, Inc., Louisville, Ky.
Filed Aug. 27, 1982, Ser. No. 411,995
Int. Cl.³ B65B *13/04*
U.S. Cl. 53—556 **25 Claims**



1. An apparatus for making a unitary package using a single web of stretchable plastic material to form an overwrap, comprising: a frame; a dispenser means mounted to said frame, said dispenser means being adapted to hold and dispense a roll of stretchable material; drive means adapted to drive said dispenser means in rotation about a load; elongation means connected to said drive means and adapted to receive and engage stretchable material pulled from said dispenser means, said elongation means comprising at least a downstream roller and an upstream roller interconnected by speed control means; power assistance means coupled to said elongation means and driven by said drive means, said power assistance means comprising power transfer means and predetermined constant torque means adapted to produce a predetermined constant torque, said power transfer means being coupled through said predetermined constant torque means to said elongation means, said power transfer means comprising stationary ring means and friction roller means, said stationary ring means being secured to said frame, said friction roller means being coupled to said predetermined constant torque means and engaging said stationary ring means to rotate said friction roller means during rotation of said dispenser means about said load to provide said predetermined constant torque to said elongation means, said elongation means being driven by said power assistance means and by engagement of the stretchable material pulled from the dispenser means during rotation of the dispenser means about the load, said upstream and downstream rollers being acted upon by said speed control means so that said downstream roller transports said stretchable material

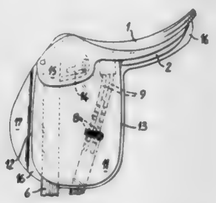
faster than said upstream roller to cause said stretchable material to elongate between said upstream and downstream rollers.

4,524,569
ANIMAL HALTER APPARATUS
Thomas B. Hanna, 1300 Hiram, Wichita, Kans. 67213
Filed Jun. 11, 1984, Ser. No. 619,140
Int. Cl.[3] B68B *1/02*
U.S. Cl. 54—24 **7 Claims**



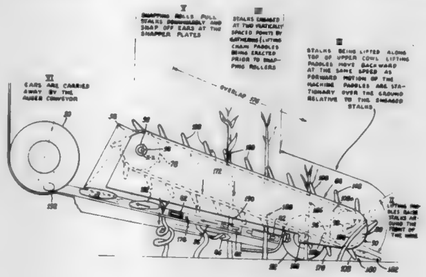
1. An animal halter apparatus adapted to be placed about a head portion of an animal such as a horse, comprising:
(a) a nose support assembly to be placed about a nose portion of subject animal;
(b) a head support assembly secured to said nose support assembly and releasable connected about a top head portion of subject animal;
(c) a control ring assembly to interconnect adjacent portions of said nose support assembly and adapted to receive a control line thereon to move or anchor subject animal;
(d) said control ring assembly of generally bell shape having a main support body integral with a connector section and aligned end portions;
(e) said adjacent portions of said nose support assembly connected to opposed portions of said main support body whereby said control ring assembly cannot rotate thus providing a constant, rigid structure;
(f) a jaw support assembly connected to said end portions of said control ring assembly and said head support assembly; and
(g) said jaw support assembly having first and second jaw strap members interconnected to each other at a section adjacent to said end portions to contact and support a jaw portion of the subject animal in a rearwardly and upwardly inclined manner from said control ring assembly to said head support assembly.

4,524,570
BLANKET-SADDLE FOR SPORTING HORSE-RIDING
Jean-Claude Racinet, 174, Avenue Charles de Gaulle, 92200 Neuilly, France
Filed May 16, 1983, Ser. No. 494,716
Int. Cl.[3] B68C *1/02, 1/12*
U.S. Cl. 54—44 **7 Claims**



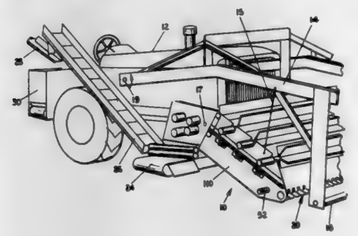
1. A blanket-saddle for sporting horse-riding, comprising a rigid one-piece seat-tree placed on a saddle blanket and a girthing device formed of two lateral V shaped half-girths, one end of which is fixed to the front of the tree and the other end of which is connected by securing buckles to tabs fixed towards the rear of the tree, the two half-girths being associated with a belly strap of adjustable length having a buckle at each of its ends and each half-girth passing through one of the buckles, in which it may slide for adjusting the girthing, said blanket-saddle having two lateral sections and being provided on each side with a stirrup-leather holder fixed to the front of the tree, wherein the seat-tree has on its lower face an anatomical padding, morphologically adapted to the back of the horse and filling the space between the tree and the back of the horse, over the whole length of the tree situated directly below the rider, so as to better distribute the weight of this rider over the animal and to ensure a good balance of the saddle as well as a perfect connection between the back of the animal, the saddle and the rider, a central recess being hoever formed at right angles to the backbone of the animal, the padding being made from a material which is both supple and resistant, a supple and light flap, thin without being easily creased, being fixed on each side to the tree so as to cover approximately the upper half of the V shaped half-girth, this flap having a substantially rectilinear edge at the front and at the rear, where it does not substantially extend beyond said tabs, the saddle blanket being made from a single piece having dimensions such that it extends beyond the saddle equipped with its supple flaps, over the whole periphery thereof, and said saddle blanket having only at the front of each of its two lateral sections, in the region extending beyond the flap with substantially rectilinear front edge and over the whole height of this flap, a thick outwardly projecting padding.

4,524,571
CORN HARVESTER MACHINE WITH MECHANISM FOR PICKING UP DOWNED CORNSTALKS AND RETRIEVING EARS THEREFROM
Randall L. Mak, R.R. 1, Box 138A, Fair Oaks, Ind. 47943, and Larry W. Young, R.R. 2, Box 300, Wheatfield, Ind. 46392
Filed Aug. 15, 1983, Ser. No. 523,046
Int. Cl.[3] A01D *45/02*
U.S. Cl. 56—98 **11 Claims**



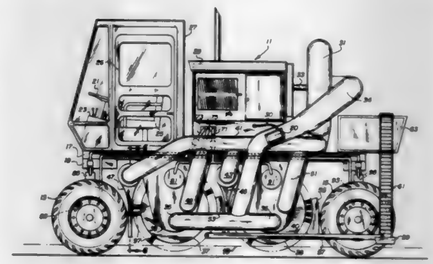
1. In combination with a harvester having a forward frame with forwardly open throats adapted to receive rows of grain-bearing stalks, pairs of gathering chains and snapping rolls located respectively above and below pairs of horizontally spaced stripper plates in each throat, and a cross conveyor with a forwardly open trough to receive grain from said throats, an improved row divider between each adjacent pair of throats comprising:
a lower cowl fixedly mounted on the frame above the stripper plates; and
an upper cowl having a downwardly concave shape positioned over the lower cowl in substantially co-extensive, nesting relationship therewith, said upper cowl having a rearwardly and upwardly inclined top surface and a curved front nose portion ahead of the lower cowl with ground-engaging support means on the underside thereof and having a rear end portion connected to the lower cowl for up and down tilting movement about a horizontal tilting axis;
a pair of stalk lifting chains trained between pairs of driving and idler sprockets adjacent the upper side edges of the upper cowl, said driving sprockets being rotatably mounted about said horizontal tilting axis within the rear end portion of the lower cowl and said idler sprockets being rotatably mounted about a horizontal axis in the front nose portion of the upper cowl and tiltably movable up and down therewith about said horizontal tilting axis;
said lifting chains moving forwardly at ground level beneath said front nose portion, upwardly around said nose portion, and rearwardly along the upper sides of the top surface of the upper cowl to the rear end thereof;
substantial stalk-engaging runs of the gathering and lifting chains extending in rearwardly moving, lapping, vertically spaced relationship with one another above and lengthwise of the snapping rolls;
means for driving said stalk-engaging runs of the gathering and lifting chains rearwardly at a speed matching the forward ground speed of the machine enabling said stalk-engaging runs to remain substantially stationary relative to the stalks and the ground while providing continuous vertically spaced supports for holding the stalks upright above the snapping rolls within the throat while the machine advances;
whereby the stalk lifting chains are effective to continuously displace stalks forwardly from beneath the front nose portion, upwardly around the forward end thereof, and hold the stalks upright within the throat and stationary with respect to the ground while the machine moves the upper cowl forwardly to elevate the stalks and hold them erect at vertically spaced locations above the snapping rolls while the stalks are pulled downwardly through the stripping plates to remove the grain therefrom.

4,524,572
PICKLE HARVESTER
Bernard D. Wilde, 16920 Kenowa, Kent City, Mich. 49330; Gary R. Van Ee, 711 Sherwood, Williamston, Mich. 48895; Richard L. Ledebuhr, 6082 Pheasant St., and C. Alan Rotz, 946 River Knoll, both of Haslett, Mich. 48840
Filed Aug. 18, 1983, Ser. No. 524,306
Int. Cl.[3] A01D *45/00*
U.S. Cl. 56—327 R **19 Claims**



1. A harvester attachment especially effective for small cucumbers that is mountable in a frame for a conventional tractor mounted cucumber harvester between the vine cutter and pinch roller mechanism thereof, the attachment comprising a pick-up mechanism that picks up the vines and a conveying and pickle removing means for conveying vines from the pick-up to the pinch roller mechanism and for dislodging pickles from the vines, the conveying and pickle removing means including upper and lower rotating paddle means rotating in the direction of vine movement between the pick-up mechanism and pinch roller mechanism, the paddle means having cushioned blades that convey the vines and strike the cucumbers so as to dislodge them from the vines, the paddles being spaced and synchronized such that the vines are held between the upper and lower paddle means while cucumbers are dislodged from the vines by the rotating paddles, without excessive vine slipping or fruit damage, the harvester including drive means for operating at least a portion of the paddle means at a vine contacting surface speed that is faster than the vine contacting surface speed of the mechanism upstream from said portion of the paddle means such that vines are stretched out and struck by the blades of said portion of the paddle means, the harvester attachment further comprising conveyor means for conveying dislodged cucumbers from the harvester to a storage location.

4,524,573
VACUUM FINGER HARVESTER FOR STRAWBERRIES OR THE LIKE
Kinney David J., Star Rte. #2, Ozark, Ark. 72949
Filed Feb. 13, 1984, Ser. No. 579,356
Int. Cl.[3] A01D *46/00*
U.S. Cl. 56—330 **18 Claims**



1. A crop harvester comprising
a vehicle having at least two wheels and a body supported thereby,
means for generating a large volume air flow at a vacuum pressure mounted on said vehicle,
a perforated support element on said vehicle body having a closed path of revolution,
means for revolving said element with a peripheral speed approximately equal to that of said wheels,
a plurality of closely spaced open-ended hollow finger elements affixed over the perforations of said support element,
a collector for crop elements adjacent said support element, and
means within said support element for directing air flow through selected ones of said finger elements at said vacuum pressure thereby causing crop elements with desired characteristics to be gathered to the end of said finger elements, separated from the crop plant, and deposited in said collector.

4,524,574
UNDERFED CROP BALER HAVING SINGLE ROTARY FEEDER
Howard J. Ratzlaff, Hesston, Kans., assignor to Hesston Corporation, Hesston, Kans.
Filed May 18, 1984, Ser. No. 611,824
Int. Cl.[3] A01D *39/00*
U.S. Cl. 56—341 **8 Claims**

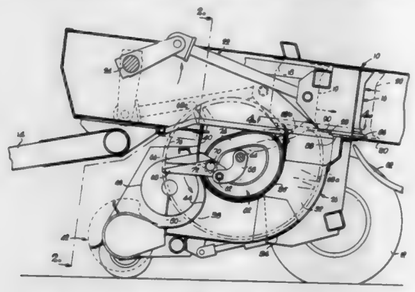
1. A crop baler comprising:
a generally horizontally disposed baling chamber extending in a fore-and-aft direction with respect to the path of travel of the baler;
a plunger mounted for reciprocation within said chamber in said fore-and-aft direction,
said chamber having an entrance opening in a lower wall

thereof over which said plunger passes during said reciprocation;

a tubular loading duct depending from said chamber with its upper end in direct communication with said opening and having a length which is at least as great as the vertical dimension of said chamber,

said duct curving downwardly and forwardly from said opening and terminating in a forwardmost end defining an open, crop-receiving mouth;

apparatus forwardly of said duct for picking up crop material from the ground as the baler moves along said path of

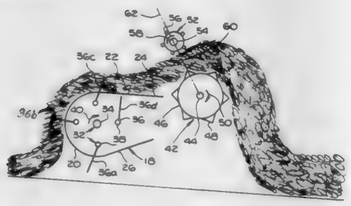


travel and for presenting the picked up material to said mouth; and

a single rotary feeder operable to load the baling chamber with successive charges of crop materials from said mouth of the duct in timed relation to reciprocation of the plunger,

said feeder including crop-engaging structure which turns through 360 degrees of revolution along a course leading into said mouth, rearwardly through the duct, up into the baling chamber, and back down to the mouth during each cycle.

4,524,575
WINDROW AERATOR
Arnold W. Nilsen, Box 20, Hazard, Nebr. 68844
Filed Mar. 12, 1984, Ser. No. 588,496
Int. Cl.[3] A01D *79/02*
U.S. Cl. 56—372 **4 Claims**



1. An implement for producing an aerating effect in hay in a windrow comprising,

a transverse frame mounted on wheels adapted to be drawn along the windrow, with the wheels straddling the windrow, and the frame disposed thereabove,

the implement including operating components mounted in the frame and extending transversely therein and on transverse axes, and encompassed between a leading edge and a trailing edge,

one of the operating components being a pickup head at and forming the leading edge and having a rounded leading surface merging into a flat top surface extending rearwardly therefrom adjacent the horizontal, the pickup head including a rotor having tines operative for picking up the hay in the windrow and moving it up and onto the top surface and operative for extending into the hay on the top surface in generally vertical direction and being withdrawn therefrom in direction linearly of the tines,

a second of the components being a lower roller at the rear of the top surface of the pickup head and extending at least as high as that top surface, and also being disposed at and forming said trailing edge, and

a third of the components being an upper roller positioned generally above and spaced from the lower roller and with a front surface at least as far forward as the front surface of the lower roller,

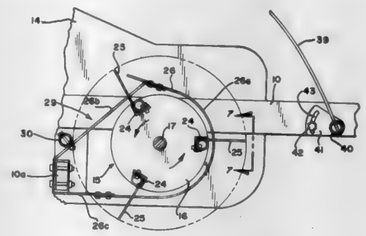
the pickup head and the lower roller being the only means forming an upwardly directed means for supporting the hay,

the implement including means for driving said components pursuant to the implement being drawn along the windrow,

the upper roller being the only means above said top surface of the pickup head and the lower roller that engages the hay on the upper side of the hay,

the three components mentioned constituting the sole means for conducting hay through the implement, and being operative for picking up the hay from the ground by the pickup head and moving it onto and rearwardly along the top surface, and moving it through the space between the rollers, and over the second roller and moving it therefrom directly onto the ground.

4,524,576
WINDROWED HAY FLUFFING AGRICULTURAL IMPLEMENT
Evan N. Probst, RFD Box 344, Heber, Utah 84032
Filed Mar. 2, 1984, Ser. No. 585,560
Int. Cl.[3] A01D *79/02*
U.S. Cl. 56—372 **13 Claims**



1. In an agricultural implement adapted to be drawn through a field behind a tractive vehicle and especially useful for fluffing cut and windrowed vegetation in the field as such implement is drawn over and along a windrow, which implement includes means forwardly thereof for attachment to a tractive vehicle a rotary pick-up device having elongate teeth extending therefrom in mutually spaced relationship around its periphery and along its length, a frame in which said pick-up device is mounted for rotation transversely of and opposite to the direction of travel of the implement, and means for driving said pick-up device as the implement travels over a windrow, the combination therewith of a series of stationary stripper bars mutually spaced along said pick-up device and being forwardly substantially concentric therewith about substantially a semi-circle, so as to receive said teeth therebetween as the pick-up device rotates, said stripper bars extending rearwardly and sloping upwardly above said pick-up device from said semi-circle and positioned relative to said pick-up device such that the lengths of said teeth projecting therethrough progressively shorten as they are moved rearwardly between said stripper bars for continually propelling the picked-up vegetation upwardly and rearwardly while progressively withdrawing therefrom; and rearward extensions of the respective stripper bars sloping downwardly as a discharge deck for the picked-up vegetation, said teeth continuing to extend through

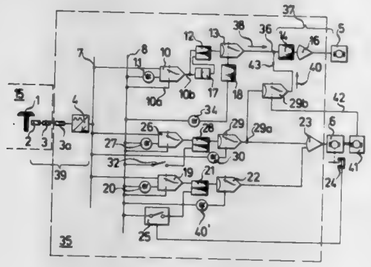
said discharge deck along substantially the length thereof to propel said vegetation toward the discharge end thereof.

4,524,577
TWISTED YARN
Osamu Ito, Utsunomiya; Harumasa Yamasaki; Itsuo Minakata, both of Wakayama, and Kazunori Nishizawa, Funabashi, all of Japan, assignors to Kao Corporation, Tokyo, Japan
Filed Dec. 10, 1982, Ser. No. 448,555
Claims priority, application Japan, Dec. 18, 1981, 56-204696
Int. Cl.[3] D02G *3/02, 3/04, 3/26, 3/28*
U.S. Cl. 57—200 **8 Claims**



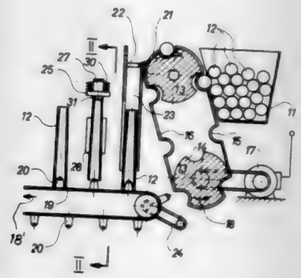
1. A twisted yarn prepared by twisting a starting yarn comprising at least 50% by weight of water-insoluble, water-swellable fibers having a degree of water swelling of at least 10 cc/g so that the twist constant of the twisted yarn is at least 2.5, said water-insoluble, water-swellable fibers being hydrolyzed acrylic fibers in which carboxylate groups of the formula —COOX, wherein X is Li, K, Na or NH_4, are present in an amount of 0.7 to 4.0 mmol/g.

4,524,578
APPARATUS FOR CONTROLLING THE THREAD JOINING PROCESS IN AN OPEN END ROTOR SPINNING MACHINE
Hans Raasch, Monchen-Gladbach, and Manfred Lassmann, Nettetal, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany
Filed Nov. 12, 1982, Ser. No. 441,233
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144761
Int. Cl.[3] D01H *15/00, 13/18*
U.S. Cl. 57—263 **17 Claims**



1. Apparatus for controlling a thread joining process which takes place by starting a rotor in an open end rotor spinning machine, comprising at least one spinning unit of the open end rotor spinning machine, means connected to said at least one spinning unit for controlling pre-feeding of a required fiber quantity for thread joining and for controlling fiber feed to the rotor, for return of a joined thread end to the rotor and for at least temporary control of thread unwinding from the rotor during the thread joining process, a thread unwinding device and a sliver drawing-in device connected to said control means at least during the thread joining process, a connection from said control means for pre-feeding to said sliver drawing-in device, and a control element connected in said connection at which a chosen draft for the spinning operation is adjustable.

4,524,579
DEVICE FOR DONNING BOBBINS ONTO A TRANSPORT BAND
Arthur Würmli, Winterthur, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland
Filed May 1, 1984, Ser. No. 605,805
Claims priority, application Switzerland, May 6, 1983, 2476/83
Int. Cl.[3] D01H *9/18*
U.S. Cl. 57—276 **7 Claims**



1. A device for donning of bobbins onto a transport band of a textile machine, especially a ring spinning or ring twisting machine and for doffing improperly donned bobbins, wherein the transport band is provided with positioning pins serving for positioning of the bobbins and the feed of bobbins to the transport band takes place at a predetermined bobbin loading position, comprising:

a bar member for the removal of damaged bobbins;

means for pivotably mounting said bar member for movement out of a substantially horizontal starting position;

means for subjecting said bar member to a resilient biasing action urging said bar member back towards said substantially horizontal starting position;

means for moving said bar member upwardly and downwardly at a bobbin monitoring position arranged after the bobbin loading position with respect to a predetermined direction of movement of the transport band, in order to doff bobbins incompletely mounted over a positioning pin of the transport band; and

said moving means acting upon said bar member such that said bar member is movable at an end portion thereof, during its downward movement, towards a bobbin head of the bobbin currently located at the bobbin monitoring position, in order to effectuate doffing of a bobbin incompletely mounted over a positioning pin by the downwardly moving bar member with pivoting of the bar member into a position forming an acute angle α with respect to the lengthwise axis of said incompletely mounted bobbin.

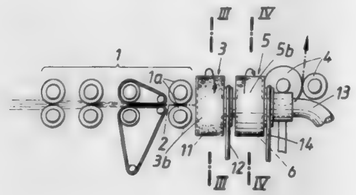
4,524,580
APPARATUS FOR MAKING A YARN FROM A ROVING
Ernst Fehrer, Auf der Gugl 28, A-4020 Linz, Austria
Filed Apr. 29, 1983, Ser. No. 490,032
Claims priority, application Austria, Dec. 10, 1982, 4493/82
Int. Cl.[3] D01H *1/135, 7/882*
U.S. Cl. 57—401 **9 Claims**

1. In apparatus for making a yarn from a roving, comprising twisting and winding means for twisting a drawn roving so as to form a twisted roving having protruding fiber ends and for winding said protruding fiber ends around said twisted roving, and

withdrawing rollers for withdrawing a yarn made from said roving,

the improvement residing in that

said twisting and winding means comprises a twisting device for twisting said drawn roving so as to form a twisted roving having protruding fiber ends and a winding device which is separate from said twisting device and operable to wind said protruding fiber ends around said twisted roving,



said winding device comprises sliding surfaces defining and bounding a guiding gap,

said withdrawing rollers are operable to pull said twisted roving through said guiding gap in a predetermined direction of travel and in contact with said sliding surfaces, and

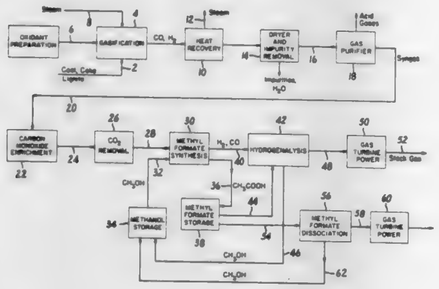
said guiding gap tapers transversely to said direction of travel.

4,524,581

METHOD FOR THE PRODUCTION OF VARIABLE AMOUNTS OF POWER FROM SYNGAS

Ronald F. Cascone, and C. Ashley Solomon, both of New York, N.Y., assignors to The Halcon SD Group, Inc., New York, N.Y.

Filed Apr. 10, 1984, Ser. No. 598,758
Int. Cl.³ F02C *3/28*
U.S. Cl. 60—39.02 **27 Claims**



1. A process for satisfying a variable power demand comprising:

gasifying a substantially combustible hydrocarbonaceous material into a syngas possessing a CO/H_2 ratio ranging from about 3 to 1 to 1 to 3;

preparing the syngas for reacting to form a liquid CO absorbing molecule product;

reacting the prepared syngas with a suitable feed to form a liquid CO absorbing molecule product in a synthesis zone;

separating the liquid CO absorbing molecule product and passing it to a first storage zone;

passing the unreacted H_2 rich syngas from the synthesis zone to a power producing zone;

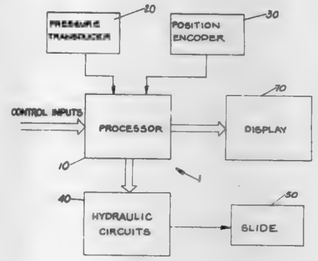
passing the CO storing molecule product from the storage zone for use as a fuel source during peak demand periods.

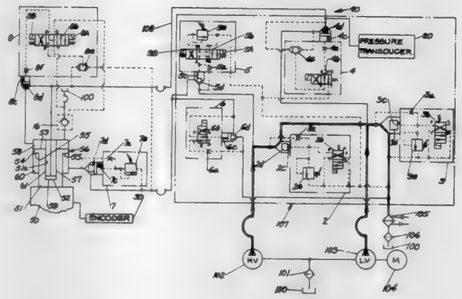
4,524,582

CONTROL SYSTEM FOR HYDRAULIC PRESSES

Delbert E. Lucas, Fairfield, Ohio, and Stephen J. Lieland, Lawrenceburg, Ind., assignors to Cincinnati Incorporated, Cincinnati, Ohio

Filed Mar. 31, 1983, Ser. No. 480,720
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—421 **19 Claims**





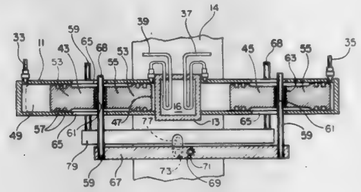
1. A control system for controlling the movement of the slide of a hydraulic press of the type having a main cylinder, a piston in said cylinder, a slide for applying tonnage to a workpiece, said piston mounting said slide, workpiece contacting tool means on said slide, at least one volume in said cylinder above said piston and a volume in said cylinder below said piston, a reservoir for hydraulic fluid to activate said main cylinder, a hydraulic circuit between said main cylinder and said reservoir for supplying hydraulic fluid under pressure to said cylinder to shift said piston and slide upwardly and downwardly, and a high volume pump and a low volume pump to supply hydraulic fluid under pressure from said reservoir to said hydraulic circuit, said control system comprising an electronic processor having inputs and outputs to control said hydraulic circuit in accordance with a preprogrammed routine, a pressure transducer positioned to measure and provide an output representative of the pressure of hydraulic fluid supplied to said cylinder by said hydraulic circuit to shift said piston and slide downwardly and thus representative of the tonnage applied by said slide against a workpiece, a position encoder coupled to said slide to provide an output indicating the vertical position thereof, said outputs of said pressure transducer and said position encoder being connected to the inputs of said processor, and said hydraulic circuit comprising a plurality of cartridge valves having control means actuable by outputs of said processor, said hydraulic circuit also including a cartridge valve between said volume below said piston and said reservoir serving as a counter-balance valve to maintain a threshold pressure in said volume below said piston to support the weight of said piston, slide, and tool means, said counter-balance cartridge valve being controlled by hydraulic fluid pressure directed to and exiting from said volume below said piston, and a prefill poppet valve between said at least one volume above said piston and said reservoir said prefill poppet valve being controlled by hydraulic pressure both below and above said piston.

4,524,583

STIRLING ENGINE

Karl J. Scheibengraber, 6025 W. Spencer Pl., Milwaukee, Wis. 53218

Filed Oct. 31, 1983, Ser. No. 547,114
Int. Cl.³ F02G *1/00*; F16H *21/22*
U.S. Cl. 60—525 **14 Claims**



1. Apparatus for converting the direction of motion, such as converting reciprocating motion to rotary motion comprising:

(a) a frame;

(b) at least one cylinder mounted to the frame and defining a first axis, the cylinder having at least one longitudinal slot in the periphery thereof;

(c) a piston adapted to reciprocate within the cylinder along said first axis, the piston having a transverse aperture therethrough coinciding with the cylinder slot;

(d) a piston rod having a longitudinal axis and extending through the piston aperture and cylinder slot transversely with respect to said first axis;

(e) a cross bar yoke for fixedly receiving the ends of at least two piston rods, the yoke having a journal therein; and

(f) a crankshaft mounted for rotation in the frame about a second axis which is offset from said first axis and perpendicular to said first axis and to the piston rod longitudinal axis and having a crank throw journaled in the yoke,

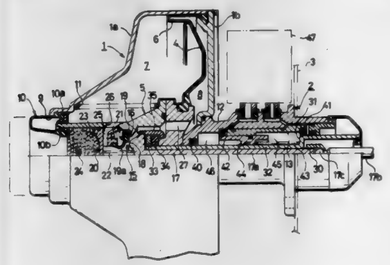
so that the reciprocating motion of the piston transmitted to the piston rod produces sliding motion of the piston rod through the piston transversely to the first axis for rotating the crank shaft.

4,524,584

BRAKE BOOSTER

Michio Kobayashi, Higashimatsuyama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1983, Ser. No. 531,554
Claims priority, application Japan, Sep. 22, 1982, 57-165604; Sep. 27, 1982, 57-167851
Int. Cl.³ B60T *13/00*
U.S. Cl. 60—554 **10 Claims**



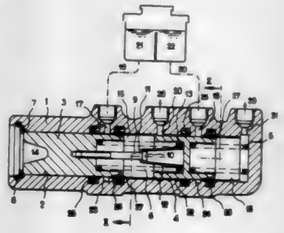
5. A brake booster comprising a power piston having a shank portion, said power piston being slidably disposed within a shell including a front shell portion and a rear shell portion, a valve mechanism received within a valve body which is defined by the shank portion of the power piston, a constant pressure chamber and a variable pressure chamber defined forwardly and rearwardly respectively, of the power piston as viewed in the direction of operation thereof, a master cylinder connected to the rear shell adjacent to the variable pressure chamber, an input shaft extending through the master cylinder for cooperation with the valve mechanism, a supply passage for supplying a fluid pressure to the valve mechanism through the front side of the power piston, and an output shaft for providing a mechanical inteconnection between the power piston and the piston of the master cylinder, wherein the valve mechanism includes a first valve seat formed on the valve body, a second valve seat formed on the input shaft and a valve head urged in a direction from the front side toward the rear side of the power piston to seat against the first and second valve seats, and in which the output shaft is slidably disposed in surrounding relationship with the input shaft, the output shaft comprising front and rear portions respectively closely and loosely surrounding said input shaft and connected by a radial step separating a chamber of the master cylinder from an annular open space to the rear of said step, and means defining an axial lost motion connection between said input and output shafts and having at least a part thereof located in said open space to the rear of said radial step.

4,524,585

SHORT MASTER-CYLINDER

Juan V. Coll; Joan S. Bacardit, and Joaquim F. Bofill, all of Barcelona, Spain, assignors to Bendiberica /S.A., Barcelona, Spain

Continuation of Ser. No. 283,392, Jul. 15, 1981, abandoned. This application Dec. 12, 1983, Ser. No. 560,284
Claims priority, application Spain, Jul. 30, 1980, 494.697
Int. Cl.³ B60T *11/20*
U.S. Cl. 60—562 **11 Claims**



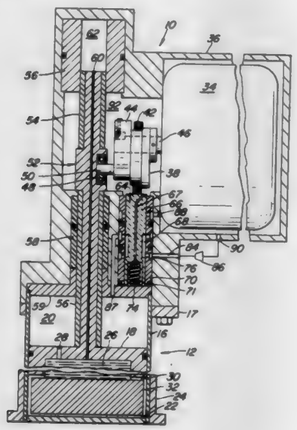
1. A brake master cylinder comprising a primary piston and a secondary piston sliding within a cylindrical housing to form two pressure chambers which communicate respectively with two brake circuits via outlet orifices and two hydraulic fluid feed reservoirs, these latter communications occurring through two compensation passages open to the chambers, respectively, in an idle position, and characterized by the pistons each having smooth lateral surfaces slidably engaging a housing interior wall and movable relative to fixed sealing rings fastened in annular grooves of the housing interior wall, and that one outlet orifice of one of the pressure chambers communicates with longitudinal grooves formed each with a width less than the circumference of said housing interior wall and in the housing interior wall in such a way that communication is maintained between the one outlet orifice and the one pressure chamber regardless of the position of the pistons in front of or overlapping the one outlet orifice, to enable reduction of the overall length of the master cylinder.

4,524,586

CRYOGENIC REFRIGERATOR

Jack E. Jensen, Columbus, Ohio, assignor to CVI Incorporated, Hilliard, Ohio

Filed Apr. 9, 1984, Ser. No. 597,983
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **5 Claims**



1. In a cryogenic refrigerator in which a movable displacer means defines within an enclosure first and second chambers of variable volume, and in which a refrigerant fluid is circulated in a fluid path between the first chamber and the second chamber by movement of the displacer means, chamber means for guiding a slide connected to the displacer means, a motor connected to said slide for reciprocating said slide, a valve having a reciprocable valve member for controlling the flow of high and low pressure fluid, said valve member having a peripheral groove, said motor being arranged to move said valve member in timed relation with movement of said slide so that the valve member will introduce high pressure fluid via said groove into said first and second chambers when the displacer means is at one of the extremities of its movement, and means for controlling said flow so that the flow from the groove to or from the displacer is correlated with the pressure difference across said valve.

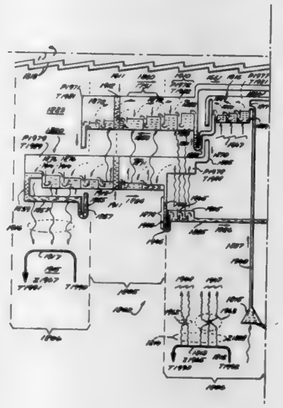
4,524,587

ROTARY THERMODYNAMIC APPARATUS AND METHOD

Frederick W. Kantor, 523 W. 112 St., New York, N.Y. 10025

Continuation-in-part of Ser. No. 456,709, Jan. 10, 1983, Pat. No. 4,441,337, which is a division of Ser. No. 240,135, Mar. 31, 1981, Pat. No. 4,367,639, which is a continuation of Ser. No. 4,606, Jan. 18, 1979, abandoned, which is a division of Ser. No. 770,316, Feb. 18, 1977, Pat. No. 4,136,530, which is a division of Ser. No. 569,478, Apr. 18, 1975, Pat. No. 4,010,018, which is a continuation of Ser. No. 78,552, Oct. 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 864,112, Oct. 6, 1969, Pat. No. 3,808,828. This application Apr. 9, 1984, Ser. No. 598,366
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—101 **38 Claims**

1. An absorptive rotary inertial thermodynamic device operable as a gas-flow driven heat pump in which heat is transferred from a lower temperature heat source to a higher temperature heat sink, comprising gas-flow driven heat pump means having a low pressure portion in which heat received directly or indirectly from said source evolves a volatile component as a gas from an absorbent liquor to concentrate said liquor and a high-pressure portion in which heat delivered to said sink is produced by absorption of the gas into the concentrated liquor; means supplying said gas at a relatively high pressure to said high-pressure portion of the gas-flow driven heat pump means; and means accepting said gas at a low pressure from said low-pressure portion of the gas-flow driven heat pump means.

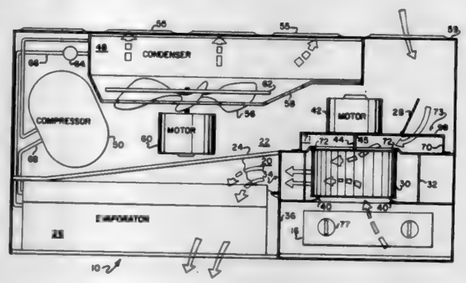


4,524,588

AIR CONDITIONER WITH IMPROVED FRESH AIR PATH

Ralph W. Bond, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Nov. 21, 1983, Ser. No. 553,664
Int. Cl.³ F25D *23/12*
U.S. Cl. 62—262 **12 Claims**



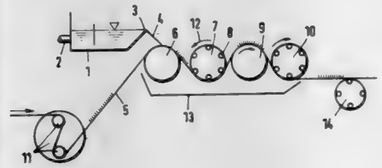
1. An air conditioner comprising a partition separating outside fresh air from room air, an evaporator blower wheel positioned on the room air side of said partition, said evaporator blower wheel having a first side facing said partition and a second side facing away from said partition, an air chamber separating said first side of said evaporator blower wheel from said partition, an evaporator blower motor mounted on the fresh air side of said partition, a shaft extending from said evaporator blower motor through an aperture in said partition and through said air chamber to said evaporator blower wheel, a vent in said partition communicating from said outside fresh air to said air chamber, a door for closing said vent wherein, in one mode of operation with said door closed, the only air entering said blower wheel is said room air recirculating by entering said second side of said blower for passage through an evaporator back to said room, and wherein, in a second mode of operation with said door open, said outside fresh air is drawn through said vent into said chamber entering said first side of said evaporator blower wheel, said outside fresh air mixing with said recirculation air in said evaporator blower wheel for passage through said evaporator to said room.

4,524,589

APPARATUS FOR FROTH PROCESSING OF LENGTHS OF MATERIAL

Heinz Fleissner, Riehen, Switzerland, assignor to Vepa Aktiengesellschaft, Basel, Switzerland

Filed Dec. 1, 1981, Ser. No. 326,279
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1980, 3045644; Jan. 17, 1981, 3101337
Int. Cl.³ D06B *1/06, 1/14, 23/00*
U.S. Cl. 68—5 D **47 Claims**



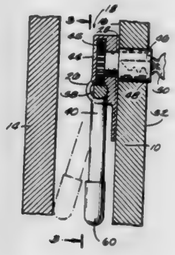
1. An apparatus for foam dyeing of lengths of textile material having pile fibers on a pile side thereof, comprising a dye liquor applicator for applying a foamable liquid-dye liquor to the pile side of said textile material, a stroking means arranged after the dye liquor applicator along a travel path of said textile material for alternately compressing and releasing the dye-containing pile fibers to cause the dye to foam on the pile fibers, said stroking means being arranged to directly contact the pile side of the textile material and being driven to rotate and to provide a relative motion between said textile material and said stroking means and means for conveying the textile material along said travel path in contact with said stroking means so that the stroking means is partially encompassed by said textile material.

4,524,590

DOOR LATCH WITH LOCK

Joseph D. Budish, 1635 Madison Ave., South Milwaukee, Wis. 53172

Filed Sep. 23, 1982, Ser. No. 421,970
Int. Cl.³ E05B *65/06*
U.S. Cl. 70—129 **4 Claims**



1. A latch for a door installation including first and second doors having inner and outer faces and mounted in spaced facing relationships for movement relative to each other between open and closed positions, said latch comprising:

a support bracket including a base adapted to be mounted on the inner face of the first door between the first and second doors;

an elongated bolt having an outer end portion, said bolt being carried by said support bracket for relative rotational movement between a sliding position and a locking position angularly displaced from said sliding position and for relative slidable movement between a latched position wherein, when the first door is closed, said outer end portion is received in a keeper located adjacent the first door to prevent opening of the first door, and an unlatched position wherein said outer end portion is retracted from the keeper to permit opening of the first door, said bolt including a longitudinally extending rack having a length corresponding to the longitudinal movement of said bolt between the latched and unlatched positions and a recessed portion angularly displaced from said rack;

an elongated handle affixed on said bolt and extending transversely therefrom for rotating said bolt and for moving said bolt between the latched and unlatched positions and the sliding and locking positions, said handle having a length greater than the spacing between the first and second doors, whereby during attempted rotational movement of said handle and said bolt in a direction from the locking position toward the second door with the second door closed, said handle engages the face of the second door to prevent movement of said bolt to the sliding position;

movable lock means operable from the outer face of the first door;

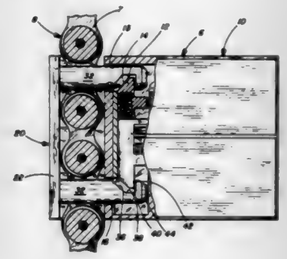
actuation means operable in response to movement of said lock means including a pinion which engages said rack when said bolt is in the locking position to prevent longitudinal movement of said bolt without moving said lock means and to permit longitudinal movement of said bolt between the latching and unlatched positions in response to movement of said lock means, said pinion being aligned with said bolt recessed portion when said bolt is in the sliding position to permit free longitudinal movement of said bolt between the latching and unlatched positions.

4,524,591

LOCK DEVICE FOR CHAIN DRIVEN VEHICLES

Richard I. Lanka, 28952 Homewood Dr., Wickliffe, Ohio 44092

Filed Dec. 30, 1982, Ser. No. 454,857
Int. Cl.³ E05B *67/22*
U.S. Cl. 70—236 **2 Claims**



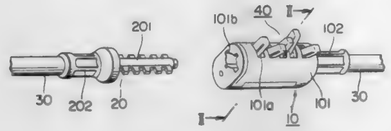
1. A locking device of the type adapted to engage the links of a drive chain of a vehicle, such as a bicycle, motorcycle, moped of the like, comprising a lock mechanism having a hollow housing mounting a key actuated tumbler means having a locking arm means adapted to be moved between a locked and an unlocked position, said housing having a pair of oppositely disposed openings adapted to provide ingress and egress into the housing, a locking plate member including a flat base plate portion and an integral downwardly depending side plate portion defining an L-shaped configuration in side elevation providing a protective outer skirt, at least one elongated locking pin element made integral with and extending downwardly from said base plate portion and parallel to said side plate portion and spaced laterally from said side plate portion, said locking pin element having a recessed slot adapted to receive therein the confronting end portion of said locking arm of said lock mechanism.

4,524,592

COMBINATION LOCK

Hisashi Saitoh, Aichi, Japan, assignor to Saikosha Works Ltd., Kasugai, Japan

Filed Feb. 23, 1983, Ser. No. 469,067
Claims priority, application Japan, Feb. 26, 1982, 57-27268[U]
Int. Cl.³ E05B *37/02*
U.S. Cl. 70—287 **12 Claims**



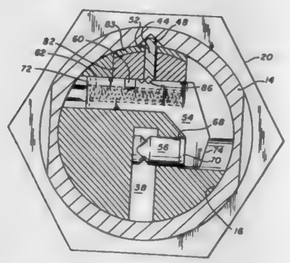
12. A combination lock comprising a housing having an inner chamber, window means arranged in said housing, said housing having an end wall, a key opening in said end wall, said housing having an inner portion defining at least a partial internal cylindrical surface, a plurality of dials each having at least a partial outer cylindrical surface, said dials being rotatably supported in said housing by the mating and engagement of said internal and outer cylindrical surfaces, said dials having outer levers extending through said window means to provide for manual rotation of said dials, said dials each having an inner bore with a slot, said dials being rotatable to an unlocked position in which said slots are axially aligned, said dials being rotatable to a locked position in which said slots are non-axially aligned, and key means inserted through said key opening into said inner bore of said dials, said key means having projections slidable in said axially aligned slots when said dials are in said unlocked position, said dials engaging said projections to preclude axial withdrawal of said key means when said dials are in said locked position, whereby the number of parts are minimized in that the dials which engage said key means to effect locking and unlocking are rotatably supported by said internal cylindrical surface of said housing.

4,524,593

SIDE BAR LOCK WITH ENHANCED PICK RESISTANCE

Thomas F. Hennessy, Bristol, Conn., assignor to Lori Corporation, Southington, Conn.

Continuation-in-part of Ser. No. 231,777, Feb. 15, 1981, Pat. No. 4,404,824. This application Jul. 5, 1983, Ser. No. 510,613
Int. Cl.³ E05B *27/06*
U.S. Cl. 70—358 **12 Claims**



1. A lock which is operated by a key having at least a first detent provided a surface thereof comprising:
housing means;
key plug means rotatably mounted within said housing means, said key plug means being provided with a keyway;
at least first pin tumbler means, said pin tumbler means being reciprocally mounted in said key plug means and having a pin portion which is partly complementary in size and shape to the key detent, said pin tumbler means normally extending into said keyway, said pin tumbler means being directed out of said keyway upon contact with the detented key, said pin tumbler means unlocked position being determined by engagement of the pin portion thereof with the key detent;
at least first side bar means, said side bar means being slidably mounted in said key plug means, said side bar means being in contact with said pin tumbler means, said side bar means being moved in a first direction by said pin tumbler means when said pin tumbler means engages the detented key, said side bar means having a first edge portion;
first biasing means for resiliently biasing said side bar means in a second direction opposite to first direction, the action of said first biasing means being transmitted to said pin tumbler means via said side bar means;
locking bar means, said locking bar means being reciprocally mounted in said key plug means, said locking bar means being resiliently biased in a third direction generally transverse to said first direction to engage said housing means and prevent the rotation of said key plug means, a first portion of said locking bar means being juxtapositioned to said first edge portion of said side bar means when the lock is in the locked condition whereby the application of rotational force to said key plug means will establish contact between said locking bar means first portion and said side bar means thereby preventing said locking bar means from moving in a fourth direction opposite to said third direction to disengage said locking bar means from said housing means;
true gate means, said true gate means being provided in said side bar means first edge portion, said true gate means being placed in alignment with said locking bar means first portion when said side bar means is moved to the unlocked position by engagement of said pin plug means in a key detent of proper size and depth, said true gate means being sized and shaped to receive said locking bar means first portion to thereby allow said locking bar means to move in said fourth direction and disengage from said housing means;
false gate means, said false gate means being provided in said side bar means first edge portion, said false gate means being at least in part located to the side of said true gate means which is between said true gate means and a point on said side bar means first edge portion which is aligned with said locking bar means with the lock in the locked condition, said false gate means including at least a first cut-out in said side bar means first edge portion, said first cut-out having side walls which are convergent toward the bottom thereof, and
second biasing means for resiliently biasing said locking bar means in said third direction.

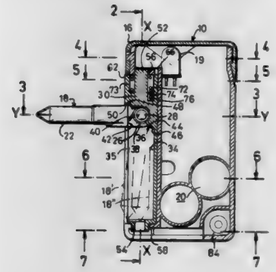
4,524,594

RETRACTABLE KEY CARRIER

Jacques Bascou, Maule, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Mar. 9, 1983, Ser. No. 473,748
Claims priority, application France, Mar. 9, 1982, 82 03910
Int. Cl.³ A44B *15/00*; A45C *11/32*; A47G *29/10*
U.S. Cl. 70—456 R **9 Claims**

1. A key carrier comprising:
a hollow case having a first opening;
a hollow drum having first and second ends, said hollow drum mounted in said case adjacent said first opening such that said first and second ends of said drum are enclosed by said case, said drum having a second opening and being rotatably mounted about a first axis, whereby said drum may be rotated such that said first and second openings are in alignment;
a pin mounted in said drum to define a second axis perpendicular to said first axis;
a key pivotally mounted on said pin for movement between a first position wherein said key is positioned in said drum, and a second position wherein said key extends out of said drum;
first means for biasing said key into said second position;
second means for biasing said drum such that said first and second openings are out of alignment; and
means for permitting manual rotation of said drum,



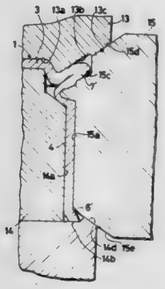
whereby said key is retained in said first position by said case when said first and second openings are biased out of alignment by said second biasing means, wherein rotation of said drum by said manual rotation means such that said first and second openings are in alignment permits said first biasing means to move said key into said second position, and wherein said second biasing means moves said first and second openings out of alignment when said key is returned to said first position.

4,524,595

METHOD OF MANUFACTURING SHEET METAL MADE POLY-V PULLEYS

Misao Oda, Hyogo, Japan, assignor to Kabushiki Kaisha Kanemitsu, Japan

Filed Sep. 19, 1983, Ser. No. 533,749
Int. Cl.³ B21D *53/26*
U.S. Cl. 72—84 **7 Claims**



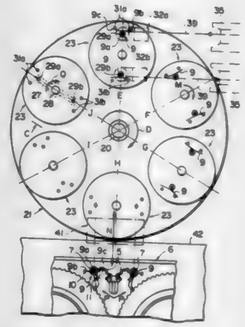
1. A method of manufacturing sheet metal poly-v pulleys, comprising the steps of:
forming a cup-shaped blank having a peripheral wall and an end wall joined at a connecting portion;
pre-forming a lug between the end wall and the peripheral wall by pressing the end wall and peripheral wall toward one another around the connecting portion between the end wall and the peripheral wall such that inside surfaces of the end wall and the peripheral wall are pressed into contact, said lug forming at least a part of an uppermost V-groove;
after said preforming step, pressing a corrugating roller against the peripheral wall from outside the blank to bring the wall into a corrugated shape having ridges alternating with grooves on an outer surface of said peripheral wall, the corrugating roller also pressing against said uppermost V-groove;
axially compressing the peripheral wall while keeping the corrugating roller inserted in the respective grooves, thereby forming poly-v grooves of predetermined spacing; and,
finishing the grooves by pressing a finish forming roller in the grooves.

4,524,596

METHOD OF FORMING AND FEEDING TORSION SPRINGS

Yuzo Tsunekawa, and Takashi Tomizawa, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Oct. 18, 1983, Ser. No. 543,000
Claims priority, application Japan, Oct. 22, 1982, 57-185828
Int. Cl.³ B21F *3/04*
U.S. Cl. 72—133 **2 Claims**



1. A method of feeding torsion springs to a system which uses the torsion springs, each torsion spring having a coiled portion and straight ends, the method comprising:
providing at least one winding means, having a spindle with an axis, for forming a torsion spring by winding a wire about said spindle;
providing a transfer means for transferring the torsion spring from said winding means to a spring feeding position in which the torsion spring is fed to a spring inserting means for inserting the torsion spring into a system which uses the torsion spring, while maintaining the torsion spring in a predetermined orientation during said transfer from the winding machine to the spring feeding position, said transfer means having at least one spring support pin having an axis and an associated pair of spring retainer pins;
forming a torsion spring by winding a wire about said spindle;
delivering the so-formed torsion spring to the transfer means by axially aligning said spindle and said spring support pin and moving the torsion spring in the axial direction from the spindle to the spring support pin so that the coiled portion of the torsion spring receives therein the spring support pin and the ends of the torsion spring are held in place by respective spring retainer pins.

4,524,597

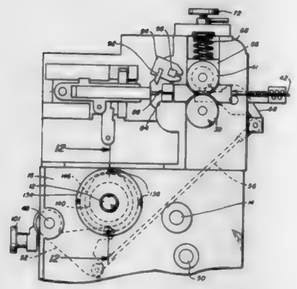
METHOD OF SUPPORTING A CAMSHAFT IN A WIRE COILING MACHINE

Frank S. Russell, Northboro, and Robert J. Simonelli, Grafton, both of Mass., assignors to Sleeper & Hartley Corp., Worcester, Mass.

Division of Ser. No. 497,756, May 25, 1983, which is a continuation of Ser. No. 251,194, Apr. 6, 1981, Pat. No. 4,402,204, which is a continuation-in-part of Ser. No. 201,204, Oct. 27, 1980, Pat. No. 4,372,141. This application Jun. 4, 1984, Ser. No. 617,342

Int. Cl.³ B21F *3/02*

U.S. Cl. 72—135 **4 Claims**



1. A method of supporting a plurality of cams on a camshaft of a wire coiling machine, said camshaft including cams for controlling respective pitch and diameter tools, of said machine comprising the steps of, providing a wire coiling machine having a work station at which a coil spring or the like is formed, feeding the wire to the work station, supporting the camshaft, driving the camshaft using non-circular gear means to effect variable speed camshaft rotation, securing the cams to the camshaft in a spaced fashion along the camshaft with each cam being in a predetermined position, providing a housing means having an opening for receiving the camshaft, said opening being of greater diameter than the cam maximum diameter, providing a support member having a bearing surface for the camshaft and secured to the housing means about the housing means opening to cover said opening, removing the support member from the housing, withdrawing at least the cams from the camshaft through the opening in the housing, repositioning the cams at the same predetermined position for the purpose of subsequently forming the same spring configuration, and resecuring the suport member to the housing.

4,524,598

METHOD OF ROLLING A SIMULATED HOLE IN SHEET METAL WITHOUT DRILLING OR PUNCHING

Neal E. Rowe, Asheville, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 7, 1983, Ser. No. 540,067

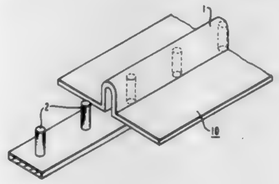
Int. Cl.³ B21B *1/08;* **B21D** *53/36*

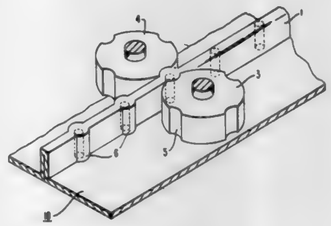
U.S. Cl. 72—198 **4 Claims**

1. A method of providing a simulated hole in sheet metal that is adapted to receive and serve as an anchorage means for a screw type fastener, which method comprises:

(a) roll forming an upstanding U-shaped loop segment of a predetermined depth in the sheet metal to match the length of a selected size of said fastener, said loop segment having a closed end and being wider than the diameter of the selected fastener;

(b) inserting a removable pin inside the loop segment at a medial position therealong where the simulated screw hole is desired and orienting the pin so that the inserted end faces the closed end of the U-shaped loop segment;





(c) crimping the loop segment of the sheet metal to close the metal around the removable pin and also close the parts of said loop segment that are adjacent to and located on either side of the pin; and then

(d) removing the pin from the sheet metal loop segment to thereby provide the desired simulated hole and fastener-anchoring means in the sheet metal.

4,524,599

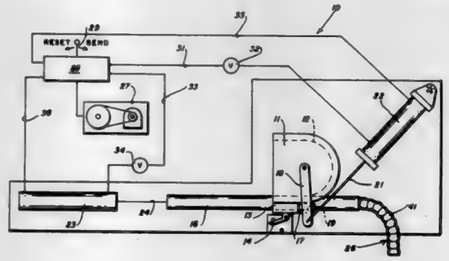
ROTARY COMPRESSION BENDING MACHINE

Gregory W. Bailey, 48 Center St., Torrington, Conn. 06790

Filed Sep. 27, 1982, Ser. No. 423,676

Int. Cl.³ B21D *9/03, 9/05*

U.S. Cl. 72—321 **6 Claims**



1. A rotary compression bending machine for bending thin wall tubing comprising:

a radius die having a concave radius around the working perimeter thereof,

a clamp die for securing a length of tubing in engagement with the radius die,

a wiper die mounted adjacent the working perimeter of the radius die for movement in an arcuate path therealong,

a flexible ball mandrel comprising a plurality of spherical balls adapted to be positioned within the portion of the tubing which is to be bent, and

means for driving said wiper die in an arcuate path in a first direction around the working perimeter of the radius die to bend said tubing therearound and for simultaneously drawing said flexible ball mandrel in an opposite direction through said tubing, at least one of said spherical balls being positioned with said tubing at the location on said tubing where said bend is taking place, whereby the motion of said flexible ball mandrel within said tubing reforms the tubing wall by burnishing to produce a bend in said tubing which is smooth and wrinkle free.

4,524,600

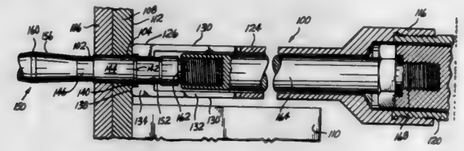
APPARATUS FOR PRESTRESSING FASTENER HOLES

Robert L. Champoux, 2539 128th SE., Bellevue, Wash. 98005, and Charles M. Copple, 13713 SE. 237th Pl., Kent, Wash. 98031

Division of Ser. No. 347,717, Feb. 10, 1982, Pat. No. 4,471,643. This application Jan. 26, 1984, Ser. No. 574,011

Int. Cl.³ B21D *31/00*

U.S. Cl. 72—391 **7 Claims**



1. For use as a pull gun extension and sleeve retainer, wherein said pull gun is adapted for pulling a mandrel axially through a one piece prestressing sleeve within a fastener hole in a workpiece, so that varied diameter portions of the mandrel exert expansion forces on the sleeve, to cause the sleeve to be expanded radially and prestress the metal around the fastener hole, and in that manner improve fatigue properties of the metal; said extension and sleeve retainer comprising:

an elongated generally tubular member having an inner and an outer end, and a generally central passageway therethrough;

means on the inner end for securing the member to the pull gun;

a multiple of annularly spaced, axially directed alternate splits and fingers extending axially inwardly from the outer end to positions outwardly of the inner end;

adjacent fingers normally being closely adjacent along axially directed surfaces along the splits at their outer ends;

the passageway being formed along inner annular surfaces of the fingers which are configured to be radially engaged at their outer ends with a mandrel when the mandrel extends therethrough and when it is being retracted through the sleeve in the fastener hole; and

axially and radially directed means formed adjacent the outer end extending around the passageway to engage the end of the sleeve to axially retain it in a fastener hole when the mandrel is being retracted through the sleeve and to prevent the sleeve from entering the passageway.

4,524,601

AUTOMATIC APPARATUS FOR DOWNSETTING LEAD FRAME STRIPS

Carl E. Bernardi, 3048 Bayberry La., San Jose, Calif. 95148

Filed May 13, 1983, Ser. No. 494,385

Int. Cl.³ B21D *43/00*

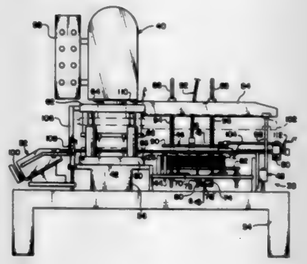
U.S. Cl. 72—422 **37 Claims**

1. An automatic apparatus for loading objects into a die set prior to a forming operation and for unloading said objects from said die set subsequent to said forming operation, where said forming operation includes sequential steps of closing and opening said die set by a punch press and said die set includes a fixed die portion and a moveable punch portion, said apparatus comprising:

a support base to support said die set and said punch press;

guide rails means attached directly to said fixed portion for guiding said objects into said die set;

placing means attached directly to said moveable punch portion for placing one of said objects onto said guide rail means;



advancing means for transferring said one of said objects along said guide rail means into said die set;

positioning means for positioning said one of said objects within said die set; and

unloading means coupled to said advancing means for transferring said one of said objects out of said die set.

4,524,602

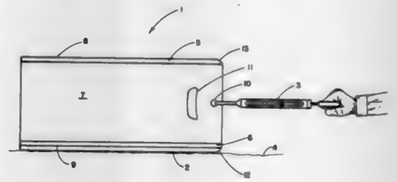
ACCIDENT RECONSTRUCTION DEVICE

Milton D. Moore, 2268 Park Cir., Baton Rouge, La. 70819

Filed Mar. 7, 1984, Ser. No. 587,052

Int. Cl.³ G01N *19/02*

U.S. Cl. 73—9 **6 Claims**



1. An accident reconstruction device, comprising:

(a) an elongated metal body, I-shaped in section, having upper and lower flanges with corresponding flat upper and lower surfaces, said flanges being connected by a web having a hole through said web at one end, said hole positioned at the vertical center of mass of said body;

(b) a flat friction surface affixed to and substantially covering said lower surface of said lower flange; and

(c) a scale means, attachable to said hole, for pulling said body and indicating the force required to pull said body.

4,524,603

METHOD OF IMPACT TESTING MOTOR VEHICLES

Ashok B. Hargunani, Farmington Hills, Clifford C. Chou, Canton, and Harold G. Brilmyer, Grosse Pointe, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

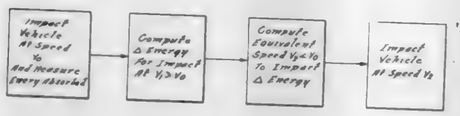
Filed Sep. 6, 1983, Ser. No. 529,821

Int. Cl.³ G01N *3/30;* **G01M** *17/00*

U.S. Cl. 73—12 **4 Claims**

1. A method of determining the deflection characteristics of a vehicle resulting from subjecting the vehicle to impact with a flat, stiff barrier at a plurality of given speeds, the method comprising the steps of:

A. subjecting the vehicle to a first such impact at a first speed;
B. measuring the deflection characteristics of the vehicle after said impact;
C. computing the observed energy absorbed by the vehicle as a result of said impact;
D. computing the predicted energy to be absorbed by the vehicle through such an impact at a second, higher speed;



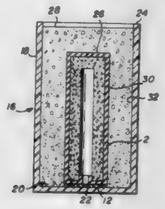
E. computing the difference between said predicted energy and said observed energy;
F. computing the equivalent speed at which the vehicle must be impacted to transfer energy equivalent to said difference; and
G. subjecting the vehicle to such impact at said equivalent speed.

4,524,604

CONCRETE PERMEABILITY TESTING DEVICE AND METHOD

Gary L. Vondran, 1905 Quail Meadow Rd., Los Altos, Calif. 94022

Filed Feb. 25, 1983, Ser. No. 469,831
Int. Cl.[3] G01N *15/08*
U.S. Cl. 73—38 **10 Claims**



6. A concrete permeability testing unit for forming a concrete test specimen with a cylindrical cavity comprising a concrete permeability testing core form means mounted axially concentric in a surrounding cylindrical mold having a bottom surface, the concrete permeability testing core form means comprising a cylinder of polymeric foam which will at least partially collapse when contacted with a solvent for the polymer, the cylinder having a side surface and first and second end surfaces, the side surface and first end surface of the cylinder being enclosed within a layer of an elastomeric polymer resistant to said solvent for the polymer foam, the elastomer polymer being under tension, the second end surface of the core means being affixed to the bottom surface of the cylindrical mold.

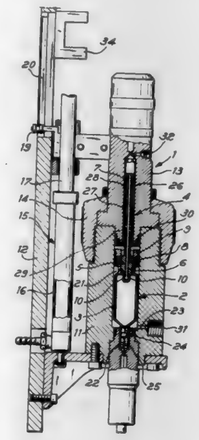
4,524,605

POROSIMETER WITH DETECTION BY CAPACITY VARIATIONS

Pietro Italiano, Cernusco S/Naviglio, and Ermete Riva, Merate, both of Italy, assignors to Carlo Erba Strumentazione S.p.A., Italy

Filed Oct. 27, 1983, Ser. No. 545,947
Claims priority, application Italy, Nov. 4, 1982, 24076 A/82
Int. Cl.[3] G01N *15/08*
U.S. Cl. 73—38 **13 Claims**

1. An apparatus for porosimetric measurements by recording capacity variations in a cylindrical condenser, said apparatus comprising a porosimeter penetrometer for housing a sample to be analyzed, said penetrometer including a capillary with a capillary wall having an outer surface and an inner surface, with said inner surface defining a predetermined inner diameter for said capillary, whereby when mercury is contained in said capillary, said mercury forms a variable inner armature for said condenser; and a porosimeter autoclave body for housing said porosimeter penetrometer, said porosimeter autoclave body including a fixed outer armature for said condenser mounted thereon, said fixed outer armature being



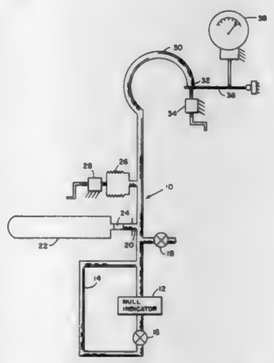
mounted such that, when said penetrometer is housed in said porosimeter autoclave body, a uniform spacing is provided between said fixed outer armature and said capillary inner surface and a space is provided between said fixed outer armature and said capillary outer wall, whereby an oil having a dielectric constant the same as the dielectric constant of the capillary wall may be introduced into said space and said oil and said capillary wall can form a condenser dielectric for said condenser.

4,524,606

LOW FLOW CALIBRATOR

William J. McMahan, 8602 Hickory Hill La., Huntsville, Ala. 35802, and John M. Ball, 12032 Chicamauga Trail, Huntsville, Ala. 35803

Filed Jan. 23, 1984, Ser. No. 572,785
Int. Cl.[3] G01M *3/26*; G01F *25/00*
U.S. Cl. 73—40 **2 Claims**



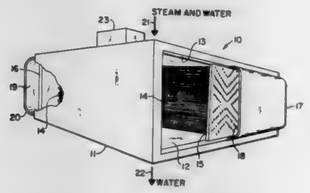
1. A low flow calibrator comprising a manifold structure defining a closed system with two ends therein and having an opening connected to a standard leak source, a valve connected into said manifold system for opening said manifold system to atmospheric pressure when desired and for closing and sealing off said system, a differential pressure transducer connected into said manifold system at one end and passage means connecting opposite sides of said differential pressure transducer to the closed system, valve means in said passage means for opening and closing said passage means to allow the same pressures to opposite sides of the differential pressure transducer when desired, adjustable bellows means connected into said closed system for varying the volume of said closed system as desired, a bourdon tube connected into said closed system at the other end, and being movable to vary the volume of said closed system, mechanical adjusting means mounted relative to a closed end of said bourdon tube for moving said closed end of said bourdon tube to increase the volume in said closed system, and a precision dial indicator mounted relative to said mechanical adjusting means for said bourdon tube, means for actuating said dial as said mechanical adjusting means moves said closed end of said bourdon tube, whereas said precision dial indicator indicates the amount of movement of said bourdon tube to enable one to calibrate a standard leak.

4,524,607

SYSTEM AND METHOD FOR LOCATING LEAKING TUBES

Charles A. Pelletier, Bethesda; William E. Gonso, Jr., Fredrick; Douglas S. Cameron, and Patrick R. Leonard, both of Gaithersburg, all of Md., assignors to Science Applications International Corporation, La Jolla, Calif.

Filed Apr. 5, 1982, Ser. No. 365,369
Int. Cl.[3] G01M *3/22*
U.S. Cl. 73—40.5 R **18 Claims**



7. A method for detecting and locating leaks from among a plurality of tubular members extending through a chamber and accessible at the opposite ends thereof from outside said chamber, there being a first process fluid communicating through said tubular members and a second process fluid communicating through said chamber, comprising the steps of releasing tracer fluid into one end of a predetermined group of tubular members while maintaining the flow of said first process fluid through all of said tubular members, then sampling said second process fluid in said chamber for the presence of said tracer fluid, then, if said sampling step reveals the presence of said tracer fluid, sequentially releasing tracer fluid into each of said tubular members of said predetermined group and sampling said second process fluid in said chamber after each such release for the presence of said tracer fluid, thereby locating which of said tubular members is leaking.

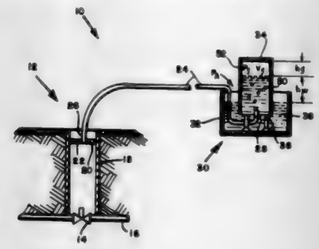
4,524,608

GAS LEAK METER

David T. Bellefeuille, 19623 E. Batavia Dr., Aurora, Colo. 80011, and Robert S. Beckwith, 2765 S. Colorado Blvd., Denver, Colo. 80222

Filed Dec. 5, 1983, Ser. No. 558,255
Int. Cl.[3] G01M *3/08*
U.S. Cl. 73—40.5 R **10 Claims**

1. A gas leak meter, said gas leak meter removably attached to a valve box containing a leaking gas valve therein, said gas leak meter comprising:
means for blocking the escape of leaking gas from said valve box, said means for blocking removably attached to said valve box, said means for blocking having therein a hole for channeling said leaking gas,
a flexible tube, said tube fixedly attached to said hole in said means for blocking,
means for collecting said leaking gas at atmospheric pressure, said means for collecting having a first chamber with



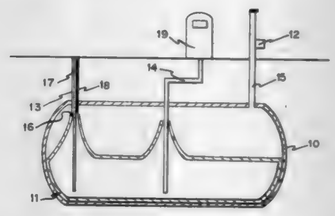
an open end exposed to said atmospheric pressure, said means for collecting having a second chamber having a closed top end, said first and said second chambers communicating through operably connected lower ends, said tube operably connected to allow said leaking gas to collect in said second chamber, said second chamber completely filled with a fluid before said leaking gas enters therein, and
means for timing, said timing means providing a period of time during which said leaking gas partially fills said second chamber.

4,524,609

STORAGE TANK SYSTEMS

Bruce R. Sharp, 4090 Rose Hill Ave., Cincinnati, Ohio 45229

Continuation-in-part of Ser. No. 544,012, Oct. 21, 1983, abandoned. This application Feb. 16, 1984, Ser. No. 580,800
Int. Cl.[3] G01M *3/32*
U.S. Cl. 73—49.2 **28 Claims**



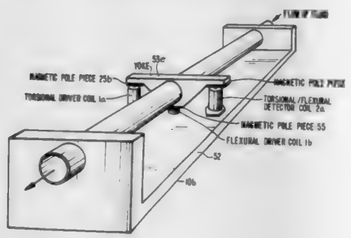
1. A liquid storage tank system comprising:
(a) an outer tank shell having rigid walls fitted with a fill pipe, a dispensing line and a vent pipe;
(b) a bladder adapted for fitting within the outer tank shell to hold the liquid, said bladder having openings with means for sealed connection with the fill pipe, dispensing line and vent pipe or points at which the fill pipe, dispensing line and vent pipe enter the outer tank shell;
(c) gas permeable material positioned between the bladder and the walls of the outer tank shell;
(d) vacuum means in communication with the space occuppied by the gas permeable material; and
(e) an analyzer in communication with the space within the inner walls of the rigid tank shell and the outside of the bladder.

4,524,610

IN-LINE VIBRATORY VISCOMETER-DENSITOMETER

J. Vincent Fitzgerald, Metuchen; Frank J. Matusik, Piscataway, and Donald W. Nelson, Voorhees, all of N.J., assignors to National Metal and Refining Company, Ltd., Edison, N.J.

Filed Sep. 2, 1983, Ser. No. 528,744
Int. Cl.³ G01N *11/16*
U.S. Cl. 73—54 **24 Claims**



22. An in-line vibratory viscometer, comprising:
a transducer having:
a tube extending elasticity, through which a fluid may flow
means for securing first and second longitudinally spaced sections of said tube to provide oscillation nodes at said sections,
a transverse yoke secured to a third section of said tube intermediate said first and second sections thereof,
drive means comprising means operatively associated with said yoke for exciting and maintaining torsional oscillation of said tube between said nodes, and
detector means for detecting said torsional oscillation;
first circuit means connected between said drive means and said detector means for providing a torsional oscillation mode control signal to said drive means to maintain said tube in torsional oscillation at substantially the natural frequency thereof and at a predetermined constant amplitude; and
second circuit means coupled to said drive means and said detector means for providing a viscosity-density product output signal indicative of the viscosity-density product of any fluid within said tube, said viscosity-density product output signal corresponding to the power required to sustain a predetermined angular amplitude of torsional mode oscillation of said tube with said fluid therein.

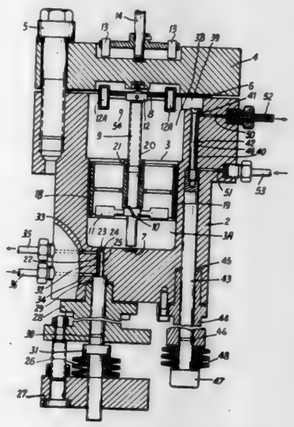
4,524,611

RHEOMETER FOR MEASURING HIGH PRESSURE AND HIGH TEMPERATURE WITH SAMPLING

Dominique Richon, Rosny. Sous. Bois, and Henri Renon, Paris, both of France, assignors to Association pour la Recherche et le Developpement des Methodes et Processus Industriels (ARMINES), Paris, France

Filed May 10, 1983, Ser. No. 493,411
Claims priority, application France, May 11, 1982, 82 08160
Int. Cl.³ G01N *11/14*
U.S. Cl. 73—59 **12 Claims**

1. A rheometer, including a hollow body (2) with an inner chamber (3), a cap (4) for closure of the hollow body (2), a vertical inner shaft (9), a rotor (18) mounted on the inner shaft (9), and means for rotating the inner shaft (9) via a torque measuring means, characterized in that said inner chamber (3) comprises a lower zone (3A) constituting a fixed measuring cylinder, and an upper zone (3B) having an enlarged diameter with respect to the lower zone (3A), and having a height at least equal to that of said rotor (18), said rotor (18) being displaceable in a longitudinal direction along said inner shaft (9) between an upper position in which said rotor (18) is located in said upper zone (3B) and a lower position in which



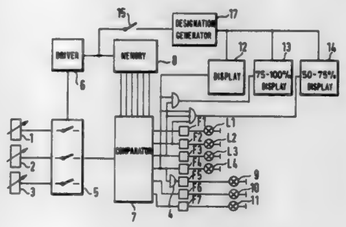
said rotor (18) is located in said lower zone (3A) for effecting a measurement.

4,524,612

TESTING INSTALLATION FOR MOTOR VEHICLE OPERATING ELEMENTS

Fritz Bouranel; Wolfgang P. Flohr, and Walter Weishaupt, all of Munich, Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 20, 1983, Ser. No. 563,458
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247858
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 **30 Claims**



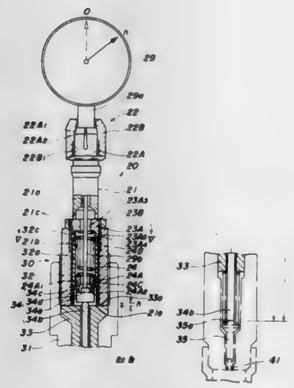
1. A test installation for motor vehicle operating elements which change compared to a starting condition and which, upon reaching an individual limit condition, trigger a common indicating means, comprising means forming an equal number of change intervals from the changes of the operating elements, said change intervals following one another and extending up to the respective limit condition, indicating means respectively coordinated to the change intervals of the operating elements, and control means for triggering the respective indicating means by that operating element which first reaches the limit of its change interval.

4,524,613

ADJUSTING DEVICE FOR ADJUSTING INITIAL INJECTION LIFT OF A DOUBLE INJECTION TYPE FUEL INJECTION VALVE

Kazuo Uchida, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 558,940
Claims priority, application Japan, Dec. 13, 1982, 57-188318[U]
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 A **6 Claims**



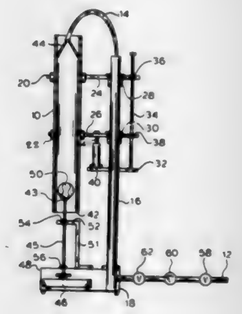
1. An adjusting device for a double-injection fuel injection valve of the type having a nozzle needle, a first nozzle spring, a first movable spring seat coupled to said nozzle needle for lifting together with said nozzle needle and supporting said first nozzle spring, a second nozzle spring, a second movable spring seat supporting said second nozzle spring, a seat held stationary at a predetermined axial location in said fuel injection valve, on which said second movable spring seat is seatable, a shim interposed between said second movable spring seat and said seat and maintaining said second movable spring seat in a position seated on said seat spaced from said first movable spring seat in a seated position thereof by a predetermined gap determining a desired initial injection lift of said nozzle needle, and a hollow member accommodating at least said second nozzle spring, said adjusting device being used to adjust said predetermined gap, said adjusting device comprising: a hollow tubular holder for holding a measuring instrument having an elongate probe, said holder having a through hole formed therein along an axis thereof for said elongate probe to extend therethrough; support means provided at one end portion of said holder for supporting said measuring instrument; mounting means provided at an axially intermediate portion of said holder for mounting said holder on said hollow member of said fuel injection valve while allowing axial displacement of said holder relative to said hollow member; and urging means provided in said through hole of said holder at another end portion of said holder for urging said second movable spring seat of said fuel injection valve against said seat to hold said second movable spring seat in close contact with said seat; said support means, said mounting means and said urging means being so constructed as to permit free axial movement of said elongate probe of said measuring instrument therethrough.

4,524,614

TENNIS BALL EVALUATOR

Carl V. Leunig, Glenmont, N.Y., and Michael F. Susi, Windsor, Conn., assignors to Tex-Tech Industries, Middletown, Conn.

Filed Oct. 5, 1983, Ser. No. 539,081
Int. Cl.³ G01M *9/00*
U.S. Cl. 73—147 **7 Claims**



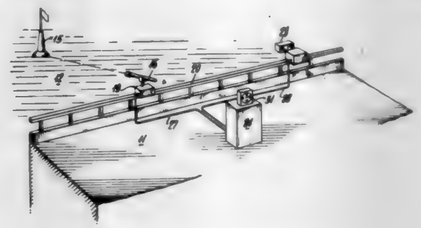
1. A tennis ball evaluator comprising:
a tube;
means for supporting a tennis ball within said tube;
means for causing a gas to flow through said tube to generate a drag force on said tennis ball; and
a scale operatively connected to said supporting means for determining said drag force.

4,524,615

METHOD AND SYSTEM FOR MEASURING THE SPEED OF A SHIP

Paul F. Curran, and Hubert T. Marshall, II, both of Fishkill, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 29, 1983, Ser. No. 527,585
Int. Cl.³ G01C *21/10*
U.S. Cl. 73—181 **11 Claims**



1. Method of measuring speed of a ship relative to a body of water through which it is being propelled, comprising the steps of:
placing a free floating buoy on said body of water beside said ship,
tracking said buoy from a location on said ship above the surface of said body of water,
measuring the height of said location above said water surface during said tracking,
measuring the vertical angle at said location between the horizontal and said buoy during said tracking,
measuring the horizontal angle at said location between a plane parallel to the center line of said ship and said buoy during said tracking, and
periodically calculating the relative position X of said buoy along a line parallel to the center line of said ship and determining elapsed time Δt between said periodical cal-

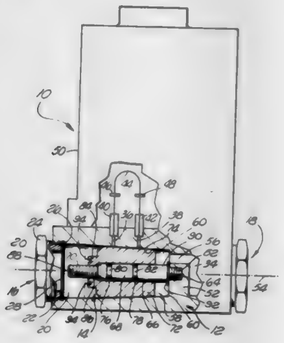
culations whereby said speed may be determined from the relationship $V_x=\Delta X/\Delta t$ where V_x is the velocity at the end of said elapsed time.

4,524,616

ADJUSTABLE LAMINAR FLOW BYPASS

Charles F. Drexel, Rolling Hills Estates, and Richard F. Blair, Long Beach, both of Calif., assignors to Tylan Corporation, Carson, Calif.

Filed Sep. 2, 1983, Ser. No. 529,057
Int. Cl.³ G01F *5/00*
U.S. Cl. 73—203 **11 Claims**



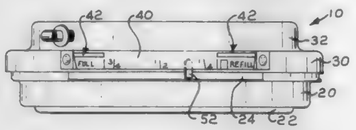
1. A flowmeter comprising an elongate housing having a fluid inlet, a fluid outlet and a longitudinal bore therebetween, a portion of said bore comprising a frusto-conical, longitudinally tapering wall including a flow restrictor within said bore portion, said flow restrictor comprising a conical frustum supported by a threaded axial spindle disposed in the housing, having a perimeter essentially parallel to at least a portion of the tapering wall and capable of forming an annular conduit therebetween capable of maintaining laminar flow of said fluid, and being longitudinally adjustable to modify the thickness of said conduit; and means for measuring the rate of fluid flow, said means including an elongate conduit in operative association with the annular conduit and means for connecting the elongate conduit with the bore within the length of the annular conduit.

4,524,617

FUEL GAUGE FOR PROPANE TANK

Charles A. Krehel, Trumbull, and George N. Kaniwec, Southington, both of Conn., assignors to The Cooper Thermometer Company, Middlefield, Conn.

Filed Oct. 6, 1983, Ser. No. 539,475
Int. Cl.³ A47J *37/08*; G01F *23/20*
U.S. Cl. 73—296 **9 Claims**



1. A fuel gauge for indicating the level of fuel in a liquid propane-type fuel tank comprising:

a base mounting a weighing means to measure the weight of an object including an angularly positionable indicator, the angular position of which indicator is indicative of weight;

a cover mounted to said base and forming a weighing platform for said weighing means, said base and cover cooperating to form a housing means to generally enclose said weighing means;

locator means to locate and secure a propane-type fuel tank on said weighing platform;

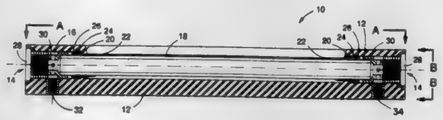
indicia means at the exterior periphery of said housing means forming a circumferentially extending scale, said indicator being angularly alignable with pre-established positions of said scale so that the level of fuel in a propane tank mounted on said weighing platform is indicated by the position of said indicator relative to said scale.

4,524,618

GLASS SIGHT GAUGE FOR HIGH PRESSURE VESSEL

H. Leon Mullis, 1701 W. Easton Ct., Tulsa, Okla. 74127

Filed Mar. 2, 1984, Ser. No. 585,389
Int. Cl.³ G01F *23/02*
U.S. Cl. 73—323 **3 Claims**



1. A tubular sight gauge comprising:

(a) an elongated gauge housing adapted to attach to the exterior of a vessel wherein said gauge housing contains a cylindrical opening passing longitudinally through said gauge housing and wherein said cylindrical opening is characterized by a larger diameter at each end of said gauge housing than in the middle thus defining larger diameter regions at each end and a smaller diameter region therebetween wherein said smaller diameter region of said opening is adapted to accept a glass sight tube of element (b) and wherein said large diameter regions are in fluid communication with the interior of the vessel and wherein said cylindrical opening is further characterized by abruptly tapering down to said smaller diameter slightly larger than the glass sight tube in a region displaced inward from each end of said gauge housing and wherein at least one side of said gauge housing, substantially between said regions of abrupt change in diameter, is open thus visually exposing a significant portion of the glass sight tube;

(b) a glass sight tube within said cylindrical opening in said elongated gauge housing wherein said glass sight tube extends from substantially within said large diameter region at one end of said gauge housing through said smaller diameter region including passing through said regions of abrupt change in diameter and visual side opening therebetween terminating substantially within said larger diameter region of said other end;

(c) a pair of tube rings concentrically positioned on said glass sight tube substantially near each end of said sight tube such as to extend from within said larger diameter region through said region of abrupt diameter change and substantially into said side opening of said gauge housing and wherein each of said tube rings contain a rigid concentric shoulder on the outermost end of said tube ring that occupy the space between the outside diameter of said glass sight tube and the inside diameter of of the larger diameter region and wherein each of said rigid concentric shoulders makes contact with said region of abrupt change in diameter on one side and makes contact with an O-ring of element (d) on the other side;

(d) a pair of O-rings each seated against said rigid concentric shoulder on one of said tube rings and occupying the space between the outside diameter of said glass sight tube and the larger diameter region;

(e) a pair of end caps each sealing the larger diameter openings at each end of said gauge housing; and

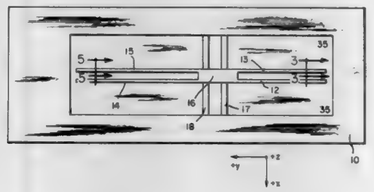
(f) a pair of tube spacers each in contact with the end of said glass sight tube of said end cap such as to limit longitudinal movement of said glass sight tube within said cylindrical opening in said elongated gauge housing and wherein said tube spacers are adapted to allow for fluid communication between said larger diameter region and the interior of said glass sight tube.

4,524,619

VIBRATORY ANGULAR RATE SENSOR SYSTEM

Juergen H. Staudte, Anaheim, Calif., assignor to Piezoelectric Technology Investors, Limited, Laguna Hills, Calif.

Filed Jan. 23, 1984, Ser. No. 572,783
Int. Cl.³ G01C *19/56*
U.S. Cl. 73—505 **2 Claims**



1. A vibratory angular rate sensor system comprising:

(a) a mounting frame of substantially rectangular configuration having a substantially rectangular opening, said frame consisting of a piezoelectric material of Z-cut crystalline quartz;

(b) a first pair and a second pair of tines disposed in said opening, said first pair forming vibrating drive tines, vibrating toward and away from each other, and said second pair of tines forming vibrating output tines, vibrating in opposite directions up and down;

(c) a stem interconnecting said first and second pair of tines, the tines of each pair being disposed parallel to each other and corresponding tines of both pairs being disposed along a common axis;

(d) means including two pairs of input electrodes in contact with the first pair of tines for exciting said tines substantially at the resonant frequency thereof, said input electrodes being in the X-Y and Y-Z planes of said wafer;

(e) means including two pairs of output electrodes disposed in contact with the second pair of tines in the Y-Z plane for deriving an output signal representative of the angular rate experienced by said system, the flexural frequency of said first pair of tines being lower than that of said second pair of tines; and

(f) a plurality of bridges integral with said frame and connected to said stem.

4,524,620

IN-FLIGHT MONITORING OF COMPOSITE STRUCTURAL COMPONENTS SUCH AS HELICOPTER ROTOR BLADES

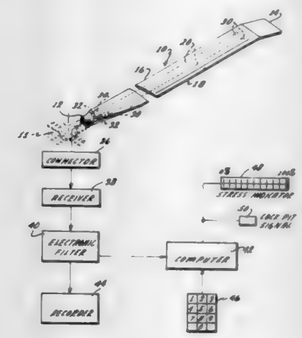
Dale M. Wright, Folsom, Calif., and Robert L. Kiraly, Mesa, Ariz., assignors to Hughes Helicopters, Inc., Culver City, Calif.

Filed Feb. 7, 1983, Ser. No. 464,343
Int. Cl.³ G01N *29/04*; G01M *5/00*
U.S. Cl. 73—587 **4 Claims**

1. Apparatus for determining the actual useful life of interchangeable helicopter blades comprising:

means associated with a particular helicopter rotor blade for monitoring acoustic emissions emitted by said rotor blade under operating stress;

computer means associated with said helicopter for accumulating a count of monitored acoustic emissions indicative of progressive structural failure of said interchangeable helicopter rotor blade, said computer means including data storage means for storing said count of acoustic emissions, and input means for entering a base count indicative of acoustic emissions emitted by said rotor blade during use prior to installation in said particular helicopter; and



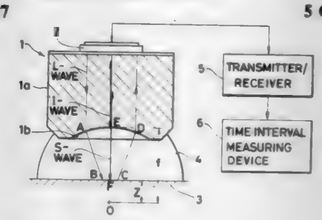
indicator means for warning the crew of said helicopter of a cumulative count and/or stress level approaching a predetermined acoustic emission count associated with catastrophic failure of similar rotor blades such that the actual useful life of said rotor blade may be exhausted prior to actual rotor blade failure.

4,524,621

METHOD FOR MEASUREMENT OF VELOCITY OF SURFACE ACOUSTIC WAVE

Kazushi Yamanaka, Ibaraki, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Sep. 6, 1983, Ser. No. 529,768
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—597 **5 Claims**



1. A method for the measurement of the velocity of the surface acoustic wave of a test piece, which comprises disposing an acoustic lens to have its focal point located within said test piece, projecting an acoustic wave in the form of pulses onto said test piece through said acoustic lens, measuring the interval separating the time at which a first component of the projected acoustic wave is returned in consequence of specular reflection on the surface of said test piece and the time at which a second component of the projected acoustic wave is returned after having been propagated in the form of a leaky surface acoustic wave along the surface of said test piece, measuring the interval separating said time of said first component and the time at which a third component of the projected acoustic wave is returned in consequence of internal reflection on the boundary of said acoustic lens, and calculating the velocity of the surface acoustic wave of said test piece based on the two time intervals obtained.

4,524,622

METHOD AND APPARATUS OF ULTRASONIC FLAW DETECTION

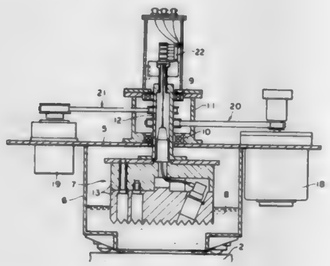
Norio Suzuki; Hiroshi Kajikawa, both of Kobe, and Tadashi Nishikawa, Osaka, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 18, 1983, Ser. No. 514,864

Claims priority, application Japan, Jul. 20, 1982, 57-127184; Jul. 20, 1982, 57-127183; Jul. 20, 1982, 57-127185; Jul. 20, 1982, 57-127186

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—620 **8 Claims**



6. A method of ultrasonic flaw detection suitable for detecting internal defects of a material, said method comprising the steps of:

providing a probe on a rotary body to transmit and receive ultrasonic pulses in a direction intersecting the axis of rotation of said rotary body in an inspecting zone of a material which is positioned opposite to said probe wherein a flaw, if one exists, in said material reflects said transmitted pulses from said probe to provide said received pulses back to said probe;

turning said rotary body to revolve said probe through 360° about said axis of rotation while transmitting and receiving said ultrasonic pulses;

indicating on a display medium the peak values of echoes received at a detection gate as a detected flaw pattern in relation with the direction of incidence of said ultrasonic pulses; and

judging the direction, inclination and size of a defect from said detected flaw pattern.

4,524,623

TRANSDUCER DRIVE ASSEMBLY

Richard A. Terwilliger, Los Gatos, Calif., assignor to Diasonics, Inc., Milpitas, Calif.

Filed Feb. 27, 1984, Ser. No. 583,990

Int. Cl.³ G01N *29/00*

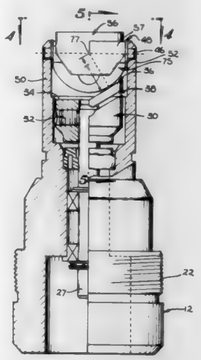
U.S. Cl. 73—633 **12 Claims**

1. An improved drive assembly for oscillating an article, comprising:

a frame;

a cradle for carrying said article pivotally fastened to said frame at pivot points, said cradle including a lower base section formed generally in the shape of a segment of a cylinder;

a rotor including a body and an upwardly extending contact plate, said contact plate extending upward from said body at a predetermined angle, such that at least some portion of said contact plate is maintained in physical contact with at least some portion of said lower base section at all times;



drive means coupled to said rotor for rotating said rotor about its longitudinal axis, the rotation of said rotor forcing said cradle to oscillate about said pivot points;

whereby said article is oscillated about said pivot points.

4,524,624

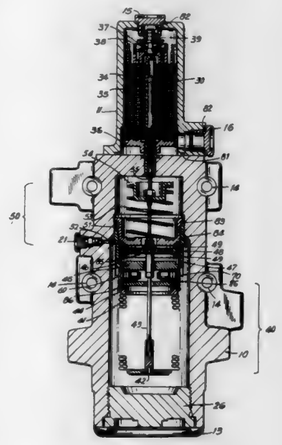
PRESSURE AND DIFFERENTIAL PRESSURE DETECTORS AND TRANSMITTER FOR USE IN HOSTILE ENVIRONMENT

Emanuel J. Di Noia, Greenwich, and Theodore R. Breunich, Stamford, both of Conn., assignors to Peerless Nuclear Corporation, Stamford, Conn.

Filed Oct. 25, 1982, Ser. No. 436,274

Int. Cl.³ G01L *9/10, 19/04*

U.S. Cl. 73—708 **11 Claims**



1. A pressure detector for sensing the pressure of a fluid system, and suitable for use in a hostile environment in which the environmental temperature and pressure can vary up to 500° F. and 500 psig, comprising a housing formed of material suitable for withstanding conditions of said hostile environment; pressure transducer means disposed within said housing for converting said pressure into a corresponding longitudinal displacement; at least one port in said housing permitting fluid communication with said pressure transducer means; a differential transformer disposed within said housing and having a primary winding, an A secondary winding, a B secondary winding, and a movable core arranted to move with the mechanical displacement of said pressure transducer means; signal supply means disposed remote from said housing to supply an AC signal to the primary winding of said differential transformer; and a signal detecting and conditioning circuit disposed remote from said housing and including demodulating means coupled to said A and B secondary windings to produce an X demodulated signal and a Y demodulated signal respectively therefrom, adding means producing a sum signal from said X and Y demodulated signals as a temperature signal, subtracting means producing a difference signal from said X and Y demodulated signals as a pressure signal, and multiplying means producing a temperature-compensated differential pressure signal based on said temperature signal and said pressure signal.

4,524,625

PRESSURE SENSOR

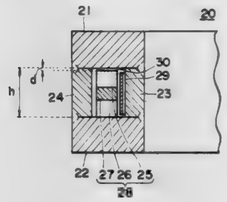
Kiyoshi Takeuchi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jan. 24, 1984, Ser. No. 574,693

Claims priority, application Japan, Jan. 31, 1983, 58-14380

Int. Cl.³ F16B *31/02*

U.S. Cl. 73—754 **11 Claims**



6. A pressure sensor comprising:

(a) concentrically spaced inner and outer rings having equal axial dimensions;

(b) axially spaced first and second discs extending coaxially with respect to the rings and each having a central bore, the discs sandwiching the rings and defining an annular inside space in conjunction with the rings;

(c) a first annular piezoelectric element coaxially disposed within the inside space and having first and second opposite faces, the first face of the first piezoelectric element contacting a face of the first disc defining the inside space;

(d) an annular electrode coaxially disposed within the inside space and having first and second opposite faces, the first face of the electrode contacting the second face of the first piezoelectric element; and

(e) a second annular piezoelectric element coaxially disposed within the inside space and having first and second opposite faces, the first face of the second piezoelectric element contacting the second face of the electrode, the second face of the second piezoelectric element being separated from a face of the second disc defining the inside space by a predetermined clearance so that the second face of the second piezoelectric element comes into contact with the face of the second disc only when the external force exerted between the discs exceeds a predetermined level.

4,524,626

SOIL EFFECTIVE STRESS SENSOR AND METHOD OF USING SAME

Mark W. Pabst, and Richard L. Handy, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Oct. 11, 1983, Ser. No. 540,652

Int. Cl.³ G01B *7/16*

U.S. Cl. 73—784 **18 Claims**



1. A device for determining the effective stress of saturated soil, comprising:

a flat frame having front and back surface, and

a sensor means mounted on said frame for directly measuring the effective stress of the soil when said frame is placed in the ground, said sensor means including a single flexible diaphragm having an outer surface flush with one of the surfaces of said frame, a strain gauge bonded to the inner surface of said diaphragm, a filter spaced apart from said diaphragm, and a bore in said frame providing communication between said diaphragm and said filter.

4,524,627

ELECTROMAGNETIC FLOW METER

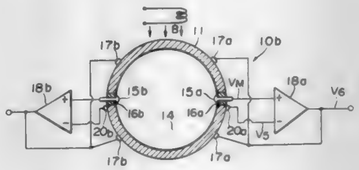
Hiro Yamasaki, Tokyo; Tung Jin Chin, Yokohama, and Chuji Akiyama, Kawasaki, all of Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Jun. 30, 1983, Ser. No. 509,799

Claims priority, application Japan, Jul. 3, 1982, 57-115870

Int. Cl.³ G01F *1/60*

U.S. Cl. 73—861.12 **9 Claims**



1. An electromagnetic flow meter comprising:

(a) a conductive conduit through which a fluid flows;

(b) means for applying a magnetic field to said conduit to induce an electromotive force in said fluid;

(c) signal detecting means for detecting the electromotive force induced in said fluid to produce a first detecting signal;

(d) means disposed in the vicinity of said signal detecting means for detecting a voltage of said conduit to produce a second detecting signal;

(e) electrical energy applying means responsive to said first

and second detecting signals for applying a selected amount of voltage to said conduit so that the voltage of said first detecting signal and the said detected voltage of said conduit become equal to each other, whereby a profile of the voltage of said conduit is substantially similar to a profile of said electromotive force at least at a position of said signal detecting means.

4,524,628

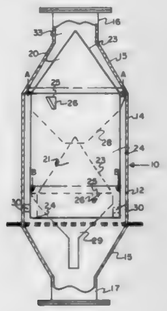
IN LINE DRY MATERIAL SAMPLER

Lynn A. Knudtson, Omaha, Nebr., and Glenn R. Sprenger, Lakeland, Fla., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 291,680, Aug. 10, 1981, abandoned, which is a continuation-in-part of Ser. No. 119,267, Feb. 7, 1980, abandoned. This application Oct. 29, 1984, Ser. No. 665,814

Int. Cl.[3] G01N *1/20*

U.S. Cl. 73—863.43 **7 Claims**



1. A sampling device for obtaining a representative sample of freely flowing material comprised of a series of concentrically nested stages in a housing; each stage of the concentrically nested stages being comprised of a cylinder with a cone attached at one end to form the top of the stage, the cylinder having a plurality of openings, and a plurality of angled chutes positioned to direct material passing over the cone into the openings, the chutes being arranged around the circumference of the cylinder, each stage except one having a stemless funnel containing an outlet for conveying the material entering the stage to the conical surface of the next stage, which projects into the outlet of the stemless funnel, the excepted stage having means for conveying the sample out of the sampling zone.

4,524,629

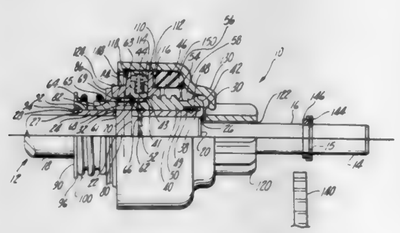
COMPACT ENGINE STARTER DRIVE

James J. Digby, Elmira, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Aug. 18, 1982, Ser. No. 409,196

Int. Cl.[3] F02N *15/06*

U.S. Cl. 74—7 R **12 Claims**



1. An engine starter device for starting an internal combustion engine, said internal combustion engine having starter means and a ring gear, said starter means including a power shaft, said device comprising:

a pinion gear slidably mounted on said power shaft for axial movement relative to said power shaft, said pinion gear further moving into and out of engagement with said ring gear of said internal combustion engine;

an outer sleeve member mounted on said power shaft, said outer sleeve member having external helical splines;

means interposed said outer sleeve member and said power shaft, for transmitting torque between said power shaft and said outer sleeve member in one direction of relative rotation;

an intermediate sleeve member non-rotatably mounted on said power shaft, said intermediate sleeve member having a first portion for slidably and rotatably mounting said outer sleeve member and a second portion for slidably mounting said means for transmitting torque;

a control nut member threadably mounted on said external helical splines of said outer sleeve member;

an enclosing cup member interposed said control nut member and said pinion gear, said enclosing cup member having a closed end connected to said pinion gear for rotation therewith, and an open end opposite said closed end and defining a cavity between said open end and said closed end; and

means for translating torque from said control nut member to said pinion gear, said means for translating torque being disposed in said cavity of said enclosing cup member between said control nut member and said pinion gear.

4,524,630

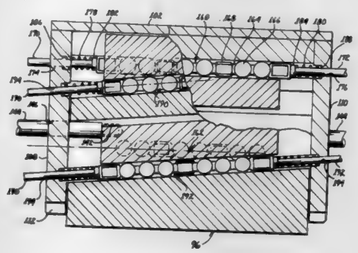
MECHANICAL FORCE AMPLIFIER

Leo A. Toth, 17030 Joshua Tree Ct., Sun City, Ariz. 85373, and David M. Toth, 1955 Hulmelville Rd., Cornwells Heights, Pa. 19020

Filed Sep. 29, 1983, Ser. No. 536,859

Int. Cl.[3] F16H *25/18*

U.S. Cl. 74—110 **48 Claims**



1. A mechanical force amplifying device, said device comprising in combination:

(a) a housing, said housing including a base, at least one sidewall and a bearing surface formed in said housing;

(b) a slide block disposed within said housing and moveable in response to an input force, said slide block including a first bearing surface and a second bearing surface, said second bearing surface being inclined with respect to said first bearing surface;

(c) a longitudinally moveable ram laterally retained by at least said one sidewall for providing an output force, said ram including a bearing surface parallel with said second slide block bearing surface and a surface for imparting the output force;

(d) first roller bearing means disposed intermediate said housing bearing surface and said first slide block bearing surface and second roller bearing means disposed intermediate said second slide block bearing surface and said ram bearing surface; and

(e) first means for biasing said first roller bearing means to the center of said housing bearing surface and second means for biasing said second roller bearing means to the center of said ram bearing surface;

whereby, the output force is an amplification of the input force in a ratio inversely proportional to the sine of the angle between said first slide block bearing surface and said second slide block bearing surface.

4,524,631

VALVE FOR POWER-STEERING SYSTEMS

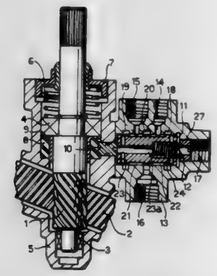
Ettore Cordiano, Turin, Italy, assignor to Corint S.r.L., Turin, Italy

Filed Nov. 2, 1982, Ser. No. 438,423

Claims priority, application Italy, Nov. 9, 1981, 68449 A/81

Int. Cl.[3] F16H *35/00;* **F16K** *31/44;* **B62D** *5/06;* **F15B** *9/10*

U.S. Cl. 74—388 PS **3 Claims**



1. A valve for controlling a power assisted rack and pinion steering system comprising housing means, helical pinion means having a longitudinal axis mounted for limited axial movement along said axis in said housing means, prestressed rubber means operatively coupled to said helical pinion means for compression and expansion in the axial direction upon axial movement of said helical pinion means, control valve means having a slide member disposed therein for controlling the flow of fluid to said power assisted steering means and sensor means operatively coupled to said slide member and disposed in engagement with said rubber means for movement along an axis substantially perpendicular to the axis of said helical pinion means whereby every axial movement of said helical pinion means will result in a specific movement of said sensor means given by the movement of the pinion multiplied by the ratio between the area of the rubber means exposed to the axial thrust exerted by said helical pinion means and the area of said sensor means in contact with said rubber means and projected along its axis of motion.

4,524,632

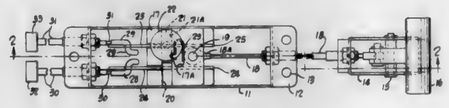
SELECTING MECHANISM

Louis F. Ballard, Medina, Ohio, assignor to MTD Products Inc., Cleveland, Ohio

Filed Mar. 29, 1984, Ser. No. 594,844

Int. Cl.[3] G05G *9/00*

U.S. Cl. 74—471 R **10 Claims**



9. Selecting mechanism for selectively connecting actuating means to one of a plurality of devices to be actuated as desired, comprising the combination of a block member adapted to be moved along a first path by the actuating means, a bar member movable relative to said block member in a second path athwart said first path, to a plurality of alternate positions, and a plurality of engaging members each connected to one of said devices, and means for manually moving said bar member in said second path between said alternate positions to selectively operatively engage the block member and one of said devices.

4,524,633

SUPPORTING STRUCTURE FOR A FLOOR-MOUNTED TYPE SPEED CHANGE LEVER

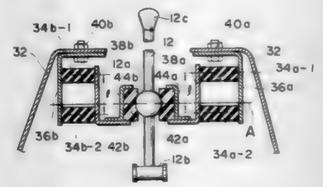
Masanori Murata, and Isao Hayashi, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 11, 1982, Ser. No. 377,191

Claims priority, application Japan, May 13, 1981, 56-71993

Int. Cl.[3] G05G *9/16, 7/16*

U.S. Cl. 74—473 R **4 Claims**



1. A supporting structure for a floor-mounted type speed change lever of a motor vehicle, comprising two identically constructed supporting units which are mounted to the vehicle floor and oriented abreast facing toward the front of said vehicle, the two supporting units being arranged to receive therebetween an enlarged spherical portion formed on said lever so that said lever is pivotal at said spherical portion relative to said supporting units, wherein each of said units comprises at least two parallel elastic blocks which are spaced from each other in a direction in which said lever extends.

4,524,634

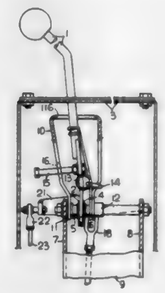
TRANSMISSION SHIFTING MECHANISM

Robert C. Haupt, West Allis, Wis., assignor to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Feb. 9, 1983, Ser. No. 465,157

Int. Cl.[3] G05G *9/16*

U.S. Cl. 74—473 R **3 Claims**



1. A shift mechanism for shifting a vehicle transmission comprising a control console, a shift selector lever mounted on said control console for pivotal movement on a transverse axis and a fore and aft axis, an inverted U-shaped shifting segment having a horizontal portion and a pair of downwardly extending legs with their lower ends pivotally mounted on said console on said transverse axis, means defining a transversely

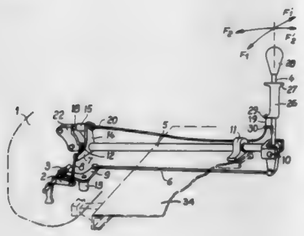
extending slot in said horizontal portion through which said lever extends, said slot permitting relative movement between said selector lever and said shift selector lever about said fore and aft axis and preventing relative movement between said selector lever and said shifting segment about said transverse axis, means defining a vertically elongated slot in one of said legs of said shifting segment, a stabilizer finger rigidly secured to said selector lever and extending horizontally therefrom and through said vertically elongated slot, said slot and said stabilizer finger cooperating to prevent rotation of said lever about a vertical axis, a transmission including a plurality of shifting devices, a shift selector for selectively and alternatively engaging one of said shifting devices, a shift selector mechanism connected between said shift selector lever and said shift selector selectively engaging said shifting devices responsive to pivotal movement of said shift selector lever about said fore and aft axis, and a shifting mechanism connected between said shifting segment and said shift selector for selectively shifting said transmission responsive to pivotal movement of said shift selector lever and said shifting segment about said transverse axis.

4,524,635

MANUAL CONTROL DEVICE FOR CHANGING SPEEDS INCLUDING A LOCKING OF THE REVERSE SPEED

René Hulin, Rueil-Malmaison, and Daniel Schuler, St. Remy les Chevreuse, both of France, assignors to Automobiles Peugeot-/Automobiles Citroen, France

Filed Jan. 14, 1983, Ser. No. 458,146
Claims priority, application France, Jan. 20, 1982, 82 00809
Int. Cl.³ F16N *57/06*
U.S. Cl. 74—476 **7 Claims**



7. A manual control device in combination with a gear box having two movable elements and a body of an automobile vehicle, said device comprising a gear shift lever located relatively remote from the gear box and carried by a bearing mounted on the body of the vehicle, at least one articulated rod and a bell crank lever connecting the gear shift lever to said two movable elements, so that, by a given pivoting of the gear shift lever successively in two directions substantially perpendicular to each other, each speed ratio of the gear box is selected and then engaged, the device further comprising first abutment means and second abutment means which cooperate upon a pivoting of the gear shift lever toward a reverse speed position, and means for disengaging said two abutment means and comprising a lever pivotally mounted on the gear box and connected to the gear shift lever through said rod, the first abutment means being mounted on the gear box and the second abutment means being disposed on the lever which is pivotally mounted on the gear box,

wherein one of the abutment means is a retractable locking finger member and means comprising a transmission cable connect the finger member to the gear shift lever; a

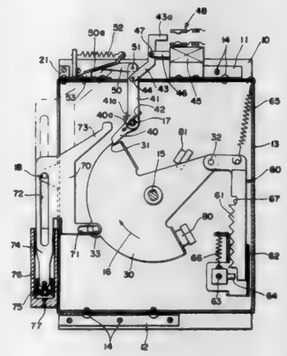
further including a guide connected to the selecting lever and in which guide the locking finger member is slidable in a direction parallel to the pivot axis of the rod and is biased by a spring towards a position in which the locking finger member is capable of cooperating with the first abutment means which are in the form of an abutment connected to the gear box, and a sleeve axially slidable on the gear shift lever, the transmission cable having an end portion which is connected to the locking finger member and a sheath for the cable bearing against the guide, the cable having an opposite end portion connected to the sleeve which is axially slidable on the gear shift lever, and the gear shift lever carrying a lug against which the sheath of the cable bears.

4,524,636

SLOT MACHINE HANDLE LOCKING DEVICE

Ikuo Nishikawa, Tochigi, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

Filed Jul. 19, 1983, Ser. No. 515,353
Claims priority, application Japan, Jul. 26, 1982, 57-112185[U]
Int. Cl.³ G05G *5/06*
U.S. Cl. 74—527 **10 Claims**



1. In a slot machine handle locking device for locking a slot machine handle for determining the instant of start of rotation of a plurality of reels and also functioning to release the lock of the handle and permit operation thereof so as to cause rotation of the reels when a coin is inserted, an improvement comprising:

a locking member rotatable in unison with said handle and having an engagement section;

a locking pawl movable between an initial locked position in engagement with said engagement section and a position out of engagement therewith;

an interlock lever movable between a first and second position, said locking pawl being held in said locked position when said interlock lever is in said first position;

a spring for biasing said locking pawl toward said out-of-engagement position so that said locking pawl can move following said interlock lever;

an electromagnet for moving said interlock lever to said second position;

locking means for locking said interlock lever in said second position against restoration to said first position when said interlock lever is brought to said second position; and

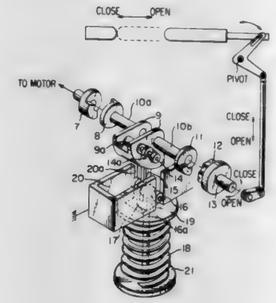
releasing means for releasing said locking means from a locked state when said locking pawl is returned to said initial locked position in engagement with said locking pawl.

4,524,637

SPRING-OPERATED MECHANISM

Toshiaki Yoshizumi, Minoo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 400,715
Int. Cl.³ F16H *53/06, 25/18*
U.S. Cl. 74—569 **4 Claims**



1. A spring-operated mechanism comprising:

a cam means secured to a crankshaft and adapted to be moved thereby,

cam grooves formed in said cam means having such a shape that the distance from a center of said crankshaft is smallest at a middle portion of said cam grooves and progressively increases towards extremities of said cam grooves,

a connecting rod provided with a guide roller at one end rolling within said cam grooves,

a spring rod provided at the other end of the connecting rod,

a bottom spring support connected to the spring rod at an end opposite from the connecting rod,

a stationary member provided with groove means at the other end of the connecting rod for guiding rectilinear movement of said connecting rod, and

a spring support means disposed between said stationary member and said bottom spring support,

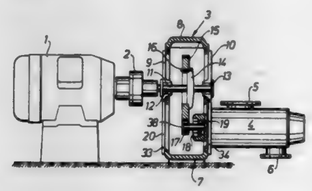
whereby said spring means is adapted to accumulate energy when said crankshaft is rotated through a predetermined angle by a driving source, and, upon further revolution of said crankshaft, said spring means releases said energy to urge said crankshaft to rotate quickly.

4,524,638

GEAR BOX FOR A COMPRESSOR PLANT

Michel A. J. Van Hee, Kontich, Belgium, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Jun. 1, 1983, Ser. No. 499,852
Claims priority, application Sweden, Jun. 7, 1982, 8203504
Int. Cl.³ F16N *57/02*
U.S. Cl. 74—606 R **2 Claims**



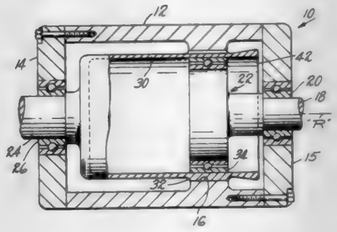
1. A gear box for a compressor plant comprising a pair of facially opposed sides (36, 37) defining a gear housing therebetween and providing journal means for a motor driven shaft (11) for rotating a driving gear wheel (15) in said gear housing, first mounting means (34) in one of said facially opposed sides, having an opening for accommodating a first compressor stage of predetermined size, said compressor stage having a shaft (38) rotatably supported in bearings means (18) in one of said facially opposed sides and carrying a driven gear wheel (17) meshing with said driving gear wheel (15) within said housing, said gear box being characterized by second mounting means (33) on the side opposite to said first mounting means and having an opening for alternatively accommodating a second compressor stage differing in size from said first compressor stage, each of said openings being of a size sufficient to facilitate access to said bearing means (18) and said driven gear wheel from the opposite one of said facially opposed sides, and a cover plate (20) covering said openings when not accommodating said compressor stages.

4,524,639

EXTENDED FLEXSPLINE ARRANGEMENT

John H. Carlson, Danvers, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Jun. 23, 1983, Ser. No. 507,014
Int. Cl.³ F16H *33/00*
U.S. Cl. 74—640 **5 Claims**



1. A strain wave gearing assembly for transmitting motion, comprising:

a housing;

a circular spline arranged within said housing, said circular spline having an annular array of gear teeth therearound;

a flexspline rotatably journaled within said housing, said flexspline being of cylindrical configuration and open at last at one end thereof, and having an array of gear teeth therearound, engageable with said gear teeth of said circular spline;

a wave generating means arranged with said rotatably flexspline so as to provide an advancement deflection wave in the annular array of gear teeth therearound; and

a shape control means comprising an enlarged distal periphery on the open end of said rotatable flexspline longitudinally outwardly of said annular gear teeth so as to minimize the distortion of the wave shape, thereby minimizing the operating deflection stress within said rotatable flexspline as said deflection wave progresses therearound.

4,524,640

INTEGRAL HOLDOUT RING AND SPRING RETAINER FOR DIFFERENTIALS

Lawrence T. Neumann, Troy, and Walter L. Dissett, Southfield, both of Mich., assignors to Tractech, Inc., Warren, Mich.

Filed Nov. 10, 1981, Ser. No. 319,961
Int. Cl.³ F16H *35/04*
U.S. Cl. 74—650 **1 Claim**

1. In a differential mechanism in cluding a pair of colinearly aligned output shafts (4,6) having spaced adjacent ends; an annular spider driving member (16) arranged in concentrically spaced relation about said output shaft adjacent ends; clutch means normally effecting a driving connection between said driving member and said output shafts, respectively, said clutch means including a pair of annular side gears (22, 24) non-rotatably mounted on the adjacent ends of said output shafts, respectively, a pair of annular driven clutch members

(18, 20) mounted on said side gears for axial displacement on opposite sides of said driving member, respectively, said clutch member having inner circumferential surfaces, and spring means (40, 42) biasing said driven clutch members axially inwardly toward clutch-engaging positions relative to said driving member, respectively; means including an annular center cam member (28) concentrically mounted within, and rotatably connected with, said driving member, said center cam member being operable when one of said output shafts overruns the other for disengaging from said driving member the driven clutch member associated with said overrunning shaft; and holdout ring means (34, 36) for maintaining said associated driven clutch member in the disengaged condition as long as said one output shaft overruns the other shaft;

the improvement wherein

(A) said holdout ring means comprises a pair of generally annular axially-split resilient holdout rings (34, 36) arranged on opposite sides of said center cam member and extending at their remote ends concentrically between said driven clutch members and said side gears, respectively, said holdout rings being resiliently biased radially outwardly into frictional engagement with said inner circumferential surfaces of said driven clutch members, respectively, each of said holdout rings including

(1) a tubular portion (34*d*, 36*d*) having first and second ends arranged in concentrically spaced relation within said central cam member and the associated clutch member, respectively;

(2) an annular radial body portion (34*b*, 36*b*) that extends radially outwardly from said second end of said tubular portion adjacent and in frictional engagement with the associated clutch member, said radial body portion terminating adjacent its outer periphery in a flange portion (34*a*, 36*a*) that extends within a corresponding groove contained in said inner circumferential surface of the associated clutch member, whereby said holdout rings are connected for frictionally resisted angular displacement relative to, but are retained against axial displacement with respect to, the associated driven clutch member, respectively;

(3) a plurality of circumferentially spaced integral holdout lugs (34*c*, 36*c*) extending axially from said radial body portion adjacent said center cam member, said holdout lugs extending axially with corresponding slots contained in the ends of said center cam member, respectively, said slots having in longitudinal cross-section a configuration defining holdout shoulders, said lugs being so dimensioned and having such a configuration that when one of the shafts is in an overruning condition, the associated holdout ring is slightly axially and angularly displaced relative to the central cam member from an inoperable central position relative to the associated slot to an operable holdout position on one of said shoulders in which the associated driven clutch member is maintained disengaged from said spider driving member; and

(4) a radially inwardly directed annular spring retainer flange (34*e*, 36*e*) carried by said first end of said tubular portion adjacent said center cam member;

(B) said spring means comprising a pair of compression springs (40, 42) mounted concentrically intermediate said holdout rings and said side gears, respectively, each of said spring means reacting at opposite ends with the associated side gear and with the spring retainer flange on the associated holdout ring, respectively, thereby to bias said driven clutch members axially inwardly toward engagement with said spider means.

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CONTINUOUSLY-VARIABLE RATIO-TRANSMISSION

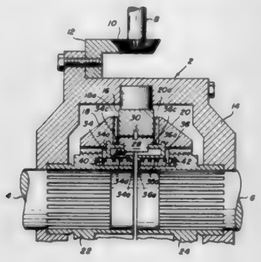
Christopher J. Greenwood, Preston, England, assignor to Leyland Vehicles Limited, Great Britain

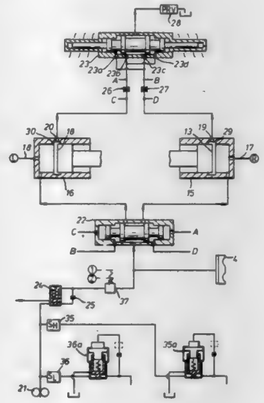
Filed Oct. 22, 1982, Ser. No. 436,052

Claims priority, application United Kingdom, Oct. 24, 1981, 8132125

Int. Cl.³ F16H *15/08, 15/00, 37/06*

U.S. Cl. 74—691 **16 Claims**





1. A continuously-variable ratio transmission of the rolling traction type having at least one pair of toroidally-recessed discs with rollers interposed on mountings therebetween, and having a hydraulic control circuit, said transmission comprising a pair of hydraulic rams for exerting forces on one of said roller mountings in two opposite directions to displace said rollers and to balance any roller reaction force; each of said hydraulic rams having a cylinder defining a working chamber and a head, said hydraulic control circuit including a hydraulic line passing through the working chamber of each of said hydraulic rams, there being two of said hydraulic lines, one hydraulic line for each of said hydraulic rams, means for varying pressure in each of said two hydraulic lines for producing said forces exerted on said one roller mounting; and each of said hydraulic rams having a hydraulic end stop arrangement operating when said one roller mounting approaches an end position to restrict the corresponding one of said hydraulic lines only, thereby to increase substantially the pressure within said one corresponding hydraulic line causing said forces strongly to resist further roller displacement towards said end position.

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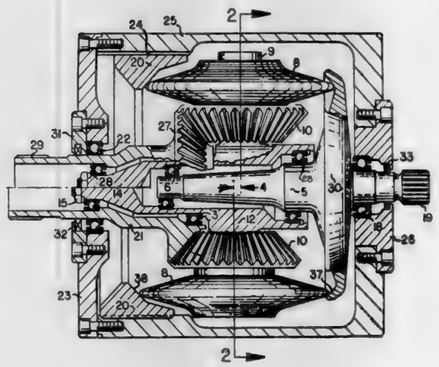
HIGH TORQUE INFINITELY VARIABLE EPICYCLIC TRANSMISSION

Joseph E. Fritsch, 14001 Sherwood, Oak Park, Mich. 48237

Filed Jan. 17, 1983, Ser. No. 446,589

Int. Cl.³ F16H *15/50*

U.S. Cl. 74—796 **29 Claims**



14. A high torque infinitely variable epicyclic transmission comprising:

a housing;

input and output shafts having end portions extending into said housing and rotating about a first axis of rotation;

a rotor rotatable with said input shaft about said first axis of rotation;

a traction ring coaxial with said first axis of rotation in spaced relation with said rotor;

said traction ring axially shiftable within said housing having means preventing rotary motion;

said rotor and said traction ring having inwardly facing traction surfaces;

outer diameter of said rotor traction surface being inclined inwardly and forming a generally dished cross sectional shape;

outer diameter of said traction ring traction surface being inclined inwardly and forming a generally dished cross sectional shape;

said dished cross sectional shape of said rotor means and said traction ring means effecting a continuously increasing amount of torque to be transmitted from said input shaft to said output shaft as the input/output ratio between the said shafts increases

a spider rotatable about said first axis of rotation having a plurality of spindles radiating outwardly;

a plurality of cylinders rotatably supported by said plurality of spindles;

a plurality of discs rotatably and slidably carried by said plurality of cylinders, each said disc in driving relationship with each of the said cylinders through a torque dependent traction loading means;

each said disc having a traction surface portion engaged in driven relationship with said inwardly facing traction surfaces of said rotor and said traction ring;

a plurality of gears in driven relationship with said plurality of cylinders;

gearing rotatable with said output shaft and in driven relationship with said plurality of gears.

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EPICYCLIC GEAR

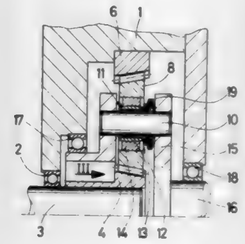
Rolf Ziegler, Nusslock, and Peter Hauk, Bonndorf, both of Fed. Rep. of Germany, assignors to Mavilor Systemes S.A., Switzerland

Filed Jan. 4, 1983, Ser. No. 455,498

Claims priority, application Switzerland, Jan. 18, 1982, 271/82

Int. Cl.³ F16H *1/28, 55/18*

U.S. Cl. 74—801 **4 Claims**



1. An epicyclic gear comprising a sun pinion axially fixed to a first shaft rotatably mounted through bearings in a gear housing, a hollow wheel having internal teeth concentric with said sun pinion and being fixed to the gear housing, and at least two planet wheels meshing with said sun pinion and said hollow wheel, and interconnected by a planet carrier rotatably fixed to a second shaft coaxial with said first shaft, wherein spur teeth are located on all of the wheels and are provided with a profile correction changing continuously along a width portion of each tooth and in each couple of meshing wheels this correction changes in opposite directions along the tooth width, the planet wheels being on the one hand movable separately and independently of one another in an axial direction and biased in said axial direction by a spring means exerting a resilient axial force and disposed between said wheels and the planet carrier, and on the other hand allowed to move radially on a planet-wheel stub shaft associated with each planet wheel, which connects the planet wheel to the planet carrier, by being oscillatably mounted on pendulum bearings, which allow radial movement, yet maintain the axis immovably fixed to the planet carrier and parallel to the other axes, all the wheels comprising crowned teeth, the sun pinion and the planet carrier being axially fixed to their shafts, the planet carrier being non-tiltable.

4,524,644

COUNTERWEIGHT FOR ORBITAL DRIVE MECHANISM

Michel A. Pierrat, 48 Farrwod Dr., Andover, Mass. 01810

Filed Apr. 19, 1983, Ser. No. 486,329

Int. Cl.³ F16H *1/28*

U.S. Cl. 74—804 **6 Claims**

1. In a speed reducing mechanism comprising

an orbital rotor assembly having a perimeter defined by an epitrochoid curve,

a set of rollers positioned in a circle and arranged respectively to operatively engage said perimeter of said rotor assembly,

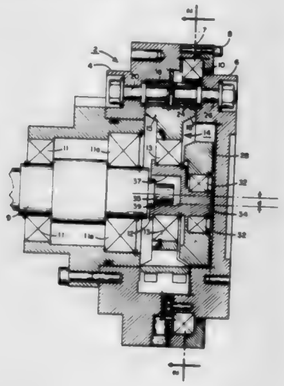
a drive shaft, and

a first eccentric means connected to said drive shaft and arranged to drive said rotor assembly in an orbital path,

a counter balance mechanism including

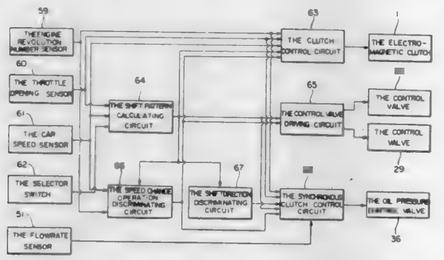
a second eccentric means including a countershaft con-

nected to said drive shaft and offset 180 degrees from said first eccentric means, and



a counterweight rotatably mounted on said countershaft and having its mass symmetrically distributed about the axis of said countershaft.

4,524,645
SPEED CHANGE CONTROL UNIT OF AUTOMATIC TRANSMISSION FOR AUTOMOBILES UTILIZING FLUID FLOW RATE
Takumi Tatsumi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 4, 1983, Ser. No. 455,530
Claims priority, application Japan, Jan. 14, 1982, 57-5615
Int. Cl.³ B60K *41/06*
U.S. Cl. 74—866 **3 Claims**



1. An automatic transmission apparatus for an automobile, comprising:

a. means, including a plurality of hydraulic servo devices, for changing the gear ratios of the automobile, operable with pressurized working oil; said changing means including a hydraulic line for carrying the working oil to said hydraulic servo devices, and means for maintaining the working oil in the hydraulic line at a fixed oil pressure; the speed of the gear changes being a function of the pressure applied to the working oil by the servo devices, and the viscosity of the working oil; and

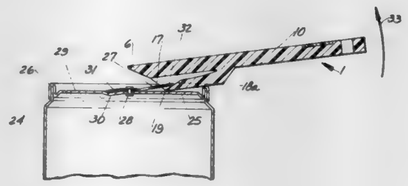
b. means for electrically controlling the speed of gear changes by said hydraulic servo devices as a function of the driving state of the automobile, so as to moderate gear shift shocks, said speed controlling means including:

(1) means for measuring the flow rate of the working oil at the constant oil pressure; said flow rate measuring means including a fixed orifice communicating with said hydraulic line, and means for measuring the flow rate of the working oil through said fixed orifice as an indication of the viscosity of the working oil;

(2) means for measuring the driving state of the automobile; and

(3) means, responsive to the measurement of the driving state by said driving state measuring means and to the measurements of flow rate by said flow rate measuring means, for electrically controlling the application of pressure to the working oil by one of said hydraulic servo devices during changes of the gears; said pressure controlling means including means for compensating for changes in the viscosity of the working oil as indicated by the flow rate measured by said flow rate measuring means, such that the dependence of the speed of the gear changes on the viscosity of working oil is reduced.

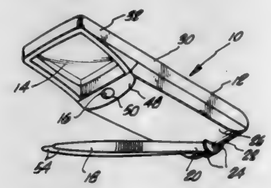
4,524,646
TAB CAN OPENING TOOL
Fred Kimberlin, Jr., 341 Gallaher Rd., Lebanon, Ohio 45036
Filed Jun. 2, 1983, Ser. No. 463,598
Int. Cl.³ B67B *7/40*
U.S. Cl. 81—3.55 **19 Claims**



1. A hand-held tool for opening beverage cans and the like of the type having an end including a circumferentially extending upstanding rim and a weakened score line defining a generally U-shaped portion configured to be broken from the can end and forced by downward pressure into the interior of the can and a tab hingedly attached to the central portion of the can end including a nose portion overlying a portion of the U-shaped portion such that when the terminal end of the tab is lifted away from the can end, the nose is forced downwardly to bend the U-shaped portion into the interior of the can, said tool comprising a thin narrow elongated body terminating at one end in a graspable handle portion and at the opposite end in an opening dimensioned to be slipped over the can end tab and retain the tab when the tool is pivoted upwardly away from the can end, the lower margin of said opening forming a transversely extending sharp thin edge configured to easily slip between the tab and upper surface of the can end to initially lift the tab away from the can end, and a nose portion extending forwardly from and overlying said opening, said tool nose portion being configured to and extending forward a distance so as to press downwardly on the U-shaped portion of the can end when the tool is slipped over the can tab and pivoted upwardly to force the U-shaped portion into the interior of the can, said tool nose portion and said edge being positioned with respect to each other such that said tool nose portion remains out of contact with said can end when said edge is intially inserted between the tab and can end surface in order to insure that the edge can be initially slipped beneath the tab regardless of the spacing between the outermost end of the tab and the can rim, the underside of said tool nose portion including a nose surface sloping downwardly and rearwardly; a fulcrum portion depending downwardly from said body commencing at the rearmost edge of said surface, the lower surface of said fulcrum portion being configured to abut the upper surface of the can end, the forward end of said fulcrum portion including said opening, the floor of said opening including a first surface sloping upwardly and rearwardly away from the forward edge

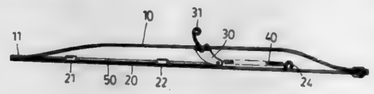
of said lower surface and a surface spaced from said lower surface continuing rearwardly from the rear edge of said first surface, the intersection of said first and lower surfaces forming said edge, said nose surface being configured to insure access to and guide the tab into said opening irrespective of the spacing between the outermost edge of the tab and the can end rim, said second surface continuing upwardly and rearwardly at a lesser slope from the rearmost edge of said first surface, the space between said first and second surfaces and a roof surface forming an opening of decreasing height such that a portion at least of the spacing between said nose and second surfaces is less than the thickness of the tab, said edge operating to initially lift the tab away from the can end when the tab is inserted into said opening, said first surface operating to further lift the tab and guide it into the space between said second and nose surfaces, the tab becoming wedged between said second and nose surfaces to prevent the tab from becoming disengaged from the tool as the tool is rotated upwardly to lift the tab.

4,524,647
TWEEZER ASSEMBLY
Manning Holoff, deceased, late of Los Angeles, Calif., and by Geraldine Holoff, executrix, 2340 Donella Cir., Los Angeles, Calif. 90077
Filed Oct. 1, 1982, Ser. No. 432,190
Int. Cl.³ B25B *9/02*
U.S. Cl. 294;99.2 **2 Claims**



1. A tweezer assembly comprising a body portion, a magnifying lens carried by said body portion adjacent one end thereof and defining a given focal range, a light source carried by said body portion and positioned such that the path of illumination eminating therefrom passes through said focal range, means for activating said light source, and a pair of tweezers, one end of said tweezers being pivotally mounted on said body portion such that the other extended gripping ends of said tweezers are moveable between a storage position adjacent said body portion and an operative position within the focal range of said lens and the path of illumination of said light source wherein the ends of said tweezers are concurrently magnified and illuminated to facilitate visibility thereof.

4,524,648
FIXATION TWEEZERS
Charng J. Chung, No. 199, Kuang-Ming St., Yuan-Lin Chen, Changhua, Taiwan
Filed Aug. 17, 1984, Ser. No. 641,827
Int. Cl.³ B25B *9/02*
U.S. Cl. 294—99.2 **3 Claims**



1. A fixation tweezers comprising:

a fixed handle having a first front end defining a first grasping jaw with straight working surface and a first rear end;

a movable handle including a second front end defining a second grasping jaw having working surface parallel with that of said first grasping jaw and a second rear end fixed with said first rear end;

a spring member having a first end and a second end secured on said fixed handle;

a controlling member disposed between said movable handle and said fixed handle, with one end thereof pivotably mounted to said movable handle and the other end connected with said first end of said spring member, being made with a configuration capable of being rotated pivotably against the biassing of said spring to achieve an open position, where said first and second grasping jaws being spaced apart and permitting a workpiece to be gripped therebetween, and when releasing, said controlling member returning to a closed position, where said first and second grasping jaws clamping against the workpiece.

4,524,649
ELECTRIC SOCKET WRENCH
Joe Diaz, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007
Filed Jan. 19, 1983, Ser. No. 459,365
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.13 **3 Claims**



1. An electric socket wrench which comprises:

(A) a housing having a tubular head and a tubular neck;

(B) power means provided in the housing;

(C) A power driven shaft extending from the power means through the tubular neck into the tubular head;

(D) Transmission means for rotating a plurality of driving shafts mounted within the tubular head on said power driven shaft, whereby said driving shafts extend from said housing at right angles to each other in combination with additional means mounted on said housing coacting with the first said means to lock the said shafts from rotation, wherein the transmission means comprises:

(A) A first bevel gear affixed to the power driven shaft within the head;

(B) A second bevel gear rotatably mounted on one side of said head that meshes with said first bevel gear;

(C) One of said driving shafts affixed to the second bevel gear and connected to a socket driving member, wherein said additional means comprises:

(A) A free rolling third bevel gear mounted on the power driven shaft spaced inwardly of said first bevel gear meshing with said second gear so that the third bevel gear will rotate in an opposite direction of the first bevel gear;

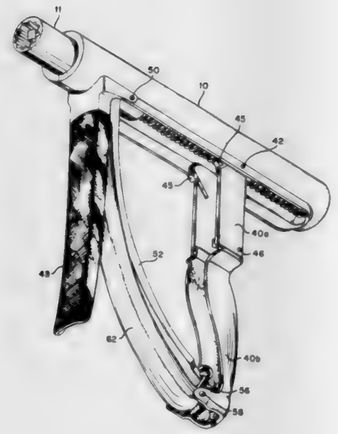
(B) A turn knob threadably mounted on said head having a fourth bevel gear connected to the turn knob that meshes and locks with both said first bevel gear and said free rolling third bevel gear.

4,524,650

SQUEEZE-RATCHET TOOL ASSEMBLY

Joel S. Marks, 10508 Wilkins Ave., Los Angeles, Calif. 90024

Filed May 18, 1983, Ser. No. 495,673
Int. Cl.[3] B25B *13/46*
U.S. Cl. 81—57.39 9 Claims



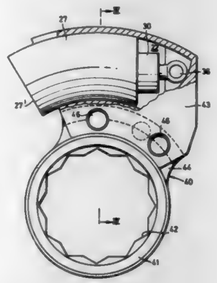
1. A two-part tool system comprising: a squeeze wrench section and a ratchet wrench section; said ratchet wrench section including: an elongated tubular housing having an open rear end, a drive head rotatably mounted on the forward end of the housing, a drive shaft for the drive head extending coaxially within the housing and having its rear end exposed through the open rear end of the housing; said squeeze wrench section including: an elongated housing, a grip handle attached to the housing and extending outwardly from the housing, a squeeze handle having one end pivotally attached to the housing and extending outwardly from the housing in essentially spaced and parallel relationship with the grip handle, a further drive shaft having at least one helical channel rotatably mounted in the housing and extending coaxially along the housing and having its forward end exposed through the end of the housing, a coupling mechanism intercoupling the squeeze handle to the further drive shaft so that pivotal movement of the squeeze handle produces rotational motion of the further drive shaft, said coupling mechanism including a slider which engages the helical channel on the further drive shaft and which is moved along the drive shaft upon pivotal movement of the squeeze handle to impart rotational motion to the drive shaft on a variable torque basis so that maximum torque is generated at the beginning of each squeeze stroke and maximum speed is generated at the end of each squeeze stroke of the squeeze handle, and coupling means for intercoupling the front end of the squeeze section housing to the rear end of the ratchet section housing and for intercoupling the further drive shaft of the squeeze section to the drive shaft of the ratchet section.

4,524,651

POWER WRENCH

Oswald Dubiel; Karl-Richard Hirtsiefer, both of Neunkirchen, and Paul-Heinz Wagner, Birrenbachshöhe, D-5203 Much, all of Fed. Rep. of Germany, assignors to Paul-Heinz Wagner, Much-Birrenbachshöhe, Fed. Rep. of Germany

Filed Mar. 31, 1982, Ser. No. 363,880
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1981, 3113481; Apr. 3, 1981, 3113482
Int. Cl.[3] B25B *13/46*
U.S. Cl. 81—57.39 16 Claims



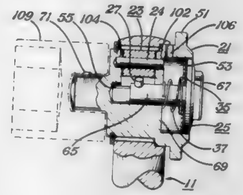
1. A power wrench comprising:
a wrench head casing having a ring to receive a button die;
a support element carried within the wrench head casing for abutment against a stationary support;
a piston-cylinder unit coupled between the wrench head casing and the support element for moving the wrench head casing relative to the support element; and
a guideway for the support element contained in said wrench head casing, said piston-cylinder unit located in said guideway and said support element being displaceable in the guideway and freely protruding from one end of the guideway.

4,524,652

RATCHET WRENCH OF THE SOCKET DRIVE TYPE WITH SOCKET EJECTOR

Kenneth G. Wenzel, Highland Village, and Jerry R. Duke, Redoak, both of Tex., assignors to Thorsen Tool Company, Dallas, Tex.

Continuation of Ser. No. 551,425, Nov. 14, 1983, abandoned.
This application May 9, 1984, Ser. No. 608,470
Int. Cl.[3] B25B *13/46*
U.S. Cl. 81—63 2 Claims



1. A ratchet wrench of the socket drive type with socket ejector comprising:
a. a handle having a lever portion and a head portion, with the head portion having a central bore with internal spline-like teeth formed therein and oppositely disposed side faces;
b. a ratchet plug assembly installed in the head portion of said handle and including:
i. a ratchet plug with a body portion having a drive stud end surface and having an integral socket drive stud protruding axially outwards from said drive stud end surface, an axial cylindrical recess having a bottom surface and opening to the body portion end opposite said socket drive stud, and a pair of spaced parallel ejector pin bores extending through said body portion and adjacent to respective side margins of said socket drive stud and opening to said axial cylindrical recess and a control knob bore coaxial with said axial cylindrical recess and extending from said axial cylindrical recess bottom surface in the direction toward said socket drive stud and having a bottom surface that is disposed axially inward with respect to said drive stud end surface;
ii. ratchet pawl means for driving or ratcheting on said spline-like teeth and reversing means therefor;
iii. a control knob for controlling both ratchet drive direction selection and socket ejection disposed in said axial cylindrical recess for reciprocable movement therein, with said control knob having a head portion which has an inner face and a cylindrical stub shaft portion having a constant diameter extending axially inward from said inner face with the diameter of said head portion being slightly less than the diameter of said axial cylindrical recess;
iv. an ejector pin retainer plate disposed on said stub shaft adjacent said inner face and having oppositely disposed side slots;
v. a pair of ejector pins each having an annular groove adjacent one end thereof with a respective annular groove being disposed within a respective said retainer plate side slot with said ejector pins being inserted in said ejector pin bores; and,
vi. a conical type control knob return spring having a larger diameter that is smaller than the transverse extent of said retainer plate and having a smaller diameter that is slightly larger than the diameter of said control knob stub shaft portion, with said control knob return spring being disposed between said cylindrical recess bottom surface and said ejector pin retainer plate, with the larger end of said spring facing said inner face of said control knob head portion, and;
vii. a ratchet reversing pin and a ratchet reversing pin bias spring, with said control knob stub shaft portion having a transverse recess disposed near said inward end for receiving said ratchet reversing pin and bias spring, such that said ratchet reversing pin may project from said recess to retain a sub-assembly comprising said retainer plate, ejector pins and control knob return spring when said wrench is being assembled.

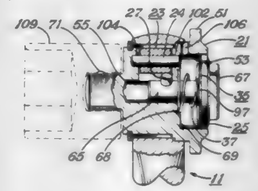
4,524,653

RATCHET WRENCH OF THE SOCKET DRIVE TYPE WITH SOCKET EJECTOR

James W. Konecny, Fort Worth, Tex., assignor to Thorsen Tool Company, Dallas, Tex.

Continuation of Ser. No. 566,274, Dec. 28, 1983, abandoned.
This application Jun. 12, 1984, Ser. No. 619,816
Int. Cl.[3] B25B *13/46*
U.S. Cl. 81—63 1 Claim

1. A ratchet wrench of the socket drive type with socket ejector comprising:
a. a handle having a lever portion and a head portion, with the head portion having a central bore with internal spline-like teeth formed therein and oppositely disposed side faces;
b. a ratchet plug assembly installed in the head portion of said handle and including:
i. a ratchet plug having a body portion having a drive stud end surface and having an integral socket drive stud protruding axially outwards from said drive stud end surface, an axial cylindrical recess having a bottom surface and opening to the body portion end opposite said socket drive stud, and a pair of spaced parallel ejector pin bores extending through said body portion and adjacent to respective side margins of said socket drive stud and opening to said axial cylindrical recess and a control knob bore coaxial with said axial cylindrical recess and extending from said axial cylindrical recess bottom surface in the direction toward said socket drive stud and having a bottom surface that is disposed axially inward with respect to said drive stud end surface;
ii. ratchet pawl means for driving or ratcheting on said spline-like teeth and reversing means therefor;
iii. a control knob for controlling both ratchet drive direction selection and socket ejection disposed in said axial



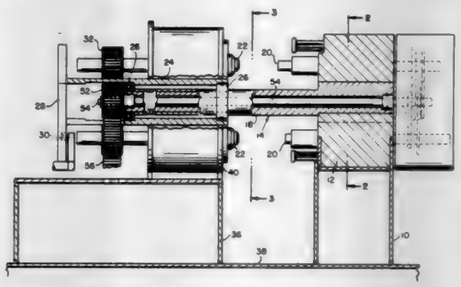
cylindrical recess for reciprocable movement therein, with said control knob having a head portion which has an inner face and a stub shaft portion extending axially inward from said inner face with the diameter of said head portion being slightly less than the diameter of said axial cylindrical recess;
iv. an ejector pin retainer plate disposed on said stub shaft adjacent said inner face and having oppositely disposed side slots;
v. a pair of ejector pins disposed within said retainer plate side slots and inserted in said ejector pin bores; and,
vi. a conical type control knob return spring disposed between said cylindrical recess bottom surface and said ejector pin retainer plate.

4,524,654

MULTI-SPINDLE AUTOMATIC SCREW MACHINE

Leslie G. Lucey, 400 Rawlinson Rd., Rochester, N.Y. 14617

Filed Jul. 19, 1982, Ser. No. 399,446
Int. Cl.[3] B23B *3/34;* B23P *23/00;* B23G *1/08, 1/20*
U.S. Cl. 82—3 3 Claims



2. A multi-spindle automatic screw machine comprising a base support structure, an elongated shaft mounted by one of its end portions upon said base support structure and extending cantilever fashion horizontally therefrom, a plurality of tool holders, means mounting said tool holders in a fixed circular array coaxially around said shaft at the proximal end thereof, a plurality of work spindles equal in number to said tool holders, and journal means mounting said work spindles in circular array coaxially around said shaft at the distal end thereof for

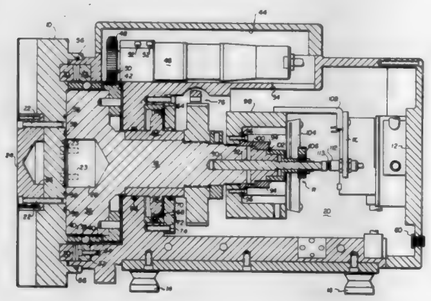
rotation upon the shaft, said shaft constituting the principal direct support for the work spindles, each of said work spindles being coaxially aligned and in end-to-end confrontation with a separate one of the tool holders in each operative position of the circular array of the work spindles.

4,524,655

INDEXABLE MACHINE TOOL TURRET AND ATTACHMENTS THEREFOR

Joseph P. Waldron, Horseheads, and Ivan R. Brown, Breesport, both of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,612
Int. Cl.³ B23B *29/32*
U.S. Cl. 82—36 A **20 Claims**



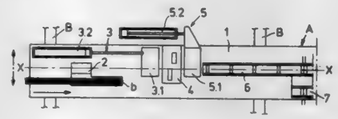
1. An indexable machine tool turret, comprising:
(a) a body having a chamber with an open end, a closed end and a central longitudinal axis;
(b) an axially displaceable rotatable turret top plate closing said open end and having a number of spaced apertures for holding tools and said top plate being coaxial with said central axis;
(c) an axially extending axially displaceable rotatable shaft connected to said top plate coaxial with said top plate;
(d) two opposed cooperating annular gears for seating said top plate to said body;
(e) one of said cooperating gears associated with said top plate and the other of said gears associated with said body;
(f) means rotating said shaft;
(g) means axially displacing said shaft and thereby said top plate for causing said cooperating gears to engage and disengage;
(h) rotation stopping means;
(i) angular rotation detection means determining the rotation of said shaft;
(j) control means cooperating with said rotation stopping means in response to said angular rotation detection means for operating said shaft rotating means and for activating said rotation stopping means when a selected one of said aperatures has rotated to a predetermined position;
(k) said shaft, said cooperating gears, said means displacing said shaft and said angular rotation detection means mounted substantially in said chamber;
(l) said body includes an auxiliary chamber;
(m) said shaft includes a radially extending flange with a ring gear mounted thereto;
(n) said shaft rotating means includes an air motor having gear means engaging and rotating said ring gear and thereby said shaft;
(o) said air motor mounted in said auxiliary chamber;
(p) means supplying air to said air motor;
(q) said auxiliary chamber includes a first aperture permitting engagement of said ring gear with said air motor gear; and,
(r) said auxiliary chamber further includes a second aperture communicating exhaust air of said air motor to said body chamber and pressurizing said body chamber during operation of said air motor and thereby preventing entry of contaminants into said body chamber.

4,524,656

METHOD FOR CUTTING METAL RODS INTO SHORTER LENGTHS

Marcello Del Fabro, and Giorgio Del Fabro, both of Udine, Italy, assignors to SAE s.r.l., Udine, Italy

Filed Sep. 27, 1983, Ser. No. 536,335
Claims priority, application Italy, Sep. 27, 1982, 83452 A/82
Int. Cl.³ B23D *33/02*
U.S. Cl. 83—23 **4 Claims**



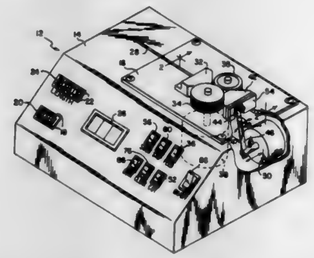
1. A method for cutting metal rods into shorter lengths using apparatus including means for storing rods arranged in a fixed manner, parallel and arranged side by side in groups of bundles with homogeneous characteristics, the storing means being connected with at least one movable cutting line at the top end of the bundles of rods of said storing means, the cutting line being movable transversely and in alignment with the rods and comprising means for the extraction of rods from said stored bundles, shears disposed across the cutting line, means for advancing the rods longitudinally along the cutting line and means for determining the required length of the pieces to be cut, wherein the method comprises actuating said cutting line in accordance with the following steps:
extracting longitudinally from a predetermined bundle of rods of the storing means, taking for an initial distance less than the complete length of the bundle, a first bundle of rods;
transferring, from said first partially extracted bundle of rods on said cutting line, a set number of rods equal to or less than the number of rods in the partially extracted bundle of rods using a first extraction device, said set number forming a sub-bundle;
gripping said sub-bundle using a second extraction and feed device, drawing the sub-bundle along said line for subsequent extraction and cutting, and continuing such extraction until passing beyond the shears;
gripping said sub-bundle using a third extraction and feed device drawing the sub-bundle beyond said shears and continuing the extraction in association with said second extraction and feed device until a desired cutting length is reached;
cutting the sub-bundle of rods that has passed beyond said shears using the shears and unloading the cut pieces;
regripping said sub-bundle using the second extraction and feed device upstream of the shears and continuing the feeding of the sub-bundle beyond said shears;
regripping said sub-bundle using the third extraction and feed device downstream of said shears and continuing the feeding of said sub-bundle beyond the shears until the next required cutting length is reached;
cutting the next section of the sub-bundle of rods and repeating the cycle of the above steps until the entire length is used up;
unloading the last waste tailend section of the sub-bundle of rods along a different path;
transferring a new sub-bundle of rods from said first partially extracted bundle onto said cutting line for subsequent extraction, feed and cutting, using said first extraction device;
gripping said new sub-bundle of rods, using the second extraction and feed device upstream of said shears, and continuing the extraction, feed and cutting following the steps previously set forth;
repeating the cycle of the transfer of sub-bundles from the first partially extracted bundle onto said line of further extraction, feed and cutting, until all of the first partially extracted bundle is used up;
during the procedure of further extraction, feed and cutting of said last sub-bundle, proceeding to a new successive partial extraction of a second bundle, using said first extraction device, from said stored bundles; and
resuming the cycle of transferring the sub-bundles onto said line of subsequent extraction, feed and cutting.

4,524,657

AUTOMATIC WIRE CUTTING MACHINE

Louis E. Griffith, Hampstead, N.H., assignor to Power Access Corporation, Manchester, N.H.

Filed Jun. 10, 1983, Ser. No. 502,944
Int. Cl.³ B26D *5/24*
U.S. Cl. 83—69 **11 Claims**



1. A machine for cutting lengths of cable comprising:
a drive roller for engaging the cable and driving it with no more than negligible slip;
a stepping motor for driving the drive roller;
means for setting a desired length of cable;
means for setting a number of lengths of cable which are to be cut to the set length;
means for counting drive cycles until the number of cycles corresponding to the set length have been counted;
means for driving the stepping motor, the stepping motor and roller driving a cable a length about equal to the length indicated by the least significant digit of the set length during each counted drive cycle;
cutter control means for disabling the stepping motor and for driving a cutting blade once the drive cycles corresponding to the set length have been counted, the cutter control means defining a delay from each drive of the cutting blade during each subsequent drive of the stepping motor such that the cutting blade is driven not less than a predetermined time after any previous cut;
means for counting the number of lengths of cable which have been cut; and
means for repeating the count of drive cycles, while driving the stepping motor, and the cutting of cable until the set number of lengths have been counted.

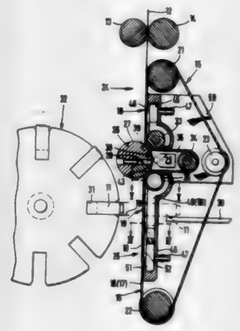
4,524,658

APPARATUS FOR PRODUCING PACKAGING BLANKS

Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Oct. 13, 1983, Ser. No. 541,638
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1982, 3241636
Int. Cl.³ B31B *23/00*; B65B *41/12, 19/02*; B26D *7/06*
U.S. Cl. 83—152 **10 Claims**

1. An apparatus for severing packaging blanks (10) from a web (12) of thin, highly flexible wrapping material, such as cellophane wrappers for cigarette packs, comprising:
(a) a pair of laterally spaced, endless, fluid permeable belts (16, 17),
(b) a plurality of spaced, axially parallel rollers (21–23, 33, 34, 36), including at least one driven roller, supporting the belts to define first and second successive coplanar conveyor runs (24, 25) separated by a diversion zone (35),
(c) first knife means (29) disposed at the diversion zone and extending laterally across the full width of a web conveyance path thereat,
(d) a conveyor roller (26) rotatably mounted at the diversion zone in surface contact with the belts at both an exit end of the first conveyor run and an entry end of the second conveyor run, said conveyor roller being provided with a plurality of suction holes (37),



(e) second knife means (28) embodied in the conveyor roller, extending laterally across the full width of the web conveyance path, and cooperable with the first knife means to sever successive blanks from a web,
(f) means for applying suction through the belts to regions of the first and second conveyor runs flanking the diversion zone, and through the holes to a peripheral sector of the conveyor roller extending substantially across the diversion zone,
(g) means (13, 14) for continuously supplying the web to an entry end of the first conveyor run, and
(h) means for removing severed blanks from the second conveyor run, whereby both the web and blanks severed therefrom are positively and continuously held against the first and second conveyor runs and against the peripheral sector of the conveyor roller during their transport and advancement through the diversion zone and the first and second knife means.

4,524,659

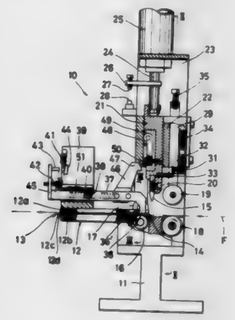
APPARATUS FOR CUTTING CONTINUOUS SLIDE FASTENER CHAIN

Akio Yunoki, NE. Marietta, Ga., assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Oct. 18, 1982, Ser. No. 434,933
Claims priority, application Japan, Oct. 23, 1981, 56-170420
Int. Cl.³ B26D *7/06*
U.S. Cl. 83—80 **3 Claims**

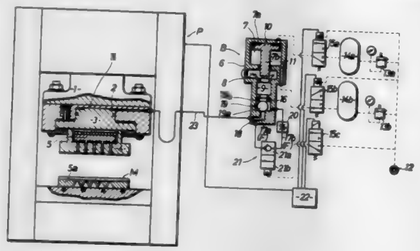
1. An apparatus for cutting a continuous intermittently gapped slide fastener chain into individual fastener lengths, comprising:
(a) a frame having a guideway for longitudinal movement of the chain;
(b) a pair of feed rolls disposed at the discharge end of said guideway for engaging opposite sides of the chain, and adapted to be intermittently driven;
(c) an anvil on said frame downstream of said feed rolls;

(d) a vertically reciprocable cutting punch assembly slidably supported on said frame in registration with said anvil;
(e) a pair of vertically opposed delivery rolls disposed downstream of said anvil for acting on opposite sides of a severed portion of the chain, said rolls being normally spaced apart to enable said feed rolls to drive any curled end of the advancing chain therebetween;
(f) means supporting one of said delivery rolls on said cutting punch assembly for vertical movement therewith toward the other of said delivery rolls, the latter being normally constantly rotating; and



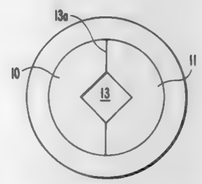
(g) control means responsive to the arrival of a gap in the chain for sequentially stopping said feed rolls, and lowering said one delivery roll and said punch assembly to thereby effect the cutting and the driven discharge of the severed portion, said control means including:
a control lever having a control prong, and being pivotally biased to urge said control prong against the chain and into a succeeding gap in the chain, said control lever being also yieldably longitudinally biased to be longitudinally shifted by the succeeding slide fastener by a selected amount to effect proper registration of the gap with the cutting punch assembly.

4,524,660
PNEUMATIC-HYDRAULIC DRIVING DEVICE FOR THE KNOCKOUT MECHANISM ASSOCIATED WITH THE SLIDE OF A PRESS-MACHINE
Keitaro Yonezawa, Itamishi, Japan, assignor to Aioi Seiki Kabushiki Kaisha, Hyogoken, Japan
Continuation of Ser. No. 266,787, May 26, 1981, abandoned. This application Sep. 12, 1983, Ser. No. 531,573
Claims priority, application Japan, Jun. 2, 1980, 55-77094[U]
Int. Cl.³ B26D *5/12;* **B60T** *7/02*
U.S. Cl. 83—639 **10 Claims**



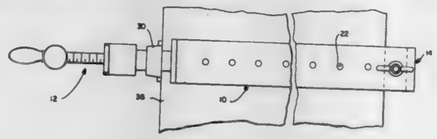
1. An improved pneumatic-hydraulic driving device for a knockout mechanism associated with the slide of a press-machine having a crank to move an upper die into and out of a corresponding lower die, which device comprises, in combination:
(a) a first casing;
(b) a pneumatic chamber disposed within the casing;
(c) an hydraulic chamber disposed within the casing adjacent to the pneumatic chamber;
(d) a slidable piston disposed in the pneumatic chamber and dividing the chamber into a driving chamber and a cushion chamber;
(e) a slidable plunger disposed in the hydraulic chamber, with the piston and plunger being connected for joint movement;
(f) an output port in the hydraulic chamber;
(g) an outlet port in the casing;
(h) a knockout piston slidably disposed in a knockout cylinder of the knockout mechanism;
(i) an actuating chamber formed above the knockout piston in the knockout mechanism;
(j) an hydraulic fluid passage providing communication between the output port and the actuating chamber through the outlet port;
(k) a charge valve means disposed in the hydraulic fluid passage to control the flow of hydraulic fluid from the output port to the actuating chamber while permitting flow in the opposite direction;
(l) a source of pneumatic pressure;
(m) first control means interconnected with the pneumatic pressure source and the pneumatic chamber to control the pressure differential across the slidable piston between a high value to supply hydraulic fluid to the actuating chamber at a high pressure, and a low value to supply hydraulic fluid to the actuating chamber at a low pressure;
(n) second control means for controlling the position of the charge valve means between its open and closed positions to control the flow of pressurized hydraulic fluid from the output port to the actuating chamber; and,
(o) switch means interconnecting the first and second control means with the crank of the press-machine such that low pressure hydraulic fluid is supplied to the actuating chamber as the crank moves from its top dead center to its bottom dead center and, after arriving at a predetermined position after passing its bottom dead center, high pressure hydraulic fluid is supplied to the actuating chamber to activate the knockout mechanism.

4,524,661
BOTTOM DIE CONSTRUCTION
Berthold Leibinger, Gerlingen, Fed. Rep. of Germany, assignor to Trumpf GmbH & Co., Fed. Rep. of Germany
Filed Sep. 3, 1982, Ser. No. 414,590
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136514
Int. Cl.³ B26F *1/14;* **B26D** *1/00*
U.S. Cl. 83—690 **1 Claim**



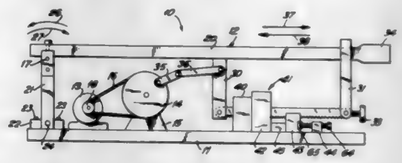
1. A bottom die with a closed cutting edge for a stamping machine having a seat for a bottom die, comprising:
a bottom die body comprising two separate body parts (**10,11**) adapted to be assembled together and together forming a cylindrical exterior surface with an internal die cutting edge (**13**) defining a die cutting opening, said body parts being separable along a parting line (**13***a*) which extends transversely across said die cutting opening;
a fixture (**8**) into which said body parts (**10,11**) are assembled, said fixture having a cylindrical outer surface (**8***a*) of a size to be received in the seat of the stamping machine, a top surface (**8***e*) and a bottom surface (**8***f*), said fixture also having a through opening (**8***b*) of a size larger than said die cutting opening (**13**) and a recess defined between a cylindrical intermediate surface (**8***c*) of said fixture facing said through opening and a shoulder surface (**8***d*) disposed above said bottom surface (**8***f*) and bounding said through opening, said cylindrical exterior surface of said die body being substantially equal in diameter to said cylindrical intermediate surface (**8***c*), said die body (**10,11**) being disposed in said recess; and
a fastening screw connected between said fixture and each die body part to hold said die body in said recess, each fastening screw extending in a direction parallel to said parting line (**13***a*);
said fixture having said opening (**8***b*) thereof extending from said bottom surface (**8***f*) thereof to said shoulder surface (**8***d*) thereof through which each screw extends, each screw being threaded into each die body part respectively, said die body having a top surface (**10***a*, **11***a*) and a bottom surface, said top surface of said die body being coplanar with said top surface of said fixture and said bottom surface of said die body being engaged on said shoulder surface of said fixture.

4,524,662
STRAIGHT-CUT GUIDE FOR SAWS
Rickey L. Carley, 787 Riverside Dr., Ukiah, Calif. 95482
Filed Feb. 17, 1983, Ser. No. 467,199
Int. Cl.³ B27B *9/04*
U.S. Cl. 83—745 **2 Claims**



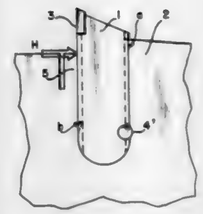
1. A saw guide comprising:
a. a rigid structural guide member having disposed at one end thereof a vertical flange with a threaded pipe section attached thereto, said guide member having a plurality of holes along the axis thereof;
b. a screw driven holding clamp attached to said rectangular guide member for adjustably positioning said guide relative to one end of a work piece, said screw driven holding clamp comprising a guide ring having a depending flange which provides an abutment for engaging the end of said work piece, said guide ring being loosely accomodated around said screw threaded pipe section of said guide member, a screw threaded driver for clamping said depending flange against said work piece, said driver connected to said depending flange at one end and having a driving handle attached to the opposite end, and a threaded attaching ring for connecting said holding clamp to said guide member, said attaching ring having two spatially separated adjacent screw threaded openings, one of said threaded openings providing a passage for said screw threaded driver at an intermediate distance between said guide ring and said driving handle and the other said threaded opening being attached to said screw threaded pipe section of said guide member;
c. a stop clamp providing a second abutment for engaging the opposite end of said work piece, said stop clamp being adjustably positioned along said guide member at varying distances from said holding clamp by selective positioning of securing means within said holes in the guide member thereby accommodating work pieces of different sizes.

4,524,663
POWER HACKSAW
Ray E. Boyer, and Harriet S. Boyer, both of P.O. Box 18451, Rte. 2-30, Massena, N.Y. 13662
Filed Sep. 20, 1983, Ser. No. 533,922
Int. Cl.³ B27B *11/00*
U.S. Cl. 83—762 **12 Claims**



1. A power actuated saw comprising:
(a) a base;
(b) means for holding a saw blade;
(c) drive means coupled to said holding means for providing a substantially reciprocating motion to said holding means and the saw blade;
(d) guide means for aligning and enhancing the cutting force of the saw blade including;
(i) a vertical raceway, disposed adjacent to said base, said raceway having an enclosure and having a slot for receiving the saw blade;
(ii) a block member disposed in the enclosure of said raceway for contacting the top of the blade so as to exert a downward force on the blade towards the base, said block member being movably disposed in only a vertical direction within said enclosure of said raceway; and
(iii) a pair of vertical roller members coupled to the bottom of said block member for exerting horizontal forces on the saw blade and aligning the blade in the direction of reciprocation.

4,524,664
ELASTIC MOUNTING FOR THE ROD-SHAPED TOOTH OF A CUT-OFF SAW
Jorma A. K. Tuomaala, Oulu, Finland, assignor to Teratuote Oy, Toijala, Finland
Filed Jun. 27, 1983, Ser. No. 508,089
Claims priority, application Finland, Mar. 17, 1983, 830883
Int. Cl.³ B27B *33/12;* **B23D** *61/04*
U.S. Cl. 83—840 **6 Claims**



1. In the mounting of a saw tooth on a circular saw blade which has a blade axis and body with a blade body edge,
a saw tooth notch formed on the edge of the blade body of said circular saw blade, said notch comprising opposed leading and following edges joined by a curved notch bottom having front and rear corners,
a saw tooth having a rear surface which is supported to be

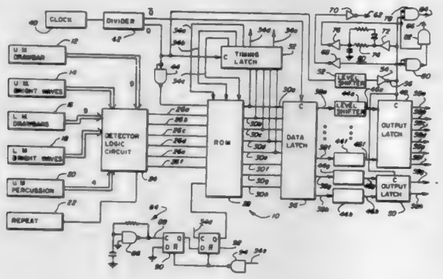
pressed against the rear corner of the tooth notch which is further away relative to the blade axis,
an elastic strip pressing the tooth front surface,
and a locking rivet mounted on said blade body adjacent to the bottom of the tooth notch and pressing the leading tooth edge against the leading edge of the notch, said rivet being positioned behind the tooth and adjacent to the notch bottom.

4,524,665

DYNAMIC CONTROLLER FOR SAMPLING CHANNELS IN AN ELECTRONIC ORGAN HAVING MULTIPLEXED KEYING

Angelo A. Bione, Elmhurst, and Brian M. Bagus, Bartlett, both of Ill., assignors to The Marmon Group, Inc., Chicago, Ill.

Filed Jun. 17, 1983, Ser. No. 505,312
Int. Cl.³ G10H *1/18, 7/00*
U.S. Cl. 84—1.01 **5 Claims**



1. A dynamic controller circuit for use in a multiplexed organ having a plurality of channels, a detector means having a plurality of output lines and being connected to each of said channels for providing an output signal on respective ones of said output lines to indicate that a respective channel contains an information signal, and means connected to each channel for sampling said channel information signal, said dynamic controller comprising:
a memory for receiving said output signals from said detector means as an address and having a plurality of digital sequences stored at different memory locations and having a plurality of memory output lines;
a clock circuit for providing a timing signal to said memory;
said timing signal having a first polarity and a second polarity;
said memory upon receiving said address signals from said detector means and said first polarity timing signal places a sequence of digital signals for use as timing signals upon at least some of said memory output lines,
a timing latch connected to said at least some of said memory output lines for receiving said sequence of digital signals for use as timing signals and having a plurality of timing output lines for providing counting signals; and
at least some of said output lines of said timing latch connected to the input of said memory.

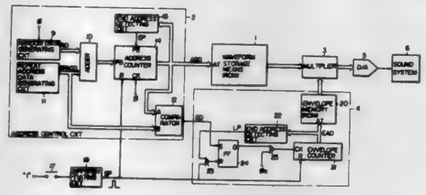
4,524,666

MUSICAL TONE FORMING SYSTEM

Mitsumi Kato, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hammatsui, Japan

Filed Sep. 12, 1983, Ser. No. 531,437
Claims priority, application Japan, Sep. 14, 1982, 57-160277
Int. Cl.³ G10H *1/02, 1/40, 7/00*
U.S. Cl. 84—1.03 **4 Claims**

1. A musical tone forming system comprising:
(a) waveform storage means for storing data representative of an attack portion of a musical tone waveform of a percussion instrument and data representative of part of the portion of said musical tone waveform following said attack portion, said data representative of said part being stored at consecutive storage locations beginning at a certain repeat address;
(b) random data generating means for generating random data varying with time;
(c) address calculation means for calculating random repeat starting addresses by combining said certain repeat address with said generated random data; and



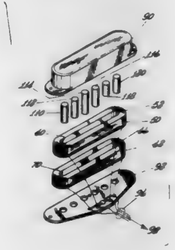
(d) address means for addressing said waveform storage means to first read the data representative of said attack portion and to then repeatedly read said part from said waveform storage means to thereby form a musical tone signal of said percussion instrument, said addressing means carrying out every repeated reading of said part in one scan direction only, and beginning the scan on each repeated reading from a respective random repeat starting address provided by said address calculation means.

4,524,667

ELECTROMAGNETIC PICKUP FOR A STRINGED MUSICAL INSTRUMENT HAVING FERROMAGNETIC STRINGS AND METHOD

Seymour Duncan, P.O. Box 4746, Santa Barbara, Calif. 93103

Filed Aug. 15, 1983, Ser. No. 523,067
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.15 **13 Claims**



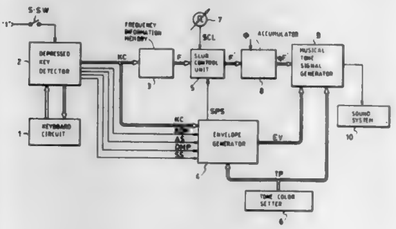
1. An electromagntic pickup adapted for use with a multistringed musical instrument having strings formed of a ferromagnetic material comprising
a first coil having wire wound in a first direction and in an elongated oval shape having a major and minor axis, said first coil having a first geometrical distance along the major axis which exceeds the distance between the outermost strings of a multistringed musical instrument adapted to use the electromagnetic pickup and a second geometrical distance along the minor axis which is substantially less than that along the major axis, said first coil including means defining a first opening which extends through the interior thereof;
a second coil having wire wound in a second direction and in an elongated oval shape having major and minor axes and the geometrical dimensions of which are substantially equal to that of said first coil, said second coil including means defining a second opening which extends through the interior thereof, said second coil being positioned in a spaced opposed aligned relationship with said first coil with the first opening of said first coil in axial alignment with the second opening of said second coil positioning the major axis of said first coil in a spaced parallel aligned relationship with the major axis of said second coil forming a coil stack assembly having a hollowed-out central cavity defined by said first opening communicating with said second opening;
a permanent magnet means having a north magnetic pole and a south magnetic pole positioned in said hollowed-out central cavity with one of said north magnetic pole and south magnetic pole positioned therein so as to be adapted to be adjacent to and to magnetically couple with a string of a said multistringed musical instrument and with the other of said north magnetic pole and south magnetic pole positioned therein so as to be adapted to be remote to a string of a said multistringed musical instrument;
said permanent magnetic means further including
a plurality of spaced, cylindrically shaped permanent magnet elements having an axial length which enables the permanent magnet elements to be located within the hollowed-out central cavity and a diameter which is less than the second geometrical dimension of the minor axis of said first opening and said second opening and wherein at least two of the cylindrically shaped permanent magnet members have different axial lengths, said cylindrically shaped permanent magnetic elements being positioned in said hollowed-out central cavity with the axes thereof in spaced parallel relationship to each other; and
coil connecting means operatively coupled to said first coil and said second coil to selectively connect the same in at least one of series opposition, parallel opposition and selected single coil configuration, said coil connecting means and coil stack assembly being adapted to produce a magnetic field which traverses a path from the hollowed-out central cavity of the coil stack assembly, through said permanent magnet means to a said string of a said multistringed musical instrument formed of ferromagnetic material defining a magnetic flux path, the reluctance of which is varied in response to the vibration of a said string of a said multistringed musical instrument which is adapted to vary the magnetic field inducing a voltage into said coils which varies in amplitude and frequency.

4,524,668

ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF PERFORMING NATURAL SLUR EFFECT

Norio Tomisawa; Yasuji Uchiyama, and Hideo Suzuki, all of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 15, 1982, Ser. No. 434,604
Claims priority, application Japan, Oct. 15, 1981, 56-163509
Int. Cl.³ G10H *1/053, 7/00*
U.S. Cl. 84—1.24 **23 Claims**



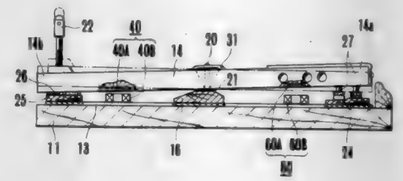
1. An electronic musical instrument, comprising:
musical tone signal generating means for generating a musical tone signal gradually changing in musical tone pitch from that corresponding to a firstly-depressed key to that corresponding to a secondly-depressed second key in a keyboard;
amplitude generating means for generating an amplitude coefficient gradually varying from a first amplitude coefficient for the musical tone generated by the first key to a second amplitude coefficient for the musical tone generated by the second key, said gradual variation in amplitude ceefficient being coordinated with said gradual variation in said musical tone signal; and
musical tone signal control means for controlling the amplitude of the musical tone signal generated by said musical tone signal generating means in accordance with the varying amplitude coefficient generated by said amplitude coefficient generating means to thereby produce a musical tone signal varying gradually in amplitude in coordination with the variation in pitch of the musical tone.

4,524,669

KEY-DRIVING/DETECTING MECHANISM FOR KEYBOARD INSTRUMENT

Jun Yamamoto; Hajime Hayashida, and Hiroyoshi Takahashi, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed May 24, 1982, Ser. No. 381,715
Claims priority, application Japan, Jun. 11, 1981, 56-85999[U]; Jun. 12, 1981, 56-91119
Int. Cl.³ G10C *3/12*
U.S. Cl. 84—433 **14 Claims**



1. A key-driving/detecting mechanism for a keyboard instrument comprising:
a plurality of keys arranged on a key bed;
each key being rotatable about a balance pin secured to said key bed;
a first electromagnetic device interposed between a lower surface of each key and said key bed at a position in rear of said balance pin, each of said first devices comprised of an electromagnetic coil and a permanent magnet; and
a second electromagnetic device interposed between said lower surface of each key and said key bed at a position in front of said balance pin, each of said second devices comprised of an electromagnetic coil and a permanent magnet.

4,524,670

SECURING APPARATUS FOR MODULES CARRIED ON AIRCRAFT, IN PARTICULAR FOR FLARE LAUNCHING MODULES

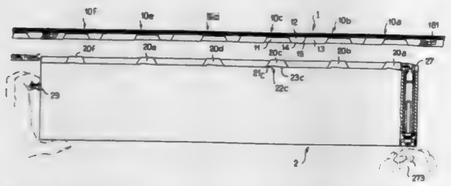
Alain A. Billard, Muret; André R. Santalucia, Leguevin, and Christian Breseghello, Saverdun, all of France, assignors to Societe E. Lacroix-Tous Artifices, Muret, France

Filed Jun. 1, 1982, Ser. No. 384,097
Claims priority, application France, Jun. 3, 1981, 81 10974
Int. Cl.³ F41F *5/00;* **B64D** *1/04*
U.S. Cl. 89—1.53 **10 Claims**

1. Securing apparatus for modules carried on board a craft, comprising a support rod mounted to a craft for engagement and disengagement of a replaceable module, the rod being elongated and provided with a series of female engagement members and associated notches distributed along the length of the rod with unequal separations (L1, L2, L3, . . .) of the members established according to a predetermined geometric progression in which

$$(L2/L1)=(L3/L2)=\ldots=q$$

for dissipation of vibrations, the module being provided with counterpart male engagement members separated according to



the same geometric progression as the female members on the support rod for insertion in the notches and engagement with the female members, the female and male engagement members also providing dovetail engagements for securely fixing the module to the craft.

4,524,671

ANTIFRICTION BEARING FOR LONGITUDINAL DISPLACEMENT GUIDANCE OF A GUN BARREL

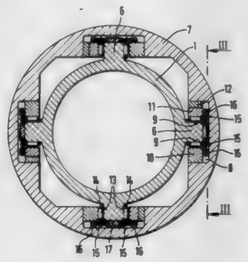
Rolf Bender, Bad Vilbel; Werner Jacob, Frankfurt am Main, and Horst Pfuderer, Dietzenbach, all of Fed. Rep. of Germany, assignors to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Dec. 7, 1982, Ser. No. 447,506

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150250

Int. Cl.³ F41F *17/02, 19/00*

U.S. Cl. 89—14.05 **4 Claims**



1. A rolling bearing arrangement for guidance of a gun barrel during longitudinal displacement comprising a gun barrel having at least three circumferential axis-parallel strips projecting radially outward, each strip having two bearing surfaces parallel to each other and to a radial plane, which surfaces in turn are associated with directly opposite bearing surfaces or elements extending parallel thereto in a housing surrounding the gun barrel, and two flat cages each containing a set of cylindrical rollers arranged between the bearing surfaces of the strip and the directly opposite bearing surfaces of the housing, the two sets of rollers cooperating with each strip being under tension by the arrangement, by at least one of the elements being displaceable perpendicular to the strip.

4,524,672

MAGAZINE AND FEED MECHANISM FOR FIREARMS

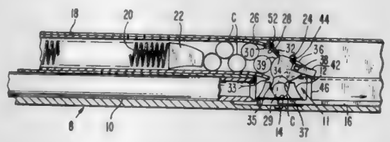
Walter Balsavage, 222 Tantum Dr., Trenton, N.J. 08610

Filed Apr. 27, 1983, Ser. No. 489,280

Int. Cl.³ F41C *25/04*

U.S. Cl. 89—33.1 **19 Claims**

1. In a magazine and feed mechanism for a firearm having a receiver, a magazine mounted thereon and adapted to hold a plurality of cartridges arranged to be fed from the magazine in successively following order, a transfer disc rotatably mounted in the receiver and having a slot receiving the cartridge that is leading in the sense of the order in which the cartridges are fed from the magazine, in a position in which the leading cartridge initially extends transversely of the barrel and thereafter is alignable longitudinally therewith on rotatable movement of the disc, and a transfer disc actuating arm slidably movable in the receiver between a retracted position in which the disc receives the transversely disposed lead cartridge and an advanced position in which the arm rotates the disc to align the cartridge with the barrel, the improvement comprising:



(a) a flap on the magazine normally preventing feeding of the lead cartridge from the magazine to the disc;

(b) cartridge feed means movable between a normally retracted position and an advanced position in which it biases the lead cartridge past the flap and into the cartridge slot; and

(c) means for biasing the feed means to its advanced position responsive to return movement of the actuating arm from its advanced to its retracted position.

4,524,673

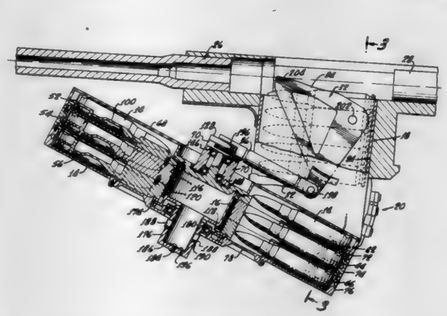
GUN POWERED AMMUNITION MAGAZINE

Michael D. Golden, Costa Mesa, Calif., assignor to Western Design Corporation, Irvine, Calif.

Filed Sep. 29, 1982, Ser. No. 428,283

Int. Cl.³ F21C *25/10*

U.S. Cl. 89—33.02 **15 Claims**



1. An ammunition magazine for small arm weapons having a reciprocating bolt and an ammunition feed well therein, said ammunition magazine comprising:

a housing for storing a plurality of ammunition rounds;

spring means disposed within said housing for urging said ammunition rounds out of said housing, said spring means decompressing as the ammunition rounds are urged out of said housing;

conduit means, configured for insertion into and removal from the ammunition feed well of a small arm weapon, said conduit means communicating with said housing for passing ammunition rounds from said housing through the conduit means, and into a position within the small arm weapon for engagement by the reciprocating bolt of the small arm weapon when the conduit means is inserted into the small arm weapon ammunition feed well; and,

means, communicating with said spring and associated with said conduit means, for engaging the reciprocating bolt and causing movement of the reciprocating bolt to compress the spring means when the conduit means is inserted into the small arm weapon ammunition feed well.

4,524,674

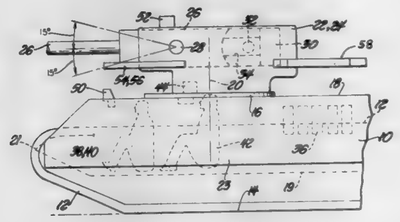
MILITARY VEHICLES

Jaunutis B. Gilvydis, Oakland County, Mich., assignor to The Unites States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 24, 1983, Ser. No. 460,323

Int. Cl.³ F41H *5/00*

U.S. Cl. 89—36 H **14 Claims**



1. In a military vehicle that comprises a hull having a roof, a platform disposed on the roof for rotary motion in the azimuth plane, two parallel walls projecting upwardly from the platform to define a gun cradle; a main gun located within the defined cradle; pivot means supporting the gun for adjusting movements in the elevational plane around a pivot axis transverse to the cradle walls; two personnel stations within the hull forwardly from the platform; and ammunition storage magazine means within the hull rearwardly from the platform: the improvement comprising means for protecting the personnel stations and magazine means from overhead attack; said protecting means comprising first, second and third armor plates carried by the cradle walls an appreciable distance above the hull roof; each armor plate being essentially horizontal when the vehicle is on level ground; a first one of the armor plates overlying one of the personnel stations when the platform is in a forward-fire position; a second one of the armor plates overlying the other personnel station when the platform is in a forward-fire position; a third one of the armor plates overlying the magazine means when the platform is in a forward-fire position.

4,524,675

DETACHABLY CONNECTABLE SIGHT ASSEMBLY FOR A SMALL DEFENSE WEAPON

Peter Durenec, Annandale, and Clifford E. Lowe, Fredricksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 3, 1982, Ser. No. 404,783

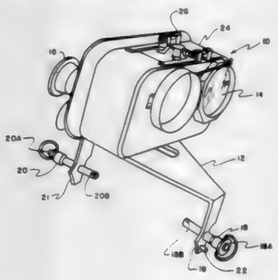
Int. Cl.³ F41G *1/38*

U.S. Cl. 89—41.03 **8 Claims**

1. A sight assembly that is detachably connectable to a small defense weapon, said assembly comprising:

a mounting cradle; and

a sight, said sight having a belt-type bracket that is screw-tightened about the sight and is connected to a plate of the mounting cradle, said plate having a front leg and a rear leg which extends down therefrom and to which are attached front or rear connecting/disconnecting means respectively; and wherein the front leg and the rear leg each are provided with antirocking means to prevent rocking of the sight assembly, when attached to a weapon, about points of attachment of the connecting/disconnecting means.



4,524,676

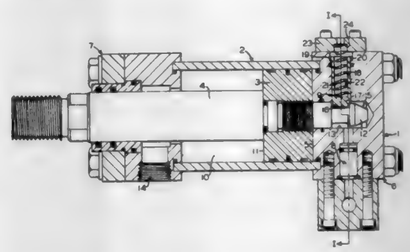
HYDRAULIC CYLINDER LOCKING DEVICE

Larry K. Rogers, Lexington, Ky., assignor to American Standard Inc., Lexington, Ky.

Filed Jan. 19, 1984, Ser. No. 572,265

Int. Cl.³ F15B *15/26*

U.S. Cl. 91—43 **13 Claims**



1. A hydraulic cylinder with a locking device comprising:

(a) a cylinder body having a piston chamber formed therein and a head end on at least one end;

(b) a piston member reciprocally movable within said piston chamber;

(c) a stud member secured to said piston for reciprocal movement therewith, said stud member being axially movable within a stud bore formed in said head end such that, said stud bore is sealed into a variable volume stud chamber, said stud member having a groove portion and a stud portion, said stud portion being of smaller diameter than said stud bore;

(d) a plunger means extending through at least a portion of said head end having plunger surfaces for engaging said groove portion of said stud member;

(e) urging means for forcing said plunger means into engagement with said stud member;

(f) said plunger means being in fluid communication with said variable volume stud bore such that, upon travel of said stud member into said stud bore, said plunger means is forced in a direction opposite said urging means;

(g) fluid regulating means in communication with said stud bore for exhausting the fluid pressure in said stud bore following movement of said stud portion past said plunger surfaces, said fluid regulating means including a first check valve disposed as an outlet valve to said stud bore, said first check valve remaining closed until such fluid pressure in said stud bore increases under the influence of such stud portion movement sufficiently to urge said plunger means out of frictional contact with said stud

portion, said first check valve thereafter opening upon such fluid pressure reaching a first predetermined cracking value; and

(h) fluid delivery means for adding to the fluid pressure in said stud bore such that such fluid pressure acts on said plunger surfaces and said plunger member is forced out of engagement with said groove portion of said stud member, said fluid delivery means including a second check valve in communication with said bore and disposed as an inlet valve to said stud bore, said fluid delivery means, when engaged, further preventing operation of said fluid regulating means.

4,524,677

SEALS USED IN PISTON AND CYLINDER ARRANGEMENTS

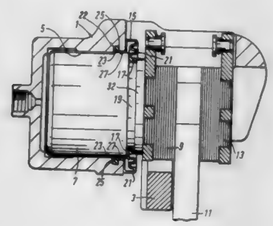
Glynn Ashman; Kelvin T. Berry, and Martin E. Winterbottom, all of West Midlands, England, assignors to Lucas Industries Limited, Birmingham, England

Filed Nov. 29, 1982, Ser. No. 445,232

Claims priority, application United Kingdom, Dec. 1, 1981, 8136199

Int. Cl.³ F16J *15/18*

U.S. Cl. 92—168 **4 Claims**



1. A piston and cylinder arrangement comprising a piston axially slidably located in a cylinder, the piston being slidable at least partially, out from one open end of said cylinder, a retaining groove on the inside wall of the cylinder adjacent the open end thereof, said groove having a bottom wall joining axially spaced front and rear walls, a pressure seal received in said groove and compressed radially of the cylinder between the outer wall of the piston and the bottom of the retaining groove with sufficient force to resist fluid pressure applied to said piston, said pressure seal being the sole sliding seal between said piston and cylinder wall, said piston having a portion extending forwardly of said groove in said cylinder when said piston is in its fully retracted position, and a flexible boot having one end sealingly engaging the forwardly extending portion of said piston and its opposite end joined to said pressure seal, the diameter of said cylinder between its open end and the front wall of the groove in said cylinder being enlarged to allow passage of said flexible boot from the exterior of said cylinder to said pressure seal.

4,524,678

DAMPER WITH INTEGRAL SUPPORT

Steven L. Klebanoff, Westchester County, N.Y., assignor to Ruskin Manufacturing Company, Grandview, Mo.

Filed Dec. 6, 1982, Ser. No. 447,470

Int. Cl.³ F24F *11/00*

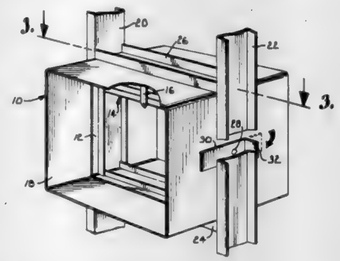
U.S. Cl. 98—1 **1 Claim**

1. A prefabricated protective damper to be secured in a postion for blocking flow through a building passageway defined by a pair of generally parallel, spaced apart, longitudinally extending construction members, there being a member at each side of said passageway, said damper including:

a rigid, peripherally extending, rectangular frame defining a damper opening, said frame having a pair of substantially parallel sides having generally flat outer surfaces;

automatically actuatable means mounted on the frame for blocking fluid flow through the damper opening responsvie to elevation of the ambient temperature beyond a predetemined limit; and

a pair of elongated, bendable straps of flat sheet steel material, said respective straps being secured intermediate the



ends thereof to opposite sides of the frame and lying flat against the respective surface to minimize the space required for the damper prior to installation, the free ends of each strap being bendable away from the damper side surface into embracing relationship with a corresponding proximal construction member to quickly and easily secure the damper in fixed position across said passageway and against dislodgement from said position under the influence of substantial fluid forces against the damper.

4,524,679

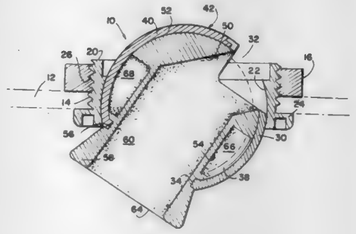
AIR VALVE

Harold W. Lyons, Deep River, Conn., assignor to Whelen Engineering Co., Inc., Deep River, Conn.

Filed Oct. 19, 1983, Ser. No. 543,340

Int. Cl.³ F24F *13/10*

U.S. Cl. 98—40.02 **17 Claims**



1. An air flow control valve for use in establishing fluid communication between a source of pressurized air and an enclosure, said valve comprising:

socket defining means, said socket defining means having a pair of oppositely disposed openings which lie in parallel planes, said openings being symmetrical with respect to a first axis which is transverse to said planes, said socket defining means further having a concave interior bearing surface which is symmetrical with respect to said first axis;

housing means, said housing means consisting of a pair of interlocking shell-defining members, said shell-defining members cooperating to form a thin-walled hollow shell having a generally truncated spheroidal interior shape and an external shape which is at least in part complementary to that of said socket defining means interior bearing surface whereby said housing means is rotatably supported in said socket defining means, said shell having an interior locking surface portion which deviates from said

spheroidal interior shape, said shell further having a circular shaped discharge port extending through the wall thereof, said discharge port lying in a plane, the valve having a directional axis which is transverse to the plane of said discharge port and coaxial therewith, said directional axis passing through the center of the sphere defined by said members, said shell also having an inlet port extending through the wall thereof, said inlet port being spacially displaced from said discharge port and being off-set with respect to said directional axis; and

a valve body movably supported within said housing means, at least a portion of said valve body having an exterior shape which complements the spheroidal interior shape of said housing means shell, said valve body defining a single unimpeded non-linear air flow passage which extends between an inlet port and a discharge port, a first portion of said passage being co-axial with said directional axis, said valve body discharge port being in alignment with said housing means shell discharge port, a second portion of said air flow passage having an axis which angularly intersects said directional axis, said air flow passage second portion terminating at said valve body inlet port, said valve body further including an exterior surface irregularity which engages said housing means shell locking surface to limit the relative motion between said valve body and said housing means to rotation about said directional axis, rotation of said valve body about said directional axis permitting the degree of overlap of said valve body inlet port and said housing means shell inlet port to be varied to thereby vary the rate of flow through the valve, application of a force having a component which is transverse to said directional axis to said valve body causing simultaneous rotation of said housing means and valve body to vary the relative angular orientation of said first and directional axes between the condition of alignment and various degrees of non-alignment to thereby selectively direct the air discharged from said valve body discharge port.

4,524,680

DEVICE FOR RIDDLING BOTTLES ACCORDING TO THE CHAMPAGNE METHOD

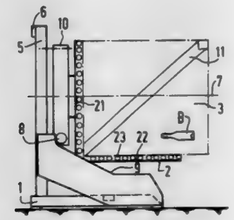
Roger G. Jeanrat, Ay; Pierre M. Martin, Reuil, and Georjes Hardy, Epernay, all of France, assignors to Methode Champenoise Automatisee-M C.A. G.I.E., Magenta, France

Filed Apr. 26, 1984, Ser. No. 604,074

Claims priority, application France, May 11, 1983, 83 07864

Int. Cl.³ C12H *1/22*

U.S. Cl. 99—277.1 **10 Claims**



1. A riddling device for processing wine according to the champagne method, the device comprising a stand, a cradle capable of pivoting through a right angle relative to the stand, and a platform capable of rotating about an axis disposed in the middle of the cradle, the platform being suitable for receiving a pallet-crate containing bottles, wherein one of the ends of the cradle is hinged to a moving support which is capable of vertical translation, and wherein the opposite end of the cradle is fitted with two wheels which rest on slopes on the stand.

4,524,681

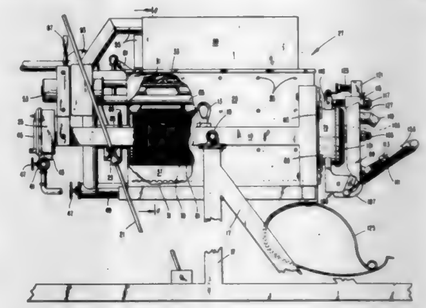
METHODS AND APPARATUS FOR THERMAL BLAST FEELING, SKINNING, OR SHELLING OF FOOD PRODUCTS

Hubert Harris, and Durward A. Smith, both of Auburn, Ala., assignors to Auburn Research Foundation, Auburn, Ala.

Division of Ser. No. 554,814, Nov. 23, 1983,. This application Jun. 18, 1984, Ser. No. 621,739

Int. Cl.³ A23N *7/00*

U.S. Cl. 99—474 **23 Claims**



1. An apparatus for thermal blast removal of coverings from food products comprising:

(a) furnace means including a combustion chamber having a burner therein;

(b) a pressure vessel having exterior walls defining a vessel chamber mounted for controlled movement substantially within said furnace means, the exterior walls of said pressure vessel being heated by said furnace means:

(c) said pressure vessel including a portion thereof extending outwardly from said furnace means and having a door means controlling an opening having an axis perpendicular thereto therein;

(d) said furnace means and said pressure vessel being mounted on frame means;

(e) means associated with said door means for controllably and substantially instantaneously opening said door means by moving said door means in a direction away from said vessel chamber and said axis; and

(f) means supplying fluid heated by said furnace means to said vessel chamber, said heated fluid pressurizing and heating said vessel chamber and said food products located therein, and actuation of said means associated with said door means causing substantially instantaneous depressurization of said vessel chamber to atmospheric pressure.

4,524,682

APPARATUS FOR CONDITIONING WAFERS

Franz Haas, Sr., Vienna; Franz Haas, Jr., Leobendorf, and Johann Haas, Klosterneuburg, all of Austria, assignors to Franz Haas Waffelmaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Dec. 7, 1983, Ser. No. 558,936

Claims priority, application Austria, Dec. 23, 1982, 4678/82

Int. Cl.³ A23B *4/04*

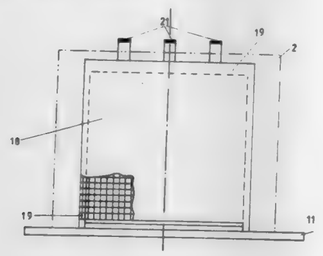
U.S. Cl. 99—477 **42 Claims**

1. In apparatus for conditioning wafers having an area up to a predetermined area, comprising

means defining an insulated conditioning chamber and a feed opening and a discharge opening communicating with said conditioning chamber, which is closed except for said feed and discharge openings,

a conveyor, which extends in said conditioning chamber and adjacent to said feed and discharge openings and is operable to revolve in a predetermined direction of travel and

carries compartment-defining means, which define compartments arranged one behind the other in said direction of travel and adapted to receive respective wafers, and
means for delivering conditioning air streams flowing in contact with wafers in said compartments,
the improvement residing in that



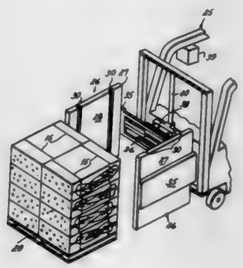
said compartment-defining means comprise for each of said compartments two supporting elements, at least one of which is movable toward and away from the other and which are adapted to support a wafer in said compartment, and
the area of each of said supporting elements is at least one-half said predetermined area.

4,524,683

METHOD OF IMPROVING THE HANDLING OF TOBACCO

Samuel S. Parker; Charles W. Marshall, both of Maysville, Ky., and Durward G. Money, Aberdeen, Ohio, assignors to Parker Tobacco Company, Inc., Maysville, Ky.

Filed Jan. 9, 1984, Ser. No. 569,045
Int. Cl.³ B65B *13/20*
U.S. Cl. 100—3 **5 Claims**



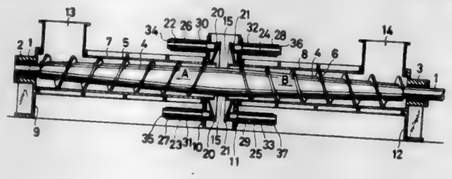
1. A method of compressing and banding bales of oriented tobacco leaves without altering leaf orientation in the bales, the leaves in the bales being oriented parallel to the bases of the bales, comprising:
assembling a stack of bales on a pallet or other surface with all the bales turned so that the leaves therein are on edge and vertical to the support;
engaging two opposite sides of the stack so formed by vertical clamping platens mounted to the jaws of a forklift truck, the platens being placed parallel to the planes of the leaves in the bales;
pressing the stack between the platens by bringing the platens closer together in the direction perpendicular to the planes of the leaves, and compressing the leaves in the direction perpendicular to their planes;
raising the jaws while holding the stack of bales compressed between the clamps, thereby lifting the stack from the surface;
rotating the jaws, with the stack between them, so that the platens and leaves are then essentially horizontal;
passing strapping bands or ties around the stack through grooves in the platens adjacent the bales while the bales are still compressed, and securing the bands or ties to hold the bales in a compressed state;
turning the jaws, while still supporting the stack, back to an orientation in which the leaves are again vertical and on edge; and
releasing the compressed and banded stack from between the platens.

4,524,684

CONTINUOUS PRESS

Hachiro Sato, Tokyo, Japan, assignor to Fukoku Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 526,149
Claims priority, application Japan, Sep. 10, 1982, 57-137592
Int. Cl.³ B30B *9/16*
U.S. Cl. 100—117 **10 Claims**



1. A continuous press comprising:
a frame;
a driving shaft journaled to the frame at its both ends by means of thrust bearings;
a screw drum disposed around the driving shaft to rotate therewith;
first and second screw blades disposed around the outer surface of said screw drum;
an outer drum arranged around the screw blades and having a number of small filtering holes;
an inlet provided in said outer drum for introducing raw materials into a space formed by the screw drum, first and second screw blades and outer drum;
an outlet provided in said outer drum for discharging the pressed raw materials as a cake;
first and second ring-shaped plates arranged opposite to each other at the outlet, an inner diameter of the ring-shaped plates being larger than that of the outlet of the outer drum so that the pressed cake is urged against only an inner surface of the plates and is guided outwardly in a radial direction of the outer drum;
means secured to the frame for supporting at least one of the plates movably in an axial direction of the press; and
means secured to the frame for resiliently pressing said at least one of the plates towards each other; whereby said space is gradually made smaller than said inlet to said outlet.

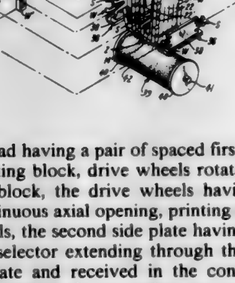
4,524,685

EQUIPMENT FOR COMPACTING TRASH CONSISTING OF PACKING MATERIALS AND EASILY COMPRESSED WASTES

Heinz Bergmann, Im Ründrdiek 1, D-4474 Lathen, Fed. Rep. of Germany

Filed Oct. 14, 1983, Ser. No. 542,231
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1982, 3238261; Jul. 19, 1983, 3326007
Int. Cl.³ B30B *3/02*
U.S. Cl. 100—210 **40 Claims**

1. In apparatus for compacting trash in a container open at the top which cooperates with compacting roller means entering the container and revolving within it on said trash in a circular manner while being supported from above said container, said compacting roller means carrying out a relative motion with respect to said container during compaction as said container is being filled, the improvement comprising:
(a) a base under said container;
(b) a post having a bottom end on said base and extending vertically from said base to an upper end;
(c) an arm extending horizontally and having a first end on said upper end of said post and a second end over said container;
(d) lifting means on said second end;



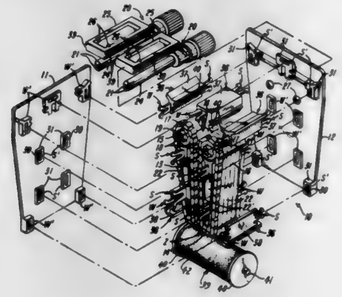
(e) a vertical shaft adapted for engagement with said lifting means and having one end engaging said lifting means and another end;
(f) at least one horizontal support provided at said another end;
(g) said compacting roller means rotatably mounted on said horizontal support and resting on said trash by its own weight; and
(h) means for subjecting said compacting roller to continuously alternating forward and backward motion within said container.

4,524,686

PRINT HEAD AND METHOD OF MAKING SAME

Donald L. Karn, Springboro, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Aug. 30, 1983, Ser. No. 527,727
Int. Cl.³ B41J *1/60*
U.S. Cl. 101—111 **10 Claims**



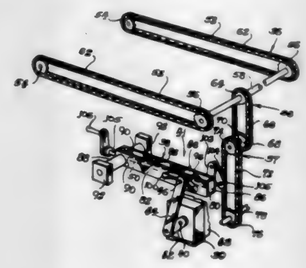
1. A print head having a pair of spaced first and second side plates, a mounting block, drive wheels rotatably mounted by the mounting block, the drive wheels having central holes defining a continuous axial opening, printing bands coupled to the drive wheels, the second side plate having means defining an opening, a selector extending through the opening in the second side plate and received in the continuous opening, means on the selector for engaging any selected wheel to advance any selected printing band, guide means connecting the first and second side plates, an indicator member coupled to the selector and slidably mounted by the guide members for indicating the printing band with which the selector is coupled, the selector being rotatable relative to the indicator member, the indicator member being shiftable in the axial direction as a unit with the selector, means for locating the guide members with respect to the first side plate, wherein the locating means includes releasable snap-connectors, snap-fit means for connecting the guide members to the second side plate sufficiently strongly so that if the second side plate is removed the guide members remain connected to the second side plate, means for locating the mounting block to the second side plate, and snap-fit means for connecting the mounting blocks to the first side plate sufficiently strongly so that if the second side plate is removed the mounting blocks remain connected to the first side plate.

4,524,687

ADJUSTABLE CARRIAGE DRIVE MECHANISM

Henry J. Bubley, Deerfield, Ill., assignor to American Screen Printing Equipment Company, Chicago, Ill.

Filed Oct. 26, 1982, Ser. No. 436,834
Int. Cl.³ B41L *13/16, 13/02*
U.S. Cl. 101—123 **9 Claims**



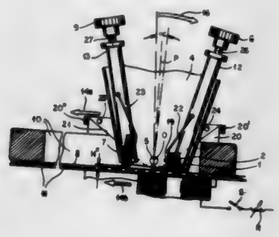
2. In a screen printing press, the combination of:
a stationary frame,
a pivoted printing head supported by the frame,
a screen supported beneath the printing head,
a carriage supported by the printing head and movable through a printing stroke along the length of the printing head,
the carriage including a squeegee which travels relative to the screen in contact therewith as the carriage travels through the printing stroke,
a motor-driven crankshaft comprising a rotating shaft with a crank extending radially outwardly therefrom and fixed thereto,
linkage means operatively associating the crankshaft with the carriage comprising a chain drive, a lever pivotally attached at one end to the frame and connected at an opposite end to the chain drive and having a movable connector member, and a link attached at one end to the crank and attached at the other end of the movable connector member, and
stroke adjustment means including an exterior operator located on the exterior of the printing press and operatively connected to said link means for moving the connector member longitudinally on the lever to alter the length of the stroke without interrupting operation of the press.

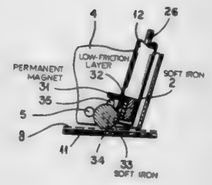
4,524,688

WIPER ASSEMBLY FOR FLAT-SCREEN PRINTER

Josef Glantschnig, Wölfnitz, Austria, assignor to Johannes Zimmer, Klagenfurt, Austria

Filed May 23, 1984, Ser. No. 613,594
Claims priority, application Austria, May 24, 1983, 1882/83
Int. Cl.³ B41L *13/18, 27/00*
U.S. Cl. 101—123 **8 Claims**





1. An apparatus for printing a pattern on a horizontal substrate, comprising:

a horizontal frame above the substrate to be printed;

a flat screen with a pattern of dyestuff-permeable perforations spanning said frame;

a carriage movable relatively to said frame along a horizontal path at a lower level, relative to said screen during a printing phase, in one direction and at a higher level, during a non-printing phase, in the opposite direction;

support means on said carriage swingable between an operating printing position and an alternate scraping position about a horizontal pivotal axis transverse to said path;

an at least partly magnetizable first mass carried by said support means on one side of said pivotal axis, said first mass including a working wiper extending across said frame above said screen;

a nonmagnetizable second mass heavier than said first mass carried by said support means on an opposite side of said pivotal axis, said second mass including a distributing wiper extending across said frame above said screen;

electromagnetic means disposed directly below said first mass below said screen and a substrate overlain thereby, said electromagnetic means being movable concurrently and codirectionally with said carriage relatively to said frame; and

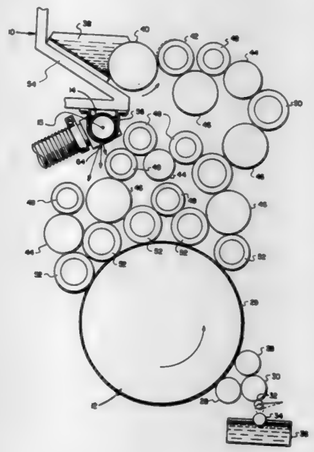
switch means for energizing said electromagnetic means during motion in said one direction, with resulting attraction of said working wiper onto said screen for pressing dyestuff accumulated thereon through said perforations onto the underlying substrate in the operating position of said support means, and de-energizing said electromagnetic means during motion in said opposite direction for enabling a swinging of said support means, acting on said nonmagnetizable second mass, by gravity into said alternate position in which said distributing wiper spreads residual dyestuff over the screen surface, said frame being vertically movable jointly with said carriage between a lower level and a higher level for keeping said screen spaced from the substrate during motion in said opposite direction.

4,524,689

DEHYDRATION APPARATUS FOR PRINTING PRESS INKING SYSTEM

Milton R. Lemaster, 16528 Voss Rd., Dallas, Tex. 75252

Continuation of Ser. No. 416,903, Sep. 13, 1982, abandoned. This application May 22, 1984, Ser. No. 613,743
Int. Cl.³ B41L *23/20, 17/24*
U.S. Cl. 101—141 **3 Claims**



3. Apparatus for mounting on a lithographic printing press for reducing the water dilution of ink on the inking rollers of said press wherein said water dilution is caused by the mixing of water used for moistening the printing surface of said press with ink on said inking rollers, said press including a frame and a rotating plate cylinder mounted on said frame, and said inking system including a plurality of inking rollers engaged with said plate cylinder and arranged in series relationship to each other around a portion of the circumferential surface of said plate cylinder in the direction of rotation of said plate cylinder, said apparatus comprising:

an elongated conduit having an opening at one end for receiving a supply of low pressure air, said conduit being closed at the opposite end;

a plurality of elongated slot shaped orifices spaced apart along said conduit and aligned with each other in such a way as to direct a uniform curtainlike flowstream of pressure air toward said inking rollers;

one of said orifices being adjacent said one end of said conduit and being longer than the other of said orifices to provide for equal distribution of flow of air from said conduit with respect to the longitudinal axis thereof and toward said inking rollers;

support means for supporting said conduit on said press, said support means being operable to support said conduit in a preselected position of said conduit so that said orifices are operable to direct a uniform curtainlike flowstream of pressure air toward the last of said inking rollers in contact with said plate cylinder in the direction of rotation of said plate cylinder;

pressure air conducting means connected to said one end of said conduit; and

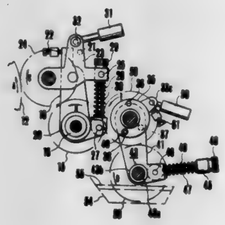
pressure air blower means connected to said pressure air conducting means for supplying pressure air to said conduit to produce said flowstream of pressure air to dehydrate ink on said last inking roller.

4,524,690

WATER SUPPLY APPARATUS FOR PRINTING PRESS

Tamotsu Omori, Toride City, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 292,388, Aug. 13, 1981, abandoned. This application Sep. 7, 1983, Ser. No. 529,924
Claims priority, application Japan, Aug. 14, 1980, 55-110992; Jan. 22, 1981, 56-8404; Jan. 22, 1981, 56-8407
Int. Cl.³ B41F *7/40;* **B41L** *25/16*
U.S. Cl. 101—148 **20 Claims**



1. A water supply apparatus for a printing press comprising:

a water supply roller being rotatably in contact with a plate cylinder of said printing press and being positioned remote from an inking roller for said plate cylinder;

a transfer roller in contact with said water supply roller and rotatable at the same peripheral speed as said plate cylinder;

an adjusting roller rotatably in contact with said transfer roller, said adjusting and transfer rollers each having a periphery moving in opposite directions at said contact;

a water feed roller being rotatably in contact with said adjusting roller, said water feed roller being immersed in a body of water in a water container;

means for causing said water supply roller to move into and out of contact with both of said transfer roller and said plate cylinder; and

means for adjusting contact pressure between said water supply roller and said transfer roller wherein said means for adjusting contact pressure comprises a shift lever rotatably mounted on a bearing supporting said transfer roller, an inverted T-shaped lever having a vertical leg and a horizontal leg pivotally connected to said shift lever, said water supply roller being supported by one end of said horizontal leg, compression spring means interposed between the other end of said horizontal leg and said shift lever, and motive means for swinging said inverted T-shaped lever.

4,524,691

ENVELOPE FEEDER FOR PRINTING PRESS WITH TIMING CIRCUIT FOR SUCTION CUPS, FEED ROLLER AND FLYWHEEL

Curtis B. Miller, Plantation, Fla., assignor to Graphic Arts Technical Innovators, Inc., Palm Bay, Fla.

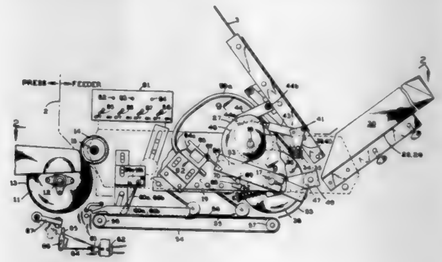
Filed Jan. 11, 1984, Ser. No. 570,004
Int. Cl.³ B41F *13/24*
U.S. Cl. 101—232 **21 Claims**

21. An envelope feeder for a printing press having gearwheels in the printer interconnected with a gearwheel in the feeder, the feeder which comprises:

at least two feeder trays for holding envelopes to be printed, said feeder trays having an upper end for feeding envelopes into said feeder trays and a lower end for removing envelopes for printing from said feeder trays,

suction cup means coordinated with said feeder trays and movable in timed relationship with said printing press in an oscillatory motion between a rear position for engagement with envelopes to be removed by said suction cup means from said lower end of said feeder trays and a forward position for delivery of said envelopes from said forward position to

feed roller means, operating in timed relationship with said suction cup means to engage said envelopes, when said suction cup means is in said forward position, and to grab said envelopes in a pinching operation between said feed roller means and



a flywheel, said flywheel cooperating in timed relationship with said feed roller means to transport said envelopes to the feeding entrance of said printing press,

timing means for timing operation of said suction cup means, said feed roller means and said flywheel in timed relationship with said printing press,

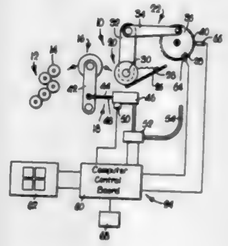
means for providing suction, and means for providing operating power for said envelope feeder.

4,524,692

ELECTRONIC INK FLOW CONTROL FOR PRINTING

Ronnie L. Rodvelt, Emporia, Kans., assignor to Didde Graphic Systems Corporation, Emporia, Kans.

Filed Apr. 18, 1984, Ser. No. 601,490
Int. Cl.³ B41F *31/14;* **B41L** *27/16, 27/38*
U.S. Cl. 101—350 **17 Claims**



1. A method of controlling the amount of ink transferred to an ink train in a printing press, wherein the printing press includes a fountain roller in operable contact with an ink supply and a ductor roller shiftable between an ink train contact position and a fountain roller contact portion, said method comprising the steps of:

providing a control processor;

inputting an operating instruction into said processor indicative of the desired amount of ink transfer;

shifting the ductor roller into contact with the fountain roller;

rotating the fountain roller thereby transferring ink to the ductor roller during the interval contact is established therebetween and the fountain roller is rotated;

determining the amount of rotational movement of the fountain roller during said interval and transmitting the same as a rotation signal to the control processor,

said processor being operable when a programmed relationship exists between said rotation signal and said operating

instruction to initiate a disconnect of the ductor roller from contact with the fountain roller;

initiating disconnect of the ductor roller from contact with the fountain roller when said processor determines that said programmed relationship exists, thereby controlling the amount of ink transferred from the fountain roller to the ductor roller; and

shifting said ductor roller into contact with said ink train for transferring ink from said ductor roller to said ink train.

4,524,693

UNDERWATER TRANSDUCER WITH DEPTH COMPENSATION

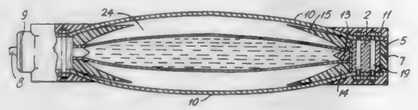
Garfield W. McMahon, and Bruce A. Armstrong, both of Dartmouth, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Continuation-in-part of Ser. No. 392,470, Jun. 28, 1982, abandoned. This application Oct. 27, 1983, Ser. No. 545,867

Claims priority, application Canada, Dec. 22, 1981, 392962

Int. Cl.³ H04B *17/00*

U.S. Cl. 367—167 **15 Claims**



1. A sealed underwater transducer comprising:

a plurality of electrostrictive elements and spacer elements arranged to form a driving ring, said elements having opposed surfaces axially of the ring, said ring surrounding a space radially internally of the same, said driving ring being expandable radially in response to an applied voltage;

a pair of flexible diaphragms closing off said space axially of said ring, said diaphragms each being formed with a plurality of extensions extending radially outwardly, said extensions being connected to said opposed surfaces of the elements so as to prevent mechanical bending stresses peripherally of the diaphragms from being transferred to the electrostrictive elements;

a closeable gas inlet means for injecting a compressed gas into said space;

a water bladder assembly within said driving ring, including a water bladder in said space, said water bladder having water inlet means in communication with the exterior of the transducer, said water bladder being collapsable by injection of a compressed gas at a predetermined pressure into said space via said gas inlet means, said water bladder being expandable from said collapsed condition to a condition substantially filling said space thereby to protect the diaphragms against collapse under excessive ambient water pressures; and

a pair of supports positioned in said space between said bladder and said diaphragms such that at a predetermined operating depth, when the external water pressure exceeds the internal gas pressure the bladder expands and is supported by said supports such that said water bladder is prevented from touching the diaphragms thus impeding the operation of said transducer, and hence extending the operating depth range.

2. A sealed underwater transducer comprising:

a plurality of electrostrictive elements and spacer elements arranged to form a driving ring, said elements having opposed surfaces axially of the ring, said ring surrounding a space radially internally of the same, said driving ring being expandable radially in response to an applied voltage;

a pair of flexible diaphragms closing off said space axially of said ring, said diaphragms each being formed with a plurality of extensions extending radially outwardly, said extensions being connected to said opposed surfaces of the elements so as to prevent mechanical bending stresses peripherally of the diaphragm from being transferred to the electrostrictive elements;

a closeable gas inlet means for injecting a compressed gas into said space; and

a water bladder assembly attached within said driving ring in a manner in which the assembly is mechanically decoupled from said driving ring, including a water bladder expandable to the shape of a torus, said water bladder having water inlet means in communication with the exterior of the transducer, said water bladder being collapsable by injection of a compressed gas at a predetermined pressure into said space via said gas inlet means, said water bladder being expandable from said collapsed condition to a condition substantially filling said space thereby to protect the diaphragms against collapse under excessive ambient water pressures, and a pair of supports positioned in said space between said bladder and said diaphragms, said supports substantially enclosing the torus shaped bladder when the latter is substantially filled with water, such that down to a predetermined operating depth, when the outside water pressure exceeds the internal gas pressure the bladder expands and is supported by said supports to prevent said water bladder from touching the diaphragms thus impeding the operation of said transducer, and hence extending the operating depth range.

4,524,694

CLUSTER BOMB PROJECTILE

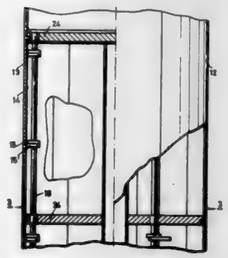
Dieter Boeder, Duesseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 436,076

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1981, 3142313

Int. Cl.³ F42B *13/50, 25/16*

U.S. Cl. 102—393 **10 Claims**



1. An improved cluster bomb projectile for transporting a plurality of useful loads having a cylindrically shaped housing, said loads being adapted to be expelled from said housing at a predetermined point of the flight path of the projectile, the improvement comprising in combination:

said cylindrically shaped housing being formed by a plurality of detachable segments which jointly form a cylindrical housing surface;

each two adjoining segments have a pair of adjoining longitudinally extending side edges and each segment has an inner suface, a plurality of hook-shaped members projecting from the inner surface of each segment at an adjoining side edge interiorly of the housing and past the longitudinally extending side edge of the next adjoining segment, said longitudinally extending side edges of adjoining segments abutting against each other, each pair of hook-shaped members of adjoining segments being disposed one immediately above the other and defining an opening therebetween, said openings defined by pairs of hook-shaped members along confronting side edges of adjoining segments being axially aligned with respect to each other;

a rod is provided for connecting each pair of adjoining segments, which rod extends through all of said aligned openings defined by pairs of hook-shaped members along confronting side edges parallel to the longitudinal axis of the cluster bomb projectile;

said rod being essentially cylindrical in shape and including at least one projection in the region of each pair of hook-shaped members, which projection biasingly abuts against at least one hook-shaped member such that when said rod is moved in a predetermined manner relative to said adjoining segments the pair of adjoining segments are prestressed; and

each rod is axially slidably mounted in said aligned openings of said pairs of hook-shaped members.

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FINNED SUBCALIBER PROJECTILE

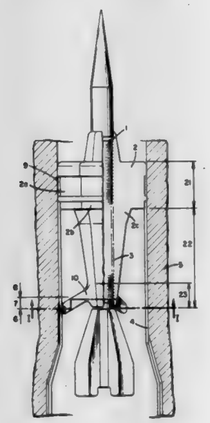
Bernhard Bisping, Ratingen-Hösel; Klaus Gersbach, Willich; Hans Luther, Kaarst; Walter Simon, Aachen; Peter Wallow, Dusseldorf, all of Fed. Rep. of Germany; Patrick Montier; Pierre A. Moreau, both of Bourges, France, and Jean C. Sauvestre, Saint-Doulchard, France, assignors to Etat Francais, Paris Armees, France

Continuation of Ser. No. 300,107, Sep. 8, 1981, abandoned. This application Sep. 25, 1984, Ser. No. 654,528

Claims priority, application France, Sep. 23, 1980, 80 20381

Int. Cl.³ F42B *5/02*

U.S. Cl. 102—430 **18 Claims**



1. Ammunition to be launched from a barrel of a weapon comprising:

a finned subcaliber-sized projectile;

a combustible tubular case surrounding a rear part of said projectile and containing a propulsive charge;

at least two longitudinal shell portions together comprising a launching shoe for launching movement with said projectile along a barrel of a weapon, said shoe being partially disposed within said tubular case and having an inner portion in form locking engagement with said projectile to prevent axial shifting between said shoe and said projectile while said shoe and said projectile are within said barrel but allow radial separation of said longitudinal shell portions from said projectile upon exit of said shoe and said projectile from said barrel;

said shoe comprising a tubular middle portion extending between a front portion and a rear portion of said shoe;

said front portion being disposed forward of said tubular case and being caliber-sized to create a seal between a combustion chamber and a front part of said barrel of said weapon;

said rear portion having recesses to permit passage of propulsive gases toward said front portion and having above caliber-sized projections extending through holes in said tubular case to frictionally engage a forcing cone of said barrel, the frictional engagement between said projections and said forcing cone being such as to limit movement of said shoe during launch until said propulsive gases reach a forcing pressure.

7. Ammunition to be launched from a barrel of a weapon comprising:

a finned subcaliber-sized projectile;

a non combustible tubular case surrounding a rear part of said projectile and containing a propulsive charge;

at least two longitudinal shell portions together comprising a launching shoe for launching movement with said projectile along a barrel of a weapon, said shoe being partially disposed within said tubular case and having an inner portion in form locking engagement with said projectile to prevent axial shifting between said shoe and said projectile while said shoe and said projectile are within said barrel but allow radial separation of said longitudinal shell portions from said projectile upon exit of said shoe and said projectile from said barrel;

said shoe comprising a tubular middle portion extending between a front portion and a rear portion of said shoe;

said front portion being disposed forward of said tubular case and being caliber-sized to create a seal between a combustion chamber and a front part of said barrel of said weapon;

said rear portion having recesses to permit passage of gases toward said front portion and having above caliber-sized projections to frictionally engage a forcing cone of an internal surface of said tubular case, the frictional engagement between said projections and said forcing cone being such as to limit movement of said shoe during lauch until said propulsive gases reach a forcing pressure.

13. Ammunition to be launched from a barrel of a weapon comprising:

a finned subcaliber-sized projectile;

a non-combustible tubular case surrounding a rear part of said projectile and containing a propulsive charge;

at least two longitudinal shell portions together comprising a launching shoe for launching movement with said projectile along a barrel of a weapon, said shoe being partially disposed within said tubular case and having an inner portion in form locking engagement with said projectile to prevent axial shifting between said shoe and said projectile while said shoe and said projectile are within said barrel but allow radial separation of said longitudinal shell portions from said projectile upon exit of said shoe and said projectile from said barrel of said weapon;

said shoe comprising a tubular middle portion extending between a front portion and a rear portion of said shoe;

said front portion being disposed forward of said tubular case and being caliber-sized to create a seal between a combustion chamber and a front part of said barrel of said weapon;

said rear portion having recesses to permit passage of propulsive gases toward said front portion and having projections extending at least partially through hole in said tubular case to limit movement of said shoe during launch until said propulsive gases reach a forcing pressure, said projections shearing at an inner surface of said tubular case to allow movement of said shoe when said propulsive gases reach said forcing pressure.

4,524,696

EXPLOSIVE SHRAPNEL SHELL

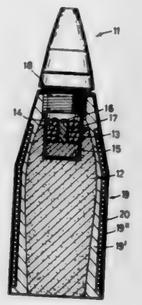
Ernst-Wilhelm Altenau, Duisburg; Ulf Hahn, Hösel, and Udo Sabranski, Willich, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 5, 1983, Ser. No. 510,930

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224704

Int. Cl.³ F42B *13/18*

U.S. Cl. 102—491 7 Claims



1. An improved shrapnel shell having an interior wall, an ignition fuse, and an outer shrapnel multilayer which layer laterally surrounds a bursting charge, the improvement comprising

(a) said ignition fuse forming the nose of the shell and having a cylindrical rearwardly axially extending portion having an outer cylindrical wall containing second shrapnel which portion defines a first annular space between its outer cylindrical wall and the interior wall of the shell;

(b) said bursting charge disposed in said shell and extending into said first annular space;

(c) a coaxial detonating charge extending through at least a portion of said cylindrical portion defining a second annular space containing the second shrapnel; and

(d) an intensifying charge mounted in said cylindrical portion and having a higher specific energy that said bursting charge and being disposed behind said tube and said second shrapnel and extending across the entire cross-section of said cylindrical portion.

4,524,697

PROJECTILE ARRANGEMENT FOR A WEAPON HAVING A GUN BARREL

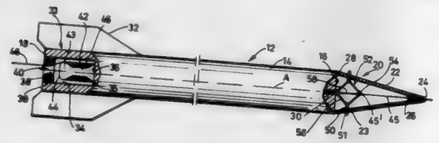
Jürgen Böcker, Oberhausen; Klaus Gersbach, Willich; Karl W. Bethmann, Moers, and Gerhard Glotz, Düsseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,671

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1981, 3127002

Int. Cl.³ F42B *11/00*

U.S. Cl. 102—517 1 Claim



1. An improved projectile arrangement for a barrel weapon having a plurality of subcaliber projectiles which are jointly mounted on a common sabot having a plurality of segments, the improvement comprising an arrangement for attaining a sequential flight of a leading projectile and a plurality of sequentially following projectiles in the same flight path after their separation from the sabot segments of the common sabot, wherein the arrangement includes wires which join the following projectiles to each other and to the leading projectile for maintaining a predetermined distance from each other along a common flight path, each following projectile having a wire connection at its nose;

an elastic tension absorbing device is interposed in the wire within the first following and second following projectiles;

wherein the projectiles exhibit, at least at firing, the following features:

(a) different air resistance values a_1, a_2, a_3; whereby air resistance a_1 corresponds to the air resistance of the leading projectile, air resistance a_2 corresponds to the air resistance of the first following projectile and air resistance a_3 corresponds to the air resistance of the second following projectile;

(b) $a_1 > a_2 > a_3$;

wherein each following projectile has at least two operatively connected retractable air foils, at least one projectile being provided with automatic means for retracting the air foils to vary the air resistance of said projectile, said automatic control means being adapted to be activated by means of a predetermined prevailing axial tensional force exerted thereon by the wire.

4,524,698

MODULAR RAIL MEMBER FOR THE TRANSLATION OF LOAD-BEARING CARRIAGES ON AN OVERHEAD TRACK

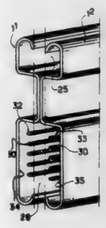
Jean-Louis Tourtellier, and Roger Schoen, both of Mulhouse, France, assignors to Etablissements Tourtellier S.A., France

Filed Sep. 2, 1982, Ser. No. 414,078

Claims priority, application France, Jun. 15, 1982, 82 10563

Int. Cl.³ E01B *25/22*

U.S. Cl. 104—107 5 Claims



1. A modular rail member for the translation of load-bearing carriages on an overhead track, in particular a suspended, tubular monorail, said modular rail member comprising a vertical wall formed with two sections of different lengths which are spaced apart from and connected to each other by a flare having a vertical web, characterized in that said two spaced apart sections have ends curved toward the same direction, and vertical plane passing through the horizontal outer edges of said curved ends being set closer to the plane of the web than to the plane connecting the two vertical sections.

4,524,699

LOW LEVEL FREIGHT CAR FOR CARRYING TRAILERS

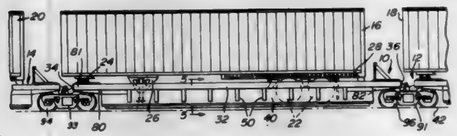
Michael J. Pavlick, Norristown, Pa., assignor to The Budd Company, Troy, Mich.

Continuation of Ser. No. 434,294, Oct. 14, 1982, Pat. No. 4,456,413, which is a continuation of Ser. No. 147,965, May 8, 1980, abandoned. This application Jun. 21, 1984, Ser. No. 623,269

The portion of the term of this patent subsequent to Jun. 26, 2001, has been disclaimed.

Int. Cl.³ B61D *3/10, 15/00*

U.S. Cl. 105—4 R 1 Claim



1. A low level freight car for carrying a trailer comparable in length to the length of said freight car and having trucks including wheels supporting each end of said car and at least one next adjacent freight car comprising:

(a) a main frame including a pair of load supporting longitudinal top side beams and end channels;

(b) side and end walls connected to said side beams and said end channels, respectively, extending downwardly therefrom and forming stress panels for transfering loads to said side beams and said end channels;

(c) a plurality of spaced, tapered braces extending substantially along the length of said freight car connected between said longitudinal top side beams and said side walls;

(d) a floor structure connected to the low portion of said side and end walls to provide a well area below said side beams and end channels to receive and support the bottom portion of a trailer therein and transfer the vertical load to said side and end wall stress panels, said floor structure of said well area being substantially in the same plane as the horizontal centerline of said truck wheels;

(e) said floor structure including a plurality of spaced lateral cross beams connected between the bottom portions of said downwardly extending walls;

(f) end frame assemblies secured to each end at said freight car adjacent said well area including coupling means secured thereto;

(g) a pair of trucks for supporting each of said freight car; and

(h) coupling means connected to said end frame assemblies being adapted to pivotally secure the respective end of said freight car on one of said trucks, and at least one of said trucks being adapted for pivotally supporting another freight car.

4,524,700

OPENING COVER FOR RAILROAD CARS

Roger Engdahl, St. Paul, Minn., assignor to Proform, Inc., Minneapolis, Minn.

Filed Jun. 7, 1982, Ser. No. 385,944

Int. Cl.³ B61D *39/00*

U.S. Cl. 105—377 7 Claims

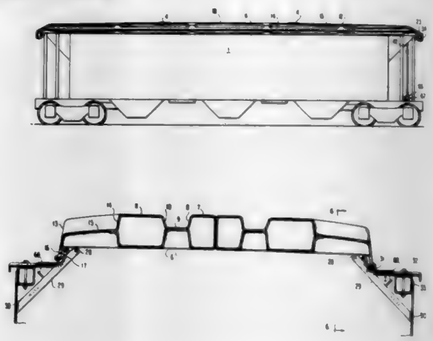
1. An opening car cover for railroad cars, the walls of said cars defining an upwardly open space, said cover, when closed, extending completely across said opening, comprising:

a cover member further comprising first and second halves;

a drive means affixed to said halves and capable of causing said halves to undergo translational movement;

each said half further comprising an upper surface of alternate raised and lowered portions of a notched shape in cross-section, said alternate raised and lowered portions extending the length of said cover, said upper surface defining dome-shaped envelope in longitudinal cross-section, and a flat lower surface integrally attached to said upper surface and spaced therefrom by integral lateral and longitudinal end portions extending downwardly from said upper surface to said lower surface which said lower surface is supported on the wall of the railroad car through friction reducing means on which it rests;

said cover member being comprised substantially of fiberglass products;



wherein said friction reducing means comprises wheels affixed to said cover halves which engage a track affixed to the lateral ends of said railroad car, and a plurality of rollers supported by braces affixed to the interior of the longitudinal walls of said railroad car, said rollers engaging said lower surface of said car cover halves.

4,524,701

DETACHABLE CAR SEAT TABLES

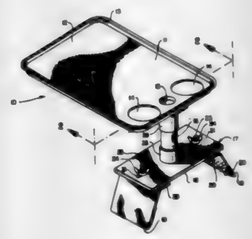
Austin W. Chappell, 739 E. First South, Kaysville, Utah 84037

Filed Aug. 27, 1982, Ser. No. 412,173

The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.

Int. Cl.³ A47B *23/00, 37/00*

U.S. Cl. 108—44 9 Claims



1. A car seat table assembly comprising:

(a) a lower attachment section consisting of a generally rectangular, horizontal base plate having attached thereto a pair of opposing laterally adjustable sidewings, each sidewing having outer and inner surfaces, a forward base plate engaging section and a rearward carpet engaging section, the inner surface of each carpet engaging section containing a multiplicity of projecting pointed teeth which teeth are slanted back at an angle in the direction of the forward base plate engaging section, said base plate containing on the upper surface thereof upwardly extending tubular support means for telescopically receiving a vertical support member,

(b) a generally rectangular tray section having a horizontal floor surrounded by an upwardly extending rim, the forward portion of said tray section containing a plurality of apertures for receiving and holding liquid food containers, the lower surface of the forward portion of said tray

section containing downwardly extending tubular support means for telescopically receiving a vertical support member, and

(c) a vertical support member adjustably and frictionally secured in said upwardly and downwardly extending tubular support means of said attachment and tray sections.

4,524,702

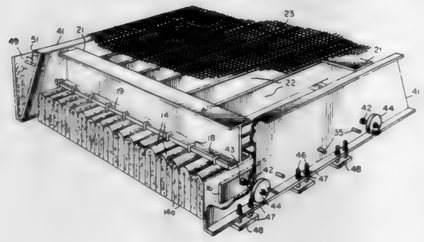
READILY REPAIRABLE AND LIGHTWEIGHT COVER FOR A HEATED VESSEL

Thomas M. Miller, North Olmsted; Raymond J. Schraff, Cleveland, and Nicholas Labas, Solon, all of Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

Filed Jul. 30, 1984, Ser. No. 635,441

Int. Cl.³ E04B *1/80*; C04B *43/02*; F23M *7/00*

U.S. Cl. 110—173 A **11 Claims**



1. A lightweight insulation cover structure for retaining heat in a heated vessel, said cover structure having a ceramic fiber insulation hot face, which cover structure comprises:

a pair of opposing, outer frame members spaced sufficiently apart one from the other for positioning each member at opposite ends beyond the opening of said vessel;

a series of parallel cover support members spanning said vessel opening, spaced apart from each other and located transversely between said frame members as well as being affixed thereto;

a plurality of depending ceramic fiber insulation units, each in form-stable condition positioned under said cover support members;

insulation support means in interengagement with said depending insulation;

linking means connecting said insulation support means with said cover support members in upwardly moveable and at least substantially swinging engagement; and

adjustable compression means abutting against said depending insulation.

4,524,703

THREAD CHANGING MECHANISM FOR SEWING MACHINES

Erich Willenbacher, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

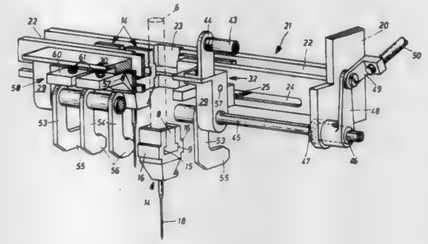
Filed Mar. 14, 1984, Ser. No. 589,497

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 3309608

Int. Cl.³ D05B *55/16*; D05C *3/02*

U.S. Cl. 112—098 **9 Claims**

1. In a sewing machine including a reciprocating needle bar for reciprocating a thread needle having thread fed thereto, the improvement comprising a needle holder magazine, a plurality of needle holders in said magazine, means mounting said holders in said magazine for movement across the path of movement of said needle bar for selectively aligning a selected one of said needle holders with the needle bar, said magazine having a holder receiving recess aligned with said needle bar, displacement means engageable with said holders to shift said holders relative to said needle bar so as to align a selected holder with the recess, and thread clamping means engageable with said holders for engaging against thread fed thereto to



hold the thread, and means associated with said thread clamping means to disengage said thread clamping means when said magazine is engaged with said needle bar.

4,524,704

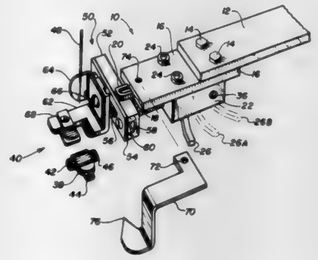
ACCESSORY-HOLDING JIG PROVIDING MULTIPLE SEWING POSITIONS

Salvatore V. Cusumano, Moscow, Pa., assignor to G & G Sewing Machine Co., Inc., Moscow, Pa.

Filed Apr. 20, 1983, Ser. No. 486,799

Int. Cl.³ D05B *3/18*

U.S. Cl. 112—105 **7 Claims**



1. A jig for a sewing machine, in combination with a clothing fastening accessory having at least two thread holes, wherein said jig supports said accessory while being stitched to a workpiece comprising:

attachment means attachable to the sewing machine in predetermined relationship with respect to the needle of the sewing machine;

a first sliding means held in slidable relationship with the attachment means and including first location-determining means to impede the first sliding means in at least two predetermined positions, said two positions being separated by the same distance in one direction as two thread holes on said accessory wherein said distance is substantially parallel to the sewing machine needle plate and substantially perpendicular to the direction of workpiece travel when said accessory is being stitched thereto;

an accessory-holding means attached to and extending from the first sliding means to a location below the needle of the sewing machine, permitting the alignment of the at least two thread holes on the accessory with the needle of the sewing machine when the first slidable means is in its predetermined positions.

4,524,705

SPADE GUSSET SEAMING APPARATUS

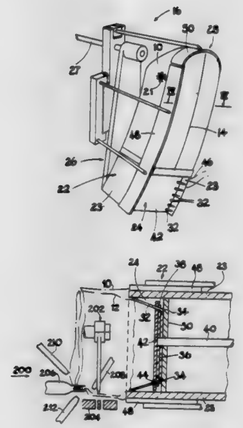
John C. Humphreys, Hinckley, England, assignor to H. Flude & Company (Hinckley) Limited, Leicestershire, England

Filed Mar. 17, 1982, Ser. No. 359,093

Claims priority, application United Kingdom, Mar. 18, 1981, 8108526

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.15 **11 Claims**



1. Apparatus for automatically seaming a spade gusset to a garment comprising a carrier for supporting the garment about a seam thereof; and means for opening the garment along said seam, said carrier comprising an elongate member having a substantially gusset-shaped opening for receiving the gusset, means operable to adjust the profile of an opened seam, and inner support means mounted internally of said member and displaceable relative to said member for gripping the gusset so as to enable the opening in the garment and the gusset periphery to be brought into overlapping relationship; a gusset mounting station comprising means for mounting said gusset and presenting said gusset to said inner support means; a sewing station comprising a seaming machine for seaming the gusset and the garment together, said carrier being displaceable relative to said machine to bring the machine into engagement with the garment and gusset to enable the gusset to be seamed to the garment by a single continuous seam.

11. An apparatus for automatically applying a spade gusset to a garment comprising a carousel unit having at least one carrier for supporting the garment in a predetermined position thereon, the carrier being supported for movement about a substantially vertical axis of the unit successively through a cutting station for providing on opening in said garment for receiving the gusset, a gusset mounting station for presenting the gusset to the garment opening and a sewing station for seaming the gusset into the garment opening; and wherein the carrier comprises an elongate member having a substantially gusset-shaped area for receiving the gusset and inner support means displaceable relative to said member for gripping the gusset so as to enable the garment opening edges and the gusset periphery to be brought into overlapping relationship.

4,524,706

TRIM ATTACHING MACHINE AND METHOD

James D. Bell, Campbellsville, Ky., assignor to Union Underwear Company, Inc., Bowling Green, Ky.

Filed Sep. 25, 1981, Ser. No. 305,402

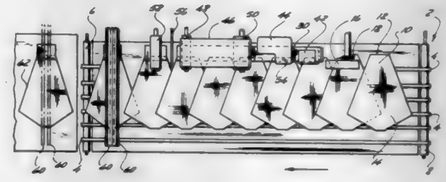
Int. Cl.³ D05B *19/00*

U.S. Cl. 112—121.29 **14 Claims**

1. A machine for successively attaching fabric trim to a plurality of cut pieces of fabric at an edge of each cut piece, the cut pieces being spaced apart from each other such that said edges of adjacent cut pieces are non-overlapping with said adjacent cut pieces, comprising:

means for successively transporting a plurality of cut pieces to a sewing location;

means for feeding a continuous band of fabric trim to the sewing location in such a manner that the band meets the cut pieces in succession and overlaps said edges;



means for successively sewing the band to the cut pieces at the sewing location;

means for increasing the distance between adjacent cut pieces; and

means for cutting the band intermediate adjacent cut pieces, after the distance between them is increased, thereby separating said cut pieces.

4,524,707

DEVICE FOR FEEDING AND SEWING A TRIMMING RIBBON TO A GARMENT PART

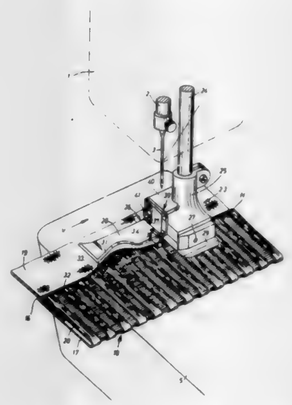
Wilfried Sander, Nurtingen, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Mar. 8, 1984, Ser. No. 587,367

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 3309607

Int. Cl.³ D05B *35/04*

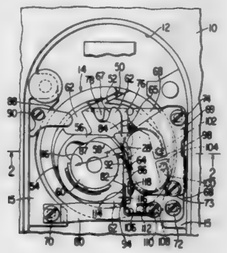
U.S. Cl. 112—152 **6 Claims**



1. A device for feeding and sewing a U-shaped trimming ribbon which has an upper portion overlapped upon the edge of a garment which is fed over a needle plate and with a ribbon lower portion underlying a margin of the garment forming with the garment a workpiece using a sewing machine having a reciprocating needle movable in a stitch forming area to effect a seam cooperating with a movable presser foot which is engageable with the workpiece to sew the ribbon to the garment along the seam, comprising an angle shaped guideway defined on the needle plate overlying and securing the position of the edge of the lower portion of the ribbon, a guide web carried by the presser foot extending parallel to the seam and

overlying the garment for securing the position of the upper portion of ribbon, a guide bar connected to and spaced laterally of said guide web and including a vertically extending portion extending parallel to the seam and providing a lifting edge located before the stitch forming area over which the upper portion of the ribbon is moved, and a hold-down edge over which the upper portion of the ribbon is moved which is located before the stitch forming area, and a hold-down carried by the presser foot and engageable with the ribbon adjacent its folded edge directly adjacent the needle stitch forming area and between the lifting edge and said guide web.

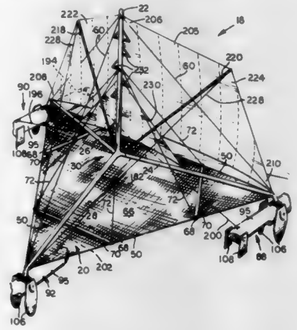
4,524,708
NOISE SUPPRESSION AND THREAD CONTROL ARRANGEMENT FOR A SEWING MACHINE
Donald Rodda, Butler, and Charles R. Odermann, Montville, both of N.J., assignors to The Singer Company, Stamford, Conn.
Filed Aug. 13, 1984, Ser. No. 639,660
Int. Cl.³ D05B *57/08*
U.S. Cl. 112—231 **5 Claims**



1. In a sewing machine, a bed, a looptaker mounted for rotation about a vertical axis in the bed and including a beak for seizing a loop of needle thread during looptaker rotation in a defined direction, a bobbin case loosely confined within the looptaker, a light force applying resilient member in continuous biasing engagement with the bobbin case for urging one side of the bobbin case against the looptaker and said bobbin case rotationally about the looptaker axis in a direction opposite to said defined direction of rotation of the looptaker for engagement with a stop having a fixed position in the bed, and a resilient shock absorber spaced a predetermined distance from the bobbin case in a position adjacent the bobbin case for engagement thereby only upon movement of the bobbin case in opposition to the bias of said resilient member.

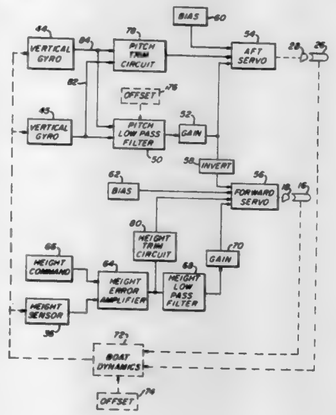
4,524,709
COLLAPSIBLE WIND PROPELLED WATER CRAFT
Quentin M. McKenna, 524 Portlock Rd., Honolulu, Hi. 96825
Filed Dec. 3, 1982, Ser. No. 446,595
Int. Cl.³ B63B *35/00*
U.S. Cl. 114—39 **36 Claims**

1. A wind propelled water craft comprising:
three spaced apart support members adapted to engage and be supported on the surface of the water,
a substantially tetrahedral frame comprising four substantially rigid spars connected together at a juncture and extending radially outwardly therefrom, said spars having ends distal from said juncture, and a first plurality of taut, flexible stays connected to and between each one of said spars and the other said spars, respectively, said stays being connected to said spars at points near the distal ends thereof,
three of said spars extending laterally and downwardly from said juncture and the fourth one of said spars extending vertically upward from said juncture, said fourth spar lying along a vertical axis,
said support members being connected to said tetrahedral frame at points near said distal ends of said three spars,
a sail connected to said tetrahedral frame, and
a triangularly-shaped trampoline having its three vertices connected near said distal ends of said three spars, and



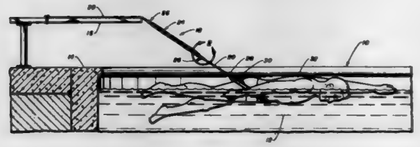
a tensioning means comprising three sleeve members, each said sleeve member being connected to said trampoline near a respective said vertex, and three rigid tube members, each said rigid tube member being received in a respective said sleeve member, each of said rigid tube members having a second plurality of taut, flexible stays connecting its end portions to the said fourth vertical spar.

4,524,710
AUTOMATIC TRIM SYSTEM FOR HYDROFOIL CRAFT
John H. Scott, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Jan. 11, 1979, Ser. No. 2,412
Int. Cl.³ B63B *1/28*
U.S. Cl. 114—275 **1 Claim**



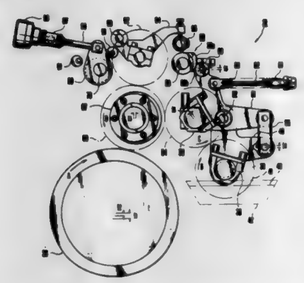
1. In a control system for a hydrofoil craft of the type in which a servo system for a control surface on a submerged foil is varied by an error signal derived by comparison of a reference signal with an actual position signal, and wherein said control system is subject to an offset from theoretical control parameters due to manufacturing tolerances of parts and wear, and wherein a bias signal is supplied to compensate for said offset, the combination of means for automatically establishing said bias signal including: means for comparing a hydrofoil craft responsive signal with a reference signal to generate a comparison signal; means for integrating said comparison signal between maximum and minimum values to generate an integrated signal, first amplifying means for amplifying said comparison signal before it is applied to said integrating means, second amplifying means for amplifying the output of said integrating means, summing means for summing the output of said second amplifying means with a control signal, an amplifier with negative gain adapted to apply a signal proportional to the output of said summing means to the input of said first amplifying means whereby, when said output is connected through said first amplifying means with negative gain to the input of said integrating means, the output of said summing means will rapidly drop to zero, and means for varying said bias signal as a function of the magnitude of said integrated signal.

4,524,711
SWIMMING HARNESS
David P. Ashrow, 1651 N. Foothill Rd., Ojai, Calif. 93023
Filed Jul. 11, 1983, Ser. No. 512,665
Int. Cl.³ F16G *11/00*
U.S. Cl. 114—215 **2 Claims**



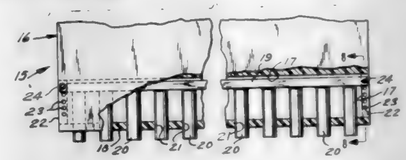
1. A swimming harness for holding a swimmer in a selected location in a swimming pool yet giving the swimmer freedom of swimming movement, said swimming harness comprising:
an elongated integral member having an inner end and an outer end, said elongated member being tubular defining an internal chamber, said elongated member comprising a cord, said elongated member including resilient means to permit a limited amount of stretching said elongated member, said resilient means comprising a mass of knots formed within said cord as well as the partial collapsing of said internal chamber during stretching of said cord, said mass of knots comprise a plurality of overlapping knots which are loosely knotted, said inner end adapted to be attached to an exterior fixed object; and
a belt adapted to be located about the waist of the swimmer, said belt being attached to said outer end.

4,524,712
VARNISH COATER FOR PRINTED PRODUCT
Kiyoshi Ito, Chiba, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan
Filed Feb. 2, 1984, Ser. No. 576,219
Claims priority, application Japan, Feb. 3, 1983, 58-16602
Int. Cl.³ B05C *1/02*
U.S. Cl. 118—46 **5 Claims**



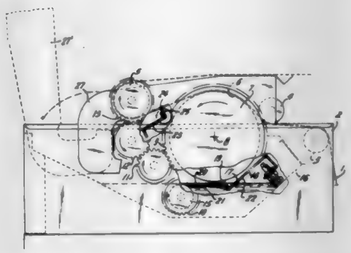
1. A varnish coater for coating varnish transferred from a form roller to a blanket cylinder on a printed sheet passing through the blanket cylinder and an impression cylinder, comprising:
first eccentric bearings for supporting said form roller;
rolling members mounted on outer end portions of said first eccentric bearings, respectively;
cams which are pivotally supported by second eccentric bearings, respectively, and each of which has a large diameter portion and a small diameter portion which are selectively brought into contact with a corresponding one of said rolling members;
first pivoting means for pivoting said cams;
biasing means for biasing said rolling members each of which is brought into tight contact with one of said large and small diameter portions of a corresponding one of said cams; and
second pivoting means for pivoting said second eccentric bearings to shift an axis of a cam shaft of said cams.

4,524,713
WAX TOOL
Paul Debry, P.O. Box 1365, New Smyrna Beach, Fla. 32070-1365
Filed Apr. 18, 1984, Ser. No. 601,723
Int. Cl.³ B05C *11/02*
U.S. Cl. 118—102 **1 Claim**



1. A wax tool for scribing a pattern in a warmed wax, comprising, in combination, a flat body, a row of equally spaced-apart teeth projecting from one longitudinal edge of said main body, each said tooth being transversely round and having a flat end face at right angle to a longitudinal axis of said tooth, a longitudinal opening through said main body, a bar slidable in said opening, said teeth being affixed along said bar and extending through a plurality of holes of a wall of said main body having said longitudinal edge, and a pair of screw fasteners received through transverse openings in said bar and selected ones of a plurality of transverse openings in said main body for selective projecting distance of said teeth from said main body.

4,524,714
PASTING MACHINE FOR A WEB OF MATERIAL, PREFERABLY WALLPAPER
Paul Hohenhövel, Meinstr. 114, D-3180 Wolfsburg 11, Fed. Rep. of Germany
Filed Mar. 22, 1984, Ser. No. 592,215
Int. Cl.³ B05C *1/08*
U.S. Cl. 118—123 **9 Claims**



1. A pasting machine for a web of material (1), preferably wallpaper, having a paste well (16), a paste applicator roll (7) arranged in driveable manner over said well and contacted by the web of material (1) over a portion (6) of its circumference facing away from the paste well (16), the periphery of said applicator roll being uniformly coated with paste from the paste well (16), and having guide rolls (3, 4, 5) for the web of

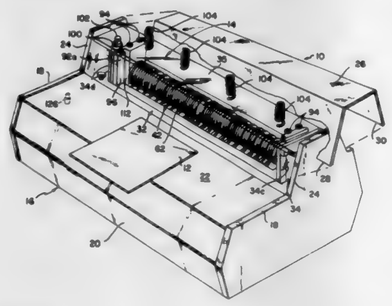
material (1) arranged on both sides of the applicator roll (7) and pulling the web of material (1) against the upper periphery (6) of the applicator roll (7), characterized by the fact that a paste well roll (15) which extends parallel to the applicator roll (7) and is driven in the direction of rotation opposite to that of the applicator roll (7) extends at least over a part of its periphery into the paste (17) in the paste well (16) and that a paste guide plate (18) is provided which surrounds, at a distance, a circumferential region (19) of the applicator roll (7) which is adjacent the feed roll (15), said guide plate (18) being adapted to force paste against said circumferential region (19) and by means of a longitudinal edge (20) facing the periphery of the feed roll (15) takes up paste from the feed roll (15), and that below the part of the web of material (1), which has moved away from the applicator roll (7) and at a distance from said part of the web which determines the thickness of the layer of paste on it, a scraper bar (23) is arranged within the vertical projection of the paste well (16).

4,524,715

APPARATUS FOR APPLYING A COATING MATERIAL

William C. Abrams, 215 N. Avenue East, Cranford, N.J. 07016

Filed Mar. 30, 1983, Ser. No. 480,322
Int. Cl.³ B05C *1/08, 1/16*
U.S. Cl. 118—221 **39 Claims**



1. Apparatus for applying a coating material to a sheet material, said apparatus comprising:

housing means for providing a substantially enclosed interior, said housing means including reservoir means for containing a supply of coating material to be coated on a sheet material;

a rotatable applicator roll mounted in the interior of said housing means for receiving coating material from said reservoir means and for then applying said coating material to a sheet material;

said housing means being sealable to seal the interior thereof from exposure to the surrounding atmosphere, and including movable opening means for providing access for a sheet material to said rotatable applicator roll;

said housing means further including a wall having an aperture of a predetermined size therein;

a shaft operatively coupled to said rotatable applicator roll for rotation therewith and extending through said aperture in said wall of said housing means;

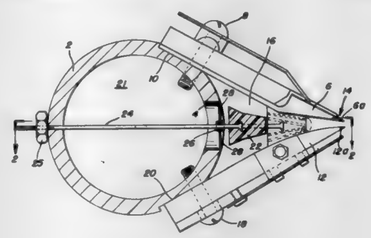
sealing means for sealing said aperture to prevent exposure of the interior of said housing means to the atmosphere through said aperture, said sealing means having an outer peripheral dimension which is greater than said predetermined size of said aperture and being disposed to be in contact with the portion of said wall surrounding said aperture to thereby create a seal between said aperture and said sealing means, and said sealing means having a cylindrical transverse bore therethrough for receipt of said shaft therethrough, the interior of said bore including an inner groove therein and said shaft including an outer groove therein disposed to be in alignment with said inner groove of said bore, and said sealing means further including ring sealing means having an inner portion disposed in said outer groove of said shaft and an outer portion disposed in said inner groove of said bore.

4,524,716

ADJUSTABLE AIR KNIFE

Hans J. Mueller, Appleton, Wis., assignor to Appleton Papers Inc., Appleton, Wis.

Filed Jan. 18, 1984, Ser. No. 571,808
Int. Cl.³ B05C *11/06*
U.S. Cl. 118—665 **16 Claims**



1. An adjustable gas knife, comprising:

elongated nozzle means having an elongated nozzle opening for projecting a sheet of gas;

elongated flexible gas flow modification means located within said nozzle for modifying the rate of flow of said gas; and

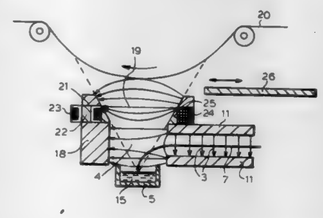
differential adjusting means for selectively adjusting the position of said gas flow modification means relative to said nozzle opening at a plurality of positions along the length of said gas flow modification means to thereby selectively modify the rate of flow of said gas through said nozzle opening.

4,524,717

ELECTRON BEAM STRIP-COATING APPARATUS

Manfred Neumann; Siegfried Schiller; Gerhard ZeiBig; Henry Morgner, and Günter Jäsch, all of Dresden, German Democratic Rep., assignors to Bakish Materials Corp., Englewood, N.J.

Filed Apr. 18, 1983, Ser. No. 485,650
Claims priority, application German Democratic Rep., Apr. 20, 1982, 239121
Int. Cl.³ C23C *13/10*
U.S. Cl. 118—718 **10 Claims**



1. Apparatus for the electron beam coating of strips comprising:

a horizontal electron beam gun;

a first magnetic deflection system adapted to fan the beam at an angle α from said gun;

an evaporation crucible as long as the breadth of the strip to be coated, said crucible lying below the plane of said fanned beam;

a second magnetic deflection system for creating a vertical sector field in the path of said beam and adapted to bend same into parallel rays at an approximately constant angle (α) as it emerges therefrom adjacent said crucible;

a third magnetic deflection system for creating a horizontal field over said crucible, and adapted to bend said beam downward into line contact with evaporant along the approximate centerline of said crucible, said third field also acting to deflect backscattered electrons;

means for transporting a strip of material to be coated above said crucible; and

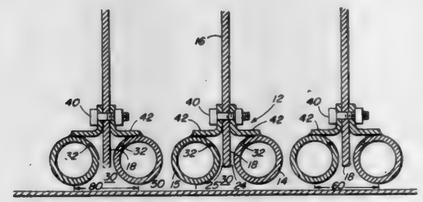
vacuum chamber means enclosing said crucible, second and third deflection means and said transporting means.

4,524,718

REACTOR FOR CONTINUOUS COATING OF GLASS

Roy G. Gordon, 22 Highland St., Cambridge, Mass. 02138

Continuation-in-part of Ser. No. 443,340, Nov. 22, 1982, abandoned. This application Aug. 10, 1983, Ser. No. 521,675
Int. Cl.³ C23C *13/10*
U.S. Cl. 118—718 **12 Claims**



1. A reactor suitable for use in continuous chemical vapor deposition coating formed by the reaction of a first reactant and a second reactant said apparatus having a coating station comprising

(a) a spaced pair of reactant-feed tubes mounted above a reaction zone, tranverse to the relative movements of the surface to be coated;

(b) a series of spaced apertures in each of said tubes to conduct reactants from each of said tubes of said pairs, said apertures forming primary means to distribute reactants flowing through said tube;

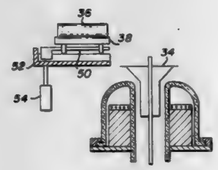
(c) shield means between said aperture tubes forming means to shield different reactants from one another and to deflect said reactants leaving said apertures (1) through a relatively narrow passage, formed of that reactant-feed tube from which said reactant is fed and said shield means and without prior contact with said surface (2) into a reaction zone at a point of about one inch or less above said surface to be coated.

4,524,719

SUBSTRATE LOADING MEANS FOR A CHEMICAL VAPOR DEPOSITION APPARATUS

Bryant A. Campbell; Dale R. DuBois, both of Los Gatos; Ralph F. Manriquez, Saratoga, and Nicholas E. Miller, Cupertino, all of Calif., assignors to Anicon, Inc., San Jose, Calif.

Filed Sep. 6, 1983, Ser. No. 529,415
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—719 **11 Claims**



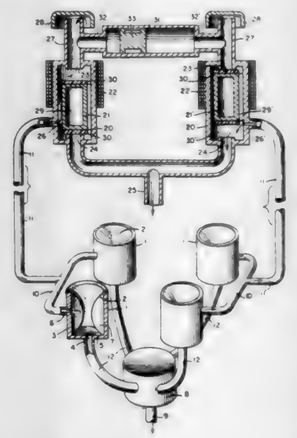
1. A controlled temperature deposition device comprising an inner deposition reaction chamber having gas distribution means for introducing gas into the inner chamber and removing gas therefrom, and vacuum chamber means surrounding the inner deposition reaction chamber and spaced from the walls thereof for maintaining a medium vacuum therein, the vacuum chamber means comprising a domed housing and a base cooperating therewith, the material of the domed housing and base being substantially transparent to radiation, said radiant heating means being positioned over outer surfaces of the domed housing and base surrounding the inner deposition chamber for providing precisely controlled temperatures in the reaction chamber, substrate loading means in combination with the device and positioned for placing a boat carrying a plurality of wafers in the inner deposition chamber and for removing the boat from the inner deposition chamber, the substrate loading means including a boat engaging means and a support for engaging the boat engaging means and for guiding the movement of the boat engaging means in a linear path between an extended position and a retracted position.

4,524,720

INDICATING DEVICE FOR MILKING APPARATUS

Eyal Brayer, Kfar Monash, Israel, assignor to 501 S.C.R. Engineers, Ltd., Nathania, Israel

Filed Jul. 18, 1983, Ser. No. 514,477
Int. Cl.³ A01J *5/14*
U.S. Cl. 119—14.14 **10 Claims**

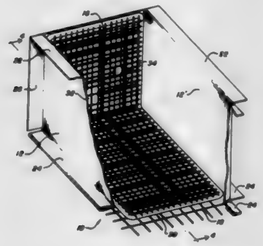


1. An indicating device for a milking apparatus, adapted to indicate regular or irregular working of each of the four teat cups attached to the udder of a cow, said apparatus comprising two electromagnetic pulsator units, each connected to two of said teat cups and adapted to expand and contract said teat cups by alternately admitting air of atmospheric pressure to, and drawing air by vacuum action out of, said teat cups, said indicating device consisting of a horizontally positioned cylinder containing a free piston and communicating at each end with one of the conduits leading from each pulsator unit to the atmosphere, said piston being driven to axially oscillate in said cylinder by the alternating suction pressure and atmospheric pressure in said conduits, whereby faulty operation of one of said conduits causes changes in the suction pressure in one of said conduits which is indicated by an unequal stroke of said piston to one side from a central position in said cylinder.

4,524,721
ANIMAL CAGE INSERT AND CONVERTIBLE ANIMAL CAGE

Michael Lanner, Stoughton, and Cynthia L. Coffey, Wayland, both of Mass., assignors to The Beth Israel Hospital Association, Boston, Mass.

Filed Mar. 5, 1984, Ser. No. 586,273
Int. Cl.[3] A01K 31/06
U.S. Cl. 119—17 1 Claim

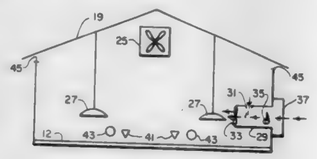


1. A process for converting a hanging animal cage suitable for use for caging a first animal species to a cage suitable for use as a cage for a second smaller animal species comprising (1) providing a cage having two solid sides and a solid back with an open grid bottom and open grid front wherein said grid size is dimensioned to safely and hygienically contain a first animal species and (2) inserting into the cage an L-shaped grid insert so as to cover the open grid bottom and open grid front, wherein said insert grid size is smaller than the size of the grids provided on the cage and is dimensioned so as to safely and hygienically contain a second smaller animal species.

4,524,722
LIVESTOCK ENCLOSURE ENVIRONMENTAL CONTROL METHOD

Frank J. Siccardi, 204 Warren Way, Apartment 20, Modesto, Calif. 95356

Filed Jan. 11, 1984, Ser. No. 569,796
Int. Cl.[3] A01K 31/20
U.S. Cl. 119—21 19 Claims



1. A method of providing in an enclosure for livestock an environment favorable for the growth, quality, and survivability of livestock and unfavorable to propagation of microorganisms comprising the steps of

forcibly injecting air into said enclosure intermittently with an air jet device controlled to have a duty factor of from 0.04 to 0.4, an on-time of at least 30 seconds, and an off-time of less than 10 minutes,

adding heat to said air so that its temperature is between 50° F. and 70° F. in response to inside temperature sensing means,

controlling the effective area of egress for air from said enclosure, and

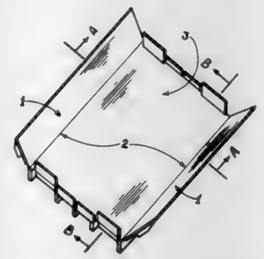
circulating the air in said enclosure with air movers directed away from the place of forcible air injection and located away from the place of forcible air injection and located at least four feet above the floor of said enclosure,

whereby injected air primarily escapes distant from the place of injection.

4,524,723
REMOVABLE POULTRY NEST BOTTOMS OF VARIABLE WIDTHS

Walter G. Davis, Hall County, Ga., assignor to NesTier Corporation, Cincinnati, Ohio

Continuation of Ser. No. 310,455, filed Oct. 13, 1981, abandoned. This application May 11, 1983, Ser. No. 493,652
Int. Cl.[3] A01K 31/16
U.S. Cl. 119—45 R 6 Claims



1. A removable poultry nest bottom of variable width, to be selectively placed within poultry nests of various sizes comprising:

said nest bottom consisting entirely of synthetic resin molded in one piece;

a rigid bottom portion of rectangular shape having two opposite sides and two opposite ends;

at least two rigid side portions;

integral sheet material hinge means respectively connecting said side portions to said sides of said bottom portion so that said bottom portion and side portions lie in a common plane in the normal unstressed condition of said hinges, with said side portions being on opposite sides of said bottom portion;

said bottom portion and side portions being constructed of planar sheets having a thickness substantially greater than the thickness of said hinge means, and further having coplanar flat top surfaces in the unstressed normal position;

a plurality of rib means extending downwardly from the bottom surface of said side portions and said bottom portion for reinforcing said sheets and spacing said sheets away from the support surfaces of the nest;

said hinge means being sufficiently thin and flexible to permit resilient movement of said side portions between the normal position and a position extending upwardly at right angles to said bottom portion selectively without material fatigue; and

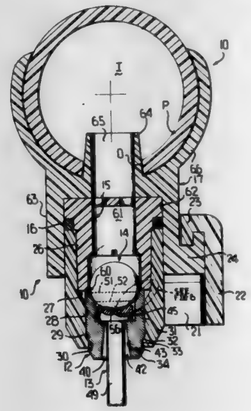
said hinges being continuous throughout the length of said side portions and bottom portion.

4,524,724
NIPPLE FOR FEEDING LIQUIDS TO FOWL AND/OR SMALL ANIMALS

Frederick W. Steudler, Jr., New Providence, Pa., assignor to Val Products, Inc., Bird-in-Hand, Pa.

Filed Apr. 2, 1984, Ser. No. 595,577
Int. Cl.[3] A01K 7/06; F16K 1/44
U.S. Cl. 119—72.5 7 Claims

1. A nipple particularly adapted for feeding liquid to fowl and/or small animals comprising a housing, a metallic insert in said housing, means for defining a passage through said metallic insert through which liquid is adapted to pass from an upstream passage portion to a downstream passage portion, valve means in said passage for controlling the flow of liquid therethrough, said valve means including a metallic spherical ball of a predetermined diameter and first and second peripheral valve seats within said upstream passage portion, said first peripheral valve seat being upstream from said second peripheral valve seat, said first peripheral valve seat having a diameter less than said ball predetermined diameter but greater than the diameter of said second peripheral valve seat, said metallic ball being seated under the influence of gravity/liquid pressure upon each of said first and second peripheral valve seats in a closed position of said valve means and defining therewith respective first and second liquid seals, a stem disposed in part within said passage, said stem having an interior end portion adjacent said metallic ball and an exterior end portion projecting outwardly of said downstream passage portion whereby fowl and/or small animals can manipulate said stem to move said metallic ball and unseat the same from said first and second peripheral valve seats breaking said respective first and second liquid seals and effecting liquid flow through said passage means, means immediately upstream of said first peripheral



valve seat for contacting said metallic ball for both centering said metallic ball relative to both said first and second peripheral valve seats and for preventing the establishment of high impact closing forces between said metallic ball and second peripheral valve seat thereby assuring repetitive formation of said first and second seals absent damage to said metallic ball, said first peripheral valve seat being a concavely curved surface, said second peripheral valve seat being a concavely curved surface, said concavely curved surfaces beiqg mirror images of an exterior surface of said spherical ball, and said centering and preventing means being a smooth convex surface defined by a plurality of successive diameters each of which is progressively greater than the diameter of said first peripheral valve seat.

4,524,725
SELF-CLEANING HEAT EXCHANGER

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 30, 1983, Ser. No. 509,541
Int. Cl.[3] F22D 1/00
U.S. Cl. 122—7 R 8 Claims

1. Apparatus comprising

(a) a carbon black reactor

(b) a steam generator; and

(c) conduit means connecting the carbon black reactor to the steam generator;

wherein the steam generator comprises a shell and tube heat exchanger containing a plurality of tubes formed into a tube bundle with each tube having a sidewall formed from a porous material.

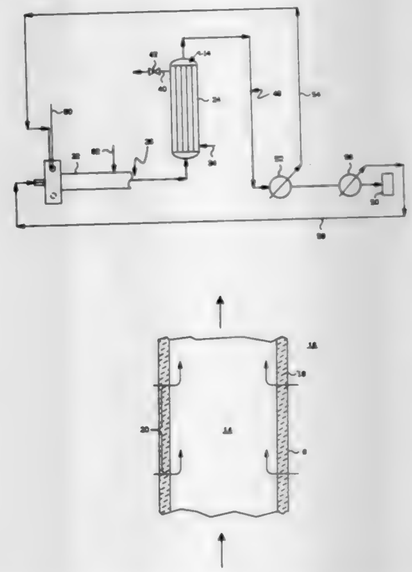
5. A process comprising

flowing a gaseous stream containing a particulate material from a carbon black reactor through the tube side of a shell and tube heat exchanger;

introducing a fluid medium into the shell side of the shell and tube heat exchanger, said fluid medium being at higher pressure than said gaseous stream;

heating a first portion of the fluid medium by indirect heat exchange with the gaseous stream;

withdrawing the first portion of the heated fluid medium from the shell side of the heat exchanger;

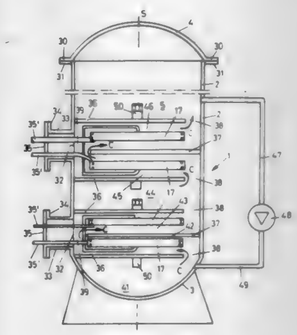


flowing a second portion of the fluid medium through pores in the tube walls and into the tube side of the shell and tube heat exchanger, said second portion of the fluid medium flowing through the tube walls along at least most of the length of at least most of the tubes in the tube bundle.

4,524,726
UTILITY WATER BOILER

Max Bindl, Wernberger Strasse 41, D-8473 Pfreimd, Fed. Rep. of Germany

Filed Jan. 4, 1984, Ser. No. 567,963
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1983, 8303845
Int. Cl.[3] F22B 5/00
U.S. Cl. 122—13 R 9 Claims



1. A liquid boiler, particularly a utility-water boiler, which comprises a tank with connections extending into the inside of

the tank for the feeding and removal of the liquid; at least two walls within said tank spaced apart from one another to define at least two auxiliary spaces, said auxiliary spaces being separated from one another and from the rest of the inner space of said tank by said walls, said walls having openings therein for connecting said auxiliary spaces with each other and with the rest of the inner space of said tank; at least one heat exchanger which forms at least one closed conduit for a heat carrier fluid arranged in one of said auxiliary spaces and arranged on one of said walls in the region of at least one of said openings, said opening connecting one auxiliary space with the other auxiliary space and said opening connecting one auxiliary space with the inner space of said tank beig arranged on different sides of said at least one heat exchanger; a first auxiliary connection in communication with one of said auxiliary spaces and adapted to be connected with the outlet of a circulating or charging pump; and a second auxiliary connection communicating with said inner space of said tank, said second auxiliary connection being adapted to be connected to the inlet of said charging or cirulating pump for carrying the liquid.

4,524,727

HEAT EXCHANGER

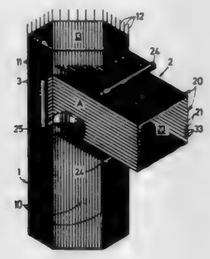
Heinz Ammann, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 31, 1984, Ser. No. 636,270

Claims priority, application Switzerland, Aug. 5, 1983, 4256/83

Int. Cl.³ F22B *27/04*

U.S. Cl. 122—235 A **8 Claims**



1. A heat exchanger comprising

a vertical gas flue having a plurality of boundary walls, each said wall including a plurality of support tubes and medium-carrying tubes disposed in welded-together gas-tight relation;

at least one transverse gas flue branching from said vertical gas flue and having a plurality of boundary walls, each said wall of said transverse gas flue including a plurality of medium-carrying tubes disposed in welded-together gas-tight relation;

a plurality of headers, each said header being connected in common to said tubes of a respective transverse gas flue wall;

said medium carrying tubes of said vertical flue at a branch-off point of said transverse gas flue being bent outwardly from said vertical flue and said transverse gas flue in groups, each said group extending to a common vertical plane extending parallel to a longitudinal axis of said transverse gas flue and passing upwardly through respective walls of said transverse gas flue in said common vertical plane, said tubes of each group being welded in gas-tight relation to said respective walls of said transverse gas flue; and

at least some of said tubes of said transverse gas flue being bent at said vertical gas flue to fill a space in said vertical gas flue between said transverse gas flue and said branch-off point of said bent tubes of said vertical gas flue.

4,524,728

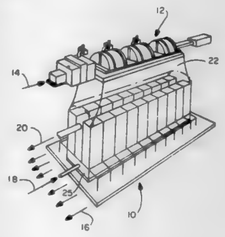
STEAM CONDENSING APPARATUS

Benjamin M. Johnson, Kennewick, Wash., assignor to Electric Power Research Institute, Inc., Palo Aito, Calif.

Filed Jul. 25, 1983, Ser. No. 512,342

Int. Cl.³ F22G *1/00*

U.S. Cl. 122—459 **12 Claims**



1. A steam condenser apparatus, comprising:

(a) housing means defining

(i) a first inlet plenum for receiving a continuous supply of steam to be condensed,

(ii) a second inlet plenum for receiving a continuous supply of liquid ammonia which is intended to condense said steam and thereby vaporize,

(iii) a first outlet plenum for receiving water resulting from the condensation of said steam, and

(iv) a second outlet plenum for receiving said ammonia after the latter has condensed said steam and has vaporized said second outlet plenum including an outlet arrangement for separating liquid ammonia from ammonia vapor;

(b) means for supporting a number of thermally conductive sheets in spaced-apart confronting relationship to one another within said housing means so as to define therebetween

(i) a plurality of first passageways extending from said first inlet plenum to said first outlet plenum for passing steam and/or water therethrough from said first inlet plenum to said first outlet plenum, and

(ii) a plurality of second passageways extending from said second inlet plenum to said second outlet plenum physically isolated from and disposed between respective ones of said first passageways for passing ammonia therethrough from said second inlet plenum to said second outlet plenum whereby to cause the steam in the adjacent first passageways to condense;

(c) means for directing a continuous supply of steam into said first inlet plenum for movement through said first passageways; and

(d) means for directing a continuous supply of liquid ammonia into said second inlet plenum for movement through said second passageways.

4,524,729

PRIMARY MANWAY CLOSURE REDUNDANT RESTRAINT

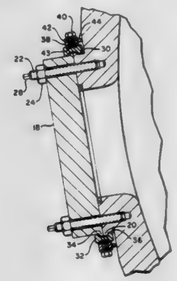
Frank P. Hill, Jr., Signal Mountain; John W. Alden, Jr., Chattanooga, and Harry K. Williams, Signal Mountain, all of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 12, 1982, Ser. No. 440,886

Int. Cl.³ F23M *7/00*

U.S. Cl. 122—498 **5 Claims**

1. In combination, a vessel, opening means in the vessel, a cover, flange means surrounding the opening means, a primary closing means for the cover including a plurality of studs securing the cover onto the vessel, the studs having inner ends threaded into openings in the vessel, nuts cooperating with the outer ends of each of the studs, secondary closing means for the cover including cylindrical clamp means made up of more than one piece, a protruding ledge on the cover over which the clamp means extends, an annular groove in the flange means into which the clamp means extends, a circular retaining ring which surrounds the clamp means, a plurality of threaded



openings in the retaining ring, and a plurality of set screws threaded into the openings, so that their ends force the clamp means into tight clamping engagement with the ledge on the cover and the groove in the flange means.

4,524,730

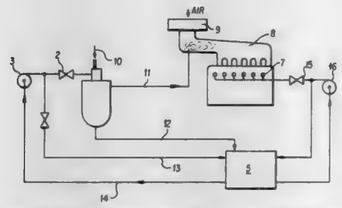
METHOD FOR IMPROVING FUEL EFFICIENCY AND REDUCED EMISSIONS IN INTERNAL COMBUSTION ENGINES

Brant Doell, Tulsa, and John T. Wright, Broken Arrow, both of Okla., assignors to Doellwood Financial, Inc., Tulsa, Okla.

Filed Aug. 19, 1983, Ser. No. 524,550

Int. Cl.³ F02B *49/00*

U.S. Cl. 123—27 GE **4 Claims**



1. A system for improving the efficiency of a diesel internal combustion engine having a principle fuel supply and delivery system comprising a means for mixing said fuel and air, and an air intake stream, thereby improving fuel efficiency and reducing pollutants therefrom, comprising:

providing, as an adjunct to said principle engine fuel supply system, vaporized fuel drawn from said principle fuel supply to said air intake stream downstream of said mixing means, whereby said vaporized fuel is distributed to at least one combustion chamber of said engine, said vaporized fuel being supplied by a vaporization chamber in fluid communication with said principle fuel supply whereby said vaporized fuel is drawn from said principle fuel supply for vaporization in said vaporization chamber.

4,524,731

HYDRAULIC VALVE LIFTER WITH CONTINUOUS VOID

Jack L. Rhoads, P.O. Box 830, Taylor, Ariz. 85939

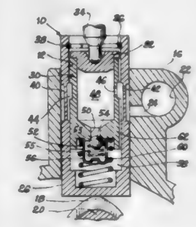
Filed Aug. 15, 1983, Ser. No. 523,119

Int. Cl.³ F01L *1/24*

U.S. Cl. 123—90.57 **3 Claims**

1. In a hydraulic valve lifter having a hollow cylindrical body with a closed lower end for engagement with a cam; a hollow cylindrical plunger axially slidable in said body and enclosing a pressure chamber in the lower end of the body; an external collecting channel in said body to receive oil from a pressurized source; a port opening into said body from said channel; a port in said plunger communicating with said first-mentioned port to admit into the plunger; and a one-way valve in said plunger opening into said pressure chamber; an improvement comprising:

(a) an oil bleed passageway defined in the exterior of said



plunger extending the full length of said plunger providing continuous communication therethrough from one end of said plunger to the other when same is seated in said body;

(b) said bleed passageway comprising a groove and being dimensioned and cross-sectioned to be inadequate to sustain oil bleed beyond a pre-determined volumetric flow at high engine speeds.

4,524,732

CYLINDER HEAD OF A PISTON ENGINE

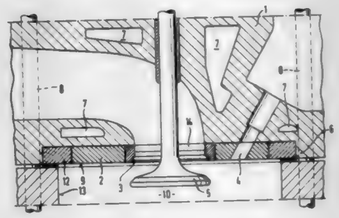
Ulf Dworak, Baltmannsweiler; Hans Olapinski, Aichwald; Dieter Fingerle, Hochdorf; Ulrich Krohn, Leonberg, all of Fed. Rep. of Germany; Martti J. A. Hakulinen, Rönninge, and Bengt N. J. Palm, Nykvarn, both of Sweden, assignors to Feldmühle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 1, 1984, Ser. No. 585,173

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1983, 3307114

Int. Cl.³ F02F *1/24*; F02B *77/11*

U.S. Cl. 123—193 H **12 Claims**



1. In a cylinder head of a piston engine having a thermal insulation component for the cylinder head bottom facing the combustion chamber, and including openings therethrough; the improvement comprising

the entire cylinder head bottom facing the combustion chamber being covered by said thermal insulation component formed as a single layer and comprising an outer planar support ring of zirconium oxide being secured to the cylinder head bottom; and a plate of aluminum titanate sized to form the greater part of the thermal insulation component and being peripherally gripped by said outer zirconium oxide ring.

4,524,733

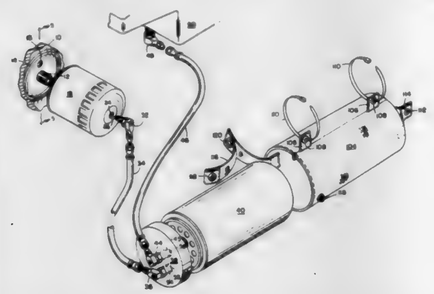
MODIFIED FULL-FLOW FILTER AND BY-PASS FILTER APPARATUS FOR INTERNAL COMBUSTION ENGINES

Donald R. Schmidt, San Antonio, Tex., assignor to Encon Systems, Ltd., San Antonio, Tex.

Continuation-in-part of Ser. No. 513,733, Jul. 14, 1983, Pat. No. 4,452,695. This application Nov. 14, 1983, Ser. No. 550,872

Int. Cl.³ F01M *1/00*

U.S. Cl. 123—196 A **11 Claims**



1. Filter apparatus for an internal combustion engine adapted for replacing a normal spin-on full-flow oil filter threadably connected to an oil filter bushing, said engine having an oil pan at a low pressure side of an oil system having an oil pump, said apparatus comprising:

a modified high performance full-flow filter adapted to be connected to said oil filter bushing to permit oil within said oil system to flow into said modified full-flow filter and to permit most of said oil to flow outward therefrom after filtering thereof by said modified full-flow filter, said modified full-flow filter being further adapted to permit a small portion of said oil to flow outward therefrom prior to filtering thereof through a by-pass bushing located along a centerline of said modified full-flow filter opposite said oil filter bushing;

a by-pass filter for filtering said small portion of oil, said by-pass filter having a base plate connected thereto;

a first flexible hose member adapted to be connected on a first end thereof to a first fitting and being adapted to be connected on a second end thereof to a second fitting, said first fitting being adapted to be connected to said by-pass bushing of said modified full-flow filter and said second fitting being adapted to be connected to said base plate for permitting flow communication of said small portion between said modified full-flow filter and said by-pass filter;

a second flexible hose member adapted to be connected on a first end thereof to a third fitting and being adapted to be connected on a second end thereof to a fourth fitting, said third fitting being adapted to be connected to said base plate and said fourth fitting being adapted to be connected to said oil pan for permitting flow communication of said small portion between said by-pass filter and said oil pan; and

means for mounting said by-pass filter with respect to said engine, said modified full-flow filter and said by-pass filter being of such respective densities and filtering capabilities that said most of said oil flows from said oil pump through said modified full-flow filter to be filtered therein with a minimum pressure drop and said small portion of oil from said oil pump flows through said modified full-flow filter to be filtered by said by-pass filter prior to returning to said oil pan;

a least one of said first, second, third and fourth fittings being a right angle fitting that may be rotated after fluid tight connection to give a right angle fitting oriented in any direction in a given plane.

4,524,734

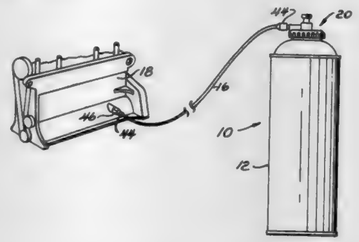
APPARATUS AND METHOD FOR ENGINE PRELUBRICATION

Thomas J. Miller, Palos Heights, Ill., assignor to Topline Automotive Engineering Inc., Chicago, Ill.

Filed Feb. 21, 1984, Ser. No. 581,959

Int. Cl.³ F01M *1/12*

U.S. Cl. 123—196 S **5 Claims**



1. Apparatus for prelubricating engines including a portable pressure containment vessel having a valve therein; a premeasured volume of prelubricant of predetermined formulation in the vessel; a compressible propellant in the vessel, the quantity of said propellant defining a minimum initial vessel pressure; valve actuator means; means for attaching the actuator means to the vessel in air-tight relationship to the valve means; hose means adapted to interconnect the valve actuator means and an engine requiring prelubrication whereby the prelubricant is discharged throughout an engine upon opening the actuator means.

4,524,735

RECIPROCATING PISTON ENGINE

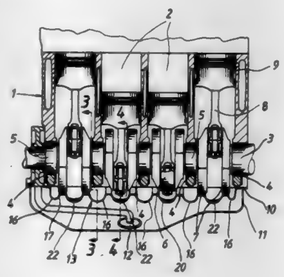
Armin Bauder, Neckarsulm, Fed. Rep. of Germany, assignor to Audi AG, Neckarsulm, Fed. Rep. of Germany

Filed Sep. 19, 1984, Ser. No. 652,103

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3334044

Int. Cl.³ F01M *1/00*

U.S. Cl. 123—196 R **5 Claims**



1. Reciprocating piston engine, in particular for motor vehicles, comprising a cylinder-crankcase (1) with a plurality of cylinders (2) having central axes which lie in a common plane (14), a crankshaft (3) supported by bearings (4) within said crankcase, said crankshaft comprising crank pins (6) and crank webs (7), said crankcase having a bottom opening (10) with longitudinal edges extending parallel to the crankshaft, said opening (10) being closed by an oil pan (11), and further comprising an insert (13) between the crankshaft and the bottom of the oil pan, said insert extending substantially over the whole length of the said bottom opening, characterized in that said insert (13) extends from that longitudinal edge (15) of said bottom opening (10), which lies in the direction of rotation (D) of the crankshaft (3) behind the plane (14) comprising the cylinder axes in opposite direction to said direction of rotation (d) without interruption substantially up to said plane (14) to separate the leading portion of the oil pan from the interior of the crankcase.

4,524,736

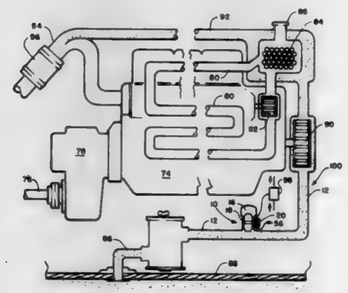
FLUID FLOW FAILURE DETECTION MEANS

Robert L. Sackett, 3597 Hancock St., San Diego, Calif. 92110

Filed Jan. 23, 1984, Ser. No. 572,907

Int. Cl.³ F02B *77/08*

U.S. Cl. 123—198 D **1 Claim**



1. Means for detecting the failure of the force of flow of water pumped through the cooling system of an internal combustion fuel burning engine for the cooling thereof, said engine including interruption means for interrupting its normal running operation comprising:

an input conduit;

a flow failure detecting device interconnected to said input conduit, said flow detection device comprising, a first tubular conduit connected in series with said input conduit and communicating therewith, a second tubular conduit communicating with said first tubular conduit intermediate its ends, a translating member freely translatable relative to said second tubular conduit, said translating member being influenced by the force of the flow of said water through said first conduit and including a permanent magnet associated therewith, a reed switch positioned externally of said second tubular conduit, said reed switch having an open and closed state whereby the location of said magnet influences the state of said reed switch;

a pump for pumping said water through said input conduit and said cooling system of said engine; and

an output conduit for exhausting said water from said cooling system,

said reed switch is interconnected to said engine interruption means whereby insufficient water flow force through the cooling system changes the state of said reed switch thereby causing interruption of the normal running of said engine.

4,524,737

FUEL INJECTION APPARATUS WITH AN AUXILIARY PUMP FOR PILOT AND MAIN INJECTION

Eberhard Hofman, Kirchberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

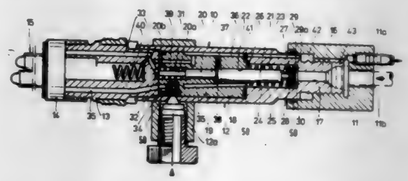
Filed Aug. 24, 1984, Ser. No. 644,007

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1983, 3330771

Int. Cl.³ F02M *45/02*

U.S. Cl. 123—300 **10 Claims**

1. A fuel injection apparatus having an auxiliary pump for pilot and main injections in internal combustion engines, wherein a pilot injection quantity pumped via an inlet by a low-pressure pump is stored ahead of a pilot injection piston and is positively displaced to an injection nozzle by said last named piston, upon said piston being driven by the supply pressure of a high-pressure injection pump, characterized in that said pilot injection piston further includes a pressure piston and is driven by a coaxially disposed intermediate piston with each of said pistons being disposed in a cylindrical intermediate element provided with pressure lines and leak-off lines of said



auxiliary pump, that said intermediate element being disposed between a connection piece and a nozzle holder is provided with a double needle nozzle, and further that said intermediate element has an outer dimension which does not exceed the diameter of the injection nozzle comprising an injection valve.

4,524,738

PROCESS AND DEVICE FOR CONTROLLING THE IDLING SPEED OF A HEAT ENGINE

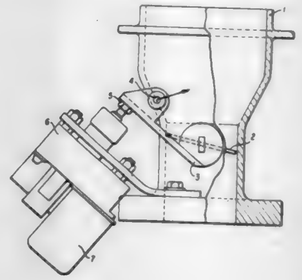
Paul Chastagner, Les Clayes Sous Bois, France, assignor to Regie Nationale des Usines Renault, Boulogne Billancourt, France

Filed Sep. 7, 1983, Ser. No. 530,108

Claims priority, application France, Sep. 7, 1982, 82 15193

Int. Cl.³ F02D *9/02, 31/00*

U.S. Cl. 123—339 **7 Claims**



1. A process for controlling the idling speed of a heat engine with controlled ignition by modification of air flow admitted to an intake mainfold of the engine when predetermined idling conditions are detected, said modification of air flow being performed by a double-action actuator that causes a passage section of a bypass to vary in parallel with a gas butterfly or a position of an idling stop of said butterfly, wherein a control signal for controlling the actuator according to an instruction value is processed by a microprocessor receiving signals associated with pedetermined input parameters, including a signal indicative of a primary current for ignition, and wherein for each ignition pulse provided by the interruption of the primary current the process comprises:

(a) counting clock signals by means of a counter, storing the contents of the counter in a period memory, after the contents of the period memory have been transferred into a preceding period memory, and then resetting the clock signals counter to zero;

(b) determining an instruction period from a table of values, as a function of said predetermined input parameters, including the temperature of the cooling water of the engine;

(c) determining a deviation between the stored period and the instruction period;

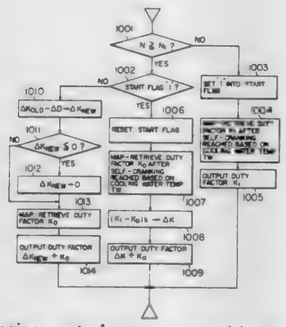
(d) determining a threshold from a table of values, as a function of the deviation;
(e) determining a slope as a difference between the period and the preceding period;
(f) determining a maximum slope, if the deviation is negative and at least if the slope is positive, also as a function of the deviation;
(g) if the deviation is positive or zero, or if the slope is negative or zero, or further if the slope is less than or equal to said maximum slope, determining a weighted slope produced from the slope by a number (N) of predetermined weight, computing the new value of a sum by adding the deviation and the weighted slope algebraically to the preceding value of this sum, and comparing the absolute value of this new value with the threshold;
(h) determining a remainder, if said absolute value is greater than or equal to the threshold, as a difference between the sum and the threshold; and
(i) determining, as a function of predetermined comparisions between the above-determined values, whether or not said control signal, which represents a predetermined basic corrective action, should be sent to the actuator and in what direction, before memorizing the remainder as the sum to recommence a new cycle while awaiting a new ignition interruption.

4,524,739

ENGINE CONTROL METHOD

Mineo Kashiwaya; Kiyomi Morita, and Masahide Sakamoto, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 25, 1983, Ser. No. 555,015
Claims priority, application Japan, Nov. 24, 1982, 57-204667
Int. Cl.³ F02D *11/10*
U.S. Cl. 123—339 **12 Claims**



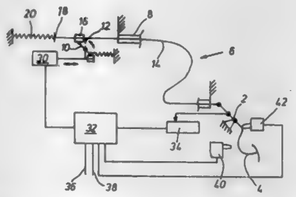
1. In an engine control system comprising an intake path communicated with each cylinder of the engine through an intake manifold; a throttle valve provided in said intake path; a bypass provided in parallel with said throttle valve for enabling a flow of intake air into a lower portion of said throttle valve to bypass said throttle valve; a bypass valve for controlling an opening area of said bypass; a plurality of sensors including an angle sensor means for producing a pulse signal in synchronism with the revolutions of the crankshaft of the engine, an opening sensor means for producing a first output representing a first state of said throttle valve with said throttle valve in a substantially completely closed state and a second output representing a second state of said throttle valve when said throttle valve is not in the substantially closed state, and a water temperature sensor for detecting the temperature of cooling water of the engine; a central processing means for computing a value of duty factor for said bypass valve in response to the respective outputs of said plurality of sensors; and a pulse generating circuit means responsive to the output of said central processing means for supplying said bypass valve with a pulse signal representing the computed value of duty factor, said central processing means computes the number of engine revolutions on the basis of the output pulse signal of said angle sensor and the duty factor for said bypass valve is computed in accordance with the computed value of the number of engine revolutions and of the output of said angle sensor means; an engine control method comprising the steps of:
computing the duty factor for said bypass valve on the basis of the outputs of said plurality of sensors in an idle running operation of the engine;
supplying said bypass valve with a pulse signal representing a predetermined duty factor on the basis of said computed value of the duty factor;
obtaining a first duty factor for said bypass valve in a first engine state before a state has been reached in which the engine is driven by itself without requiring an external force;
obtaining a second duty factor for said bypass valve in a second engine state in an idling operation after the state has been reached in which the engine is driven by itself;
judging the engine state such that it is in said first engine state when said computed value of the number of engine revolutions is smaller than a predetermined value and that it is in said second engine state once said computed value of the number of engine revolutions is equal to or greater than said predetermined value;
supplying said bypass valve with a pulse signal representing first duty factor when the result of the judgment proves that the engine is in said first engine state;
supplying said bypass valve with a pulse signal representing an initial duty factor which is a predetermined value between said first and second duty factors when judgment is made that the engine state is changed from said first engine state to said second engine state;
supplying said bypass valve successively with a pulse signal representing a duty factor obtained by a step by step decreasing of said initial duty factor by a fixed value at predetermined time intervals; and
wherein said first and second duty factors are determined on the basis of the detected value of cooling water temperature of the engine.

4,524,740

COUPLING MEANS BETWEEN AN OUTPUT CONTROL MEMBER OF AN INTERNAL COMBUSTION ENGINE AND AN ACTUATOR MEMBER

Herbert Brockhaus, Wettstetten, Fed. Rep. of Germany, assignor to Audi NsU Auto Union AG., Ingolstadt, Fed. Rep. of Germany

PCT No. PCT/DE82/00157, § 371 Date Mar. 24, 1983, § 102(e) Date Mar. 24, 1983, PCT Pub. No. WO83/00534, PCT Pub. Date Feb. 17, 1983
PCT Filed Jul. 28, 1982, Ser. No. 480,948
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1981, 3131553
Int. Cl.³ F02D *9/00*
U.S. Cl. 123—340 **9 Claims**



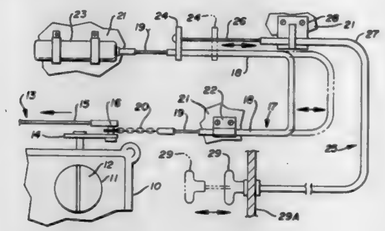
1. Coupling means between a throttle valve member of an internal combustion engine and a manually moveable actuator member, the internal combustion engine comprising electronic control means for controlling the movement of the throttle valve member in dependency of the position of the actuator member and at least one operating parameter of the internal combustion engine within a range lying between a full-load position and a minimum opening, the coupling means moving the throttle valve member to its full-load position when the actuator is fully actuated, the coupling means comprising a mechanical connection including a lost-motion connection between the actuator member and the throttle valve member which connection for a given change in position of the actuator member in the range of small actuations associates a smaller change in position of the throttle valve member than for a given change in the position of the actuator member in the range of larger actuations, whereby the lost-motion connection is operative within about the first half of the range of actuation of the actuator member, and the mechanical connection provides a mechanical override means for the control device within about the second half of the range of actuation of the actuator member.

4,524,741

PRESET THROTTLE RELEASE DEVICE

Ronald W. Corbi, 368 Edgewood Dr., Columbiana, Ohio 44408

Filed May 10, 1984, Ser. No. 609,028
Int. Cl.³ F02D *3/00*
U.S. Cl. 123—342 **6 Claims**



1. A preset throttle release for use on drag racing vehicles including an engine, a throttle linkage movable between a full opened and a closed position wherein said preset throttle release comprises a first cable assembly extending between said throttle linkage and a selective cable restraint means, said first cable assembly having a predetermined effective length for normal throttle linkage travel, means for adjustably foreshortening the effective length of said first cable assembly wherein said throttle linkage travel is restrained, means for presetting said effective length of said first cable assembly and means for releasing said foreshortened effective length of said first cable assembly while maintaining said presetting of said effective length of said first cable assembly.

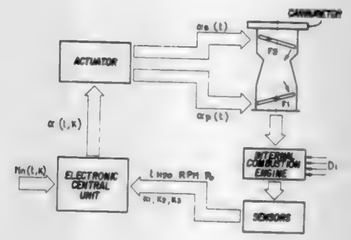
4,524,742

CARBURETOR HAVING ELECTRONICALLY CONTROLLED ELEMENTS FOR MAINTAINING ENGINE IDLING SPEED AT A CONSTANT LEVEL AND FOR CONTROLLING CHOKE-VALVE POSITION DURING A WARM-UP PHASE

Silverio Bonfiglioli, Zola Predosa, and Innocenzo Triolo, Bologna, both of Italy, assignors to Weber S.p.A., Turin, Italy

Filed Dec. 16, 1983, Ser. No. 561,994
Claims priority, application Italy, Dec. 20, 1982, 3627 A/82
Int. Cl.³ F02B *33/00*
U.S. Cl. 123—438 **5 Claims**

1. A carburetor for an internal combustion engine, for maintaining an idling speed of said engine at a constant level and for controlling a position of a choke valve associated with said carburetor during an engine warm-up phase, said carburetor comprising:
(a) a main barrel;
(b) a throttle valve;
(c) idle speed circuit control means;
(d) a choke valve;
(e) a primary fuel circuit opening into said barrel between said throttle valve and said choke valve;
(f) first sensor means disposed in an engine head of said engine for monitoring cooling water temperature of cooling water associated with said engine and for providing signals indicating said cooling water temperature;
(g) second sensor means for monitoring engine RPM and for providing signals indicating said RPM;
(h) third sensor means for monitoring intake manifold absolute pressure and for providing signals indicating said pressure;
(i) first positioning means for positioning said throttle valve when an accelerator of said engine is in a non-depressed rest position, in a plurality of angular positions as a function of said cooling water temperature;
(j) second positioning means for positioning said choke valve as a function of said cooling water temperature to limit an amount of opening of said choke valve caused by air sucked into said carburetor by said engine, said second positioning means including elastic means for biasing said choke valve by an amount of force required to close said choke valve to prevent pivoting of said choke valve when said engine is turned off;
(k) a central processing unit receiving signals from said first, second and third sensors for controlling said first and second positioning means to position said throttle valve and said choke valve respectively; and



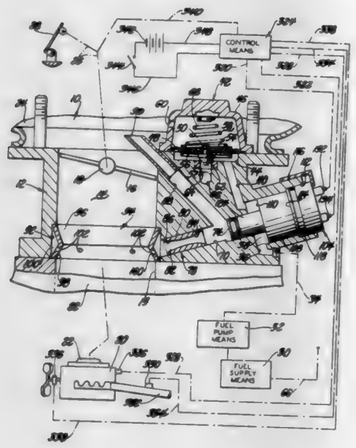
(l) said second positioning means including;
(i) a step motor;
(ii) a first cam rotatably controlled by said step motor;
(iii) a choke valve shaft on which said choke valve is mounted;
(iv) a second lever connected to said choke valve shaft to pivot therewith;
(v) first rod means having one end connected to said second lever such that when said second lever pivots with said choke valve shaft said end of said first rod means pivots therewith;
(vi) a first lever pivotable about an axis interposed between said first rod means and said first cam, said first lever having one end contacting a contour of said first cam and another end pivotably connected to an end of said first rod means;
(vii) said elastic means including a spring tending to bias said first rod means to oppose action by air sucked by said engine which tends to open said check valve; and
(viii) a member disposed on an end of said first lever, having a contour shaped for limiting downward axial movement of said first rod means to position said choke valve in predetermined positions as a function of said cooling water temperature, whereby a predetermined angular position of said first cam determines a static position of said choke valve.

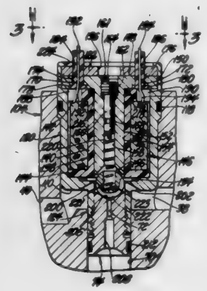
4,524,743

FUEL INJECTION APPARATUS AND SYSTEM

Lawrence McAuliffe, Jr., Warren, and Richard Chauvin, Clawson, both of Mich., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,820
Int. Cl.³ F02M *7/00*
U.S. Cl. 123—438 **10 Claims**





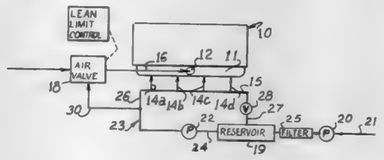
1. A valving assembly for variably restricting fluid flow, comprising housing means, bobbin means situated in said housing means, said bobbin means comprising a generally medially situated tubular body portion, electrical field coil means carried by said bobbin means, pole-piece means situated generally within said tubular body portion, a valve seat member, fluid flow passage means formed through said valve seat member, said pole-piece means comprising a pole-piece face portion, a valve member situated generally between said pole-piece face portion and said valve seat member, said valve member comprising at least a portion thereof of generally spherical configuration, said portion of generally spherical configuration having a center of curvature, wherein said portion of generally spherical configuration is directed generally toward said valve seat member, and resilient means normally resiliently urging said valve member toward a direction whereby said portion of generally spherical configuration moves toward operative seating engagement with said valve seat member as to thereby terminate flow through said fluid flow passage means, a recess formed in said valve member, said recess extending through a side of said valve member and through said center of curvature, said recess terminating in an internal reaction end surface means disposed generally on a side of said center of curvature opposite to where said recess extends through the side of said valve member, at least a portion of said resilient means being received within said recess and operatively abutting against said internal reaction end surface means, said valve member comprising armature means of said electrical coil and said pole-piece means.

4,524,744

FUEL SYSTEM FOR COMBUSTION ENGINE

William D. Adams, P.O. Box 461, Austell, Ga. 30001

Filed Jan. 3, 1983, Ser. No. 455,002
Int. Cl.³ F02M *63/02*
U.S. Cl. 123—459 **5 Claims**



1. Fuel injection apparatus, for a spark ignition internal combustion engine having at least one cylinder and an air inlet, an injection nozzle for injecting fuel into said cylinder, a fuel feed line in direct communication with said injection nozzle for supplying fuel under pressure to said injection nozzle, said fuel feed line being one leg of a closed fuel circuit, said fuel circuit further including a fuel reservoir, means for maintaining a level of fuel within said reservoir, a pump for pumping fuel from said reservoir to said fuel feed line and for creating pressure in said fuel feed line, said pump having an output greater than the maximum requirements of said engine, valve means connected in said fuel circuit between said fuel feed line and said reservoir so that opening said valve means allows fuel flow from said fuel feed line into said reservoir and releases pressure of said fuel feed line and closing said valve means retains pressure on said fuel feed line, said pressure on said fuel feed line being directly communicated to said injection nozzle, and an air valve for controlling air flow to said air inlet, said air valve including a cylinder, piston means within said cylinder, said cylinder being in fluid communication with said fuel circuit between said pump and said feed line, said piston being movable in a first direction in response to high pressure in said fluid circuit, and spring means for urging said piston means in the opposite direction, a valve member for said air valve, said valve member being moved to allow increased air flow when said piston is moved in said first direction and to close said air valve for restricting air flow when said piston is moved in said opposite direction, the arrangement being such that said pressure on said fuel feed line is the only force that urges said piston means in said first direction, and spring force of said spring means is the only force that urges said piston means in said opposite direction.

4,524,745

ELECTRONIC CONTROL FUEL INJECTION SYSTEM FOR SPARK IGNITION INTERNAL COMBUSTION ENGINE

Noboru Tominari, No. 19-9, Kamiyama-cho, Shibuya-ku, Tokyo, and Takashi Ishida, Kanagawa, both of Japan, assignors to Mikuni Kogyo Co., Ltd. and Noboru Tominari, both of Tokyo, Japan

Continuation of Ser. No. 228,973, Jan. 27, 1981, abandoned. This application Oct. 5, 1983, Ser. No. 538,843
Claims priority, application Japan, Jan. 31, 1980, 55-10218
Int. Cl.³ F02D *5/00*
U.S. Cl. 123—478 **13 Claims**

1. An electronic control fuel injection system for a spark ignition internal combustion engine for preferentially determining fuel flow rate according to the stroke of an accelerator pedal and subordinately determining airflow rate to the engine

in response to the fuel flow rate and the engine operating state comprising:

an air intake passage having a throttle valve therein for supplying air to said engine;

a fuel selecting mechanism for selecting a fuel discharge amount in accordance with a depression stroke of an accelerator pedal;

an exhaust gas recirculation rate control device;

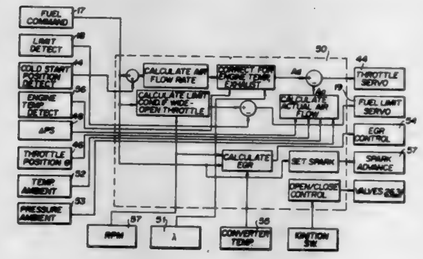
at least one fuel injector for injecting said selected fuel discharge amount into said engine;

means for detecting the amount of intake air to said engine comprising first means for providing a signal representing a pressure difference in said air intake passage on the upstream and downstream sides of said throttle valve, and a second means for providing a signal representing the actual opening position of said throttle valve;

an engine rotational speed detecting sensor;

an engine temperature sensor;

a computer for selectively receiving signals from said fuel selecting mechanism indicating a selected fuel discharge amount, from said first means for providing a signal representing said pressure difference, from said second means for providing a signal representing the actual opening position of said throttle valve and from said rotational



speed and temperature sensors, for producing from the signal from said fuel selecting mechanism a first fuel supply output signal which controls the amount of fuel injected by said injector so that said selected fuel discharge amount is supplied to said engine, and for producing from said pressure difference signal, from a signal representing an injected fuel flow amount, and from the signal indicating the actual opening position of said throttle valve, a second optimum air supply amount output signal, said computer adjusting at least one of said first and second output signals in accordance with the signal from said temperature sensor, said computer further producing from the signal from said rotational speed detecting sensor a fuel limiting signal, the amount of fuel discharged by said injector being limited independently of the depression stroke of the accelerator pedal in response to said fuel limiting signal, said computer also producing a third output signal which controls said exhaust gas recirculation rate control device in response to said engine rotational speed signal and said signal representing the selected fuel discharge amount; and,

a throttle valve control mechanism for setting the opening of said throttle valve according to said second output signal from said computer to provide an optimum air supply amount to said engine.

4,524,746

CLOSED CIRCUIT FUEL VAPOR SYSTEM

Earl S. Hansen, P.O. Box 925, Willits, Calif. 95490

Filed Apr. 9, 1984, Ser. No. 598,364
Int. Cl.³ F02M *31/00, 27/08;* B05B *17/06*
U.S. Cl. 123—538 **5 Claims**

1. A fuel delivering system for an internal combustion engine comprising:

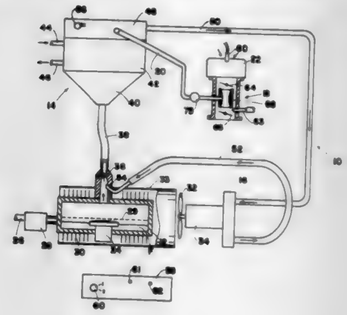
a closed vaporizer chamber;

a closed heat exchanger; and

a pump;

duct means connecting said vaporizer chamber, said heat exchanger, said pump and said vaporizer chamber in continuous series to form a closed circuit, oxygen-free vapor supply;

means for introducing liquid fuel into said chamber;



an ultrasonic transducer in said chamber for vaporizing liquid fuel;

a carburetor with a venturi throat therein; and

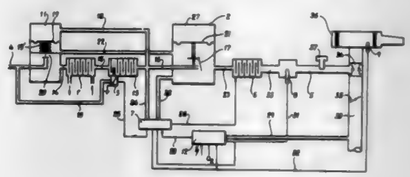
a duct connected from said closed circuit just downstream of said heat exchanger to said venturi throat so that said carburetor can draw off heated vapor from said closed circuit to meet engine demand.

4,524,747

EVAPORATING-PRESSURE REGULATING DEVICE

Adrianus M. M. van den Wildenberg, Geldrop, and Andreas L. M. T. Smeets, Eindhoven, both of Netherlands, assignors to Vialle B.V., Eindhoven, Netherlands

Filed Feb. 6, 1984, Ser. No. 577,112
Claims priority, application Netherlands, Feb. 4, 1984, 8300441
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **6 Claims**



1. An evaporating pressure regulating device for liquefied gas to be evaporated into gas for an internal combustion engine comprising an inlet conduit receiving liquefied gas from a source of liquefied gas, a first pressure reducing means receiving liquefied gas from said inlet conduit, and metering the gas at a controlled rate to reduce the pressure thereof, a heater-/evaporator receiving the gas from the first pressure reducing means for gasifying and heating the same, a second pressure reducing means receiving gas from the heater/evaporator, an adjustable injection means between the heater/evaporator and second pressure reducing means for injecting liquefied gas into the heated gas leaving the heater evaporator for controllably varying the temperature of the gas going to the second pressure reducing means, an outlet conduit from the second pressure reducing means leading to an intake manifold of an internal combustion engine, and control means connected to and receiving a gas pressure from each of a point between the

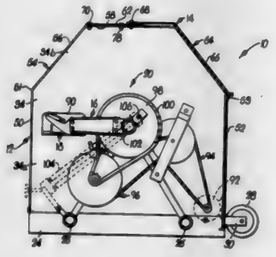
injection means and second pressure reducing means and the outlet conduit, said control means acting on the injection means to vary the amount of liquefied gas in response to pressure signals from the gas pressure at its connections between the injection means and the second pressure reducing means and the outlet conduit.

4,524,748
APPARATUS FOR SEPARATING AND RE-CIRCULATING OVERSIZE FUEL PARTICLES IN SPARK-IGNITION ENGINES
Hugo V. Giannotti, 879 S. Country Rd., E. Patchogue, N.Y. 11772
Filed Jun. 11, 1982, Ser. No. 387,352
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—591 **8 Claims**



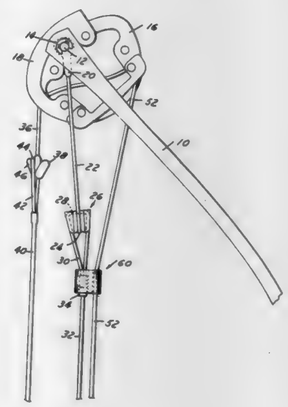
1. Apparatus for reducing the average fuel particle size in an air-fuel mixture for spark-ignition engines comprising inertial means for separating a portion of the air-fuel mixture containing fuel particles greater than a pre-determined size prior to its introduction to the cylinders of the engine, and means for returning the separated portion to the fuel supply system of the engine, said separated portion being re-circulated to the venturi portion of the engine from an area of higher staic pressure, wherin said inertial means comprises a particle separator having an array of elements, each element having a venturi-shaped housing and a centrally aligned trap disposed downstream of the throat into which the flow of fuel particles greater than a pre-determined size is inertially separated.

4,524,749
SPRING-TYPE BALL PITCHING MACHINE
Paul S. Giovagnoli, Kansas City, Mo., assignor to Master Pitching Machine, Inc., Kansas City, Mo.
Filed Nov. 8, 1982, Ser. No. 439,932
Int. Cl.³ F41B *3/02*
U.S. Cl. 124—7 **3 Claims**



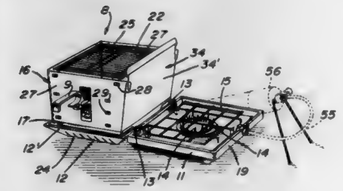
1. A ball pitching machine comprising:
an elongated pitching arm;
a ball-receiving hand secured to said arm;
mechanism for rotating said arm about an axis;
means for successively feeding respective balls to said hand for pitching thereof;
housing structure disposed about said arm, hand and mechanism, including structure defining a ball outlet located to permit pitched balls to pass out of said housing structure,
said housing structure including--
a pair of upright, opposed, spaced apart sidewalls each having a rectangular lower portion and a trapezoidal upper portion, with the upper portions each presenting a pair of inclined, converging end margins and a horizontal top margin,
a pair of upright, opposed, spaced apart, end walls joining said sidewall portions, and
a top wall including an inclined section joining one opposed pair of said converging end margins, and a horizontal wall section of lesser length than the length of the opposed top margins, said top wall section extending from the adjacent end of said inclined section and along said top margins for a portion of the length thereof;
cover means for substantially covering said ball outlet when said machine is not in use,
said cover means including--
an elongated planar, intermediate connection section situated between and extending along the length of said opposed top margins,
a second section including an inclined portion configured to be complemental with the pair of inclined converging end margins spaced from said one pair thereof, and
a bolt means connecting said intermediate section and said second section for permitting pivoting of the second section about an upright axis; and
means mounting said cover on said housing structure, including means for adjusting the position of the cover to vary the effective dimensions of said ball outlet, having--
releasable means coupling said intermediate section to said top wall section, including structure for permitting shifting of the intermediate section relative to said top wall portion.

4,524,750
ARCHERY BOW AND CABLE POSITIONER
Rex F. Darlington, Hale, Mich., assignor to Container Specialties, Inc. (by Kleman), Flint, Mich.
Filed Mar. 10, 1983, Ser. No. 474,203
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—23 R **3 Claims**



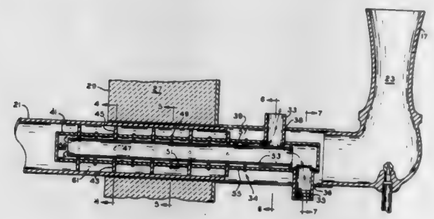
1. In a compound bow assembly of the type having eccentrically mounted pulleys at each bow limb, a bowstring and a pair of return cables, said pair of return cables including first and second return cables, each return cable anchored respectively at opposite bow limbs and each passing from the anchored end to a pulley at the end opposite to the anchored end, that improvement which comprises:
a cable positioner at each end of the bow having a securing portion and a guiding portion, said securing portion being secured adjacent the anchored end of a first return cable, and said guiding portion having a slide passage to receive a second return cable at an end opposite to that at which it is anchored and to retain said second return cable in close proximity to said first return cable, said positioners serving to maintain said first and second cables in a close relatively parallel relation during the operation of the bow.

4,524,751
PORTABLE COOKING DEVICE
Allen C. Hoglund, 116-261, 3rd St. East, North Vancouver, B.C., Canada
Filed Aug. 20, 1982, Ser. No. 409,876
Int. Cl.³ A47J *37/00*
U.S. Cl. 126—25 A **39 Claims**



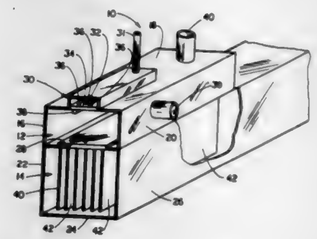
1. A portable cooking device comprising a housing having two concave sections each having an open end and securable to one another in juxtaposition with their open ends facing one another, one of said concave sections having a heat generating element secured therein beneath a heat transmitting support frame, the other of said concave sections having a collapsible wall assembly secured thereto and positionable to an operable vertical position extending above said open end of said other concave section, a combustible product support platform securable internally of said wall assembly when in said operable vertical position to support a combustible product thereon, said wall assembly having at least one angulated reflective wall, and a base wall under said support platform.

4,524,752
RECUPERATOR
Beresford N. Clarke, 3723 W. Hamilton Rd., Fort Wayne, Ind. 46819
Filed Apr. 26, 1983, Ser. No. 488,702
Int. Cl.³ F24C *3/00;* **F28D** *7/12;* **F23D** *11/44;* **F27B** *5/11*
U.S. Cl. 126—91 A **9 Claims**



1. In a negative pressure radiant tube type fuel burner system having a closed type burner unit near one tube end for introducing a combustible fuel-air mixture into the tube, an arrangement for recovering heat from exhaust gas emanating from another end of the tube comprising an air intake passageway for supplying air from the atmosphere to the burner unit including a concentric conduit portion extending inwardly into the radiant tube from said other end of the tube to divert intake air along generally parallel coaxial oppositely directed paths into and out of the radiant tube to transfer heat from exhaust gas to intake air and means fixed to the concentric conduit portion at spaced locations therealong for slidingly supporting the conduit portion within the tube in a relatively free floating manner to reduce the likelihood of damage due to temperature differential induced distortions and to facilitate installation, the negative pressure being created within the tube by an eductor assembly connected to said other end of the tube, said concentric conduit portions being disposed upstream from said eductor such that exhaust gas passes thereby prior to entering the eductor assembly.

4,524,753
INFRA-RED HEATING APPARATUS
Daniel Wolf, 9200 Prospect Ave., Louisville, Ky. 40222
Filed Nov. 12, 1982, Ser. No. 440,953
Int. Cl.³ F24C *3/04*
U.S. Cl. 126—99 R **10 Claims**



1. An infra-red heating apparatus, comprising:
an air duct;
a combustion chamber located adjacent said air duct;
a black body receiver adjacent said air duct and said combustion chamber;
a fuel supply plenum chamber adjacent said combustion chamber;
a radiating surface disposed between said fuel supply plenum chamber and said combustion chamber, said radiating surface being spaced from and generally facing said black body receiver;
means for directing fuel along said radiating surface and generally in a direction toward said black body receiver;
ignition means for igniting the fuel at said radiating surface; and,
heat radiating surfaces projecting from said black body receiver into said air duct whereby air passing through said air duct is heated as it passes said heat radiating surfaces.

4,524,754
HEATING APPLIANCE
Elliot V. Schubert, 194 Pleasant Valley St., Methuen, Mass. 01844
Filed Aug. 15, 1983, Ser. No. 523,182
Int. Cl.³ F24H *3/02*
U.S. Cl. 126—110 R **7 Claims**

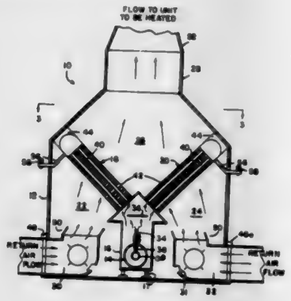
1. A heating appliance comprising:
an outer housing including top, bottom, and side walls and forming an inner heat exchange chamber;
an elongated combustion chamber centrally disposed within said heat exchange chamber adjacent said bottom housing wall;
said combustion chamber having chamber walls forming a

lower combustion portion including a burner for the combustion of fuel and an upper combustion portion;

a pair of elongaged heat exchanger units angularly and laterally disposed within said outer housing and upon said upper combustion chamber portion and forming a generally upwardly V configuration within said inner heat exchange chamber whereby said combustion chamber and heat exchangers divide said heat exchange chamber into a pair of lower cool air plenum zones for receiving cool air to be heated and a single upper hot air plenum zone for receiving air heated by each of said heat exchange units, each of said heat exchange units comprising:

a plurality of spaced elongated tubular conduits having lower inlet openings communicating with the upper portion of said combustion chamber through which effluent fuel combustion gases pass;

upper outlet openings;



an exhaust manifold communicating with said upper outlet openings of said tubular conduits for conducting said effluent combustion gases away from said tubular conduits; and

a plurality of elongated heat conducting fin members disposed in spaced vertical array about said tubular conduits from said combustion chamber to said exhaust manifold;

cool air intake openings disposed in said housing sidewalls adjacent each said cool air plenum zone;

blower means disposed adjacent said cool air intake openings to force movement of air into said cool air plenum zones, into contact with the said heat exchanger associated with each said cool air plenum zone, and into the said hot air plenum zone; and

a hot air outlet opening disposed in said top housing wall communicating with said hot air plenum zone for conducting heated air from said heating appliance.

4,524,755

FRICTION HEAT GENERATOR

Harold D. Harris, 5518 Ogden St., Omaha, Nebr. 68104, and Thomas J. Harris, 10636 Ellison Plz. #1, Omaha, Nebr. 68134

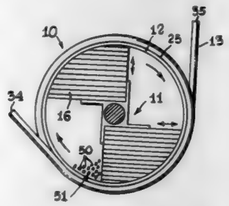
Filed Apr. 5, 1984, Ser. No. 596,967
Int. Cl.³ F24C *9/00*
U.S. Cl. 126—247 **5 Claims**

1. An improved friction heater apparatus consisting of:

an elongated thin, walled metallic friction drum sealed on both end and having an elongated axle member centrally journaled therein;

an elongated axle spindle element comprising a generally rectangular main body surrounding the axle member and mounted thereto, and having a plurality of leg members projecting outwardly from the corners of the spindle body, wherein the leg members are axially off-set from the spindle body and create a plurality of enlarged support surfaces and a plurality of relatively short support surfaces that generally divide the interior of said drum into axially offset quadrants; and,

a pair of free floating arcurate friction block elements occupying only two of the four axially offset quadrants wherein the pair of friction block elements are offset from one another, and wherein the the unoccupied axially offset quadrants are adapted to receive a mass of detached particles from the



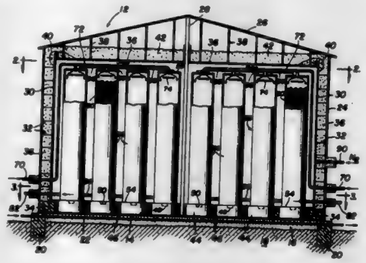
friction block elements, whereby the mass of particles are swept around the interior of the drum by the leading edges of the friction block elements under the influence of centrifugal force imparted to the said pair of friction block elements by the spindle element.

4,524,756

THERMAL ENERGY STORAGE TANK USING MODULAR HEAT BATTERIES

Royce J. Laverman, South Holland, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jul. 25, 1983, Ser. No. 516,593
Int. Cl.³ F24H *7/00*; F28D *17/00*
U.S. Cl. 126—400 **4 Claims**



1. A thermal energy storage apparatus comprising:

a thermally insulated tank having a bottom, side wall and roof;

a plurality of spaced apart modular heat batteries inside the tank supported on load bearing thermal insulation on the tank bottom;

each heat battery constituting an enclosed metal shell containing a bed of solid objects and around which objects a liquid can flow;

conduit means to feed a hot or cold liquid from outside of the tank to the top of each bed in each battery;

conduit means to withdraw a hot or cold liquid from the bottom of each bed in each battery and deliver it to a destination outside of the tank; and

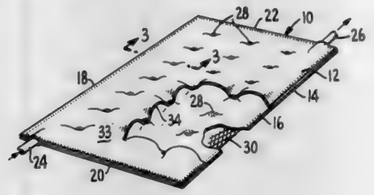
means to flood the tank with an inert gas.

4,524,757

SOLAR COLLECTOR, HEAT EXCHANGER OR HOT WATER STORAGE TANK AND METHOD OF FORMING SAME

Bruce S. Buckley, 1321 Grizzly Peak, Berkeley, Calif. 94708, assignor to Bruce Shawn Buckley, San Jose, Calif.

Continuation of Ser. No. 258,519, Apr. 28, 1981, abandoned.
This application Dec. 29, 1983, Ser. No. 565,533
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—426 **12 Claims**



1. Method of forming a heat exchanger, solar heat collector or storage element having flow passages therethrough which comprises:

bonding a flexible pair of non-metallic sheet members directly to each other at a plurality of discrete areas of similar size and similarly spaced apart with respect to each other, at least one of said sheet members having heat-transfer promoting filaments embedded therein, and said heat-transfer filaments being substantially coextensive with said spaced apart areas for equalization of thermal stresses and for readily transferring heat between the bonded and unbonded portions of said non-metallic sheet members, and

sealing along at least one pair of parallel opposed edges of said sheet members to form longitudinal flow passages generally parallel to said edge but with free lateral communication of fluid between said sheet members along substantially the entire length of the passages for equalizing fluid temperatures across said panel when the resulting unbonded volume between said sheet members is filled with fluid.

6. An article of manufacture suitable for use as a heat exchanger tank or solar collector in a solar water heating system comprising:

a pair of flexible non-metallic sheet members bonded directly to each other around their peripheral edges and additionally bonded at a plurality of discrete areas of similar size, each area being similarly spaced longitudinally and laterally with respect to each other over the enclosed surface of said sheet members, such that fluid flow is permitted from opposed edges over substantially the entire lateral and longitudinal lengths of the article,

heat conductive filaments for readily transferring heat embedded in one of said sheet members to promote heat transfer and to equalize thermal stresses between said bonded areas and the unbonded areas of said sheet members, and

fluid connector means formed adjacent two opposed peripheral edges of said sheet members for admission and withdrawal of fluid from said article.

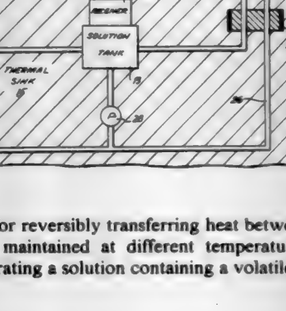
4,524,758

SOLAR RAY COLLECTING DEVICE

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Jun. 14, 1984, Ser. No. 620,405
Claims priority, application Japan, Jun. 24, 1983, 58-114766
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—440 **10 Claims**

1. A solar ray collecting device for collecting solar rays from the sun, comprising a rotatable support post having a generally vertical axis, a support post motor for rotating said support post about said vertical axis, a rod having a rod axis disposed generally perpendicular to the vertical axis of said support post, said rod having a longitudinal central portion mounted on said support post such that said rod rotates in a generally horizontal plane as said support post motor rotates said support post, a plurality of solar ray collecting elements each rotatable about a generally upright shaft, each of said collecting elements having a drive means for rotating the respective collecting element about the axis of its upright shaft, said plurality of drive means being carried by said rod and being longitudinally spaced along the longitudinal length of said rod, each of said collecting elements including a plurality of light collecting lens means and optical conductors having a light-receiving edge located at the focus of said lens means, each of said upright



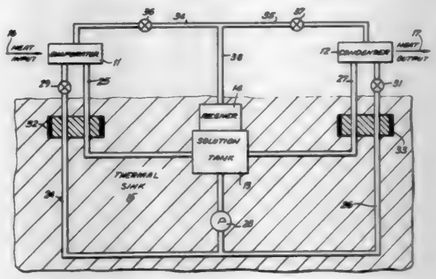
shafts along with said rod and said support post having hollow portions, said conductors passing from said light-receiving edge through the hollow portions of the respective upright shaft, said rod and said support post, whereby each of said drive means is operable to rotate its respective collecting element alternately in both directions while said support post motor rotates said support post alternately in both directions in a manner to preclude the shadow of one collecting element impinging on the lens means on another collecting element as the sun traverses a 360 degree path about the solar ray collecting device while also limiting the maximum twist imparted to said conductors passing through said hollow portions of said upright shaft, said rod and said support post.

4,524,759

PROCESS FOR THE REVERSIBLE TRANSFER OF THERMAL ENERGY AND HEAT TRANSFER SYSTEM USEFUL THEREIN

Robert F. Butler, 18805 Orange Ave., Sonoma, Calif. 95476

Filed Oct. 28, 1983, Ser. No. 546,470
Int. Cl.³ F24J *3/02*; F25B *27/00*
U.S. Cl. 126—452 **21 Claims**

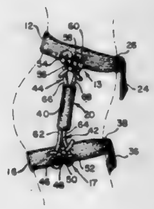


1. A process for reversibly transferring heat between a plurality of zones maintained at different temperature levels, including evaporating a solution containing a volatile material

in a first, heated evaporation zone, condensing vapor of the volatile material in a second, condensation zone at a temperature less than that of the evaporation zone, and removing heat from the condensation zone upon condensation of the volatile material vapor therein; comprising:

(a) maintaining the solution in a solution-holding zone;
(b) circulating the solution from the solution-holding zone through the evaporation and/or condensation zones;
(c) feeding the volatile material vapor from the evaporation zone into a separate receiving zone maintained at a lower temperature, and condensing the vapor therein;
(d) providing a low temperature thermal sink in heat exchange relation with the receiving zone;
(e) effecting heat transfer from the receiving zone to the thermal sink upon condensation of the volatile material vapor in the receiving zone;
(f) when it is desired to extract heat from the condensation zone, vaporizing the volatile material in the receiving zone and thereby effecting heat transfer from the thermal sink to the resulting vapor;
(g) feeding the vapor to said condensation zone and absorbing it in the solution therein; and
(h) recovering the thermal energy released during step (g).

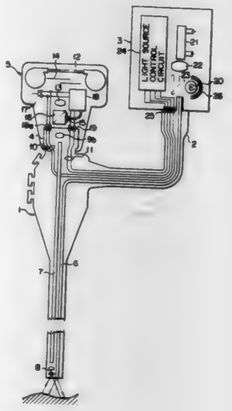
4,524,760
SEXUAL AID
Elaine Lerner, 6 Duggan St., Stoughton, Mass. 02072
Filed May 31, 1983, Ser. No. 499,507
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—1 R **2 Claims**



1. Device whereby one partner can exercise control over the movement of the hips of the other partner during the act of sexual intercourse which comprises:

(a) a waist band of a predetermined length of nonextensible material having first and second free ends, fastening means connected to at least one of said free ends for fastening the ends together to form an endless band around a person's waist, said fastening means providing for adjustability of the waist band size, and loop means each having four individual loops located in opposition to one another on said waist band and so located thereon as to be at the wearer's respective sides when the said device is being worn;
(b) first and second leg bands of a predetermined length of nonextensible material each having first and second free ends, fastening means providing for adjustability connected to at least one of each said first and second free ends for forming an endless band around the wearer's upper thigh, and loop means each having four loops each being provided on each leg band; and
(c) first and second gripping means of nonextensible material each having a gripping portion whereby the one partner can grip the device with his hands and a pair of tie connectors extending from each end of the gripping portion for connecting the gripping means to a loop member on the waist band and a loop member on a leg band, said tie connectors being threaded in one direction through the outside loops in the loop means and threaded in the reverse direction through the inner loop and then tied together.

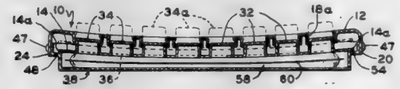
4,524,761
ENDOSCOPE APPARATUS
Shinichiro Hattori; Seiichi Hosoda, and Takeshi Takamatsu, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 355,243, Mar. 5, 1982, abandoned. This application Feb. 21, 1984, Ser. No. 580,780
Claims priority, application Japan, Mar. 16, 1981, 56-37662
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **7 Claims**



1. An endoscope apparatus comprising:
an endoscope having a light guide for transmitting observation and photographing lights, an image guide for transmitting light reflected from an object, and an eyepiece section;
a camera detachably arranged at the eyepiece section of said endoscope and having light control signal producing means for producing selectively an observation light control analog signal corresponding to an intensity of light transmitted through the image guide and a photographing light control digital signal for terminating the emission of the photographing light, said light control signal producing means including a photoelectric element, an integrating circuit for integrating an analog signal of said photoelectric element and a comparator for comparing the integration signal of said integrating circuit with a reference signal to produce the photographing light control digital signal; and
a light supply unit including light source means for emitting the observation light and photographing light, observation light control means for automatically controlling an intensity of the observation light of said light source means correspondingly to the observation light control signal applied from said light control signal producing means in said camera, and photographing light control means for controlling a brightness of the photographing light of said light source means correspondingly to the photographing light control signal.

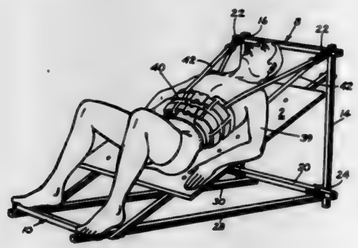
4,524,762
SEAT HAVING MOVABLE SUPPORTING SURFACES
David A. Schulman, 7701 Newton Ave. N., Brooklyn Park, Minn. 55444
Filed May 16, 1983, Ser. No. 494,942
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—33 **12 Claims**

1. A seat for promoting improved blood circulation, posture and comfort comprising
a hollow seat body including a supporting matrix with an upwardly disposed first support surface for supporting the human body and having a plurality of openings therein,
a second supporting means defined by an array of connected plugs movably mounted in the openings and adapted to slide up and down as a unit through the openings,
said plugs having top surfaces comprising a second support surface adapted to support a surface of the body when elevated to an extended position above the first support



surface and being adapted to permit the body of the user to rest upon the matrix when lowered to a retracted position with their top surfaces below said first surface,
a fluid inflatable flexible bag mounted within the seat and connected to the plugs in motion transmitting operative association therewith to move the connected plugs as a unit when inflated to one of said positions and allowing the plugs to move together as a unit to the other of said positions when deflated.

4,524,763
PORTABLE GRAVITY ASSISTED LUMBAR TRACTION DEVICE
Ernest W. Eberling, Jr., 1872 Hybiscus St., Medford, Oreg. 97501
Filed Jul. 13, 1982, Ser. No. 397,797
Int. Cl.³ A68H *1/02*
U.S. Cl. 128—75 **1 Claim**



1. A therapeutic apparatus for use in gravity assisted lumbar spine traction treatments and including a body harness adapted to connect to the patient's body above the lumbar spine area, comprising
first and second support frames for the apparatus connectable so that the frames are in substantially 90° angular relation to each other,
a support board having a patient body support surface thereon,
elongated support members carrying the support board and secured to the first and second support frames to form a triangle therewith as seen in side elevational view so that the support board and the body support surface lie within the hypotenuse of said triangle,
at least one of said first and second support frames having body harness connection means thereon,
said harness having means to connect to the connection means whereby same is adapted to accomodate the gravity hang of only the torso of the patient's body on the support surface,
foot support means adjacent the apparatus,
said foot support means and the apparatus being positioned relative to each other whereby the patient may maintain his thighs in a determined angular relation to the body support surface and may controlably vary the angular relation between the thighs and the body support surface through ninty degrees and thereby enhance the therapeutic effect of the lumbar spine traction,
and said support board being dimensioned to provide body torso surface support from the patient's head to the patient's pelvic area and providing no support for the patient's thighs and lower legs whereby the patient's body is so hung by the apparatus that the distance from the patient's pelvic area to the foot support means along the hypotenuse is always substantially less than the patient's inseam.

4,524,764
KNEE BRACE
Harold E. Miller, R.R. 1, Box 185, West Branch, Iowa 52358, and Ronald W. Cheney, 2004 Center St., West Des Moines, Iowa 50265
Filed Sep. 6, 1983, Ser. No. 529,261
Int. Cl.³ A61F *3/00*
U.S. Cl. 128—80 C **8 Claims**



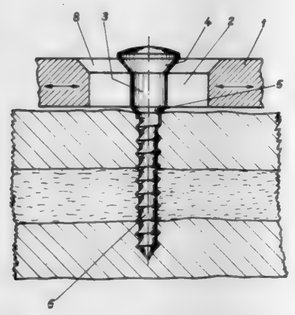
1. A knee brace for supporting a human leg having a knee, an upper leg portion above said knee, and a lower leg portion below said knee; said knee and said upper and lower leg portions each having an anterior surface, a posterior surface, a medial surface, and a lateral surface, said brace comprising:
a medial articulated assembly and a lateral articulated assembly adapted to embrace said medial and lateral surfaces of said knee therebetween;
each of said articulated assemblies comprising an upper member having upper and lower ends, a lower member having upper and lower ends, and hinge means pivotally interconnecting said upper end of said lower member to said lower end of said upper member;
each of said hinge means comprising a pair of spaced apart strap plates held in rigid spaced apart relation to one another by web means;
said upper ends of said lower members and said lower ends of said upper members extending between and being embraced by said spaced apart strap plates;
each of said hinge means including a pair of spaced apart hinge pins extending through said spaced apart strap plates, one of said pins extending through said lower end of said upper member and the other of said hinge pins extending through said upper end of said lower member to provide first and second hinged axes for said upper and lower members respectively;
said lower ends of said upper members and said upper ends of said lower members each being provided with an arcuate gear surface concentric to said first and second hinge axes respectively, said gear surfaces each including gear teeth and flange means formed adjacent said gear teeth;
said gear teeth of said lower members intermeshing with said gear teeth of said upper members between said spaced apart strap plates whereby said intermeshing gear teeth, said flange means, said hinge pins, said spaced apart strap plates, and said web means combine to resist breaking of said hinge means in response to outside impact forces being applied to said knee.

4,524,765

FUNCTIONAL ATTACHMENT SYSTEM FOR OSTEOSYNTHESIS BY MEANS OF COMPRESSION PLATES

Juan L. de Zbikowski, Virgen de la Antigua, 10-1º , Sevilla, Spain

Filed Dec. 9, 1982, Ser. No. 448,329
Claims priority, application Spain, Dec. 9, 1981, 507.800
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 D **5 Claims**



1. A functional attachment system for biocompressive osteosynthesis for connecting bone portions on either side of a fracture site of a fractured bone comprising:

(a) a plate having a major axis adapted to be oriented generally parallel to a major axis of the fractured bone, said plate having end portions adapted to be positioned on either side of said fracture site respectively, each of said end portions having holes elongated in a direction generally parallel to the major axis of said plate; and

(b) means attached to the bone portions for capturing said plate end portions with respect to the bone portions through said elongated holes, so as to allow relative displacement between each bone portion and said plate generally paallel to said plate major axis in response to biocompressive forces.

4,524,766

SURGICAL KNEE ALIGNMENT METHOD AND SYSTEM

Thomas D. Petersen, 9680 Alto Dr., La Mesa, Calif. 92041

Filed Jan. 7, 1982, Ser. No. 337,587
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 H **50 Claims**



1. A system of instruments for assisting in performing knee replacement surgery, comprising;

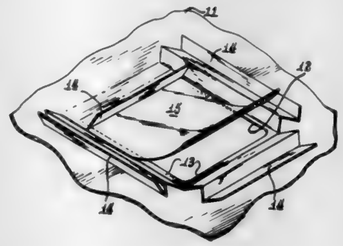
a cutting guide for guiding an instrument for cutting a knee joint surface; and means for precisely aligning said cutting guide with respect to the true weight bearing axis of the leg in which the knee is to be replaced, comprising an extensible member having said cutting guide attached at one end thereof; and an adjustable ankle means at the other end of said body member having means engaging the ankle.

4,524,767

SURGICAL DRAPES

Jacob A. Glassman, 1680 Michigan Ave., Miami Beach, Fla. 33139

Filed Jul. 6, 1982, Ser. No. 395,803
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—132 D **5 Claims**



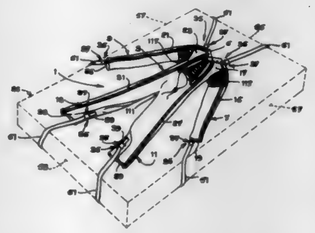
1. A surgical drape comprising a main drape having a multiple sided operative opening adapted to be arranged over the surgical area of a patient, a number of absorbent accordion folded flaps integrally attached to the main drape along one of their marginal edges one outwardly of each peripheral margin of the operative opening, an incise drape being sized and shaped to lie over the operative opening and areas of the main drape inwardly of the folded flaps surrounding the operative opening, said incise drape having one edge attached to one of said peripheral margins, an adhesive covering the surface of the unsecured portion of said incise drape facing the operative opening and said peripheral margins, a removable sheet normally covering said adhesive coated surface whereby when said main drape is placed over said surgical area, said sheet is removable to expose the adhesivly coated surface and enable the incise drape to be adhesively secured to the remaining areas of the main drape inwardly of the flaps and to the surgical area of the patient within said operative opening, and said absorbent flaps being extendable to overlie at least a portion of the incise drape disposed over the operative opening.

4,524,768

RESTRAINT GARMENT

Charles A. Serrao, Montreal, Canada, assignor to Giovanni Argentino, Verdun, Canada

Filed Sep. 21, 1983, Ser. No. 534,294
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—134 **7 Claims**



1. A restraint garment for securely, yet confortably, immobilize a patient in laid down position on a bed, said garment comprising:

a torso enclosing portion with a top edge defining a neck opening;

two arm enclosing portions and two leg enclosing portions integral with the torso enclosing portion and extending thereform to terminate in free ends, said arm enclosing portions being made longer than the normal length of an arm;

closure means in the garment for providing access into it; and

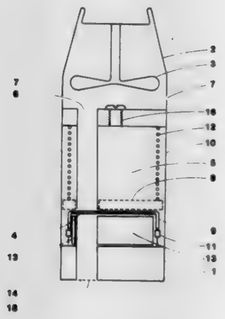
restraint means on the garment for attaching it into the a bed in view of substantially immobilizing a patient within the garment on said bed, said restraint means comprising a plurality of first restraint members respectively fixed to the garment on each side of the neck opening and at the free end of each arm and leg enclosing portion, said first restraint members being detachably connectable to a similar number of second restraint members mounted at the end of straps fixed to the bed in such a manner as to substantially immobilize said garment and the patient therein in laid down position on said bed.

4,524,769

DOSAGE INHALATOR

Kjell I. L. Wetterlin, S Sandby, Sweden, assignor to Aktiebolaget Draco, Lund, Sweden

Filed Jun. 17, 1982, Ser. No. 389,213
Claims priority, application Sweden, Jul. 8, 1981, 8104239
Int. Cl.³ A61M *15/00*
U.S. Cl. 128—203.15 **12 Claims**



1. A dosage inhalator for dispensing to a patient a micronized solid, pharmacologically active compound in dry powdered form having a particle size of less than 5 micrometers suspended in a gas, comprising:

a nozzle;

a conduit connected to the nozzle;

a storage chamber adjacent said conduit for storing said active compound to be dispensed by said inhalator;

a perforated membrane having a plurality of preselected perforated portions each holding and dispensing a reproducible unit dose of less than 50 mg. of said micronized compound, said membrane being mounted for movement between said conduit and said storage chamber so that one of said preselected portions is positioned across said conduit whereby the active compound held in the perforation thereof can be dispensed into the conduit and another of said preselected portions thereof is disposed within said storage chamber;

dose loading means for introducing said active compound in the storage chamber into the perforation of the preselected portion of said membrane disposed within the storage chamber; and

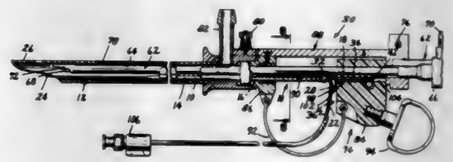
maneuvering means for displacing the perforated membrane through a plurality of positions whereby successive preselected portions of the perforated membrane holding the active compound are positioned across said conduit for dispensing the active compound.

4,524,770

ENDOSCOPE INJECTION NEEDLE

Ahmad Orandi, Rte. 6, Box 138A, Fergus Falls, Minn. 56537

Filed Jan. 25, 1983, Ser. No. 460,873
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.1 **2 Claims**



1. A tool for use with an endoscopic instrument for applying fluid from forcing means, said instrument having an eyepiece at a proximal end and a sheath at a distal end, said instrument further including a working element with a body and a header, said body being guidably movable toward and away from said header, said sheath and said header including passages for receiving said tool, said body including clamping means for holding a portion of said tool, said tool comprising:

a hollow needle with a tip and an opposite end portion, said needle for projecting partially from the sheath of said endoscopic instrument when said body of said instrument is moved toward said header;

extending means for being received by the clamping means of the body of said instrument, said extending means being connected to said needle;

flexible conduit means for directing fluid from the fluid forcing means to an end portion positioned for fluid communication with said needle; and

means for encasing the end portions of said conduit means and said needle, said encasing means extending from the end portion of said needle when it projects partially from the sheath of said instrument to between said body and said header, said extending means extending beyond said encasing means to the clamping means of the body, said encasing means including means for providing said conduit means to be bent between said header and said body so that said conduit means may be directed away from said instrument;

whereby said flexible conduit means may be directed from between said header and said body away from said instrument to said forcing means thereby providing fluid communication from said forcing means to said needle, through said conduit means and said encasing means, while providing operable connection at said extending means between said tool and said instrument.

4,524,771

MULTIPLE CURVED SURGICAL NEEDLE

Richard C. Troutman, New York, N.Y., and Walter McGregar, Fleming, N.J., assignors to Ethicon Inc., Somerville, N.J., a part interest

Filed Oct. 28, 1982, Ser. No. 437,419
Int. Cl.³ A61B *17/06*
U.S. Cl. 128—339 **11 Claims**

1. A surgical needle comprising a multiple curved body portion terminating in a blunt end and a stra-ght point end, all curves of the multiple curves being concave, the curve adjacent the pointed end of the needle having a radius of curvature of from 0.040 inch to 0.075 inch and a length of curvature of from 0.063 inch to 0.105 inch, and the curve adjacent the blunt end of the needle having a radius of curvature of from 0.080 inch to 0.120 inch and a length of curvature of from 0.081 inch

to 0.115 inch the axis of said straight point end intersecting at an angle the concavity of said concave curve adjacent said straight point end whereby the straight point provides a controlled depth during the placement of the needle, the tighter



initial curve provides the desired turnaround of the needle when the needle is placed and the gentler curved portion provides ease of gripping of the needle and control of the needle during placement.

4,524,772

APPARATUS FOR HAIR REMOVAL

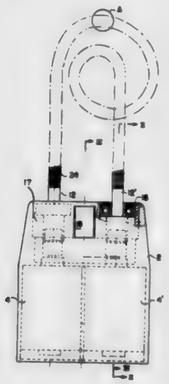
Yair Daar, Moshav Galia, and Shimon Yahav, 11 Moshe Mizrachi St., Rehovot, both of Israel

Filed Jul. 22, 1983, Ser. No. 516,699

Claims priority, application Israel, Aug. 20, 1982, 66595; Jun. 15, 1983, 68990

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—355 **30 Claims**



1. An electrically powered depilatory device comprising:
a hand held portable housing;
motor means disposed in said housing; and
a helical spring comprising a plurality of adjacent windings arranged to be driven by said motor means in rotational sliding motion relative to skin bearing hair to be removed, said helical spring including an arcuate hair engaging portion arranged to define a convex side whereat the windings are spread apart, and a concave side corresponding thereto whereat the windings are pressed together, the rotational motion of the helical spring producing continuous motion of the windings from a spread apart orientation at the convex side to a pressed together orientation at the concave side and for engagement and plucking of hair from the skin of the subject, whereby the surface velocities of the windings relative to the skin greatly exceeds the surface velocity of the housing relative thereto.

4,524,773

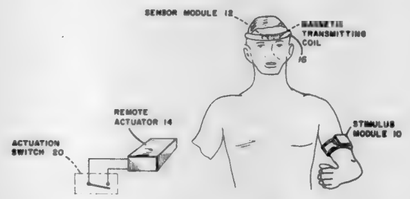
APPARATUS FOR INHIBITING SELF-INJURIOUS BEHAVIOR (SIB) IN PATIENTS

Robert E. Fischell, Silver Spring; Arnold L. Newman; Henry B. Riblet, both of Kensington, and William R. Powell, Columbia, all of Md., assignors to The John Hopkins University, Baltimore, Md.

Filed Aug. 24, 1983, Ser. No. 843,944

Int. Cl.³ A61N *1/38*

U.S. Cl. 128—419 S **18 Claims**



1. An apparatus for inhibiting self-injurious behavior, comprising:
an actuator means for generating a modulated near field magnetic signal in response to a patient's self-injurious behavior, said modulated near field magnetic signal being modulated with coded information identifying said patient; and
a stimulus module, adapted to be worn on said patient's body, including:
a receiver means for receiving said modulated near field magnetic signal and for detecting and processing said coded information;
a digital control means, operably connected to said receiver means, for generating an enabling command when said coded information detected by said receiver means matches with a stored identification code; and,
a stimulation means, operably connected to said digital control means, for generating pulses of aversive electrical stimulation to be applied to said patient's skin, in response to said enabling command.

4,524,774

APPARATUS AND METHOD FOR THE STIMULATION OF A HUMAN MUSCLE

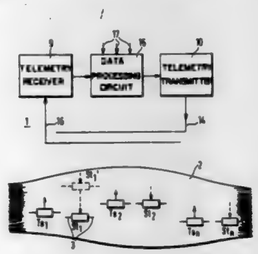
Jürgen Hildebrandt, Munich, Fed. Rep. of Germany, assignor to Deutsche Nemectron GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,283

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130104

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—421 **28 Claims**



1. Apparatus for stimulating a muscle, comprising:
(a) first means for stimulating said muscle, said first means being adapted to receive muscle stimulation signals from third means and to stimulate one region of said muscle accordingly;
(b) second means for receiving muscle stimulation signals directly from another region of said muscle and transmitting said muscle stimulation signals to said third means; and
(c) third means adapted to receive said muscle stimulation signals and to re-transmit said muscle stimulation signals to said means for stimulating said muscle.

4,524,775

MEDICAL ELECTRODE AND A METHOD OF MANUFACTURING SAME

Jan Rasmussen, Bogevej 12, DK-3650 Olstykke, Denmark

Filed Feb. 14, 1983, Ser. No. 466,164

Claims priority, application Denmark, Feb. 15, 1982, 647/82

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—640 **10 Claims**



1. A medical electrode comprising:
a foamed plastic disc having first and second sides with an aperture extending therebetween and forming a contact medium chamber, said foamed plastic disc comprising a plurality of cells with walls, said walls of said cells surrounding and adjoining said chamber being compressed and at least partially fused;
a plastic foil cover covering said aperture and at least a part of said foamed plastic disc surrounding said aperture on one of said sides of said disc;
connector means adapted to be electrically connected to monitoring equipment;
a metal electrode disposed in said chamber and electrically connected to said connector means; and
a layer of pressure-sensitive adhesive applied to the other of said sides of said disc.

4,524,776

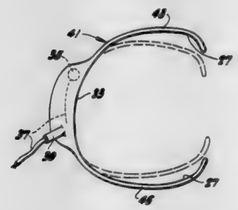
SPLIT CARRIER FOR EYELID SENSOR AND THE LIKE

Stanley J. Withers, 4701 San Leandro St., Oakland, Calif. 94601; Gary E. Schneiderman, 640 Mandarin La., Walnut Creek, Calif. 94598, and William M. Little, Jr., 1059 Norwood Ave., Oakland, Calif. 94610

Filed Oct. 27, 1983, Ser. No. 545,908

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—644 **13 Claims**



1. An eyelid device carrier comprising a split, resilient ring having upper and lower legs adapted to be received between the eyeball and the eyelids and defining an opening allowing substantial movement of the eyeball with minimal contact between the cornea and the ring, the vertical distance between said upper and lower legs, with the split resilient ring in relaxed position, being greater than the vertical distance between the inferior and superior conjunctival fornices of the eye whereby the split ends of said ring are adapted to resiliently hold the carrier in position in the eye by being resiliently urged apart and into the conjunctival fornices, at least one device in said ring having a portion exposed for contact with the eye, said ring including a first portion of relatively small cross-section and a second portion of relatively wide cross-section, said device being disposed in said second portion.

4,524,777

AUTOMATIC, CONTINUOUS AND INDIRECT BLOOD PRESSURE MEASUREMENT APPARATUS

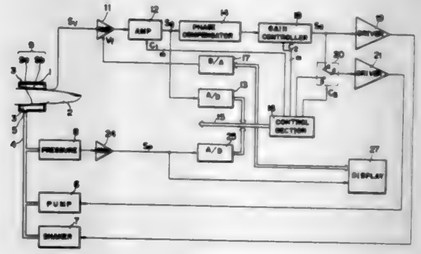
Kazuya Kisioka, Tomisatomura, and Kenichi Yamakoshi, Sapporo, both of Japan, assignors to Ueda Electronic Works Limited, Japan

Filed May 5, 1983, Ser. No. 491,984

Claims priority, application Japan, Feb. 25, 1983, 58-30500

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—677 **2 Claims**



1. In an automatic, continuous and indirect blood pressure measurement apparatus comprising:
(a) a cuff which is adapted to be attached to a segment to be measured;
(b) external force applying means for applying an external force to fluid contained in said cuff to thereby generate a cuff pressure;
(c) a pressure sensor means for measuring said cuff pressure; and
(d) a volume sensor means for detecting a volume per unit length of an artery of said segment, said volume varying in accordance with said cuff pressure and a pulsating intravascular pressure, said volume sensor means generating a volume signal corresponding to said volume, said volume signal comprising a DC component and a volumetric pulse signal, wherein said external force applying means is energized in accordance with said volumetric pulse signal shifted in phase and controlled in amplitude in order to control and maintain said volume per unit length constant and to obtain an instantaneous blood pressure of said artery as a function of said cuff pressure;
the improvement which comprises:
DC level adjustment and first gain control means which is supplied with an output from said volume sensor means, said output being subjected to DC level adjustment and amplitude control, said DC level adjustment and first gain control means generating a DC level adjusted and amplitude controlled volume signal;
phase compensator and second gain control means which controls the phase and amplitude of said volume signal from said DC level adjustment and first gain control means to generate said phase shifted and amplitude controlled volumetric pulse signal; and
driver means responsive to said volumetric pulse signal shifted in phase and controlled in amplitude for driving said external force applying means.

4,524,778

SKIN TEMPERATURE INDICATING AND RECORDING DEVICE

George T. Brown, Jr., Dayton, and Lewis E. Blakely, Jr., Kettering, both of Ohio, assignors to American Thermometer Co., Inc., Dayton, Ohio

Filed Jul. 1, 1983, Ser. No. 509,933
Int. Cl.³ A61B *6/10*
U.S. Cl. 128—736 **8 Claims**



1. A device for sensing and recording the skin surface temperature in selected areas of a human body, comprising a first flexible panel of film-like material, said first panel having a width sufficient to extend across the chest of the body for covering and contacting both breast of the body and for conforming to the curvature of the breast, a coating of temperature responsive liquid crystalline marterials carried by said first flexible panel and effective to produce a thermogram of the skin surface in the area of both breast in thermal contact with said first panel, a second flexible panel of transparent plastics film material directly overlying said first panel and contacting said first panel, said second panel also having a width sufficient to extend across the chest of the body, the thermogram on said first panel being visually observable through said second panel in contact with said first panel, marker means for recording on said second panel a selected pattern detail of the underlying thermogram on said first panel in contact with said second panel, means for attaching said second panel to the body in the area to be examined, means for supporting said first panel between the skin surface and said second panel, said latter supporting means providing for removing said first panel without removing said second panel, an elongated flexible thermometer band adapted to be positioned between the skin surface and said second panel after said first panel is removed, and said thermometer band having opposite end portions projecting above and below said second panel to facilitate gripping said thermometer band and precisely positioning said thermometer band between the skin surface and said second panel whereby temperatures from the thermometer band can be recorded on the second panel.

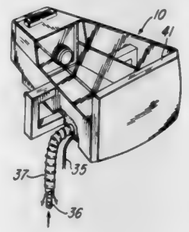
4,524,779

DEVICE FOR DETECTING, MEASURING, AND RECORDING BODY THERMAL EMISSIVITY

George T. Brown, Jr., Dayton, Ohio, assignor to American Thermometer Co., Inc., Dayton, Ohio

Filed Jul. 20, 1983, Ser. No. 515,503
Int. Cl.³ G03B *29/00*
U.S. Cl. 128—736 **17 Claims**

1. A device for detecting and recording the thermal emissivity of a body, comprising a substantially rigid housing having opposite forward and rearward end portions, a flexible thermal responsive screen adapted to conform to the contour of the body and having a coating of liquid crystals effective to transform thermal differentials emanating from the body to visible color patterns, means for mounting said screen on said forward end portion of said housing, a camera for recording the image of the patterns, means for closing said rearward end portion of said housing and for supporting said camera, said closing means cooperating with said housing and said screen and screen mounting means to define an enclosed air confining chamber, said housing having transparent wall means providing for viewing the color patterns on said screen prior to recording the image of the patterns with said camera, said chamber having air inlet and outlet means, and means for



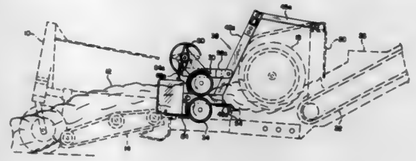
supplying a continuous flow of air to said chamber through said inlet and outlet means and against said flexible screen to aid in conforming said screen to the contour of the body and in controlling the normal temperature of said screen.

4,524,780

COMBINE ATTACHMENT FOR HARVESTING RADISH SEEDS AND THE LIKE

Henry Warkentin, Lebanon, Oreg., assignor to Agriculture Service Corporation, Salem, Oreg.

Filed Sep. 19, 1983, Ser. No. 533,122
Int. Cl.³ A01F *12/10, 11/04*; A01D *45/00*
U.S. Cl. 130—30 G **11 Claims**



1. In a harvesting combine having a pick-up belt, an auger downstream of the pick-up belt, a feeder conveyor downstream of the auger and a threshing means downstream of the feeder conveyor, an attachment mountable to a forward portion of the combine to facilitate the harvesting of radish seeds or the like from a crop windrow having seed-containing pods comprising:

a frame;

fastening means for detachably securing the frame to the combine between the pick-up belt and auger;

a pair of upper and lower transverse hulling rolls carried by the frame and spaced vertically a distance sufficient to split seed-containing pods conveyed between the rolls without crushing the seeds; and

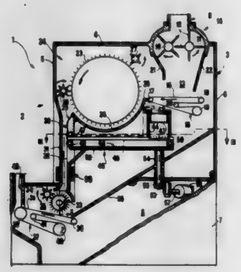
fluid drive means for driving the rolls in a counter-rotating manner such that the rolls receive all the material comprising the crop windrow from the pick-up belt, convey all of such material therebetween to effect splitting of the pods and then feed all of such material to the auger for conveyance downstream to the feeder conveyor and thence to the threshing means, where the seeds are separated from the split pods.

4,524,781

CIGARETTE-MAKING MACHINE WITH AN AUXILIARY TOBACCO SUPPLY UNIT

Enzo Seragnoli, Bologna, Italy, assignor to G.D Societa' per Azioni, Bologna, Italy

Filed Aug. 6, 1982, Ser. No. 406,031
Claims priority, application Italy, Sep. 24, 1981, 49365 A/81
Int. Cl.³ A24C *5/39*
U.S. Cl. 131—108 **7 Claims**



1. A cigarette-making machine comprising:

a main tobacco supply unit (**24**);

a descending chimney (**30**) for shredded tobacco, said descending chimney (**30**) extending downwards from said main tobacco supply unit (**24**);

an intermediate lateral aperture (**47**) provided in said chimney (**30**);

an auxiliary tobacco supply unit (**45**) communicating with said chimney (**30**) and comprising a shredded tobacco output conveyor (**46**) having an outlet end arranged at said aperture (**47**) and movable thereacross transversely of said chimney (**30**) to sweep a transverse section of the same; and

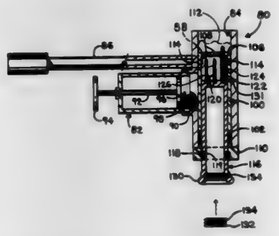
actuator means (**58**) connected to said output conveyor (**46**) to impart said transverse movement thereto.

4,524,782

TOBACCO SMOKING PIPE HAVING SELF-CONTAINED CLEANING ASSEMBLY

René Chister, 20702-177 El Toto Rd., El Toro, Calif. 92630

Continuation-in-part of Ser. No. 431,470, Sep. 30, 1982, Pat. No. 4,478,228. This application Feb. 7, 1983, Ser. No. 464,457
The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.
Int. Cl.³ A24F *3/02*
U.S. Cl. 131—180 **9 Claims**



1. A tobacco smoking pipe having a hollow smoking chamber for receiving a plug of tobacco to be smoked and a pipe stem interconnected with said smoking chamber so that tobacco smoke can be drawn therethrough to the mouth of the smoker, said pipe comprising:

tobacco magazine means communicating with said smoking chamber for storing a supply of tobacco to be smoked,

means by which to move an amount of tobacco from the supply thereof in said magazine into said smoking chamber,

tobacco cutting and transporting means being of hollow construction and having a cutting surface formed at an end thereof, said cutting and transporting means being dimensioned to travel through said smoking chamber in order to cause said cutting end surface to cut off a plug of tobacco that has been moved from said magazine into said cutting chamber, said cutting end surface having at least first and second smoke intake ports extending therethrough through which tobacco smoke can be drawn, and

cleaning means located at the hollow interior of said tobacco cutting and transporting means and dimensioned to be moved therethrough,

said cleaning means including at least one elongated cleaning pin and at least one elongated guide pin, said guide pin extending in substantially parallel alignment with and having a length which is longer than said cleaning pin,

said guide pin being of sufficient length to be received through a first of said smoke intake ports at the cutting end surface of said cutting and transporting means for aligning said cleaning pin for receipt by said second smoke intake port, and

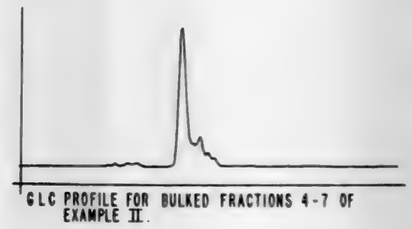
said cleaning pin being forced through said second smoke intake port to remove tobacco residue therein when said cleaning means is moved through said cutting and transporting means in a direction towards the cutting end surface thereof.

4,524,783

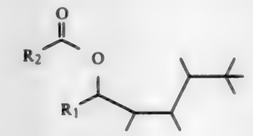
ALKANOIC ACID ESTERS OF 3,4,5,6,6-PENTAMETHYL HEPTANOL-2 AND ALKYL HOMOLOGUES THEREOF; PROCESS FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

Wilhelmus J. Wiegers, Red Bank; Ronald S. Fenn, New Providence; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 541,261, Oct. 12, 1983, abandoned, which is a division of Ser. No. 405,611, Aug. 5, 1982, abandoned. This application Apr. 26, 1984, Ser. No. 589,498
Int. Cl.³ A24B *3/14*
U.S. Cl. 131—276 **7 Claims**



1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of smoking tobaccos and smoking tobacco articles comprising the step of intimately admixing with a smoking tobacco composition or at least one element of a smoking tobacco article, an aroma or taste augmenting or enhancing quantity of at least one compound defined according to the structure:

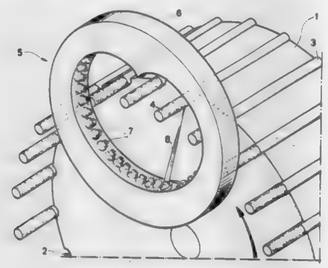


wherein R_1 is C_1–C_3 alkyl and R_2 is hydrogen or C_1–C_3 alkyl.

4,524,784
DEVICE FOR FORMING PERFORATIONS IN BAR-SHAPE ARTICLES

Enzo Seragnoli, and Armando Neri, both of Bologna, Italy, assignors to G.D Societa' per Azioni, Bologna, Italy

Filed Mar. 22, 1983, Ser. No. 477,605
Claims priority, application Italy, Apr. 13, 1982, 48220 A/82
Int. Cl.³ A24C *5/60*
U.S. Cl. 131—281 **1 Claim**

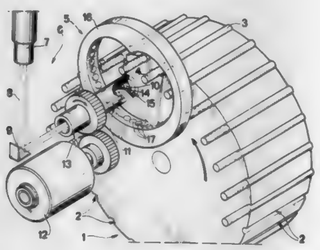


1. A device for forming perforations in bar-like articles, in particular cigarettes, characterized by the fact that it comprises a piercing station (5) traversed by the said articles (3) to be pierced and including a plurality of laser diodes (7) and a fixed support (6-15) for the said diodes (7); these latter each being operable to emit a beam (8) of focused and impulsed laser rays, and being distributed on the said support (6-15) in such a way that the distance between each said diode (7) and the associated perforation on each said article (3) is, at the instant of emission of the associated beam of rays, identical to the focal length thereof, said laser diodes (7) disposed on the said support in succession along a curve (13) of the cardioid type, and the said articles (3) are supported by a conveyor (1) for moving them with a uniform motion through the said piercing station (5) in a direction contrary to that in which the said laser diodes (7) are activated in succession with the said sequence of activation.

4,524,785
METHOD AND APPARATUS FOR FORMING PERFORATIONS IN BAR-LIKE ARTICLES

Enzo Seragnoli, and Armando Neri, both of Bologna, Italy, assignors to G.D Societa' per Azioni, Bologna, Italy

Filed Mar. 22, 1983, Ser. No. 477,606
Claims priority, application Italy, Apr. 13, 1982, 48221 A/82
Int. Cl.³ A24C *5/60*
U.S. Cl. 131—281 **8 Claims**



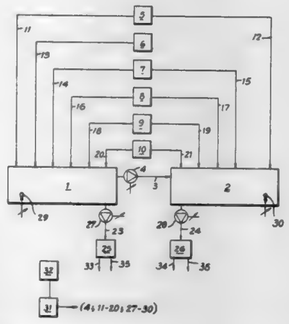
1. A method for perforating bar-shaped articles, including the steps of:
(a) directing a laser beam onto a rotary reflector,
(b) deflecting said beam so as to make it impinge in succession onto each one of a plurality of stationary reflectors distributed along an annular support,
(c) arranging each said stationary reflector so as to reflect an impinging laser beam onto a respective focusing point along a respective point of a line segment, and
(d) advancing by means of a conveyer the articles to be pierced in succesion along a path, a portion of which coincides with said line segment.

6. A device for forming perforations in bar-shaped articles, in particular cigarettes, comprising:
(a) a piercing station for articles and a conveyer for causing the articles to be pierced to move in succession through the piercing station, the piercing station including a plurality of laser emitters each successively operable to emit beams of focused laser rays with a predetermined focusing length, and a support element for the emitters which are distributed thereon along at least one curve formed in such a way as to maintain the length of a path followed by each beam of laser rays between the emitter and the associated piercing point on the article to be pierced maintained constantly equal to the focusing length, the laser emitters being reflector elements selectively impinged on by a beam of laser rays emitted by a rotary reflector laser generator operable to successively deflect the beam onto each reflector element fixed on the support to reflect the beam on the articles to be pierced.

4,524,786
CONTINUOUS PROCESS FOR MICROBIAL DEGRADATION OF TOBACCO CONSTITUENTS CONTAINING NITRATES

Helmut Gaisch, Cormondreche, and Dieter Schulthess, Neuchatel, both of Switzerland, assignors to Fabriques De Tabac Reunies S.A., Neuchatel, Switzerland

Filed Sep. 9, 1982, Ser. No. 416,769
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136299
Int. Cl.³ A24B *15/20*
U.S. Cl. 131—308 **11 Claims**



1. A continuous process for the microbial degradation of tobacco constituents containing nitrates, nitrites and ammonium ions, wherein fresh aqueous tobacco extract is added continuously to a first fermenter in which exponential growth conditions for the micro-organisms are maintained, and treated extract is continuously removed, characterized in that excess carbohydrate taken up by the biomass removed with the treated extract is used in a second fermenter for the degradation of a further extract of tobacco constituents with the biomass in its stationary phase, the stationary condition being maintained by addition of salts, where necessary, by continuous aeration and by regulating the pH and temperature.

4,524,787
HAIR RELAXER

Ezzat N. Khalil, Oak Park, and Ernest Cheslow, Glencoe, both of Ill., assignors to Johnson Products Co., Inc., Chicago, Ill.

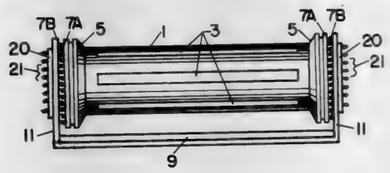
Filed Jul. 20, 1982, Ser. No. 398,691
Int. Cl.³ A45D *7/00*
U.S. Cl. 132—7 **31 Claims**

1. A hair relaxer system in at least two packages comprising:
(a) a first package containing a substantially water-free activator that includes a hydrolyzable organic base having a pK_a value of at least 12 that is dissolved in an organic solvent, said organic base being present in free base form in an amount of at least 0.05 moles, sufficient to relax hair and in molar-excess over free and combined water of at least 70 mole percent, said organic solvent being immiscible with petrolatum at a temperature of 25° C.; and
(b) a second package containing water; the contents of said first and second packages when admixed forming a relaxer composition having a pH value of at least 12, and containing at least 20 weight percent water.

4,524,788
HAIR ROLLER

Donald D. Pauldine, 359 W. Church St., Elmira, N.Y. 14901

Filed Jan. 10, 1984, Ser. No. 578,825
Int. Cl.³ A45D *2/14*
U.S. Cl. 132—42 R **8 Claims**

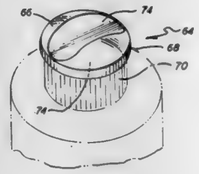


1. A hair roller comprising a cylindrical member having a cylindrical body upon which the hair is wound and end surfaces at the ends thereof; and an elongated strap member, having a center portion substantially the same length as the longitudinal axis of the cylindrical member with a width substantially equal to the diameter of the cylindrical member and end portions at each end of the strap member, which end portions may be folded at substantially right angles to the center portion; the end surfaces of said cylindrical member and the end portions of said strap member each being provided with mating surfaces of self-adhering material, whereby the strap member may be affixed to the cylindrical member at each end.

4,524,789
FINGER REST FOR MANICURING

Elizabeth Sazdanoff, 443 Gerald Ave., Mansfield, Ohio 44903

Filed Sep. 27, 1982, Ser. No. 424,146
Int. Cl.³ A45D *29/00*
U.S. Cl. 132—73 **2 Claims**

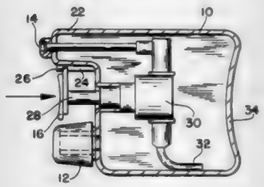


1. A finger rest for stabilizing and elevating a finger during manicuring, said finger rest comprising closure means for covering and sealing the opening of a nail care product bottle having a generally planar base, said closure means having opposed top and bottom surfaces and an interior surface, said bottom surface receiving said bottle opening, said interior surface frictionally engaging the bottle to seal the opening, and said top surface having at least one concave groove oriented generally parallel to the planar base for receiving a finger.

4,524,790
DEVICE FOR CLEANING TEETH AND ORTHODONTAL BRACES

Robert E. Kelley, 166 Cross St., Gardner, Mass. 01440, and David Prince, 638 Lancaster Rd., Leominster, Mass. 01453

Filed Sep. 26, 1983, Ser. No. 535,561
Int. Cl.³ A45D *44/18*
U.S. Cl. 132—84 R **1 Claim**



1. A device for cleaning particles of food from teeth or orthodonture devices comprising a generally flat hollow housing adapted to contain fluid material,
said housing being substantially square shaped and including two rigid walls with four contiguous edges, three of said edges all being completely closed, the fourth edge mounting a nozzle for a pump and a thumb manipulated operator for the pump which extend outwardly of the housing, and a filling opening and a filling cap, said nozzle, cap and operator being located closely together in a single line with the thumb manipulated operator between the nozzle and the filling cap,
said filling cap, operator, and nozzle all extending from the housing at a single edge thereof approximately equally so that their outermost ends are substantially flush so that some of the fingers can engage the opposite edge of the housing to hold it and the user's thumb can operate the pump operator.

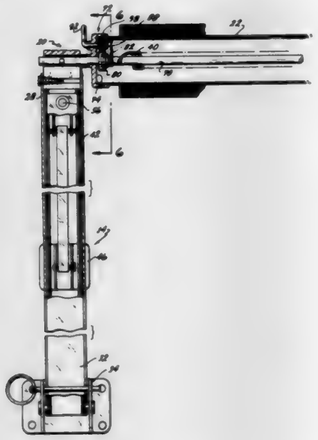
4,524,791
BRAKE FOR AWNING ASSEMBLY

Bradley G. Greer, Irvine, Calif., assignor to A & E Systems, Inc., Santa Ana, Calif.

Filed Jan. 20, 1984, Ser. No. 572,404
Int. Cl.³ B60T *1/02;* **E06B** *9/208*
U.S. Cl. 135—89 **13 Claims**

1. In combination for use on a recreational vehicle,
a roller,
an awning having first and second opposite ends and attached at one end to the recreational vehicle and attached at the second end to the roller,
a hollow cap rotatable with the roller,
a brake member disposed within the cap and coupled to the cap for rotation with the roller, and
an eccentric coupled to the cap for rotation with the cap and rotatable relative to the cap in two opposite directions for engagement with the brake member after rotation in each of the two opposite directions to provide for an unwinding of the awning from the roller, and to inhibit a winding of the awning on the roller, with the engagement between the eccentric and the brake member after the rotation of the eccentric in the first direction and to provide for a

winding of the awning on the roller, and to inhibit an unwinding of the awning from the roller, with the engagement between the eccentric and the brake member after the rotation of the eccentric in the second direction.

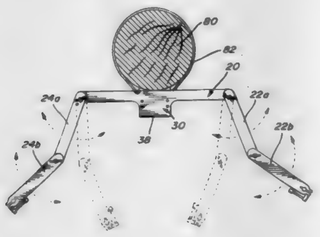


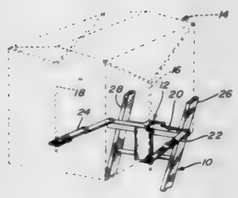
4,524,792

TENT BRACKET

George Tzabanakis, Montreal, Canada, assignor to Les Ateliers Mecaniques Alexandre, Inc., Montreal, Canada

Filed Jul. 11, 1983, Ser. No. 512,711
Int. Cl.³ A45F *1/06*
U.S. Cl. 135—90 **15 Claims**





1. A bracket for securing the struts of a tent structure to a substantially vertical supporting structure, comprising:

a horizontal frame having a central portion and opposite extremities;

means provided at the central portion for securing said horizontal frame to said supporting structure;

a pair of arms each having one end rotatably mounted to a respective opposite extremity of said horizontal frame and the other end adapted to detachably clamp a strut of said tent, each said arm being angularly adjustable in a horizontal plane relative to said horizontal frame; and

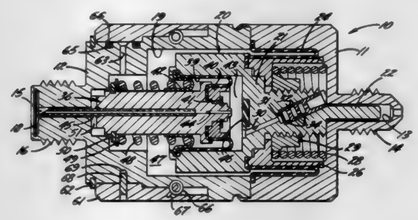
means for fixing said arms in angular position relative to said horizontal frame.

4,524,793

AUTOMATIC RESERVOIR BLEED VALVE

Bernard Silverwater, Plainview, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Oct. 14, 1983, Ser. No. 541,985
Int. Cl.³ F16K *24/00*
U.S. Cl. 137—198 **13 Claims**



1. An automatic bleed valve for pressurized fluid reservoirs comprising, in combination,

(a) a housing having a flow path extending therethrough,

(b) first and second flow restricting means interposed in said flow path, one of said flow restricting means including a capillary,

(c) pressure-sensitive sealing means responsive to the pressure drop across one of said flow restricting means, said pressure-sensitive sealing means comprising a piston through which a portion of said flow path runs, said piston including one of said flow restricting means,

(d) biasing means engaging said piston, and

(e) an abuttable sealing member positioned to engage one end of the flow path through said piston upon movement of said piston against the force of said biasing means when the pressure drop across said piston exerts a force on said piston exceeding the force of said biasing means such that the reservoir is bled automatically until the pressure drop exceeds a predetermined minimum, at which point said pressure-sensitive sealing means blocks said flow path to prevent the flow of fluid therethrough.

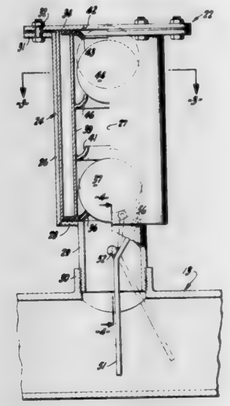
4,524,794

AIR RELEASE AND ANTI-SIPHON VALVE

Frederick K. Haines, 1600 McKinley Ave., Woodland, Calif. 95695

Filed Dec. 19, 1983, Ser. No. 562,557
Int. Cl.³ F16K *31/22*
U.S. Cl. 137—202 **1 Claim**

1. An air release and anti-siphon valve comprising a housing having an axis adapted to be disposed vertically, means at the bottom of said housing and including a first opening to the apex of a fluid line and to the interior of said housing, a first valve seat within said housing and surrounding said first opening, means at the top of said housing and including a second opening to the atmosphere and to the interior of said housing, a second valve seat within said housing and surrounding said second opening, a first ball valve within the lower part of said housing and movable between a position on said first valve seat and blocking said first opening and another position off of said first valve seat and unblocking said first opening, a second ball valve within the upper part of said housing and movable between a position on said second valve seat and blocking said second opening and another position off of said second valve seat and unblocking said second opening, means for mechanically lifting said first ball valve from said first valve seat, said lifting means including a lever adapted to extend through said first opening into and at least part way across said fluid line and into said housing, and means for pivoting said lever on said housing for lifting movement by one end of said lever against said first ball valve.

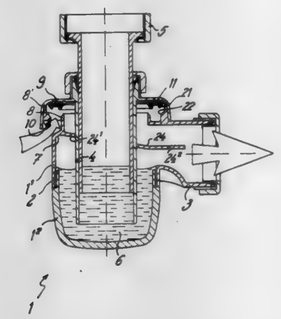


4,524,795

HYDRAULIC DEVICE FOR THE DRAINAGE OF WASTE WATER

Kurt S. B. Ericson, Prins Boudewijnlaan, 48, B-2230 Schilde, Belgium, and Gijsbrecht H. J. Van Olst, Leusden, Netherlands, assignors to Kurt Sture Birger Ericson, Schilde, Belgium

Filed Nov. 10, 1982, Ser. No. 440,696
Claims priority, application Belgium, Nov. 12, 1981, 891.095
Int. Cl.³ E03C *1/295*
U.S. Cl. 137—216.2 **2 Claims**



1. In an apparatus for draining waste liquid of the type including a container having an upper part and a lower part; an inlet pipe extending downwardly into said container; a water seal within said lower part, said inlet pipe extending into said water seal; a waste liquid outlet pipe opening from said container at a location above said water seal whereby the upper surface of said water seal is exposed to gas from said waste liquid outlet pipe; an automatic air valve at said upper part, said valve having an air entry duct into said container and a valve element for closing said air entry duct when the pressure acting at said waste liquid outlet pipe equals or exceeds the pressure acting at said air entry duct, the improvement comprising:

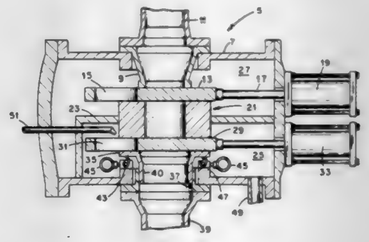
an internal partition fixed to the inner wall of said upper part of said container around said inlet pipe and below said air valve, said partition being extended by a substantially horizontal wall section across said upper part into the entry from said container into said waste liquid outlet pipe, whereby said partition separates said water seal from said air valve and protects said air valve against splashing or rising of said water seal.

4,524,796

SLIDING-GATE VALVE FOR USE WITH ABRASIVE MATERIALS

William J. Ayers, Jr., Morgantown; Charles R. Carter, Fairmont; Richard A. Griffith, Morgantown; Richard B. Loomis, Bruceton Mills, and John E. Notestein, Morgantown, all of W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 24, 1982, Ser. No. 422,795
Int. Cl.³ F16K *3/36, 25/00*
U.S. Cl. 137—240 **2 Claims**



1. A valve assembly for controlling the flow of abrasive, particulate material comprising:

a valve body;

partition means in said body for dividing said body into first and second compartments;

a tubular inlet extending into said first compartment;

a stationary annular seat disposed in the partition means for placing the first and second compartments in registry with one another, said annular seat being spaced from said tubular inlet;

a displaceable tubular support member disposed in said second compartment and spaced from said annular inlet;

said tubular inlet, annular seat and tubular support member cooperatively defining a flow channel through said valve body;

a first gate in said first compartment comprising an apertured plate disposed in the space between confronting surfaces of said tubular inlet and said annular seat, said gate being mounted in said first compartment for transverse movement between first and second positions where the aperture in said apertured plate is respectively in and out of registry with said channel;

a second gate in said second compartment comprising a further apertured plate disposed in the space between confronting surfaces of said annular seat and said support member and supported by the latter for displacement therewith and mounted for movement transverse to said displacement between first and second positions where the aperture in said further apertured plate is respectively in and out of registry with said channel; and

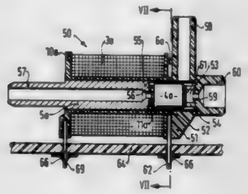
drive means for displacing said annular support member and said further apertured plate into a first position to sealably engage said further apertured plate with said annular seat when the aperture in the further apertured plate is either in or out of registry with said channel and for displacing said annular support member into a second position during the displacement of said second apertured plate into either of said positions where the aperture in said further apertured plate is either in or out of registry with said channel.

4,524,797

SOLENOID VALVE

Corneliu Lungu, Bühlertal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 432,395
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1982, 3206692
Int. Cl.³ F16K *11/07, 31/08*
U.S. Cl. 137—343 **2 Claims**



1. A solenoid valve including an exciter coil and an armature in the form of a permanently magnetic bar which is coaxially plungable into said coil and polarized in the direction of its axial movement, comprising a core of a first magnetic material projecting at one end thereof into said coil to form a limit stop for the rest position of said armature, a valve housing including one housing part forming a supporting form for said coil, another housing part forming a central passage in said core, a further housing part forming a valve chamber communicating with said central passage and guiding said armature, the end of said valve chamber opposite said central passage being formed with a valve seat opening into an axial valve connector and a wall of said chamber communicating with a transversely directed valve connector; said core of said magnetic material having the form of a tubular conduit projecting into said central passage and defining at its outer end another axial valve connector and at its inner end a valve seat cooperating with said plunger which acts as a valving member; said parts of said valve housing together forming said housing as a molded single piece of synthetic material formed with a recessed neck surrounding said valve chamber; a magnetically conductive annular member mounted in said recessed neck, said annular member having a pair of soldering lugs for fastening the valve to a supporting plate; and further comprising an additional pair of soldering lugs extending from said molded single piece housing embedded in an end of said coil supporting form which is remote from said annular magnetically conductive member, said additional extending soldering lugs being electrically connected to terminals of said exciter coil.

4,524,798

SAFETY VALVE FOR AUTOMATICALLY STOPPING THE FLOW OF A FLUID BROUGHT BY A CONDUIT TO A RESERVOIR

Patrice Simard, 53 de Vimy Ave., Outremont, Quebec, Canada H3S 2P9

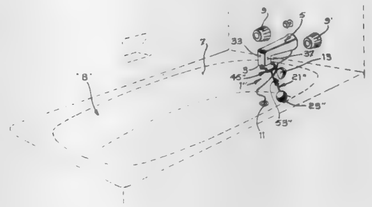
Filed Jul. 16, 1984, Ser. No. 631,405
Claims priority, application Canada, Sep. 16, 1983, 436911
Int. Cl.³ F16K *31/18, 33/00*
U.S. Cl. 137—448 **19 Claims**

1. A safety valve for automatically stopping the flow of a fluid coming from a supply conduit, into a reservoir when the level of the fluid in the reservoir has reached a predetermined maximum height, said safety valve being of the type comprising:

an obturation plate pivotally mounted in a housing of said supply conduit close to the outlet thereof, and

a control device including a float adapted to rock said plate from an open position where said plate allows free flow of said fluid to a closed position where said plate obturates said conduit outlet to thereby stop flow of said fluid into said reservoir when the fluid level therein has reached said predetermined maximum level, characterized in that

said obturation plate is pivotally mounted by a pivot arrangement located outside of said housing and of said supply conduit;



said pivot arrangement is constituted by two aligned stub axles respectively seating into two bearings made solid with two opposed external surfaces of said housing, and

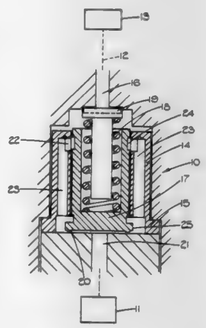
said obturation plate is made solid with said stub axles by means of at least one arm entering said housing through said outlet of said supply conduit.

4,524,799

DELIVERY VALVES

Ivor Fenne, North Greenford, England, assignor to Lucas Industries public limited company, Birminghan, England

Filed Jun. 8, 1983, Ser. No. 502,162
Claims priority, application United Kingdom, Jul. 15, 1982, 8220493
Int. Cl.³ F02M *39/00, 59/02*
U.S. Cl. 137—516.27 **5 Claims**



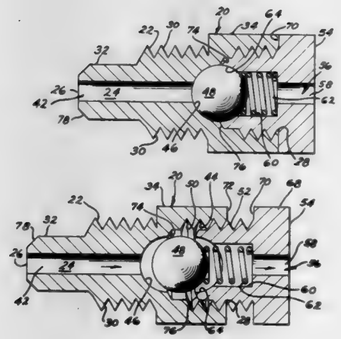
1. A delivery valve for use in a fuel injection system for a compression ignition engine comprising in combination, a delivery valve body defining a bore, a valve member slidable in the bore, resilient means biasing the valve member towards one end of said bore, a first groove defined in the wall of the bore adjacent said other end thereof, a second groove defined in the periphery of the valve member adjacent the end thereof remote from said one end of the bore, said grooves being in register with each other, a fuel flow path to said first groove which is opened when the valve member moves against said resilient means under the action of fuel under pressure, said second groove being uncovered beyond the other end of said bore after a predetermined movement of the valve member to allow fuel to flow by way of said grooves to an outlet, said predetermined movement determining the amount of fuel returned from said outlet when the valve member is moved by the action of said resilient means.

4,524,800

ONE-WAY BRAKE BLEEDER CHECK VALVE WITH SEALING CAP

Marion D. Holland, Louisville, Ky., assignor to Robert E. Robbins, Elizabethtown, Ky.

Filed May 14, 1984, Ser. No. 609,950
Int. Cl.³ F16K *15/18, 31/58*
U.S. Cl. 137—516.27 **4 Claims**



3. For use with a hydraulic wheel brake cylinder of the brake system for wheeled vehicles, a one-way brake bleeder check valve having an elongated valve body with a longitudinal passage therethrough that has an inlet at the first end of the body and an outlet at the second end;

a. said passage having a first section extending inwardly from said first inlet end and being furnished with a recessed valve seat at its innermost end, said passage having a second section of larger diameter extending from the recessed valve seat to the said second outlet end;

b. and a valve element positioned in the second section of the passage adjacent the recessed valve seat, and internal threads formed in the said second section;

c. and an adjustable valve sealing cap having external threads for mating engagement with the threads in the second section of the passage, the innermost end of this adjustable valve sealing cap having a second recessed valve seat for sealing engagement with the valve element when the sealing cap is closed, said sealing cap including a longitudinal passage that is fitted with a compression spring normally bearing upon the said valve element for urging the valve element into a closed sealing engagement with the said first recessed valve seat, whereby when the valve sealing cap is closed the valve element is sealed with respect to both the first recessed valve seat and the second recessed valve seat;

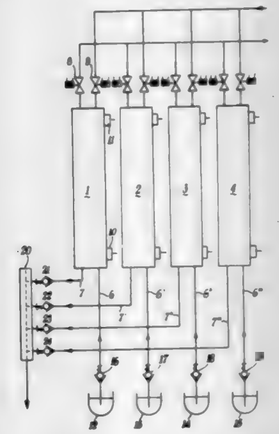
d. wherein the said first recessed valve seat has a tapered peripheral edge, and the said second recessed valve seat also has a mating tapered peripheral edge that is adapted to seal with respect to the said first tapered peripheral edge when the valve sealing cap is closed into sealing engagement with the valve element and the valve element is in sealing engagement with the first recessed valve seat.

4,524,801

APPARATUS FOR THE SELECTION, METERING AND DELIVERY OF LIQUIDS, IN PARTICULAR TREATMENT LIQUIDS FOR INDUSTRIAL LAUNDRY WASHERS

Enrico Magnasco, Rapallo, and Giorgio Viale, Chiavari, both of Italy, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 3, 1982, Ser. No. 446,527
Claims priority, application Italy, Dec. 4, 1981, 49842 A/81
Int. Cl.³ F04F *3/00*
U.S. Cl. 137—567 **2 Claims**



1. A device for selecting, metering and delivering treatment liquid to an industrial washer comprising a plurality of chambers, a plurality of tanks of treatment liquid, each tank being respectively connected to one of said chambers, means for sucking liquid from said tanks and for delivering said liquid to the respective chamber, said means including means for applying a vacuum on said tanks to suck the liquid and further including means for applying pressure on said sucked liquid to force it into said respective chamber, and control means for controlling the volume of each liquid delivered to its respective chamber, said control means comprising means for sensing the level of rise and descent of the liquid in said chambers, said means comprising a floating member on the liquid operatively associated with sensors of the instantaneous position of said floating member correlated with the level of the liquid, the control of the application of said vacuum and said pressure being performed under the control of the rise level of each liquid to be handled.

4,524,802

PINCH VALVE

John N. Lawrence, Whippany, and István Sándor, Kinnelon, both of N.J., assignors to Bio-Chem Valve Corp., East Hanover, N.J.

Filed Oct. 1, 1984, Ser. No. 655,765
Int. Cl.³ F16K *11/00*
U.S. Cl. 137—595 **6 Claims**

1. An improved pinch valve for controlling the flow of fluids in an unrestricted manner in, at least, two flexible tubes, said valve comprising:

a. a solenoid housing including

1. an outer cylindrical wall, and an inner cylindrical core including a centrally disposed longitudinally extending opening having a first and second end, said core centrally disposed within said outer cylindrical wall,

b. a solenoid coil disposed about said core and between said

core and said outer cylindrical wall, said coil terminating in a pair of wires,

c. an armature member including centrally disposed openings on opposite faces of said armature member,

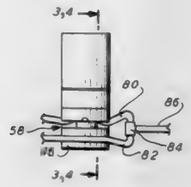
d. a tube retention member including a body portion and having

1. a centrally disposed first opening extending a portion of the longitudinal length of said body portion thereof,
2. a second opening disposed at right angles to said first opening, and passing through the sidewall of said body portion at at least one point,
3. third and fourth openings disposed at right angles to both said first and second openings in said tube retention member, said third and fourth openings sized to receive separate flexible tube members, said body portion further including means for fixedly connecting said tube retention member to said solenoid housing when said valve is assembled,

e. a pin member,

f. a plunger member including

1. a body portion sized and shaped to nest in said first opening of said tube retention member when said valve is assembled, said body portion including a longitudinally extending slotted opening, said body portion having an arcuate segment removed therefrom to create an opening at right angles to both the longitudinal axis of said plunger member and said slotted opening,
2. a first centrally disposed protruding portion extending longitudinally from one end of said body portion,
3. a second protrouding portion extending axially from the opposite end of said body portion,



said plunger member nesting in said first opening of said tube retention member, said plunger member slideably captured in said first opening by said pin member, said pin member passing through said longitudinally extending slotted opening said body portion when said plunger member is assembled into the second opening of said tube retention member,

said pin member retentively held in the second opening of said tube retention member,

the first protruding portion of said plunger member retentatively positioned in one opening in said armature member,

g. means disposed between said second end of the longitudinally extending opening in said inner cylindrical core and the second opening in said armature member, for urging said armature member away from the first end of said inner cylindrical core to a first position when said tube retention member is secured to said solenoid housing, and when said solenoid coil is unenergized,

said armature member attracted towards said first end of said inner cylindrical core to a second position, when said solenoid coil is energized,

the first and second of said flexible tubes disposed in said third and fourth openings in said tube retention member respectively, said second flexible tube compressed between said second protruding portion of said plunger member and the body portion of said tube retention member, when said armature member is in said first position, whereby said first flexible tube is unrestricted, said first flexible tube compressed between the body portion of said plunger member and said pin member when said solenoid coil is energized and said armature member is in said second position,

said plunger member coaxially aligned with said armature member and said core of said solenoid housing, such that said flexible tubes are alternatingly compressed at a point on the axis of said valve.

4,524,803

SPOOL VALVE

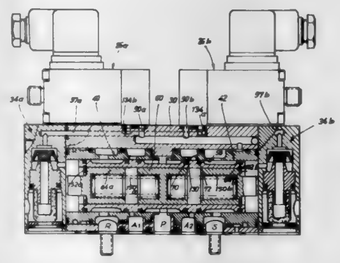
Kurt Stoll, Lenzhalde 72, 7300 Esslingen a.N., and Manfred Rüdle, Ermsweg 10, 7300 Esslingen-Berkheim, both of Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 357,015

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 8107889[U]

Int. Cl.³ F15B *13/043*

U.S. Cl. 137—625.64 **25 Claims**



1. A spool valve having at least two positions, comprising: a valve housing having means defining therein a spool hole and plural control ports for fluid control which communicate with said spool hole; a valve spool axially movably supported in said spool hole and having fluid control collar means thereon for effecting fluid connections between selected ones of said ports in response to movement of said valve spool; servo piston means for moving said valve spool in two axial directions; and pilot valve means which can be remotely controlled for putting said servo piston means under pressure and freeing it of pressure; wherein said valve housing includes a body having a central opening therethrough and having openings therein which each serve as a portion of a respective one of said ports, two end plates shutting off said central opening at opposite ends of said body, and two liners which have therein said spool hole and openings which each serve as a portion of a respective one of said ports, said liners being positioned symmetrically in said central opening through said body with respect to a plane which is normal to the axis of said spool hole and being axially spaced from each other, and said servo piston means including spaces provided within said spool hole in said liners; including an air let-off valve provided in one of said end plates, said let-off valve having a large air flow cross-section; including a support plate for said valve housing, said support plate having plural connection openings which each communicate with a respective said port in said valve housing; and means which includes plural fixing parts for fixing said valve to said support plate, each said fixing part having a stem which extends through a through-hole provided in said valve body and which has a threaded portion which threadedly engages a threaded hole provided in said support plate, each said fixing part further having a head at an end thereof remote from said threaded hole, said head being disposed in a wider end portion of said through-hole and resting against a shoulder located between said wider end portion of said through-hole and a narrower portion thereof, said through-holes communicating with said central opening through said housing body, and said valve furthermore having for each said fixing part a sealing ring washer which encircles said stem adjacent said head for producing a seal between said head and said shoulder of said through-hole.

4,524,804

ELECTROPNEUMATIC SERVO VALVE FOR CONTROLLING A VOLUME CURRENT AND PRESSURE, RESPECTIVELY

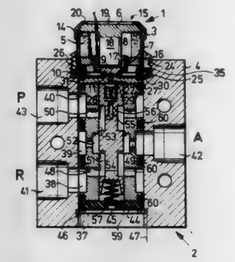
Wolf-Dieter Goedecke, Unterkirnach; Gerhard Schneckenburger, Hüfingen, and Reinhard Schwenzer, Aachen, all of Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,665

Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3216693

Int. Cl.³ F15B *13/043*

U.S. Cl. 137—625.64 **5 Claims**



1. An electropneumatic servo valve for controlling a volume current or a pressure, respectively, comprising a preliminary control stage (1) for converting electrical signals into pneumatic control air pressure, a valve main stage (2) including a control pistion (54), spring means (57) for applying a restoring force to said control piston (54), means defining a control air space (29) between said preliminary control stage (1) and said valve main stage (2) and a nozzle impact plate system (22, 9, 56), said valve main stage (2) being adjustable by means of said control air pressure of said preliminary control stage (1) in such a way that said control piston (54) of said valve main stage (2) ia driven against the action of the restoring force of said spring means by means of a control air pressure which can be converted in proportional pneumatic pressure in said control air space (29) between said preliminary control stage (1) and said valve main stage (2) by means of said electrical signals via said nozzle impact plate system (22, 9, 56) in such a manner that said control piston (54) is positioned for controlling a proportional air current in dependence upon said control air pressure.

4,524,805

NORMALLY CLOSED DUCKBILL VALVE AND METHOD OF MANUFACTURE

Allan C. Hoffman, 5876 Republic St., Riverside, Calif. 92504

Filed Jul. 8, 1983, Ser. No. 511,837

Int. Cl.³ F16K *15/14*

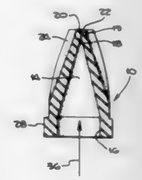
U.S. Cl. 137—846 **6 Claims**

1. A unitary duckbill valve comprising

a generally cylindrical body member provided with an axial fluid passageway and having an inlet end and an outlet end, said outlet end provided with an outlet slit, said body member progressively narrowing in cross-section from said inlet end to define a pair of opposed sealing lips at said outlet slit;

a pair of enlarged lip margins disposed adjacent to the opposite ends of said outlet slit; and

an increasing thickness of material progressively provided from the generally central portion of each of said lips outwardly toward the outer edges of each of said lip margins to form opposing arcuate surfaces which exhibit a





leaf-spring-like characteristic tending to maintain and urge said lips into a normally closed valve position.

4,524,806

PRESSURE VALVE FOR A COMPRESSOR

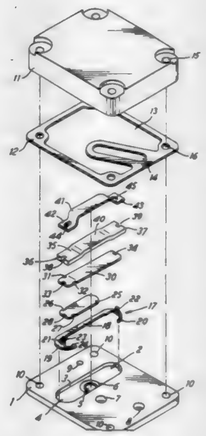
Bendt W. Romer, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Feb. 3, 1984, Ser. No. 576,733

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1983, 3305791

Int. Cl.³ F16K *15/16*

U.S. Cl. 137—856 **9 Claims**



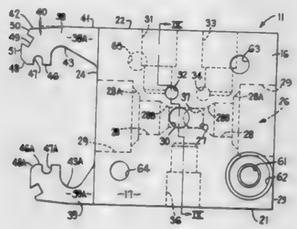
1. A pressure valve for a compressor, comprising, a valve plate, a valve cover, a valve seal disposed between said valve plate and said valve cover, means connecting said valve cover to said valve plate, said valve plate having an elongated recess in the surface thereof in which is disposed an aperture and a surrounding valve seat, an elongated resilient insert having upstanding pins, said insert being sprung into said elongated recess, an elongated resilient leaf spring having a recess at one end thereof in which one of said pins is disposed, and an elongated catch plate for limiting the stroke of said leaf spring.

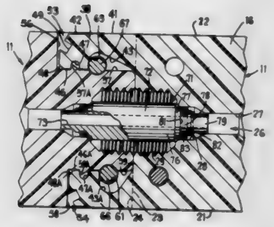
4,524,807

SNAP-TOGETHER MODULAR MANIFOLD CONSTRUCTION

Vytautas J. Toliusis, Paw Paw Township, Van Buren County, Mich., assignor to Humphrey Products Company, Kalamazoo, Mich.

Filed May 21, 1982, Ser. No. 380,846
Int. Cl.³ F16L *39/00*
U.S. Cl. 137—884 **12 Claims**





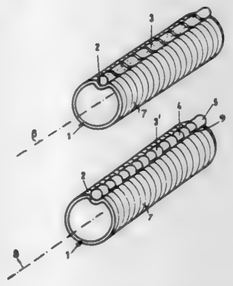
1. A fluid manifold comprising at least two modules, each said module having first, second and third surfaces thereon, said first and second surfaces being on opposite ends thereof, a fluid supply channel extending therethrough and terminating in first and second fluid supply ports respectively provided in said first and second surfaces, and a first fluid supply opening provided in said third surface and communicating with said supply channel at a location between said first and second supply ports, means integral with said modules for releasably interconnecting said modules in an end-to-end relationship in which said first and second surfaces on respective and adjacent said modules are adjacent and said first and second supply ports therein are substantially aligned, and seal means cooperable with adjacent said modules for preventing leakage of fluid from said fluid supply channels therein; wherein said interconnecting means includes first and second recesses provided in each said module in said second end surface thereof on opposite sides of said second supply port, first and second spaced and resiliently flexible arms on each said module which project outwardly beyond said first end surface thereof on substantially opposite sides of said first supply port and substantially parallel to said supply channel therein, said first and second arms respectively being received in said first and second recesses when said modules are in said end-to-end relationship, first detent means provided on each said arm adjacent an outer end thereof, and second detent means provided in each said recess and cooperable with said first detent means on a said arm of an adjacent said module when said modules are in said end-to-end relationship for releasably maintaining said modules in such relationship; and wherein said interconnecting means includes a transversely extending groove provided in an inwardly facing surface of each said arm at a location spaced from said outer end thereof, and first and second fastener openings in each said module extending transversely to and respectively communicating with said first and second recesses, each said fastener opening being aligned with a said groove in a respective said arm of another said module when said modules are in said end-to-end relationship, whereby fasteners inserted into said first and second fastener openings of a said module will cooperate with said grooves in said arms of an adjacent said module to maintain said modules in said interconnected end-to-end relationship.

4,524,808

VACUUM CLEANER HOSE

Wolfgang Fleischer, Elfershausen; Leo Eichelberger, Rüsselsheim, and Georg Endress, Frankfurt, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich and Technochemie Kessler & Co. GmbH, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Jan. 31, 1984, Ser. No. 575,576
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1983, 3303181
Int. Cl.³ F16L *11/12*; A47L *9/24*
U.S. Cl. 138—103 **4 Claims**



1. A vacuum cleaner component comprising:
a flexible main hose having an enclosing wall extending in part in a longitudinal direction, said wall having on an outer surface a groove extending in said longitudinal direction; and
a flexible supplementary hose for housing an electrical line extending in said longitudinal direction, said supplementary hose being attached to said main hose and disposed in part in said groove, said supplementary hose having a perforated wall for increased flexibility, said perforated wall substantially taking the form of a series of spaced cylindrical sections separated by cuts extending substantially transversely to said longitudinal direction.

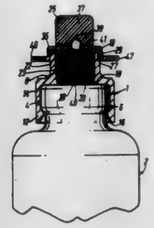
4,524,809

FITMENTS FOR CONTAINERS FROM WHICH LIQUID IS INTENDED TO BE WITHDRAWN BY A HOLLOW NEEDLE OR TUBE

Hugh R. Dent, Chippenham, England, assignor to Sterimatic Holdings Limited, Tortola, V.I.

Filed May 17, 1983, Ser. No. 496,488
Claims priority, application United Kingdom, Jan. 29, 1983, 8302481
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—1 **16 Claims**

13. A method of withdrawing liquid from a container using a hollow needle or tube and a fitment comprising an enclosure incorporating sterilising means attached to the container, the method comprising separating an integral removable portion from an end wall of the enclosure by rupturing the material of the end wall so as to form an aperture in the end wall, passing the point of the needle or tube into the enclosure by way of the aperture so formed, moving the point of the needle or tube through the sterilising means and into the liquid in the container, and withdrawing liquid from the container by drawing it up the needle or tube, whereby the point of the needle or tube is sterilised by the sterilising means before being introduced into the liquid in the container.

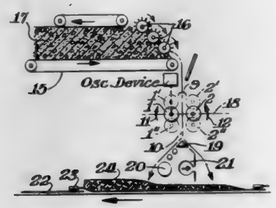


4,524,810

METHOD AND APPARATUS FOR CONTROLLING THE DENSITY DISTRIBUTION OF BULK MATERIAL

Dieter Arnold, Darmstadt, Fed. Rep. of Germany, assignor to Carl Schenck AG., Fed. Rep. of Germany

Filed Oct. 12, 1983, Ser. No. 541,047
Claims priority, application European Pat. Off., Dec. 10, 1982, 82111490.7
Int. Cl.³ B65B *1/04*
U.S. Cl. 141—250 **4 Claims**



1. Apparatus for controlling the density distribution of bulk material in the manufacture of pressed wood panels comprising upstream means for storing and delivering a stream of bulk material, downstream means upon which the bulk material stream is deposited, a pair of spaced apart parallel rollers between the upstream and downstream means in the path of travel of the stream of bulk material and through which the stream passes, means rotating the rollers in opposite directions such that the inner surfaces of the rollers move in the same direction as the bulk material stream, means for adjusting the spacing between the rollers to a Predetermined width depending upon the desired width of the bulk material stream, and means connected to oscillate each roller in a direction transverse to the flow of bulk material through the rollers to render uniform the density along the width of the stream.

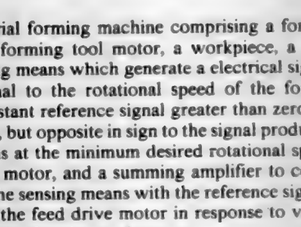
4,524,811

ENGINE OIL SAMPLING DEVICE

Julian S. Taylor, 8300 SW. 8, Oklahoma City, Okla. 73108

Continuation-in-part of Ser. No. 438,240, Nov. 1, 1982, abandoned. This application Aug. 1, 1984, Ser. No. 636,787
Int. Cl.³ B65D *51/16*
U.S. Cl. 141—325 **4 Claims**

1. In an engine containing a quantity of lubricating oil and having a centrally bored self-sealing access plug connected with a wall of the engine in communication with the oil, the improvement comprising:
an oil sample receiving container;
a length of flexible tubing connected at one end with said container;
a hollow needle axially connected with the other end of said tubing,
said needle having an elongated tubular portion adapted at its end opposite said tubing for entering said access plug and filling said container with oil,
said tubular portion having a wall,



said tubular portion having an opening in its wall adjacent its said opposite end; and,
means including a grommet on the wall of said container for exhausting air during the filling of the container and for thereafter frictionally receiving and sealing with an intermediate portion of said tubular portion.

4,524,812

MODULATED FORMING MACHINE

Peter H. Murphy, 7031 Glendora, El Paso, Tex. 79912

Continuation-in-part of Ser. No. 407,094, Aug. 11, 1982, abandoned. This application Sep. 29, 1982, Ser. No. 427,701
Int. Cl.³ B23B *5/18*; B27C *5/02*
U.S. Cl. 144—134 A **6 Claims**

1. A material forming machine comprising a forming tool, driven by a forming tool motor, a workpiece, a feed drive motor, sensing means which generate a electrical signal which is proportional to the rotational speed of the forming tool motor, a constant reference signal greater than zero and equal in magnitude, but opposite in sign to the signal produced by the sensing means at the minimum desired rotational speed of the forming tool motor, and a summing amplifier to combine the signal from the sensing means with the reference signal to vary the speed of the feed drive motor in response to variations in the speed of the forming tool motor.

4,524,813

TIRE BREAKER APPARATUS

Julie Gering, 3203 Silva Ave., Lakewood, Calif. 90712

Filed Oct. 7, 1983, Ser. No. 540,002
Int. Cl.³ B60C *25/06*
U.S. Cl. 157—1.17 **8 Claims**

1. A tire breaking apparatus for breaking the bead of a tire from the flange of a horizontally disposed wheel rim, said apparatus comprising:
a holddown bar that engages the upwardly facing side of said wheel rim;
attachment clamp means horizontally slideably carried by said holddown bar to secure said bar to said wheel rim;

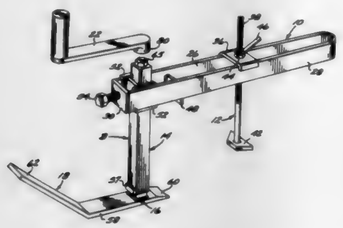
a locator plate on said holddown bar engageable with said flange to limit outward horizontal movement thereof away from said flange;

a tire press support column vertically slideably mounted on said holddown bar;

a pusher tube vertically slideably disposed within said support column;

threaded screw and nut means interposed between said support column and said pusher tube which effect relative vertical movement therebetween upon the application of relative rotation to said screw and nut means;

a collar horizontally slideably carried by said holddown bar,



said collar vertically slideably supporting said support column, while being restrained against vertical movement with respect to said holddown bar;

an adjustment screw carried by said holddown bar that engages said collar to vary the horizontal position of said support column relative to said holddown bar;

a stop lug formed on the lower portion of said support column for engagement with said collar to limit upward movement of said support column; and

a tire press mounted on the lower end of said pusher tube, said tire press being inserted between the tire bead and the wheel rim flange to break the bead from said flange upon downward movement of said pusher tube.

4,524,814

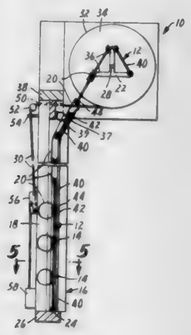
ENCLOSURE ASSEMBLY

Edward W. Deziel, 902 Felix St., West St. Paul, Minn. 55118

Filed Jun. 22, 1983, Ser. No. 506,728

Int. Cl.³ E06B *9/08, 9/262*

U.S. Cl. 160—133 **17 Claims**



1. An enclosure assembly comprising a plurality of stiff elongate generally rectangular panels having parallel longitudinal panel edges;

means mounting said panels generally in edge-to-edge relationship for edgewise movement along a predetermined path in directions normal to said panel edges;

a plurality of elongate, generally rectangular lengths of flexible material joining adjacent panels along said path, each of said lengths of flexible material being attached between two adjacent panels and at least some of said lengths having a width normal to the panel edges of adjacent panels affording relative movement of said adjacent panels between a closed position with the panel edges in contact, and a spaced position with the panel edges spaced apart and the strip of flexible material therebetween extending across the space between said adjacent panels, at least some of said lengths of flexible material joining adjacent panels being screen and each having opposite parallel longitudinal screen edges and screen edge portions adjacent said screen edges; means along said panel edges for attaching said screen edge portions to said adjacent panels with the screen edges adjacent the panel edges of the adjacent panels to form said lengths of screen generally into a cylinder projecting normally from said corresponding surfaces when said adjacent panels are in said closed position, and to tension said length of screen around and between said means for attaching along the panel edges of said adjacent panels when said adjacent panels are in said spaced position; and

means for relatively moving said panels along said path between said closed and spaced positions.

4,524,815

METHOD OF PRODUCING SEWING MACHINE NEEDLES

Klaus Pavel, Eynatten, Belgium, and Horst Lange, Aachen, Fed. Rep. of Germany, assignors to Rhein-Nadel Maschinennadel Gesellschaft mit beschrükter Haftung, Aachen, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,540

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111632; Dec. 21, 1981, 3150673; Jan. 18, 1982, 3201285; Feb. 27, 1982, 3207167

Int. Cl.³ B21G *1/04*

U.S. Cl. 163—5 **15 Claims**



1. A method of producing sewing machine needles from a cylindrical length of wire by the steps of

form pressing in which, starting from a length of wire having a starting cross section of a diameter substantially corresponding to the thickness of a needle butt, the length of wire is reduced substantially to a thinner final diameter and cross sectional form over at least the entire length of a needle shank including a needle point and the length of a shoulder between the needle butt and the needle shank and grooves are pressed in from curved outer surfaces of the length of wire in the region of the needle shank, wherein the reduction in cross section is effected by pressing the length of wire into laterally protruding flat burrs, leaving between the laterally protruding flat burrs outer surfaces of a transverse convex curvature defining substantially the final diameter of the needle shank and of said needle point and substantially having their said final cross sectional form, and

removing the flat burrs by a subsequent cutting.

4,524,816

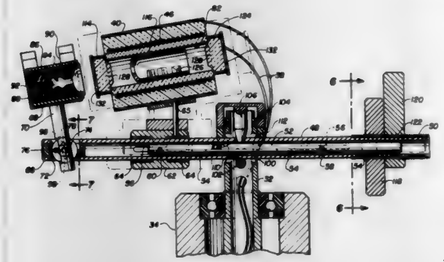
CENTRIFUGAL CASTING FURNACE

Richard E. Plowman, York, and James A. VanLenten, Lancaster, both of Pa., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Feb. 21, 1984, Ser. No. 581,984

Int. Cl.³ B22D *13/06, 13/10*

U.S. Cl. 164—287 **11 Claims**



1. A centrifugal casting furnace comprising in combination,

a. a vertical rotatable shaft supported on a base,

b. a transverse arm supported by the upper end of said shaft,

c. an electrically heated muffle supported upon one end of said arm in elevated relationship to the axis thereof and having means to receive material to be cast.

d. power means connected in driving relationship to said shaft to rotate it at a predetermined speed, and

e. counterweight means vertically and longitudinally adjustably connected to the opposite end of said arm and comprising a pair of circular flat weights and said opposite end of said arm being threaded, one of said weights having a substantially central threaded opening and the other weight having a threaded opening substantially offset from the center thereof, said weights being threadably movable upon said arm to positions to counterbalance said weights and muffle statically relative to said shaft and effect a lock-nut arrangement with each other and the main mass of said offset weight being disposed uppermost relative to the axis of said arm to dynamically balance said arm to effect freedom from vibrations thereof when said arm is rotated.

4,524,817

CENTRIFUGAL CASTING UNIT FOR THE PRODUCTION OF PRECISION CASTINGS

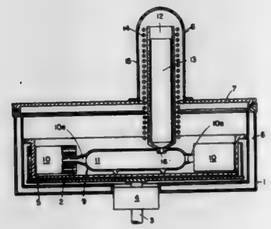
Manfred Brugger, Birmenstorf; Peter Janczer, Zürich, and Hans Peter, Schlieren, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jul. 6, 1982, Ser. No. 395,599

Claims priority, application Switzerland, Jul. 6, 1981, 4419/81

Int. Cl.³ B22D *13/00*

U.S. Cl. 164—290 **5 Claims**



1. A centrifugal casting machine capable of manufacturing irregularly shaped precision cast parts, comprising: a machine frame; a vertically translatable housing having a double-wall configuration to provide a passageway for a cooling fluid; a housing cover with an induction melting device and a melt crucible for accommodating and melting a material to be cast, said melt crucible including transverse beams for supporting it on support plates which are connected to the housing cover to facilitate the installation, removal, and charging of the crucible, ends of said transverse beams being engagable with detent blocks of the housing cover so that the crucible can be removed to charge it with the casting material; a rotary table having a vertical axis of rotation, said table being enclosed within said housing; drive means for rotating said table; means for producing a vacuum in and introducing a protective gas into the space enclosed by the housing and the housing cover; a sliding carriage which supports and guides the housing for movement along said frame; an hydraulic cylinder mounted at one end to the machine frame; a cable pulley mounted on the piston rod of said hydraulic cylinder; a guide rail for guiding movement of said pulley; a cable which passes over the cable pulley, with one end of said cable being affixed to the machine frame and the other end being anchored to said sliding carriage; a pressurized oil reservoir for supplying hydraulic fluid to said cylinder; an electric limit switch for limiting the excursion of the housing; and a ceramic shell disposed on said table for accommodating a casting mold having individual, refractory workpiece molds, said shell being removable from said table to enable it to be preheated with the workpiece molds.

4,524,818

REPLACEMENT APPARATUS FOR GUIDE ROLL SEGMENT IN A CURVED GUIDE RACK OF A CONTINUOUS CASTING INSTALLATION

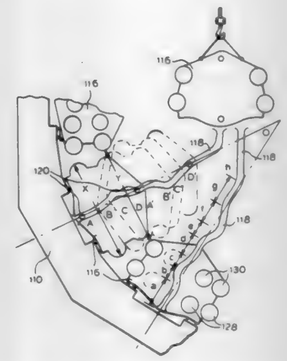
Joseph Pietryka, Versailles, France, assignor to Fives-Cail Babcock, Paris, France

Filed Jun. 20, 1983, Ser. No. 505,829

Claims priority, application France, Jun. 29, 1982, 82 11352

Int. Cl.³ B22D *11/12*

U.S. Cl. 164—448 **1 Claim**



1. An apparatus for placing a segment of a cluster of bottom and top guide rolls in a curved guide rack of a continuous casting installation and for removing the segment therefrom, the segment comprising a support for the cluster of guide rolls, the support having two opposite sides extending generally radially with respect to the curved guide rack, and a bottom roller and a top roller being arranged at each one of the sides, the apparatus comprising

(a) two fixed guide rails extending generally radially with respect to the curved guide rack at the two opposite sides of the support, the bottom and top rollers engaging the guide rails for movement therealong, each guide rail including two portions inclined in opposite directions in relation to the generally radial direction of the guide rail and so disposed that, when the support is displaced along the guide rails, the support is pivoted into a skewed posi-

tion by displacement of the top rollers in one of the inclined guide rail portions and of the bottom rollers in the other inclined guide rail portion, which permits passage between the outer top guide rolls of two like segments adjacent thereto, and

(b) hoisting means for displacing the segment along the guide rails.

4,524,819

METHOD OF MANUFACTURING LEADED FREE-CUTTING STEEL BY CONTINUOUS CASTING PROCESS

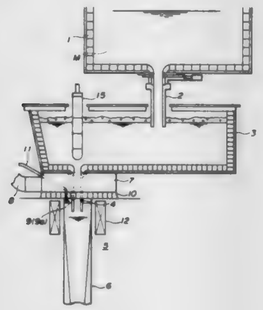
Tsuneo Yoshimura, Tokyo, Japan, assignor to Mitsubishi Steel Mfg. Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 354,004, Mar. 2, 1982, abandoned. This application Dec. 13, 1983, Ser. No. 561,134

Claims priority, application Japan, Apr. 7, 1981, 56-51268; Apr. 7, 1981, 56-51269; Apr. 7, 1981, 56-51270; May 14, 1981, 56-71410

Int. Cl.³ B22D *11/10, 27/02*

U.S. Cl. 164—468 **11 Claims**



1. A method of manufacturing steel containing an effective, uniformly distributed amount of lead, comprising:

pouring molten, refined steel into a ladle;

feeding said molten steel to a tundish;

continuously pouring said molten steel, at a selected rate, from said tundish through downwardly extending passage means of said tundish into the upper portion of an upright continuous casting mold associated with said tundish, which mold is substantially filled near the top thereof with molten steel, and which passage means extends beneath the upper surface of said molten steel in said mold, while simultaneously adding, at a selected rate, to the upper surface of said molten steel in said upper portion of said mold, above and laterally offset from said molten steel being poured into said mold through said passage means from said tundish, a lead feed material selected from the group consisting of lead, lead alloys, lead surface coated with a metallic material, and lead alloys coated with said metallic material, said metallic material being essentially free of lead and being composed of one or more suitable metals which do not adversely affect the properties of said steel, which lead feed material melts in contact with said molten steel to form a molten mixture in said upper portion of said mold, while simultaneously uniformly horizontally stirring said mixture in said upper portion of said mold by means of electromagnetic stirring force whereby said lead feed material is substantially uniformly mixed throughout said molten steel in said upper portion of said mold.

4,524,820

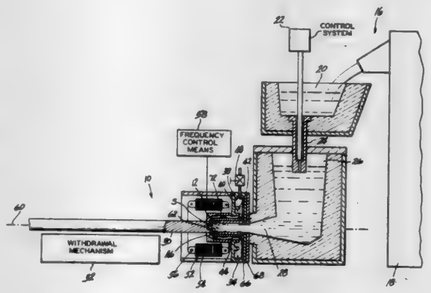
APPARATUS FOR PROVIDING IMPROVED SLURRY CAST STRUCTURES BY HOT WORKING

Damian V. Gullotti, Cheshire; Joseph Winter, New Haven, both of Conn.; Kenneth P. Young, Ballwin, and Robert D. Evans, Manchester, both of Mo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 30, 1982, Ser. No. 363,621

Int. Cl.³ B22D *11/12*

U.S. Cl. 164—476 **8 Claims**



1. A process for providing metal material having an improved structure for forming into a desired article, said process comprising:

slurry casting said metal material into a continuous member having an initial cross-sectional area and a structure comprising islands of solid particles enveloped by a solute-rich matrix; and

hot working said slurry cast material while in a solid state to reduce said cross-sectional area, said hot working causing said particles to deform,

heating said hot worked material for a desired period of time at a temperature sufficient to place said material into a semi-solid state,

whereby said material substantially rehabilitates to a typically slurry cast structure and exhibits finer particles and fewer eutectic melting rosettes than said slurry as-cast material in a heated and unworked condition.

4,524,821

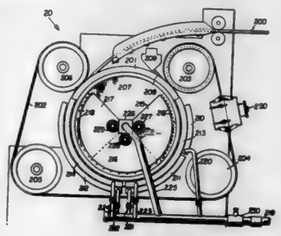
APPARATUS TO IMPROVE CASTING BAND LIFE

Milton E. Berry, Carrollton, Ga., and Mitsuyoshi Shibata, Ichihara, Japan, assignors to Southwire Company, Carrollton, Ga.

Filed Jan. 26, 1983, Ser. No. 461,098

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—482 **13 Claims**



1. In a continuous metal casting process of the type wherein molten metal is introduced into a continuously advancing mold cavity formed by at least one endless moving band surface in conjunction with other sealing surfaces, and wherein the molten metal is cooled to at least partial solidification, the improvement comprising extending band operating life by the additional steps of:

(a) enclosing a portion of the at least one endless moving band within an enclosure;

(b) passing the at least one endless moving band continuously through said enclosure; and

(c) heating the band within the enclosure to a temperature of at least 190° F.

7. In an apparatus for continuous metal casting of the type including a continuously advancing mold, which mold is formed by at least one endless moving casting band surface of a moving band member in conjunction with other sealing surfaces for a portion of a predetermined path of travel of said band, the improvement comprising enclosure means having band entry and exit apertures for receiving the band, in combination with heat source means for producing heat and conveyance means adjacent said enclosure means for directing the heat to said enclosure means, in which the heat is concentrated within the enclosure for heating a portion of said band.

4,524,822

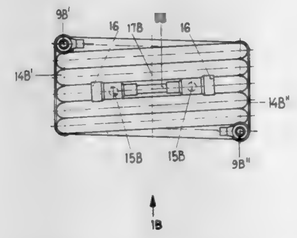
SAFETY HEAT-TRANSMITTING DEVICE

Manfred Hage, Ulm-Wiblingen, and Otto Junker, Gerlenhofen, both of Fed. Rep. of Germany, assignors to Wieland-Werke AG, Ulm, Fed. Rep. of Germany

Division of Ser. No. 221,164, Dec. 29, 1980, abandoned. This application May 3, 1983, Ser. No. 489,394

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—141 **7 Claims**



1. A heat transmitting device adapted to transmit heat between two different fluid mediums, comprising an elongate heat pipe and first and second pipelike jacket parts, said elongate heat pipe extending completely through said pipelike jacket parts substantially parallel thereto and said pipelike jacket parts being spaced from each other along the length of said heat pipe, wherein each of said pipelike jacket parts is sealingly connected at each end thereof to said heat pipe and includes means defining an inlet opening and an outlet opening, each of said pipelike jacket parts being adapted to have a respective said fluid medium flowing therethrough from said inlet opening to said outlet opening thereof, wherein said heat pipe is curved, and wherein said heat pipe is one of a spiral and a helix.

4,524,823

HEAT EXCHANGER HAVING A HELICAL DISTRIBUTOR LOCATED WITHIN THE CONNECTING TANK

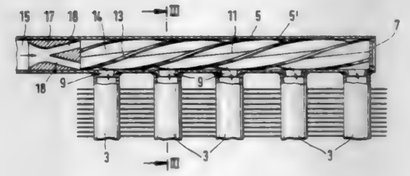
Karl-Ernst Hummel, Bietigheim-Bissingen; Bohumil Humpolik, Ludwigsburg; Hans-Joachim Ingelmann, Iggingen-Schoenhardt, and Karl-Heinz Staffa, Stuttgart, all of Fed. Rep. of Germany, assignors to Süddeutsch Kühlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,120

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311579

Int. Cl.³ F28F *9/22*

U.S. Cl. 165—174 **20 Claims**



1. A heat exchanger, comprising:

at least one connecting tank comprising a chamber of substantially circular cross-section;

a plurality of essentially parallel tubes, each in communication with the connection tank;

a plurality of ribs arranged transversely to the parallel tubes; and

a distributor installation located within the connecting tank, comprising a plurality of helical distributor channels wherein each channel is in communication with at least one of said tubes and comprises one open and one closed end.

4,524,824

DENTAL CEMENT

Hirokata Shimokobe, Sapporo; Sueo Saito, Tokyo; Kentaro Tomioka, Chofu; Shoji Akahane, and Kazuo Hirota, both of Tokyo, all of Japan, assignors to G-C Dental Industrial Corporation, Tokyo, Japan

Filed Apr. 13, 1983, Ser. No. 484,517

Claims priority, application Japan, Apr. 20, 1982, 57-64630

Int. Cl.³ C09K *3/00*

U.S. Cl. 106—35 **6 Claims**

1. A dental cement powder composition comprising a dental cement powder and 0.005–5 percent by weight of one or more of tannic acid derivatives selected from the group consisting of a tannic acid-protein combination, a tannic acid-formaldehyde combination, acetyl tannate and a metal salt of tannic acid, said tannic acid derivatives being sparingly soluble in water, said tannic acid derivative being present in amount sufficient to reduce the solubility of the dental cement formed with the dental cement powder, wherein the dental cement powder is the powder of a dental cement which is a zinc phosphate cement, a polycarboxylate cement prepared from the reaction of a basic component and a polycarboxylic acid or a glass ionomer cement.

4,524,825

WELL PACKER

William M. Fore, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 1, 1983, Ser. No. 557,090

Int. Cl.³ E21B *33/129*

U.S. Cl. 166—139 **11 Claims**

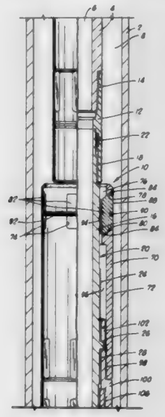
1. A pack-off device for a well bore, comprising:

mandrel means having first ratchet means and lug means associated therewith;

tubular housing means having second ratchet means, slot means and drag spring means associated therewith;

radially expandable slip means disposed about said mandrel means including upper slips and lower slips adapted to cooperate with slip wedge means and be moved radially outward thereby in response to relative longitudinal movement between said mandrel means and said housing means, said upper slip is secured to said housing means by an upper slip guide,

said slip wedge means comprises an annular body having upper and lower channels therein disposed about said



mandrel means, said channels possess radially inclined faces,

said slip wedge means is longitudinally slidably secured to said upper slip guide,

said lower slips have a lower slip guide associated therewith, and

said upper and lower slips possess radially inclinded inner faces adapted to cooperate with said channel faces;

a compressible packer element disposed about the lower end of said mandrel means below said lug means, said slot means, said drag spring means and said slip means; and

packer element compression means associated with said mandrel means and said housing means.

4,524,826

METHOD OF HEATING AN OIL SHALE FORMATION

Kerry D. Savage, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

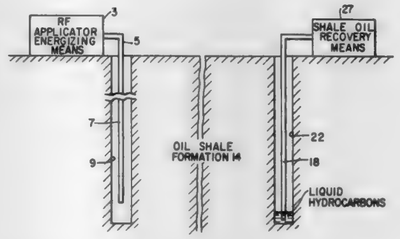
Filed Jun. 14, 1982, Ser. No. 387,996
Int. Cl.³ E21B *43/00*
U.S. Cl. 166—248 **5 Claims**

1. A method of heating an oil shale formation to produce fluid hydrocarbons comprising

radiating RF electromagnetic energy into the oil shale formation for a predetermined first time interval from a first borehole which penetrates said oil shale formation,

producing fluid hydrocarbons, when available, during said first time interval from a second borehole penetrating said oil shale formation a predetermined distance from said first borehole,

radiating RF electromagnetic energy into said oil shale formation during a predetermined second time interval from said second borehole,



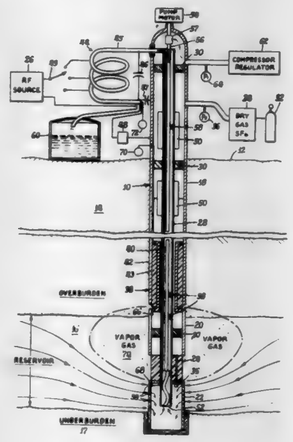
producing fluid hydrocarbons during said second time interval from said first borehole.

4,524,827

SINGLE WELL STIMULATION FOR THE RECOVERY OF LIQUID HYDROCARBONS FROM SUBSURFACE FORMATIONS

Jack E. Bridges, Park Ridge; Allen Taflove, Wilmette, and Guggilam C. Sresty, Chicago, all of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Apr. 29, 1983, Ser. No. 489,756
Int. Cl.³ E21B *36/00*
U.S. Cl. 166—248 **32 Claims**



1. A method for recovering liquid hydrocarbons from a water-containing subsurface formation through a borehole extending from the surface of the earth into said formation, said method comprising the steps of:

disposing an electrode in said borehole in at least a first portion of said formation,

producing liquid through said borehole from said first portion of said formation, and

applying electrical power through said electrode at a rate sufficient to vaporize water in an annular region of said formation extending from said borehole above said first portion while leaving water in said first portion substantially in the liquid phase.

4,524,828

METHOD OF USING THIXOTROPIC CEMENTS FOR COMBATING GAS MIGRATION PROBLEMS

Fred Sabins, and Jerry D. Childs, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 11, 1983, Ser. No. 540,742
Int. Cl.³ E21B *33/138*
U.S. Cl. 166—293 **15 Claims**

1. A method for cementing a zone under pressure comprising pumping a thixotropic cement slurry into said zone, terminating pumping, and allowing said static slurry to set, wherein said slurry comprises water, hydraulic cement, a crosslinking agent selected from the group consisting of titanium chelates and a crosslinkable agent selected from the group consisting of water-soluble cellulose ethers; polyvinyl alcohol; homopolymers, copolymers and terpolymers of AMPS (2-acrylamido-2-methylpropane sulfonic acid), sodium vinylsulfonate, acrylamide N,N-dimethylacrylamide and acrylic acid; and mixtures thereof, whereby said slurry develops static gel strength in an amount sufficient to prevent fluid migration during some time after the pumping has terminated and until the cement slurry has set.

4,524,829

METHOD OF ALTERING THE PERMEABILITY OF A SUBTERRANEAN FORMATION

David J. Hanlon, and Stephen W. Almond, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 525,596, Aug. 23, 1983, abandoned. This application Sep. 19, 1984, Ser. No. 652,419
Int. Cl.³ C09K *3/00*; E21B *43/22, 43/25*
U.S. Cl. 166—294 **20 Claims**

1. A method of altering the permeability of a subterranean formation comprising contacting said formation with an aqueous mixture comprising:

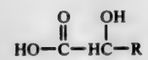
a. a water dispersible hydrophilic organic polymer having a molecular weight greater than 100,000 and containing carboxyl functionality; and

b. a crosslinking composition comprising

(1) water;

(2) a zirconium compound selected from the group consisting of zirconium oxychloride, zirconium acetate, zirconium ortho-sulfate, zirconium tetrachloride, zirconium carbonate, zirconium ammonium carbonate, and mixtures thereof;

(3) an alpha-hydroxy acid represented by the following formula:



wherein R is selected from the group consisting of hydrogen and an alkyl group having about 1 to about 3 carbon atoms; and,

(4) an amine compound represented by the formula:



wherein:

R_1 is hydroxyalkyl group having 1 to about 3 carbon atoms;

R_2 is selected from the group consisting of an alkyl group having 1 to about 3 carbon atoms and a hydroxyalkyl group having 1 to about 3 carbon atoms; and,

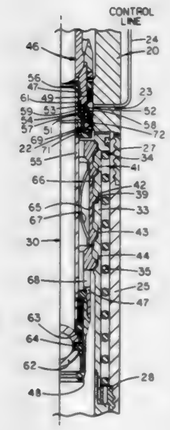
R_3 is selected from the group consisting of hydrogen, an alkyl group having 1 to about 3 carbon atoms and a hydroxyalkyl group having 1 to about 3 carbon atoms.

4,524,830

LANDING NIPPLE WITH SUBSURFACE SAFETY VALVE

Charles R. Williams, Carrollton, Tex., assignor to Otis Engineering Corporation, Carrollton, Tex.

Filed Jul. 5, 1983, Ser. No. 511,012
Int. Cl.³ E21B *34/10, 43/12*
U.S. Cl. 166—321 **6 Claims**



1. Apparatus comprising:

a landing nipple including;

groove means in said nipple for receiving and latching a tool string in the nipple,

compression spring means supported in the nipple on upwardly facing shoulder means,

a spring guide within the spring means having downwardly facing shoulder means engaging said spring means,

said spring guide being tubular and having an upwardly facing shoulder for abutment with an actuator, and

a port in said nipple for introducing control fluid into the nipple bore; and

a separately removable tool string within said nipple including:

a releasable latch cooperable with said nipple groove means for latching the tool string to the nipple; and

a subsurface safety valve comprising;

a housing having exterior seal means straddling said nipple port with a seal above and a seal below said port when the string is landed,

a port in said housing communicating with said nipple port,

a piston in said housing exposed to said housing port,

an actuator cooperable with and movable downwardly by said piston,

a valve seat and cooperable valve member movable between open and closed positions by reciprocation of said actuator, and

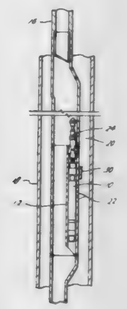
downwardly facing shoulder means on said actuator and engageable with said spring guide shoulder to compress said spring means in response to pressure against said piston to move said valve member to open position.

4,524,831

HYDRAULIC CONTROLLED WELL VALVE

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Dec. 27, 1983, Ser. No. 565,506
Int. Cl.³ E21B *34/10*
U.S. Cl. 166—322 **10 Claims**



1. A hydraulic controlled valve for use in a well conduit for controlling fluid flow between the inside and outside of the conduit comprising,

a tubular body adapted to be connected in a well conduit, said body having an opening for providing communication between the inside and outside of the body,

a sliding tubular valve element having an opening and positioned inside of the body for longitudinally moving the valve opening between open and closed positions relative to said body opening,

a tubular conduit having an opening and positioned inside of said valve element, said tubular conduit having an inside in communication with the inside of the tubular body,

seal means between the conduit and said valve element about the conduit opening,

piston means sealably movable between the body and the tubular conduit and connected to the valve element for moving said valve element,

hydraulic control means connected to the body and in communication with one side of the piston, said control means adapted to extend to the well surface for controlling the movement of the piston, and

said piston having a second side in communication with the outside of the body through the body opening for hydrostatically compensating the piston.

4,524,832

DIVERTER/BOP SYSTEM AND METHOD FOR A BOTTOM SUPPORTED OFFSHORE DRILLING RIG

Joseph R. Roche, Humble; Gabriel G. Alexander, Houston, and William L. Carbaugh, Humble, all of Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Nov. 30, 1983, Ser. No. 556,626
Int. Cl.³ E21B *17/01, 17/07, 33/038, 33/076*
U.S. Cl. 166—347 **16 Claims**

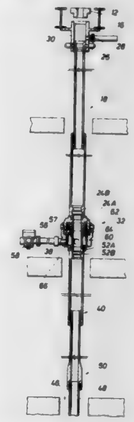
1. A system adapted for alternative use as a diverter or a blowout preventer for a bottom supported drilling rig and adapted for connection to a permanent housing attached to rig structural members beneath a drilling rig rotary table, the permanent housing having an outlet connectable to a rig fluid system flow line, the system comprising

a fluid flow controller having

a controller housing with a lower cylindrical opening and an upper cylindrical opening and a vertical flow path therebetween and an outlet passage provided in its wall,

a packing element disposed within the controller housing, and

annular piston means adapted for moving from a first position to a second position, whereby in the first position the piston means wall prevents interior fluid from communicating with the outlet passage in the controller housing wall and in the second position the piston means wall allows fluid communication of interior fluid with the outlet passage and urges the annular packing element to close about an object extending through a bore of the controller housing or to close the vertical flow path through the controller housing in the absence of any object in the vertical flow path,



means for connecting alternatively a vent line or a choke/kill line to said outlet passage provided in the controller housing wall,

a lower telescoping spool having a lower connector means at its lower end for connection to structural casing or to a mandrel connected to a conductor string cemented within the structural casing and an upper connection means at its upper end for connection to the lower cylindrical opening of the fluid flow controller, and

an upper telescoping spool having a lower connection means for connection to the upper cylindrical opening of the fluid flow controller.

4,524,833

APPARATUS AND METHODS FOR ORIENTING DEVICES IN SIDE POCKET MANDRELS

Robert L. Hilts, Farmers Branch, and Robert W. Crow, Irving, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Sep. 23, 1983, Ser. No. 535,214
Int. Cl.³ E21B *23/03*
U.S. Cl. 166—381 **24 Claims**

1. Apparatus for installing a well tool device in the offset receptacle of a side pocket mandrel in predetermined oriented relation therewith, said mandrel having means therein for orienting a kickover tool, said apparatus comprising:

a. a kickover tool having well tool device carrying means thereon, said kickover tool having orienting means thereon cooperable with said orienting means in said side pocket mandrel for orienting said kickover tool relative to said offset receptacle of said side pocket mandrel;

b. a well tool device carried on said well tool device carrying means of said kickover tool;

c. means for releasably attaching said well tool device to said well tool device carrying means; and



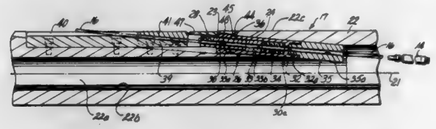
d. means separate from said attaching means for orienting said well tool device with respect to said well tool device carrying means.

4,524,834

CABLEHEAD SIDE ENTRY SUB

Charles D. Barron, and Felix Kuus, both of Gardena, Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Jun. 22, 1982, Ser. No. 390,819
Int. Cl.³ E21B *23/00*
U.S. Cl. 166—385 **35 Claims**



1. An apparatus for admitting a cablehead assembly attached on a cable into a drill string, the apparatus comprising:

a cylindrical tubular sub body for attachment in the drill string and having a substantially central passage therethrough;

an entrance port in a side of the sub body, the port running at an acute angle to a longitudinal axis of the drill string;

a cartridge assembly for sealing the cable in the port against pressure loss, the cartridge assembly being slidably moved to a seated position in the port, the cartridge assembly comprising a cylindrical cartridge and a packoff gland, each having a central passage for receiving the cable;

means for tightening the packoff gland into the cartridge to compress a packing element disposed in the cartridge about the cable to seal between the cable and the cartridge;

means for seating the cartridge assembly in a fixed longitudinal position in the port;

means for clamping the cable to the outside of the body for preventing movement of the cable; and

a cylindrical wear element removably attached at one end of the cartridge and extending from the cartridge toward the central passage of the tubular sub body.

13. A method for introducing a cablehead assembly into a passage along a drill string comprising the steps of:

disposing a cartridge assembly around a cable;

attaching a cablehead assembly to one end of the cable;

feeding the cablehead assembly from outside the drill string through a side entrance in a member of the drill string into the drill string, the side entrance being sufficiently wide to admit the cablehead assembly into the drill string along a path which forms an acute angle with a longitudinal axis of the member;

feeding sufficient cable longitudinally into the side entrance to lower the cablehead assembly to the desired location inside the drill string;

slidably seating the cartridge assembly within the side entrance;

clamping the cable to the outside of the member to prevent further longitudinal movement of the cable relative to the member;

tightening the cartridge assembly about the cable to seal the cable against pressure loss through the cartridge assembly;

securing a cover plate to the outside of the member adjacent the side entrance to prevent expulsion of the cartridge assembly from the side entrance; and

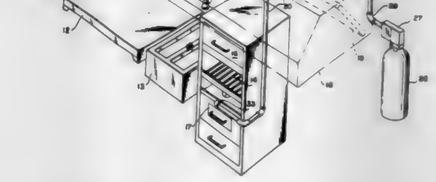
attaching a wear element on the cartridge assembly extending to the drill string passage to space the cable from the perimeter of the passage in the drill string.

4,524,835

FIRE SUPPRESSION SYSTEMS

Frank V. Mingrone, 67 Nels Rd., Milford, Conn. 06460

Continuation-in-part of Ser. No. 229,792, Jan. 30, 1981, abandoned. This application Feb. 28, 1983, Ser. No. 470,439
Int. Cl.³ A62C *37/00*
U.S. Cl. 169—65 **9 Claims**



1. A fire suppression piping system for delivering dry chemical powder propelled by compressed non-oxidizing gas upon command to quench fires in flammable liquids, such as grease fires occurring in restaurant kitchen equipment, such as grills, ovens, deep fat fryers, charbroilers, exhaust plenum hoods and exhaust ducts, which present one or more individual, potential fire hazards, each requiring a different predetermined amount of dry chemical powder to extinguish a fire therein, and providing effective and economical distribution of the amount of powder required for each potential fire hazard without costly and inefficient redundant parallel runs of duplicate piping, comprising

storage cylinder means containing dry fire suppressing chemical powder and compressed nonoxidizing gas sealed therein by a valve head assembly,

individual nozzle means each positioned to deliver dry chemical powder to the exposed surface of the flammable liquid,

a continuous, non-bifurcated supply manifold having one end connected to the valve head assembly and its other end connected to the most remote of said nozzle means,

a plurality of distribution orifice Tees, each having a through passageway connected to form an uninterrupted part of said supply manifold, a lateral outlet, and means forming a diversion orifice extending partway into said passageway and having an orifice portal of predetermined size selected to

correspond to the predetermined quantity of dry chemical powder required for a specific individual fire hazard, and positioned to receive and divert said predetermined required quantity of powder from the storage cylinder and the supply manifold through the lateral outlet,

and a corresponding plurality of lateral conduits each connecting one of said lateral outlets to nozzle means, delivering gas-propelled fire suppressing powder diverted by the distribution orifice Tee for ejection of its respective predetermined quantity of said powder by its nozzle means toward one said flammable liquid surface,

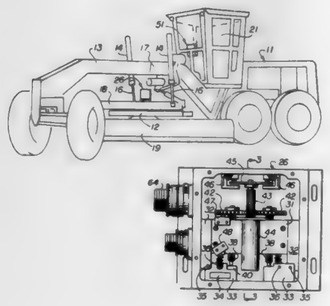
whereby when the valve head assembly is actuated the continuous supply manifold delivers the available fire suppressing powder from the storage cylinder directly to nozzles without forked-branching and without travelling through redundant parallel runs of duplicate piping.

4,524,836

SCRAPER WITH DUAL-DIRECTION BLADE TILT CONTROL

John V. Pehrson, Sparks, Nev., assignor to Reno Energy Systems, Inc., Sparks, Nev.

Filed Jun. 3, 1983, Ser. No. 500,891
Int. Cl.³ E02F *3/76, 3/85*
U.S. Cl. 172—4.5 **6 Claims**



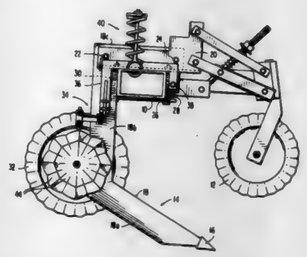
1. In combination, a scraper or the type having a frame, a turntable articulately supported by said frame, a scraper blade depending from said turntable, at least one ram interconnecting said frame and said turntable to adjust the tilt of said blade relative to said frame, and a blade tilt control, said control comprising an enclosure, means for mounting said enclosure on said turntable, a first vial rail, first mounting means pivotally mounting said first vial rail in said enclosure about an axis parallel to said turntable, a second vial rail, second mounting means pivotally mounting said second vial rail in said enclosure about an axis parallel to said turntable, first adjustment means for adjusting the tilt of said first vial rail relative to said enclosure, second adjustment means for adjusting the tilt of said second vial rail relative to said enclosure, first and second vials fixed in said first and second vial rails respectively, each said vial being of a type emitting a first signal when tilted off horizontal in a first direction and a second signal when tilted off horizontal in a second direction, an electric circuit connected to said vials having a switch to selectively include one or the other of said vials into said circuit, and electrical means to control energization of said ram in either direction responsive to signals emitted from the particular vial connected into said circuit by said switch.

4,524,837

SOIL CONDITIONING AND BED PREPARATION APPARATUS

Jerrell W. Harden, Banks, Ala., assignor to Allied Products Corporation, Chicago, Ill.

Filed Apr. 7, 1982, Ser. No. 366,281
Int. Cl.³ A01B *13/08, 49/02*
U.S. Cl. 172—156 **17 Claims**



1. Soil conditioning apparatus, comprising:

a main frame;

soil loosening means coupled to the main frame for cutting and loosening compacted soil, the soil loosening means including subsoiler means coupled to the main frame and extending downwardly to be pulled into the earth below the surface to form a slot or groove in the soil into which roots may grow;

soil preparation means coupled to the main frame for working the soil adjacent to and into the slot left by the forward motion of the subsoiler means therethrough, the soil preparation means including independently rotatable substantially solid surface disk-shaped members;

respective pivot arm means mounting said rotatable members to said frame on laterally opposite sides of and in at least partially overlapping relation with the subsoiler means and laterally spaced from the slot or groove formed by the subsoiler means for movement independently of the subsoiler means in respective substantially vertical planes relative to the soil surface; and

biasing means coupled with said pivot arm means for urging said rotatable members downwardly into the soil adjacent the subsoiler means independently of the depth of penetration of the subsoiler into the soil to push soil loosened by the subsoiler means back into the slot or groove formed by the subsoiler means to substantially fill the voids formed in the slot or groove and to substantially close the slot or groove behind the subsoiler means substantially to the depth of the slot or groove.

4,524,838

OIL WELL JAR

Wayne N. Sutliff, Bakersfield, Calif., assignor to Jim L. Downen, Bakersfield, Calif.

Filed Oct. 13, 1982, Ser. No. 437,196
Int. Cl.³ E21B *4/14*
U.S. Cl. 175—297 **17 Claims**

1. A for use in imparting jarring blows to an object lodged in the bore of a well, said jar comprising:

(a) a mandrel member and outer telescopically related member, said mandrel member and said tubular member movable between an extended and a collapsed of said jar;

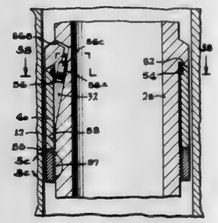
(b) means for connecting one of said members to a drill string and the other of said members to the object to be jarred;

(c) telescopically overlapping portions of said members providing an annular chamber for confining an operating fluid;

(d) a sleeve and a cylinder extending into said chamber and into an essentially fluid tight fit with each other for a selected portion of the telescopic travel between said extended and collapsed position;

(e) a fastener for capturing said sleeve in place with respect to a first one of said members, said fastener having threads and said first one of said members having threads for receiving said fastener, the threads of a said fastener and the threads of said first one of said members having a predetermined clearance between the opposing threads thereof;





(f) an operating fluid bypass in said first one of said members, said bypass being in fluid communication with the operating fluid above and below said sleeve, said bypass including an orifice having a fluid passageway therein; and

(g) filter means installed in fluid communication with an upstream of said orifice, said filter means being provided by the predetermined clearance between the threads of said fastener and the threads of said first one of said members, the maximum dimension of said predetermined clearance being less than a minimum size of the fluid passageway within said orifice.

4,524,839

APPARATUS FOR MONITORING TARE WEIGHT IN A FIBER BLENDING LINE

John M. Cochran, Jr., and Ronald N. Cleveland, both of Greenville, S.C., assignors to Frontier Electronics, Inc., Greenville, S.C.

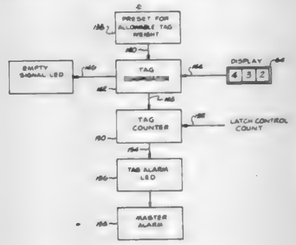
Filed Dec. 15, 1982, Ser. No. 450,106
Int. Cl.³ G01G *19/52, 23/14, 23/18*
U.S. Cl. 177—45 **2 Claims**

1. An apparatus for generating a signal responsive to a tag weight of fibers remaining in a weigh pan after said weigh pan has been opened for dropping fibers carried therein onto a receiver forming part of a fiber blending operation comprising:

means for generating a signal representing a predetermined maximum tag weight for fibers being dropped by said weigh pan;

means for generating a signal representing actual weight of fiber remaining in said weigh pan after a drop of said fibers;

means for comparing said predetermined maximum tag weight signal with said signal representing actual weight of fibers remaining in said weigh pan after a drop of said fibers and producing an output compared signal indicating the relationship between said signals;



an alarm; and

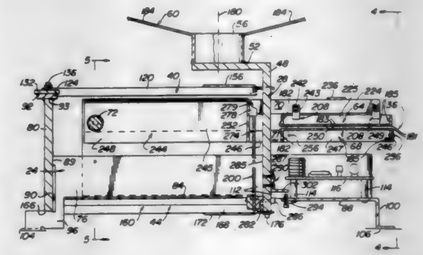
means for activating said alarm responsive to said actual weight of a tag of fibers which exceeds said predetermined maximum tag weight after said tag of fibers remains in said weigh pan for a predetermined number of successive drops of fibers by said weigh pan.

4,524,840

ELECTRONIC SCALE WITH NON-PARALLEL CAPACITANCE MEANS

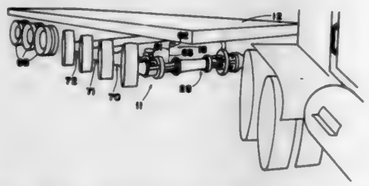
James M. Stuart, Malvern, Pa., assignor to Malvern Scale Company, Malvern, Pa.

Filed Aug. 24, 1983, Ser. No. 526,178
Int. Cl.³ G01G *3/14*
U.S. Cl. 177—210 C **3 Claims**



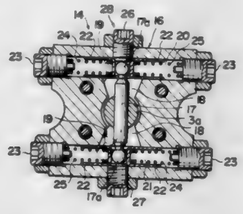
1. An electronic scale comprising frame means, platform means arranged to move upon receipt of some material thereon, spring means coupled both to said frame means and to said platform means, variable capacitance means including a first plate and a second plate, with one of said plates being movable so that movement of said platform means upon receipt of said material thereon causes a displacement of said movable plate reltive to the other of said plates to produce a signal indicative of the weight of said material, said displacement being achieved by said movable plate rotating about a fixed axis of rotation, with said plates being out of engagement with each other and being disposed non-parallel to each other over the entire operational range of movement of said movable plate and with the distance between all of the points on one of said plates and their respective corresponding points on the other of said plates being substantially proportional to the distance each respective point is from the axis of rotation over said entire operational range of movement of said movable plate.

4,524,841
AUXILIARY AXLE APPARATUS
Wayne Waggoner, P.O. Box 31357, Billings, Mont. 59107
Filed Nov. 21, 1983, Ser. No. 553,522
Int. Cl.³ B62D *61/10, 61/12*
U.S. Cl. 280—81 A **17 Claims**



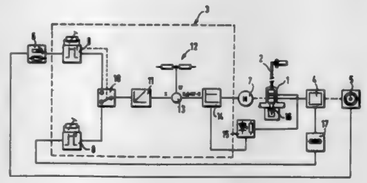
1. Auxiliary trailer axle apparatus including a frame portion, a carriage portion, a hitch portion, a bearing portion, a support portion and a lifting portion; said frame portion including a substantially horizontal section, supporting members extending downwardly from said horizontal section adjacent the ends thereof, said supporting members being pivotally connected to said horizontal section; said carriage portion including an axle housing section secured between said supporting members adjacent the lower ends thereof, an axle member carried by said axle housing section, wheels disposed on the ends of said axle member, expandable members disposed between said horizontal section and said axle housing section; said hitch portion including a tongue section extending from said frame portion substantially perpendicular to said axle section, connecting means disposed on a free end of said tongue section; said bearing portion including at least one pair of low friction pad members, one of said pad members being disposed adjacent each end of a top surface of said frame portion; said support portion including an upper support member disposed above said frame portion and closely adjacent thereto, said upper support member including a bottom surface in contact with said pad members of said bearing portion, means for affixing said support portion to a frame section of a trailer; said lifting portion including means connected to said axle housing section for raising said wheels off the ground.

4,524,842
FLEXIBLE COUPLING FOR PROVIDING VARIABLE RATE STEERING
Hirotaka Kanazawa, Hiroshima, Japan, assignor to Mazda Motor Corporation, Japan
Filed Mar. 10, 1983, Ser. No. 473,999
Claims priority, application Japan, Mar. 17, 1982, 57-43330; Mar. 19, 1982, 57-44858; Apr. 21, 1982, 57-67877; Apr. 21, 1982, 57-67878
Int. Cl.³ B62D *1/20*
U.S. Cl. 180—132 **12 Claims**



1. A power steering device for vehicles comprising:
a steering wheel;
a steering linkage which operatively connects the steering wheel to dirigible wheels of the vehicle so that the dirigible wheels can be turned as the steering wheel is operated to steer the vehicle;
a power assisting means inserted into the steering linkage to assist the steering force of the steering wheel, the steering linkage having a rotating portion which is rotated with the steering wheel to transmit the steering force of the steering wheel to the power assisting means and being divided into first and second parts;
a first extensible resilient member and a second extensible resilient member which are opposingly disposed between said first and second parts of the rotating portion to connect said first and second parts of the rotating portion with each other and which are adapted to be elastically deformed to produce a rotational displacement between the first and second parts when the steering wheel is rotated; and
a restricting means for applying a set load to each of said first and second extensible resilient members and limiting the extension thereof, so that when one of the resilient members is compressed by a relative rotation between said first and second parts, the extension of the other is restricted so as to prevent the action of the set load thereof, whereby one of the resilient members is elastically deformed to produce the rotational displacement between said two parts only when the steering force from the steering wheel exceeds a predetermined value.

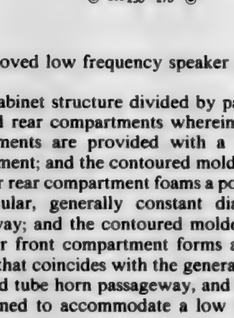
4,524,843
SPEED GOVERNOR FOR MOTOR VEHICLES
Eberhard Class, Geislingen; Heiner Schweizer, Bad Überkingen, and Günther Frank, Eislingen/Fils, all of Fed. Rep. of Germany, assignors to ULO-Werk Moritz Ullmann GmbH & Co. KG, Geislingen/Steige, Fed. Rep. of Germany
Filed Jul. 7, 1981, Ser. No. 281,178
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026423
Int. Cl.³ B60K *31/00*
U.S. Cl. 180—179 **15 Claims**



1. Apparatus for governing the speed of a motor vehicle having an engine equipped with a carburetor which includes a carburetor jet needle controlling the flow of fuel, said apparatus comprising a sliding member connected to said needle and responsive to action by a driver for actuating said needle, means for limiting displacement of said sliding member and electronic switch means selectively responsive to engine speed when vehicle speed is below a preselected value and to the vehicle speed when vehicle speed is above said preselected value for controlling said displacement limiting means to limit the response of the needle to driver actuation.

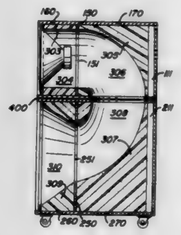
4,524,844
ANTI-DIVE FRONT WHEEL SUSPENSION SUITABLE FOR MOTORCYCLE
John E. Williams, Jr., Duquesne, Pa., assignor to AAKAC Industries Inc., Apollo, Pa.
Filed Feb. 10, 1983, Ser. No. 465,523
Int. Cl.³ B62K *25/08*
U.S. Cl. 180—219 **18 Claims**

1. A telescopic front-end suspension system suitable for motorcycles comprising in combination:
(a) a front tubular fork assembly having,
(i) a pair of upper tubes,
(ii) a pair of lower tubes slidably attached to said upper tubes to permit telescopic engagement of the tubes,
(iii) spring means carried by said tubes to provide a spring rate,
(iv) means for damping spring action including liquid carried in said tubes,
(b) a chamber provided in fluid connection with at least one of said tubes for permitting a fluid to escape thereinto when said suspension system is compressed, and



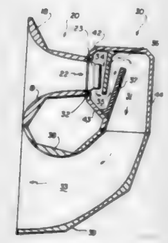
(c) control means for restricting the flow of said fluid to said chamber to increase the effective spring rate in at least one of said tubes upon application of brakes of said motorcycle, thereby restraining the collapse of said suspension system on braking.

4,524,845
LOW FREQUENCY SPEAKER ENCLOSURE
Stephen M. Perrigo, 14321 SE. 187th Ave., Clackumas, Oreg. 97015
Filed Feb. 28, 1983, Ser. No. 470,792
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—152 **4 Claims**



1. An improved low frequency speaker enclosure comprising:
an upper cabinet structure divided by partitions into upper front and rear compartments wherein each of the upper compartments are provided with a contoured molded foam element; and the contoured molded foam element in the upper rear compartment foams a portion of a generally semi-circular, generally constant diameter, tube horn passageway; and the contoured molded foam element in the upper front compartment forms an opening, having one end that coincides with the generally constant diameter of said tube horn passageway, and whose other end is dimensioned to accommodate a low frequency speaker; and
a lower cabinet structure connected to the upper cabinet structure, wherein the lower cabinet structure is also divided by partitions into lower front and rear compartments, wherein each of the lower compartments are provided with a contoured molded foam element; and the contoured molded foam element in the lower rear compartment forms the remaining portion of the said generally semi-circular, generally constant diameter, tube horn passageway; and, the contoured molded foam element in the lower front compartment forms a sharply tapered conical opening, whose one end coincides with the said generally constant diameter of the tube horn passageway, and whose other end forms the mouth of the tube horn passageway.

4,524,846
LOUDSPEAKER SYSTEM
Ronney J. Whitby, 8067 Center Pkwy., Sacramento, Calif. 95823
Filed Mar. 2, 1983, Ser. No. 471,495
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—152 **15 Claims**



1. A loudspeaker system comprising, in combination:
a mid-range acoustic transformer including a flared, stepped elliptical horn with a mid-range driver therein;
a woofer having a diaphragm;
a mid-bass acoustic horn mounted below said mid-range acoustic transformer, said mid-range bass acoustic horn having said woofer with said diaphragm disposed on a rear wall thereof to provide said diaphragm with a positive operational impedance encountered by front loading, said mid-bass acoustic horn having at least two opposing curved walls;
a low-bass acoustic horn positioned directly beneath said mid-bass acoustic horn and having a folded horn interior section which communicates with rear of said woofer to provide said diaphragm with a negative operational impedance encountered by rear loading, a balance being provided between said positive and negative operational impedances, a lower frequency response being provided to said low-bass acoustic horn by said diaphragm of said woofer; and
a pair of tweeters disposed on said opposing curved walls of said mid-bass acoustic horn, which curved walls disperse high frequency waves from said tweeters.

4,524,847
LADDER
Daniel Mintz, 70 Cambridge Pl., Brooklyn, N.Y. 11238
Filed Feb. 3, 1984, Ser. No. 576,742
Int. Cl.³ E06C *1/18, 1/32*
U.S. Cl. 182—23 **3 Claims**

1. A ladder for reaching a location above ground level comprising
a base section comprising a pair of transversely spaced, channel-shaped first rails, the first rails having longitudinally extending webs and longitudinally extending legs connected to the webs, and a plurality of longitudinally spaced first rungs secured to the first rails at the said longitudinally extending legs thereof,
each of the first rails being provided with an elongated opening in an upper portion of each respective web;
an extension section connected to and being pivotally and longitudinally movable with respect to the base section,

the extension section comprising a pair of transversely spaced channel-shaped second rails having longitudinal webs and legs and a plurality of longitudinally spaced second rungs secured to the second rails at the longitudinal legs thereof;

pivot means fixably secured to the longitudinal webs of the extension section to pivotally interconnect the base section with the extension section,



end portions of the pivot means being positioned within the elongated openings and being adapted for longitudinal movement within the openings, and

an L-shaped bracket secured to a second rail and adapted to move when the extension section is moved, the bracket engaging one of the first rungs when the extension section is longitudinally moved,

whereby the extension section may be pivoted relative to the base section between angular offset and longitudinally aligned positions.

4,524,848

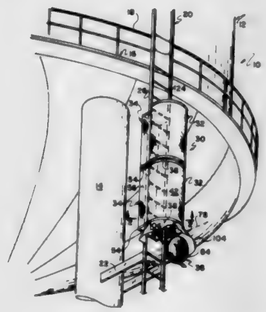
DEVICE FOR DETERRING UNAUTHORIZED CLIMBING OF PERMANENT LADDERS

John B. Russo, 1123 N. Mesquite, Corpus Christi, Tex. 78475

Filed Jul. 16, 1984, Ser. No. 631,384

Int. Cl.³ E06C *5/32*

U.S. Cl. 182—77 **15 Claims**



1. A device to deter climbing of permanent ladders of the type permanently secured to a support structure and having a pair of side rails and a plurality of rungs, comprising

a front section having a pair of generally coplanar longitudinal edges and a front panel spanning the longitudinal edges and extending out of the plane thereof to define a climbing path for a human between the front panel and the ladder;

means for securing the front section to the ladder for positioning the longitudinal edges parallel to the ladder side rails and juxtaposed thereto;

a back section, separable from the front section, having a back panel;

means for securing the back section to the ladder at the same elevation as the front section and for positioning the back panel away from the ladder rungs;

means preventing human movement between the back section and the ladder;

a door and means mounting the door for pivotal movement between a first closed position adjacent the front panel closing the climbing path and a second open position unblocking the climbing path; and

means for locking the door in the first position.

4,524,849

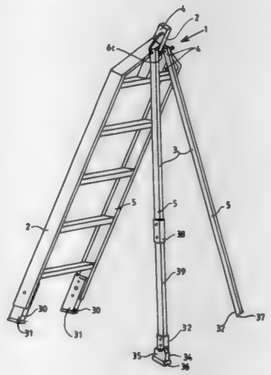
TRIPOD

Ronald G. Riddle, Auckland, New Zealand, assignor to Terrence Arthur Riddle, Takapuna, New Zealand, a part interest

Filed Jun. 11, 1984, Ser. No. 619,321

Int. Cl.³ E06C *1/20*

U.S. Cl. 182—170 **12 Claims**



1. A tripod connection including a link portion pivotally mounted with leg portions, a first leg portion mounted to one side of said link portion and second and third leg portions mounted to a substantially opposite side of said link portion, said legs and link portion pivotable into a condition where the said leg portions are mounted converging towards said link portion in a tripod like condition, said link member depending downwardly from the first leg pivot connection and generally upwardly of said second and third leg pivot connections, a portion of said link remote from said first leg pivot abutting an adjacent portion of said first leg portion to maintain said erected condition.

4,524,850

WEAR COMPENSATING OPERATING MECHANISM FOR DISK BRAKES

Erich Reinecke, Burgdorf, and Fritz Isernhagen, Wunstorf, both of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,429

Int. Cl.³ F16D *65/14, 65/54, 55/10, 65/24*

U.S. Cl. 188—71.8 **12 Claims**

1. A fluid pressure operated mechanism for disk brakes having brake shoes, comprising:

(a) a pair of expansion elements movable with respect to one another wherein the brake shoes are forced against the surfaces of a pair of brake disks,

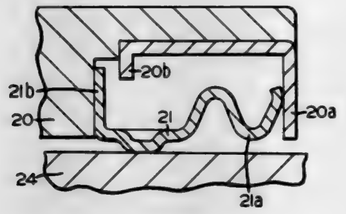
(b) compensating means located between said two expansion elements for maintaining a given clearance between said surfaces of said brake disks and said brake shoes,

(c) said compensating means takes the form of a one-piece, ring-shaped connecting link which is flexibly supported against one of said two expansion elements so as to oppose

the relative movement of said expansion elements during application of the brake shoes,

(d) said connecting link is frictionally connected to the other of said two expansion elements,

(e) a stop is provided on one of said two expansion elements which engages said connecting link to allow said connecting link to move relative to the other of said two expansion elements during brake application to compensate for brake shoe wear and to maintain a given clearance,



(f) said connecting link includes a plurality of first projections which function as return spring elements during brake release,

(g) said connecting link includes a plurality of second projections for frictionally engaging said other of the two expansion elements, and

(h) said first projections of said connecting link are designed as offset portions which are corrugated in the direction of the resulting spring force.

4,524,851

MECHANICAL SNUBBER

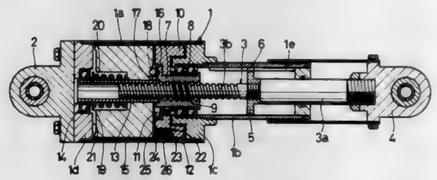
Susumu Sawano, Koganei; Yoshihiro Gofuku, Fujisawa; Junji Hashimoto, Kawasaki, and Takayuki Ando, Yokosuka, all of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Jun. 9, 1982, Ser. No. 386,520

Claims priority, application Japan, Jun. 11, 1981, 56-90057

Int. Cl.³ F16F *7/04, 7/10*

U.S. Cl. 188—134 **9 Claims**



1. A mechanical snubber, comprising in combination:

a cylindrical casing;

a rod member axially reciprocably fitted in said casing;

a rotary member fitted on said rod member and rotated by axial displacement of said rod member;

an inertia member rotatable in face-to-face relation with said rotary member;

a braking surface disposed in said cylindrical casing adjacent to said inertia member, said braking surface normally being disposed a small distance from said inertia member;

a first spring biasing said inertia member away from said braking surface and toward said rotary member;

a rotation control means provided between said rotary and inertia members and adapted to rotate said inertia member substantially in synchronism with said rotary member during slow rotary motion and to move said inertia member away from said rotary member and in to braking contact with said braking surface during quick rotary motion; and

an intermediate brake provided between said rotary and inertia members, said intermediate brake including a bore axially disposed in either of said rotary and inertia members and opening against an end face of the other of said rotary and inertia members, a friction element, and a second spring disposed within said bore and arranged to press said friction element against said end face of the other of said rotary and inertia members, said second spring biasing said rotary member and said inertia member apart, but said first spring being stronger than said second spring, whereby said second spring does not cause said inertia member to move against said braking surface.

4,524,852

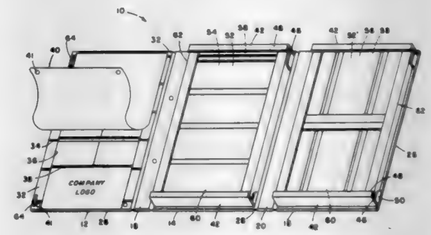
PLASTIC SIDING SAMPLE CASE

Grant F. Hess, Charlotte, N.C., assignor to National Gypsum Company, Dallas, Tex.

Filed Jun. 1, 1983, Ser. No. 500,096

Int. Cl.³ A45C *11/00*

U.S. Cl. 190—16 **10 Claims**



1. A sample case comprising three wide rigid flat main panels hingedly connected to two narrow rigid flat panels along the side edge of said narrow panels, said narrow panels each being between a pair of main panels, a sample building siding assembly insert on each of a middle and a first outer retainer means on, respectively, said middle and first outer main panels, said retainer means being adapted to removably retain said sample building siding assembly inserts on each respective middle and first outer panel, said retainer means each including elements disposed near the bottom and near the top of said middle and first outer panels which have a total width substantially equal to the width of said narrow panels, and which in a folded together condition, abut one another at the bottom and at the top and together form two end walls of said case, said two retainer means having a total thickness substantially equal to the width of said narrow panels, whereby said first outer panel can be folded over onto said middle panel and said two retainer means will abut and hold said middle and said first outer panels in spaced parallel relation, spaced apart a distance equal to the total thickness of said two retainer means, and a second outer panel can be folded onto the outer face of said first outer panel.

4,524,853

CLUTCH BRAKE ARRANGEMENT FOR FARM WORK MACHINERY OR OTHER EQUIPMENT

Shigeo Nagai, Nagano, Japan, assignor to Nisshin Kogyo Kabushiki Kaisha, Japan

Filed Feb. 4, 1982, Ser. No. 345,647

Claims priority, application Japan, Feb. 6, 1981, 56-16427; Feb. 9, 1981, 56-17805; Mar. 31, 1981, 56-48123

Int. Cl.³ B60K *41/24*

U.S. Cl. 192—18 R **7 Claims**

1. A clutch brake apparatus, comprising:

a cam plate fixedly secured to an engine mounting;

an engine output shaft extending through said cam plate;

a rotatable member rotatably attached to said output shaft;

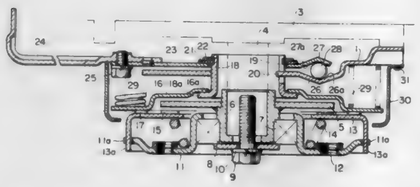
a non-rotatable pressure plate mounted on said cam plate, axially movable along said output shaft;

a clutch disk integrally rotatable with said output shaft, disposed between said pressure plate and said rotatable member;

a lining plate between said clutch disk and said rotatable member, rotatable with said rotatable member and axially movable along said output shaft, comprising a brake lining for engaging said pressure plate at a portion thereof and a clutch lining for engaging said clutch disk;

a brake spring extending in the direction parallel to said output shaft, between said pressure plate and said cam plate, for normally urging said pressure plate toward said rotary member and into engagement with said brake lining;

a clutch spring disposed between said rotatable member and



said lining plate urging said lining plate toward such clutch disk and said pressure plate;

a rotatable cam plate cover opposed to said cam plate, axially movable along said output shaft and attached to said pressure plate;

a cam ball between said cam plate and said cam plate cover;

means for moving said pressure plate with said cam plate cover;

an operation rod fixed to said cam plate cover for rotating the same to thereby move said cam plate cover away from said cam plate and move said pressure plate toward said cam plate against the force of the brake spring whereby said lining plate is engaged with said clutch disk by said clutch spring and is thereafter spaced from said pressure plate.

4,524,854

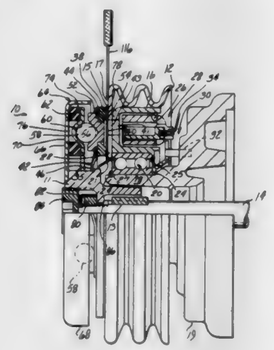
ADJUSTABLE AIR GAP AND METHOD FOR ELECTROMAGNETIC CLUTCH

Donald L. Miller, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Sep. 28, 1982, Ser. No. 425,589

Int. Cl.³ F16D *27/10*

U.S. Cl. 192—84 C **8 Claims**



5. In an electromagnetic clutch, a connection enabling axial adjustment between a threaded clutch shaft and a threaded armature assembly carried by said threaded clutch shaft for rotation therewith to set an air gap spacing between an armature plate and an inner body pole face, comprising:

an adjusting nut threadably advanceable on said threaded clutch shaft and directly abutting with said threaded armature assembly to prevent an increase in said air gap spacing by retaining said threaded armature assembly against axial movement away from said inner body pole face; and

a plug member threadably advanceable relative said threaded armature assembly and having an abutment face engageable with said threaded clutch shaft to prevent a decrease in said air gap spacing by retaining said threaded armature assembly against axial movement toward said inner body pole face.

4,524,855

HYDRAULIC RELEASE ARRANGEMENT, ESPECIALLY FOR VEHICLE CLUTCHES

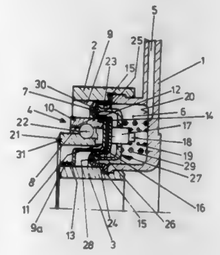
Manfred Brandenstein, Eussenheim, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,509

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133968

Int. Cl.³ F16D *25/08, 25/12*

U.S. Cl. 192—88 A **7 Claims**



1. In an hydraulic release device comprising an annular housing having radially inner and outer walls and an end wall, an annular rolling bearing having inner and outer rings and positioned in the space between said walls and radially spaced therefrom, and a rolling bellows sealed between said inner and outer walls to define with said inner and outer walls and end wall a pressure chamber, said bearing being arranged to be axially moved in said space by said rolling bellows; the improvement comprising an annular pressure plate within said pressure chamber coaxial with said rolling bellows and axially abutting said rolling bellows, first spring means biasing said pressure plate away from said end wall, said rolling bellows having folded-back regions at said inner and outer walls, an annular spacing element within said pressure chamber and having inner and outer annular projections engaging the folded-back regions of the rolling bellows adjacent the inner and outer walls of the housing respectively toward said pressure chamber, and second spring means biasing said annular spacing element away from said end wall.

4,524,856

CLUTCH RELEASE BEARING CONTROL MECHANISM

Pierre Renaud, Le Plessis-Trevise, France, assignor to VALEO, Paris, France

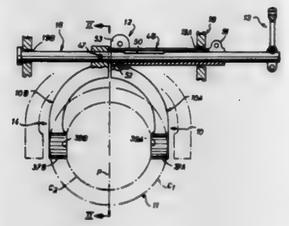
Filed Jun. 14, 1982, Ser. No. 388,162

Claims priority, application France, Jun. 18, 1981, 81 12000

Int. Cl.³ F16D *23/14*

U.S. Cl. 192—98 **14 Claims**

1. In a clutch release bearing control mechanism comprising a shaft, a yoke having a pivot section pivotally mounted on said shaft and an operative section, and a control arm for rotating said yoke on said shaft, said yoke further comprises two separate parts, at least one of said separate parts is adjustable in position parallel to the axis of said shaft, each of said separate parts having on it a respective bearing area adapted to act axially on a respective area on a clutch release bearing, said



areas on said clutch release bearing being at positions thereon which are substantially diametrically opposed, a sleeve being keyed to said shaft and adjustable in position axially thereon, one of said separate parts being mounted on said sleeve and the other on said shaft.

4,524,857

BOOK BLOCK FEED DEVICE

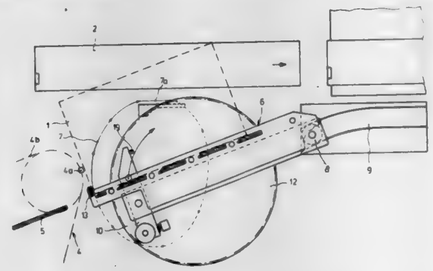
Horst Rathert, Minden, and Winfried Hedrich, Rahden, both of Fed. Rep. of Germany, assignors to Rahdener Maschinenfabrik August Kolbus, Rahden, Fed. Rep. of Germany

Filed Oct. 3, 1983, Ser. No. 538,748

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237256

Int. Cl.³ B65G *25/00*

U.S. Cl. 198—409 **13 Claims**



1. Apparatus for transferring blocks comprised of plural articles, the articles being aligned within the blocks, from a lower to a higher level without disruption of the alignment, said apparatus comprising:

first conveyor means, said first conveyor means defining a motion path for the blocks which is generally inclined upwardly;

movable clamp means, said clamp means defining a second motion path for the blocks, said clamp means receiving and engaging the blocks;

feed table means, said table means having first and second edges and defining a plane therebetween;

means for imparting motion to said feed table means, said motion imparting means causing a first edge of said feed table means to follow a generally closed path, said closed path intercepting said upwardly inclined motion path whereby a block will be engaged by said table means first edge and will be raised from said inclined motion path, said closed path extending above and below said inclined motion path, the upper limit of motion of said feed table means first edge placing a block engaged by said feed table means in registration with said clamp means whereby said clamp means may engage the block and continue the motion thereof; and

means for guiding the motion of the second edge of said feed table means, said second edge being disposed oppositely with respect to said first edge and being located downstream of said first edge in the direction of motion of a block along said inclined motion path, said guide means causing said feed table means second edge to move from said inclined motion path to a path which follows the course of said second motion path.

4,524,858

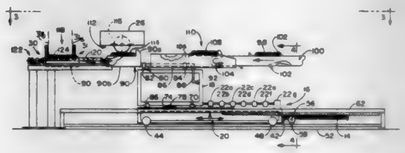
EDGER TRANSPORT AND POSITION APPARATUS

Carl W. Maxey, P.O. Box 3210, Hattiesburg, Miss. 39403

Filed May 24, 1983, Ser. No. 497,666

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—434 **6 Claims**



1. Sawmill apparatus adapted for the continuous-motion, adjustable, non-handoff, transfer of successive, elongate cants moved transversely of their longitudinal axes between intake and discharge stations, which stations are disposed respectively on the upstream and downstream sides of a wane-scanning station, where the wane-scanning station included means that generates, for each scanned cant, related wane-trim data, and the discharge station is positioned upstream from a wane-trim edger, said apparatus comprising

a first moveable carriage adapted for continuous, recurrent, reciprocal shifting between such an intake station and such a discharge station through such a wane-scanning station,

a second moveable carriage mounted for position adjustment on and relative to, and moveable with, said first carriage, including carrier means for supporting a cant transferred by the apparatus, and

position-adjustment means operatively interposed between said first and second carriages, adapted for operative connection to such a generating means in such a wane-scanning station to respond thereto regarding each scanned cant, thus to adjust the position of said second carriage relative to said first carriage, while the latter moves, in accordance with and as required by related wane-trim data, said means being constructed to accommodate both horizontal translational and rotational relative movement between the two carriages, with such rotational movement occurring about an upright axis which is fixed relative to said second carriage.

4,524,859

RAIL ASSEMBLY FOR UNDERGROUND COAL-GETTING MACHINES

Elmar Götte, Lüdinghausen, and Heinrich Schulte, Witten, both of Fed. Rep. of Germany, assignors to Klöckner-Becorit GmbH, Castrop-Rauxe, Fed. Rep. of Germany

Continuation of Ser. No. 373,053, Apr. 29, 1982, abandoned. This application Oct. 2, 1984, Ser. No. 656,421

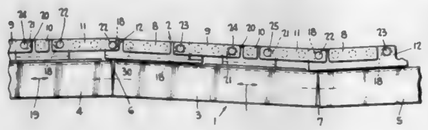
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1981, 3123122

Int. Cl.³ B65G *19/18*

U.S. Cl. 198—735 **4 Claims**

1. A rail assembly for supporting the wheels of underground wheeled coal-getting machines, in combination with a coal conveyor comprising a plurality of conveyor pans intercon-

nected end-to-end in the direction of movement of the machines with the central axis of adjoining pans being angularly related, the assembly comprising a rail section mounted on each said pan and a connecting piece mounted for movement relative to each pan, each said section comprising at least three rail elements having adjoining ends interconnected for relative movement along said direction to provide play between adjoining rail sections, whereby the upper surfaces of said rail



sections lie parallel to said central axes of said pans and wherein the first of said elements of said section is fixedly mounted on each said pan, the second of said elements of each said section being movably mounted on each said connecting piece, and the third of said elements of each said section lying between said first and second elements and movably mounted to the pan and the connecting piece such that play is provided above and between each of said adjoining pans.

4,524,860

AUTOMATIC BOARD TRANSFER APPARATUS

Yoshihiko Misawa, Osaka; Makito Seno, Hirakata, and Koji Fujiwara, Yamatokouriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

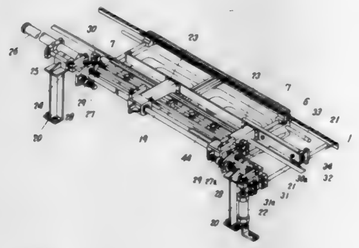
PCT No. PCT/JP82/00049, § 371 Date Oct. 22, 1982, § 102(e) Date Oct. 22, 1982, PCT Pub. No. WO82/02992, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 23, 1982, Ser. No. 440,218

Claims priority, application Japan, Feb. 23, 1981, 56-25144

Int. Cl.³ B65G *25/02*

U.S. Cl. 198—740 **3 Claims**



1. An apparatus for automatically transferring, positioning and delivering print boards onto which are to be mounted electronic elements and each of which has an end surface and a reference hole spaced from said end surface by a predetermined distance, said apparatus comprising:

transfer means for moving each print board to a predetermined position;

guides extending from said transfer means for guiding movement of the print board in a straight direction from said position;

an arm mounted for reciprocal movement in opposite directions parallel to said guides and for reciprocal pivotal movement in opposite directions generally transverse to the plane of the print board;

a pusher member integral with said arm for abutting the end surface of the print board at said position;

means for pivoting said arm toward the print board at said position such that said pusher member abuts the end surface of the print board;

means for moving said arm in said straight direction, such that said pusher member moves the print board along said guides in said direction from said position;

a pin mounted on said arm for movement relative thereto in a direction generally transverse to the plane of the print board, the center of said pin being spaced from the surface of said pusher member which abuts the end surface of the print board by a distance approximately equal to the predetermined distance between the end surface and the reference hole of the print board; and

means for moving said pin downwardly with respect to said arm and thereby for inserting said pin into the reference hole of the print board, whereby movement of the print board thereafter is achieved by said pin, said pin moving means comprising a cam surface extending parallel to said guides, a roller connected to said pin, means for urging said roller into contact with said cam surface and thereby for urging said pin downwardly with respect to said arm, and a portion of said cam surface having a contour to enable downward movement of said roller and thereby said pin with respect to said arm.

4,524,861

CONVEYOR DRIVING ROLLER

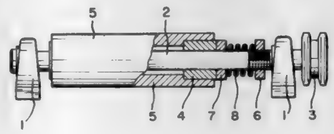
Yoshihiro Matsushita, Inuyama, Japan, assignor to Tsubakimoto Machinery & Engineering Co., Ltd. and Line Industry Corp., both of, Japan

Filed Sep. 10, 1982, Ser. No. 416,676

Claims priority, application Japan, Feb. 4, 1982, 57-14654[U]

Int. Cl.³ B65G *13/02*

U.S. Cl. 198—781 **3 Claims**



1. A conveyor driving roller comprising:

a shaft mounted for rotation about its longitudinal axis;

a cylindrical roller member mounted over said rotatable shaft through bushings mounted within the ends of said cylindrical roller member, said cylindrical roller member being adapted to be frictionally engaged and driven by said rotatable shaft through said bushings, said bushings being rotatable with respect to said shaft and being frictionally engaged and driven by said shaft;

a pressure plate slidably mounted on said rotatable shaft adjacent one end of said cylindrical roller member;

a compression spring mounted on said shaft and bearing against the face of said pressure plate opposite the face engaging said one end of said roller member; and

means for adjusting the degree of compression of said spring.

4,524,862

SCREW-JACK TYPE ACCUMULATION CONVEYOR

John M. Leach, P.O. Box 544, Walpole, N.H. 03608

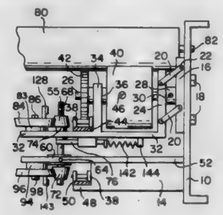
Filed Sep. 20, 1982, Ser. No. 420,025

Int. Cl.³ B65G *13/06*

U.S. Cl. 198—781 **10 Claims**

10. An article accumulation conveyor comprising a frame, rollers mounted on the frame for supporting and moving the articles, roller rotating means mounted on the frame for movement into and and out of contact with the rollers, a screw-jack mounted in position to move the roller rotating means both into and out of contact with the rollers, means for actuating the screw-jack from the roller rotating means in both directions, a sensor mounted in position to be moved by being contacted by

articles moving on the article supporting rollers, and means connecting the sensor and the screw-jack actuating means to



control the actuation and direction of actuation of the screw-jack.

4,524,863

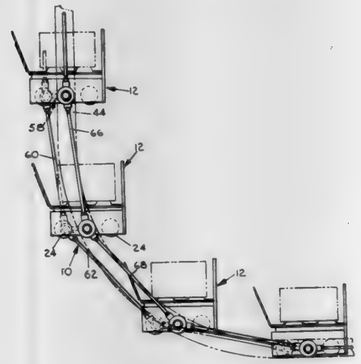
CONVEYOR APPARATUS

Robert A. Mogé , Milford, N.H., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jul. 22, 1983, Ser. No. 516,015

Int. Cl.³ B65G *17/16*

U.S. Cl. 198—797 **1 Claim**



1. A conveying apparatus having a plurality of interconnected and spaced support trays moved by a linear drive unit in horizontal pathways of different elevations and in directions interconnecting one horizontal pathway with another, said conveying apparatus comprising:

(a) a plurality of first guide rollers rotatable mounted on the underside of each support tray;

(b) a plurality of second guide rollers rotatable mounted adjacent the sides of each support tray;

(c) a support track for receiving said first guide rollers for guiding the support trays in their horizontal pathways;

(d) a guide track operatively associated with said support track for receiving said second guide rollers to effect guiding each support tray from one horizontal pathway to another;

(e) a tie rod member pivotably interconnecting the second guide rollers of one support tray with the second guide rollers of the adjacent support trays defining an endless chain of the latter;

(f) a crank member pivotably connected at a first end to at least one of said second guide rollers and said tie rods operatively associated therewith; and

(g) a pair of crank rods pivotably connected to a second end of said crank member and extending in opposite directions for operative connection to the crank members associated with adjacent support trays, said crank rods have a cushion member mounted in one end for absorbing linear deviations resulting from dimension tolerance buildup of said tie and crank rods in said linkage means.

4,524,864

BELT CONVEYOR GAP STRINGER SUPPORT SYSTEM

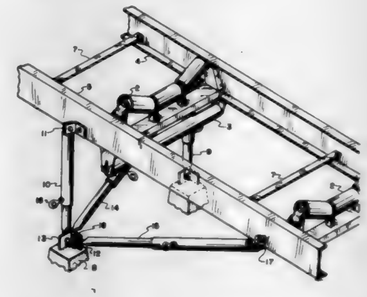
William D. Peterson, II, 1996 E. 4675 South, Salt Lake City, Utah 84117

Continuation of Ser. No. 367,563, Apr. 12, 1982,. This application May 21, 1984, Ser. No. 612,998

The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.

Int. Cl.³ B65G *39/10*

U.S. Cl. 198—828 **10 Claims**



1. In a gap stringer conveyor belt carrying structure of the type which includes a pair of parallel spaced apart rigid stringers with belt carrying rollers therebetween, the improved underlying support for said structure which comprises in combination at least two spaced-apart load-bearing frames under said stringers each of said frames including a pair of extensible load bearing members each connected at one end to said structure to receive a part of the weight thereof and at its other end to a weight bearing anchor, a third extensible member connected at one end to said strucuture thence extending in a direction that is diagonally transverse to and in substantially the same plane as said pair of extensible load bearing members to terminate in a connection to an anchor, all of said extensible members being provided with means for fixing them at a selected length, at least said extensible weight bearing members being connected to said belt support structure and said weight bearng anchors by pivotal connections enabling their adjustment by pivoting at least about an axis parallel to said stringers, and at least one additional extensible rigid member extending diagonally between a connection adjacent the lower end of one of said extensible load bearing members and a point of connection on one of said stringers.

4,524,865

UNIVERSAL PLATFORM CHAIN

Edward L. von Hofen, 5449 Willow, Vermilion, Ohio 44089

Filed Nov. 6, 1981, Ser. No. 318,934

Int. Cl.³ B65G *17/06*

U.S. Cl. 198—852 **2 Claims**

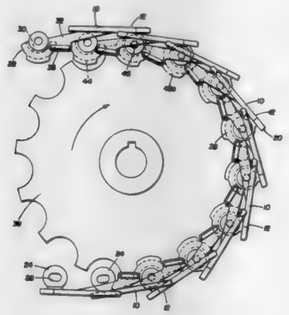
1. A conveyor system comprising a universal chain formed from a plurality of identical links each link being one completely integrated member and having:

(a) a crescent shaped platform load bearing surface,

(b) a ball member on a side opposite said platform load bearing surface at the front edge thereof, and

(c) a hemi-spherical cap member having an inside diameter equal to the diameter of said ball member and adapted to receive said ball member, wherein said ball member of one link member is connected to the cap member of a third

successive link member, said connection being a pivot point, and wherein the distance from a pivot point to a



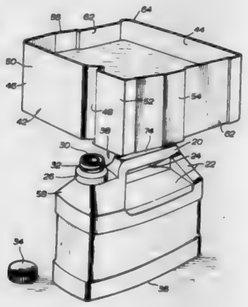
successive pivot point is twice the width of said platform load bearing surface.

4,524,866

MOTOR OIL CATCH PAN AND MOTOR OIL CHANGE KIT INCORPORATING THE SAME

Paul J. Pollacco, 3819 Burlingame Pl., Alexandria, Va. 22309

Filed Mar. 9, 1984, Ser. No. 588,052
Int. Cl.³ B65D *85/00*
U.S. Cl. 206—223 **15 Claims**



1. A do-it-yourselfer's oil catch pan, for use with an openably and reclosably capped jug of new oil sufficient to fill or at least substantially fill the engine oil reservoir of a pre-selected motor vehicle to its proper level,

said oil catch pan comprising:

a self-supporting container sized and configured to fit under a motor vehicle crankcase and having a bottom wall and a peripheral sidewall with a top opening for receiving used oil drained from the crankcase;

said bottom wall of said container having means providing a seating surface means cooperable with said jug for enabling the oil catch pan to be seated on the jug in overlying relation thereto when the jug is upright, uncapped and emptied of new oil;

said bottom wall of said container having means defining an oil drain aperture formed therethrough;

closure member for said oil drain aperture, said closure member being removably positionable in obstructing relation to said oil drain aperture to block flow of used oil through said oil drain aperture;

said oil drain aperture being constructed and arranged to register with an opening in the jug when the oil catch pan is seated on the jug in overlying relation thereto with the jug in an upright, uncapped, emptied of new oil disposition, for enabling used oil which has been drained into the oil catch pan from the pre-selected motor vehicle through said top opening to be transferred from the oil catch pan to the jug upon manipulation of said closure member to unblock said oil drain aperture, thereby making it unnecessary to pour the used oil out of the oil catch pan through said top opening by tilting or tipping the oil catch pan, so that the used oil may be drained from the oil catch pan into the jug and the jug re-capped for transporting the used oil to a disposal site without spillage;

said closure member comprising:

a seal,

means adhering the seal perimetrically to said container bottom wall circumferentially of said oil drain aperture to be irreversibly pulled away or broken for opening said oil drain aperture, and

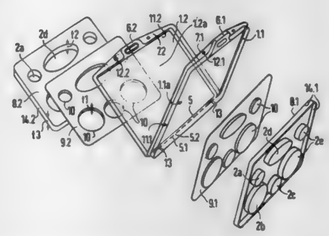
means associable with said seal and actuable without necessitating the user's dipping into the used oil for operatively destroying said seal in relation to said oil drain aperture, so that the used oil may be drained from the oil catch pan into the jug.

4,524,867

CASE FOR ACCOMMODATING WRITTEN MATERIAL FOR PRESENTATION PURPOSES

Hans-Jörg Klein, Möhrendorf, and Herbert Böhmer, Buckenhof, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Continuation of Ser. No. 280,091, Jul. 2, 1981, abandoned. This application Dec. 27, 1983, Ser. No. 565,517
Int. Cl.³ B65D *25/14, 57/00*
U.S. Cl. 206—232 **4 Claims**



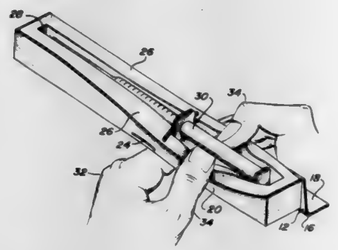
1. Case for accommodating written material for presentation, comprising two molded similar case halves formed of thin clear plastic material, said case halves each having a case wall with an inner space formed therein, a folding hinge connecting said case halves to each other for folding said halves open and closed, at least one removable and reusable transparent plastic wall inserted in each respective case half, said inserted walls each having receptacles with substantially planar surfaces molded therein for the written material, at least one opaque plastic wall fixed in place in each respective case half, said fixed walls having shapes with substantially planar surfaces molded therein each being receivable in a respective one of said molded receptacles in assembled condition of the case, the shapes and said molded receptacles having predetermined depths and other dimensions, the shapes having less depth than said molded receptacles defining a space between said surfaces for receiving the written material, and said other dimensions of the shapes and said other dimensions of said molded receptacles being substantially equal, a recessed grip formed in each respective case half, said grips being mutually aligned in closed condition of the case, and reinforcement ribs connected to said grips, said inserted walls being surrounded by a rim having a depth substantially corresponding to the depth of said receptacles forming guiding and spacing means for fitting said inserted walls into said inner spaces.

4,524,868

CARRYING CASE FOR PRE-DRAWN SYRINGE

Damon S. Buckley, and Marlene E. Buckley, both of R.D. 3, Box 3025, Stroudsburg, Pa. 18360

Filed Feb. 26, 1981, Ser. No. 238,375
Int. Cl.³ B65D *85/10*
U.S. Cl. 206—364 **2 Claims**



1. A carrying case for a pre-drawn syringe comprising:

(a) a generally parallelpipedal casing, said casing being made of deformable, pliant, resilient material of construction;

(b) an integral cover hingedly attached to said casing, said cover including a mid sction fold to provide an overlap portion for one face of said casing, said cover also including means to releasably secure said cover to said casing; and,

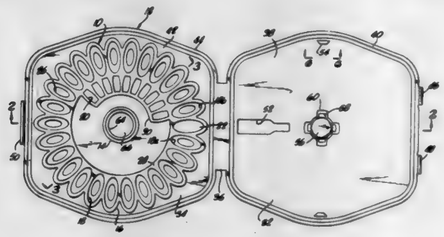
(c) a liner fitted within said casing, said liner contoured to fill said casing, at least one shaped aperture generally conforming in cross section to that of a drawn syringe to permit a syringe to be sunken therein, said aperture's distance from said casing being generally only wide enough to allow a user's thumb to span the distance, said liner consisting of a cellular, elastic material of construction so that a syringe resting in said aperture, snugly held, may be removed therefrom by a gentle simultaneously manual flexing of said casing and a deformation of said liner to separate said syringe from said liner to thereby expose and make prominent a portion of the syringe to facilitate its grasping and removal thereof by the user.

4,524,869

PILL DISPENSER AND METHOD OF LOADING

N. Joseph Nader, 1601 Highland Oaks Dr., Arcadia, Calif. 91006

Filed Jan. 17, 1984, Ser. No. 572,157
Int. Cl.³ B65D *3/28, 83/04, 85/56*
U.S. Cl. 206—358 **10 Claims**



1. A pill dispenser for a prescribed dosage schedule comprising

a circular cartridge having a hub, first cavities about said hub at first radially equal locations therefrom, second cavities about said hub at second radially equal locations therefrom, said first and second cavities being open to one side of said cartridge, each said second cavity being aligned with and immediately adjacent said first cavity, the numbers of each said first and second cavities being preselected for the prescribed dosage schedule, and a distinguishable position at a said first radial location;

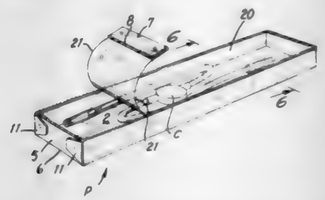
a housing having a base and a mounting means for rotatably mounting said hub on said base with said first and second cavities of said circular cartridge opening toward said base, said base including a hole therethrough positioned adjacent said first radial location and said second radial location for selective communication with said first and second cavities.

4,524,870

VISIBLE AND EASY ACCESSIBLE PACKAGE

Harry I. Roccaforte, Western Springs, and Robert A. Christie, Mundelein, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Sep. 6, 1983, Ser. No. 529,521
Int. Cl.³ B65D *65/28*
U.S. Cl. 206—608 **1 Claim**



1. A generally rectangular tray formed from a single blank of paperboard material, said tray being adapted to securely enclose an article stored therein yet enable easy and efficient access thereto, said tray comprising:

a rectangular bottom wall having pairs of opposed sides and ends;

a pair of rectangular upstanding side walls foldably connected respectively to the opposite sides of said bottom wall each said side wall comprising a rectangular side wall panel articulated to said bottom wall and a side flap articulated to the respective side wall panel along a fold line extending generally parallel to the bottom wall, said side flaps being foldably disposed in face-to-face contact with an outer surface of the respective side walls and adhesively secured thereto;

a pair of rectangular upstanding end walls foldably connected to the opposed ends of said bottom wall, each said end wall comprising a rectangular end wall panel articulated to said bottom wall and connected to the side walls, each said end wall further comprising an end flap articulated to said end wall panel along a cut fold line extending parallel to the bottom wall, each of said end flaps being folded into face-to-face contact with an outer surface of the respective end wall panel and adhesively secured thereto with a light bond adhesive which permits the respective end flap to be peeled away from the corresponding end wall panel; and

a transparent plastic cover sheet extending between the articulations of said side and end flaps to the respective side and end wall panels, said cover sheet further including edge portions overlying outer surfaces of each of said side and end flaps and adhesively secured thereto, said cover sheet including a pair of rupturable cut score lines substantailly overlying and extending substantially entirely along the articulations between the respective side wall panels and side flaps to define a medial portion of said cover sheet intermediate said rupturable cut score lines, said medial portion of said cover sheet being separable from the adjacent edge portions thereof, whereby removal of either of said end flaps from its respective end wall panel enables separation of said medial portion from

the remainder of said cover sheet to provide access to material stored in said tray.

4,524,871

RECEPTACLE FOR CONTAINING DISPOSABLE CLOTHS AND A STICK-LIKE CONTAINER

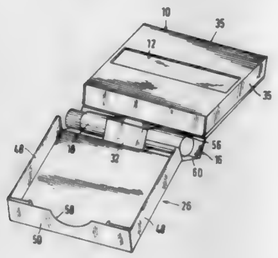
Max H. Klinger, Obere Ringstrasse 54, 4901 Hiddenhausen, Fed. Rep. of Germany

Filed Jul. 20, 1983, Ser. No. 515,512

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1982, 8220848[U]

Int. Cl.³ B65D *37/00*

U.S. Cl. 206—233 **4 Claims**



1. A receptacle for containing disposable cloths and a tubular container, comprising:

a parallelepipedic box for containing disposable cloths, having a base and an upper surface with an opening;

a lid having sidewalls for closing the box;

a connecting member adjacent to a first sidewall of said box, hingedly connecting the base of said box to said lid;

a space for accepting a tubular container, defined by at least said first sidewall and said connecting member, said space having end openings closable by portions of the sidewalls of said lid; and

means for retaining a tubular container in said space, comprising a forced-in central segment of said connecting member.

4,524,872

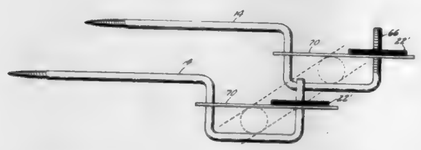
UNIVERSAL LOCKING DEVICE

Lewis W. Chamberlain, 79 Abbey Rd., East Hampton, Conn. 06424

Continuation-in-part of Ser. No. 248,953, Mar. 30, 1981, abandoned. This application Feb. 15, 1983, Ser. No. 466,379

Int. Cl.³ E05B *73/00*

U.S. Cl. 211—4 **4 Claims**



1. A combination support and securing device comprising:

elongated bar means, said bar means having a first linear portion which defines an axis and a second generally U-shaped portion extending from a first end of said linear portion, said U-shaped portion having a pair of spacially displaced legs with axes which are substantially perpendicular to said axis, a generally U-shaped object receiving channel being defined between said legs, a first end of a first of said legs being integral with the said first end of said linear portion, the second of said legs being provided with a threaded section extending from the free end thereof;

a flat plate, said plate being provided with a plurality of apertures, a pair of said apertures being spacially displaced and sized whereby said plate will loosely engage both of said legs of said U-shaped portion of said bar means, said plate having at least a third aperture located between an edge thereof and one of said apertures of said pair, said plate being movable along said legs of said bar means U-shaped portion to define an adjustable retaining member which bridges said object receiving channel; and

lock nut means, said lock nut means being provided with a central aperture, said central aperture having a thread which is complementary to the thread on said section of said bar means U-shaped portion second leg whereby said lock nut means may be installed on said bar means, said lock nut means further being provided with at least a first aperture positioned between said central aperture and the periphery of said lock nut means, said second aperture being alignable with said third aperture of said plate whereby the shackle of a lock may be passed through said aligned apertures; and

means for affixing said bar means to a support structure.

4,524,873

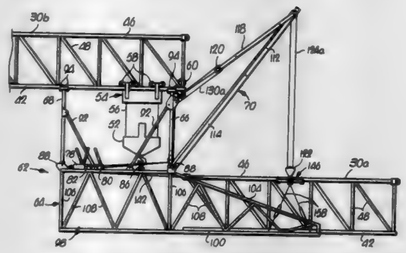
METHOD AND APPARATUS FOR DISASSEMBLING SECTIONAL BOOM OF TOWER CRANE AT TERMINAL HEIGHTS

Joseph L. McGowan, Harpenden, England, assignor to The Marley Cooling Tower Company, Mission, Kans.

Filed Nov. 26, 1982, Ser. No. 444,743

Int. Cl.³ B66C *17/04*

U.S. Cl. 212—177 **7 Claims**



1. In apparatus for disassembling a tower crane boom having an outermost boom section, at least one inboard boom section, means detachably interconnecting said boom sections, and a hoisting assembly suspended from said boom, the combination therewith of:

an elongated load bearing framework;

means cooperable with said hoisting assembly for shiftably coupling said framework to said inboard boom section for movement along the length thereof with the longitudinal length of the framework extending generally horizontally;

jib means on said framework for transferring said outermost boom section to said framework for support thereby when the section is detached from the boom for supporting of said outermost section by said framework; and

means on said framework for shifting said outermost section substantially horizontally relative to said framework to a position wherein the center of gravity of said outermost section is generally vertically aligned with the center of support of said framework by said hoisting assembly from said inboard boom section.

4,524,874

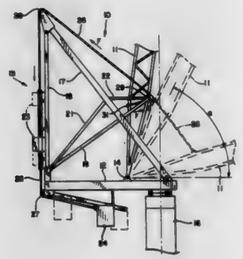
TOWER CRANE WITH OVERBOOMING PROTECTION

Klaas E. ten Broeke, Darien, Conn., and Manfred R. Kohler, Somers, N.Y., assignors to American Pecco Corporation, Milwood, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,248

Int. Cl.³ B66C *23/72*

U.S. Cl. 212—197 **5 Claims**



1. A crane having a counterweighted luffing boom with protection against overbooming, as by excessive wind force when the boom is at a steep angle close to vertical, comprising:

a supporting structure;

a luffing boom pivotally mounted on the supporting structure at a pivot point;

a series of sheaves mounted on the supporting structure;

at least one counterweight and a line connected to the counterweight and over the sheaves to a connection with the boom at a point spaced from the boom's pivot point;

a portion of the supporting structure supporting one of the sheaves adjacent to but spaced sideward of the path of travel of the luffing boom and adjacent to the path of travel of the connection point of the line on the boom, said one sheave being the first sheave over which the line travels from the connection point on the boom and spaced forward of the vertical boom position, such that the line and the counterweight pull on the boom tending to swing it upward in its path of travel until the line connection point on the boom passes said one sheave, after which the boom is oriented steeply and close to vertical and the line loops further around said one sheave and the line and counterweight then pull on the boom in the opposite direction, tending to retard further upward travel.

4,524,875

DERRICK CRANE

John R. Jamieson, Largs, Scotland, assignor to Vickers p.l.c., London, England

Filed Sep. 28, 1982, Ser. No. 425,876

Claims priority, application United Kingdom, Oct. 15, 1981, 8131083

Int. Cl.³ B66C *23/16*

U.S. Cl. 212—239 **8 Claims**

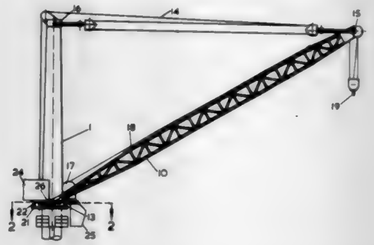
1. A derrick crane of the type having

a jib pivotally connected by way of a horizontal pivot to a movable member of a bearing device supported by a pedestal,

luffing gear arranged to raise and lower the jib about the horizontal pivot, hoisting gear arranged to raise and lower a load suspended from the jib and slewing gear arranged to swing the jib around the pedestal,

in which the pedestal is extended above the bearing device to form a mast and luffing cables of the luffing gear are connected between the top of the mast and the upper end of the jib,

and the bearing device comprises inner and outer bearing rings formed with registering part-circular annular grooves, a single ring of free-running balls which are a running fit in said annular grooves in said inner and outer bearing rings of which the inner bearing ring is connected to the mast, and the bearing device is supporting said jib vertically and is so positioned vertically on the mast with respect to the horizontal pivot by which the jib is connected to the outer bearing ring that the line of thrust of the jib through said horizontal pivot passes within the



pitch circle diameter of said ring of balls during normal use whereby the vertical and horizontal component forces of the force exerted by said jib produce moments about the bearing centerline moment axis which oppose one another.

4,524,876

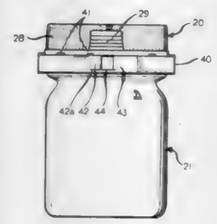
TAMPER INDICATING CHILD-RESISTANT PACKAGE

Maximillian Kusz, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 23, 1984, Ser. No. 643,590

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—224 **12 Claims**



1. A tamper indicating child-resistant package comprising

a container having a body and a neck,

said neck having at least one retaining bead with a notch therein and

a closure comprising a base wall and a peripheral wall,

said peripheral wall having at least one pair of locking lugs generally diameterically opposite to one another such that the closure can be rotated to orient one of the locking lugs with the notch on the container permitting the closure to be removed by an upward force in the area of the notch to produce a tipping movement,

said peripheral wall of said closure having an axially extending band connected to the lower end of the peripheral wall by a weakened line,

said band having an inner regular polygonal surface, said container having a portion at the area of juncture of the neck and body with an external polygonal surfaces complementary to the polygonal configuration on the interior of the band such that the closure must be applied with the lug in unoriented position to the notch by an axial movement with the lug snapping over the retaining bead, bringing the polygonal configuration of the band into engagement with the polygonal configuration of the shoulder on

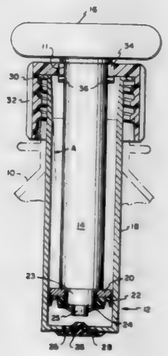
the container such that the closure cannot be rotated without breaking the band along the weakened line.

4,524,877

PRESSURIZING AND CLOSURE APPARATUS FOR CARBONATED BEVERAGE CONTAINERS

Willard A. Saxby, 285 Old Farm Dr., Newington, Conn. 06111, and Robert D. Pikula, 116 Johnny Cake La., Glastonbury, Conn. 06033

Filed Jan. 9, 1984, Ser. No. 569,569
Int. Cl.[3] B65B *31/04*
U.S. Cl. 215—228 **6 Claims**



1. A pressurizing and closure apparatus for a carbonated beverage container comprising:
(a) a hollow cylinder having one open end,
(b) a threaded cap having a central opening, and abuts the open end of said cylinder,
(c) a piston mounted in said cylinder with one end of said piston extending through the central opening in said cap,
(d) a piston grip at the end of the piston extending outside of said cylinder,
(e) a seal mounted on the opposite end of said piston for sealing the piston against the inner walls of said cylinder,
(f) one or more ports located in the closed end of said cylinder,
(g) valve means mounted in the closed end of said cylinder which allows air to be displaced through said ports from said cylinder on the downstroke of the piston, and seals the ports on the upstroke of said piston,
(h) locking means on said piston for locking the piston in the downstroke position when the apparatus is stored within a carbonated beverage container.

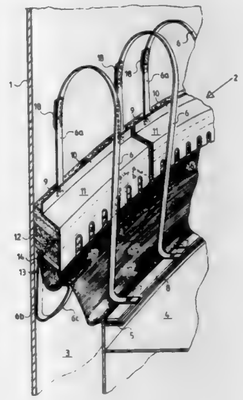
4,524,878

ASSEMBLY FOR SEALING AN ANNULAR GAP BETWEEN THE WALL OF A LARGE VESSEL AND A FLOATING COVER

Heinrich Imhof, Offenbach am Main, Fed. Rep. of Germany, assignor to Ingenieurbüro Imhof GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed Mar. 30, 1984, Ser. No. 595,233
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1983, 3313564
Int. Cl.[3] B65D *87/207*
U.S. Cl. 220—224 **17 Claims**

1. A sealing assembly for a large tank having a generally vertical tank wall and a movable floating cover for sealing an annular gap therebetween, comprising:
an annular outer sealing element adapted to be pressed against said tank vertical wall in sliding sealing engagement therewith;
a plurality of spring elements fastened at the circumference of said floating cover at uniform distances adjacent each other, said spring elements spanning said annular gap and operating at the free ends thereof to press by spring tension said outer sealing element against said vertical walls;
a sealing blanket which extends completely around said annular gap between said outer sealing element and said floating cover to cover said annular gap;
said spring elements being comprised of U-shaped spring stirrups produced from narrow strips and being fastened with a web end at the outer border of said floating cover;



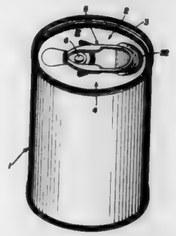
said spring stirrups including a free spring web with whose end said outer sealing element is rigidly connected, said free spring web being supported with said sealing element and a second contact point at said tank wall;
said contact point being spaced away from said sealing element in the vertical direction so that during all movements of said floating cover, the reaction forces of said tank wall acting at said contact points of said free spring webs constantly hold said free spring webs in a constant upright position.

4,524,879

CAN END POUR SPOUT AND PULL TAB CONSTRUCTION

Danny L. Fundom, and William A. Kirk, both of Massillon, Ohio, assignors to Van Dorn Company, Massillon, Ohio

Filed Jun. 18, 1984, Ser. No. 621,541
Int. Cl.[3] B65D *17/36*
U.S. Cl. 220—273 **14 Claims**



1. In a steel can end of a type having a seam flange adapted to be connected by seam means to a can body, in which said can end has a recessed corner located below said seam flange with a flat circular panel extending inward from said recessed corner, in which a score line is formed in said panel defining a metal area to be torn from said panel by an aluminum pull tab having a ring portion and a nose porrtion, and in which said nose portion is riveted to said metal area so that pulling of the pull tab tears said metal area from the panel to form a pouring opening, wherein the improvement comprises:
(a) a steel can end having an endless score line formed in said panel, in which said score line has a generally pear shape extending radially from a small rounded inner end located adjacent the center of the panel to a larger rounded outer end located adjacent the periphery of the panel, and has outwardly diverging straight sides connecting said inner and outer rounded ends to define the pouring opening to be formed in the can end panel;
(b) the nose portion of said aluminum pull tab riveted to said panel metal area has flat top and bottom panels and an enlarged rivet opening formed in said nose bottom panel, the nose bottom panel being integrally connected laterally at each side of said rivet opening through spaced inner nose shoulder walls directly with said nose top panel, said nose top and bottom panels and spaced shoulder walls converging to form a stepped tip, and said integral lateral connections of the nose bottom panel with the nose top panel strengthening and stiffening said flat nose bottom panel against bending between said rivet opening and said stepped tip when the pull tab is pulled to form a pouring opening in said can end panel;
(c) the can end panel metal area within the small rounded inner end of said pear-shaped endless score line is formed with concentric integral rivet means which extends through said enlarged rivet opening in said flat nose bottom panel and is riveted to said flat nose bottom panel, whereby the stiffened flat nose bottom panel is held at all times in contact with said can end panel metal area within said score line; and
(d) the ring portion of said pull tab integral with said nose portion has weakened connection with said nose portion to permit ready bending of the pull tab at said weakened connection when the pull tab is pulled to form a pouring opening in said can end panel;
(e) whereby the metal area within the endless score line may be completely torn from the can end by a person holding the can in one hand and grasping the tab pull ring portion with a finger or thumb of the other hand and pulling the tab ring portion upward and forward toward the person to first bend the pull tab at said weakened connection and then to initially rupture the score line behind and around the rivet means, accompanied by lever action of the contiguous pull tab nose flat bottom panel and contacted can end metal area within the score line applied by pull tab nose tip engagement with said metal area to form a bend in said metal area in front of said nose tip while tearing along the score line to such bend, and then by continuing forward pulling, completely tearing the metal area from the can end panel along the remainder of the score line to the rounded outer end of the score line to form a pouring opening.

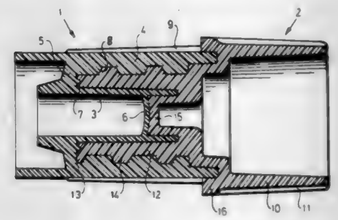
4,524,880

CLOSURE DEVICE

Carl O. Danielson, Upsala; Bo B. Gustafsson, Alunda; Göte E. Richardsson, and Karl-Erik Lundh, both of Gislaved, all of Sweden, assignors to Pharmacia AB, Upsala, Sweden

Filed Jul. 6, 1984, Ser. No. 628,591
Claims priority, application Sweden, Jul. 29, 1983, 8304207
Int. Cl.[3] A61J *1/00*
U.S. Cl. 220—288 **9 Claims**

1. A closure device for fluid-tight closure of an opening of a fluid container or fluid conduit, comprising a casing part (1) for permanent connection to said opening, and a cap part (2) which is detachably connectable to said casing part, characterized in that said casing and cap parts (1,2) are molded in the same mold, one partially against the other, from two different thermoplastic materials having different melting points so as to permit relative movement of the mutually contacting surface portions thereof, and in that said casing part (1) comprises an internal sleeve portion (3), which communicates with said opening, and an external sleeve portion (4), which surrounds the internal sleeve portion (3) at a distance so as to form a substantially cylindrical hollow space therebetween, said cap part (2) comprising a tubular portion (12) dimensioned to sealingly intrude into said substantially cylindrical hollow



space, and coupling means (14,8) being provided for establishing a releasable mechanical coupling between said tubular portion (12) and at least one of said internal and external sleeve portions (3,4).

4,524,881

CAP FOR A TANK

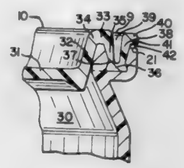
Dietmar Mierzwa, Korb, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Aug. 14, 1984, Ser. No. 640,697
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1983, 8324849[U]
Int. Cl.[3] B65D *51/16*
U.S. Cl. 220—374 **14 Claims**

1. A cap for a tank such as the fuel tank of a motor-driven chain saw or the like, the tank having a threaded opening with a sealing surface about the periphery thereof, the cap comprising:
a grip housing defining a central axis and having a thread formed thereon for threadably engaging the threaded opening of the tank;
a seal mounted on the grip housing in a plane transverse to said central axis so as to be pressed tightly to the sealing surface when said grip housing is rotated about its central axis in threaded engagement with the threaded opening of the tank; and,
a ventilating arrangement for conducting air into and out of the tank when the cap is mounted thereon, the ventilating arrangement including:
bore means defining a longitudinal axis and located in said grip housing so as to cause said longitudinal axis to be transverse to said central axis, said bore means having a wall surface disposed in spaced relationship to said longitudinal axis;
a threaded member having a longitudinal axis and screwed into said bore means so as to cause said last-mentioned axis to be coincident with the longitudinal axis of said bore means; and,
said wall surface and the thread of said threaded member conjointly defining a helical channel communicating with

the interior of the tank when the cap is mounted thereon, whereby air can flow into or out of the interior of the tank.

4,524,882
MOLDED CONTAINER AND CLOSURE
John L. Buc, 144 N. Third Ave., Des Plaines, Ill. 60016
Filed Jun. 20, 1983, Ser. No. 505,799
Int. Cl.³ B64D *41/16*
U.S. Cl. 220—306 **23 Claims**



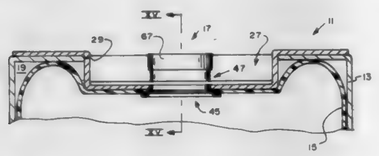
1. In a plastic container having a substantially cylindrical wall portion, a bottom member sealingly closing a lower end of said cylindrical wall portion of said container and an upper end of said cylindrical wall portion being open and defined by a closure receiving and sealing rim system, said rim system comprising:

a continuous annular resilient plastic bridge member formed integral with and extending around said upper end of said cylindrical wall;

an outer continuous annular resilient plastic rim formed integral with said bridge member and extending axially upwardly from said bridge member;

an inner discontinuous annular resilient plastic rim molded integral with said bridge member and extending axially upwardly from said bridge member, said inner rim being concentric with and radially inwardly spaced from said outer rim whereby said bridge member, said continuous outer rim and said discontinuous inner rim form a closure receiving and sealing container end which remains substantially radially annular and axially rigid.

4,524,883
STACKABLE CONTAINER
Walter R. Herring, Memphis, Tenn., assignor to Brockway, Inc., Richmond, Va.
Filed Jun. 27, 1983, Ser. No. 508,035
Int. Cl.³ B65D *21/00, 90/04*
U.S. Cl. 220—462 **14 Claims**



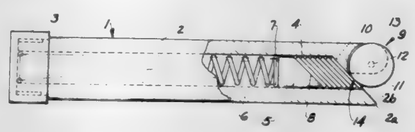
1. A container comprising:

(a) a substantially rigid box member having a top surface, having a hollow interior and having an aperture through said top surface;

(b) a flexible liner member for being positioned within said hollow interior of said box member and having a hollow interior and having an aperture therethrough; and

(c) attachment means for attaching said box member and said liner member to one another, said attachment means being fixed in the vertical plane with respect to said box member, said attachment means including a first lock means and a second lock means that snap together to secure said attachment means to said box member and to clamp said liner member therebetween, said first lock means including a tube member for extending through said aperture in said box member and said aperture in said liner member, said tube member of said first lock means having a first end for being positioned within said interior of said liner member and having a second end for being positioned above said aperture through said box member, said first end of said tube member of said first lock means including an outwardly extending portion for preventing said tube member of said first lock means from freely passing upwardly through said aperture through said box member, said second lock means coacting with said first lock means to lock said tube member of said first lock means to said box member and said liner member, said second lock means including a tube member having a first end and a second end and including an outwardly extending portion for preventing said second lock means from freely passing downwardly through said aperture through said lock member and for coacting with said outwardly extending portion of said first end of said tube member of said first lock means to position said attachment means relative to said box member to prevent vertical movement of said attachment means with respect to said box member, said second end of said tube member of said first lock means having an outwardly extending portion, said tube member of said second lock means and said liner member being secured between said outwardly extending portion of said first end of said tube member of said first lock means and said outwardly extending portion of said second end of said tube member of said first lock means, said first end of said tube member of said first lock means having a wedge portion and said first end of said tube member of said second lock means having a bevel portion for coacting with said wedge portion of said first lock means to securely hold said liner member therebetween.

4,524,884
BINGO COVER DISPENSER
William C. Myers, Box 331, Salt Fork Rd., Lawrenceburg, Ind. 47025
Filed Aug. 5, 1982, Ser. No. 405,331
Int. Cl.³ B65H *1/12*
U.S. Cl. 221—231 **10 Claims**



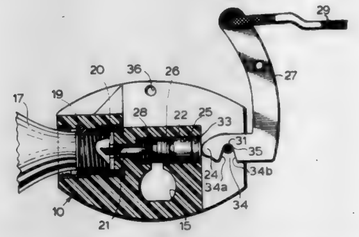
1. A device for dispensing generally flat circular covers used in playing the game of bingo comprising:

a magazine having an elongated tubular body of substantially oval cross sectional shape wherein the shorter dimension of said oval shape is less than the diameter of a cover, said magazine having one end configured to load a stack of covers into the magazine so that the covers rest therewithin in shingled relationship at inclined angles with respect to the longitudinal axis of the magazine with their outer peripheries substantially in contact with the inner wall of said tubular body, and an opening in the opposite end of the magazine for dispensing covers therefrom one at a time;

a cap removably attached to said loading end of the body; and

a manually operable wheel rotatably mounted on the dispensing end of the magazine adjacent said opening such that the outer surface of the wheel lies in abutting contact with the inclined surface of a cover presented at said dispensing opening, said presented cover being slidably retained between said wheel and the next in-line cover, said wheel when rotated operating to frictionally engage said presented cover and slide it outwardly at an oblique angle with respect to the longitudinal axis of the magazine from the stack of covers contained within the magazine until the presented cover clears said magazine, said dispensing device being configured so that said body may be grasped in one hand and said wheel operated by a rolling motion of the thumb of the same hand, said wheel being dimensioned so that said presented cover may be dispensed and completely clear the magazine with a single rolling motion of the thumb.

4,524,885
BREAK-AWAY INFLATOR
Harry L. Zimmerly, 9641 105th Ave. N., Largo, Fla. 33543
Filed Jan. 11, 1983, Ser. No. 457,241
Int. Cl.³ B63C *9/24*
U.S. Cl. 222—5 **12 Claims**



1. In an inflator for a gas inflatable article, the inflator having a body adapted to be mounted upon and sealed to the inflatable article, means for mounting a compressed gas-containing capsule upon the body and sealing it thereto, and manually operated capsule piercing means on the body including a piercing pin selectively movable forwardly toward the capsule to cause the forward end of the piercing pin to pierce the capsule and thus to release gas therefrom to flow into the inflatable article, said last named means including a cam having an active cam surface which gradually increases in radius from a low point to a high point, a pivot pin on the body, means on the cam for rotatably mounting it upon the pivot pin, resilient means constantly urging the piercing pin rearwardly so that its rear end engages and follows the cam, and a cam rotating lever attached at a first end to the cam and having a second, outer free end, the improvement wherein the means on the cam for rotatably mounting it upon the pivot pin has a seat receiving the pivot pin, said seat having a root in which the pivot pin is received when the cam and lever are in their ready at-rest position, and an open-ended passage in the cam extending generally radially outwardly from the seat therein, said passage being so disposed relative to the high point of the cam as to afford the free escape of the cam from the body of the inflator in a direction away from the pivot pin when the cam has been turned in the capsule piercing direction from its at-rest position suficiently for the piercing of the capsule to have been accomplished.

4,524,886
APPARATUS AND METHOD FOR IMPROVING THE ACCURACY OF A LOSS-IN-WEIGHT FEEDING SYSTEM
David H. Wilson, and James M. Loe, both of Scottsdale, Ariz., assignors to K-Tron International, Inc., Scottsdale, Ariz.
Filed Jan. 28, 1982, Ser. No. 343,143
Int. Cl.³ G01G *11/08*
U.S. Cl. 222—58 **9 Claims**

1. In a material feed system wherein material is discharged from a storage device and wherein material is added to the storage device for refill, apparatus comprising:

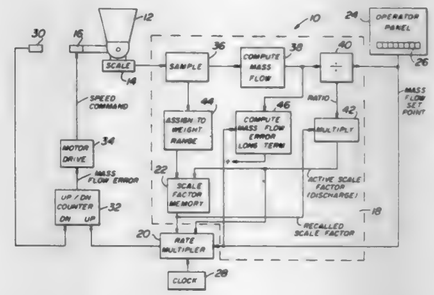
(a) means for sensing the weight of material in the storage device;

(b) a memory provided with storage locations each of which corresponds to one of a number of discrete weight increments, each weight increment being a predetermined fraction of the range of weight of material capable of being stored in the storage device;

(c) means for detecting whether material is being added to said storage device for refill;

(d) means for computing an active scale factor representative of the density of material being discharged from the storage device for each of said weight increments when no material is being added to refill the storage device;

(e) means for storing said active scale factor at the storage location corresponding to the weight increment within which the sensed material weight falls;



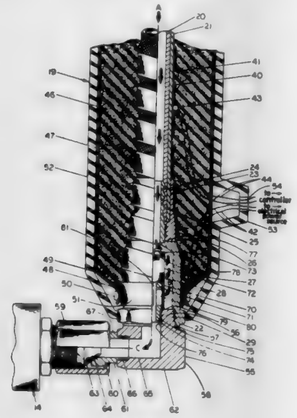
(f) means for recalling the stored active scale factor from the storage location in memory corresponding to the weight increment within which the sensed material weight falls during the time that material is being added to refill the storage device; and

(g) means responsive to the computed active scale factor for automatically varying the flow of material being discharged from the storage device when material is not being added to refill the storage device and responsive to said recalled active scale factor for varying the flow of material discharged from said storage device when material is being added to refill the storage device.

4,524,887
FILTER FOR ADHESIVE APPLICATOR
Eric H. Cocks, Ft. Lauderdale, Fla., assignor to Spraymation, Inc., Ft. Lauderdale, Fla.
Filed Dec. 22, 1982, Ser. No. 452,398
Int. Cl.³ B67D *5/62;* **B01D** *23/00*
U.S. Cl. 222—146.5 **10 Claims**

1. A filter arrangement adapted for use with an adhesive applicator and a heated adhesive supply line, said applicator being in flow communication with said supply line, comprising a housing located within the outlet end of said supply line, said housing having a flow channel therein permanently flow connected at a first end to said supply line and removably connected at a second end to said adhesive applicator, filter means within said housing for filtering the adhesive flowing through

said housing, and heating means comprising an electrical heater positioned around the outer surface of said housing for



heating said adhesive flowing through said filter means to maintain said adhesive in a liquid state.

4,524,888

DISPENSER

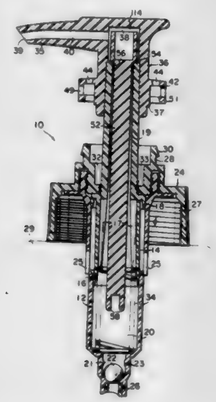
Tetsuya Tada, Tokyo, Japan, assignor to Canyon Corporation, Tokyo, Japan

Filed Jul. 26, 1982, Ser. No. 401,902

Claims priority, application Japan, Jul. 30, 1981, 56-119816; Jul. 31, 1981, 56-120097; Jul. 31, 1981, 56-120098; Jan. 13, 1982, 57-3684; Jan. 18, 1982, 57-5726; Feb. 12, 1982, 57-20794; Feb. 18, 1982, 57-25142; Apr. 6, 1982, 57-56870; Apr. 27, 1982, 57-70713

Int. Cl.³ B67B *5/00*

U.S. Cl. 222—153 **5 Claims**



1. A dispenser having a cap, a head, a piston attached to the head and a cylinder attached to the cap, and which is constructed so that it may be fitted onto a vessel through the cap and so that it may, in accordance with the sliding movement of the piston, suck up a liquid in the vessel into the cylinder through a primary valve and pressurize the liquid to cause the same to issue from the dispenser through a secondary valve, the dispenser further comprising:

child-proofing means including a protruded portion formed on the cap and having an engagement groove, and an engagement projection formed on the inner wall surface of the head and, by being rotated with the piston located at its depressed position, engaged with said engagement groove of said protruded portion to lock the piston made integral with the head to its depressed position;

one of an engagement projection and an engagement groove formed on or in, respectively, the outer wall surface of the cap;

the other of an engagement groove and an engagement projection formed in or on, respectively, the head so that it may be engaged with said engagement projection or engagement groove of the cap; and

means for preventing the rotation and rising movement of the head, said preventing means being formed on a virgin seal removably disposed between the cap and the head;

said preventing means for preventing the rotation and rising movement of the head including first engagement means engaged, by being moved in the direction of depressing the piston, with said engagement projection or engagement groove of the cap to prevent at least the rotation of the virgin seal relative to the cap, and second engagement means engaged, by being depressed in the direction of depressing the piston, with said engagement projection or engagement groove of the head to prevent at least the rotation of the head relative to the virgin seal.

4,524,889

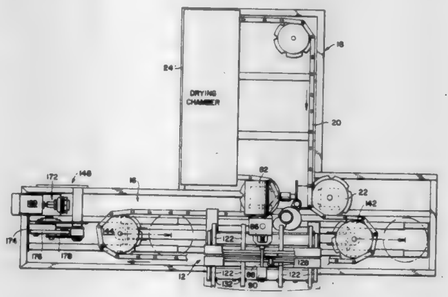
HOSIERY PROCESSING METHOD

John W. Glaze, Jr., Charlotte, N.C., assignor to Intech Corporation, Charlotte, N.C.

Filed Apr. 28, 1983, Ser. No. 489,313

Int. Cl.³ D06C *5/00*

U.S. Cl. 223—76 **19 Claims**



1. A method of setting synthetic fibers of hosiery within a low-volume flat steam chamber comprising the steps of:

(a) placing an article of hosiery made of synthetic fiber on a substantially flat form;

(b) moving the form and article into a flat steam chamber;

(c) sealing the periphery of the steam chamber to define an internal operative chamber with a volume less than 2.0 cubic feet;

(d) purging substantially all of the ambient air from the operative chamber in less than one second and setting the fibers of the article of hosiery in less than five seconds after substantially all of the ambient air is purged from the operative chamber by:

(i) injecting steam into said operative chamber at a line pressure above 50 psi;

(ii) holding the steam in the operative chamber until the fibers of the article of hosiery are set;

(e) opening the steam chamber;

(f) removing the form and the article of hosiery from the steam chamber.

4,524,890

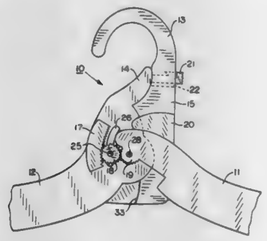
COLLAPSIBLE GARMENT HANGER

John D. Fulton, 117 Becker Ave., Rochelle Park, N.J. 07662

Filed Feb. 3, 1984, Ser. No. 576,551

Int. Cl.³ A47J *51/10*

U.S. Cl. 223—94 **2 Claims**



1. A collapsible garment hanger comprising: a support hook, a pair of pivotable arms, an axle, both of said arms connected to said axle for pivoting therearound independent of said support hook, a first of said pair of arms including a rack and the second of said arms including pinion drive means, a pinion, said pinion mounted for rotation about a stationary axle, said stationary axle extending through an arcuate slot in said first of said pair of arms, said pinion meshing with said rack and said pinion drive means for movement relative to said rack, said first arm including an extension lever, said lever having a latch means and said support hook having a neck with an opening therethrough for reception of said latch means to maintain said arms in an extended position and upon release of said latch means from the neck opening, the garment hanger being collapsible whereby said arms can overlap for compact storage.

4,524,891

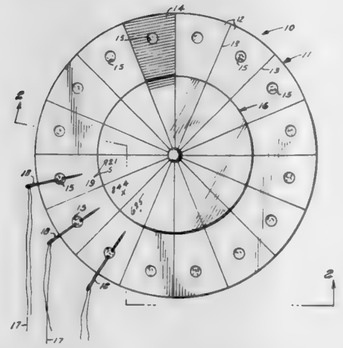
NEEDLE KEEPER DEVICE

Rosemary A. Silva, 4400 Turf, El Paso, Tex. 79936

Filed Dec. 1, 1983, Ser. No. 557,195

Int. Cl.³ A41H *31/00*

U.S. Cl. 223—109 R **1 Claim**



1. A needle keeper device, comprising, in combination, a relatively larger circular disc made of cardboard, and a relatively smaller circular, disposable paper disc, said discs being fastened concentrically together by a brad through the centers thereof, a plurality of equally and radially spaced segments defined upon said larger disc by means of inscribed radial lines upon the top face thereof, a single one of said segments being colored for defining a zero position of said larger disc, a circular opening through an exposed portion of each said segment, and a circular felt pad of the same diameter as said larger disc being fastened to the bottom side thereof and covering said openings; said openings being made along a circular row that is concentric with said larger disc, and a circular felt ring fastened concentrically to an underside of said larger disc, said felt ring extending across the center of each said opening, and each said opening being of a diameter whereby pressure of a person's finger against an underside of said felt ring causes only said felt pad to be pushed upwardly through said opening for receiving a needle slid upon said top face and across said opening; and an upper surface of said smaller disc being suitable for writing thereupon.

4,524,892

HANGER ATTACHMENT

Isamu Ozeki, 32, Yoshida-machi, Seki-shi, Gifu-ken, Japan

Filed Nov. 2, 1983, Ser. No. 547,856

Claims priority, application Japan, Jul. 8, 1983, 58-106680[U]

Int. Cl.³ A45F *5/02*

U.S. Cl. 224—256 **1 Claim**



1. A hanger attachment for use with an article having an attachment loop to be hung from an attachment item, comprising:

(a) a support member having a groove receptive of the attachment item therein, said groove formed by bending said support member into a U shape with an inner side panel and an outer side panel parallel thereto, said inner side panel having its lower end bent toward said outer side panel and serving as a locking portion and said outer panel having a pair of cylindrical insertion tubes formed from the opposite edges thereof; and

(b) a hook member comprising a metal round rod which is first bent into a U shape having a horizontal support shank and a pair of insertion shanks extending vertically downward from opposite ends of said horizontal support shank, and which is further bent to provide a pair of positioning shoulders at the ends of said horizontal support shank, said hook member being detachably mounted on said support member by telescoping said insertion shanks, which have enlarged portions thereon, downwardly into said cylindrical insertion tubes so that said horizontal support shank is disposed above said insertion tubes, said horizontal support shank thereby removably supporting the attachment loop of the article such that the attachment loop hangs from said horizontal support shank and is prevented from shifting sideways thereon by said positioning shoulders.

4,524,893

BICYCLE CARRIER

Stephen J. Cole, Arcata, Calif., assignor to Yakima, Inc., Arcata, Calif.

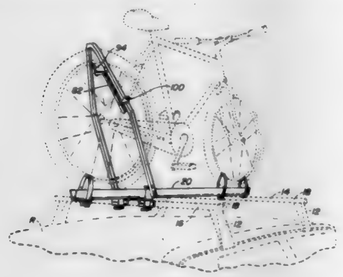
Filed Sep. 10, 1984, Ser. No. 648,950

Int. Cl.³ B60R *9/10*

U.S. Cl. 224—319 **6 Claims**

1. A car top carrier for a bicycle comprising an elongate

rigid V-shaped channel adapted to receive the bicycle tires therein, means for mounting the channel on a car top in a substantially horizontal position oriented longitudinally of the car, a generally U-shaped stanchion including a pair of depending stanchion legs that have lengths approximately the diameter of the bicycle tire, means for attaching the lower extremities of respective said stanchion legs to said channel for pivotal movement about an axis substantially transverse to the channel, the upper portions of said stanchion legs being joined to one another by a crosspiece to space the upper portion of said stanchion legs apart from one another by a distance approximating the width of a bicycle tire, a clamping lever pivotally mounted on one of said stanchion legs and having a first portion that extends inward from said stanchion leg and confronts the crosspiece across an interval greater than the radial extent



of the bicycle tire and rim, said clamping lever having a second portion rigid with the first portion and angularly oriented with respect thereto so that when the first portion is in a generally horizontal position said second portion resides substantially parallel to said stanchion leg, means for releasably locking said second portion into substantially parallel relation to said stanchion leg, and a clamping member secured to the distal region of said first portion of said lever, said clamping member including a high friction clamping piece for engaging the inner radial extremity of the bicycle rim and means for positioning the high friction member toward and away from the rim so that the rim and tire can be clamped between the crosspiece and the high friction member, said clamping member being releasable by disengaging said locking means and pivoting said clamping lever to move said clamping piece away from the bicycle rim.

4,524,894

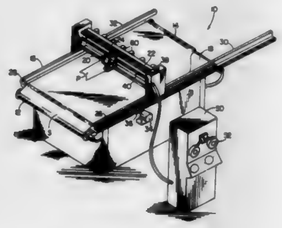
METHOD AND APPARATUS FOR FORMING PATTERN PIECES

Claude W. Leblond, Enfield, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Dec. 29, 1982, Ser. No. 454,431

Int. Cl.³ B26F *3/00*

U.S. Cl. 225—2 **3 Claims**



1. In an apparatus for cutting patterns from a pattern material while the material is held in a spread condition on a support, and a cutting tool and the material are guided relative to one another along a cutting path defined by the pattern periphery, an improved cutting tool comprising a rotatable tool support mounted a predetermined distance above the support surface for movement relative to the surface in a parallel direction, the rotatable support including a sleeve journaled by bearings for free rotation about an axis perpendicular to the material on the support surface, a cylindrical presser foot mounted coaxially within the sleeve and slidable relative to the sleeve along the perpendicular axis toward and away from the support surface; resilient means operatively connected with the cylindrical presser foot for urging the lower end of the presser foot upwardly away from the support surface and material supported thereon, a cutting bit formed from a hard cylindrical member projecting from and fixedly mounted in the lowr end of the cylindrical presser foot in perpendicular relationship with the sheet material to rotate with the foot about the axis perpendicular to the material for alignment with the cutting path, the lower end of the cylindrical member having two ground surfaces intersecting in a sharp cutting edge, which edge extends downwardly toward the support surface at an angle to the perpendicular axis from an upper point at one side of the member and the perpendicular axis to a lowermost point at the opposite side of the member and axis, the cylindrical member projecting from the foot at the lowermost point by a limited amount equal to the desired depth of cut, whereby the cutting bit is mounted relative to the perpendicular axis of rotation of the sleeve for castering movement into alignment with the cutting path when the bit is pressed into cutting relationship with the pattern material and advanced during a cutting operation, and actuator means for urging the cylindrical presser foot and the cutting bit downwardly into cutting engagement with the pattern material in opposition to the resilient means to penetrate the bit into the material up to the lower end of the presser foot during cutting.

4,524,895

HOLDER FOR PAPER ROLL WITH CENTRAL DISPENSING OF THE PAPER

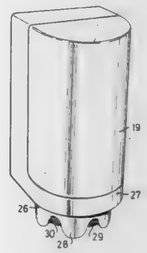
Bertil Lundén, Hovas, Sweden, assignor to Molnlycke AB, Goteborg, Sweden

Filed Mar. 15, 1983, Ser. No. 475,632

Claims priority, application Sweden, Apr. 1, 1982, 8202091

Int. Cl.³ A47K *10/36*

U.S. Cl. 225—19 **4 Claims**



1. A holder for paper rolls with central dispensing of the paper from the interior of the roll, said roll comprising a housing adapted to be mounted on a supporting surface and which has an end wall having a dispensing opening for the paper web, about which opening there is an at least substantially cylindrical tearing means for the paper web, said tearing means projecting from the end surface and having at its outer end sharp, substantially pointed tearing teeth for tearing off the paper web, the tearing means having at its outer end a plurality of spaced protective projections which extend beyond the sharp, substantially pointed tearing teeth, at least one of which teeth is disposed between adjacent protecting projections, said projections having inclined surfaces to protect the user's hand and fingers from the sharp teeth, said protective projections having substantially sine-wave-shaped free edges with a wave amplitude substantially greater than the length of the tearing teeth.

4,524,896

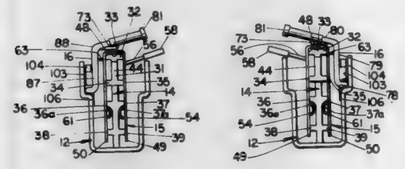
REVERSIBLE STAPLE FEEDER SHOE AND DOOR SYSTEM FOR THE MAGAZINE OF A STAPLE DRIVING TOOL

Robert F. Morrell, Jr., Cincinnati, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Oct. 31, 1983, Ser. No. 546,927

Int. Cl.³ B25C *5/02, 5/06;* **B27F** *7/00*

U.S. Cl. 227—126 **8 Claims**



1. A magazine for use with a staple driving tool comprising a reversible feeder shoe and door system enabling set-up of said tool for one of right and left-hand loading, said tool being of the type having a body, a driver, a guide body having a drive track for said driver and a magazine, said magazine being of the top-side loading type and comprising a rail terminating at its forward end at said guide body, a row of staples slidably mounted in straddling fashion on said rail, a feeder shoe slidably mounted on said rail behind said row of staples, means to constantly urge said feeder shoe forwardly so that the forwardmost staple of the row is located in said drive track and a door swingable between an open position and a closed position overlying said rail to prevent inadvertent dislodgement of said staples therefrom, resilient means to bias said door to its closed position, said feeder shoe having a substantially symmetrical inverted U-shaped body having a base portion and downwardly depending sides so sized as to straddle said rail, said feeder shoe having an operating handle extending laterally from one of its sides by which it may be shifted rearwardly to a retracted position on said rail, said shoe being reversibly mountable on said rail such that its operating handle can extend to the left of said rail or to the right of said rail, said door being of reversible configuration and being mountable in parallel-shaped relationship to either side of said rail.

4,524,897

ELECTRICALLY DRIVEN TACKER OR THE LIKE FOR DRIVING FASTENING ELEMENTS INTO A WORKPIECE

Rainer Bachmann, Hohenstein, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 30, 1983, Ser. No. 537,803

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1982, 3236748

Int. Cl.³ B25C *1/06*

U.S. Cl. 227—131 **19 Claims**

1. An electrically driven tacker for driving fastening elements into a workpiece, comprising:

a housing;

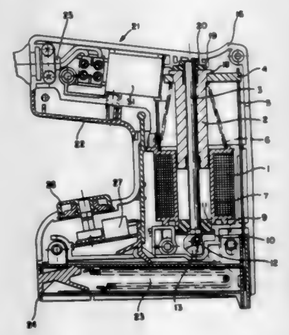
a driving element for impacting onto and driving a a fastening element;

a solenoid mounted in said housing and having an armature drivingly connected to said driving element;

means for adjusting the length of the operating stroke of said armature whereby the drive-in depth of the fastening element can be adjusted;

a guide rod upon which said armature is slidably mounted; said driving element being spaced from and parallel to said guide rod;

one end of said guide rod being located by said housing and the other end of said guide rod engaging said adjusting means; and



said armature moving towards and being stopped by said adjusting means during driving-in of the fastening element.

4,524,898

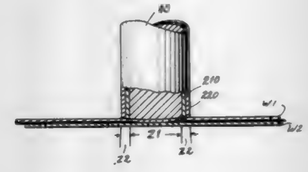
APPARATUS FOR PREVENTING STEP-EDGE SHEARING DURING ULTRASONIC WELDING

Theodore A. Renshaw, North Babylon, N.Y., assignor to Fairchild Industries, Inc., Chantilly, Va.

Filed Apr. 12, 1983, Ser. No. 484,189

Int. Cl.³ B23K *20/10*

U.S. Cl. 228—1.1 **6 Claims**



1. Apparatus for preventing step-edge shearing during ultrasonic welding with ultrasonic vibratory spot welding apparatus of the type having a welding tip adapted to introduce high frequency lateral vibratory energy into at least two workpieces in order to effect a weld therebetween and a complimentary anvil comprising means for applying coaxial pressure against said workpieces, said pressure applying means comprising at least one shield positioned about and with the inner surface thereof in continuous contact with the surface of either or both the anvil and welding tip, said shield including both an inner and an outer layer with the inner layer comprising an organic material.

5. Apparatus for preventing step-edge shearing during ultrasonic welding with ultrasonic vibratory spot welding apparatus of the type have a welding tip adapted to introduce high frequency lateral vibratory energy into at least two workpieces in order to effect a weld therebetween and a complimentary anvil comprising means for applying coaxial pressure against said workpieces, said pressure applying means comprising at least one shield positioned about and with the inner surface thereof in continuous contact with the surface of either or both the anvil and welding tip, said shield including both an inner and an outer layer with the inner layer comprising at least two layers of metallic material.

4,524,899

METHOD OF MANUFACTURING VENT ELEMENT

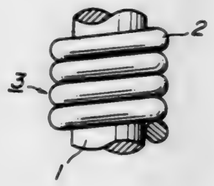
Masao Hirabayashi, Kawagoe, Japan, assignor to Tokyo Sintered Metal Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1982, Ser. No. 366,694

Claims priority, application Japan, Jul. 31, 1981, 56-119283; Jul. 31, 1981, 56-119284; Jul. 31, 1981, 56-119285; Dec. 24, 1981, 56-208037

Int. Cl.³ B21D *39/04*

U.S. Cl. 228—173.2 **5 Claims**



1. A method of manufacturing a vent element having a plurality of small pores extending therethrough in parallel, comprising winding at least one wire rod in at least one layer spirally around and in contact with each of a plurality of core rods to form secondary wire rods each having a plurality of windings, said at least one wire rod having a melting point higher than that of said core rods, assembling a plurality of said secondary wire rods into a bundle by inserting the secondary wire rods into a hollow tubular element with interspaces between the secondary wire rods, plastically working the hollow tubular element and the bundle to reduce the diameter of the hollow tubular element and the bundle, and heating the bundle of secondary wire rods to a temperature which exceeds the melting point of the core rods but does not melt the wire rods thereby to melt the core rods, whereupon the molten core rods infiltrate between the windings of the secondary wire rods and also the interspace between the secondary wire rods thereby to bond adjacent windings of each secondary wire rod together, to bond the bundle of secondary wire rods together, to bond the secondary wire rods to the hollow tubular element and to form one pore at every position where a core rod was.

4,524,900

TWO-PIECE SLIDING BOX WITH TEAR STRIP SEPARATION

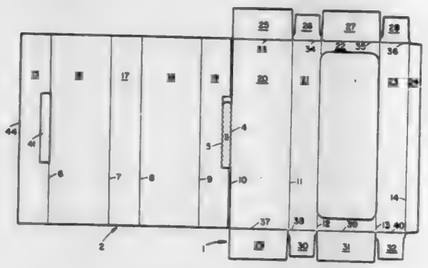
Arvo Salminen, Kauttua, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Aug. 17, 1983, Ser. No. 524,034

Claims priority, application Finland, Aug. 30, 1982, 822992

Int. Cl.³ B65D *5/38*

U.S. Cl. 229—19 **3 Claims**



1. A container comprising an inner box and an outer box, said container being formed from a single blank having a first portion adapted to form the outer box and a second portion adapted to form the inner box, said inner and outer box being detachably attached to each other, the first blank portion comprising serially an attachment flap, a bottom panel, one side panel, an upper panel and another side panel, the second blank portion comprising serially, a bottom panel, one side panel, an upper panel, another side panel and an attachment flap, each of said bottom panel, said side panels and attachment flap of the second blank portion having end flaps extending therefrom at opposite ends thereof, said panels of the first blank portion and said panels of the second blank portion being defined by longitudinal fold lines, said container having been assembled by folding the second blank portion and the first blank portion along said longitudinal fold lines sequentially in the same direction and fixing the attachment flap of the outer box to the last side panel of the outer box, a tear strip located between the bottom panel of the inner box and the last side panel of the outer box, said tear strip being shorter than the longitudinal fold lines, said tear strip having two edges, one edge coinciding with the longitudinal fold line between the bottom panel of the inner box and the last side panel of the outer box, a slot in the attachment flap of the first blank portion, an opening in the upper panel of the inner box, said slot overlapping the tear strip in the assembled container.

4,524,901

SLIDING TWO-PIECE BOX WITH TEAR STRIP

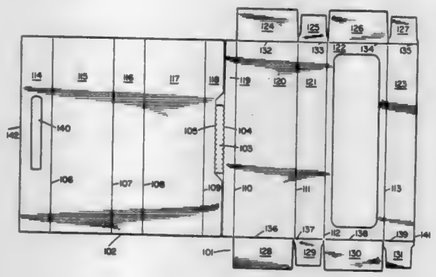
Kyosti Tikka, Kauttua, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Division of Ser. No. 524,034, Aug. 17, 1983,. This application Dec. 27, 1983, Ser. No. 565,404

Claims priority, application Finland, May 12, 1983, 831659

Int. Cl.³ B65D *5/38*

U.S. Cl. 229—19 **1 Claim**



1. A container comprising an inner box and an outer box, said container being formed from a single blank having a first portion adapted to form the outer box and a second portion adapted to form the inner box, said inner and outer box being detachably attached to each other, the first blank portion comprising serially an attachment flap, a bottom panel, one side panel, an upper panel and another side panel, the second blank portion comprising serially, an attachment flap, a bottom panel, one side panel, an upper panel and another side panel, each of said bottom panel said side panels of the second blank portion having end flaps extending therefrom at opposite ends thereof, said panels of the first blank portion and said panels of the second blank portion being defined by longitudinal fold lines, said container having been assembled by folding the second blank portion and the first blank portion along said longitudinal fold lines in the same direction sequentially and fixing the attachment flap of the outer box to the last side panel of the outer box, a tear strip located between the attachment flap of the inner box and the last side panel of the outer box, said tear strip being shorter than the longitudinal fold lines, a slot aligned with the tear strip in the attachment flap of the first blank portion, said tear strip being located a distance apart from the adjacent fold lines, said slot being longer than the tear strip, an opening in the upper panel of the inner box.

4,524,902

CARTON HANDLE

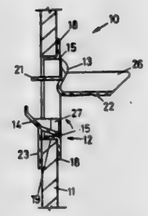
John K. Mortimer, St. Marys, Australia, assignor to F. F. Seeley Nominees Pty. Ltd., St. Marys, Australia

Filed Aug. 15, 1983, Ser. No. 523,157

Claims priority, application Australia, Aug. 23, 1982, PF5518

Int. Cl.³ B65D *5/46, 25/22, 25/28*

U.S. Cl. 229—52 A **6 Claims**



1. A carton handle comprising a monolithic moulding of polymeric material which, in its as-moulded mode, comprises a base portion, a pair of hinged portions, a pair of parallel hinge webs joining respective said hinged portions to the base portion, retaining flanges on the base portion and also on respective said hinged portions, and interengageable latch means on said hinged portions,

the shapes and dimensions of said hinged portions being such that, upon insertion in an aperture in a carton wall, the hinged portions are movable to respective positions wherein their retaining flanges lie contiguous with one surface of said carton wall while the base portion flanges lie contiguous with the opposite surface thereof, and said latch means interengage with one another and thereby inhibit release of said portions from their said respective positions.

4,524,903

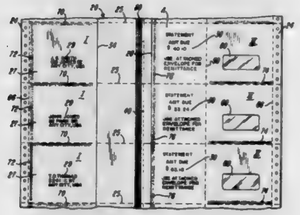
ONE-PIECE TWO-WAY MAILER UNIT

F. Leo Vath, Brookville, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Filed Mar. 19, 1984, Ser. No. 590,840

Int. Cl.³ B65D *27/06*

U.S. Cl. 229—73 **8 Claims**



1. A one-piece two-way mailer unit comprising a single sheet of paper-like material having a predetermined width and length, the sheet having an inner surface and an outer surface and being folded at the middle of its length along a center fold line to define a first part and a second part, the inner surface of the first part opposing the inner surface of the second part and having a receiver's name and address information portion, the second part of the sheet having a window through which the receiver's name and address information portion is visible, the second part having a first severance line extending across its width and spaced parallel to the fold line to define therebetween a receiver's personalized information portion on the first surface, the first part having a second severance line extending across its width in close parallel spaced relation to the center fold line to define a connecting portion, the first part having a fold line across its width adjacent the receiver's name and address information portion, adhesive material attaching the inner surface of the first part to the inner surface of the second part in the connecting portion and also to form a pocket region at least partially encompassing the receiver's name and address information portion and the window with the pocket region being open along the fold line on the first part, the outer surface of the second part being adapted to carry postage information, the outer surface of the first part having a sender's name and address information portion between the connecting portion and the fold line on the first part, the single folded sheet thus being mailable to a receiver whose name and address appears through the window, the sheet being severable by the receiver along the first and second severance lines to separate and remove the receiver's personalized information portion of the second part and to create a return envelope with a flap portion extending from the pocket region, the flap portion being foldable along the fold line on the second part to cover at least a portion of the receiver's name and address to provide for mailing the return envelope to the sender's name and address.

4,524,904

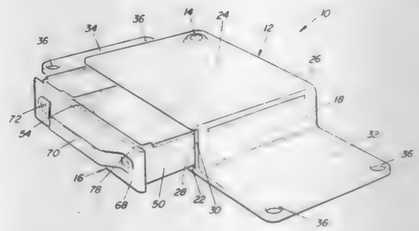
VAULT

Lionel Massé , 578 Notre Dames St., Embrum, Ontario K0A 1W0, and Richard L. Boisvert, 4 Place Radisson, Apt. 103, Hull, P.Q., both of Canada

Filed Jun. 7, 1982, Ser. No. 385,882

Int. Cl.³ E05G *1/00*

U.S. Cl. 232—7 **2 Claims**



1. A paper currency vault for use in a vehicle, comprising,

a housing having a pair of opposed, generally rectangularly shaped, substantially parallel end walls, a pair of relatively closely spaced, substantially parallel top and bottom walls which extend between said end walls in substantially perpendicular relation to said end walls, a side wall which extends between said top and bottom walls and said end walls, said top and bottom walls, said end walls and said side wall cooperating to define a generally rectangular chamber having an opening along one side thereof, and an elongated, narrow slot in one of said end walls opening into said chamber, said slot being substantially parallel to said top and bottom walls and exceeding the width of said paper currency;

a box shaped paper currency receptacle having a rectangular bottom wall and two pairs of opposed side walls extending substantially perpendicularly from the marginal edges of said receptacle bottom wall, an open upper end and an interior partition extending between a pair of said receptacle

side walls, said partition, said pair of side walls between which said partition extends, and another of said receptacle side walls defining a second, rectangular chamber for receiving and storing paper currency therein in a folded condition wherein said currency is folded about a transverse fold line, said receptacle being disposed in said chamber of said housing and being slidable therein between a closed position whereat one of said side walls of said receptacle closes said opening of said housing chamber and the interior of said receptacle is inaccessible from the exterior of said slot and an opened position whereat the interior of said receptacle is accessible for removal of paper currency therefrom, said receptacle having a width parallelling said slot and exceeding the width of said paper currency and a length exceeding one half the length of said paper currency, an aperture in one of said receptacle side walls alignable with said slot in said closed position of said receptacle for communicating to said chamber paper currency fed through said slot, and a separable end plate secured to said one receptacle side wall closing said opening; and

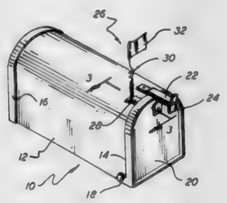
a key operated lock secured to the top wall of said housing and extending into said chamber, said lock having a latch member movable between a latching position and non-latching position and said receptacle having a latch surface engageable with said latch member in said latched position of said latch member and said closed position of said receptacle.

4,524,905

MAIL BOX SIGNAL DEVICE

Robert M. Crist, R.D. #4, Box 185, Oswego, N.Y. 13126

Filed Mar. 12, 1984, Ser. No. 588,398
Int. Cl.³ B65D *91/00*; A47G *29/12*
U.S. Cl. 232—35 **1 Claim**



1. A signal device for use with a conventional outdoor mail box having a body portion with bottom, rear, top and side walls, and a front wall hingedly attached along its lower edge to the lower, front edge of the body portion bottom wall, said front wall providing a door movable between open and closed positions with respect to the forward edges of the walls of the body portion, and cooperating frictional latch members, one fixedly attached to the body portion adjacent the forward edge of the top wall and the other to the door adjacent its upper edge when in the closed position, said signal device comprising, in combination:

(a) a clip member formed of a unitary strip of metal bent upon itself to provide upper and lower portions connected at the band and having a closely superposed normal position with limited flexibility to permit said upper and lower portions to be spread apart for insertion of said clip member on said forward edge of the top wall of said body portion in closely spaced relation to said one latch member, a central portion of said clip member at the bend between said upper and lower portions being removed to provide a cut-out area between two portions of said bend, said upper portion having a through opening adjacent the end opposite said bend;

(b) a coil spring element having a lower end inserted into said opening in said upper portion of said clip member, the successive coils of said spring being wound in contacting relation for a first portion of the length of said spring extending from said lower end, said spring being attached to said clip member by engagement of said upper portion thereof being engaged between two successive coils of said spring near said lower end, the coils of said spring being expanded to significantly spaced relation for a second portion of the length of said spring extending upwardly from said first portion, and said spring being bent to a substantially linear portion extending upwardly from said second portion to an upper terminal end, the normal, unflexed position of said spring extending upwardly from said clip member along a substantially linear axis through said first and second portions and along said linear portion; and

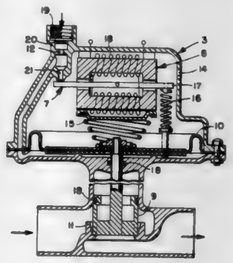
(c) flag means attached to said linear portion of said spring adjacent said upper terminal end, the relative dimensions and positions of said clip member, coil spring and flag means being such that said spring may be flexed away from said normal position to place said device in a set position wherein the axis of said spring is curved, said second portion of said spring is positioned in said cut-out area of said clip member, and said flag means is positioned inside said box body portion, said device being retained in such position by placing said door in said closed position to retain said second spring portion between said door and said forward edge of the top wall of said body portion without direct engagement therebetween, said spring returning to said normal position upon opening of said door.

4,524,906

TEMPERATURE CONTROL VALVE AND SENSOR/CONTROLLER THEREFOR

Richard L. Kenyon, Irvine, and Calvin E. Kempton, Laguna Hills, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 173,660, Jul. 29, 1980, abandoned, which is a continuation of Ser. No. 869,255, Jan. 13, 1978, abandoned. This application Dec. 10, 1982, Ser. No. 448,691
Int. Cl.³ G05D *23/00*; F16K *31/12*
U.S. Cl. 236—12.11 **14 Claims**



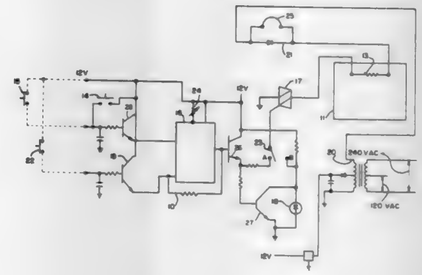
1. An automatic process control system comprising control valve means providing a variable area orifice to change the rate of flow of a control agent to maintain a desired condition in the process, and a sensor/electronic controller of which the sensor detects a departure from the desired condition to produce an error signal which is processed by the controller to provide an output signal to said control valve means, said control valve means including a diaphragm actuated modulating valve, the diaphragm of which separates respective chambers on opposite sides thereof, means for providing system fluid to both said chambers for establishing a pressure differential on opposite sides of said diaphragm, said means for providing including motor operated pilot valve means for directing and controllably metering fluid flow to one of said chambers in response to actuation of said motor by said output signal to change the rate of flow of said control agent to restore the process to the desired condition, and means for venting system fluid from said one chamber to allow for such directed and controlled fluid flow to said one chamber, and said modulating valve having position feedback spring means bearing on said pilot valve means to reach a force equilibrium with the motor force acting on said pilot valve means when said modulating valve has stroked an amount proportional to said output signal.

4,524,908

SET-BACK THERMOSTAT ASSEMBLY

John Marshall, 1300 Spear St., South Burlington, Vt. 05401, and Henry B. Clark, Jr., Box 117, Underhill Center, Conn. 05490

Continuation-in-part of Ser. No. 285,016, Jul. 20, 1981, abandoned. This application Nov. 15, 1983, Ser. No. 460,546
Int. Cl.³ F23N *5/20*; G05D *15/00*
U.S. Cl. 236—46 R **1 Claim**



1. An improved, set back thermostat assembly, having a thermostat, an electrical, (energizable) controllable heat emitting element in thermally-effective juxtaposition relative to said thermostat, and an electrical circuit, connected to said element, said circuit comprising means for (conducting) effecting and interrupting electrical current through said element electively (energizing and) de-energizing said element, wherein the improvement comprises:

assembly means of unitized construction;

means coupled to said element and said circuit operative in a first normal mode for enabling a (given) controlled amount of current to be conducted through said element, and operative in a second mode for (enabling an amount of current differing from said given amount to be conducted through) electively and randomly disconnecting said current from said element;

means enabling said assembly to accommodate a plurality of voltages; (and)

electrically-interconnected means for electively and ramdomly disconnecting electrical current from said circuit (initiated on the specific site.) initiated on said unitized assembly;

said element-coupled means comprises a diode in series connection with said element;

said element-coupled means further comprises a disengageable jumper connection connected in parallel with said diode;

said current effecting and interrupting means comprises a solid-state, electronic switching means in series connection with said element;

said switching means comprises a solid-state electronic switch, a source of electrical potential, and means electrically interconnecting said source and said switch;

said electrically-interconnecting means includes adjustable means for controlling the amount of time during which electrical current is interrupted through said element;

said electrically-interconnecting means further includes means for visually signalling an interruption of current from conduct thereof through said element thereby indicating said thermostat assembly is operating without setback; and

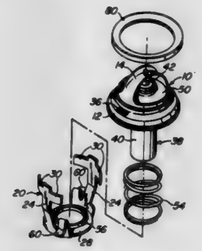
said signalling means comprises a light-emitting diode.

4,524,907

AUTOMOTIVE THERMOSTATIC FLUID CONTROL VALVE DEVICE

Backman Wong, Wayland, Mass., assignor to Standard-Thomson Corporation, Waltham, Mass.

Continuation of Ser. No. 513,803, Jul. 14, 1983, abandoned, which is a continuation of Ser. No. 318,321, Nov. 5, 1981, abandoned. This application Jul. 30, 1984, Ser. No. 635,540
Int. Cl.³ G05D *23/12*
U.S. Cl. 236—34.5 **4 Claims**



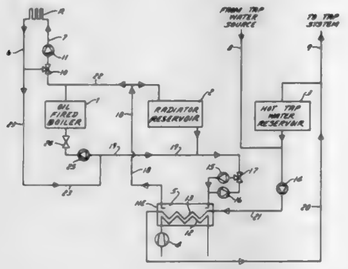
2. A thermally responsive fluid control valve device for a fluid conduit system provided with a first engagement surface and an axially spaced generally parallel second engagement surface, the fluid control device being of the type provided with a first frame member, the first frame member including an annular valve seat portion forming a fluid port and a bridge portion integral with the annular valve seat portion and extending across the fluid port, the annular valve seat portion being adapted to engage the first engagement surface of the fluid conduit system, a closure member engageable with the annular valve seat portion of the first frame member to close the fluid port, a thermally responsive actuator member having a portion engaging the closure member and a portion engaging the bridge portion of the first frame member, a coil spring encompassing a portion of the thermally responsive actuator member, the improvement comprising: a second frame member consisting of a single piece of sheet metal material including a ring portion and a plurality of leg portions integral with the ring portion and extending from the ring portion, a plurality of foot portions integral with the ring portion and the leg portions, the foot portions being circumferentially offset on the ring portion, each of the foot portions being positioned between two of the leg portions, the leg portions of the second frame member being attached to the annular valve seat portion of the first frame member to form a frame unit adapted to be positioned within a fluid conduit system with the foot portions extending outwardly from the ring portion and being adapted to engage the second engagement surface of the fluid conduit system, the coil spring engaging the closure member and the ring portion of the second frame member and urging the closure member toward the valve seat portion of the first frame member.

4,524,909

APPARATUS FOR PRODUCTION OF HOT TAP WATER

Ingemar Persson, Tallvägen 3, S-562 02 Taberg, Sweden

Filed Nov. 14, 1983, Ser. No. 551,042
Claims priority, application Sweden, Nov. 15, 1982, 8206471
Int. Cl.³ G05D *23/00*
U.S. Cl. 237—2 B **4 Claims**



1. Heating apparatus for supplying heat to heat radiating means at desired times and in desired quantities and for heating tap water from an unheated source thereof for withdrawal at a tap system as hot tap water at desired times and in desired quantities, said heating apparatus comprising a heat pump having a compressor by which refrigerant is compressed and a heat exchanger having a refrigerant passage connected with the compressor and through which compressed refrigerant can flow, said heating apparatus being characterized by:

A. a reservoir for storage of radiator water;

B. means defining a raditor circuit in which said heat radiating means and said reservoir are connected and in which radiator water can circulate;

C. means in said heat exchanger defining

(1) a radiator water passage and

(2) a tap water passage, each of which is in heat transfer relationship with the other and with said refrigerant passage;

D. means connecting said radiator water passage with said reservoir in parallel with said heat radiating means and defining a heat transfer circuit wherein radiator water can circulate through the radiator water passage in bypass relation to the heat radiating means;

E. means communicating the tap water source with the tap system through said tap water passage to provide for heating tap water from both compressed refrigerant and radiator water; and

F. radiator water circulation controlling means comprising valve means and pump means arranged to provide for circulation of radiator water from the reservoir through each of said circuits substantially independently of circulation through the other.

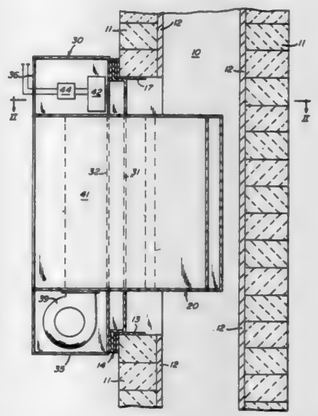
4,524,910

HEATER USING HOT WASTE FLUE GASES

Larry J. Condon, 307 E. End Ave., Pittsburgh, Pa. 15221

Division of Ser. No. 199,580, Oct. 22, 1980, Pat. No. 4,363,442.
This application Sep. 13, 1982, Ser. No. 417,050
Int. Cl.³ F24B *7/00*
U.S. Cl. 237—81 **5 Claims**

1. A method for heating a forced-air supply with sensible heat recovered from a hot stream of waste flue gases in a chimney or the like for supplying heat to a dwelling, the method including the steps of forming an access opening through a side wall of said chimney to the flow space therein for hot waste gases, securing a frame in a substantially airtight manner to the wall of said chimney to surround the access opening therein, selecting a heat exchanger to occupy a cross-sectional area of the chimney which substantially corresponds to the cross-sectional area of the access opening formed in the side wall of said chimney, using the access opening to arrange planar walls of a heat exchanger generally parallel to and within the flow space for hot waste gases in the chimney, supporting said heat exchanger by a housing attached to said frame to close the access opening in the frame in a substantially



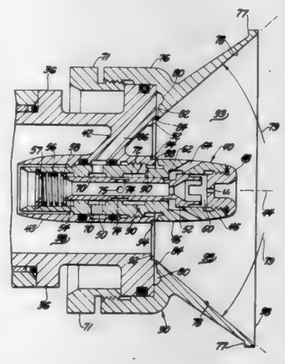
airtight manner, using the access opening along the inside of the housing facing the chimney for the flow of hot waste gases, feeding air from the housing into an enclosed heat exchange space between the planar wall of said heat exchanger for heating therein, and directing a heated discharge flow of air from the heat exchanger through the housing into the dwelling.

4,524,911

OSCILLATING FLOW NOZZLE

Edward J. Rozniecki, 31041 Angeline, St. Clair Shores, Mich. 48082

Filed Feb. 21, 1984, Ser. No. 581,521
Int. Cl.³ B05B *1/08*
U.S. Cl. 239—101 **16 Claims**



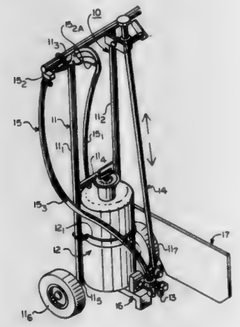
1. A liquid spray nozzle comprising a liquid inlet passage means defining a flow axis; a liquid outlet passage means connected to the inlet passage means; said outlet passage means defining first liquid attachment surfaces diverging away from the flow axis in the downstream direction; an elongated hollow housing within the nozzle centered on the flow axis; said hollow housing defining second liquid attachment surfaces extending generally parallel to the flow axis; first flow deflector orifice means in the first liquid attachment surfaces; second flow deflector orifice means in the second liquid attachment surfaces; liquid pulse generation means within the hollow housing; a first control passage system between the pulse generation means and said first orifice means; and a second control passage system between the pulse generation means and the second orifice means, whereby the main liquid flow is deflected from the first attachment surfaces to the second attachment surfaces while the pulse generation means is delivering a control pulse to the first orifice means, and the main liquid flow is deflected from the second attachment surfaces to the first attachment surfaces while the pulse generation means is delivering a control pulse to the second orifice means.

4,524,912

AGRICULTURAL PORTABLE CHEMICAL APPLICATOR WITH PROTECTIVE SHIELD

William R. Jones, Crystal Springs, Miss., assignor to J/Mac Corporation, Jackson, Miss.

Filed May 23, 1983, Ser. No. 497,125
Int. Cl.³ B05B *15/04, 1/28;* **A01C** *15/00*
U.S. Cl. 239—150 **8 Claims**



1. An applicator for use by an operative in applying a liquid to plants or shrubs growing within the earth which comprises

a carriage, constituted of a frame provided with a pair of alternately disposed wheels mounted on an axle located at the lower end of said frame, and handle located at the upper end of said frame,

a bracket frame located on the lower end of the carriage, projected outwardly from the carriage frame,

a tank supported on said bracket frame, said tank being constituted of an outer shell with an upper opening within which a pump assembly can be removed for filling the tank with liquid, replaced after filling with the tank with liquid, and the pump activated to pressurize the liquid,

a spray nozzle assembly, inclusive of a pivotally movable spray nozzle operatively communicated with said tank via a conduit for the receipt of liquid therefrom mounted on the bracket frame at the lower end of the carriage frame, said spray nozzle of the spray nozzle assembly being pivotally mounted via a hinge element to the bracket frame, and means for actuation and movement of the spray nozzle via mechanism located in part upon the carriage frame handle, said means including an elongated shaft the lower end of which is pivotally mounted to said spray nozzle, and the upper terminal end of which is reciprocably mounted within a collar lock assembly located on the handle of the carriage frame whereby the elongated shaft can be reciprocably moved within the collar to change the direction of the spray nozzle, or locked in position within the collar lock assembly to fix the direction of the spray nozzle, and

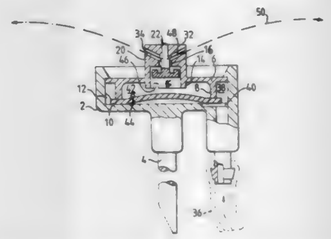
a guard of substantially planar shape mounted on the side of the carriage adjacent the spray nozzle such that the narrow edges thereof are vertically oriented, the inner flat side of the guard facing the spray nozzle of the spray nozzle assembly to restrict and control the area of application of the spray of liquid emitted from the spray nozzle, the narrow edges of the guard being aligned in the direction of forward movement of the carriage to minimize physical contact between the guard and the plants or shrubs through which the applicator is moved.

4,524,913

SELF-REGULATING SPRINKLER NOZZLE

Dan Bron, 36 Palmach St., Haifa, Israel

Continuation of Ser. No. 276,195, Jun. 22, 1981, abandoned.
This application Feb. 6, 1984, Ser. No. 577,309
Claims priority, application Israel, Jul. 2, 1980, 58176
Int. Cl.³ B05B *3/04*
U.S. Cl. 239—222.17 **10 Claims**



1. A self-regulating sprinkling nozzle attachable to a liquid-carrying line, comprising a cylindrical housing having a vortex chamber inside said housing, a vortex-producing inlet through which said liquid enters said vortex chamber, one wall being constituted by a first surface of a stretchable diaphragm and the opposite wall of said vortex chamber being constituted by a cover provided with a drive space communicating with said vortex chamber and having an aperture leading to the atmosphere, the second surface of said diaphragm being exposed to the pressure of the liquid in said liquid carrying line, said diaphragm being stretchable in response to variations in pressure between that in said liquid carrying line and that in said vortex chamber to vary the volume thereof and maintain the pressure in said vortex chamber constant, a spinner disposed in said drive space and entrained by said vortex propagated into said drive space, said spinner having a shaft which passes with substantial clearance through said aperture to permit liquid to flow therethrough, and a liquid-throwing member fixedly attached to the end of said shaft, and spun as a result of the action of said vortex on said spinner.

4,524,914

THROTTLING PINTLE-TYPE FUEL INJECTION NOZZLE HAVING AN IMPROVED INITIAL INJECTION CHARACTERISTIC

Nobuhiro Kaibara; Toshio Ida; Shinji Okuda, and Takayuki Motohashi, all of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1983, Ser. No. 566,498
Claims priority, application Japan, Jan. 27, 1983, 58-10176[U]
Int. Cl.³ B05B *1/32;* **F02M** *61/06*
U.S. Cl. 239—452 **3 Claims**

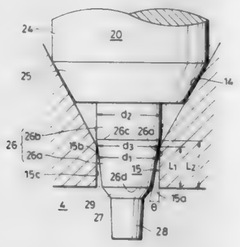
1. A throttling pintle-type fuel injection nozzle for use in a fuel injection valve having a nozzle holder and mounted in an internal combustion engine having at least one combustion chamber, said fuel injection nozzle comprising:

a nozzle body fixed to said nozzle holder of said fuel injection valve, said nozzle having an axial hole, a valve seating portion and a nozzle hole formed therein and succesively arranged in the order mentioned along an axis thereof, said nozzle hole having a cylindrical configuration and having one end remote from said combustion chamber of said engine and another end opening into said combustion chamber, said nozzle hole having a substantially constant diameter along the whole length thereof;

a nozzle needle mounted within said nozzle body, said nozzle needle having a guide portion slidably fitted in said axial hole of said nozzle body, a seating portion formed adjacent said guide portion and seatable on said valve seating portion of said nozzle body, a pressure-applying portion located between said guide portion and said seating portion, and a pintle formed adjacent said seating portion and disposed to be fitted through said nozzle hole of nozzle body;

said axial hole of said nozzle body having a guide hole in which said guide portion of said nozzle needle is slidably fitted, and a pressure chamber formed adjacent one end of said guide hole closer to said combustion chamber and disposed to be supplied with pressurized fuel, said pressure chamber being swelled radially outwardly of said guide hole and accommodating at least part of said pressure-applying portion of said nozzle needle;

said pintle of said nozzle needle having a conical portion having two ends, said conical portion being disposed such that one end of said conical portion is located slightly remoter



from said combustion chamber than is said one end of said nozzle hole, and another end of said conical portion is substantially on a level with said another end of said nozzle hole opening into said combustion chamber when said seating portion of said nozzle is in a position seated on said valve seating portion of said nozzle body, said conical portion of said pintle having a diameter gradually decreasing from said one end thereof to said another end thereof;

said conical portion of said pintle having an outer peripheral surface and said conical portion having a portion disposed to on a level with said one end of said nozzle hole when said seating portion is in said seated position, said portion of said conical portion having a diameter equal to the inner diameter of said one end of said nozzle hole;

whereby when said seating portion of said nozzle needle is in said seated position, said pintle and said nozzle hole define therebetween an annular gap gradually expanding from said one end of nozzle hole to said another end thereof, with said one end of said nozzle hole being positiviely closed by said outer peripheral surface of said conical portion of said pintle.

4,524,915

OPPOSED TYPE JET MILL

Takashi Yamagishi, Fujisawa, Japan, assignor to Turbo Kogyo Co., Ltd., Yokosuka, Japan

Continuation of Ser. No. 447,233, Dec. 6, 1982, abandoned. This application Oct. 15, 1984, Ser. No. 660,964

Claims priority, application Japan, Feb. 6, 1982, 57-17893

Int. Cl.³ B02C *19/06*

U.S. Cl. 241—39 **5 Claims**

1. An opposed type jet mill comprising:

a pair of opposed injectors each having a nozzle for ejecting high pressure gas, said nozzles being aligned on a common axis in opposed relationship to each other;

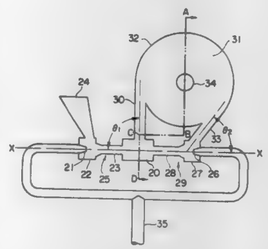
a grinding chamber between said opposed injectors;

feed means for feeding new raw material solely to one of said injectors;

grinding chamber discharge pipe means connected and oriented generally perpendicularly to said common axis of said nozzles for receiving a high speed flow of a mixture of ground material and gas from the grinding chamber;

an airflow classifying chamber connected to said grinding chamber discharge pipe means for receiving said mixture and separating coarse grains in the ground material;

recycle pipe means connected to said classifying chamber means for returning said coarse grains solely to the other



of said injectors for regrinding, said recycle pipe communicating with said other injector at an angle of 60 degrees or less with said common axis of said nozzles and in the direction of said other injector, whereby proper adjustment of the feed rate of new raw material into said one injector causes said mill to create a continuous high frequency tone.

4,524,916

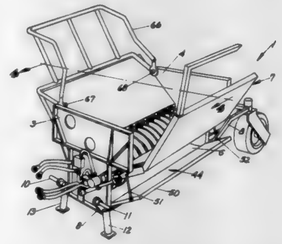
DISPERSING MACHINE FOR LARGE BALES

Richard E. Keyes, and John W. Dirksing, both of Cincinnati, Ohio, assignors to Finn Corporation, Cincinnati, Ohio

Filed Mar. 7, 1983, Ser. No. 472,971

Int. Cl.³ B02C *21/02*

U.S. Cl. 241—101 A **15 Claims**



1. A machine for dispersing the material contained in large bales upon the ground or the like, comprising:

a trough-shaped body having a front end, a rear end, a bottom, a stationary side and a movable side, wherein said movable side is pivotally connected between said front end and said rear end a fixed distance above said bottom forming a discharge opening;

a supporting framework which unifies said trough-shaped body elements in such a manner that said framework and said trough-shaped body are not capable of independent movement, said framework having wheels near said rear end and means for hook-up of the machine to a tractor;

a rotor centrally located near said bottom of said trough-shaped body, made up of a series of uniformly spaced, flat adjacent plates connected to a central shaft, tie rods connecting adjacent plates at positions equally distant about the periphery of said adjacent plates, hammer means pivotally connected to said tie rods between the adjacent plates and means for coupling said central shaft of said rotor to an external power source;

grate means overlying said rotor for holding the bale above said rotor while still allowing said hammers to pass therethrough to engage and break up the baled material; and

lift means connected to said movable side for moving said movable side only between a lowered, pick-up position in which said movable side wall contacts said ground, and a raised, operational position.

4,524,917

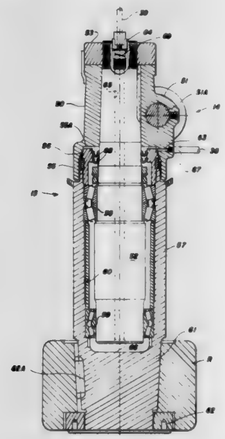
AIR SEAL AND LUBRICATION SYSTEM FOR ROLLER GRINDING MILLS

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Filed Mar. 3, 1983, Ser. No. 471,701

Int. Cl.³ B02C *15/04*

U.S. Cl. 241—101.2 **8 Claims**



1. In an air seal and lubrication supply system for a grinding roll assembly having a pivot support by which a grinding roll is mounted, the improvement comprising:

(a) a journal shaft non-rotatably mounted in the pivot support;

(b) a sleeve surrounding and spaced from said journal shaft, said sleeve having an open end spaced from the pivot support forming a joint space therewith;

(c) bearing means engaged between said sleeve and journal shaft;

(d) a grinding roll carried by said sleeve for rotating with said sleeve relative to said journal shaft;

(e) means for delivering lubricant through said journal shaft to said bearing means in said sleeve;

(f) means for delivering air through the pivot support for creating an air seal between said sleeve and said journal shaft at said joint space between said sleeve open end and the pivot support; and

(g) seal means in said sleeve in operative engagement with said journal shaft, said seal means being responsive to the delivery of air into said joint space for maintaining said seal means operative to retain lubricant in said sleeve.

4,524,918

FILAMENT WINDING MACHINE

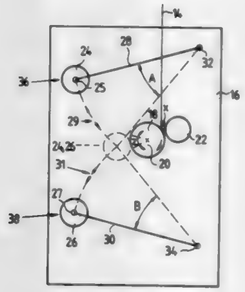
Markus Feusi, Winterthur; Josef Huber, Pfungen; Heinz Oswald, and Peter Pfyffer, both of Winterthur, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Aug. 26, 1982, Ser. No. 411,908

Claims priority, application United Kingdom, Sep. 17, 1981, 8128122

Int. Cl.³ B65H *54/02, 67/04*

U.S. Cl. 242—18 A **9 Claims**



1. A winder for thread comprising

a friction drive member rotatable about a longitudinal axis thereof to receive a thread thereon,

a first rotatable chuck movable along a first path between a rest position spaced from said friction drive member and a winding position adjacent said drive member for winding of a thread thereon,

a second rotatable chuck movable along a second path between a rest position spaced from said friction drive member and a winding position adjacent said drive member for winding of a thread thereon,

said paths being so disposed that a part on one chuck moving towards said winding position thereof intercepts a length of thread extending between said friction drive member and the other chuck moving away from said winding position thereof;

a headstock;

a pair of stationary support member in said headstock;

a shaft extending between and mounted in said support members;

a swing arm slidably mounted on said shaft for axial movement between said support member and for pivoting about a longitudinal axis of said shaft;

means connected to said swing arm for pivoting said swing arm about said axis of said shaft;

means connected to said swing arm for moving said swing arm axially of said shaft; and

said first chuck being mounted on said swing arm in cantilivered relation for pivoting about said shaft between said rest position and said winding position thereof.

4,524,919

MULTIPLE BOLT TURNING MACHINE

Claus Wehrmann, Extertal, Fed. Rep. of Germany, assignor to Lenze GmbH & Co. KG Aerzen, Aerzen, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,985

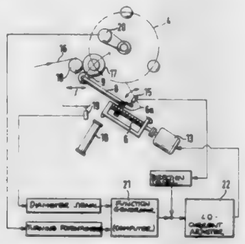
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1982, 3205779

Int. Cl.³ B65H *19/20*

U.S. Cl. 242—67.1 R **9 Claims**

1. A multiple bolt turning machine comprising a winding star which is adapted to be rotated from one to the next of a plurality of bolt positions, at least one of said positions com-

prising a bolt winding position and at least one other of said positions comprising a bolt removal position, a feed roll adapted to engage a web of material being wound onto said bolt at said bolt winding position, first positioning means for shifting the position of said feed roll about a pivot axis spaced from and parallel to the axis of rotation of said feed roll as said winding star rotates to move a bolt from said winding position to said removal position thereby to maintain said feed roll in contact with the incoming web of material and in engagement with the exterior of said bolt during said movement of said

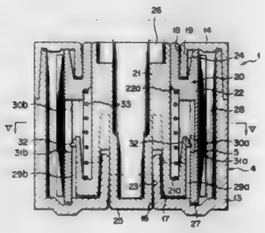


bolt, and second positioning means operable concurrently with said first positioning means for adjusting the distance between said pivot axis and the axis of rotation of said feed roll to maintain the angle of contact between said feed roll and said web of material substantially constant throughout the movement of said bolt between said winding and removal positions, said feed roll being mounted in a frame which is mounted for pivotal motion about said pivot axis, said second positioning means comprising motor means mounted for movement with said frame as said frame is pivoted about said pivot axis.

4,524,920
FILM CASSETTE

Atsushi Kidawara, and Kazunari Kobayashi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1983, Ser. No. 513,238
Claims priority, application Japan, Jul. 20, 1982, 57-126131; Aug. 10, 1982, 57-121213[U]; Aug. 10, 1982, 57-121214[U]
Int. Cl.³ B65D *85/67;* **B65H** *19/00*
U.S. Cl. 242—71.1 **11 Claims**

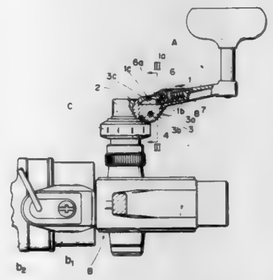


1. A film cassette comprising:
a cassette main body having a film supply portion and a film take-up portion;
said cassette main body including a case with a first aperture at one end thereof, a second aperture at the opposite end thereof, and a cover closing said first aperture, said cover having an aperture therein;
a spool arranged at said film take-up portion of said cassette main body, said spool comprising:
an outer cylinder around which a film is wound;
an inner cylinder which is slidable in an axial direction relative to said outer cylinder and which is rotatable with said outer cylinder, said inner cylinder having opposite ends, one of which is at said second aperture and the other of which is passable through said aperture in said cover to project outward; and
biasing means for biasing and moving said outer and inner cylinders relative to each other in the axial direction thereof to bias said inner cylinder into said outer cylinder and into said cassette main body; and
bearing means arranged at said film take-up portion of said cassette main body for rotatably supporting said spool, said bearing means including a pair of bearings formed at said cover and said case, respectively, of said cassette main body, said bearings each rotatably supporting respective opposite ends of said outer cylinder;
said inner cylinder being pushable at said one end thereof in the axial direction through said second aperture of said case to cause said inner cylinder to project outward from said aperture of said cover.

4,524,921
FISHING REEL

Kiyomi Ozaki, Fuchu, and Kikuo Tsunoda, Hiroshima, both of Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Filed Mar. 8, 1983, Ser. No. 473,231
Claims priority, application Japan, Mar. 10, 1982, 57-33375
Int. Cl.³ A01K *89/00;* **G05G** *5/06*
U.S. Cl. 242—84.1 J **3 Claims**



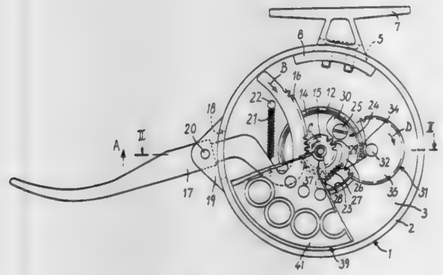
1. In a fishing reel having a drag knob arranged near a handle mounting end of a handle shaft journalled on a reel body, the handle shaft having a front end to which a handle is mounted, the improvement comprising:
a bracket secured to and protruded from said front end of said handle shaft and extending substantially in the radial direction of said handle shaft, said bracket having an axially parallel sectional configuration comprising an axially directed part directed axially of said handle shaft, an inwardly inclined following part directed radially inwardly relative to said handle shaft, and a flat part extending radially relative to said handle shaft;
a handle arm having a base end portion, said base end portion being swingably pivoted to said bracket, said base end portion of said handle arm comprising an inverted U-shaped member provided with a lower guide wall at an intermediate portion thereof, said base end portion having an arc shaped upper inner surface which engages a peripheral portion of said bracket for rotation thereof around said peripheral portion of said bracket, and said lower guide wall having a front end having a cut therein transversely of said handle arm to contact and meet with said axially directed part of said bracket;
a locking element coupled to said handle arm and having an engagement portion, said locking element being selectively movable longitudinally of said handle arm between (i) a locking state in which said engagement portion engages said inclined following part and said radially extending flat part of said bracket and (ii) a retracted state in which said engagement portion is out of engagement with said inclined following part and said radially extending flat part of said bracket; and

resilient means coupled between said handle arm and said locking element for urging said locking element toward its said locking state.

4,524,922
FISHING REEL WITH OSCILLATING MOVEMENT ACTUATING LEVER

Franco Vivarelli, Via Beniamino Gigli 7, Bologna, Italy

Filed Feb. 3, 1983, Ser. No. 463,362
Claims priority, application Italy, Feb. 15, 1982, 3337 A/82
Int. Cl.³ A01K *89/00*
U.S. Cl. 242—84.1 R **1 Claim**



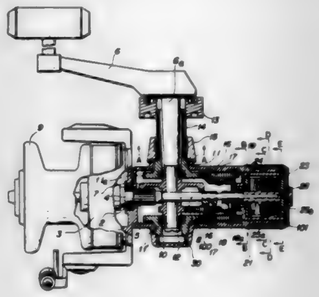
1. A fishing reel comprising a case provided with means for attachment to a fishing rod, a shaft rigidly secured in said case, a gear wheel and a line storage spool rotatably carried on said shaft, a torque limiter for rotatably connecting said gear wheel with said spool, a manually operable lever pivoted for oscillation in said case, a gear segment associated with said lever and gear means connecting said gear segment with said gear wheel for driving the spool in line winding direction when the lever is actuated, said gear means including a one-way coupling acting in line winding direction, wherein according to the improvement said gear means comprise a second gear wheel rotatably supported on said shaft and having a central bushing extending on said shaft, a pinion rotatably supported on said bushing and meshing with said gear segment, a flange peripherally formed on said second gear wheel and surrounding said pinion so as to define a space herewith, a pawl pivoted on said second gear wheel inside said space and having a tooth facing said pinion and a shoe portion, and a spring acting on said pawl to hold said shoe portion in abutment on said peripheral flange and the tooth in engagement between the teeth of the pinion when the spool is driven in line winding direction.

4,524,923
FISHING SPINNING REELS

Kikuo Tunoda, Hiroshima, and Kiyomi Ozaki, Fuchu, both of Japan, assignors to Ryobi Limited, Hiroshima, Japan

Filed May 5, 1982, Ser. No. 375,206
Claims priority, application Japan, May 25, 1981, 56-76321[U]; May 25, 1981, 56-76322[U]
Int. Cl.³ A01K *89/01, 89/02*
U.S. Cl. 242—84.5 A **5 Claims**

1. A fishing spinning reel comprising:
a hollow main body having front and rear ends;
a main shaft within the main body having a spool attached to its front end;
a handle shaft rotatably mounted on the main body;
a handle connected to the outer end of the handle shaft;
a gear mechanism within the main body drivingly connecting the handle shaft and the main shaft;
a drag knob telescoped over the handle shaft and disposed adjacent to the handle;
a rotatable hollow shaft telescoped over the handle shaft and having the drag knob affixed to the outer end thereof; and
a drag force generating mechanism connected between the rear end of the main body and the rear end of the main shaft and operated upon the rotation of said drag knob and hollow shaft, said drag force generating mechanism comprising:
a drag bush mounted on the rear end of the main shaft;
an inner housing installed in the rear end of the main body;
a plurality of drag washers arranged between said inner housing and said drag bush, some of which having a circular opening at the center thereof which receives said drag

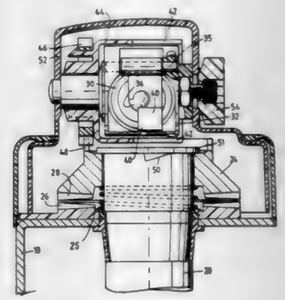


bush and a pair of radial projections at the outer peripheral thereof which slidably engage a pair of grooves of the inner housing while the other drag washers have a rectangular opening at the center thereof which engages the drag bush having a rectangular cross section;
a plurality of friction discs inserted between said drag washers; and
a drag spring forcing said washers and friction discs to the axial direction.

4,524,924
SEAT BELT REEL

Ronald A. Proctor, "Sedbury", Woodham La., Woking, Surrey, England

Filed Dec. 10, 1982, Ser. No. 448,499
Claims priority, application United Kingdom, Dec. 23, 1981, 8138818; Feb. 26, 1982, 8205662
Int. Cl.³ A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **10 Claims**



1. A seat belt reel comprising:
(a) a casing adapted to be mounted in transportation means;
(b) a reel shaft rotatably carried on said casing with a strap of said belt being wound on said reel shaft;
(c) locking means operatively associated with said reel shaft to lock said reel shaft against rotation, said locking means including a rotatable member;
(d) coupling means coupling said rotatable member of said locking means with rotatable carrier means mounted for rotation with said rotatable member;

(e) an inertia member adapted to move when said transportation means is subjected to an irregular movement, said inertia member being carried in said rotatable carrier means; and

(f) an element associated with said inertia member and responsive to movement thereof to prevent rotation of said rotatable carrier means whereby said rotatable member of said locking means is also prevented from rotating and thus locks the reel shaft against rotation.

4,524,925

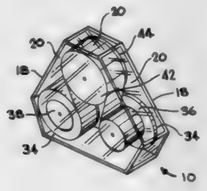
OPTICAL DATA TAPE CARTRIDGE HAVING WIDE ANGLE READ/WRITE SURFACE

Richard Haddock, Redwood City, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.

Filed Feb. 17, 1984, Ser. No. 581,323

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—197 **10 Claims**



6. A cartridge for optical recording and storage tape comprising,

a housing having a top wall, a bottom wall and side walls,

tape supply and take-up spools and a capstan with a tape path extending from the supply spool to around the periphery of the capstan to the take-up spool, and

at least one transparent window defined in each said side wall having regions parallel to tangent planes of the capstan in three locations, the furthest points of tangency forming an angle exceeding 90° when subtended to the center of said capstan.

4,524,926

CASSETTE AND CASSETTE ADAPTER FOR USE THEREWITH

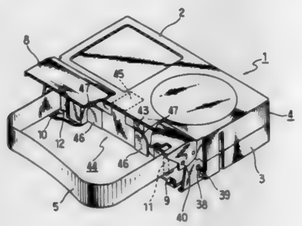
Tsuneo Nemoto, and Kokichi Sugawara, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,412

Claims priority, application Japan, Apr. 16, 1982, 57-55239[U]

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—198 **2 Claims**



1. A tape cassette for use with an information signal recording and/or reproducing apparatus having reel driving means, said tape cassette comprsing:

housing means;

a supply reel rotatably positioned within said housing means;

a take-up reel rotatably positioned about a fixed axis of rotation within said housing means;

engaging means mounted within said housing means for rotation with said take-up reel and engageable by said reel driving means for rotatably driving said take-up reel;

lid means pivotally mounted to said housing means; and

lid lock means for preventing pivotal movement of said lid means to an open position;

said lid means including a first aperture, said housing means including a second aperture in alignment with said first aperture when said lid means is in a closed position and a third aperture, and said lid lock means including an arm pivotally mounted within said housing means, a first projection, a second projection and spring means for biasing said arm so that said first projection extends through said third aperture and said second projection extends through said first and second apertures to lock said lid means in said closed position.

4,524,927

MAGNETIC-TAPE CASSETTE WITH A FLEXIBLE LATCH FOR A COVER

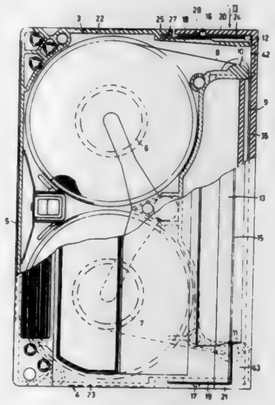
Joannes H. F. C. Sieben, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 15, 1983, Ser. No. 513,942

Claims priority, application Netherlands, Aug. 17, 1982, 8203219

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—198 **14 Claims**



1. A magnetic-tape cassette comprising:

a housing having major walls, first and second substantially parallel side walls, and a front with a front aperture or recess between the major walls,

a magnetic tape which has a portion which extends across said front aperture or recess in the housing to cooperate with parts of a magnetic-tape cassette apparatus;

a cover pivot which is perpendicular to the side walls of the housing,

at least one front cover which is pivotable about said cover pivot from an open position to a closed position which front cover at least partly covers the front aperture or recess in the housing in the closed position;

a lever pivot which is connected to the housing,

a least one latching lever which is pivotable about said lever pivot, situated near one of the side walls, from an inoperative position to a latching position in which the latching lever latches the front cover in the closed position; and

spring means for biasing said lever from the inoperative position toward the latching position,

characterized in that the latching lever comprises two arms of different lengths arranged in the form of an L, the longer arm being elastically deflectible over at least part of its length and comprising a latching portion at an end which is remote from the shorter arm; and the shorter of said arms is connected to the pivot for the latching lever at an end which is remote from the longer arm,

the pivot of the latching lever extends substantially parallel to the pivot of the front cover and is connected to said one of the side walls of the housing, and

the cassette further comprises guide means disposed near the latching portion for guiding said portion during the pivotable movement of the latching lever.

4,524,928

WING-SECTIONS, IN PARTICULAR AIRCRAFT LIFT-WING SECTIONS

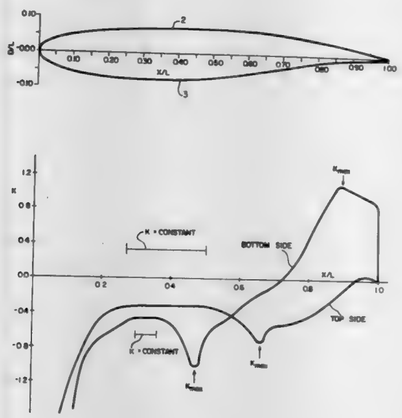
Wolfgang Schmidt, Friedrichshafen, and Jose M. Longo, Deggenhausertal-Untersiggingen, both of Fed. Rep. of Germany, assignors to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 418,064

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1981, 3140351

Int. Cl.³ B64C *3/14*

U.S. Cl. 244—35 R **9 Claims**



1. Wing sections, in particular lift-wing sections for aircraft with a design Mach number between 0.2 and 0.9 and with a lift range between −0.2 and 0.6 in the high velocity range and up to 1.5 in the low velocity range, in which

(a) the wing section evinces respectively areas of constant curvature on its top side between 30% and 50% of the relative wing section depth (x/1) and on its bottom side between 20% and 40% of the relative wing section depth (x/1), said areas of constant curvature terminating on each side in a maximum of curvature to stabilize a location of production of shocks and wherein the maximum of curvature at the top side is provided at 60 to 70% of the relative wing section depth, with $|k|>0.6$ and wherein the maximum of curvature at the bottom side occurs at 35 to 50% of the relative wing section depth; and

(b) the areas of maximum curvature are joined and continued by recompression areas, with at least two inflection points in the respective contour curvature on top and bottom sides, and extending respectively to the trailing edge.

4,524,929

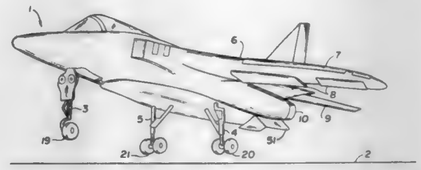
SHORT TAKE OFF JUMP MODE FOR AIRPLANE LANDING GEAR STRUTS

David F. Gebhard, Northport, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,657

Int. Cl.³ B64C *25/26, 25/60*

U.S. Cl. 244—63 **21 Claims**



1. A method of facilitating early takeoff of an airplane or, alternatively, increasing the payload of the airplane without increasing takeoff ground roll, said airplane having a telescoping, energy-dissipating oleo shock strut affixed to an extendible from the nose of said airplane, said method comprising the steps of

restraining said shock strut in unenergized shortened condition;

energizing said strut;

accelerating said airplane from standstill;

releasing said strut during the takeoff run acceleration of said airplane, whereby the energy of said strut extends said strut from said airplane and is dissipated thereby increasing the angle of attack of said airplane, causing an upward increase in lift which decreases gravity effect during acceleration of said airplane and shortens its takeoff roll; and

immediately restoring the landing shock energy dissipation condition of said strut thereby immediately reinstituting the normal landing function of said strut.

7. A jump strut device for facilitating early takeoff of an airplane or, alternatively, increasing the payload of the airplane without increasing takeoff ground roll, said airplane having a telescoping, energy-dissipating oleo shock strut affixed to and extendible from the nose area of said airplane, said device comprising

latching means for latching said shock strut in its shortened condition;

pressure means for pressurizing the interior of said shock strut while it is latched;

release means for unlatching said latching means during takeoff run acceleration of said airplane, whereby the internal pressure of said strut extends said strut from said airplane and is dissipated, thereby pushing said airplane upward and increasing the angle of attack of said airplane, causing an increase in lift and a decrease in gravity effect during acceleration of said airplane and shortening its takeoff roll; and

restoring means for immediately restoring the landing shock energy dissipation condition of said strut thereby immediately reinstituting the normal landing function of said strut.

4,524,930

INFLATION-CONTROLLED PARACHUTE

Matts J. Lindgren, and Murl F. Culp, both of Cupertino, Calif., assignors to Lockheed Missiles & Space Co., Inc., Sunnyvale, Calif.

Filed Jun. 17, 1983, Ser. No. 505,301

Int. Cl.³ B64D *17/36*

U.S. Cl. 244—152 **6 Claims**

1. A parachute comprising:

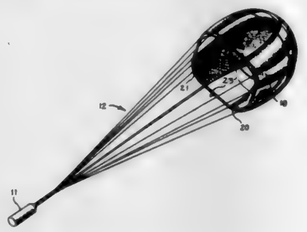
(a) a flexible structure that is foldable into a stowed configuration, said flexible structure being unfoldable from said

stowed configuration into an inflated configuration so as to provide an aerodynamic drag-producing surface, and

(b) inflation control means for enabling said flexible structure to unfold from said stowed configuration into said inflated configuration at a controlled rate, said inflation control means including:

(i) a plurality of positioning rings attached to said flexible structure, and

(ii) a flexible inflation-control line, a first portion of said line being affixed to said flexible structure and a second portion of said line being threaded through said positioning



rings, said second portion of said line moving relative to said first portion of said line when said flexible structure unfolds into said inflated configuration, one segment of said second portion of said line overlying another segment of said second portion of said line within at least one of said positioning rings, said one segment being in frictional engagement with said other segment when said second portion of said line moves relative to said first portion of said line, said frictional engagement of said segments of said second portion of said line providing frictional resistance for controlling the rate at which said flexible structure unfolds into said inflated configuration.

4,524,931

DEVICE FOR INDICATING A CERTAIN PROXIMITY BETWEEN MOVABLE UNITS

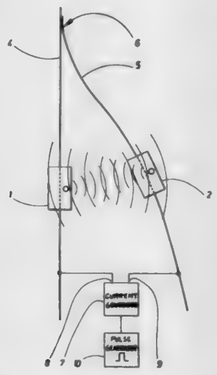
Arne H. A. Nilsson, Kungsbacka, Sweden, assignor to Ingeniorsfirma N.D.C. Netzler & Dahlgren Co Aktiebolag, Saro, Sweden

Filed Nov. 9, 1981, Ser. No. 319,635

Claims priority, application Sweden, Nov. 12, 1980, 8007933

Int. Cl.³ B61L *3/00, 1/08;* **G01S** *3/02*

U.S. Cl. 246—167 D **3 Claims**



1. An apparatus for indicating a certain proximity between movable vehicles having a control device assuring that the vehicles automatically follow a predetermined path determined by electrical control loops fed with an alternating current, said apparatus comprising a device for transmitting by means of said electrical control loops to said vehicles an electro-magnetic synchronizing signal in the form of synchronizing pulses propagated with very high speed, a first receiver device, and a transmitter device, situated on each of said vehicles for receiving the synchronizing pulses and for activating said transmitter devices to emit an information signal in the form of wave propagation movement in the air with a considerably lower speed of propagation in comparison with the synchronizing signal, said information signal being in the form of information pulses emitted in synchronism with the reception of the synchronizing pulses, devices situated on each of said vehicles, including a second receiver for receiving the information pulses, means for measuring a time difference arising between the synchronizing pulses as received by a vehicle and the received information pulses emitted synchronously from another vehicle, means for comparing said time difference with a predetermined time value corresponding to a certain proximity between the vehicles, and means for emitting a proximity indicating signal, when said time difference falls below said time value, thereby indicating that the distance between two vehicles lies below a predetermined distance value, said synchronizing pulses reaching all vehicles substantially simultaneously, resulting in that all vehicles transmit during their travel along the path information signals substantially in synchronism with each other and that said proximity indicating signal is caused to be emitted in each individual vehicle, as soon as the same comes within said certain proximity of any other vehicle.

4,524,932

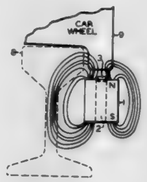
RAILROAD CAR WHEEL DETECTOR USING HALL EFFECT ELEMENT

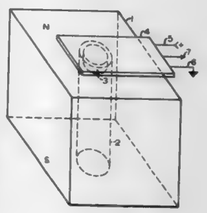
Thomas A. Bodziak, Neville Island, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Dec. 30, 1982, Ser. No. 454,519

Int. Cl.³ B61L *1/16*

U.S. Cl. 246—247 **7 Claims**





1. Wheel detector apparatus for car wheels moving along a railroad track rail, comprising:

(a) a permanent magnet means with an internal hole extending parallel to the pole-to-pole axis for creating a magnetic flux null space along that axis within said hole and externally at both poles,

(b) said magnet means positioned adjacent the gauge side of said rail a predetermined distance below the top of said rail with said pole-to-pole axis in vertical alignment with the flange of each passing car wheel, for generating a first and a second level of magnetic flux when a car wheel is absent and present, respectively,

(c) a Hall effect means positioned at the upper end of said magnet means within said null space and with its critical axis parallel to said pole-to-pole axis,

(d) said Hall effect means responsive to flux from said magnet means for generating an output voltage proportional to the existing flux level, and

(e) a detector network coupled for responding only to said Hall effect means output voltage representing said second flux level to register the passage of a car wheel.

4,524,933

APPARATUS AND MOUNTING SHELL HAVING RETAINING TONGUES FORMED BY CUTS

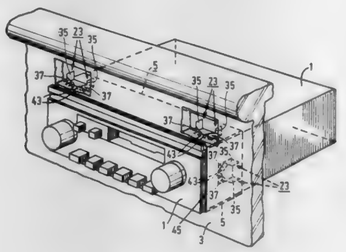
Petrus L. A. Rouws, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 399,043, Jul. 16, 1982, abandoned. This application Aug. 27, 1984, Ser. No. 644,667

Claims priority, application Netherlands, Jul. 29, 1981, 8103575

Int. Cl.³ G12B *9/00*

U.S. Cl. 248—27.3 **16 Claims**



1. An arrangement for securing an element inserted into a hole in a mounting wall, said mounting wall having outer and inner surfaces spaced a given wall thickness apart, and

said element having at least one element wall arranged to extend perpendicularly through said mounting wall adjoining an edge of the hole in the mounting wall; an abutment portion arranged to bear against a portion of said outer surface; and at least one tongue formed by a cut in said element wall arranged to leave a bridge portion between the tongue and the element wall, and bent outward from said element wall and arranged to engage said inner wall and press against said inner wall with force resulting from bending of a portion of the tongue,

characterized in that said tongue comprises a mounting portion and a supporting portion which are bent outward together from said element wall about a first axis perpendicular to said mounting wall and extending along said bridge portion; and said mounting portion has a free end which engages and bears against said inner surface, and is arranged such that said mounting portion is bent relative to the supporting portion about a second axis parallel to said supporting portion and lying in a plane parallel to said mounting wall,

whereby said free end bears against said inner surface with a force determined mainly by the degree of deformation of the mounting portion.

4,524,934

PIPE HANGER

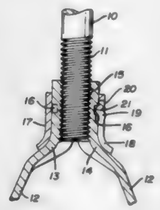
Ray M. Rumble, Canfield, Ohio, assignor to Michigan Hanger Company, Inc., Hubbard, Ohio

Continuation of Ser. No. 381,077, May 24, 1982, , which is a continuation-in-part of Ser. No. 257,599, Apr. 27, 1981, abandoned. This application Dec. 1, 1983, Ser. No. 556,777

The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.

Int. Cl.³ F16L *3/00*

U.S. Cl. 248—62 **7 Claims**



1. An improvement in a pipe hanger which pipe hanger includes a strap which may be bent and positioned about a pipe to be suspended, the ends of said strap arranged to be moved to positions adjacent one another and secured to a threaded support rod, the improvement comprising means for securing said ends of said strap to said threaded support rod, said means consisting of end portions on said strap shaped to engage the opposite sides of said threaded support rod, and a ferrule movable coaxially of said support rod over said end portions of said strap so as to move said end portions against said threaded support rod in non-slipping engagement therewith, and means for locking said ferrule in said position against said end portions, said locking means consisting of inter-engaging snap-in resilient configurations formed in said ferrule and in at least one of said end portions of said strap, said ferrule and locking means being integrally formed of resilient metal.

4,524,935

PIPE HANGER

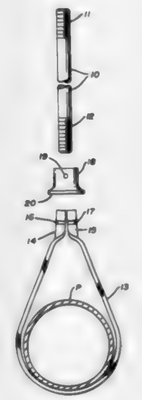
Ray M. Rumble, Canfield, Ohio, assignor to Michigan Hanger Company, Inc., Hubbard, Ohio

Continuation of Ser. No. 381,077, May 24, 1982, which is a continuation-in-part of Ser. No. 257,599, Apr. 27, 1981, abandoned

The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.

Int. Cl.³ F16L *3/00*

U.S. Cl. 248—62 **11 Claims**



1. An improvement in a pipe hanger, which pipe hanger

includes a strap to be positioned about a pipe to be suspended, the ends of said strap arranged to be moved to positions adjacent one another and secured to a threaded support rod, the improvement comprising means for securing said ends of said strp to said threaded support rod, said means consisting of cross sectionally arcuate end portions on said strap engaging the opposite sides of said threaded support rod, and a ferrule movably coaxially of said support rod over said end portions of said strap so as to move said end portions against said threaded support rod in non-slipping engagement therewith, and means for locking said ferrule in said position against said end portions, said locking means consisting of inter-engaging snap-in resilient configurations formed in said ferrule and in at least one of said end portions of said strap, said ferrule being resilient and distortable.

4,524,936

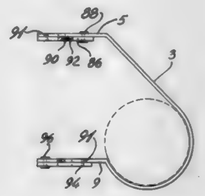
PIPE HANGER

Gerard Hurtubise, 851 Rochon, Ste-Thérèse-en-haut, Quebec, Canada G7E 4B2

Continuation of Ser. No. 472,770, Mar. 7, 1983, which is a continuation-in-part of Ser. No. 291,953, Aug. 11, 1981, abandoned. This application Aug. 27, 1984, Ser. No. 644,441

Int. Cl.³ F16L *3/00*

U.S. Cl. 248—62 **6 Claims**



1. A pipe hanger having a threaded support rod; a unitary, preformed bracket, the bracket consisting of a top section, a bottom section, and a pipe receiving section joining the top and bottom sections, the top section overlying the bottom section and extending parallel to it, the pipe receiving section lying to one side of the top and bottom sections and below the bottom section, the bottom section being straight and merging with the pipe receiving section, a support rod extending in a vertical axis at a right angle to the top and bottom sections, a mounting opening in the form of a slot in both the top and bottom sections, the slots in both sections aligned on the axis of the rod which extends perpendicular to both sections, the slots extending inwardly from side edges of the respective sections, a jaw pivotally mounted on each section and movable between a slot open position wherein the rod is free to be placed within the slots and a slot closed position wherein the jaw is closed against the rod to secure the bracket on the rod, and wherein the pipe pipe receiving and the bottom section retains a pipe against movement in a direction transverse to the pipe axis.

4,524,937

BUCKLE CONNECTION FOR HANGING CABLE

John P. Zizan, Pittsburgh, Pa., assignor to Robroy Industries, Verona, Pa.

Filed Jan. 20, 1983, Ser. No. 459,310

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—74.3 **12 Claims**

1. Cable support structure comprising,

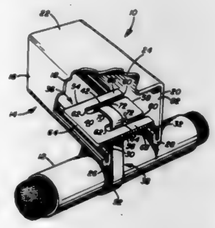
a structural support including a longitudinally extending channel-shaped support member,

said support member including a pair of spaced side walls having free end portions turned inwardly to form opposed, longitudinally extending flanges,

locking strip means extending around a cable for securing the cable to said support member, said locking strip means including a first end portion and a second end portion,

a rigid member positioned within said support member and supported by said flanges,

said rigid member having a body portion extending between said flanges, said body portion including slotted means for receiving said locking strip means to extend around said



rigid member in overlying relation with said rigid member body portion, and

means associated with said locking strip means for connecting said first end portion to said second end portion to form a loop of a preselected size extending around said rigid member at a first end portion and around the cable at a second end portion to support the cable from said support member.

4,524,938

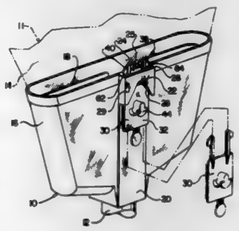
SELF CONTAINED BROOM HANGING SYSTEM

Martin P. Strahs, Lawrenceville, and John Vosbikian, Mt. Laurel, both of N.J., assignors to Quickie Manufacturing Corporation, Cinnaminson, N.J.

Filed Jan. 17, 1983, Ser. No. 458,307

Int. Cl.³ A46B *17/02*

U.S. Cl. 248—110 **18 Claims**



1. A combination broom and broom hanging system of the type including a broom having a handle and sweeping portion affixed at one end of the handle comprising

a shroud secured about the sweeping portion and adapted to move when the broom is moved, the shroud comprising a sidewall and a hanger holder integral with and extending from the shroud; and

a hanger removably engaged with the hanger holder, the hanger comprising a body, leg means of

predetermined thickness extending from the body to releasably engage the hanger holder, means to secure to a fixed surface and hook means formed in the body to hang the broom, the hanger being movable from a first, storage position in association with the hanger holder and a second, hanging position that is on the fixed surface;

whereby the broom may be supported upon the fixed surface by affixing the hanger to the surface by utilizing the means to secure and then engaging the hook means portion of the hanger with a portion of the hanger holder.

4,524,939

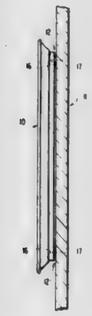
DOUBLE PRONGED FASTENER WITH PARTIALLY DELAMINATED ADHESIVE LAYER

James W. Hogg, Nashville, Tenn., assignor to Anchor Wire Corporation, Goodlettsville, Tenn.

Continuation-in-part of Ser. No. 97,145, Nov. 26, 1979, Pat. No. 4,317,555. This application Feb. 25, 1982, Ser. No. 352,188

Int. Cl.³ A47F *7/14*

U.S. Cl. 248—467 **16 Claims**



1. Fastener for mounting an object having a wood member on a wall comprising plaster, or gypsum, wallboard or the like, comprising:

a flat sheet of metal;

a sheet of liquid degradable, partially delaminated fibrous material bonded to one side of said metal sheet to form a composite of sheet metal and fibrous material

the exposed surface of said fibrous sheet being coated with a soluble adhesive;

a pair of flat metal prongs projecting outwardly from respective opposite sides of said composite of sheet metal and fibrous sheet material and at right angles thereto;

the free ends of said prongs being sharply pointed to facilitate insertion respectively into wood material and into a wall.

4,524,940

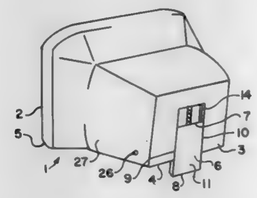
MONITOR FOOT

James R. Yurchenco, and Michael J. Nuttall, both of Palo Alto, Calif., assignors to MAD Computer, Inc., San Jose, Calif.

Filed Nov. 28, 1983, Ser. No. 555,993

Int. Cl.³ A47B *91/00*

U.S. Cl. 248—359 **3 Claims**



1. An apparatus for adjusting the angle of presentation of a screen on the front of a video monitor, the video monitor having a lower edge, comprising:

a slidable foot, having a top, a bottom, a left side, a right side, an inside, and an outside for supporting the video monitor at an angle of presentation;

rail means for securing said slidable foot formed along said left side and said right side of said slidable foot;

guide means formed on the video monitor for receiving said rail means so that said slidable foot slides to extend said bottom of said slidable foot below the lower edge of the video monitor;

ratchet means for engaging said slidable foot to prevent movement of said slidable foot when engaged, said ratchet means including a series of teeth formed on said slidable foot on said inside parallel with said left side, and an elongate member with a pawl for engaging one of said series of teeth mounted on the video monitor, said elongate member being mounted so that a distal end of said elongate member protrudes slightly from said video monitor and a proximal end is adjacent said series of teeth, and a ratchet spring mounted on the video monitor against said proximal end of said elongate member so that said pawl tends to engage said series of teeth and so that said pawl is disengaged by depressing said distal end.

4,524,941

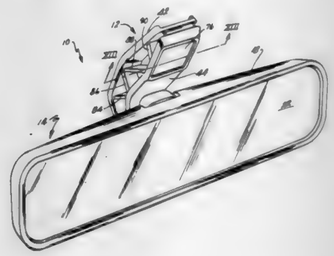
REARVIEW MIRROR SUPPORT BRACKET

Denis Wood, Dublin, Ireland; John F. Thomas, Jr., Holland, Mich.; Barry Dipper, Cardiff, Wales; Philip D. Stegenga; John H. Veltkamp, both of West Olive, Mich.; William L. Katsma, Jenison, and Robert L. Norton, Holland, both of Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Jun. 24, 1981, Ser. No. 276,839

Int. Cl.³ B60R *1/02*

U.S. Cl. 248—544 **2 Claims**



1. A breakaway rearview mirror bracket for attaching a rearview mirror to a mounting button, said bracket comprising:

a body having a top end and a bottom end, said body further including mirror case mounting means at its bottom end for adjustably mounting a mirror case to said body; and

an attachment means joined to said body adjacent said top end, said attachment means comprising:

a generally planar member;

a pair of opposed, elongated clips which define opposed, inwardly opening grooves dimensioned to receive the mounting button in a tongue and groove fashion, said clips being formed of a resilient material, each of said clips being generally L-shaped in cross section including a sidewall and an inwardly directed lip having an under surface which is sloped downwardly towards said sidewall;

pivot and tension means mounted in a substantially fixed position on and extending from said planar member for engaging the mounting button, said pivot and tension means dimensioned to tension the clips after receipt of the button to securely locate the bracket on the button and to act as a substantially fixed pivot to cause the bracket to break away from the button when the bracket sustains a predetermined impact;

a surrounding wall which encloses and extends around three sides of said planar member, said wall defining an open end for receipt of the button;

resilient retaining means adjacent said clips for engaging and retaining said body on the button after said clips have received the button; and

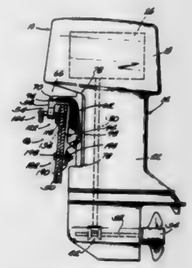
a pair of transversely spaced, longitudinally extending guides, each having a generally V-shaped in cross section, said guides extending upwardly from said planar member, one of said guides being adjacent each of said clips to prevent a leading edge of the button from catching on the attachment means as the clips are slid over the button.

4,524,942

OUTBOARD MOTOR MOUNTING ASSEMBLY

Don F. Kueny, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 27, 1983, Ser. No. 545,823
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—643 **6 Claims**



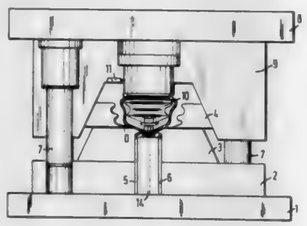
1. An assembly for mounting an outboard motor on the transom of a boat, said assembly comprising an inverted U-shaped clamp member adapted to have the motor mounted thereon, said clamp member including an upper body portion, an inside leg extending downwardly and rigidly from said upper body portion and in position to be located inside of the transom, an outside leg extending downwardly and rigidly from said upper body portion and in position to be located outside of the transom and including a bottom end, a transom plate adapted to be fixed on the inside of the transom, and means adapted to extend through the transom for securing said outside leg to said transom plate, means for clamping said clamp member to the transom including selectively engageable interengaging means on said clamping means and said transom plate for fixing said clamping means to said transom plate, and means for preventing movement of said bottom end relative to the transom.

4,524,943

INJECTION MOLD

Peter Busch, Bochum, and Karl-Heinz Barbet, Korschenbroich, both of Fed. Rep. of Germany, assignors to TRW Ehrenreich GmbH & Co. KG, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 18, 1983, Ser. No. 514,734
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228748
Int. Cl.³ B29C *11/00*
U.S. Cl. 249—63 **10 Claims**



1. In an injection mold for the manufacture of a sealing element of elastic material which has outer and inner undercuts, having followers which are divided centrally in a longitudinal direction of the sealing element and correspondingly form an outer contour of the sealing element, the mold including a core plunger which correspondingly forms an inner contour of the sealing element and is divided into an upper core plunger part and a lower core plunger part which are movable longitudinally relative to each other and from which the sealing element is removed after the opening of the followers, the improvement in combination wherein

said followers are divided further in a transverse direction in the region between the inner of the undercuts of smallest diameter and the outer of the undercuts of smallest diameter into an upper pair of said followers and a lower pair of said followers,

each of said upper and lower pairs of followers are movable transversely to the longitudinal direction independently of each other, and wherein

said mold further comprises an ejection sleeve, the lower core plunger part being guided in said ejection sleeve, said sleeve being movable relative to the lower core plunger part and with an end surface thereof forming a part of the outer contour of an end surface of the sealing element, and

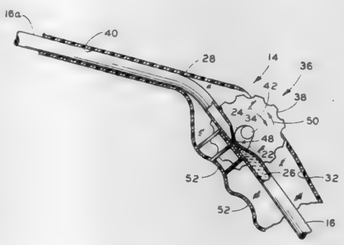
means for simultaneously feeding compressed air for expanding the sealing element when said one of said pairs of followers open for initiation of automatic removal of the sealing element from one of the core plunger parts adjacent said one of said pairs of followers when the other of said pairs of followers is closed and holding the sealing element firmly sealed on the other core plunger part.

4,524,944

PLANT-WATERING DEVICE

Howard Sussman, 3101 NW. 25th Ave., Pompano Beach, Fla. 33060

Filed Dec. 27, 1982, Ser. No. 453,612
Int. Cl.³ B05B *1/30*; F16K *7/06*
U.S. Cl. 251—6 **1 Claim**



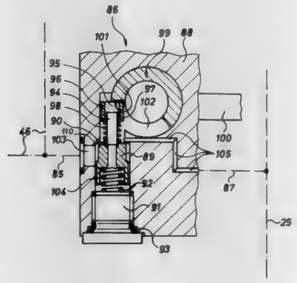
1. An improved indoor plant-watering device comprising a housing, a cam-like rotatable operative member having a peripheral contact surface thereon at variable distances from a rotation axis such that a leading end of said surface is at a selected minimal distance and a trailing end thereof is at a selected maximum distance and said surface is of a smooth configuration therebetween, said cam-like member having a pair of hubs extending laterally from opposite sides thereof journalled for rotation in opposite sides of said housing for establishing said rotation axis thereof, a large diameter knob located adjacent said cam-like member on said hubs having a knurled peripheral edge providing finger grips and also visual indices of positions of rotation of said cam-like member, a tube of squeezable construction material disposed in said housing for flowing water from a source to a point of discharge from said plant-watering device, and means for mounting said cam-like member for rotation on said housing such that the rotative path of said peripheral surface thereon is effective to establish squeezing contact of said surface against said tube for providing a fully open flow condition in said tube operatively associated with said leading end of said cam-like surface and a fully closed condition therein operatively associated with said trailing end thereof and all flow conditions therebetween such that there is adjustability in the volume of the water discharging from said device afforded by said cam-like member which also obviates any possible damage to said tube by reason of the established contact therewith by said cam smooth peripheral surface, and a cooperating pair of sides in said housing shaped as a handle, whereby the user is able to grip the device and to rotate said knob with the user's thumb on said gripping hand.

4,524,945

PRESSURE-FLUID OPERATED LIMIT SWITCH

Norbert Mucheyer, Rechtenbach, and Heinz Schulte, Marktheidenfeld, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,627
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148500
Int. Cl.³ F16K *31/52*
U.S. Cl. 251—75 **7 Claims**



1. A limit switch for a pressure fluid-operated device including a pressure fluid source, an adjusting element, and a pressure compensator, the limit switch comprising a valve housing provided with a recess and formed with a valve seat; a valve member located in said recess and abutting said valve seat when the switch is in its closed position, said valve member having one side facing toward said seat and another side facing away from said seat; a valve spring arrange at said another side and biasing said valve member toward said seat, said valve member being adapted at times to move away from said valve seat against the action of said valve spring; and actuating member having an axis and rigidly connected to said valve member, said actuating member having a portion extended outwardly therefrom beyond said valve seat in said housing; a sleeve mounted on said portion and adapted to axially slide thereon; and a prestressed spring arranged on said actuating member at a side thereof facing away from said valve spring, said prestressed spring being clamped between said sleeve and said valve member, said portion including a stop flange extended radially outwardly therefrom and being integral therewith, said sleeve being formed with a stop projection extending inwardly toward said portion and cooperating immediately with said stop flange, said sleeve projecting beyond said actuating member in the direction of said axis when the switch is in its closed position.

4,524,946

BALL VALVE HAVING IMPROVED SEAL MEANS

William E. Thompson, R.R. 1, Box 89, Middletown, Ind. 47356

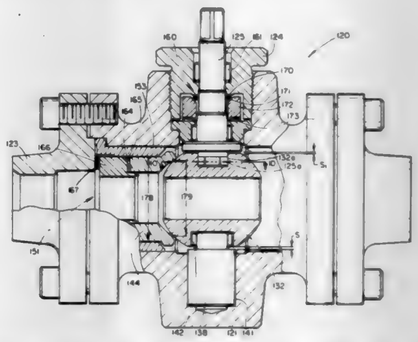
Continuation-in-part of Ser. No. 317,579, Nov. 2, 1981, Pat. No. 4,428,561. This application Jan. 10, 1983, Ser. No. 456,774
Int. Cl.³ F16K *35/00*
U.S. Cl. 251—88 **11 Claims**

1. A ball valve operable between a fully-open position and a closed position for regulating fluid flow, said ball valve comprising:

a valve body having a flow passageway extending therethrough;

a ball plug member disposed within said flow passageway and having a flow hole therethrough, said flow hole terminating in open ends adjacent the exterior surface of said ball plug;

a pair of oppositely positioned ball seats, each seat being cooperatively disposed in sealing contact against the outer surface of said ball plug with a corresponding circular line of contact, each of said circular lines of contact encompassing the open ends of said flow hole; and



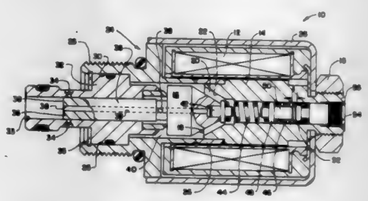
a pair of spring seal assemblies disposed within said valve body and positioned around said flow passageway, one spring seal assembly on each side of said ball plug, each of said spring seal assemblies including seal-energizing means and an L-ring annular seal member which is oriented to have two outwardly facing sealing surfaces and an interior annular corner, said annular seal member being disposed continguous to its corresponding ball seat and said seal-energizing means acting upon its corresponding annular seal member, said spring seal assemblies being free of any elastomeric materials thereby enabling said spring seal assemblies to be used with high-temperature fluids.

4,524,947

PROPORTIONAL SOLENOID VALVE

Pierre D. Barnes, and Maynard W. Marts, both of Hutchinson, Kans., assignors to The Cessna Aircraft Company, Wichita, Kans.

Filed Nov. 30, 1982, Ser. No. 445,773
Int. Cl.³ F16K *31/06*
U.S. Cl. 251—129 **8 Claims**



1. A normally closed two way proportional solenoid-operated valve assembly including:

a body having a bore therein;

a lateral passage in the bore;

a spool slidably positioned in the bore overlapping the lateral passage in the closed position and forming a variable opening with the lateral passage in various open positions;

an armature means attached to said spool for positioning the spool and controlling the valve opening;

a pole piece means in the body positioned adjacent the armature forming an air gap therebetween;

a first spring means having a predetermined spring rate urging the armature and spool toward the overlapping closed position;

a second spring means having a lesser spring rate than the first spring means positioned in series with the first spring means urging the armature and spool toward the overlapping closed position;

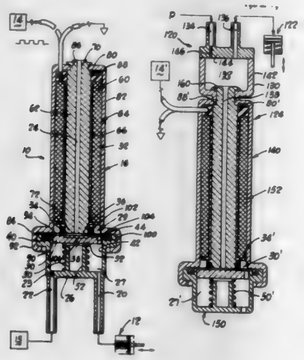
coil means operable to produce a circuit of electromagnetic flux line flow and provide a variable attractive force between the armature and pole piece to overcome the second spring means and the first spring means in sequence with intermediate positions of the armature and spool therebetween.

4,524,948

ELECTRICALLY CONTROLLED PRESSURE TRANSDUCER VALVE

Dale G. Hall, Galena, Ohio, assignor to Ranco Incorporated, Dublin, Ohio

Filed Sep. 9, 1983, Ser. No. 530,510
Int. Cl.³ F16K *31/02, 17/04*
U.S. Cl. 251—139 **9 Claims**



1. An electrically controlled pressure transducer valve comprising:

(a) a controlled output pressure passage;

(b) an input passage communicating with a source of pressure and with said output passage, said input passage defining a flow restriction of substantially restricting flow therethrough so that changes in source pressure are not abruptly communicated to said output passage;

(c) a vent passage communicable with said pressure passage between said flow restriction and said output passage;

(d) valve means for controllably varying the degree of communication through said vent passage to govern the output pressure level, said valve means comprising:

(i) a valve member defining opposed sides forming first and second effective pressure areas respectively exposed to output and vent pressures, said effective pressure areas consituting substantial proportions of the total areas of said valve member sides, said valve member movable in response to changes in differential pressure applied to said effective pressure areas;

(ii) an electromagnetic actuator for exerting magnetic force on said valve member, said actuator comprising a coil connected to an electrical power source for producing an electromagnetic field, a core extending within said coil and a pole piece having one end section connected to said core, a thin walled tubular sleeve section closely surrounding said coil and a second end section having a peripheral portion extending circumferentially about said core and disposed adjacent said valve member for establishing a substantially uniform concentrated magnetic flux path extending peripherally about said core across a gap between said second pole piece end section and said one valve member side to minimize application electromagnetic tipping forces on said valve member; and,

(iii) a nonmagnetic valve seat coacting with said one valve member side for blocking communication between said vent passage and said output passage, said valve seat positioned to prevent said valve member from engaging said core and pole piece and configured to maintain said valve member uniformly spaced from said core and pole piece when communication between said vent and output passages in blocked, said valve seat defining, with said one valve member side, one of said first and second effective pressure areas; and,

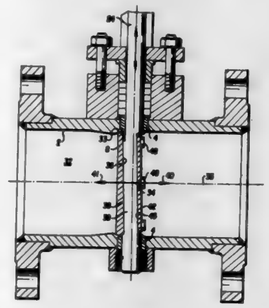
(e) biasing means for biasing said valve member toward engagement with said valve seat, said valve member acted upon by differential pressure force, electromagnetic force and biasing force to govern the flow through said vent passage and control the pressure of said output port.

4,524,949

HIGH PRESSURE BUTTERFLY VALVE WITH FLOATING DISK VALVE MEMBER

John R. Goetzinger, 2956 W. 17th St., Erie, Pa. 16506

Filed Jan. 31, 1983, Ser. No. 462,208
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—163 **2 Claims**



1. A valve comprising

a unitary body having an axial flow passageway therethrough defined in part by a radial metal valve seat,

a unitary metal valve disk member having a forward face with a metal radially sealing surface which sealably engages said metal radial seat when the disk is in closed position, the valve disk member further having a rearward face opposite said forward face, said sealing surface being spherical about a point on the axis of flow through said passageway to the rear of said forward face,

a diametral slot in the rearward face of the valve disk member, said slot being of rectangular cross section with its bottom wall inclined to the axis of the valve stem at a wedging angle,

a unitary valve stem journaled in said body for rotation about and axial displacement along its axis, the stem axis extending transverse to the axis of flow through said passageway,

a cam integral with the stem cooperating with a surface at the bottom of said slot to wedge the disk toward said seat upon said axial displacement of the stem, said cam being a section of the valve stem of rectangular cross section complementary to the slot and wedging the valve closed upon axial displacement of the stem,

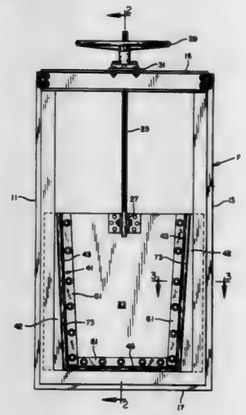
and a retainer fixed to the valve disk member extending over the stem remote from said bottom surface and holding the stem in said slot.

4,524,950

OPEN CHANNEL GATE VALVE

John K. Vitas, Wilsonville, and Harry J. Reed, Gladstone, both of Oreg., assignors to Plasti-fab, Inc., Tualatin, Oreg.

Filed Jul. 18, 1983, Ser. No. 514,566
Int. Cl.³ F16K *3/12, 3/312*
U.S. Cl. 251—326 **6 Claims**



1. An open channel gate valve comprising a gate blade and a frame,

said gate blade being arranged normal to the fluid flow path through the valve,

said frame being provided with a pair of parallel grooves to slidably receive parallel side margins of the gate blade, to guide the blade between open and closed positions,

seat means including a pair of converging seats carried by the frame in offset relation to the plane of the gate blade,

said seat means providing first contacting surfaces facing generally inwardly toward one another,

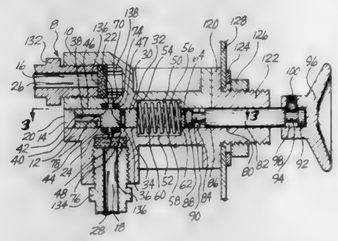
sealing means carried by one face of the gate blade in offset relation to the plane of the gate blade, said sealing means having second contacting surfaces facing generally outwardly for contacting said first contacting surfaces in a direction contained in a plane normal to the fluid flow path as the blade moves to a closed position.

4,524,951

CENTER-POSITION BIASED SLIDE VALVE

Charles J. Green, Vashon, and Alan K. Forsythe, Burton, both of Wash., assignors to GT Development Corporation, Tukwila, Wash.

Filed Jun. 15, 1981, Ser. No. 273,664
Int. Cl.³ F15B *13/04;* **F16K** *3/02*
U.S. Cl. 251—327 **22 Claims**



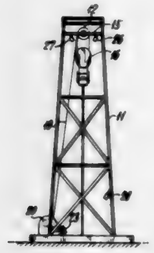
4. In a valve mechanism, a valve housing having a slide valve chamber and an adjoining spring chamber of larger cross section than the slide valve chamber providing a shoulder at the junction of the spring chamber with the slide valve chamber, slide valve means movably mounted in the slide valve chamber and having a rectangular portion adjacent to the spring chamber, said valve housing being formed of two parts adjacent to opposite faces of the slide valve means, said housing parts having elongated mating surfaces and cooperating to form the slide valve chamber, said valve housing being formed with at least one valve port controlled by the slide valve means, said valve housing also being formed with an opening at one end leading from the slide valve chamber to the outside of the housing, and the slide valve means including operating means passing through said opening for operating the slide valve means from outside the housing, spring means in the spring chamber arranged to engage the rectangular portion of the slide valve means and said shoulder, said spring means urging the slide valve means in a predetermined direction and being stopped by the shoulder, said spring chamber being located in the housing between the valve port and the opening for the operating means.

4,524,952

SAFETY SYSTEM FOR AN OIL WELL DERRICK

Gerald F. Rome, Houston, and Frank L. Lankford, Jr., Bellaire, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 18, 1984, Ser. No. 611,658
Int. Cl.³ B66D *1/48, 1/36*
U.S. Cl. 254—269 **7 Claims**



1. Safety system for an oil well derrick or the like having a stationary block, a traveling block and drawworks for raising and lowering said traveling block within a normal range, said drawworks including means for stopping movement of said traveling block, comprising

first electrical sensing means adjacent to said stationary block for sensing the presence of said traveling block,

second electrical sensing means located adjacent to a predetermined lower limit of travel of said traveling block,

actuating means for said stopping means,

alarm means for warning prior to activating said actuating means,

first circuit means for connecting said first and second sensing means to said actuating means,

said first circuit means comprising a) manual means for deactivating said actuating means whereby said traveling block may be released for travel beyond either said first or second sensing means, and b) means for automatically reactivating said actuating means when said traveling block has returned to said normal range,

second circuit means for connecting said first and second sensing means to said alarm means whereby said alarm means will be actuated before said actuating means for said stopping means.

4,524,953

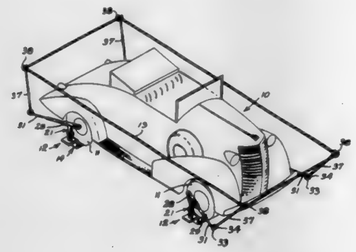
ADJUSTABLE PROTECTIVE ROPE BARRIER

Roger W. Phillips, and Ann L. Phillips, both of 8030 E. Township Rd. 88, Bloomville, Ohio 44818

Continuation-in-part of Ser. No. 304,771, Jul. 23, 1981, abandoned. This application Apr. 22, 1982, Ser. No. 370,874
Int. Cl.³ A01G *17/06*
U.S. Cl. 256—23 **15 Claims**

1. An adjustable protective barrier standard for use in supporting a portion of an elongated barrier member which fences off an article to be displayed comprising a base member, post

means mounted on and extending generally vertically to said base member, said post means including first and second portions, joint means vertically spaced from said base member adjustably connecting said first and second portions, locking means associated with said joint means for securing said first and second portions of said post means in angularly adjustable position, said first portion of said post means being attached to said base member and extending to said joint means, said second portion of said post means having first and second ends, said first end being connected to said joint means, sleeve means



fixed to said second end of said second portion of said post means in a manner such that the axis of the sleeve means is generally disposed in angular relationship ot the axis of said post means, at least one laterally extending elongated support means supported by said sleeve means and being axially adjustable outwardly relative thereto while being continuously supported thereby and retainer means for receiving and supporting a portion of the elongated barrier member carried by said elongated support member so that said barrier member is maintained in spaced relationship with the article being displayed.

4,524,954

METHOD OF OPERATING A MIXER TYPE HOT METAL CAR FOR THE TRANSPORT OF MOLTEN IRON AND A DEVICE FOR CARRYING OUT THE METHOD

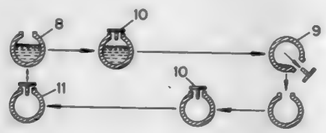
Willem Baas; Tette Hof, both of Heemskerk, Netherlands; Heinrich Comes, Borken, Fed. Rep. of Germany; Helmut Jaunich, Raesfeld, Fed. Rep. of Germany, and Hubert Krampe, Reken, Fed. Rep. of Germany, assignors to Hoogovens Groep B.V., IJmuiden, Netherlands and Foseco Trading A.G., Chur, Switzerland

Filed Jan. 27, 1983, Ser. No. 461,389

Claims priority, application Netherlands, Feb. 4, 1982, 8200418

Int. Cl.³ F27D *3/00*

U.S. Cl. 266—45 **6 Claims**



1. A method of operating a transfer vessel for the transport of molten iron comprising the steps of

(a) filling said vessel with molten iron at a charging location at a blast furnace through an opening in said vessel

(b) closing said opening by means of a disposable cover,

(c) moving said vessel to a discharge location at a steel making plant,

(d) treating the iron in the vessel during the journey from the blast furnace to the steel making plant by the use of a lance which is inserted into the vessel through a hole in the said cover,

discharging the molten iron from the vessel in a manner such that at least part of said disposable cover is carried away by the discharging molten iron and is thus lost into the molten iron,

(f) closing the opening of the vessel by means of a further disposable cover,

(g) moving the vessel to a charging location at a blast furnace, and

(h) charging molten iron into the vessel in a manner such that at least part of said further disposable cover is carried away by the charging molten iron and is thus lost into the molten iron.

4,524,955

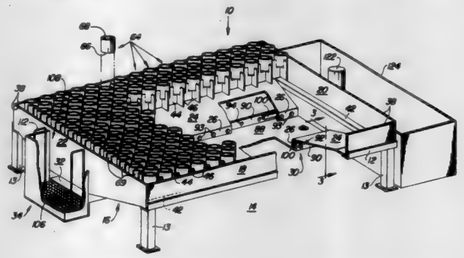
BURNING TABLE

Peter W. Boardman, St. Catharines, Canada, assignor to Deere & Company, Moline, Ill.

Filed Jun. 8, 1984, Ser. No. 618,614

Int. Cl.³ B23K *7/00*

U.S. Cl. 266—49 **28 Claims**



1. A burning table for supporting a workpiece during cutting, said table comprising:

a water tank for providing a preselected water level;

a horizontal grid supported substantially entirely below water level; and

a plurality of individually replaceable tubular elements supported by the grid, each element including a lower end portion extending downwardly into the water and an upper end portion extending above the grid, the upper portions of the elements defining a generally horizontal workpiece support closely adjacent the level of the water.

4,524,956

LINEAR SLIDING CLOSURE UNIT

Herbert Bachmann, Ebikon, Switzerland, assignor to Stopinc Aktiengesellschaft, Baar, Switzerland

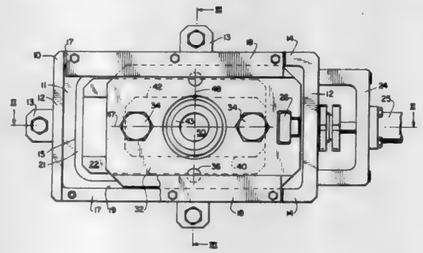
Continuation of Ser. No. 371,486, Apr. 23, 1982, Pat. No. 4,424,958. This application Aug. 24, 1983, Ser. No. 526,131

Claims priority, application Switzerland, May 19, 1981, 3255/81

The portion of the term of this patent subsequent to Jan. 10, 2001, has been disclaimed.

Int. Cl.³ B22D *37/00*

U.S. Cl. 266—236 **3 Claims**



1. In a linear sliding closure unit for use in discharging molten metal from a container and of the type including a stationary refractory plate, a closure casing adapted to be mounted on the molten metal container, a linearly movable sliding refractory plate, a sliding closure member mounting said sliding refractory plate for linear sliding movement relative to said

casing and said stationary refractory plate, and means for urging said sliding refractory plate toward said stationary refractory plate so that respective sliding surfaces thereof are in abutment, the improvement wherein:

said closure casing includes an inner supporting surface supporting and defining the position of said stationary refractory plate;

means on said closure casing defining guide surfaces at positions outwardly of said supporting surface;

said sliding closure member includes a sliding carriage adapted to be moved linearly and guided by said guide surfaces during linear sliding movement, a supporting frame separate from said sliding carriage and supporting said sliding refractory plate, and connecting means for connecting said sliding carriage to said supporting frame and thus for transmitting sliding movement of said sliding carriage to said supporting frame and said sliding refractory plate;

said sliding refractory plate is movable with respect to said sliding carriage in a direction transverse to said sliding surfaces and to said direction of sliding movement;

said urging means are mounted on said sliding closure member for sliding movement therewith and urge said sliding refractory plate away from said sliding carriage and toward said stationary refractory plate; and

said closure casing including fixed structure rigidly connecting and spacing said guide surfaces a predetermined fixed distance from said supporting surface.

4,524,957

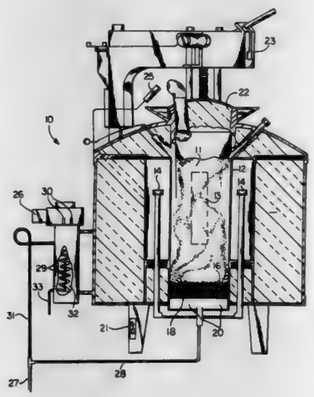
APPARATUS FOR METAL TREATMENT

Robert Staffin, Colonia; Carol A. Girrell, North Brunswick, and Mario A. Fronzoni, East Brunswick, all of N.J., assignors to Procedyne Corp., N.J.

Division of Ser. No. 450,921, Dec. 20, 1983, Pat. No. 4,512,821. This application Jul. 5, 1983, Ser. No. 510,657

Int. Cl.³ C21D *9/00*

U.S. Cl. 266—252 **22 Claims**



1. A fluidized bed apparatus for heat treating metal workpieces in a chemically controlled atmosphere, which comprises:

a heated fluidized bed having a particulate bed media disposed therein and a plenum in fluid communication therewith;

a source of an atmosphere precursor liquid that upon decomposition establishes a desired atmosphere in a fluidized bed;

means external of the fluidized bed and plenum for vaporizing at least one said atmosphere precursor liquid before it enters the plenum;

a means for maintaining the plenum at temperatures greater than the atmosphere precursor liquid vaporization temperature but less than its decomposition temperature; and

means for introducing the vaporized atmosphere precursor liquid into the heated bed causing it to thermally decompose into specific chemical entities thus producing the chemically controlled atmosphere.

4,524,958

APPARATUS FOR CLOSING THE DISCHARGE APERTURE OF A METALLURGICAL VESSEL

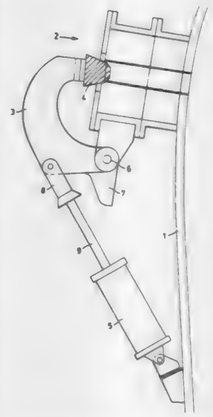
Jean Goedert; Fernand Thill; Romain Henrion, all of Esch; Henri Klein, Niedercorn; Jean-Francois Liesch, Luxembourg, and Jean Peckels, Esch, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Jun. 29, 1983, Ser. No. 509,140

Claims priority, application Luxembourg, Jun. 29, 1982, 84237

Int. Cl.³ C21C *5/46*

U.S. Cl. 266—272 **16 Claims**



9. A method for closing the discharge aperture of a metallurgical tilting vessel prior to and subsequent to tilting utilizing closure apparatus comprising first and second closure element means suitable for one time use, and pivotal lever means having mounting means to temporarily mount the first closure element means at one end thereof and temporarily mount the second closure element means at the same end thereof after said first closure element means has been placed in said discharge aperture, the first and second closure element means having mating means to receive the mounting means, and pressure cylinder means attached by a piston rod to the pivotal lever, the closure method including the steps of:

actuating said pivotal lever means by said pressure cylinder means to seat said first closure element means in said discharge aperture upon actuation of said pressure cylinder means in a first direction prior to tilting;

actuating said pivotal lever means by said pressure cylinder to disengage said mounting means from said first closure element means and leave said first closure element means in said discharge aperture upon actuation of said pressure cylinder means in a second direction, wherein said first closure element means is destroyed when said metallurgical vessel is tilted;

actuating said pivotal lever means by said pressure cylinder means to seat said second closure element means in said discharge aperture upon actuation of said pressure cylinder means in said first direction subsequent to tilting;

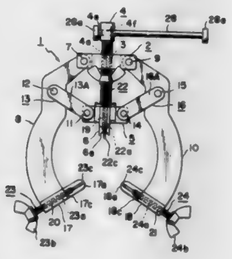
actuating said pivotal lever means by said pressure cylinder to disengage said mounting means from said second closure element means and leave said second closure element means in said discharge aperture upon actuation of said pressure cylinder means in said second direction.

4,524,959

HOLDER OF PIPES OR PIPE JOINTS FOR WELDING

Tetsushi Kubo, 861, Hirata, Ichihara-shi, Chiba-ken, Japan

Filed Aug. 24, 1983, Ser. No. 526,114
Claims priority, application Japan, Aug. 25, 1982, 57-128418[U]
Int. Cl.³ B23K 1/14
U.S. Cl. 269—43 4 Claims



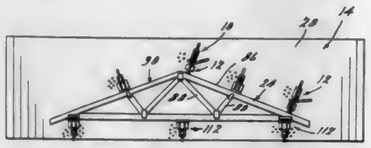
1. Holder for welding pipes or pipe joints comprising a supporting member having an upper surface and a lower surface with a threaded hole extending therethrough from the upper surface to the lower surface, said supporting member having a pair of opposite end portions, an upwardly arranged axially extending screw bar engaged within the threaded hole in said supporting member, a mounting member mounted at the lower end of said screw bar and the lower end of said screw bar projects downwardly from the lower surface of said supporting member, said mounting member having a pair of end portions, said mounting member being movable upwardly and downwardly by turning said screw bar about the axis thereof, a first pipe abutting member provided on said mounting member, an upwardly arranged first arm member having an upper portion and a lower portion and being pivoted at the upper end thereof to one end portion of said supporting member, an upwardly arranged second arm member having an upper portion and a lower portion and being pivoted at the upper end thereof to the other end portion of said supporting member, a first link having a pair of opposite ends with one end pivoted to one end portion of said mounting member and the other end pivoted to the upper portion of said first arm member, a second link having a pair of opposite ends with one end pivoted to the other end portion of said mounting member and the other end of said second link pivoted to the upper portion of said second arm member, a second pipe abutting member provided at the lower end of each of said first arm member and second arm member, each of said first and second pipe abutting members having a threaded hole extending therethrough, and a pipe supporting screw bar mounted in each said threaded hole in said first and second pipe abutting members.

4,524,960

ADJUSTABLE JIG

Robert A. LePoire, 2200 Barritt, Lansing, Mich. 48912

Continuation-in-part of Ser. No. 245,970, Mar. 20, 1981, abandoned. This application Jun. 24, 1983, Ser. No. 507,300
Int. Cl.³ B25B 1/10
U.S. Cl. 269—45 6 Claims



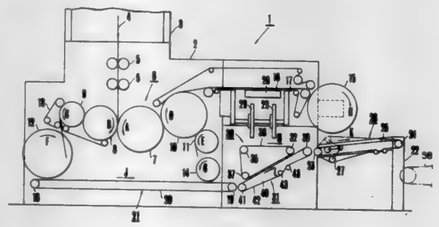
1. An adjustable jig for use in maintaining the correct positional relationship between components of work during assembly thereof on a workpiece support, said support being in the form of a flat plate formed of magnetic material and defining a plurality of spaced passageways opening upon an exterior surface of said support, said jig comprising, in combination, a base, permanent magnet means carried by said base and magnetically attractable to said support, said base defining an elongate channel, an adjustable block mounted for longitudinal movement in the channel defined by said base, pin means carried by said block and adapted to be received selectively in the passageways defined by said support to mechanically connect said base to said support, and means for advancing and retracting said block in the channel defined by said base.

4,524,961

PAPER DISCHARGE APPARATUS FOR USE IN PAPER FOLDERS OF ROTARY PRESSES

Yosihide Suzuki, Toride, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 246,739, Mar. 23, 1981, abandoned. This application May 2, 1983, Ser. No. 490,661
Claims priority, application Japan, Apr. 2, 1980, 55-44926[U]
Int. Cl.³ B41F 13/58
U.S. Cl. 270—4 5 Claims



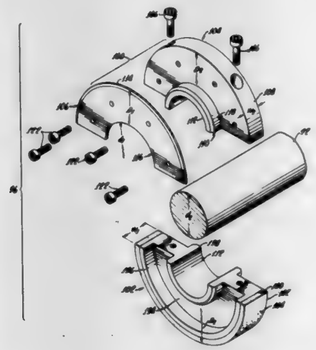
1. A paper discharge apparatus for use in a paper folder of a rotary press comprising a system of conveyors wherein there is a discharge conveyor and first and second conveyors so arranged that said first conveyor is operable to deliver sections from one source to the discharge conveyor and in combination with said second conveyor is operable to deliver sections from another source to said discharge conveyor, said discharge conveyor defining a generally horizontal run onto the receiving end of which the first and second conveyors are adapted to deliver sections from said alternate sources and from the other end of which the sections from the two sources are discharged and wherein the first conveyor has a horizontal run onto which the sections from the one source are deposited and an end adjacent the receiving end of the discharge conveyor, and wherein the second conveyor has an inclined run, the lower end of which is situated at a level to receive sections from the second source and an upper end situated at the level of the receiving end of the discharge conveyor between the receiving end of the discharge conveyor and the delivery end of the horizontal run of the first conveyor and wherein the first conveyor has an inclined run parallel to the inclined run of the second conveyor cooperable with the inclined run of the second conveyor to move a section delivered to the lower end of the second conveyor to the upper end thereof and from thence onto the receiving end of the delivery conveyor, means for driving the respective conveyors comprising means for driving the first conveyor in a direction such that the upper horizontal run moves in a direction toward the receiving end of the discharge conveyor when delivering sections deposited thereon to the discharge conveyor, means for driving the second conveyor in a direction such that the inclined run moves upwardly toward the receiving end of the discharge conveyor when moving sections delivered to the lower end thereof to the receiving end of the discharge conveyor and wherein there are change gears for reversing the direction of movement of the first conveyor without changing the direction of movement of the second conveyor to cause the inclined run of the first conveyor to travel in the same direction as the inclined run of the second conveyor to in combination therewith move sections delivered to the lower end of the second conveyor to the upper end thereof onto the receiving end of the discharge conveyor.

4,524,962

PRE-FOLD, WEB SCORING APPARATUS FOR SIGNATURE FOLDING MACHINES

Harold D. Davenport, La Mirada, and Anthony J. DeVito, Huntington Beach, both of Calif., assignors to Penn Lithographics, Inc., Cerritos, Calif.

Filed Sep. 7, 1984, Ser. No. 648,379
Int. Cl.³ B41F 13/56
U.S. Cl. 270—21.1 31 Claims



1. In a printing system in which a continuous web of paper is printed and is then fed into a signature folding machine having a first folding stage in which sheets cut from the web are serially folded crosswise to the direction of web travel into the first folding stage and having a second folding stage wherein the folded sheets from the first folding stage are folded at right angles to the first stage fold, prefold scoring apparatus which comprises:

(a) scoring means for prefold scoring of the paper in alternating directions along a longitudinal line corresponding to the second stage fold line,

said scoring means including mating first and second scoring members each having separate scoring and resilient abutment portions configured for causing the lengths of the paper scoring in each alternating direction to be equal to the length of the second stage fold and for causing the paper to be scored in directions corresponding to the folding directions of each paper layer in the second folding stage; and

(b) means for mounting the scoring means in the path of paper travel intermediate the printing press and the signature folding machine first folding stage so as to enable scoring of the paper before the paper enters the first folding stage.

4,524,963

DOCUMENT HANDLING DEVICE

Kenneth R. D'Angelo, Bridgewater, and Timothy T. Childress, Manchester, both of Conn., assignors to Scan-Optics, Inc., East Hartford, Conn.

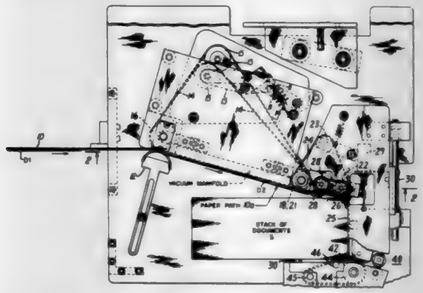
Filed Jan. 17, 1983, Ser. No. 458,573
Int. Cl.³ B65H 5/22
U.S. Cl. 271—3.1 14 Claims

1. A document handling device for documents movable along one of their edges, said device comprising a stacker section and a feeder section, wherein said stacker section includes:

transporting means for receiving documents moving upright on one of their edges, and for moving said documents longitudinally to a first position;

stop means for intercepting said document at said first position; and

means for moving said document from said first position transversely to a stacking position, wherein said stacker section is arranged to receive successive documents in a series of documents, and position each successive document, in an upright position, behind the succeeding document to form an edgewise stack of documents; and wherein said feeder section includes:



feeder means for engaging the front document of said stack of documents for selectively removing the front document from a stack of documents, and for moving the front document from said stack in an upright manner along one edge, wherein said stacker section and said feeder section are arranged to support a stack of documents therebetween; and

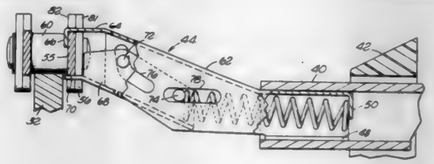
means for selectively actuating said feeder means for feeding the front document from the stack in an upright position, wherein said feeder means is slidably mounted on guide shafts so as to be laterally displaceable toward and away from said stacker section.

4,524,964

APPARATUS FOR TRANSFERRING PRINTED MATERIAL ONTO A CHAIN DELIVERY

H. William Jamieson, Jr., Encino, Calif., assignor to Offset Engineering, Inc., Encino, Calif.

Continuation-in-part of Ser. No. 104,500, Dec. 17, 1979, Pat. No. 4,369,963. This application Sep. 29, 1982, Ser. No. 426,561
Int. Cl.³ B65H 29/04
U.S. Cl. 271—204 11 Claims



1. In apparatus for preventing the smudging of a sheet as it is guided onto a chain delivery mechanism, said apparatus being generally of the type including a bar having a pair of clips at opposed ends for engaging the continuous chains of the chain delivery and at least one paper contacting member mounted and longitudinally adjustable upon said bar, the improvement comprising said clips including:

(a) an outer body member, said member including a first flange;

(b) a jaw member insertable within said outer body member, said jaw member including a second flange;

(c) said outer body members and said jaw members being arranged so that said first and second flanges are substantially parallel; and

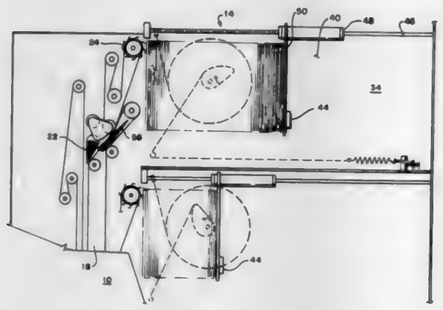
(d) means for urging said flanges together for applying a substantially vertical compressive retaining force to the side members of pre-selected links of said chains.

4,524,965

ENVELOPE STACKING MACHINE

Walter J. Kulpa, Trumbull, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 25, 1984, Ser. No. 573,898
Int. Cl.³ B65H *31/04*
U.S. Cl. 271—214 **8 Claims**



1. An envelope stacking machine comprising:

A. conveyor means for feeding a plurality of substantially vertically oriented envelopes in succession along a predetermined path of travel,

B. an elongate envelope stacking support disposed adjacent said conveyor means with its longitudinal axis substantially perpendicular to said path of travel,

C. transfer means for intercepting envelopes moving along said path of travel and for redirecting said envelopes for movement along said stacking support,

D. envelope abutment means mounted on said stacking support for movement in a direction parallel to said longitudinal axis of said stacking support in response to a pushing force imposed on said abutment means by successive envelopes accumulating on said stacking support,

E. resilient means interposed between said stacking support and said movable abutment means for normally urging said abutment means toward said transfer means, thereby maintaining a resisting force on said abutment member in opposition to said pushing force imposed thereon by said envelopes, and

F. force converting means interconnected between said resilient means and said movable abutment means for preventing said resisting force from increasing as said resilient means expands in response to movement of said abutment means away from said transfer means,

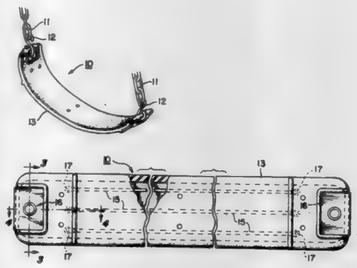
whereby said abutment means exerts a uniform or gradually decreasing degree of resistance, during movement of said abutment means away from said transfer means, to the transfer of envelopes from said conveyor means to said stacking support to prevent envelopes from jamming at said transfer means.

4,524,966

SEAT FOR RECREATIONAL SWING SET

William H. Shannon, Mentone, and Wesley D. Sutton, Jr., Fort Payne, both of Ala., assignors to Game Time, Inc., Fort Payne, Ala.

Filed Aug. 24, 1983, Ser. No. 525,872
Int. Cl.³ A63G *9/00*; A47D *13/10*
U.S. Cl. 272—85 **26 Claims**



1. A seat suitable for use with a recreational swing set comprising:

a body of flexible rubber material having an elongated substantially planar configuration,

an insert embedded in said body, said insert being formed of a band of pliable metallic material having a greater stiffness than the stiffness of said body of flexible material to impart form to and enhance the strength of said body of flexible material, and said insert also having an elongated, substantially planar configuration,

at least one tension strand of flexible metallic material embedded in said body of flexible material and disposed generally longitudinally relative to said planar configurations,

said tension strand having opposite spaced tension strand end portions, each said tension strand end portion being provided with an eyelet,

a tensioning and securing means associated with said insert and with said tension strand for securing said end portions to said insert and for holding said tension strand in constant tension, and including said eyelets being welded directly to said insert, and

a connecting means disposed at both end portions of said body of flexible material for connecting said end portions to a pair of depending members of a recreational swing set,

said connecting means each including an opening through an end portion of said body of flexible material, a U-shaped base member straddling said end portion, and a grommet disposed in said opening and rigidly secured to said U-shaped base member.

4,524,967

ACTION MATCHING GAME

Steven P. Hanson, Winnetka, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 9, 1984, Ser. No. 578,053
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—1 GE **16 Claims**

1. A game comprising:

a housing with means establishing an upwardly disposed playing surface;

motor means mounted within the housing;

cam means driven by the motor means;

a cam follower disposed between the cam means and the playing surface;

the cam follower having an upwardly disposed supporting surface essentially parallel to the playing surface;

means mounting the cam follower within the housing for movement of the supporting surface substantially perpendicular to the playing surface;

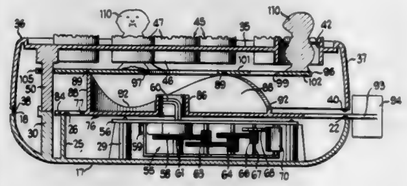
a plurality of openings extending through the playing surface;

a first set of pieces, each piece having a bottom surface, insertable into the openings and seatable upon the cam follower supporting surface;

the cam means moving the cam follower between a first position in which all of the pieces of the first set are substantially disposed below the playing surface and a second position in which the pieces of the first set are generally exposed above the playing surface permitting each piece of the first set to be picked up by a player;

identifying means on the bottom surface of each piece of the first set distinguishing each piece from every other piece; and

the identifying means being obscured while the pieces of the first set are seated on the cam follower supporting surface.

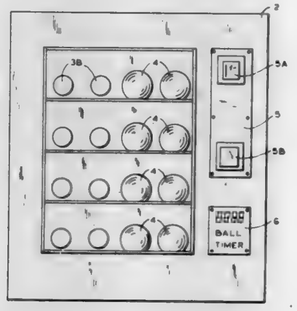


4,524,968

DEVICE FOR ACCOMMODATING BILLIARD BALLS IN SPACES PROVIDED FOR BILLIARDS PLAYING

Heinrich Dölp, Kimbacher Strasse 211, D-6123 Bad König, Fed. Rep. of Germany

Filed Feb. 6, 1984, Ser. No. 577,127
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1983, 3304439
Int. Cl.³ A63D *15/00*
U.S. Cl. 273—2 **14 Claims**



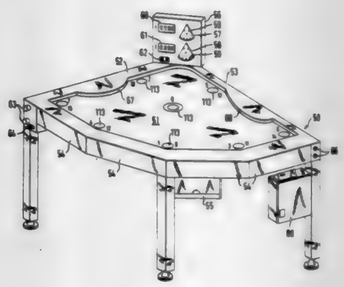
1. A device for keeping ready billiard balls in spaces provided for billiard playing, comprising a housing having a front side; holding means for holding billiard balls and having a plurality of holding elements arranged at said front side in spaced relationship from one another so as to receive therein billiard balls, each of said holding elements having a center point for a billiard ball; contact means arranged to cooperate with the billiard balls and having a plurality of contact elements each located behind a respective one of said holding elements and having an actuating member which is spaced from the center point of the associated holding element by a distance which is smaller than a radius of the billiard ball, each of said actuating members having a permissible displacement path for the associated contact element; limiting means provided behind said contact means for limiting the horizontal displacement of billiard balls so that the end of the displacement path of the billiard balls limited by said limiting means is located prior to the end of the permissible displacement path of said actuating members; indicating means provided on said front side of said housing and arranged to indicate a remaining game time; and a yieldable membrane arranged between the billiard balls when they are received in said holding means and said actuating members of said contact elements.

4,524,969

BILLIARD APPARATUS HAVING SENSORS IN LIEU OF POCKETS

Horst Erzmoneit, Fredenbecker Strasse 36, 2741 Kutenholz, Fed. Rep. of Germany

Continuation of Ser. No. 416,179, Sep. 9, 1982, abandoned. This application May 21, 1984, Ser. No. 611,939
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135846
Int. Cl.³ A63D *15/00*
U.S. Cl. 273—3 R **26 Claims**



1. A billiard apparatus comprising: a planar playing area (**110**, **51**), a cushion (**120**, **52**, **53**, **54**) bordering said playing area, a plurality of pocket fields (**113**) positioned adjacent said cushion; and least one playing field (**113**) positioned in the interior of said playing area, said pocket fields and playing field being disposed in the plane of the playing area and each having a contactless sensor (**115**) associated therewith responsive to the presence of a billiard ball, said sensors being coupled to a visual indicator device (**56**).

4,524,970

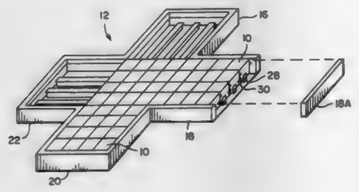
Patent Not Issued For This Number

4,524,971

TWO DIMENSIONAL PUZZLE

Albert Sasso, 8 Rail Ct., Roseland, N.J. 07608

Filed Dec. 1, 1982, Ser. No. 445,898
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **15 Claims**



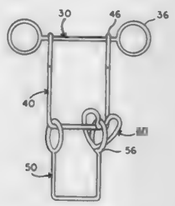
1. A two dimensional puzzle, comprising:
a planar board defined by a centrally disposed relatively large square and four squares of the same size as the centrally disposed square, each of the four squares having an edge common with an edge of the centrally disposed square;
a plurality of movable pieces carrying indicia and disposed on the planar board, said pieces being relatively small squares, each of the same size and initially positioned in equal numbers on the centrally disposed square and two of the four squares to fill said squares;
means for retaining the movable pieces in a plurality of sets each of which includes a predetermined number of pieces, with the pieces movable only in the sets on the planar board, with successive movements of the sets positioning any piece of any set at any point on the planar board;
the pieces being moved in the sets of a predetermined number of pieces in two mutually perpendicular directions on the planar board; and
the sets being successively moved on the planar board with the pieces retained in the sets until a predetermined indicia pattern is achieved.

4,524,972

WIRE PUZZLE

Charles R. Wilmarth, 88340 Thienes La., Springfield, Oreg. 97477

Filed Feb. 10, 1984, Ser. No. 579,104
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—158 **1 Claim**



1. A wire-form puzzle comprising
first capture means including a first U-shaped planar wire-form element having a generally rectilinear first transverse portion and a pair of generally rectilinearly equal length first arm portions extending substantially in parallel and substantially normally from the ends of said first transverse portion; and a pair of planar first circular wire-form elements attached at their peripheries to the free ends of said first arm portions, the two lanes defined by the circular elements being mutually parallel and perpendicular to said first transverse portion;
second capture means constructed with substantially the same form as said first capture means including a second U-shaped element having a second transverse portion and a pair of second arm portions, and a pair of second circular elements; said second U-shaped element being sized to be receivable within the inner dimensions of said first U-shaped element;
third capture means including a generally planar dumbbell-shaped wire-form element having a generally rectilinear, elongate rod and a pair of third circular wire-form elements fixedly attached at their peripheries to opposite ends of said rod;
all of said circular elements having substantially uniform inside and outside diameters and said second arm portions being shorter than said first arm portions by a length substantially equal to ½ the outer diameter of said circular element; and
captured means including a planar heart-shaped wire-form element having a pointed tip formed in one side and a pair of adjacent arcuate outward-extending lobes surrounding an inward extending cleavage formed in an opposing side, said heart-shaped element being sized for clearance passage through said circular elements about its tip and cleavage and further being sized for clearance passage about said circular elements between its tip and either lobe;
wherein the puzzle is constructed such that said first U-shaped element is unremovably and movably received within the circumferences of said second circular elements, said second capture means being trapeze-like swingable on said first U-shaped wire-form element; and
said elongate rod is unremovably and movably received within the circumferences of said first circular elements; said captured means being threadable about and through said capture means elements between a location external of said capture means and a location wherein said second U-shaped element is received internally of said captured means, the puzzle being constructed such that said second transverse portion must be swung to a position adjacent said first circular elements to effect puzzle solution.

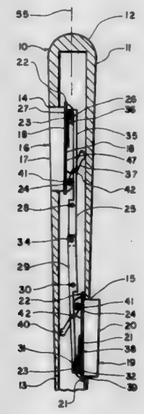
4,524,973

GRIP-CORRECTING GOLF CLUB HANDLE

William G. Sterbik, 11101 Continental Ave., Cleveland, Ohio 44104

Filed Jul. 2, 1984, Ser. No. 627,010
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—183 D **3 Claims**

1. A golf club handle comprising:
(a) a tubular housing having a curved sidewall, an upper extremity adapted to be closed, a lower extremity, and upper and lower apertures elongated in the direction of the axis of said housing and positioned in opposite sides of said sidewall,
(b) upper and lower depressor pads adapted to slideably engage said upper and lower apertures respectively, each pad having a finger-contacting surface extremity extending exteriorly of said housing and an opposed inwardly directed extremity disposed within the interior of said housing, the length of said finger-contacting surfaces being adequate to contact the last three fingers of each hand of a golfer,
(c) retainer means associated with the inwardly directed extremity of each pad adapted to prevent disengagement of said pads from said apertures,
(d) upper and lower spring means located within said housing in association with each pad and adapted to urge each respective pad outwardly from said housing, the force of said upper spring means being greater than the force of said lower spring means, and
(e) upper and lower levers located within said housing, each having upper and lower extremities, the upper extremity of said upper lever being movably associated with said upper pad, the lower extremity of said lower lever being movably associated with said lower pad, the lower extremity of said upper lever and upper extremity of said lower lever being pivotably and movably interengaged, whereby



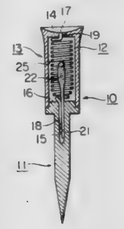
(f) inward movement of the upper pad against the urging of its spring means causes outward movement of said lower pad, and conversely, inward movement of said lower pad against the urging of its spring causes outward movement of said upper pad.

4,524,974

GOLF TEE

Norio Matsuura, 6-10-16, Mino-o, Mino-o city, Osaka, Japan (562)

Filed Jan. 16, 1984, Ser. No. 570,885
Claims priority, application Japan, Feb. 22, 1983, 58-23839[U]
Int. Cl.³ A63B *57/00*
U.S. Cl. 273—207 **1 Claim**



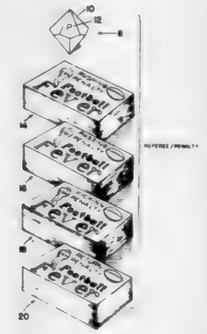
1. A golf tee **(10)** comprising in combination:
(a) an elongated cylindrical peg member **(11)** with a top section and a pointed lower end designed to be placed vertically in the ground, said top section including an outer flange and an inner stepped portion;
(b) a cylindrical head member having a concave cup-shaped top, designed to receive a golf ball and a cylindrical hollow body portion in said head member, said body portion supporting said top, an anchor hole **(17)** at the inner bottom of said concave cup-shaped top, a circular open bottom to said hollow body portion resting on said flange and over the stepped portion;
(c) an axial center space in said peg member, a plastic knob **(22)** with a stem portion, said stem portion being held in said center space, and the knob **(22)** protruding into the hollow body portion; and,
(d) a plastic coil spring **(12)** having one end held by said stem in said space **(15)** and the other end extending through said axial bore to the anchor hole **(17)**, the diameter of the coil spring **(15)** being greater than that of the knob **(22)**; whereby when a golf ball is hit on the tee, the head member will tend to fly off but is restrained by the spring, and, to pull the peg of the golf tee out of the ground, the knob is used to avoid distending the plastic coil spring.

4,524,975

FOOTBALL GAME BOARD

Keith E. Caughie, 709 G St., and Kenneth L. Caughie, 4545 N. Petaluma Blvd, #7, both of Petaluma, Calif. 94952

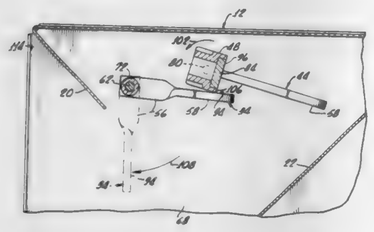
Filed Jun. 29, 1983, Ser. No. 508,820
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—247 **11 Claims**



1. A football type board game comprising:
a game board marked to simulate a football field with goal posts at each end;
a game piece representing a football to be moved along the game board;
a referee random selection means to be utilized on every play;
said referee random selection means having at least eight facets, one of said facets bearing indicia thereon denoting a penalty, other facets being unmarked to indicate a play unaffected by an official's call; and
a plurality of play random selection means, a selected one of said play random selection means to be utilized on each play;
said play random selection means comprising:
a plurality of multi-sided scrimmage dice, the sides of each bearing indicia thereon denoting yardage;
some of said sides bearing indicia thereon denoting rushing yards, the other of said sides bearing indicia thereon denoting passing yards;
said rushing yards displayed to be totalled to determine yards gained when a rushing play is called prior to display, and said passing yards displayed to be totalled to determine yards gained when a passing play is called prior to display;
and a plurality of kicking random selective devices to be used selectively in kicking situations;
said game further including:
a set of rushing penalty cards to be drawn from on a rushing play from scrimmage upon random selection of a penalty facet by use of said referee random selection means;
a set of passing penalty cards to be drawn from on a passing play from scrimmage upon random selection of a penalty facet by use of said referee random selection means; and
a set of kicking penalty cards to be drawn from on a kicking

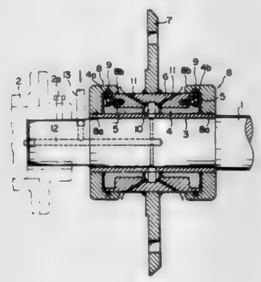
play upon selection of a penalty facet by use of said referee random selection means.

4,524,976
MAGNETIC TARGET ASSEMBLY
Fred H. Seitz, Yorba Linda, and Max J. Jaschke, Villa Park, both of Calif., assignors to Air Cabin Engineering, Fullerton, Calif.
Filed Dec. 13, 1983, Ser. No. 560,986
Int. Cl.³ F41J *7/04*
U.S. Cl. 273—388 **9 Claims**



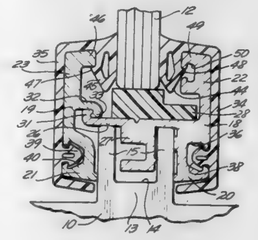
1. A remotely resettable target assembly comprising:
a plurality of spaced apart individual targets pivotally mounted on a generally horizontal axis and suspended therefrom when the individual targets is in a set position, said individual targets being configured for rotation to an unset position when struck by a projectile;
a master target pivotally mounted on a generally horizontal axis; and
magnetic means disposed in an operative position for holding each individual target in an unset position after said individual target has been moved to an unset position, said magnetic means being in an operative relationship with said master target for releasing each individual target when said master target is struck by a projectile.

4,524,977
UNDERWATER BEARING PROTECTION DEVICE
Nagashima Masaaki, 272-Oyama, Chiba-ken, Japan (271)
Filed Dec. 8, 1983, Ser. No. 559,206
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—3 **21 Claims**



1. An underwater bearing protection device comprising:
a fixed shaft,
a sleeve attached on the said fixed shaft,
a bushing rotatably mounted on said sleeve, a hub fixed around the outside of the bushing,
collars having inside edges attached on said sleeve and outside edges respectively covering the both sides of said hub, and sealing members having bases attached on the both edges of said hub or the outside edges of said collars and lips respectively contacted to the outside edges of said collars or the both edges of the hub,
whereby clean water is supplied to a ring-like hole formed in the bushing and hub through a center water supplying passage formed in the center of said fixed shaft and a water passage of said sleeve from a water pipe attached outside said fixed shaft and is supplied to clean water pressure portions between said sealing members and the both edges of the hub and said outside edges of said collars through water passages formed in the hub or gaps between said sleeve and said bushing and between said collars and bushing from said ring-like hole.

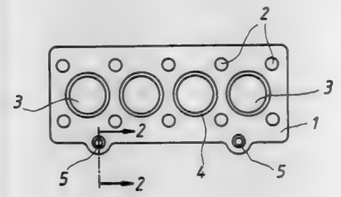
4,524,978
SIMULATED STRUCTURAL GASKET
Richard J. Mauser, Stow, Ohio, assignor to Ampat/Midwest Corp., Cleveland, Ohio
Filed Aug. 31, 1983, Ser. No. 528,082
Int. Cl.³ E04C *2/00*
U.S. Cl. 277—189 **10 Claims**



1. A simulated structural gasket for supporting a panel within an opening defined by a building frame, the frame having a flange surrounding the opening, the simulated gasket comprising:
first and second elongated metal members each having a flange-engaging portion extending along the length of the building frame flange, said portions engaging opposite sides of the flange,
each of the elongated members having a panel-supporting portion extending beyond the free edge of the flange into the opening surrounded by the flange, an edge of the panel within the opening being located between the panel-supporting portions of the elongated members,
a cross-member projecting laterally from the first elongated member toward the second elongated member, the cross-member overlying the building frame flange,
cooperable locking means carried by the second elongated member and the cross-member for preventing movement of the elongated members away from each other, and
a layer of resilient material covering the outer surface of each elongated member, each resilient layer having a gasket portion located between the panel-supporting portion of its respective elongated member and the panel being supported.

4,524,979
CYLINDER HEAD GASKET FOR INTERNAL COMBUSTION ENGINES
Armin Bauder, Neckarsulm, Fed. Rep. of Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany
Filed Jun. 14, 1984, Ser. No. 620,628
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1983, 3321425
Int. Cl.³ F21B *5/00*
U.S. Cl. 277—189 **6 Claims**

1. A cylinder head gasket for disposition between a cylinder head and a cylinder block of an internal combustion engine, said cylinder head and block having corresponding cylinder bores, coolant bores for a liquid coolant, and one of said cylinder head and cylinder block having gasket bores, said gasket comprising:



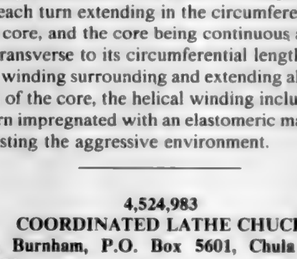
a plate with openings corresponding to said cylinder and coolant bores; and
elements corresponding to said gasket bores, said elements being affixed to said plate and being shaped to frictionally engage said gasket bores thereby positioning said gasket.

4,524,980
INTERSECTING FEATHER SEALS FOR INTERLOCKING GAS TURBINE VANES
Herbert J. Lillibridge, Plainville, and Russell A. Schwarzmann, Marlborough, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 5, 1983, Ser. No. 558,401
Int. Cl.³ F16J *15/08*
U.S. Cl. 277—199 **1 Claim**

1. An interlocking feather seal comprising a pair of relatively thin flat plate-like elements, one of said elements having an aperture fitting into a pair of diametrically opposed slotted sections of the other of said pair of plate-like elements, each being restrained axially relative to each other and each having limited rotary movement relative to each other, one of said pair of plate-like elements having a portion extending radially from the face of the other of said pair of plate-like elements, whereby said interlocking feather seal fits into intersecting grooves formed in abutting members intended to be sealed, providing both radial and axial sealing capabilities.

4,524,981
ANNULAR SEAL WITH V-CUT
Daniel L. Hertz, Jr., Red Bank, N.J., assignor to Smith International, Inc., Newport Beach, Calif.
Filed Nov. 22, 1983, Ser. No. 554,188
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—210 **16 Claims**

1. An annular, compression-actuated, elastomer seal member for forming a compression-type seal between concentric, generally cylindrical surfaces and for transforming the compression-type seal to a lip-type seal on relaxation of strain within said seal member, comprising:
a first seal face for sealingly engaging a first of such generally cylindrical surfaces, said first seal face being sized in its relaxed state substantially to engage, but not form an effective fluid seal against, such first surface; and
a first circumferential groove in said first seal face, said first groove, when viewed in radial cross section, forming an acute angle with respect to a portion of said first seal face



which is axially downstream of the intersection of said first groove with said first seal face.

4,524,982
SEAL FOR AGGRESSIVE ENVIRONMENTS
Daniel L. Hertz, Jr., Red Bank, N.J., assignor to Seals Eastern Inc., Red Bank, N.J.
Filed Dec. 27, 1983, Ser. No. 566,090
Int. Cl.³ F16J *9/20, 15/22*
U.S. Cl. 277—229 **11 Claims**

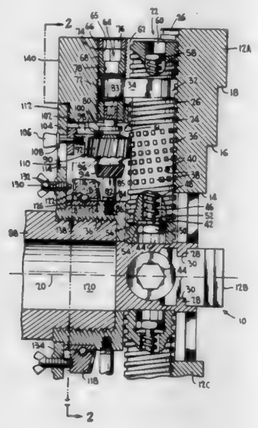
1. A seal for use in aggressive environments, comprising:
a ring-shaped core including a winding of asbestos yarn impregnated with an elastomeric material, the winding including a multiplicity of turns of a single length of the yarn, each turn extending in the circumferential direction of the core, and the core being continuous and having no joint transverse to its circumferential length, and
a helical winding surrounding and extending along the entire length of the core, the helical winding including an asbestos yarn impregnated with an elastomeric material capable of resisting the aggressive environment.

4,524,983
COORDINATED LATHE CHUCK
J. Kellogg Burnham, P.O. Box 5601, Chula Vista, Calif. 92010-5601
Filed Aug. 27, 1982, Ser. No. 412,089
Int. Cl.³ B23B *31/16*
U.S. Cl. 279—110 **23 Claims**

1. A lathe chuck comprising a chuck body having a central bore and a plurality of openings disposed radially outward from the bore;
a jaw screw rotatably mounted in each of said openings;
a gripping jaw associated with each of said jaw screws;
first cooperating thread means joining each jaw screw with its respective gripping jaw for moving the gripping jaw radially in relation to the bore;
a locater screw mounted adjacent said jaw screw in each of said openings;
second cooperating thread means joining said locater screw

to said chuck body for moving the locater screw radially in relation to the bore;

a locater bracket extending between each jaw screw and its respective locater screw in their respective opening whereby radial movement of the locater screw causes the locater bracket to move the jaw screw in a radial move-



ment; and wherein each of said jaw screws includes a contoured internal passageway and a spring biased slidable plunger housed therein and wherein said passageway terminates adjacent the central bore in a contoured socket and said plunger terminates in a head adapted to be fitted in said socket.

4,524,984

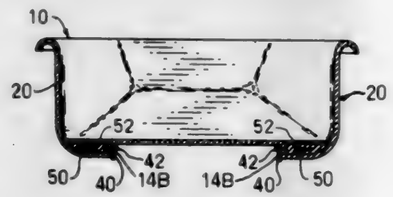
CONTROLLABLE SLED FOR SNOW SKIING

Peter W. Axelson, 5858 Empire Grade, Santa Cruz, Calif. 95060

Filed Aug. 19, 1980, Ser. No. 179,562

Int. Cl.³ B67B *13/02*

U.S. Cl. 280—18 **10 Claims**



1. In a controllable ski sled for use on ski slopes, or the like, comprising a unitary body which includes a bottom member formed with a pair of parallel downwardly extending runners along opposite sides thereof, said body including front, rear and opposite side walls extending upwardly from said bottom member and which terminate at the upper edge substantially in a plane extending generally parallel to said runners, said side walls tapering inwardly at the rear thereof and said rear wall slanting downwardly from the top to provide a reduced size sled rear end insertable through the back rest of a chair lift seat for stable support of the sled and sled occupant on the chair lift seat.

4,524,985

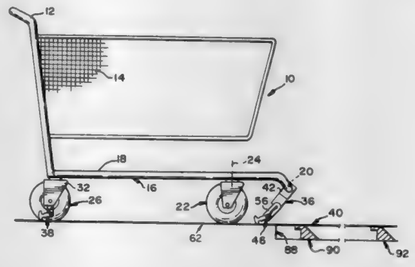
CART ANTI-THEFT DEVICE

Daniel Drake, 1915½ Addison St., #104, Berkeley, Calif. 94704

Filed Apr. 12, 1983, Ser. No. 484,219

Int. Cl.³ B62B *39/00*

U.S. Cl. 280—33.99 C **27 Claims**



1: An arrest device for a wheeled cart comprising

a hook,

connecting structure adapted to mount said hook on the cart, said structure including pivoting means adapted to accommodate swinging of said hook in a front-to-back direction with respect to the cart, and shifting means adapted to be shiftable with respect to the cart to accommodate shifting of said pivoting means between lowered and raised positions, said connecting structure also including a leg having said hook pivotally attached thereto by said pivoting means for pivoting about one axis, said leg being pivotally attached to the cart by said shifting means for pivoting about a second axis substantially parallel to the first axis, and

hooking means adapted to be placed on the ground to engage said hook when said cart is moved across the hooking means in specified directions.

4,524,986

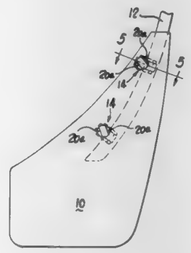
SPLASH GUARD

Douglas K. Ward, Toronto, Canada, assignor to Powerflow, Inc., Buffalo, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,358

Int. Cl.³ B62D *25/16*

U.S. Cl. 280—154.5 R **7 Claims**



1. A clamp for mounting a splash guard to a vehicle fender, comprising:

(a) structure defining a primary support base including a laterally extending back plate means;

(b) spaced apart clamping arms disposed on either side of said back plate means each of said arms including a portion depending away from a plane defined by said back plate means such that a fender receiving gap is defined between said back plate means and portions of said clamping arms;

(c) pin means carried by said base, said base including structure for preventing rotation in said pin means;

(d) lock means engageable with said pin means and including means for urging said clamping legs towards the plane of said back plate means such that a clamping force is applied to a fender received between said back plate means and said clamping arms when said lock means is installed.

4,524,987

TRICYCLES

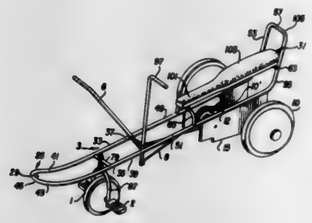
Sang K. Kim, Seoul, Rep. of Korea, assignor to Myung Keun Oh, Kyung Gi-Do Rep. of Korea

Filed Feb. 28, 1983, Ser. No. 470,626

Claims priority, application Rep. of Korea, Feb. 27, 1982, 1506/82[U]

Int. Cl.³ B60D *1/00;* **B62M** *1/14;* **B62K** *5/06*

U.S. Cl. 280—204 **14 Claims**



1. A tricycle (**13**), comprising a support body (**3**), forming a frame (**14**) having levers (**6**) mounted thereof for opposite reciprocation, lever actuated rear wheels (**10**) in operable association with the levers (**6**) and having rear wheel supports (**15**) mounted on the frame (**14**), and a front wheel (**1**) having a front wheel support (**17**) mounted on the frame (**14**);

the frame (**14**) being shaped to provide a low profile, low center-of-gravity seat (**19**) mounted on the frame (**14**) for hand actuated lever operation of the back wheels (**10**) by an operator who also is in a low profile, low center-of-gravity sitting position on the seat (**19**) for foot steering of the front wheel (**1**);

said frame (**14**) also having front and rear ends (**21** and **23**) forming upwardly directed portions (**25** and **27**) having fast operation couplings (**29** and **31**) for selectively and removably connecting the said tricycle to another said tricycle in a train (**32**)

said frame including parallel bars (**33** and **35**) having first horizontal portions (**37** and **39**) in front of the levers and said first horizontal portions having two first upwardly directed front portions (**41** and **43**) extending to a connection (**45**) therebetween positioned forwardly of said front wheel forming one of said fast operating couplings (**29**).

4,524,988

UPRIGHT BICYCLE FOR HANDICAPPED

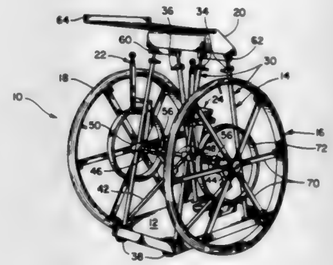
Frederick P. Netznik, 8556 Central Park Ave., Skokie, Ill. 60076

Filed May 12, 1983, Ser. No. 493,929

Int. Cl.³ B62K *3/16*

U.S. Cl. 280—208 **22 Claims**

1. A mobile apparatus for stably maintaining an infirm person in a generally upright position and providing for the self-propelled locomotion of said person, said apparatus comprising: a platform for supporting the feed of said person, said platform adapted for displacement over a surface upon which it is positioned, and wherein a front portion of said platform is raised slightly with respect to a rear portion thereof; a frame positioned on said platform and extending upward therefrom immediately forward of the person supported thereon; first support means mounted to an upper portion of said frame immediately adjacent and in contact with an upper, front portion of the torso of said person positioned on said platform; second support means mounted to an intermediate portion of said frame and extending rearward therefrom so as to engage a lower, rear portion of the torso of said person so as to provide lateral and vertical support for said person in maintaining said



person in a generally upright, stable position; and first and second wheels each rotatably mounted to facing lateral portions of said frame for supporting said frame on said surface, wherein said wheels are positioned on said frame within the reach of said person to permit their rotation by said person in providing for the self-propelled locomotion of said person.

4,524,989

LAMINATED, REINFORCED FORK END FITMENT CONNECTOR FOR A BICYCLE AND PROCESS FOR MANUFACTURING SAME

Norman L. Centeny, Norridge, Ill., assignor to Schwinn Bicycle Company, Chicago, Ill.

Filed Jul. 5, 1983, Ser. No. 510,632

Int. Cl.³ B62K *19/30, 25/02*

U.S. Cl. 280—281 R **4 Claims**



2. A laminated, reinforced fork end fitment connector for a bicycle comprising:

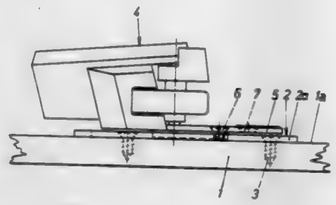
a base plate member formed from flat uniform thickness plate stock having at least one peripheral extension adapted to connect to a fork end of a bicycle and having an axle-engaging slot;

a pair of face plates formed from flat uniform thickness sheet stock and having slots matching the size and shape of the axle-engaging slot in the base plate member; and

said face plates being permanently affixed to opposite sides of the base plate member with the slots thereof registering with the axle-engaging slot in the base plate member;

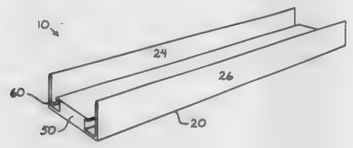
whereby said face plates provide thickened hub portions for the connector having opposite surfaces raised above the surfaces of the base plate member and assembleable to provide opposite seats for axle nuts in a bicycle axle assembly.

4,524,990
ADJUSTING MECHANISM
Josef Svoboda, Schwechat; Alois Himmetsberger, Vienna, and Emilie Szabo, Schwechat, all of Austria, assignors to TMC Corporation, Baar, Switzerland
Filed Nov. 12, 1981, Ser. No. 320,631
Claims priority, application Austria, Nov. 14, 1980, 5624/80
Int. Cl.³ A63C *9/22*
U.S. Cl. 280—633 **13 Claims**



1. An adjusting mechanism for a jaw of a ski binding, comprising: a uniformly thick holding plate adapted to be fixed to an upper side of said ski, said holding plate being generally U-shaped and flat with an upwardly facing surface parallel to said upper side of said ski and having a pair of parallel legs with several pairs of laterally spaced first receiving openings therein and arranged in the direction of the longitudinal axis of the ski symmetrically in relationship to said axis, one of said pair of first receiving openings being provided in each leg and several of said receiving openings in each leg being equidistantly spaced from said longitudinal axis of said ski, a base plate on which is mounted said jaw, said base plate having at least two pairs of second receiving openings therein, the division between said second receiving openings in said base plate being offset in relationship to the division between said first receiving openings in said holding plate, means defining a dovetail guideway on the inside edges of each of said legs, a dovetail counterpart centrally disposed on said base plate slidingly received in said dovetail guideway, cooperating surfaces on said dovetail guideway and said dovetail counterpart preventing a separation of said counterpart from said guideway in a direction perpendicularly upward relative to said upper side of said ski, and pin means secured to said base plate and received in an aligned pair of said first and second receiving openings to hold said holding plate fixed to said base plate.

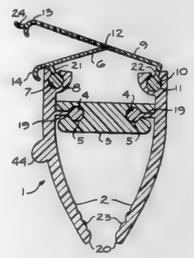
4,524,991
SNAP ON DEVICE FOR HARDCOVER RING BINDER
Ralph D. Thomas, 7104 Granada La., Fox Lake, Ill. 60020
Filed Jun. 27, 1983, Ser. No. 508,079
Int. Cl.³ B42D *1/00, 17/00, 3/06*
U.S. Cl. 281—20 **20 Claims**



1. A device to be removably attached to an openable side of a ring binder, said ring binder having two covers and a spine with a paperlock secured to said spine, said device having sufficient length to protect material contained within said ring binder and said device having sufficient width to render said covers substantially flat with said ring binder in a closed configuration to thereby simplify storing of said ring binder wherein:

a. said device includes a U-shaped support having a channel as an interior portion thereof;
b. a spacer means is secured within said channel to form a first binder cover channel and a second binder cover channel within said channel; and
c. a flexible binder contact means is secured to said spacer means within said channel and is capable of flexibly contacting each cover of said binder and cooperating with said U-shaped support to render said ring binder flat in the closed configuration and protect said material in said binder.

4,524,992
BINDING UNIT
Maynard W. Linn, 6336 N. Bergeron, Fresno, Calif. 93704
Continuation-in-part of Ser. No. 362,021, Mar. 25, 1982,. This application Dec. 29, 1982, Ser. No. 454,320
Int. Cl.³ B42D *17/00, 5/00;* **B42F** *9/00;* **A44B** *21/00*
U.S. Cl. 281—45 **19 Claims**

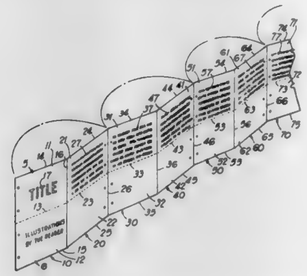


2. A binding unit for loose-leaf sheet materials or the like, comprising a continuous section of resilient material having two legs, connecting means joining the legs near one end portion of one of the legs, and at the end portion of the other leg, the legs extending from the connecting means and each leg terminating in a free edge, the free edges having cooperating material engaging end portions, the connecting means including a spline disposed to provide pivotal movement to the one leg attached to the spline by hinge means at a point on the leg between the free edge of the leg and the end remote from the free edge, the spline being non-pivotally fixed to the end of the other leg, a keeper means mounted on the spline, a wedge that can be retained by the keeper, and means for closing the unit, the closing means including two clamping members being non-pivotally joined together, the end of the first clamping member being pivotally attached by hinge means to the end of the pivotal leg remote from the free edge and generally aligned in a plane parallel to the spline, the second clamping member having the wedge mounted on it disposed to be retained in the keeper, the second clamping member being shaped to engage the non-pivotal leg so that when the wedge is retained by the keeper, the end remote from the first clamping member provides a means to close said non-pivotal let and a fulcrum for pivoting said closing means to close said pivotal leg.

4,524,993
BOOK ASSEMBLY
Sherry Walker-Taylor, 2283 Bayswater Dr., Kennesaw, Ga. 30144
Filed Jun. 13, 1983, Ser. No. 503,416
Int. Cl.³ B42D *1/00, 15/00, 15/04*
U.S. Cl. 281—46 **5 Claims**

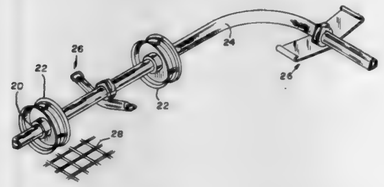
1. A book assembly comprising a plurality of rectangular sheets joined in accordian fashion, in succession along successive spaced parallel fold lines each fold line forming a common edge for the next adjacent of said sheets, the first common edge being a front edge and the next common edge being a rear edge and alternating front and rear edges thereafter, adjacent pairs

of said sheets being folded against each other so that a first side of the pair of sheets are adjacent to each other with the common edge between that pair of sheets forming a one of the front or rear edges whereby when the sheets are collapsed, the sides of the pairs of sheets form successive pages of the book, the trailing edge of sheets of the pairs of sheets being joined respectively to the leading edge of the sheets of the following pairs of sheets along rear edges, said sheets being provided with perfo-



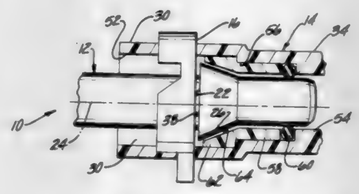
ration lines extending between the front edge and rear edge of each sheet for separating each sheet into an instruction area panel and a blank work sheet area panel, and printed indicia on said instructional area panel, the blank sheet area panels providing space for illustrations in seriatim and being removeable from the instructional area panels along said perforation lines after completion of the illustrations so that the work area panel may be separated from the instruction area panels to form a continuous display sheet of the work area panels in seriatim.

4,524,994
FLOWABLE CONCRETE DELIVERY HANDLING APPARATUS
William T. Anderson, P.O. Box 395, Dover Plains, N.Y. 12522
Filed Jul. 29, 1982, Ser. No. 402,936
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—38 **14 Claims**



1. A flowable concrete delivery apparatus including a high pressure conduit pipe of a selected length and diameter, having a discharge end said delivery apparatus including:
(a) a plurality of lengths of rigid pipe assembled in an end-to-end conduit relationship;
(b) at least one length of flexible pipe interposed and connected into said conduit so as to provide and enable said conduit to be bent at said flexible pipe length so that a discharge end may be moved to a selected and desired position; said lengths of pipe having their ends configured to accept a resilient gasket and with shoulder means for retaining of said ends in said assembled end-to-end relationship by a clamp and a clamp engaging said shoulder means and a gasket between said ends,
(c) a skid member affixed to a clamp which provides means as to allow the clamp to be opened and closed to secure and release the coupled pipe ends while said skid protects the the clamp and coupled ends of the pipe against dragging contact and wear on a support surface;
(d) a plurality of freely rotating wheels interposed on the pipe lengths, each wheel having an attached sleeve means which provides a free fit of the wheel on the outer diameter of a rigid pipe length, and
(e) manipulating means for locally moving said concrete delivery apparatus and pipe length portions thereof, said means including means for grasping by an attendant without accidental opening of said clamp or clamps during manipulation of the concrete delivery apparatus by and with said attendant's efforts to move the conduit pipe to a desired delivery position.

4,524,995
SWIVELABLE QUICK CONNECTOR ASSEMBLY
Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Inc., Southfield, Mich.
Division of Ser. No. 201,711, Oct. 29, 1980, Pat. No. 4,423,892. This application Jul. 14, 1983, Ser. No. 513,847
Int. Cl.³ F16L *37/14*
U.S. Cl. 285—54 **30 Claims**



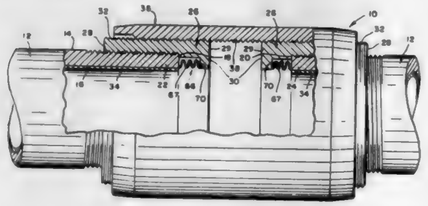
1. A connector assembly for providing a swivelable quick connection, comprising:
a tubular conduit adapted to convey fluid, having outwardly projecting annular surface means, formed at a predetermined distance from an end of said conduit to be connected, for providing a blocking wall portion disposed transversely to a central axis of said conduit;
a housing having axial bore means formed therein for receiving said conduit at a first end and for providing a fluid path at a second end, said bore means forming an enlarged first diameter portion at said first end of said housing, and a reduced second diameter portion at said second end of said housing, elastomeric ring means disposed in said bore means for providing a seal between said conduit and said housing, and annular bushing means disposed in said bore means for positioning said ring means and for guiding the insertion of said conduit into a sealing engagement with said ring means; and
retainer means, demountably coupled to said first end of said housing, for cooperating with said blocking wall portion of said annular surface means to resist the disconnection of said conduit from said housing said retainer means having a pair of generally parallel elongated legs joined at one end by a cross member formed to provide a separation of said legs approximately equal to the outside diameter of said conduit, and said retainer means also having a lead area formed in the interior side of each of said legs which is sloped from the front surface of said retainer means in a direction towards the back surface of said retainer means, the thickness of said retainer means lead areas at the front surface being less than the thickness of said retainer means lead areas at the back surface.

4,524,996

CORROSION-RESISTANT TUBE ASSEMBLY

Joseph M. Hunt, Natrona Heights, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Oct. 15, 1982, Ser. No. 434,652
Int. Cl.³ F16L *9/14*
U.S. Cl. 285—55 **13 Claims**



1. In a corrosion-resistant tube assembly, a corrosion-resistant component comprising:

a corrosion-susceptible metal tube having an outside surface, an inside surface and end surfaces, and to be located adjacent another of said tube near their end surfaces;

an overlay sleeve of corrosion-resistant metal having a first and second portion, said first portion annularly extending about a surface of said tube and one surface of said sleeve adjacent the tube being mechanically joined to at least a portion of the tube surface, said first portion terminating in a second portion of the sleeve overlying the annular end surface of said tube, said sleeve other surface of said first portion disposed away from the surface of said tube and being threaded; and

a corrosion-resistant, tubular metallic liner having an outside surface, an inside surface and end surfaces, the outside surface of the liner being adjacent the entire circumference of the inside surface of the corrosion-susceptible metal tube along its longitudinal extent;

the improvement comprising:

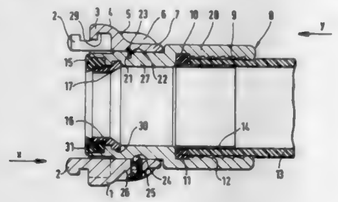
a corrosion-resistant annular expansion-sealing ring annularly fixed to the end surface of the liner and positioned at a location at the end surface of the corrosion-susceptible tube and between the liner and inside surface of the second portion of the sleeve and bearing thereagainst to seal the corrosion-susceptible metal tube about the circumference thereof from any corrosives in the tube assembly and to provide an expansion joint between the liner and tube.

4,524,997

HOSE COUPLING

Karl Ebert, Giengen, Fed. Rep. of Germany, assignor to Max Widenmann Armaturenfabrik, Giengen, Fed. Rep. of Germany

Filed Mar. 15, 1984, Ser. No. 589,873
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 8307717[U]
Int. Cl.³ F16L *33/20*
U.S. Cl. 285—74 **.7 Claims**



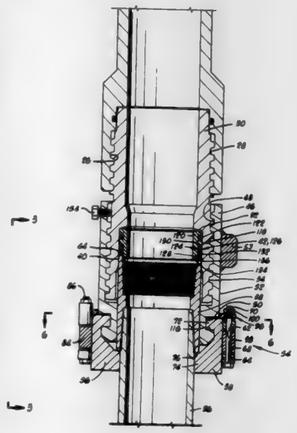
1. Hose coupling, particularly for fire extinguishing hoses, whose halves have cam rings which are rotatable relative to hose connection pieces assigned to each said half and whose cams can be made to engage in a bayonet-type locking engagement with an annular groove of said cam ring of the other respective said coupling half, said annular groove being sloped, whereupon the turning of said cam rings causes said hose connection pieces to draw together axially so that sealing rings arranged in their end faces are pressed against one another axially without reciprocal turning and in which said hose connection pieces are adjusted for inner fastening, for which purpose an expandable clamping ring is provided, which holds said hose in contact with the inner wall of the fastening connection piece after its expansion, characterized in that a one-piece fastening connection piece **8** is used which has two sections of different diameter, namely one rear section **28** of a larger inner and outer diameter, which section **28** receives said hose, and a front section **27** of a smaller inner and outer diameter; in that the neck **7** of said cam ring **1** is rotatably attached on said front section **27** with an inner diameter which is constant along said sections; in that said cam ring **1** is held on said front section **27** of said fastening connection piece **8** against movement in the axial direction in a manner allowing it to turn by means of locking means **22**; **24** engaging simultaneously in an annular groove **21** of said front connection piece section **27** and in an annular groove **23** in said neck **7** of said cam ring **1**, which locking means **23**; **24** are employed as particular structural component parts; and in that a springing holding ring **16** catches in an annular groove **30** of said front section **27** of said fastening connection piece **8**, which holding ring **16**, together with a recess **31** on the end face in said front section **27**, forms a shaped annular space for receiving the sealing ring **15** of said coupling on said end face.

4,524,998

TUBULAR CONNECTING DEVICE

David P. Brisco, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 4, 1982, Ser. No. 374,869
Int. Cl.³ F16L *17/00*
U.S. Cl. 285—101 **3 Claims**



1. A coupling apparatus for connection to a cylindrical member, comprising:

a body having a cylindrical bore disposed in a lower end thereof and having a radially outer threaded surface, said bore having an inner diameter appropriate to closely receive an end of said cylindrical member therein;

main seal means disposed in said bore of said body for sealing against an annular upward facing surface of said end of said cylindrical member;

a cylindrical adjusting nut having an internally threaded upper end threadedly engaged with said outer threaded

surface of said body, and having an annular groove disposed in a radially outer surface thereof; and

a locking collar, including

a first arcuate collar portion having an upper lip received in said annular groove, and having a lower lip adapted to engage a downward facing annular surface of an enlarged diameter portion of said cylindrical member;

an second arcuate collar portion having an upper lip received in said annular groove, and having a lower lip adapted to engage said downward facing annular surface of said enlarged diameter portion of said cylindrical member;

a hinge pin, disposed through pin receiving holes in said first and second collar portions, so that said first and second collar portions are pivotally connected;

a limit plate concentrically disposed about said adjusting nut and having an orientation hole therethrough through which said hinge pin is disposed, said limit plate including means for limiting relative pivotal opening movement of said first and second collar portions; and

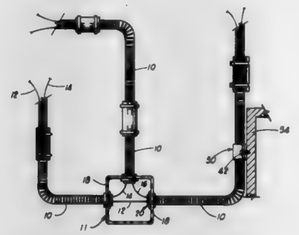
latch means for selectably latching said first and second collar portions in an open position wherein said enlarged diameter portion of said cylindrical member can be passed through said locking collar into said bore of said body, and a closed position wherein said enlarged diameter portion of said cylindrical member is locked within said bore of said body.

4,524,999

FLEXIBLE CONDUIT SYSTEM

Harold T. Pate, Cleveland, and Helmut P. Fochler, Chagrin Falls, both of Ohio, assignors to Indian Head Inc., New York, N.Y.

Division of Ser. No. 875,229, Feb. 6, 1978, Pat. No. 4,248,459.
This application Sep. 24, 1979, Ser. No. 78,376
Int. Cl.³ F16L *41/00*
U.S. Cl. 285—158 **1 Claim**



1. A system for supporting and conveying electrical conductors comprising:

a synthetic resin electrical box having a side wall defining a conduit-receiving opening communicating with the interior of said box;

a pair of elongated, synthetic resin tubular corrugated conduits having external annular corrugations extending therearound;

an inlet fitting within said conduit-receiving opening and engaged with the opening-defining side wall of said synthetic resin box, said inlet fitting engaging one of said elongated, synthetic resin tubular corrugated conduits by mechanical registry of said inlet fitting with the corrugations of said one tubular corrugated conduit;

a synthetic resin sleeve clampingly engaging said conduits in end-to-end relation and including:

a pair of elongated, axially extending, radially movable corrugated clamping elements movable relative to each other for closure about the tubular corrugated conduits, each of said clamping elements comprising a semi-cylindrical part having a series of semi-circular, arcuate, axially spaced corrugations over a major portion of its length and configured to register with the corrugations of the tubular corrugated conduits clampingly engaged by said resin sleeve;

flexible hinge means hingedly interconnecting said semi-cylindrical parts along a longitudinal edge of each, said hinge means comprising:

a flexible, medial hinge section joining said semi-cylindrical parts at locations intermediate the length thereof; and

a pair of end hinge sections each spaced axially from said medial hinge section; and

means releasably converging said clamping elements to retain said clamping elements in a closed position in engagement with said conduits, with the corrugations of said clamping elements engaged with the corrugations of said conduits, said means releasably converging said clamping elements comprising:

first elongated strap means surrounding said semi-cylindrical parts and passing through the space between one of said end hinge sections and said medial hinge section, said first elongated strap means comprising:

an elongated first strap having a tooth-carrying end portion carrying a series of teeth spaced from each other thereon; and

a first engaging block secured to the opposite end of said first strap from said tooth-carrying end portion thereof, said first engaging block having a slot therein to receive the tooth-carrying end portion of said first strap, said first engaging block being serially and selectively engagable with the teeth on said first strap to facilitate extension of said strap around said semi-cylindrical parts when said parts surround synthetic resin tubular corrugated conduits of varying diametric sizes, and to prevent reverse movement of said first strap out of said slot after said first strap has been extended through said slot; and

second elongated strap means surrounding said semi-cylindrical parts and passing through the space between the other of said end hinge sections and said medial hinge section, said second elongated strap means comprising:

an elongated second strap having a tooth-carrying end portion having a series of teeth spaced from each other thereon; and

a second engaging block secured to the opposite end of said second strap from said tooth-carrying end portion thereof, said second engaging block having a slot therein to receive the tooth-carrying end portion of said second strap, said second engaging block being serially and selectively engagable with the teeth of said second strap to permit said elongaged second strap to be encircled around said synthetic resin sleeve when said sleeve is clampingly engaged with varying diametric sizes of conduit and to prevent reverse movement of the second strap out of said second block slot after said second strap has been extended through said second block slot.

4,525,000

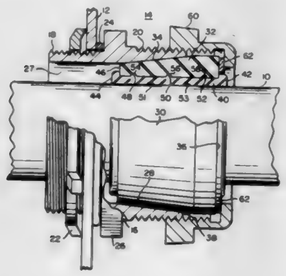
CABLE FITTING WITH VARIABLE INNER DIAMETER GROMMET ASSEMBLY

Walter W. Bachle, Harwinton, Conn., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 17, 1984, Ser. No. 581,145
Int. Cl.³ H02G *3/18*
U.S. Cl. 285—177 **14 Claims**

1. A cable fitting having an externally threaded tubular body through which the cable extends, said body having an inside surface a portion of which is tapered in shape, a grommet assembly in said body, and a nut threaded on one end of said

body also having an opening through which said cable extends for compressing said grommet assembly to secure the cable within the fitting, characterized in that said grommet assembly has a grommet with a conical outside surface which is tapered in a direction opposite to said tapered portion of said inside surface of said body so that said grommet is compressed both radially and axially by said nut, said grommet being of compressible elastomeric material with an insert also of compressible elastomeric material separate from said grommet and



removably disposed therein for decreasing the inside cross section of said grommet assembly, whereby said grommet and said insert cover a range of cable cross sections larger than said grommet alone, said insert and said grommet being in such interlocking relationship as to limit axial movement of said insert during compressing of said grommet assembly and when said cable is pulled against the fittings, said interlocking being sufficient to prevent the insert from popping and pulling out of said grommet.

4,525,001

PIPE CONNECTOR WITH INTERENGAGABLE TUBULAR PIN AND TUBULAR BOX MEMBERS

Norman Lumsden, and Brian K. Phillips, both of Aberdeen, Scotland, assignors to Hunting Oilfield Services (UK) Limited, Aberdeen, Scotland

Filed Jan. 14, 1983, Ser. No. 458,154

Claims priority, application United Kingdom, Jan. 18, 1982, 8201250

Int. Cl.³ F16L *25/00*

U.S. Cl. 285—328 **6 Claims**



1. In a pipe connector comprising a tubular pin member having a generally frusto-conical outer peripheral surface, a tubular box member having a generally frusto-conical inner peripheral surface corresponding to said outer peripheral surface of said pin member and which overlies said outer peripheral surface of said pin member when said members are fully engaged together, said peripheral surfaces being provided with annular projections and grooves which interengage when said members are fully engaged together to axially lock said members together, and means for supplying fluid under pressure between said peripheral surfaces when said members are fully engaged together for use in disengaging said members, the improvement wherein at least one of said pin member and said box member has a free end surface which includes an annular portion inclined in the opposite direction to the direction of inclination of said peripheral surface thereof, and the other one of said box member and said pin member is provided with a correspondingly inclined annular surface which, when said members are fully engaged together, overlies and is closely spaced from said corresponding surface on said pin member of box member, said surfaces, when said members are fully engaged together, being intentionally brought into sealing contact only when pressurized fluid is applied between said peripheral surfaces of said members for use in disengaging said members.

4,525,002

DEVICE FOR APPLYING A BINDING ON A FLEXIBLE TUBULAR PACKING, AND IMPROVED BINDING THEREFOR

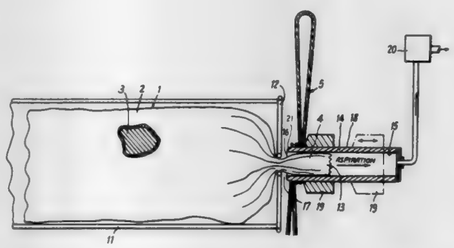
Jean-Frédéric Herubel, Guebwiller, France, assignor to N. Schlumberger & Cie, France

Filed Mar. 9, 1982, Ser. No. 356,470

Claims priority, application France, Mar. 10, 1981, 81 04714

Int. Cl.³ A01D *59/04*; **B65H** *69/04*

U.S. Cl. 289—2 **6 Claims**



1. A device for applying a knot-shaped binding on the end of a flexible tubular packing, particularly a pork-butchery article, comprising a hollow mandrel for receiving the narrowed end of the packing, said mandrel being adapted for receiving on its cylindrical outer peripheral surface a previously prepared knot-shaped binding; a sliding push-piece adapted for sliding the binding on the mandrel for ejecting it therefrom and transferring it onto the narrowed end portion of the packing protruding from the mandrel; and suction means for the narrowed free end through the mandrel in order to stretch it axially during the application of the knot.

4,525,003

KNOTTING DEVICE

John L. Tate, Jr., Rte. 8, Box 464, Denham Springs, La. 70726

Filed Jan. 26, 1984, Ser. No. 574,058

Int. Cl.³ B65H *69/04*

U.S. Cl. 289—17 **20 Claims**

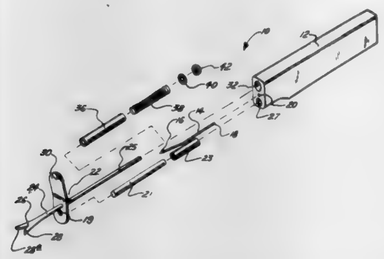
1. A knotting device which comprises:

(a) a handle portion;

(b) an elongated resiliently flexible rod attached at its proximate end to said handle portion, said rod having a taper to at least a near-point at its distal end; and

(c) an elongated member movably mounted to said handle portion whereby the distal end of said elongated member

travels along a path which extends from a point rearward of to a point forward of said distal end of said rod, said



distal end of said elongated member having a forked portion which includes a knot recess at its crotch.

4,525,004

LID LOCK STRUCTURE

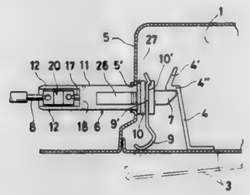
Toshie Tanaka, Tokyo, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Feb. 11, 1983, Ser. No. 465,842

Claims priority, application Japan, Feb. 19, 1982, 57-21399[U]

Int. Cl.³ E05C *1/12*

U.S. Cl. 292—171 **4 Claims**



1. A lid lock structure for a hinged lid in combination with an outwardly opening walled recess in a car body including a catch leg having a ramp and step portion at its free end forming a shoulder facing in spaced relation to and fixed to the back of the hinged lid, and a latch assembly, which comprises: a hollow housing fixed at its head to one apertured side wall of the recess; a bolt having a cam end contained in the hollow housing and integrally spring-loaded to partly project said cam end from the front surface of the housing into the recess, thus catching the shoulder portion of the catch leg when the lid is closed; and a plate spring connected to the head of the housing, yieldingly bent to constantly apply pressure against the lid when the lid is closed, whereby the lid is snapped opened from the interior when unlatched by retracting the spring bolt from engagement with said shoulder portion of said catch leg.

4,525,005

BUMPER COMPONENT MADE OF FIBER-REINFORCED MATERIAL FOR AUTOMOBILES OR THE LIKE

Wolfgang Prochaska, Munich, and Ralf-Thilo Schulz, Putzbrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

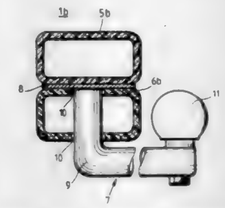
Filed Sep. 26, 1983, Ser. No. 536,170

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1982, 3237762

Int. Cl.³ B60R *19/08*

U.S. Cl. 293—117 **11 Claims**

1. A fiber-reinforced vehicle bumper bar having a central longitudinal axis, comprising at least two wound bodies of fiber-reinforced synthetic resin impregnated material windings, each of said wound bodies having a box-shaped completely closed substantially rectangular cross-sectional configuration, said fiber-reinforced synthetic resin impregnated material windings having a fiber orientation relative to said longitudinal axis selected in accordance with strength requirements of the bumper bar along its length, said substantially rectangu-



lar configuration having two shorter and two longer walls with two longer walls of said two bodies bonded together along the entire length of said bumper bar, said two longer walls which are bonded together forming a central double wall extending substantially horizontally in a use position of said bumper bar for an increased bonding strength.

4,525,006

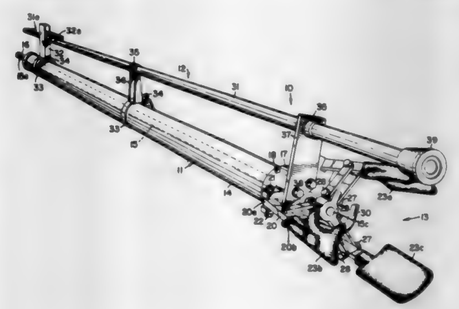
ELECTRICAL DISCONNECT TOOL

David J. Nowak, Saint Paul, and David F. Zupfer, Stillwater, both of Minn., assignors to R.J. LeVesque Manufacturing Co., St. Paul, Minn.

Filed May 2, 1983, Ser. No. 490,799

Int. Cl.³ A47F *13/06*

U.S. Cl. 294—19.1 **11 Claims**



1. An electrical disconnect tool for insulatably gripping and removing a high voltage termination from a connector, the terminator having a removal hook, said tool comprising:

(a) an elongated tube having first and second ends;

(b) a working head cooperatively connected to said second end of said elongate tube, said working head comprising a plurality of opposed jaw members for gripping the terminator;

(c) means for moving said working head between open and closed positions;

(d) a ratchet assembly axially spaced from and cooperatively connected to said tube, said ratchet asembly having a ratchet rod with first and second ends, said second end being axially spaced from said working head, whereby operation of said ratchet assembly causes said working head to be moved gradually away from said second end of said ratchet rod; and

(e) means for engaging the removal hook of the terminator, said engaging means cooperatively connected to said working head and said ratchet assembly is aligned with said engaging means, whereby when said engaging means engages the removal hook of the terminator, said second

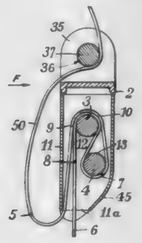
end of said ratchet rod is in a general vertical relationship to the terminator.

4,525,007

DEVICE FOR LOCKING STRAPS AT THE TIME OF LIFTING LOADS, WITH POSSIBLE ADJUSTMENT OF THEIR USEFUL LENGTH

Jean-Pierre Chapalain, 8 À 18, rue de Méry, 95310 Saint Ouen l'Aumone, France

Filed Sep. 20, 1982, Ser. No. 419,910
Claims priority, application France, Sep. 7, 1982, 82 15159
Int. Cl.³ B66C *1/18*
U.S. Cl. 294—74 **9 Claims**



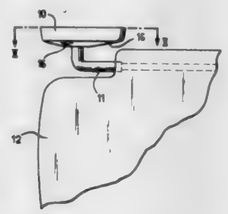
1. A device for locking a strap for lifting loads and securing it to a lifting member, comprising: a yoke shaped piece having arms pierced with two pairs of holes in facing relation, a removable case having sides pierced with two pairs of holes which come into alignment with said holes of the yoke when the case is housed in the yoke, two parallel shafts engaged in the holes of the yoke and the case, means for locking said shafts, said case having a cover bent back towards a bottom portion thereof to form a slit for passing therethrough superposed active and free strands of the strap, before the same is wound into a loop on said shaft for locking thereof, lugs extending from the arms of the yoke, holes provided in facing relation in said lugs, a guide shaft engaged in said holes of said lugs and serving for guiding the active strand of the strap towards the lifting member, and means for locking said guide shaft on the yoke.

4,525,008

SWIVEL ATTACHMENT FOR AUTO VEHICLE ADJUSTABLE SUN VISORS

Giovanni Foggini, Turin, Italy, assignor to Lear S.n.c. di Foggini & C., Orbassano, Italy

Filed Mar. 28, 1983, Ser. No. 479,538
Claims priority, application Italy, Apr. 9, 1982, 67475 A/82
Int. Cl.³ B60J *3/02*
U.S. Cl. 296—97 K **10 Claims**



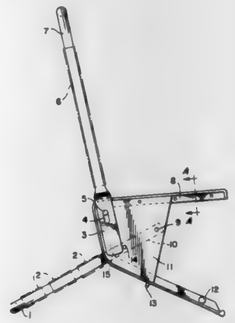
1. A swivel attachment for automobile vehicle adjustable sun visors, including a suspension rod having an end, comprising a supporting body of a polymeric material having a throughgoing socket holding, with allowance for rotation, an end of said visor suspension rod, defining a cranked projection, in spaced relationship within two opposing cheeks formed within said body, and having an inside hollow space extending through an arc at least as wide as the adjustable angle of said visor suspension rod, said two opposing cheeks of said supporting body being engaged by said cranked projection and acting in elastic contact engagement with the same, so as to control the angular travel throughout the range of movement thereof.

4,525,009

CHAIR CHANGEABLE INTO EASY CHAIR

Alejandro de la Sota Martinez, Avenida de América No. 49, Madrid-2, Spain

Filed Jan. 26, 1983, Ser. No. 461,973
Claims priority, application Spain, Jan. 29, 1982, 262.857[U]
Int. Cl.³ A47C *13/00*
U.S. Cl. 297—118 **8 Claims**



1. An article of furniture which is convertible between first and second positions of use as a chair and as a lounge, respectively, said article of furniture comprising:

a base structure including two generally U-shaped frameworks each having first and second legs, said two frameworks being connected together in spaced parallel planes by a rod connecting said first legs and by a rigid panel extending between and connecting said second legs, said base structure being movable between said first position of use, whereat said rigid panel is a seat of said chair and said first legs form one support of said chair, and said second position of use, whereat said first and second legs form two supports of said lounge;

a first U-shaped frame having arms pivotally mounted to respective said frameworks about a first axis of rotation, said first frame being rotatable about said first axis between a first position, whereat said first frame forms another support of said chair when said base structure is in said first position of use, and a second position, whereat said first frame forms a seat of said lounge when said base structure is in said second position of use; and

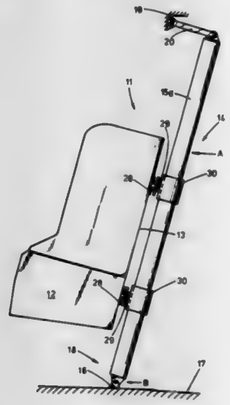
a second U-shaped frame having arms pivotally mounted to respective said frameworks about a second axis of rotation, said second frame being movable with respect to said second axis between a first position, whereat said second frame forms a backrest of said chair when said base structure is in said first position of use, and a second position, whereat said second frame forms a backrest of said lounge when said base structure is in said second position of use.

4,525,010

AIRCRAFT SEAT

Peter W. Trickey, Sherborne; David C. Netherway, Sturminster Newton, and William S. Clifford, Martock, all of England, assignors to Westland plc, Somerset, England

Filed Jul. 7, 1983, Ser. No. 511,586
Claims priority, application United Kingdom, Jul. 19, 1982, 8221028
Int. Cl.³ B60R *21/10*
U.S. Cl. 297—216 **10 Claims**



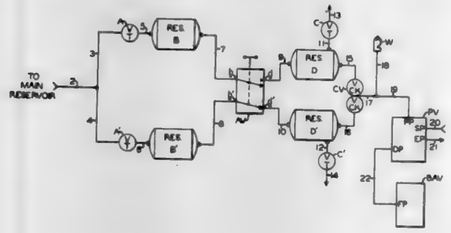
1. An aircraft seat including a seat bucket and a back-rest portion, support means attached to said back-rest portion to permit generally vertical movements of the seat, and energy absorber means adapted to support the seat in an operative position, seat support means comprising an articulated support structure adapted to react to vertical, longitudinal and lateral loads, the articulated structure including two parallel generally vertical guide tubes supported at each end by pivoted attachments to aircraft structure.

4,525,011

VIGILANCE SAFETY CONTROL SYSTEM

Richard L. Wilson, Monroeville, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Sep. 20, 1982, Ser. No. 420,197
Int. Cl.³ B60T *7/14*
U.S. Cl. 303—19 **8 Claims**



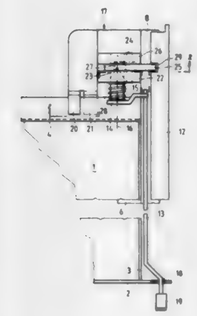
1. A safety control system for checking the alertness of an operator of a moving vehicle comprising, first and second parallel fluid circuits each having separate first and second reservoirs, an input choke valve is disposed in line with said first reservoir of each circuit to restrict the rate of fluid flow to said first reservoirs and an output choke valve is cooperatively associated with said second reservoir of each circuit to bleed off the pressure in said second reservoirs wherein the fluid flow rate of said input choke valves and the pressure bled off by said output choke valves establish a predetermined cycle time for initiating a warning signal, a reversing valve cooperatively associated with said first and second reservoirs of each circuit for selectively and alternately interconnecting said first reservoir to said second reservoir of each circuit, and means including a pilot valve which directly receives fluid pressure from said second reservoir in each circuit for causing a penalty brake application when the operator fails to acknowledge the warning signal by switching said reversing valve within a predetermined time after the warning signal is initiated.

4,525,012

LOCKING APPARATUS FOR DRAWERS AND THE LIKE

Max Dünner, Erlen, Switzerland, assignor to Lista AG, Switzerland

Filed May 3, 1983, Ser. No. 491,288
Claims priority, application Switzerland, May 12, 1982, 2966/82
Int. Cl.³ A47B *88/04*
U.S. Cl. 312—222 **17 Claims**



10. A pull-out member, such as a drawer or rack board, comprising:

mounting and guiding means including a bearing rail located in a running rail attached to a housing;

a locking member including a pivotable lever having a guide opening therethrough;

means defining a recess in the housing to receive said locking member;

support means, adjacent the back of said pull-out member, for movably supporting said locking member on said pull-out member for movement relative to said pull-out member in a direction perpendicular to the direction of pull-out member movement between a first position in said recess and a second position out of said recess, said support means including a pivot fixedly attached to the rear of said pull-out member;

operating rod means longitudinally movable for operating said locking member between said first and second positions, said operating rod means including an axially moveable ram member having a cam surface inclined relative to the movement axis thereof, said cam surface being positioned adjacent an edge of said guide opening such that axial movement of said rod means and said ram member relative to said lever moves said lever between said second and first positions, said ram member including a cylindrical pin, said cam surface being conical and located at the distal end of said cylindrical pin; and

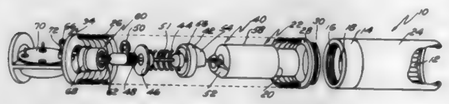
guide means for supporting and guiding said rod means along a side of and beyond a front of said pull-out member.

4,525,013

DEMOUNTABLE COAXIAL ELECTRICAL CONNECTOR FOR IN-LINE AMPLIFIERS

Raymond J. Phillips, Oakdale, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 17, 1984, Ser. No. 571,414
Int. Cl.³ H01R *39/00*
U.S. Cl. 339—7 **2 Claims**



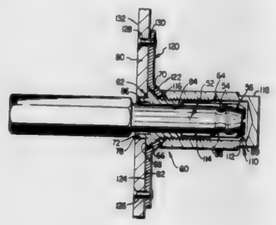
1. A flexible electrical connector comprising:
a first assembly including a first contact piece adapted to be demountably connected, said first assembly further includes a spring seat having an aperture in which the first contact piece is press fitted and a retaining ring positioning said first contact piece within said spring seat aperture;
a second assembly including an insulated second contact piece adapted to be demountably connected, said second contact piece having a split end and an electrical feedthrough with the end opposite said split end adapted for receiving an external electrical conductor; and
flexible means for providing an electrical conductive bending radius between said first and second contact pieces, said flexible means further including an electrical wire connected between said first contact piece and said split end of said second contact piece, a spring cap having a split end abutting said split end of said second contact piece to prevent relative rotation between said spring cap and said second contact piece, said spring cap further having an aperture for passing therethrough said electrical wire and a flexible spring connecting said spring cap and said spring seat and having said electrical wire passing axially through said spring.

4,525,014

AIRCRAFT GROUNDING RECEPTACLE

Howard E. Holman, and Roy D. Turner, both of Fort Worth, Tex., assignors to T. J. Electronics, Arlington, Tex.

Continuation-in-part of Ser. No. 466,915, Feb. 16, 1983,. This application Jan. 10, 1984, Ser. No. 569,603
Int. Cl.³ H01R *4/66*
U.S. Cl. 339—14 R **6 Claims**



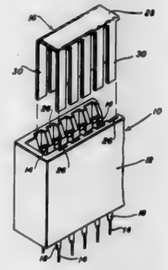
1. An aircraft grounding receptacle comprising:
a unitary body of electrically conductive material;
said body of electrically conductive material including a plug receiving portion and a collet portion;
the plug receiving portion including a flange characterized by a first surface extending perpendicularly to the axis of the receptacle and adapted for engagement with the internal surface of an aircraft panel and a second surface sloping inwardly toward the collet portion;
said plug receiving portion further including an extension projecting from the flange in the opposite direction from the collet portion and adapted to project through an aperture in the aircraft panel;
the collet portion having reduced diameter portions adapted to matingly receive the terminal groove and the tip of an aircraft grounding plug therein;
said collet portion further comprising a plurality of longitudinally extending slots defining a plurality of tines therebetween adapted to flex outwardly when an aircraft grounding plug is inserted into the collet portion of the receptacle and to thereafter flex inwardly to securely retain the tip and the terminal groove in the reduced diameter portions of the collet portion;
a washer having the receptacle extending therethrough and including a dimple positioned for engagement with the second surface of the flange of the plug receiving portion of the receptacle;
means securing the washer to the aircraft panel; and
a housing mounted on the receptacle and surrounding the collet portion thereof.

4,525,015

PREASSEMBLED PRESS FIT CONNECTOR WITH ASSEMBLY INSERT

Gary W. Schwindt, Washington, Conn., assignor to Litton Systems, Inc., Watertown, Conn.

Continuation of Ser. No. 264,584, May 18, 1981, abandoned. This application Aug. 25, 1983, Ser. No. 526,308
Int. Cl.³ H05K *1/00*
U.S. Cl. 339—17 C **3 Claims**



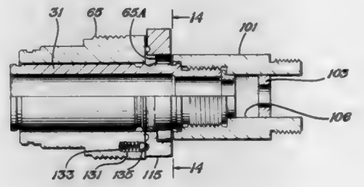
1. A preassembled press fit connector for mounting on a printed circuit board in an array of plated thru holes comprising:
a selectively configured connector housing,
first and second adjacent rows of contacts mounted within said housing,
a press shoulder formed on each said contact within said housing,
a press fit section formed on each said contact extending downwardly below said housing, and
a removable insert formed from thin sheet stock and having an inverted U shape mounted within said housing and being axially supported soley by said first and second rows of contacts, said insert means comprising:
a plate portion defining an external connector press surface above said housing, and
first and second rows of integral teeth extending downwardly from said plate portion and engaging one each with said press shoulders of said first and second rows of contacts, whereby a force applied to the external press surface of the insert is transfered by said first and second rows of integral teeth and whereby the press fit sections of a plurality of press fit connectors may be simultaneously forced into mating engagement with the plated thru holes of the printed circuit board by applying pressure with the flat pressing surface of a press head to the external connector press surfaces presented by the removable inserts in said plurality of preassembled press fit connectors, said press head being withdrawn from said connector independently of said removable insert whereby the press head must be withdrawn from said removable insert prior to said removable insert being removed from said connector.

4,525,016

LOCKING APPARATUS FOR TEST PROBE

Robert A. Williams, 2721 White Settlement Rd., Fort Worth, Tex. 76107

Filed Feb. 21, 1984, Ser. No. 581,610
Int. Cl.³ H01R *13/631*
U.S. Cl. 339—75 R **4 Claims**



1. Locking apparatus for a test probe of the type having electrical contact means at its forward end, a central body member, a movable sleeve located around said central body member, said movable sleeve being movable axially to forward and rearward positions relative to said central body member to cause latch means to be moved to latching and unlatching positions respectively relative to said central body member, comprising:
structural means coupled to said central body member rearward of said movable sleeve at a position such that the forward end of said structural means is spaced from the rear end of said movable sleeve when it is in its forward position,
a ring shaped member located around said central body member,
coupling means for coupling said ring shaped member to the rear end of said movable sleeve such that said ring shaped member will move axially with said movable sleeve when said movable sleeve is moved to its forward and rearward positions,
said coupling means allowing said ring shaped member to be moved to locking and unlocking positions in directions transverse to the axis of said central body member,
said ring shaped member being movable to its locking position when said movable sleeve is in its forward position thereby locating a portion of said ring shaped member between a portion of said rear end of said movable sleeve and a portion of the forward end of said structural means to prevent said movable sleeve from being moved to its rearward position,
when said ring shaped member is in its unlocked position, its opening being located to allow said movable sleeve to be moved to its forward and rear positions,
said ring shaped member being located at least partially around the forward end of said structural means when said movable sleeve is located at its rear position.

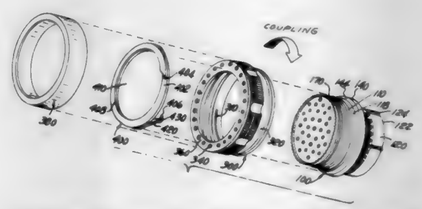
4,525,017

ANTI-DECOUPLING MECHANISM FOR AN ELECTRICAL CONNECTOR ASSEMBLY

Alan L. Schildkraut, Sidney, and Robert W. Brush, Sr., Unadilla, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Filed May 11, 1983, Ser. No. 493,535
Int. Cl.³ H01R *13/623*
U.S. Cl. 339—89 M **11 Claims**

1. An anti-decoupling mechanism for a separable electrical connector assembly, the connector assembly including first and second connector members adapted for mating engagement and a coupling member rotatably mounted to one of said connector members for drawing the connector members into mating engagement, said one connector member including a forwardly facing rear end wall and an annular wall circumferentially therearound, said coupling member comprising a radial flange having an outer end wall, said anti-decoupling mechanism resisting rotation of the coupling member in both coupling and uncoupling directions and characterized by:
a plurality of detents disposed around said outer end wall; and
a radially expansible and contractible spiral band interference fit about said annular wall and adapted for movement between first and second positions depending, respectively, on whether the coupling member is rotated in said coupling and uncoupling directions, said spiral band abutting said rear end wall and including a laterally deflectable arm adapted to successively engage the detents driven thereagainst during rotation of the coupling member with movement of said spiral band to the first position causing the spiral band to radially expand from its interference fit and slide relative to annular wall and to the second position causing the spiral band to radially contract and the arm to laterally deflect from the detent, the radial contraction increasing frictional forces acting between the spiral band and the annular wall to prevent rotation therebetween until sufficient torque is applied to laterally deflect the arm from the detent whereby to allow the coupling member to rotate and the arm to advance into engagement with the next successive detent.

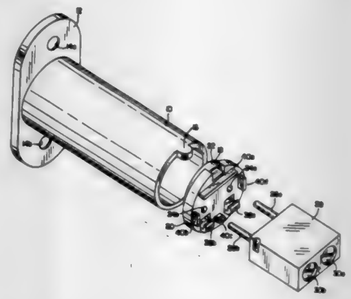


4,525,018

MODULAR TERMINAL HOUSING

Thomas J. Holce, Portland, and Charles M. Huckins, Tigard, both of Oreg., assignors to Sentrol. Inc., Portland, Oreg.

Filed Jun. 15, 1984, Ser. No. 621,112
Int. Cl.³ H01R *13/502*
U.S. Cl. 339—91 R **4 Claims**



1. A modular housing and terminal for an electrical component comprising:
(a) a terminal strip having a substantially rectangular base;
(b) a substantially cylindrical housing for an electrical component; and
(c) adapter means for connecting said terminal strip to said

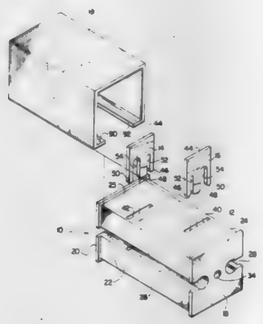
housing, said means having two sides, one side including rectangular retaining means for engaging said terminal strip, and the other side including arcuate retaining means for engaging said housing.

4,525,019

SELF-STRIPPING CONNECTOR FOR INSULATED WIRES

Joseph L. Brasky, 15 Tower Hill Rd., Killingworth, Conn. 06417

Continuation of Ser. No. 351,642, Feb. 23, 1982, abandoned.
This application May 11, 1984, Ser. No. 609,490
Int. Cl.[3] H01R *9/08*
U.S. Cl. 339—98 **1 Claim**



1. In an electrical radiant heating panel assembly for connection in parallel to a pair of insulated power wires of opposite polarity and which extend in a closely spaced parallel relationship with each other, the combination comprising:

(a) a radiant heating panel including an electrical resistance heating wire having a major portion extending in the body of the panel and two insulated lead end portion protruding from one edge of the panel for connection in parallel to the pair of insulated power wires of opposite polarity,

a connector including

(a) an insulative body member in the form of a generally rectangular block having opposite sides and a top, said body member defining a pair of elongated through channels extending between said opposite ends and arranged on opposite sides of the member, each channel opening outwardly and having a narrow neck portion and a wider interior portion so as to receive and securely retain an insulated power wire urged sideways in a snap action and in a lateral direction into said interior portion of the channel, said body member thus being supported in suspended relationship between said spaced parallel power wires, said body member further defining first and second elongated openings extending toward one another from said opposte ends but insulated form one another, said first and second openings being approximately concentric and arranged end-to-end between and in closely spaced relationship with said channels in said body member, and said first and second openings being adapted respectively to receive and position longitudinally said lead wire end portions in an endwise entry movement of the end portions, and said body member still further defining two thin slots, each slot extending from said body member top surface and in communication with one of said channels and one of said openings,

(b) two thin flat resilient conductive contact elements each having a head portion and spaced wire-receiving slots defined by fingers extending opposite the head portion, each of said contact elements being of such size and shape as to be slidably received within a separate one of said thin body member slots, and said fingers of each contact element adapted to engage the conductors of isulated wire positioned within the channel and opening communicating with its slot to form electrical contact between the conductors, and

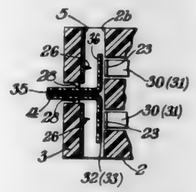
(c) a cover fastenable over the insulative body member for covering the head portions of the contact elements and securing the same in fully inserted condition within their respective slots, said cover also extending over said narrow neck portion of each of said channels and thus positively retaining said power wires against accidental lateral dislodgement from their respective channels.

4,525,020

ELECTRICAL CONNECTOR

Hiromi Yasumoto, Hitaka, Japan, assignor to Junkosha Company Ltd., Tokyo, Japan

Filed Sep. 13, 1983, Ser. No. 531,747
Claims priority, application Japan, Sep. 21, 1982, 57-143139
Int. Cl.[3] H01R *13/39*
U.S. Cl. 339—99 R **3 Claims**



1. A connector for a flat cable having alternating pairs of conductors, the connector having an insulating first housing in which a plurality of ready access terminals are fitted to female or male receptacles,

an insulating second housing affixed to said first housing, characterized in that said ready access terminals have conductor contact faces which are arranged in two parallel rows, and, in addition, provided on the rear side of said first housing to which said cable is connected are a plurality of conductors of said cable which are exposed and in which the conductors in each pair of conductors are directed away one from the other, the conductors being put into contact with the conductor contact faces of said ready access terminals, said cable conductors being compressed and contacting said conductor faces simultaneously with the affixing of said second housing onto said first housing, and wherein a plurality of pins are provided on said second housing at positions corresponding to said conductor contact faces, and said cable conductors are compressed and contacting said conductor contact faces through said pins.

4,525,021

ELECTRICAL CABLE CONNECTOR ASSEMBLY

Robert A. Williams, 2721 White Settlement Rd., Fort Worth, Tex. 76107

Filed Oct. 24, 1983, Ser. No. 544,709
Int. Cl.[3] H01R *13/58*
U.S. Cl. 339—104 **4 Claims**

1. An electrical cable connector assembly, comprising:

an electrical connector,

a hollow armored cable means,

a fitting having an opening formed therethrough connected to an end of said armored cable means,

said fitting having an enlarged forward end and a rear end with a shoulder formed therebetween facing the rear of said fitting,

electrical lead means extending through said armored cable means and through said fitting and coupled to said connector,

a body having an opening formed therethrough,

said body having a forward end adapted to be removably coupled to said connector and a rear end to be located near and forward of said forward end of said fitting when said forward end of said body is coupled to said connector,

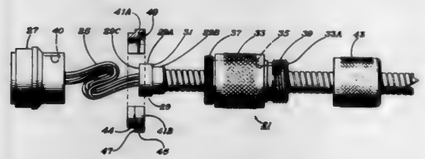
said electrical lead means extending through said opening of said body when said forward end of said body is coupled to said connector,

said opening of said body being large enough such that said body may be moved rearward of said fitting when said forward end of said body is uncoupled from said connector,

ring means having a forward end and an enlarged rear end with a shoulder formed therebetween facing said forward end of said ring means,

said ring means having a rearward facing portion,

said ring means being adapted to be located around said electrical lead means with its forward end located within



said opening of said body such that said rear end of said body engages said shoulder of said ring means and with said rearward facing portion of said ring means engaging said forward end of said fitting,

a nut means having an opening formed therethrough,

said nut means being located around said armored cable means and adapted to be removably coupled to the rear end of said body,

said nut means having structure adapted to engage said shoulder of said fitting when said nut means is coupled to the rear end of said body and said forward end of said body is coupled to said connector whereby said fitting will be securely held between said ring means and said structure of said nut means,

said nut means being adapted to be uncoupled from said body and moved rearward thereby allowing said ring means to be removed,

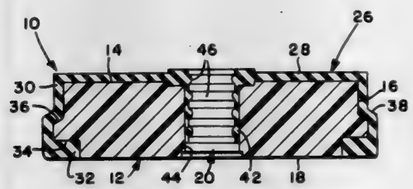
said ring means being characterized such that it may be removed transversely from said electrical lead means.

4,525,022

ELECTROLYTIC CAPACITOR AND IMPROVED HEADER THEREFOR

Myles N. Murray, 15 Skyline Dr., Chagrin Falls, Ohio 44022

Filed Jun. 30, 1983, Ser. No. 509,248
Int. Cl.[3] H01R *9/16;* **H01G** *9/00*
U.S. Cl. 339—220 C **16 Claims**



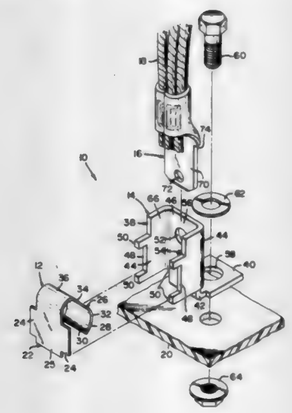
1. A capacitor header into which a terminal may be assembled, comprising: a rigid body having an axial hole for receipt of the terminal, and a resilient elastomeric tubular sealing element extending interiorly about said hole, said sealing element having plural axially spaced apart annular sealing beads at its interior side which extend transaxially inwardly for compression by the terminal upon assembly in said hole to form respective axially spaced apart line seals between the terminal and said sealing element.

4,525,023

ELECTRICAL CONNECTOR

Gustaf R. Lawson, Willingboro, N.J., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 12, 1983, Ser. No. 531,133
Int. Cl.[3] H01R *13/12*
U.S. Cl. 339—258 R **1 Claim**



1. An electrical connector for use with tab terminals and the like comprising:

a. an asymmetrical, U-shaped spring member with a first leg providing a spring section and a second leg having laterally projecting ears; and

b. a terminal having a fastening section for fastening the terminal to an electrical device; a channel section for receiving the spring member with the spring section thereon being generally parallel to a floor of the channel section and providing therebetween a tab terminal receptacle, and posts on the sidewalls peened over the ears on the second leg to secure the spring member to the terminal.

4,525,024

TWO-BEAM SCANNING OPTICAL SYSTEM

Kimio Tatsuno, Kokubunji, and Susumu Saito, Hachioji, both of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Nov. 3, 1982, Ser. No. 438,772
Claims priority, application Japan, Nov. 6, 1981, 56-177220
Int. Cl.[3] G02B *27/17*
U.S. Cl. 350—6.5 **16 Claims**

1. A two-beam scanning optical system comprising:

a first laser light source for emitting a first laser beam having a polarization characteristic;

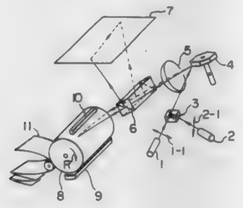
a second laser light source for emitting a second laser beam having a polarization characteristic;

a first optical means for compounding said first and second laser beams into one compounded laser beam by utilizing the respective polarization characteristics of said first and second laser beams;

a second optical means for scanning said compounded laser beam;

a third optical means for separating a laser beam emitted

from said second optical means into said first and second laser beams by utilizing the respective polarization characteristics of said first and second laser beams; and



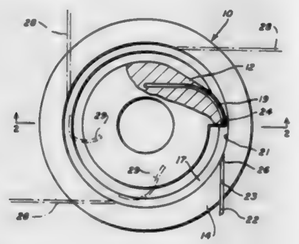
a fourth optical means disposed between said second and third optical means, for collecting the laser beam from said second optical means such that said first and second laser beams respectively scan predetermined scanning planes.

4,525,025

FIBER OPTIC ROTARY JOINT USING A REFLECTIVE SURFACE AND TANGENTIALLY MOUNTED ROTOR AND STATOR OPTICAL FIBERS

Thomas C. Hohmann, Blacksburg; Norris E. Lewis, Christiansburg, and Michael B. Miller, Blacksburg, all of Va., assignors to Litton Systems Inc., Blacksburg, Va.

Filed Mar. 21, 1983, Ser. No. 477,070
Int. Cl.³ G02B *5/14, 7/26*
U.S. Cl. 350—96.15 **11 Claims**



1. A fiber optic rotary joint for coupling an optical signal across a rotary interface comprising:
a stator,
an annular reflective wall formed on said stator,
a stator optic fiber mounted on said stator and having an end in close proximity and tangential to said annular reflective wall,
a rotor,
a rotor optic fiber,
means on said rotor for positioning an end of said rotor optic fiber in close proximity and tangential to said annular reflective wall, whereby a signal emitted by one of said optic fibers will be projected tangentially against and reflected in short chordal paths along said annular reflective wall to be received by the other of said optic fibers.

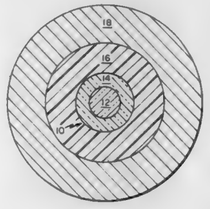
4,525,026

OPTICAL FIBER PROTECTION BY POWDER FILLED COATINGS

Glenn R. Elion, Northborough, Mass., assignor to Aetna Telecommunications Laboratories, Westboro, Mass.

Filed Nov. 19, 1982, Ser. No. 442,919
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.23 **30 Claims**

22. A protectively coated optical waveguide resistant to attack by environmental substances, comprising:
an inner composite including an optically transmissive fiber coated with a layer of cladding material which enhances the optical performance of said fiber, and a protective layer surrounding said cladding material and bonded to it;
a layer of polymeric material surrounding said inner composite and bonded to it; and
powdered micron-to-submicron size material reactive with said environmental substances, said powdered material including particles of at least one of the constituents of said inner composite;



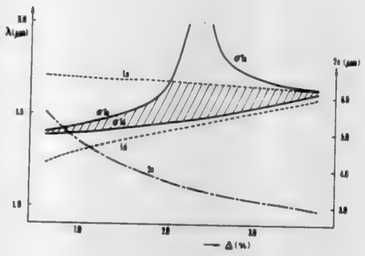
said cladding material comprising at least one material selected from the group consisting of oxides and nitrides of silicon, titanium, tin, boron, germanium, and phosphorous;
said protective layer comprising at least one material selected from the group consisting of aluminum, silicon, tin, titanium, nickel, lead, and oxides of these metals; and
said powdered material being dispersed in said layer of polymeric material, forming therewith a buffer layer to protect said inner composite from attack by environmental substances.

4,525,027

SINGLE MODE OPTICAL FIBERS

Katsunari Okamoto; Takao Edahiro, both of Mito; Akio Kawana, Komae, and Tetsuo Miya, Mito, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Japan

Continuation-in-part of Ser. No. 518,772, Aug. 2, 1983, abandoned, which is a continuation of Ser. No. 192,259, Sep. 30, 1980, abandoned. This application Sep. 5, 1984, Ser. No. 648,334
Claims priority, application Japan, Oct. 8, 1979, 54-130449
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.30 **4 Claims**



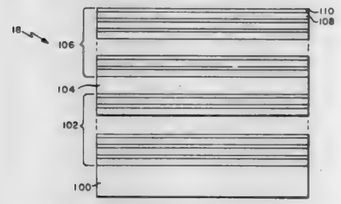
1. A single mode optical fiber comprising a core having a diameter of $2a$ and made of glass having a refractive index of n_1, and a cladding surrounding the core and made of glass having a refractive index of n_2 wherein when a refractive index difference Δ is expressed by $n_1-n_2/n_1\times 100$, said refractive indices n_1 and n_2 are determined to satisfy a relation $1.0<-\Delta<3.6$ and the diameter $2a$ of said core is selected to have a value in a range of 4.8 to 3.0 microns as determined by the value of Δ.

4,525,028

ENHANCED MAGNETIC MIRROR

Terry A. Dorschner, Newton Center, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 257,304, Apr. 23, 1981,. This application May 11, 1984, Ser. No. 608,925
Int. Cl.³ G01B *9/02*
U.S. Cl. 350—377 **16 Claims**



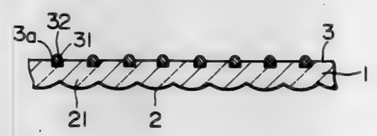
1. In combination:
a substrate;
means for producing a predetermined amount of reflectivity disposed on a surface of said substrate;
a semi-transparent layer of magneto-optical material disposed over a surface of said reflectivity producing means, said magneto-optical layer having a predetermined thickness;
means, disposed over a surface of the semi-transparent layer of magneto-optical material, for enhancing the reflectivity of said surface of said magneto-optical layer; and
wherein the predetermined thickness of the magneto-optical layer is different from the thickness required to provide phase equalization between waves reflected from an outer surface of the reflectivity enhancing means, the surface of the magneto-optical layer and the surface of the reflectivity producing means, with the reflectivity enhancing means and the reflectivity producing means being selected to provide such phase equalization.

4,525,029

REAR PROJECTION SCREEN

Masao Inoue; Shingo Suzuki, both of Tokyo, and Hajime Gotoh, Nagoya, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1983, Ser. No. 564,301
Claims priority, application Japan, Dec. 27, 1982, 57-234409
Int. Cl.³ G03B *21/60*
U.S. Cl. 350—128 **15 Claims**



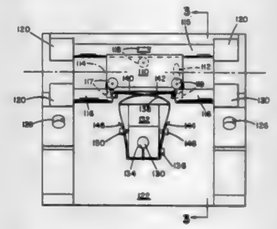
1. A rear projection screen comprising a projection surface upon which light from a projector impinges and a viewing surface, at least one of the screen surfaces being formed so as to serve as a lens so that the light which impinges on the projection surface produces on the viewing surface a multiplicity of bright stripe portions where the light is transmitted and a multiplicity of dark stripe portions where no light is transmitted, a plurality of elongated grooves formed along the dark stripe portions of the viewing surface and a corresponding plurality of thread-like members disposed in the elongated grooves as light-absorbing means.

4,525,030

POSITIONER FOR OPTICAL ELEMENT

Jean I. Montagu, Brookline, and Kurt A. Pelsue, Wayland, both of Mass., assignors to General Scanning Inc., Watertown, Mass.

Filed Aug. 26, 1982, Ser. No. 412,020
Int. Cl.³ G02B *7/04*
U.S. Cl. 350—255 **5 Claims**



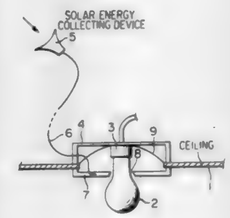
1. Apparatus for positioning an optical element at selected locations along an optical axis, comprising
a carriage on which said optical element is mounted,
support and guide means for holding said carriage, and confining it to substantially linear motion along said axis,
a moving-iron, limited-rotation actuator having a rotor and a rotor shaft rotatable over a range of angular excursions within a maximum operational angular excursion defined by the configurations of the stator and rotor pole faces of said actuator,
a crank arm connecting the shaft of said actuator to said carriage and arranged to drive said carriage in linear motion when the shaft of said actuator rotates,
the length of said crank arm being arranged with respect to said maximum operational angular excursion of said shaft to substantially match the inertia of said crank arm and the rotor of said actuator to the reflected inertia of said carriage, and
control means adapted to apply electrical signals to said actuator to controllably vary the rotary position of said rotor of said moving-iron, limited-rotation actuator and thereby the position of said optical element along said axis.

4,525,031

SOLAR LIGHT ENERGY AND ELECTRIC LIGHTING SYSTEM AND SOLAR AND ELECTRIC LIGHT LAMPS USED THEREIN

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 43,832, May 30, 1979, abandoned. This application Mar. 5, 1981, Ser. No. 240,999
Claims priority, application Japan, Jun. 7, 1978, 53-67810; Jun. 13, 1978, 53-71271
Int. Cl.³ G02B *17/00*
U.S. Cl. 350—265 **7 Claims**



1. A solar energy and electric lighting system, comprising:
a solar light energy collection means;
a solar light energy transmission means for transmitting the collected solar light energy; and
a solar light energy guide means for guiding the transmitted

solar light energy into an enclosure of an electric lamp through a transparent portion thereof,

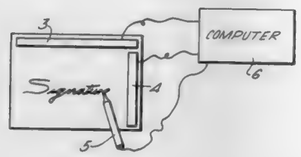
whereby said electric lamp may be also used for solar light energy illumination.

4,525,032

LIQUID CRYSTAL REUSABLE SIGNATURE COMPARISON

Cyril Hilsum, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 27, 1982, Ser. No. 385,263
Int. Cl.³ G02F *1/137, 1/133*
U.S. Cl. 350—331 R **31 Claims**



1. A liquid crystal display comprising a layer of liquid crystal material contained between a front and a rear wall, a pen having a tip for contacting the front wall and changing the observed state of the layer at positions traced by the pen tip when moved across the front wall, means for erasing information formed by the pen movement, an optically transparent electrically resistive layer on the outer surface of the front wall for direct contact by the pen, and read out means for determining the instantaneous position of the pen on the display, wherein a visible image is formed on the display by virtue of the changed observed state of the liquid crystal material layer while an electrical representation of pen movement is obtained by virtue of the resistive layer in contact with the pen.

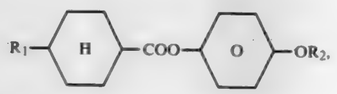
4,525,033

LIQUID CRYSTAL COMPOUND AND COMPOSITIONS CONTAINING SAME

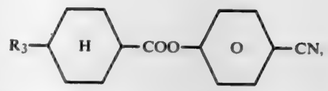
Tadashi Ota, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 46,583, Jun. 7, 1979, abandoned. This application Dec. 7, 1981, Ser. No. 328,155
Claims priority, application Japan, Jun. 8, 1978, 53-69228; Jul. 7, 1978, 53-82798; Jul. 26, 1978, 53-89018
Int. Cl.³ G02F *1/13;* **C09K** *3/34*
U.S. Cl. 350—350 R **25 Claims**

1. A method of presenting a display in a liquid crystal display device, comprising the step of applying multiplex driving signals to a liquid crystal composition having a positive dielectric anisotropy in the twisted nematic field effect mode, said composition consisting essentially of about 27.3 to 59.0 weight percent of at least one liquid crystal compound having the formula

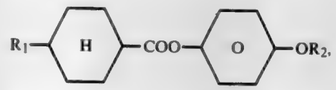


termed Type I wherein R_1 and R_2 and n-alkyl with one to six carbon atoms and about 41.0 to 72.7 weight percent of at least one liquid crystal compound having the general formula

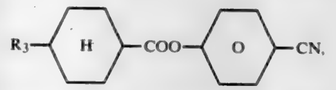


termed Type II wherein R_3 is n-alkyl with one to six carbon atoms, said Type I and Type II compounds included in the composition to increase the dynamic margin of the liquid crystal display device.

12. A liquid crystal display device for displaying in a twisted nematic field effect mode comprising multiplex circuit means for generating multiplex driving signals and a liquid crystal cell including a pair of opposed substrates with electrodes selectively disposed on said substrates for receiving said signals and a liquid crystal composition sealed between said substrates, said liquid crystal composition having a positive dielectric anisotropy and consisting essentially of about 27.3 to 59.0 weight percent of at least one liquid crystal compound having the formula



termed Type I, where R_1 and R_2 are n-alkyl with one to six carbon atoms and about 41.0 to 72.7 weight percent of at least one liquid crystal compound having the general formula



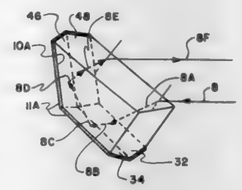
termed Type II wherein R_3 is n-alkyl with one to six carbon atoms, said Type I and Type II compounds included in said composition for increasing the dynamic margin of the display device said device selectively generating a display when the multiplex signals are applied to the electrode for applying a potential between opposed regions of the electrodes through said compositions for rendering the liquid crystal composition therebetween visually distinguishable from the remainder of the composition.

4,525,034

POLARIZING RETROREFLECTING PRISM

Clarke V. Simmons, 9020 Charles Augustine Dr., Alexandria, Va. 22308

Filed Dec. 7, 1982, Ser. No. 447,726
Int. Cl.³ G02B *5/30, 5/04*
U.S. Cl. 350—395 **6 Claims**



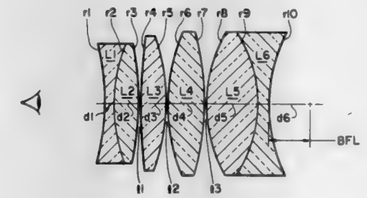
1. A specially shaped right angle prism for polarizing and parallel retroreflecting light beams incident thereon at the Brewster's angle entrance surface wherein the Brewster angle of entrance to said prism is a soft angle giving said prism insensitivity to alignment with a large angle of freedom for said Brewster's angle, said prism comprised of a secondary internal reflecting surface and a tertiary internal reflecting surface at a right angle to each other with each reflecting surface cut into the form of a roofed prism giving insensitivity to prism alignment in both planes of orientation with regard to the incoming beam and a cut-away of a truncated section cut at a 135° angle with respect to said secondary internal reflecting surface at a point making said secondary and tertiary internal reflecting surfaces of the same length wherein said truncated section portends from said entrance surface and said secondary internal reflecting surface to an apex of a wedge at an angle of $45°-\theta R$ where θR is defined as the refraction angle of an incident light beam and is a complimentary angle of the Brewster's angle θB.

4,525,035

WIDE ANGLE EYEPIECE

Albert Nagler, 15 Green Hill La., Spring Valley, N.Y. 10977

Filed Jan. 5, 1984, Ser. No. 568,407
Int. Cl.³ G02B *9/58, 25/04*
U.S. Cl. 350—410 **1 Claim**



1. An eyepiece comprising a doublet, a singlet, a singlet, and a doublet, wherein each doublet includes a biconcave element cemented to a biconvex element and has a negative power, and each singlet is a biconvex lens with its stronger curvature facing the other singlet, and wherein the biconcave lens elements have a refractive index of 1.717 and an Abbe Number of 29.5 and the biconvex lens elements have a refractive index of 1.620 and an Abbe Number of 60.3, and wherein, for a 40 mm. focal length eyepiece, the lens data conforms substantially to the following table wherein lens radii, diameters, and axial thicknesses are given in millimeters:

Lens	Radii	Axial Thickness	Lens Diameter
	r1 = −98.30	d1 = 3.55	50
	r2 = +68.76	d2 = 10.22	50
	r3 = −123.86		
L3	r4 = +234.80	d3 = 10.22	56
	r5 = −82.86		
L4	r6 = +76.48	d4 = 15.32	60
	r7 = −111.24		
	r8 = +60.13	d5 = 21.21	60
L5, L6	r9 = −54.27	d6 = 4.42	
	r10 = +66.20		

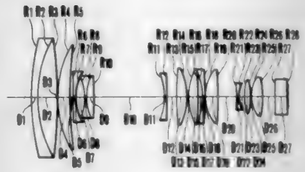
and the separations between the doublets and the adjacent singlets, and between the singlets are 0.30 mm. air spaces.

4,525,036

ZOOM LENS

Kazuo Fujibayashi; Muneharu Sugiura, and Sadahiko Tsuji, all of Kanagawa, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 28, 1983, Ser. No. 470,623
Claims priority, application Japan, Mar. 8, 1982, 57-36922; Jul. 21, 1982, 57-127035; Jul. 23, 1982, 57-128563; Jul. 23, 1982, 57-128564; Oct. 14, 1982, 57-180677
Int. Cl.³ G02B *15/00*
U.S. Cl. 350—427 **7 Claims**



1. A zoom lens comprising:

four lens groups,

said four lens groups being, from front to rear,

a 1st lens group having a positive refractive power and movable for focusing,

a 2nd lens group having a negative refractive power and movable for changing the image magnification,

a 3rd lens group having a negative refractive power and movable for compensating for the shift of an image plane resulting from the change of the image magnification, and

a 4th lens group having two lens groups, or, from front to rear, a 4-1st lens group and a 4-2nd lens group, and having a positive refractive power as a whole,

said 4-1st lens group consisting of, from front to rear,

a bi-convex 4-1-1st lens having a strong refractive power at the rear,

a bi-convex 4-1-2nd lens having a strong refractive power at the front,

a 4-1-3rd lens of negative refractive power turning its concave surface toward the front, and

a 4-1-4th lens of positive refractive power turning its convex surface toward the front, and

said 4-2nd lens group consisting of, from front to rear,

a 4-2-1st lens of negative refractive power turning its concave surface toward the rear,

a bi-convex 4-2-2nd lens having a strong refractive power at the rear, and

a 4-2-3rd lens of positive refractive power having a strong refractive power at the front and turning its convex surface toward the front,

the axial separation between said 4-1-3rd lens and said 4-1-4th lens and the axial separation between said 4-2-1st lens and said 4-2-2nd lens being smaller than the axial separation between said 4-1-4th lens and said 4-2-1st lens, and said 4-1-2nd lens and said 4-1-3rd lens being axially separated from each other.

4,525,037

OBJECTIVE LENS ASSEMBLY OF VARIABLE FOCAL LENGTH HAVING A DIAPHRAGM MECHANISM WITH ADJUSTABLE APERTURE

Tsuneyo Metabi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

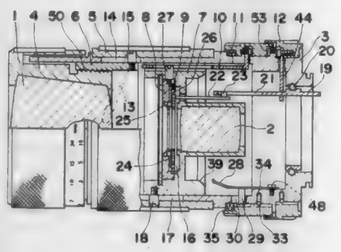
Filed Jun. 8, 1983, Ser. No. 502,204
Claims priority, application Japan, Jul. 9, 1982, 57-120320
Int. Cl.³ G02B *9/08, 7/10*
U.S. Cl. 350—450 **22 Claims**

1. An objective lens assembly of variable focal length comprising, in combination:

a varifocal lens system having its focal length adjustable

within a predetermined range, said lens system including a diaphragm mechanism having an adjustable diaphragm aperture, the aperture ratio being variable during an operation for changing the focal length with the diaphragm aperture kept unchanged;

a diaphragm aperture adjustng mechanism for adjusting the diaphragm aperture for compensating for change in aperture ratio realtive to the change in focal length within the predetermined range;



a diaphragm aperture maintaining mechanism operable to maintain the diaphragm aperture while allowing the aperture ratio to change within a portion of the predetermined range; and

a manually operable change-over mechanism operable to bring the diaphragm aperture adjusting and maintaining mechanisms selectively into an operative position one at a time.

4,525,038

FISH EYE LENS SYSTEM

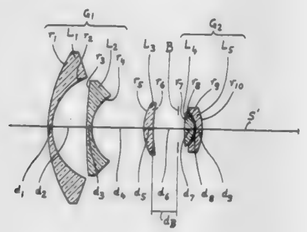
Rolf Müller, Wienerstr. 3, 7888 Rheinfelden, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,762

Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3119993

Int. Cl.³ G02B *9/60, 9/62*

U.S. Cl. 350—462 **21 Claims**



1. A five element fish eye lens system comprising from the object to the image side:

a first meniscus shaped lens (**L1**) of negative refractive power curved towards the object,

a second lens (**L2**) of negative refractive power curved towards the object,

a third positive meniscus lens (**L3**) of positive refractive power curved towards the object,

an aperture stop (**B**),

a fourth lens (**L4**) of positive refractive power curved towards the image, and

a fifth meniscus shaped lens (**L5**) of negative refractive power curved towards the image.

4,525,039

OBJECTIVE LENS

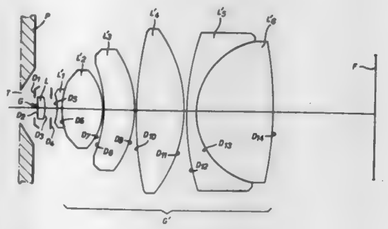
Jean-Louis Defuans, 9 Avenue du Bourcet, 38240 Meylan, France

Filed Feb. 22, 1983, Ser. No. 468,583

Claims priority, application France, Feb. 19, 1982, 82 02803

Int. Cl.³ G02B *9/60*

U.S. Cl. 350—465 **17 Claims**



1. An objective lens for a camera, said lens comprising an iris diaphragm being disposed at the front of said lens and an optical assembly being disposed behind said iris diaphragm, said optical assembly comprising a plano-convex front lens unit with its plane surface facing the front of said lens whereby said lens is suitable for use in media with different refractive indices, and a rear lens unit being adapted to apply the necessary correction to maintain abberations within reasonable limits and to achieve a required distance from said lens to the focal image plane, said iris diaphragm having an effective diameter of 0.25 mm., said plano-convex lens being disposed between 0.02 and 0.04 mm. from said iris diaphragm and having a refractive index of 1.45, an Abbe number of 68 and a thickness at the center between 0.08 and 0.11 mm., and wherein the rear surface of said plano-convex lens has a radius of between 0.92 and 0.93 mm.

4,525,040

LENS SYSTEM FOR OPTICAL RECORDING TYPE DISKS

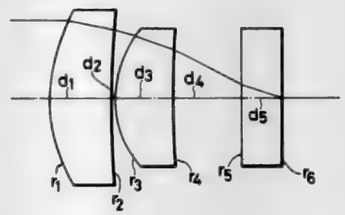
Toru Nakamura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1983, Ser. No. 501,786

Claims priority, application Japan, Jun. 16, 1982, 57-102169

Int. Cl.³ G02B *3/02, 9/06*

U.S. Cl. 350—480 **5 Claims**



1. A lens system for optical recording type disks comprising a first lens and a second lens wherein said first lens is a positive lens and said second lens is a positive lens, said lens system for optical recording type disks being arranged to fulfill the condition (1) shown below and the entrance surface of said first lens being arranged as an aspherical surface expressed by a formula of aspherical surface including the term proportional to the sixth power of the incidence height, the vertex portion of said aspherical surface being approximately a spherical surface;

$$2.0 < f_1/f < 3.0 \quad (1)$$

where, reference symbol f represents the focal length of the lens system as a whole, and reference symbol f_1 represents the focal length of the first lens,

wherein said aspherical surface is expressed by the following formula:

$$x = \frac{\frac{y^2}{r}}{1+\sqrt{1-\left(\frac{y}{r}\right)^2}} + Ey^4 + Fy^6 + Gy^8 \ldots$$

where, reference symbol r represents the radius of curvature of the vertex portion of said aspherical surface, reference symbol x represents the distance from an arbitrary point on said aspherical surface to the tangential plane which is tangential to said aspherical surface at the point thereof on the optical axis, reference symbol y represents the distance from said arbitrary point to the optical axis, and reference symbols E, F, G, . . . respectively represent coefficients of aspherical surface:

said coefficients of aspherical surface E and F respectively fulfilling the conditions (2) and (3) shown below:

$$-0.12 < Ef^3 < -0.06 \quad (2)$$

$$-0.15 < Ef^5 < -0.08 \quad (3)$$

4,525,041

ARRANGEMENT FOR USE IN POSITIONING AN OPTICAL IMAGE

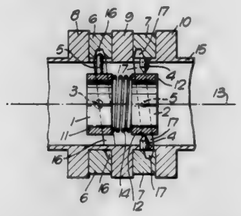
Stanley W. Andrews, Worcester Park, England, assignor to Precision Grinding Limited, Surrey, England

Filed Feb. 22, 1983, Ser. No. 468,848

Claims priority, application United Kingdom, Feb. 24, 1982, 8205480

Int. Cl.³ G05D *1/02*

U.S. Cl. 350—484 **2 Claims**



1. An arrangement for use in positioning an optical image with respect to an optical axis, said arrangement including first and second optical elements arranged on the optical axis, first and second pivotal mounting means for pivotally mounting the first and second optical elements to turn about first and second axes respectively, the first and second axes being positioned at right angles to each other and perpendicular to the optical axis, first and second rotatable ring members which are turned about the optical axis, means for respectively coupling the first pivotal mounting means to the first rotatable ring member and for coupling the second pivotal mounting means to the second rotatable ring member whereby a rotation of the first rotatable ring member causes the first mounting means and the first optical element to be tilted about the first of the axes and a rotation of the second rotatable ring member causes the second mounting means and the second optical element to be tilted about the second of the axes.

4,525,042

OPTICAL SYSTEM OF VARIABLE FOCAL AND BACK-FOCAL LENGTH

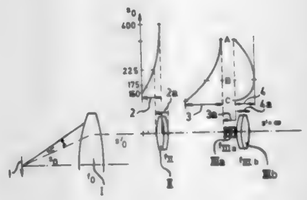
Franz Muchel, Königsbronn, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim on the Brenz, Fed. Rep. of Germany

Filed Jan. 5, 1983, Ser. No. 455,666

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202075

Int. Cl.³ G02B *15/16*

U.S. Cl. 350—519 **5 Claims**



1. An optical system of variable focal and back-focal length for operation microscopes, comprising an objective (I) of fixed focal length, combined with an optical system of variable focal length including a first lens group (II) and a second lens group (III*a*, III*b*), the objective projecting an image of an object, and the first lens group of the system being displaceable and imaging the image projected by the objective onto the focal point of the second lens group (III*a*, III*b*) of the system, the components of the second lens group (III*a*, III*b*) being displaceable on the optical axis and being coupled together for movement in order to change the focal length of the system.

4,525,043

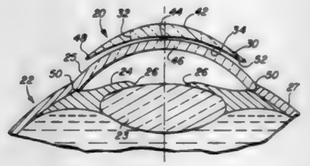
CONTACT LENS

Leonard Bronstein, 2928 N. 30th St., Phoenix, Ariz. 85016

Continuation-in-part of Ser. No. 850,857, Nov. 11, 1977, abandoned. This application Apr. 21, 1980, Ser. No. 141,949

Int. Cl.³ G02C *7/04, 7/06*

U.S. Cl. 351—160 R **20 Claims**



1. A corneal contact lens for correcting the vision of an eye of a patient, said lens comprising:

a lens body made of a refractive material, said body having an anterior surface and a posterior surface, said posterior surface having a central zone, an intermediate zone, and a peripheral zone, said anterior surface having a central zone corresponding to the central zone of the posterior zone, the portion of the lens body defined by the posterior and anterior central zones substantially defining the optically effective portion of the lens for correcting the vision of the wearer;

the central zone of the posterior surface having a chord diameter and a radius of curvature;

the chord diameter being preferrably larger than the largest measurable chord diameter of the pupil of the eye of the patient but which is equal to or less than the maximum measured central spherical radius of curvature of the cornea of the patient;

the radius of curvature of the posterior central zone being

such that the sag depth difference between the measured greatest central spherical radius of curvature of the cornea and that of the posterior central zone of the lens is in the range of from 0–15 microns;

the central zone of the anterior surface having a radius of curvature which, in conjunction with the posterior surface of the central zone, provides the proper power factor to provide the patient with substantially normal distance vision;

the intermediate annular zone of the posterior surface being aspheric with a curvature that increases continuously from its least value adjacent the central zone to its maximum value adjacent the peripheral zone, said curvature adjacent the posterior peripheral zone being greater than the corresponding zone of the cornea, said posterior intermediate zone controlling the change of shape of the cornea; and

the peripheral annular zone having a spherical radius of curvature to provide limbal clearance.

4,525,044

SOFT CONTACT LENS WITH SURFACE IDENTIFICATION AND METHOD OF USING SAME

Robert C. Bauman, 86 Goodhouse Rd., Litchfield, Conn. 06759

Filed May 5, 1983, Ser. No. 491,891
Int. Cl.³ G02C *7/04*
U.S. Cl. 351—160 H **21 Claims**



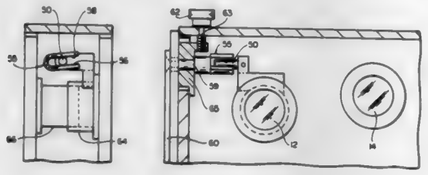
1. A soft contact lens of generally symmetrical concavo-convex configuration with uniform optical power about the optic axis and having an inner surface for placement against the eye and an outer surface, said surfaces having a peripheral portion adjacent the circumference thereof, said peripheral portion of one of said surfaces having a circumferentially elongated directional marking thereon which is asymmetrical about its midpoint to enable the user to identify readily the inner surface of the lens by the direction of asymmetry, said lens being cast or molded from a synthetic resin which is homogeneous throughout said lens and of uniform coloration, said indicia being of sufficient size and of a configuration to be interpretable by the wearer without magnification, said indicia being substantially nondiscernable when in place in the user's eye to avoid cosmetic blemish.

4,525,045

CAMERA FOR THREE-DIMENSIONAL MOVIES

Carl F. Fazekas, Tarzana, Calif., assignor to Panavision, Inc., Tarzana, Calif.

Filed Jan. 23, 1984, Ser. No. 573,085
Int. Cl.³ G03B *35/00*
U.S. Cl. 352—57 **25 Claims**



1. A lens system adapted to couple to a camera for recording images on film comprising:

a first lens for receiving light;

a second lens for receiving light;

means for focusing said first and second lenses by moving said first lens in a direction along a first axis and moving said second lens in a direction along an axis parallel to said first axis; and

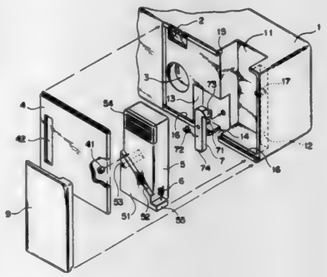
vertical means for causing said second lens to move in a direction having a component along a second axis substantially perpendicular to said first axis in response to movement of said second lens along said first axis.

4,525,046

CASELESS CAMERA

Yukio Takaoka; Masaaki Morizumi, and Norimichi Takahashi, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1983, Ser. No. 559,384
Claims priority, application Japan, Jan. 20, 1983, 58-6245[U]
Int. Cl.³ G03B *15/03*
U.S. Cl. 354—149.11 **3 Claims**



1. A caseless camera comprising;

a camera body;

a cover plate mounted at the front of the camera body slidably between its closing and opening positions, said cover plate being provided with a contact member at the rear side thereof;

an electric flash mounted inside the camera body longitudinally movably between its restoring and operating positions, said electric flash being provided with an inclined step at the front side thereof to be contacted with said contact member of the cover plate; and

said electric flash being downwardly moved to its restoring position by the contact of said inclined step with said contact member, when the electric flash is in its operating position, upon the sliding movement of said cover plate from its opening position to its closing position.

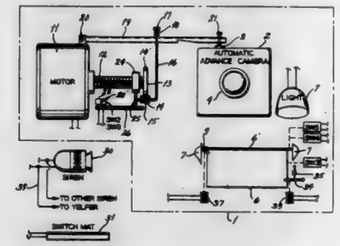
4,525,047

BURGLAR AND INTRUDER DETECTION SYSTEM

Harold P. Myers, S. Harding St., P.O. Box 46, Marquand, Mo. 63655

Filed Apr. 5, 1982, Ser. No. 365,542
Int. Cl.³ G03B *17/46, 1/12*
U.S. Cl. 354—173 **10 Claims**

1. A burglar and intruder detection system for photographing burglars and other intruders, said system comprising a mechanically trippable camera of the automatic advance type for sequentially taking a plurality of successive pictures upon being repeatedly tripped, an electric motor, a shaft for being rotatably driven by the motor, the shaft having a cam presenting at least one lobe, trip means actuatable by the cam lobe for repeatedly tripping the camera upon operation of the motor, first electric switching means for providing electric power for initiating operation of the motor in response to detection of the presence of an intruder, delay means driven by the shaft for establishing a predetermined time interval following the initiation of motor operation, second electric switching means operable in response to the delay means for de-energizing the motor after the predetermined time interval, and concealment means for concealing and protecting the camera including an enclosure for the camera, electric motor and shaft, and a cover



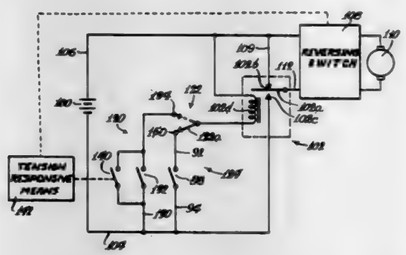
movable between enclosed positions concealing and an open position uncovering said camera for picture taking, means for driving said cover between said positions, said driving means moving said cover to its closed position in response to operation of the second switching means.

4,525,048

AUTOMATIC SLOT POSITIONING DEVICE FOR CAMERA TAKE-UP SPOOL

Wan C. Wong, North Point, Hong Kong, and Shigeru Oshima, Tokyo, Japan, assignors to W. Haking Enterprises, Limited, Hong Kong

Filed Mar. 21, 1983, Ser. No. 477,247
Int. Cl.³ G03B *1/12*
U.S. Cl. 354—173.1 **16 Claims**



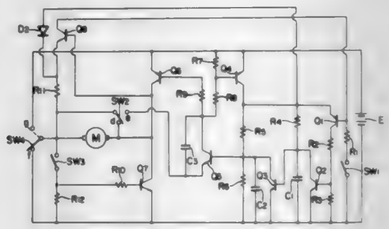
1. In a still camera including a housing having a film chamber for receiving a film cartridge with a film leader extending therefrom, said chamber defining a film path therein and including a cartridge-receiving space for receiving said cartridge for drop-in loading and located at one end of said film path, a take-up spool space at the other end of said film path having a take-up spool, said take-up spool having a slot for receiving the end of the film leader, the improvement comprising aligning means for automatically aligning said take-up spool slot with said film path for receipt of the film leader in said slot when said camera is conditioned to receive a film cartridge in said cavity, a manually-operable means including a film chamber door initially covering said chamber and movable thereon to uncover the same, and wherein said aligning means includes motor means for driving said take-up spool, and means responsive to the opening of said door to operate said motor means to drive said take-up spool until said slot is aligned with said film path.

4,525,049

MOTOR DRIVING DEVICE OF A CAMERA

Harumi Ogawa; Fumito Obikawa, both of Chino; Toshio Koyama, Suwa; Yoshiaki Otsubo, Yokohama; Hiroshi Wakabayashi, Yokohama, and Tadashi Otani, Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 3, 1983, Ser. No. 538,423
Claims priority, application Japan, Oct. 20, 1982, 57-182996
Int. Cl.³ G03B *1/18*
U.S. Cl. 354—173.11 **10 Claims**



1. A device for flowing a driving current to a motor to drive the motor, comprising:

(a) capacitor means charged with charge, said capacitor means producing a voltage corresponding to the charged charge; and

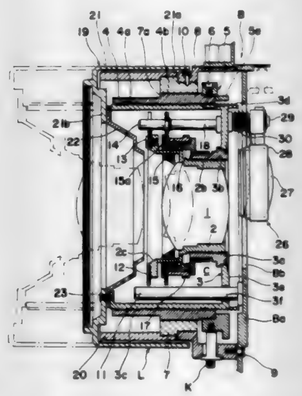
(b) supplying means responsive to the charging current flowing into said capacitor means to supply the driving current to said motor, said supplying means including charging means for supplying the charging current to said capacitor means and means for discharging the charge charged in said capacitor means during the supply of the driving current to said motor.

4,525,050

PHOTOGRAPHIC CAMERA WITH BUILT-IN OPTICAL CONVERTER

Saichiro Ohashi, Kyoto, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 23, 1983, Ser. No. 468,838
Claims priority, application Japan, Feb. 24, 1982, 57-29572
Int. Cl.³ G03B *3/00*
U.S. Cl. 354—195.12 **5 Claims**



1. A photographic camera comprising, in combination:

a camera body including a front wall having an opening therein at a position opposed to a focal plane within the camera body where a photosensitive film, when loaded in the camera, is positioned;

an objective lens assembly including an objective lens means

providing a principal optical system of a first predetermined focal length and a lens mount means for supporting the objective lens means in alignment with the opening in the front wall of the camera body;

a converter lens means carried by the lens mount means for movement together therewith in a direction parallel to the optical axis of the lens assembly;

means for shifting the lens mount means in a direction parallel to the optical axis between a first mode position where the converter lens means is out of alignment with the objective lens assembly and a second mode position where the converter lens is aligned with the objective lens means; and

means operatively engaging said shifting means for selectively switching the converter lens means into and out of alignment with the objective lens means when the object lens assembly is shifted to the second and first positions, respectively.

4,525,051

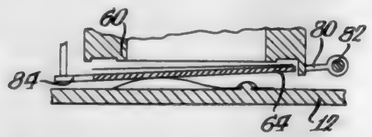
STILL CAMERA WITH PRESSURE PLATE CONTROL DEVICE

Wan C. Wong, North Point, Hong Kong, and Shigeru Oshima, Tokyo, Japan, assignors to W. Haking Enterprises, Limited, Hong Kong

Filed Mar. 21, 1983, Ser. No. 477,246

Int. Cl.³ G03B *17/28*

U.S. Cl. 354—203 **5 Claims**



2. A still camera including a housing having a film chamber for receiving a film cartridge with a film leader extending therefrom, said chamber defining a film path, a film leader-receiving channel leading from said film path to an outer margin of said housing, said channel being sized to receive and guide said leader upon edgewise insertion thereof, a cavity for receiving said cartridge for drop-in loading in the direction of the plane of the film, said cavity being at one end of said film path, and a cavity housing a take-up spool at the other end of said film path, an imaging area adjacent one side of said film path and a pressure plate in said housing on an opposite side of said film path and genreally aligned with the imaging area, biasing means normally biasing said pressure plate towards said imaging area and into an initial position to force film into engagement with a film plane surface thereat, a door closing off said film chamber to cover said channel and cavities and movable between said film chamber opening and closing positions, and plate moving means for moving the pressure plate away from said imaging area to accommodate free movement of the film into said film leader-receiving channel when said door is opened, said pressure plate being pivoted along one edge in said housing and said means for moving the pressure plate including a mechanism for engaging an opposite edge to pivot said pressure plate away from said imaging area.

4,525,052

DEVICE FOR FIXING A CAMERA TO A TRIPOD

Yoshinobu Kosugi, Tokyo, and Kaoru Tachibana, Kawagoe, both of Japan, assignors to Slik Tripod Co., Ltd., Japan

Filed Dec. 23, 1983, Ser. No. 564,681

Claims priority, application Japan, Jan. 27, 1983, 58-10522[U]; Jan. 27, 1983, 58-10523[U]

Int. Cl.³ F16M *11/04*; G03B *17/56*

U.S. Cl. 354—293 **18 Claims**

1. A device for fixing a camera to a universal head of a tripod which comprises:

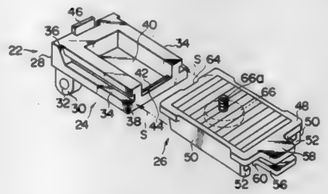
a base which is adapted to be attached on the upper end portion of the universal head, said base having in its surface guiding sections and an engagement portion; and

a slider to which a camera is to be fitted, and which includes;

a slide body,

integral guided sections which are formed on the surface of the slide body to be slidably engaged with the guiding sections, whereby said slider can be slidably mounted on said base in a detachable condition, and

an elastically deformable piece integrally formed with the slide body, the piece having an integral engaged portion



and a free end, the integral engaged portion being elastically engaged with the engaging portion of said base when said slider is set on said base and the free end serving to cause the piece to be elastically deformed by an external force, whereby said slider is securely fixed on said base by the interlock between the engaging portion and the engaged portion, and said slider is removed from said base after the interlock is released by the forced deformation of the piece which occurs by an external force applied to the free end of the piece.

4,525,053

MOTOR-DRIVABLE PHOTOGRAPHING LENS ASSEMBLY

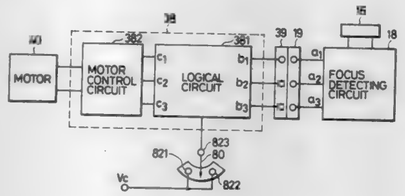
Yoshiharu Shiokama, and Shigeru Suzuki, both of Kawasaki, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 29, 1983, Ser. No. 537,013

Claims priority, application Japan, May 10, 1982, 57-150387[U]

Int. Cl.³ G03B *3/00*

U.S. Cl. 354—400 **7 Claims**



1. A photographing lens assembly provided with a moving lens system which is movable within a given moving range to change the optical characteristics and the movement of which is controlled by an electrical driving apparatus, said lens assembly comprising:

(a) mechanical limiting means which acts on said moving lens system when said lens system has been moved up to the limit of the moving range in order to inhibit any further movement of said lens system beyond said limit; and

(b) electrical limiting means including means for producing an electrical signal when said moving lens system movable by said electrical driving apparatus reaches a position lying a determined amount before the limit of said given moving range and electric circuit means for inhibiting the control for further moving said lens system in the same direction by said electric driving apparatus.

4,525,054

CAMERA

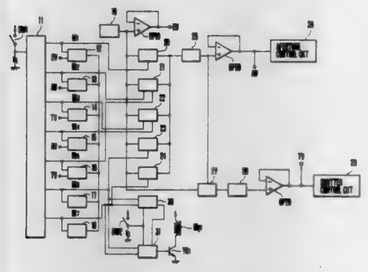
Hiromi Someya, Kanagawa; Yoshihiko Aihara, Tokyo; Toyokazu Mizogui, and Nobuyuki Suzuki, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,494

Claims priority, application Japan, Jun. 20, 1983, 58-111717; Jun. 20, 1983, 58-111718; Jun. 20, 1983, 58-111719; Jun. 20, 1983, 58-111720

Int. Cl.³ G03B *7/087*

U.S. Cl. 354—443 **8 Claims**



4. A camera having a self-timer mode, comprising:

(a) an exposure control circuit having a self-timer mode in which an aperture is restricted within a wider opening aperture range by an exposure control restricting part; and

(b) self-timer photographing selecting means for selecting self-timer photography, exposure control being arranged to be carried out in said self-timer mode when self-timer photography is selected by said selecting means.

4,525,055

PHOTOGRAPHIC CAMERA HAVING BATTERY REMAINING LIFE INDICATING MEANS

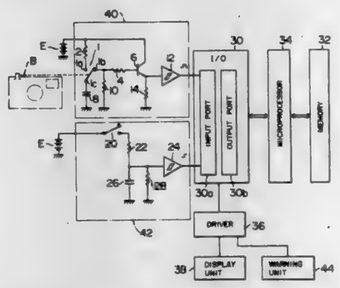
Hirokazu Yokoo, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashicara, Japan

Filed Jul. 16, 1984, Ser. No. 630,948

Claims priority, application Japan, Jul. 15, 1983, 58-129223

Int. Cl.³ G03B *17/18*; G08B *21/00*

U.S. Cl. 354—468 **7 Claims**



1. A battery remaining life indicating means for photographic cameras which are provided with systems operated under electric power supplies from batteries and have at least two photographing modes of different power consumptions, said indicating means comprising battery life memorizing means having a memory of a battery life in terms of number of possible exposures under a first photographing mode which is calculated on the basis of capacity of battery loaded in the camera and the power consumption under the first photographing mode, modifying factor memorizing means having a memory of a modifying factor which is the power consumption under a second photographing mode measured taking the power consumption under the first photographing mode as a unit, battery life display means for displaying the battery life memorized in the battery life memorizing means, photographing exposure detecting means, photographing mode discriminating means, operating means responsive to said photographing exposure detecting means to rewrite the memory of the battery life in said battery life memorizing means by subtracting one when the discriminating means detects the first photographing mode and by subtracting said modifying factor when the discriminating means detects the second photographing mode.

4,525,056

DEVELOPING MEANS FOR ELECTROSTATIC LATENT IMAGE

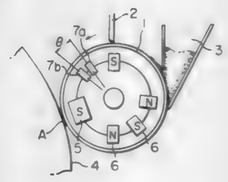
Masahiko Itaya; Satoshi Haneda, and Makoto Tomono, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,630

Claims priority, application Japan, Jul. 10, 1981, 56-108445

Int. Cl.³ G03G *15/09*

U.S. Cl. 355—3 DD **7 Claims**



1. A developing means for developing an electrostatic latent image on a developing area of an image forming member comprising a non-magnetic developer transport member, a series of magnets arranged inside said non-magnetic transport member, and a developer layer thickness regulating member for regulating a developer layer on the non-magnetic developer transport member, wherein a plurality of said magnets is arranged in series in a defined area between the developer layer thickness regulating member and said developing area opposite said image forming member so as to generate a magnetic flux distribution having a pair of homopolar peaks for eliminating a density unevenness of the developer layer on said transport member.

4,525,057

GUIDE PATH FOR TRANSFER OF SHEETS TO A FIXING APPARATUS OF A COPYING MACHINE

Heinrich Kaufmann, Stuttgart, and Friedhelm Brenner, Reichartshausen, both of Fed. Rep. of Germany, assignors to Develop Dr. Eisbein GmbH & Co., Fed. Rep. of Germany

Filed Sep. 2, 1982, Ser. No. 414,267

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136310

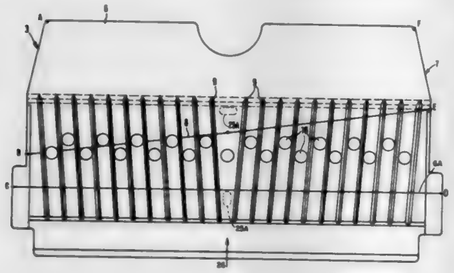
Int. Cl.³ G03G *15/20, 15/00*; B65H *9/00, 5/06*

U.S. Cl. 355—3 FU **8 Claims**

1. In an apparatus for the transport of sheets of paper including in a photocopying machine, a first paper handling station and a fixing station having a pair of pressing rolls with respective pressing roll axes inclined to one another to form a pressing gap which is angularly inclined with respect to the paper transport direction of said sheets as they leave said first paper handling station, the improvement comprising:

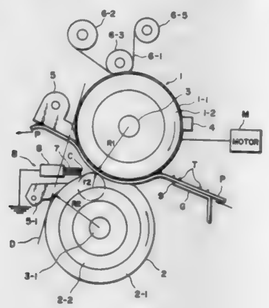
paper guide path means disposed between said first paper handling station and said fixing station, said paper guide

path means defining different paper travel lengths across the width of a sheet of paper traveling thereover so that all



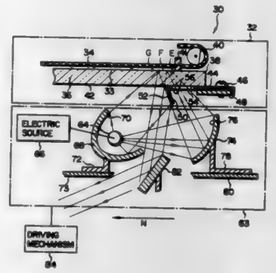
parts of the forward edge of that sheet simultaneously reach said pressing gap.

4,525,058
IMAGE FIXING DEVICE
Hiromitsu Hirabayashi; Masaaki Sakurai, both of Yokohama, and Kazuo Kagiura, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 11, 1983, Ser. No. 540,616
Claims priority, application Japan, Oct. 15, 1982, 57-181814; Feb. 28, 1983, 58-33039
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 FU **34 Claims**



1. An image fixing device, comprising:
first and second rotatable members for forming a nip therebetween, which transport from an entrance side to an exit side a recording material and fix an image thereon;
means for driving said first and second rollers;
charge removing means having charge removing ends arranged along the longitudinal direction of said rotatable members and adjacent to but spaced from the peripheral surface of said first rotatable member, wherein each charge removing end is positioned within a predetermined exit-side region of a plane transverse to said longitudinal direction, the boundaries of which planar region are defined by the common tangent line which is tangent to the peripheral surface of both rotatable members on the exit side and the peripheral surfaces of said first and second rotatable members from their respective tangent points to the common exit and press-contact area between said rotatable members.

4,525,059
EXPOSURE APPARATUS TO GUIDE REFLECTED LIGHT FROM A SUBJECT TO A PHOTOSENSITIVE BODY
Toshio Haramaki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Sep. 28, 1982, Ser. No. 425,992
Claims priority, application Japan, Nov. 4, 1981, 56-176906
Int. Cl.³ G03G *15/04*
U.S. Cl. 355—8 **14 Claims**

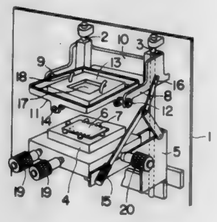


1. An exposure apparatus for exposing a subject to light and guiding the light reflected from the subject to a photosensitive body, said apparatus comprising:
an exposure table including means defining an exposure region for receiving the subject and permitting illumination of the subject with light beams;
light beam projecting means for projecting first light beams to the exposure region in one direction and second light beams in another direction to illuminate the subject with light beams;
mask means including (a) a shielding portion having a white-colored face for shielding one portion of said exposure region from said first light beams; (b) a support portion integrally joined to said shielding portion; (c) means for fixing said support portion to said document table so that said shielding portion forwardly extends into said projected light beams; and (d) means defining a light beam transparent region intermediate said shielding and support portions to permit said second light beams to pass therethrough; and
guide means for guiding light beams reflected from said exposure region to said photosensitive body.

4,525,060
EXPOSURE APPARATUS
Hiroshi Miyamoto, Tokyo, Japan, assignor to Orc Manufacturing Co., Ltd., Tokyo, Japan
Filed Apr. 28, 1983, Ser. No. 489,315
Claims priority, application Japan, Apr. 28, 1982, 57-62704[U]
Int. Cl.³ G03B *27/42, 27/28*
U.S. Cl. 355—53 **4 Claims**

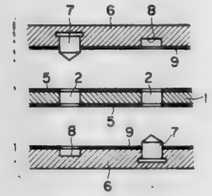
1. Film exposure apparatus comprising first frame means, a photosensitive flat plate body secured to said frame means, a second frame means positioned above said first frame means and vertically moveable with respect thereto for engagement therewith, a mask body mounted on said second frame means in vertical alignment with said photosensitive flat plate body, said second frame means being rotatable about at least one axis passing through near the center point of said mask body

wherein when said mask body is brought into close contact with said photosensitive flat plate body over their respective



whole opposed surfaces, and means to move said second frame means into engagement with said first frame means.

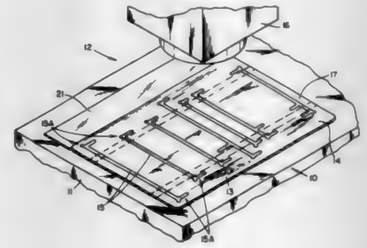
4,525,061
COMBINATION OF A PLATE FOR EXPOSURE AND FRAME PLATES
Toshiro Oki, Tama, Japan, assignor to ORC Manufacturing Co., Ltd., Tokyo, Japan
Filed Jun. 13, 1983, Ser. No. 503,538
Claims priority, application Japan, Jun. 14, 1982, 57-101620
Int. Cl.³ G03B *27/58*
U.S. Cl. 355—72 **3 Claims**



1. In a combination of a plate for exposure having a pair of photosensitive layers formed on its opposite surfaces, and a pair of transparent frame plates between which said plate for exposure can be sandwiched, a mask being provided on that surface of each of said frame plates which faces said plate for exposure, the improvement wherein said plate for exposure is formed with a pair of apertures adjacent to each of a pair of opposite edges thereof, each of said frame plates being provided adjacent to each of a pair of opposite edges thereof with a pin facing one of said apertures and a recess facing the other of said apertures, said pin on one of said frame plates facing said recess in the other frame plate, said pins being so sized and shaped that they can be easily fitted in, and removed from said apertures, and can hold said frame plates against displacement relative to said plate for exposure when fitted in said apertures.

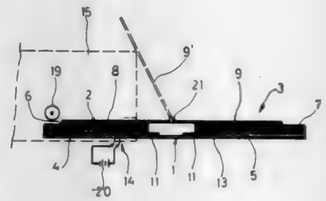
4,525,062
POSITIONING JIG FOR POSITIONING COPY MATERIAL FOR OFFSET PRINTING
Alfred L. Clark, P.O. Box 53, Zionsville, Ind. 46077
Filed Sep. 12, 1983, Ser. No. 530,969
Int. Cl.³ G03B *27/42, 27/58*
U.S. Cl. 355—72 **17 Claims**

1. A positioning jig for positioning copy material on the copyboard of a photographic print plate maker, said plate maker used to make an offset print plate bearing an image of the copy material, comprising:
a base having a top facing surface and one or more positioning stops recessed within said base, each of said one or more positioning stops providing means, including a pair of mutually perpendicular side walls having a relatively low height with respect to the length of said side walls, for accurately positioning said copy material without said



positioning stops casting an image which is photographically perceptible by said plate maker.

4,525,063
PAPER HOLDER FOR A PHOTOCOPYING MACHINE
Jürgen Eisbein, Gerlingen, Fed. Rep. of Germany, assignor to Develop Dr. Eisbein GmbH & Co., Fed. Rep. of Germany
Filed Nov. 18, 1983, Ser. No. 553,111
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1982, 3244388
Int. Cl.³ G30B *27/58*
U.S. Cl. 355—72 **14 Claims**



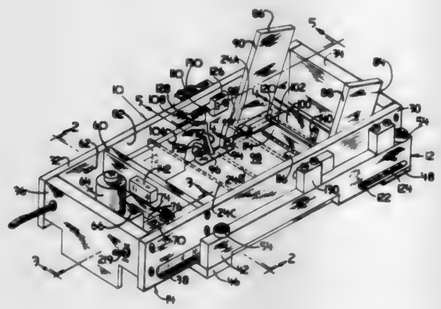
1. Paper holder for a photocopying machine of the type which holds stacked paper sheets to be copied on and which is selectively insertable into the machine to a position accomodating machine withdrawal of sheets therefrom, said paper holder comprising first and second stack holding sections disposed one behind the other, said sections exhibiting respective oppositely facing end regions which are sufficiently similarly configured to accomodate selective insertion of the paper holder with a respective one or the other of the stacks in the sections being accessible to a paper withdrawing mechanism of a photocopying machine.

4,525,064
COPIER APPARATUS
William E. Grover, 2407 Wapiti Rd., Ft. Collins, Colo. 80525, and Anthony R. Bruce, Berthoud, Colo., assignors to William E. Grover, Fort Collins, Colo.
Filed Jul. 12, 1982, Ser. No. 397,101
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—75 **23 Claims**

1. Copier apparatus for use with a machine that prepares a copy from an information-carrying master placed atop a surface through which said master is reproducingly exposed, said apparatus comprising:
an information-carrying master within which is defined a window through which a card placed over said window is reproducingly exposed along with other matter carried upon the surface of said master;
an assembly disposed above said master and including means for accepting a stack of cards individually carrying re-

spective different notations to be reproducingly exposed through said window;

and handling means included in said assembly for placing



successive different ones of said cards in a position over said window and for correspondingly moving successive ones of said cards from said position into a storage location.

4,525,065

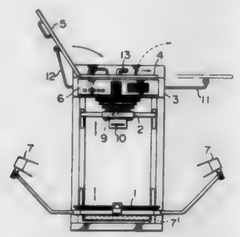
METHOD FOR CONTROLLING AN EXPOSURE TIME IN CONSIDERATION OF THE RECIPROCITY LAW FAILURE OF A PHOTOSENSITIVE MATERIAL

Tsuneo Takagi, Kurita, and Hiroyuki Yonehara, Hikone, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Continuation-in-part of Ser. No. 275,698, Jun. 22, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 503,658

Int. Cl.³ G03B *27/32*

U.S. Cl. 355—77 **4 Claims**



1. A method for controlling the exposure time in the reciprocity law failure range of a photosensitive material, in a picture reproducing machine, wherein the response time variation cause by variations is corrected according to the operational equation for the reciprocity law when the photosensitive material is in its linear range, said method comprising exposing said photosensitive material for a time T_m in accordance with the relationship;

$$Tm\left(\frac{1+Mi}{2}\right)^{2P}\cdot T_0$$

wherein T_0 is the correct exposure time in the absence of reciprocity law failure, M_i is the desired reproduction scale and P is an empirically determined coefficient which is greater for enlargements than reductions.

4,525,066

METHOD AND DEVICE FOR MEASURING TEMPERATURE USING A DIFFRACTION GRATING

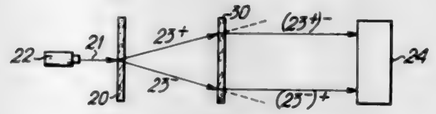
Michel Guillaume, Les Blétières - Les Adrets, 38190 Brignoud, and Michel Pichot, 11 Chemin du Couvent, 38100 Grenoble, both of France

Filed Jul. 8, 1982, Ser. No. 396,446

Claims priority, application France, Jul. 21, 1981, 81 14176

Int. Cl.³ G01J *5/08, 5/38*

U.S. Cl. 356—43 **10 Claims**



1. A temperature measuring device comprising a first diffraction grating heated to the temperature to be measured, a monochromatic beam source emitting a light beam directed onto said first grating, said light beam given two once diffracted beams after said first grating with opposite diffraction orders +n and −n (in which n is an integer equal to or above 1), a second diffraction grating placed on the paths of said two diffracted beams, said first and second gratings having similar spacings, said second grating being raised to a reference temperature, each once diffracted beam of orders +n and −n impinging onto said second grating and given twice diffracted beams of orders respectively −n and +n, and measuring means positioned so as to receive said twice diffracted beams, said measuring means being able to measure the angular variation between said twice diffracted beams.

4,525,067

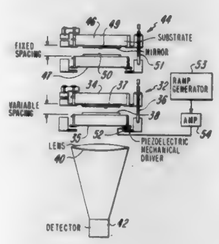
TWIN-ETALON SCANNING SPECTROMETER

Gonzalo J. Hernandez, Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Oct. 22, 1982, Ser. No. 436,124

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—346 **18 Claims**



15. A method for increasing spectrometer luminosity, said method comprising:

providing first and second etalon means each of which provides an output responsive to received radiation that has predetermined angles of transmission;

positioning said second etalon means in alignment with said first etalon means to receive the output therefrom; and

causing one of said etalon means to vary said output so that at least in one instance the outputs of said first and second etalon means have the same angles of transmission and in other instances an intentional mismatch is introduced to thereby modulate said radiation passing through said etalon means for luminosity enhancement.

4,525,068

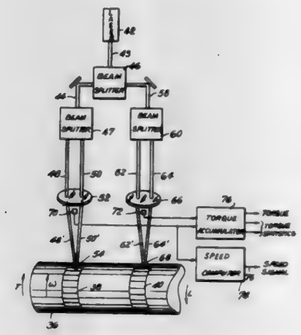
TORQUE MEASUREMENT METHOD AND APPARATUS

Seetha R. Mannava, Latham, and Joseph W. Erkes, Menands, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 17, 1982, Ser. No. 419,241

Int. Cl.³ G01P *3/36;* **G01L** *3/12*

U.S. Cl. 356—35.5 **12 Claims**



1. Apparatus for measuring twist in a body, said body being subjectable to a torque applied at a first location and said torque being resistable by a load at a second location, comprising:

first means for measuring a first velocity at a first region on a surface of said body;

second means for measuring a second velocity at a second region on a surface of said body;

said second region being closer to said load than said first region; and

means for accumulating a difference between said first and second velocities, said difference being related to said twist.

4,525,069

OPTICAL ABSORPTION ANALYZER

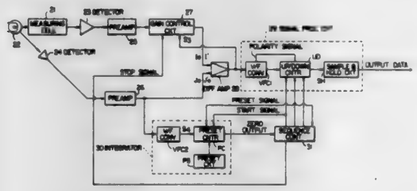
Masaru Tanaka; Naoki Noguchi; Kenji Yoshino, and Osamu Saitoh, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Apr. 23, 1982, Ser. No. 371,484

Claims priority, application Japan, May 19, 1981, 56-75120

Int. Cl.³ G01N *21/61*

U.S. Cl. 356—435 **6 Claims**



1. An optical absorption analyzer for determining the concentration of a particular component of a gas mixture, said analyzer comprising:

a light source;

first and second optical detectors and at least one cell arranged in an optical path between said light source and said first and second optical detectors, said detectors and at least one cell arranged such that during a first process, one of either a zero gas and a sample gas to be measured is passed through said at least one cell and, during a second process, the gas different from that of said first process is passed through said at least one cell;

a gain control circuit connected to an output of said first optical detector for controlling the amplitude of a first signal which is output by said first optical detector;

a differential amplifier connected to outputs of said gain control circuit and said second optical detector for amplifying the difference between said first signal and a second signal which is output by said second optical detector, said differential amplifier having an output which is fed back to said gain control circuit for controlling the operation thereof;

an integrator connected to said output of said second optical detector for integrating said second signal and for outputting an agreement signal when the integrated value reaches a predetermined value; and

a signal processing circuit means having an input connected to an output of said differential amplifier and having means for integrating, storing and comparing signals input thereto;

wherein, during said first process, the gain of said gain control circuit is controlled so that said first signal from said first optical detector is equal in value to said second signal from said second optical detector at a predetermined accuracy, and said output from said differential amplifier is integrated by said signal processing means from an instant of time when said integrator begins to integrate to an instant of time when said integrator outputs said agreement signal which is input to said signal processing means and the resulting integrated value is stored by said signal processing circuit means; and wherein,

during said second process, said signal output from said differential amplifier is integrated by said signal processing circuit means from an instant of time when said integrator begins to integrate to an instant of time when said integrator outputs said agreement signal, and the resulting integrator value is then compared with said integrated value stored during said first process so as to analyze said component to be analyzed.

4,525,070

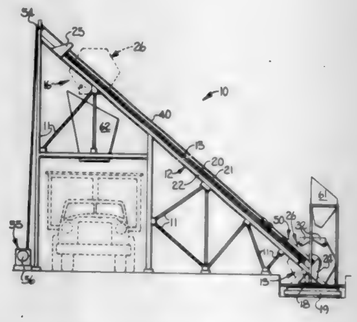
ROTARY MIXING APPARATUS

Tatum W. Gressette, Jr., Highway 601 North, Box 318, St. Matthews, S.C. 29135

Filed Apr. 8, 1983, Ser. No. 483,289

Int. Cl.³ B01F *9/06;* **B28C** *5/22*

U.S. Cl. 366—18 **10 Claims**



1. An apparatus for weighing, mixing, and transporting a mixture of dry granular or wet materials, and which is characterized by the materials being simultaneously mixed and transported, and comprising

a trackway including a pair of parallel, laterally spaced apart rails, with said trackway defining a receiving end portion and a discharge end portion, and with said receiving end portion being physically unconnected to the remaining portions of said trackway,

a mixing container adapted for receiving the materials to be mixed and including a peripheral outer wall comprising a

plurality of flat wall sections, opposite parallel end walls, a door positioned in said peripheral outer wall, axle means fixedly mounted to each of said end walls and extending coaxially outwardly therefrom so as to define a central axis, and wheel means fixedly mounted to each of said axle means and operatively engaging respective ones of said rails of said trackway, and such that the container may be moved along said trackway while being rotated about said central axis,

weighing means operatively connected to said receiving end portion of said trackway for permitting the container and its contents to be weighed when said container is disposed on said receiving end portion,

means for moving the container along said trackway between said receiving end portion and said discharge end portion, and

mixing vane means mounted within said container for facilitating the mixing of the materials during the rotational movement of said container along said trackway, said mixing vane means including a plurality of flat blades mounted in spaced relation to the inside surface of said container outer wall, and with at least a plurality of said wall sections mounting at least one pair of said flat blades, and with the blades of each such pair being separated from each other and oppositely inclined with respect to the axial direction,

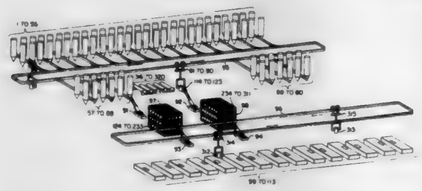
whereby the container may be filled with weighed amounts of each of plurality of different materials while positioned on said receiving end portion of said trackway, and then moved along the trackway to said discharge end portion to effect concurrent mixing and transport of the materials, and the mixed materials may be discharged upon the container reaching the discharge end portion.

4,525,071

ADDITIVE INVENTORY CONTROL, BATCHING AND DELIVERY SYSTEM

Franklin B. Horowitz, Stamford; Martin Pfeffer, Norwalk, both of Conn., and Herold T. Hertanu, New York, N.Y., assignors to Crawford & Russell, Inc., Stamford, Conn.

Filed May 31, 1984, Ser. No. 615,583
Int. Cl.³ B01F *15/04;* **G05D** *11/02*
U.S. Cl. 366—152 **15 Claims**



1. Apparatus for storing, dispensing, weighing, conveying and charging predetermined quantities of particulate solid ingredients selected from a plurality of different particulate solid ingredients into a plurality of batch blenders arrayed in a blending zone, comprising

a plurality of particulate solid storage bins arrayed in a storage zone, each provided with a dispensing portal opened and closed by external "open" and "close" dispensing control signals,

a trolley conveyor track extending beneath the dispensing portals in the storage zone and above the batch blenders in the blending zone,

a plurality of carriers adapted for carrying batches of particulate solids, each having code indicia displayed thereon,

a plurality of carrier holders, each movably engaged on the trolley conveyor track for travelling delivery of a carrier between the dispensing portals and the batch blenders,

carrier holder moving means for propelling each holder along the track or stopping its movement in response to received "start" and "stop" signals,

weighing means in the storage zone positioned to support a carrier while particulate solid ingredients are loaded therein through each dispensing portal, the weighing means producing a signal corresponding to the weight for the carrier and ingredients loaded therein,

means at predetermined locations for reading the code indicia on each carrier,

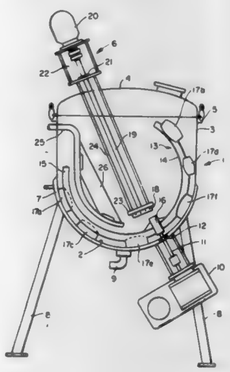
and a computer control system for receipt and execution of batch mixing receipt programs that prescribe the weights of selected ingredients, the computer control system having means responsive to the outputs of the code indicia reading means and of the weighing means, so as to produce said "start" and "stop" signals controlling the travel of one or more carrier holders for causing a carrier holder to move a carrier into juxtaposition with the dispensing portals of selected storage bins, wherein the computer control system produces said "open" dispensing control signals to dispense the selected ingredients into the carrier and so that the "close" dispensing control signal is generated when the weighing means signal reaches a value corresponding to the recipe prescribed weight for the selected ingredient, and further wherein said "start" and "stop" signals cause the carrier holder to move into juxtaposition with a selected blender after the desired ingredients have been loaded from the storage bins, so as to generate a dumping signal to cause the carrier holder to empty the contents of the carrier into the selected blender.

4,525,072

ROTARY MIXING APPARATUS

Raolo B. Giusti, London, England, assignor to T. Giusti & Son Ltd., England

Filed May 19, 1983, Ser. No. 496,058
Int. Cl.³ B01F *7/02*
U.S. Cl. 366—168 **9 Claims**



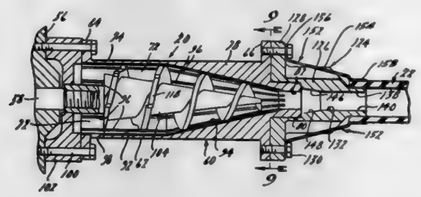
1. A rotary mixing apparatus comprising a vessel for containing the material to be processed, at least the lower portion of the vessel being hemi-spherical and having a vertical axis; a generally C-shaped part circular agitator rotatable in the vessel about an axis inclined to the vertical and about a point located in the lower region of the vessel but offset from said vertical axis, said inclined axis extending through the agitator so that the agitator has a first arm disposed on one side of the axis and a second arm disposed on the other side of the axis, said two arms being co-planar, said agitator being provided with scraper means for scraping the lower portion of the vessel and being operable to lift material to be mixed from the lower portion to an upper portion of the vessel; external drive means for said agitator located at the lower portion of said vessel; a lid hingedly disposed on the top of said vessel; and an emulsifier mounted on said lid, passing therethrough at an angle inclined to the vertical, said emulsifier having a discharge head at the end of a drive shaft extending at said angle inclined to the vertical from the upper portion of the vessel towards the lower portion thereof, the discharge head, in use, being located adjacent the point of rotation of said agitator, whereby said lid can be hingedly opened.

4,525,073

ICE MAKING APPARATUS

Joseph R. Spinner, Albert Lea, Minn., assignor to King-Seeley Thermos Company, Prospect Hts., Ill.

Division of Ser. No. 402,586, Jul. 28, 1982, Pat. No. 4,433,559.
This application Jun. 21, 1983, Ser. No. 506,421
Int. Cl.³ F25C *5/14;* **B01F** *7/08*
U.S. Cl. 366—323 **14 Claims**



1. In combination in apparatus for producing discrete ice cubes from flake ice,

an extruder device having an extruder body defining a circular chamber having a wall having a frusto conical section and an inlet which opens into said wall,

means defining an outlet positioned at the smaller end of and axially aligned with said wall through which extruded ice may pass out of said chamber,

an ice extruding auger rotatably disposed interiorly of said chamber having a frusto conical helical ice advancing flight thereon of substantially the same diameter and length as the corresponding chamber section,

the root of said auger and said wall section providing an annular space of progressively decreasing radial extent in which flake ice passing thereinto is dewatered and compressed into a relatively solid ice mass and is forced outwardly through said outlet,

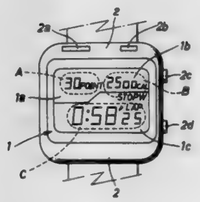
said inlet being arranged at generally right angles to the longitudinal axis of said chamber and having the center line thereof offset laterally from the rotational axis of said auger.

4,525,074

APPARATUS FOR MEASURING THE QUANTITY OF PHYSICAL EXERCISE

Tomomi Murakami, Higashimurayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1984, Ser. No. 640,562
Int. Cl.³ G04B *47/00*
U.S. Cl. 368—10 **9 Claims**



1. An apparatus for measuring the quantity of physical exercise comprising:

exercise time measuring means for measuring a length of time for which the physical exercise continues;

movement detecting means responsive to movement of the body of a person taking the exercise for generating movement signals each representing the movement of the body;

exercise pace detecting means for measuring intervals between subsequent movement signals and detecting an exercise pace;

individual data storage means for storing at least the stride of the person;

judging means for making a judging as to whether movement signals exist or not;

arithmetic means for calculating the quantity of movement on the basis of the exercise time, the stride and the exercise pace; and

display means for displaying the quantity of movement thus calculated,

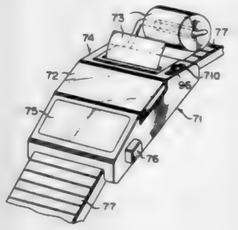
whereby the time measurement by said exercise time measuring means is controlled on the basis of the judgment made by said judging means.

4,525,075

ELECTRONIC WRISTWATCH WITH PRINTER FUNCTION

Kazunori Kita, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,660
Claims priority, application Japan, Jul. 27, 1984, 59-155380
Int. Cl.³ G04B *47/00, 45/00*
U.S. Cl. 368—10 **6 Claims**



1. An electronic wristwatch with a printer comprising:

a wristwatch case means having a recording paper loading portion;

a printing head means, arranged inside said wristwatch case, for printing on the recording paper;

an operation member means, manually operated, for moving said printing head means;

detecting means for detecting a displacement of said printing head which is performed by manual operation of said operation member; and

print controlling means for controlling the printing of said printing head at a speed corresponding to the displacement detected by said detecting means.

4,525,076

VOCAL ANNOUNCING DEVICE FOR ELECTRONIC TIMEPIECE

Katuhiko Takebe, Machida, Japan, assignor to Rhythm Watch Company Limited, Tokyo, Japan

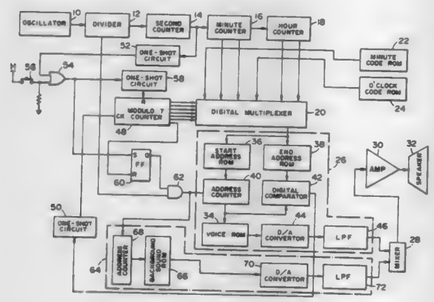
Filed Sep. 24, 1980, Ser. No. 190,356
Claims priority, application Japan, Sep. 29, 1979, 54-126145
Int. Cl.³ G04B *21/08*
U.S. Cl. 368—63 **1 Claim**

1. A vocal announcing device for an electronic timepiece wherein background sounds are overlappingly performed with vocal announcement during vocal announcement in a timepiece with vocal announcing device which announces indi-

cated time or performs alarming action by voice signals, said device comprising:

a voice memory section which memorizes voices as digital signals;

a voice signal generating circuit which at least includes a first address counter that reads out in a fixed order a content memorized in said voice memory section and said circuit further includes a converting section which converts digital signals supplied by said voice memory section into analog signals;



a background sound memory section which memorizes background sounds as digital signals;

a background sound signal generating circuit including second address counter which reads out in a fixed order a content memorized in said background sound memory section and said circuit further includes a converting section which converts digital signals supplied by said background sound memory section into analog signal; and

action controlling section which makes said first and second address counters operate overlappingly at an optional interval or at an indicated time.

4,525,077

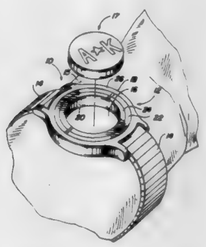
TIMEPIECE HAVING CENTRAL OPENING

Eugene N. Ketner, P.O. Box 380494, San Antonio, Tex. 78280

Continuation-in-part of Ser. No. 337,110, Jan. 5, 1982, Pat. No. 4,473,304. This application Sep. 19, 1984, Ser. No. 652,746

Int. Cl.³ G04B *19/20, 37/00*

U.S. Cl. 368—77 **14 Claims**



1. A timepiece comprising a body having opposed faces, a central opening formed through said body which results in each of said opposed faces assuming an inner boundary which extends about and defines the configuration of said opening and an outer boundary which defines the configuration of the peripheral edge of said body; indicator means on one of said faces related to time keeping; means housed within said body by which said indicator means provides data related to the time of day, and an insert member having an outer wall surface made into a configuration which enables said insert member to be mounted within the opening.

4,525,078

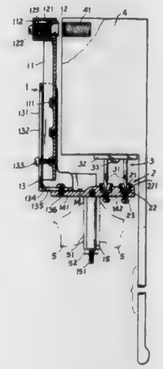
ELECTROMAGNETICALLY-INDUCED ROCKING CLOCK

Kuo-Chin Chu, 10-4 Fl., No. 62 Chang Chun Rd., Taipei, Taiwan

Filed Nov. 22, 1983, Ser. No. 554,281

Int. Cl.³ G04B *17/02*

U.S. Cl. 368—134 **2 Claims**



1. An electromagnetically-induced rocking clock having:

an adjustable combination rod including a vertical rod fixed with a permanent magnet thereon, a L-shaped connection rod having a vertical plate connected with said vertical rod and a horizontal plate connected with a horizontal rod, and a horizontal rod fixed on a decorative figurine seat or hanging rack;

two abrasion-resistant sockets formed on said horizontal rod of said combination rod;

two supporting needles fixed on a rocking clock body or swinging casing and pivotedly mounted on said two abrasion-resistant sockets respectively; and a rocking clock body or swinging casing fixed with an induction coil corresponding to said permanent magnet to swing along two fulcra on said abrasion-resistant sockets;

said adjustable combination rod having said vertical rod formed with several positioning screw holes thereon, said L-shaped connection rod having said vertical plate formed with a series of positioning holes thereon to permit a fixing screw to pass through said positioning hole on said vertical plate and to be fixed into said positioning screw hole on said vertical rod so that said permanent magnet can be adjusted vertically along said L-shaped connection rod and having a horizontal plate formed with a series of positioning holes thereon, said horizontal rod formed with a positioning screw hole thereon to permit a fixing screw to pass through said positioning hole on said horizontal plate and fixed into said positioning screw hole on said horizontal rod so that said permanent magnet can be adjusted horizontally along said horizontal rod; said two abrasion-resistant sockets each being formed with an inversed truncated cone hole which is lowerly terminated with a bottom plate adjustably fixed on said horizontal; and

two supporting needles, connected to a base fixed under said rocking clock body, respectively pivotedly mounted on said two abrasion-resistant sockets, whereby the horizon of said clock body can be adjusted by adjusting said bottom plates of said abrasion-resistant sockets.

4,525,079

SYSTEM FOR RETAINING A WALL ON A CLOCK HOUSING

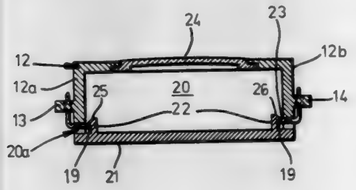
Karl W. Schmidt, Idar-Oberstein, Fed. Rep. of Germany, assignor to Gebrüder Schmidt GmbH & Co. KG, Idar-Oberstein, Fed. Rep. of Germany

Filed Jun. 22, 1983, Ser. No. 506,680

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1982, 3246100

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—276 **9 Claims**



1. A clock housing comprising: a diecast or injection molded housing body of generally rectangular configuration formed with a generally rectangular opening at one side, a wall adapted to close said opening and formed with a pair of undercuts on opposite sides thereof, and a pair of spring clips are provided at opposite flanks of said housing body to reach over said opening from opposite sides thereof and engaging in respective ones of said undercuts, each of said clips being of generally U-shaped configuration having a bight reaching over said opening and a pair of shanks extending from said bight and secured to the respective flanks of said body, said body having sides along said flanks formed with notches receiving said shanks.

4,525,080

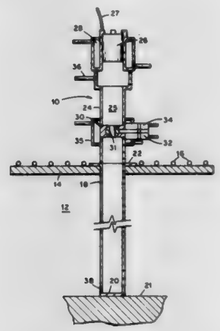
APPARATUS FOR ACCURATELY MEASURING HIGH TEMPERATURES

Douglas D. Smith, Knoxville, Tenn., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Feb. 8, 1983, Ser. No. 464,839

Int. Cl.³ G01K *3/00*

U.S. Cl. 374—115 **7 Claims**



1. A temperature sensing device for use in a high-temperature environment comprising:

an elongated blackbody sight tube penetrating into the environment;

chamber means coupled to said sight tube at a location external of said environment;

thermal radiation sensing means supported by said chamber at a location thereon remote to the coupling with the sight tube and in optical alignment with a surface at the distal end of the sight tube innermost within the environment and indicative of the temperature in the environment;

conduit means coupled to said chamber for charging said chamber with high-pressure gas; and

valve means carried by said chamber for isolating the interior of the sight tube from the pressurized gas in said chamber and the thermal radiation sensing means, said valve means being sequentially actuatable for effecting the flow of the charge of pressurized gas from said chamber through the sight tube to purge said sight tube of airborne thermal radiation attenuating material prior to measuring the temperature of said surface at the distal end of the sight tube with the thermal radiation sensing means through an opening in the actuated valve and for isolating the interior of the sight tube from said chamber and the thermal radiation sensing means between measurements of the temperature of said surface.

4,525,081

VIBRATION DAMPENED BEAM

Douglas C. Myhre, Eden Prairie, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Sep. 9, 1983, Ser. No. 531,218

Int. Cl.³ G01K *1/08, 1/14*

U.S. Cl. 374—208 **15 Claims**



1. A vibration dampening system for supporting an elongated temperature sensor comprising elongated temperature sensor means having an unsupported length and affixed on at least one end to a supporting structure, the supporting structure being subject to vibrations which may be transmitted to the temperature sensor means, sheath means rigidly mounted to the supporting structure at each end of the temperature sensor means which is supported on said supporting structure, the sheath means being subjected to vibrations of the supporting structure, the sheath means substantially surrounding a corresponding portion of the temperature sensor means and being spaced therefrom, elastomeric dampening means disposed between the beam means and the sheath means at each end where the temperature sensor means is to be supported to couple such end of the temperature sensor means to the supporting structure, the sensor means being supported to the supporting structure only adjacent to sheath means supported to the supporting structure, the elastomeric dampening means and the corresponding sheath means dampening vibrations of the temperature sensor means adjacent each support for the temperature sensor means to the supporting structure in direction generally perpendicular to the longitudinal axis of the elongated temperature sensor means.

4,525,082

SEALING RING ASSEMBLY FOR ROLLING BEARINGS

Manfred Brandenstein, Eussenheim; Roland Haas, Hofheim; Wolfgang Friedrich, Schweinfurt, and Rüdiger Hans, Niederwerrn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed May 31, 1984, Ser. No. 615,780

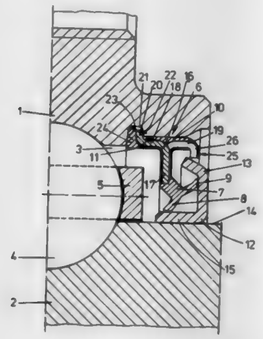
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320063

Int. Cl.³ B21D *53/10;* **F16J** *15/34*

U.S. Cl. 384—138 **10 Claims**

1. A sealing ring assembly for rolling bearings having an

outer race and an inner race and rolling elements in the gap between them, comprising a ring body **7** of elastic material bridging the gap with at least one sealing lip **8**, **9** at one radial edge of said ring body in sliding contact with one of the races, a hub section **10** supported on a seating surface of the inner or outer race and a stiffening plate **16** incorporated into the ring



body including a radial web section and, in the hub section, a collar section connected to the outer edge of the web section facing the hub, said collar section of the stiffening plate **16** being formed both by axially inwardly directed and axially outwardly directed tabs **18**, **19**, **28**, **35**, **36**, **37**, **38** at the outer edge of the stiffening plate.

4,525,083

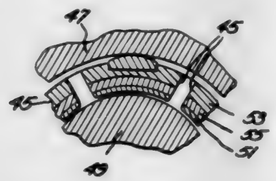
TRIMETALLIC BEARINGS

James R. Pedersen, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 297,810, Aug. 31, 1981, abandoned. This application Sep. 21, 1983, Ser. No. 534,263

Int. Cl.³ F16C *17/06*

U.S. Cl. 384—278 **9 Claims**



1. In a flood lubricated bearing associated with a rotatable shaft, a load-bearing element for minimizing localized peak temperatures, comprising:

an inner metallic layer having a bearing face for carrying a mechanical load transmitted from an adjacent portion of said shaft to said bearing face through an intervening lubricant film;

an outer metallic layer; and

an intermediate metallic layer having higher thermal conductivity than both said inner and outer layer, respectively, said intermediate layer sandwiched between and metallurgically bonded to said inner and said outer layer and effective to maintain a substantially even temperature distribution throughout said inner layer, wherein said outer metallic layer has greater structural rigidity than both said inner and intermediate layer, respectively.

4,525,084

DEVICE FOR ADJUSTING POSITION OF PRINTING HEAD OF PRINTER

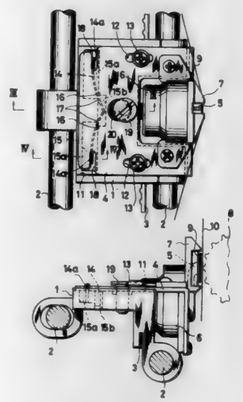
Yoshiaki Ikeda, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1983, Ser. No. 554,353

Claims priority, application Japan, Nov. 29, 1982, 57-180386

Int. Cl.³ B41J *11/20, 11/22*

U.S. Cl. 400—55 **13 Claims**



1. A device for adjusting the position of a printing head of a printer comprising: a movable carrier having an upper surface provided with a recess; a support plate of the printing head slidably mounted on the carrier upper surface for slidable movement in forward and backward directions, the support plate covering the top opening of said recess; a leaf spring disposed within said recess and having at opposite ends thereof tabs integrally projecting upwards, said tabs being in engagement with said support plate to resiliently bias said support plate in the backward direction; and means for adjustably positioning said support plate on said carrier.

4,525,085

SERIAL PRINTER

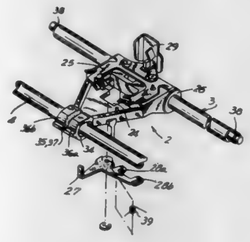
Hiroyuki Akazawa, Shiojiri, Japan, assignor to Epson Corporation, Tokyo, Japan

Division of Ser. No. 305,413, Sep. 24, 1981, Pat. No. 4,452,543. This application Sep. 30, 1982, Ser. No. 430,420

Claims priority, application Japan, Sep. 25, 1980, 55-136236

Int. Cl.³ B41J *11/20*

U.S. Cl. 400—59 **4 Claims**



1. A serial printer comprising:

a print head for printing characters on recording sheet;

a pair of side frames, said side frames being spaced apart;

first and second guide shafts provided between said side frames of said printer;

a platen facing said print head, said platen being in a fixed position relative to said side frames, said print head striking on said platen with said recording sheet therebetween to accomplish said printing of characters;

a head carriage supporting said print head and adapted to move across said sheet, said head carriage being guided by said first and second guide shafts, said head carriage having at least one first hole, said first guide shaft passing through as said at least one first hole and sliding thereon said head carriage further including a second hole, said second hole being oval in shape and sliding on said second guide shaft,

said first guide shaft being offset, having non-concentric portions of first and second diameters, the end portions of said first guide shaft of said first diameter being rotatably engaged with said side frames, a central portion of said first guide shaft of said second diameter riding in said at least one first hole, and

an adjustment lever for varying the distance between the print head and the platen fixed to an end portion of said first guide shaft for rotation therewith, and adapted to releasably engage one said side frame adjacent to said adjustment lever, rotation of said adjustment lever and said connected end portion causing movement of said offset central portion causing said print head to move on said carriage relative to said platen,

the adjustment lever having a first end and a second end, said second end being resilient and formed with a portion projecting and biased toward said adjacent side frame, said side frame adjacent to said adjustment lever being formed with a plurality of positioning holes, said projecting portion engaging and biased into one of said positioning holes, said projecting portion being releasable from said selected positioning hole by applying a force to the first end of said lever overcoming said bias and the resilience in said second end absorbing any backlash transmitted by the guide shaft.

4,525,086

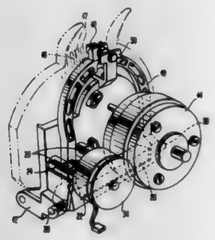
SOLENOID ACTUATED PIVOTAL PRINTER HAMMER MECHANISM

Thomas R. Field, Lexington; Frank M. Hughes, Paris; Iraj D. Shakib, and Edward J. Vitek, Jr., both of Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 532,121, Sep. 14, 1983, abandoned. This application Oct. 9, 1984, Ser. No. 658,347

Int. Cl.³ B41J *1/08*

U.S. Cl. 400—144.2 **7 Claims**



1. A print mechanism for a printer comprising:

a print disc,

a hammer for impacting a preselected point on said print disc,

an electromagnetic driver for said hammer,

said hammer comprising a rigid body formed in the shape of an arch, and having contacting means attached thereto at the midpoint thereof for contacting said disc,

bearings supports formed into the legs of said arch,

impact absorbing means attached to only one of said legs of said arch to accept impact drive forces from said electromagnetic driver,

said impact absorbing means being radially displaced from said bearing supports by less than one-half the radial distance between said bearing supports and said contacting means,

the drive output of said electromagnetic driver being transferred to said hammer and said hammer being driven toward said disc solely by said driver impacting said impact absorbing means and moving through the entirety of its range of motion.

4,525,087

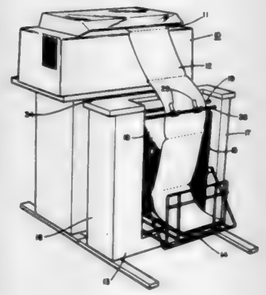
PAPER HANDLING APPARATUS WITH CONTINUOUS DRIVE ROLL AND PRESSURE FINGER

Ramon M. Cardona, Des Plaines; Theodore M. Leno, Arlington Heights, and Melody M. O'Leary, Evanston, all of Ill., assignors to AT&T Teletype Corporation, Skokie, Ill.

Filed Mar. 5, 1984, Ser. No. 586,387

Int. Cl.³ B41J *11/26*

U.S. Cl. 400—613.2 **5 Claims**



1. Apparatus for handling fanfold paper exiting from a printing device, the apparatus comprising:

a support frame;

a first shaft rotatably mounted in the support frame;

a drive roller mounted on the first shaft for supporting the back surface of the paper;

means for continuously driving the first shaft at a substantially constant predetermined rotational speed;

a second shaft rotatably mounted in the support frame, located a predetermined distance away and parallel to the first shaft;

a pressure finger mounted on the second shaft, positioned opposite the drive roller;

means for applying a rotational force to the second shaft for biasing the pressure finger towards the drive roller whereby the pressure finger holds the paper against the drive roller; and

means driven by the first shaft for periodically lifting the pressure finger away from the drive roller for a predetermined period of time.

4,525,088

COMPACT ROTARY KNIFE MECHANISM

Louis E. Shipos, Ithaca, and Steven I. Tinker, Brooktondale, both of N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 22, 1983, Ser. No. 525,203

Int. Cl.³ B41J *11/70*

U.S. Cl. 400—621 **30 Claims**

1. Mechanism for cutting across a strip of record material being moved along a path in one direction, said mechanism comprising a

support member extending transverse to the path of the strip of material, said support member having an edge against which the strip is trained,

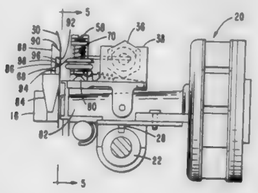
rotary cutting means,

means for carrying the rotary cutting means in transverse direction to the path of the strip of material,

cam means on said carrying means and defining an inclined surface and supporting the rotary cutting means in a non-cutting position thereof, and

means supported from the carrying means for moving the rotary cutting means from the cam means supported non-cutting position along the inclined surface to a cam means unsupported cutting position wherein the rotary cutting means engages the edge of the support member to cut the strip of material.

27. A cutoff mechanism for cutting a portion of record material from a supply thereof in a printer having a print head carriage and a print head thereon movable in transverse manner along a line of printing, the record material being moved in a path past a printer platen, said cutoff mechanism comprising a



support member extending transverse to the path of the record material and including a surface portion for bearing the record material,

rotary cutting means,

means supported from the print head carriage and carrying the rotary cutting means therewith along the line of printing, the rotary cutting means carrying means comprising a slide bracket and a slide member operable in sliding engagement therewith in a substantially straight path toward and away from the support member, and

actuating means supported from the print head carriage for moving the rotary cutting means in slidable manner toward the support member for cutting the record media along the surface portion as the print head is moved across the printer.

4,525,089

DOCUMENT FEED-IN DEVICE

Remo Falconieri, S. Giorgio Canavese, Italy, assignor to C. Olivetti & C., S.p.A., Ivrea, Italy

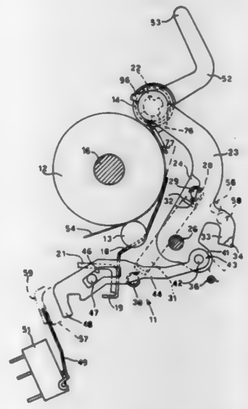
Filed Feb. 3, 1983, Ser. No. 463,493

Claims priority, application Italy, Feb. 3, 1982, 67123 A/82

Int. Cl.³ B41J *13/02*

U.S. Cl. 400—639.1 **8 Claims**

1. A document feed-in device comprising a paper platen cylinder which defines a typing line and supports a document; a lower guide member for guiding the document towards the typing line on the paper platen cylinder; guide elements for guiding the document beyond the typing line and for holding the document in a position of fitting closely to the paper platen cylinder; a switch operable for activating rotary movement of the paper platen cylinder in such a way as to advance a top edge of document closely beyond the typing line, and wherein the guide elements permit typing in a region immediately adjacent the top edge of the document; and actuating element for moving at least a part of the guide elements away from the paper platen cylinder and connecting means operating in response to the movement of said part of the guide elements on said switch; wherein said guide elements comprise: an axis member; a series of paper pressure rolls rotatable and slidable on said axis member for cooperating with said document; two levers for supporting said axis member, wherein said two levers are movable from a first position in which the series of paper pressure rolls are adjacent the paper platen cylinder to a second position in which the series of paper pressure rolls are spaced from the paper platen cylinder to permit the document to be introduced; a bar member which is pivoted on said axis member parallel to the paper platen cylinder wherein the bar member is movable from an abutment position in which the bar member is arrested against an arrest on the two levers to a free position in which the bar member is away from said arrest; torsion spring means for holding the bar member in said abutment position against the arrest on the two levers; wherein said bar member comprises a portion for guiding the top edge of said document toward said paper pressure rolls and wherein



said portion of the bar member is parallel to the paper platen cylinder in the abutment position of said bar member and in the first position of said levers; and cam means disposed adjacent the paper platen cylinder and cooperative with the bar member for holding the bar member in the free position against the action of the torsion spring means when the two levers are positioned in said second position and wherein a lower edge of said bar member, in said free position, engages said document for urging the top edge of the document on said paper platen cylinder closely beyond the typing line when the two levers are returned from said second position to said first position.

4,525,090

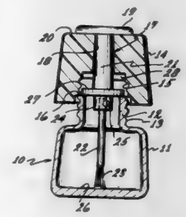
LIQUID DISPENSING BOTTLES WITH BUILT-IN APPLICATORS

Patrice J. Riley, 25038 Fourl Rd., Newhall, Calif. 91321, and Arthur W. Riley, 13218 Herrick Ave., Sylmar, Calif. 91342

Filed Oct. 3, 1983, Ser. No. 538,222

Int. Cl.³ A46B *11/00;* **A45D** *29/20, 44/18*

U.S. Cl. 401—127 **8 Claims**



1. In a liquid dispenser including a container for liquids and a sealing member for sealing the contents of the container, the sealing member having a built-in applicator for accessing any liquids in the container normally extending into the container when said sealing member seals the contents of the container, the improvement which comprises:

said sealing member is a cap screwed onto said container and said applicator is reciprocally mounted within said cap and axially movable therealong whereby, when said cap is in an unsealing position with respect to said container, said applicator may be reciprocated within said cap to extend back into substantially its position with respect to said container when said cap is in a sealed position with respect to said container without resealing of said container by said cap, said container being a bottle having a threaded neck and said cap including internal threads adapted to engage the threaded neck of said bottle in sealing engagement, said cap including an internal annular shoulder of a diameter greater than that of the inner diameter of said neck, said applicator including a liquid applicating portion at its lower end in said bottle and a stop member at its uppermost end extending outside of said bottle, and an intermediate section on said applicator conforming substantially to said annular shoulder and engaging the same when said cap is threaded to said bottle, said intermediate section being of an overall diameter greater than the internal diameter of said neck.

4,525,091

SCRUB SPONGE WITH OPPOSED PUNCTURE MEMBER ARMS

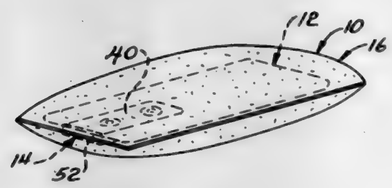
Ronald R. Van Overloop, Palatine, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Apr. 25, 1983, Ser. No. 488,519

The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.

Int. Cl.³ B43K *5/14;* **A45D** *40/26*

U.S. Cl. 401—134 **16 Claims**



1. A scrub sponge, comprising:

a packet having a rupturable wall and a closed chamber containing a liquid scrub agent;

a cover of foam material having a cavity to receive said packet and enclosing said packet; and

a puncture member intermediate said cover and the packet and having a pair of generally aligned and spaced arms on opposed sides of the packet beneath the cover, hinge means connecting said arms adjacent one end of the packet, and at least one sharp projection on one of said arms directed toward the packet to pierce the wall when the arms are pressed toward each other to release the scrub agent into the cover, and an opening extending through the other arm and aligned with the projection.

4,525,092

TUBULAR WRITING TIP HAVING AN OUTER REDUCED DIAMETER PORTION

Takahiko Shimizu; Hishao Fukui, both of Tokyo, and Tadashi Kohno, Ishioka, all of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP81/00066, § 371 Date Mar. 19, 1982, § 102(e) Date Mar. 19, 1982, PCT Pub. No. WO82/03360, PCT Pub. Date Oct. 14, 1982

Continuation of Ser. No. 361,929, Mar. 19, 1982, abandoned.

This PCT application Mar. 26, 1982, Ser. No. 566,970

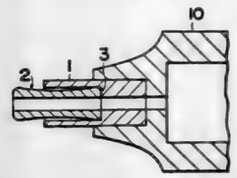
Claims priority, application Japan, Sep. 29, 1979, 54-135438[U]

Int. Cl.³ B43K *1/06, 15/00*

U.S. Cl. 401—265 **4 Claims**

1. In a writing instrument nib structure of the type including a tubular nib press-fitted into a forward end of a tubular tip of the instrument, the improvement of means for enabling press-fitting of said nib into said tip upon misalignment of the longitudinal axis of said nib and the direction of pressing by correcting such misalignment during pressing, said means comprising:

an outer nib surface defining equally configured radiused peripheral edges at opposite longitudinal ends of said nib, said outer nib surface sloping radially inwardly from said radiused peripheral edges toward a middle length portion



of said nib, thereby defining a concentrically reduced diameter central portion, such that said nib is longitudinally symmetrical between said opposite ends; and

said radiused peripheral edge at a rearward end of said nib contacting an inner surface of said tip, and said sloping surface of said nib and said inner surface of said tip defining therebetween an annular space;

whereby said sloping surface acts to guide pressing movement of said nib while correcting misalignment thereof.

4,525,093

MODULAR FRAMEWORK SYSTEM FOR FURNITURE RACKS OR SIMILAR ARTICLES

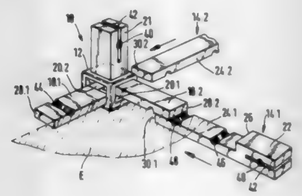
Reiner Moll, Wilhelmstrasse 19, D-7070 Schwaebisch Gmuend, Fed. Rep. of Germany, and Armin Hornung, Singen, Fed. Rep. of Germany, assignors to Reiner Moll, Schwaebisch Gmuend, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,611

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1981, 3142283

Int. Cl.³ F16B *13/00*

U.S. Cl. 403—4 **4 Claims**



1. A modular framework system for use with hollow-end interconnecting tubes in building furniture or similar articles, comprising:

a connection body comprising

a block member having one upper, one lower and four side walls with two transverse through-channels of equivalent cross section traversing the side walls so as to be perpendicular to each other but not intersecting each other, and

two peg members of equivalent cross section, integrally formed with at least two of the side walls of the block member and projecting outwardly therefrom so as to be perpendicular to each other but not intersecting each other, such that each peg member is placed so as to perpendicularly abut one of said transverse through-channels; and

at least two plug members each having

an insertion plug portion adapted to fit into the hollow end portion of an interconnecting tube, and

half-plug portions of approximately half the cross section

of the insertion plugs and which are arranged at one side of a longitudinal center plane of the plug members and are adapted to fit into said channels of the block member while occupying approximately the dimensions of said channels; wherein

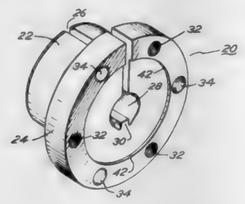
said at least two plug members may be selectively fitted into said channels so as to form one of an L-shaped, T-shaped and cross-shaped framework.

4,525,094

POWDERED METAL, FLANGED BUSHING FOR SECURING MACHINE ELEMENTS TO SHAFTS

James D. Johnson, Greer, S.C.; Byron B. Belden, Fletcher, N.C., and Terrence A. Kamp, Simpsonville, S.C., assignors to Reliance Electric Company, Greenville, S.C.

Filed Feb. 15, 1984, Ser. No. 580,462
Int. Cl.³ F16B *2/00*
U.S. Cl. 403—11 **16 Claims**



1. A powdered metal, flanged bushing for securing machine elements to a shift, said machine elements having a hub with a central opening, said bushing comprising a generally cylindrical, tapered body member split longitudinally and radially, and having a large end and a small end and a central bore, a flange split longitudinally and radially disposed on said large end of said body member and having a portion projecting outwardly from said large end, a key formed integrally with said body member in said central bore and projecting inwardly and axially therein, said body member having fillets at the points of junctures between said flange and said body member on both sides of said flange for increased density at said points, and a plurality of holes formed in said flange for receiving securing means for selectively securing said bushing in the opening in the hub and onto the shaft and for removing said bushing from the hub opening, the small end of said body member having an annular recess at the periphery for facilitating seating of said bushing in a hub.

4,525,095

DRIVING AND ALIGNING COUPLING

Miles P. Lamb, Colonia, and Herman S. Karol, Morris Township, Morris County, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 22, 1984, Ser. No. 623,745
Int. Cl.³ F16D *1/00*
U.S. Cl. 403—16 **13 Claims**

1. A driving and aligning coupling, comprising: a solid shaft having a first end and outer surface, with said outer surface defining first, second and third uniformly spaced, axially extending flat bottomed keyways which start at its first end,

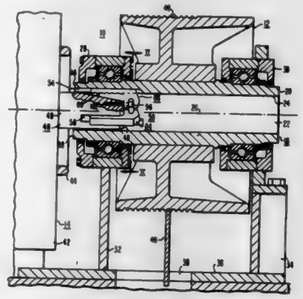
a hollow shaft having first and second ends, and an opening which extends between its ends,

said solid shaft being disposed within the opening of said hollow shaft, with said hollow shaft further including first, second and third axially extending, flat bottomed keyways in registry with the first, second and third keyways, respectively, of said solid shaft,

said keyways of one shaft being inclined and the keyways of the remaining shaft being parallel, with respect to longitudinal planes through the respective shafts,

first, second and third keys in the registering keyways, with each of said keys having a longitudinal axis and oppositely disposed longitudinally extending inclined and non-inclined flat sides corresponding to the inclined and parallel keyways, respectively,

adjustment means for independently adjusting the axial positions of said first, second and third keys to concentrically align the solid and hollow shafts,



said adjustment means including first, second and third bolts each having a threaded end engaged with a tapped opening in one of said shafts, and a head linked with a key,

bearing means for rotatably supporting the first and second ends of said hollow shaft, with said solid shaft being a driving shaft,

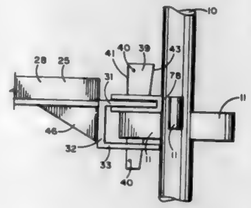
and a sheave fastened to said hollow shaft.

4,525,096

CONNECTING CLAMP FOR BUILDER'S SCAFFOLDING

Jasper L. Green, Anaheim, and Steven B. Hackett, Irvine, both of Calif., assignors to Weldtec, Inc., Fountain Valley, Calif.

Filed Apr. 18, 1983, Ser. No. 485,886
Int. Cl.³ E04G *7/00*
U.S. Cl. 403—49 **2 Claims**



1. In builders' scaffolding having an upright member, and a plurality of sockets provided thereon for coupling crossmembers thereto, said sockets having an internal clamping face, a connector means coupled to one end of said crossmembers comprising:

(a) two spaced apart limbs to permit said socket to be received therebetween with said limbs extending respectively above and below said socket;

(b) a generally trapezoidal opening having four sides, two of which are non-parallel, provided in said limbs, two of said for sides forming first and second clamping sides, said first and second clamping sides having a plurality of clamping positions,

(c) a wedge clamping member mounted for clamping engagement with said internal clamping face of said socket and selected ones of said plurality of clamping positions on said first and second clamping sides; and

(d) an abutment coupling including

(i) two spaced-apart arms for permitting at least one of said limbs to be received therebetween;

(ii) an aperture provided in said arms for permitting said wedge clamping member to pass therethrough free of clamping action; and

(iii) an abutment face for abutting said upright member when said wedge clamping member is in pressure engagement with said first and second clamping sides and said internal clamping face of said socket;

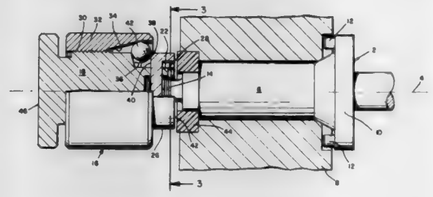
whereby in connecting said upright member and said crossmember together said two limbs extend respectively above and below said socket, and said wedge is in pressure engagement with portions of said first and second clamping sides of said trapezoidal opening in at least one of said limbs and said internal clamping face of said socket.

4,525,097

FORCE MULTIPLYING LOCKING ARRANGEMENT

Harold R. Ziegelmeyer, 5010 Griffen Creek Rd., Medford, Oreg. 97501

Continuation of Ser. No. 256,852, Apr. 23, 1981, abandoned.
This application Sep. 14, 1983, Ser. No. 532,104
Int. Cl.³ E21D *20/02*
U.S. Cl. 403—259 **6 Claims**



1. In a force multiplying and locking arrangement for a device to be locked,

a main body member adapted to be mounted on the device to be locked,

a pressure member mounted on the main body member in a manner to allow longitudinal movement relative to the main body member and to prevent rotational movement relative to the main body member,

a compression member threadably moveable relative to the main body member,

first inclined plane means on the compression member,

second inclined plane means on another member,

roller means operatively disposed between the inclined plane means and engaging the pressure member,

whereby, upon threadable movement of the compression member force available at the pressure member is greatly multiplied to lock said device.

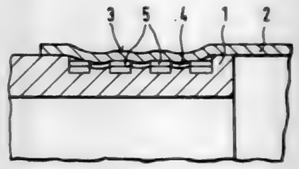
4,525,098

ASSEMBLY FOR CONNECTING TOGETHER TORQUE-TRANSMITTING MEMBERS

Werner Krude, Am Sonnenhang 10a, 5200 Siegburg-Kaldauen; Alfons Jordan, Uckerather Str. 88, 5202 Hennef, and Peter Harz, Steinbruchstr. 14, 5202 Hennef 41, all of Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 446,955
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 3149596
Int. Cl.³ F16B *00/00*
U.S. Cl. 403—280 **9 Claims**

1. An assembly of parts such as shafts and the like to join together in torque-transmitting relationship a first member and a second member comprising: an inner and an outer tubular connecting part formed, respectively, on each of said first and second members arranged coaxially relative to each other with said outer connecting part being arrange circumferentially around said inner connecting part; said connecting parts being arranged to define therebetween a recess comprising an annular hollow space; a pair of projections arranged axially spaced apart on opposite sides of said recess to define the axial termination of said annular hollow space; and connecting means interposed between said connecting parts within said annular hollow space, said connecting means consisting essentially of an annular member formed separately from said inner and outer tubular connecting parts and inserted therebetween within said recess, said connecting means comprising a plural-



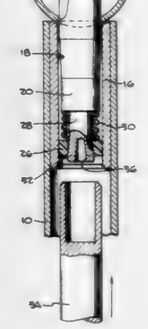
ity of small connecting elements having acuminated portions joined together and arranged circumferentially around said inner connecting part, said connecting elements being formed of a material harder that the material of said connecting parts and operating to penetrate the surfaces of said connecting parts to hold said first and said second members in torque-transmitting relationship.

4,525,099

CONNECTOR FOR TUBULAR FRAME MEMBERS

Robert H. Day, Burbank, Calif., assignor to S.D.S. Industries, Inc., Los Angeles, Calif.

Filed Mar. 21, 1984, Ser. No. 591,855
Int. Cl.³ B25G *3/20*; F16B *2/00*
U.S. Cl. 403—371 **4 Claims**



1. A two part connector structure for frame members of a store fixture or the like:

(a) one of said parts providing an elongated substantially cylindrical bore and adapted to be attached to one of said frame members;

(b) the other of said parts comprising a pin securely attached to the another of said frame members, and projecting therefrom and adapted to be inserted into said bore, said pin having an axially extended part fitting said bore to stablize said parts against all but relative axial movement;

(c) the end of said pin being outwardly flared;

(d) an expansible compression member mounted on said pin; and

(e) a compression spring urging said compression member outwardly of said flared end firmly to grip the said bore whereby movement of said pin in an outward direction

causes said compression member more firmly to engage said bore whereby said frame members are positively locked together.

4,525,100

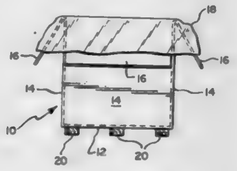
TRANSPORTATION AND DISPOSAL OF WASTE MATERIALS

Stanley C. Zawadzki, Jr., Ransomville; Robert A. Stadelmaier, Orchard Park, both of N.Y., and John J. Perrone, Westchester, Ohio, assignors to Cecos International, Inc., Buffalo, N.Y.

Filed Feb. 23, 1983, Ser. No. 469,041

Int. Cl.³ E02D *3/08*

U.S. Cl. 405—129 **8 Claims**



1. A method for receiving waste in the form of free flowing solids, liquids or combinations thereof from a waste source and transporting said waste to a storage station and effecting disposal thereof, said method comprising:

batch-loading said waste in a succession of transport containers, each of said containers comprising a box-like polygonal housing formed of an excess-moisture structurally vulnerable material normally having sufficient shape-wise rigidity to withstand deformation from its plan view configuration under the weight of waste placed therewithin and having the inner surfaces thereof covered by a flexible fluid-impervious material;

placing a plurality of such loaded containers in compactly nested relation upon a transport facility;

transporting said loaded containers to a designated storage station;

transferring said loaded containers to said storage station while placing them in at least one layer in which said loaded containers are in closely nested together relation; and

exposing said loaded containers in said layer to excess-moisture conditions to effect softening of said structurally vulnerable material and permit said housings and waste contents thereof to spread out and settle down, whereby to eliminate open spaces present between said loaded containers of said layer and to decrease the height of said layer.

4,525,101

DRILL STRING DEPLOYMENT OF CABLE PULLING TOOL

James W. Stevens, and Ray R. Ayers, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 30, 1982, Ser. No. 394,034

Int. Cl.³ F16L *1/04*

U.S. Cl. 405—169 **7 Claims**

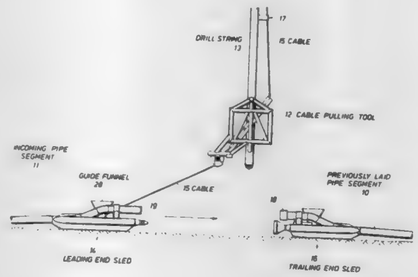
1. A method for aligning and pulling together a subsea pipeline segment and a previously installed subsea pipeline segment comprising:

providing mating alignment sleds, one sled being attached to the trailing end of the previously installed pipeline segment and the other sled being attached to the leading end of the pipeline segment to be aligned;

deploying a cable pulling tool at the end of a vertical pipe assembly suspended from a vessel;

landing the cable pulling tool on one alignment sled and thereby attaching a cable end to the sled using the cable pulling tool;

removing the cable pulling tool from the one alignment sled while paying out cable and then landing the cable pulling tool on the other alignment sled; and



pulling the two sleds together into a mating position by means of the cable pulling tool, thereby aligning and pulling together the pipeline segment ends.

4,525,102

TIMBER PILE CONNECTION SYSTEM

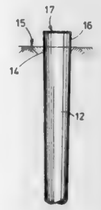
Gerard J. Gillen, 4512 Ithaca St., Metairie, La. 70002

Continuation-in-part of Ser. No. 332,085, Dec. 18, 1981. This application Aug. 12, 1983, Ser. No. 522,682

The portion of the term of this patent subsequent to Feb. 14, 2001, has been disclaimed.

Int. Cl.³ E02D *5/52*

U.S. Cl. 405—232 **10 Claims**



1. A method of driving composite timber pile sections comprising the steps of:

a. providing a pair of timber pile sections;

b. driving the first, lowermost pile section into the earth a distance leaving an exposed tip;

c. partially embedding a portion of a splice element into the one of the pile sections using a removable ram which both (1) applies force to the splice element to drive it into the first pile section and (2) defines the penetration of the splice element into the first pile section;

d. adding displaceable leveling material to the top of the first pile section;

e. laterally confining the granular leveling material with the splice element;

f. axially aligning the two pile sections;

g. partially embedding a portion of the splice element into the other pile section;

h. driving the composite pile section into the earth.

4,525,103

METHOD OF FIXATION OF ANCHORING BOLTS IN BOREHOLES

Frank Meyer, Essen; Wolfgang Cornely, Gladbeck, and Hans Mehesch, Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Dec. 29, 1982, Ser. No. 454,479

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1982, 3200201

Int. Cl.³ E21B *33/13;* **E21D** *20/02*

U.S. Cl. 405—261 **12 Claims**

1. In a method for bonding anchoring bolts in boreholes of the type in which an anchoring bolt is introduced into a twin-chamber cartridge, one chamber of which is filled with polyisocyanates and the other one with a hydroxyl component, the improvement comprising using prepolymers having viscosity below 50,000 m Pa. s from the conversion of polyisocyanates, said polyisocyanates consisting of phosgenation products from aniline formaldehyde condensates, with one or several difunctional polyols of the molecular weight range 1600–3000, as polyisocyanate component.

4,525,104

ROOF SUPPORT FOR TUNNEL EXCAVATOR

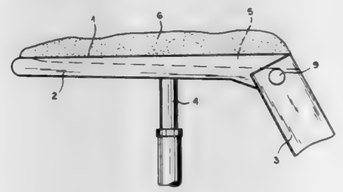
Peter Stephan, Essen, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Nov. 18, 1982, Ser. No. 442,786

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1982, 3204872

Int. Cl.³ E21D *15/44, 17/01*

U.S. Cl. 405—290 **2 Claims**



1. In tunnel-excavating equipment provided with a roof support comprising a unitary horizontal shield plate supported by a jack,

the improvement wherein said shield plate has a flat solid underside and an upper surface provided with a plurality of parallel grooves extending in the direction of advance of the equipment, said grooves opening onto a rear edge of said shield plate for facilitating the removal of detritus landing on said upper surface and collecting in said grooves, said grooves progressively widening and deepening toward said rear edge, said grooves being separated by ribs tapering progressively to a width less than that of said grooves in the vicinity of said rear edge.

4,525,105

DEVICE FOR CONTROLLED BATCH FEEDING OF A FLUIDIZIBLE PARTICULATE MATERIAL AND PROCESS FOR ITS OPERATION

Ernst Jaggi, Sunde, Norway, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

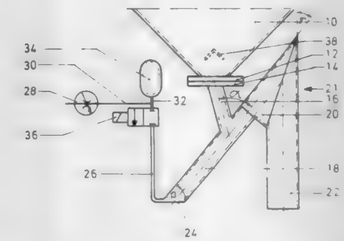
Filed Jun. 1, 1982, Ser. No. 383,554

Claims priority, application Switzerland, Jun. 15, 1981, 3911/81

Int. Cl.³ B65G *53/06*

U.S. Cl. 406—50 **23 Claims**

1. Device for controlled batch feeding of a fluidizable particulate material from a silo which comprises: a silo for storing particulate material; outlet means on said silo for discharging particulate material; a feed pipe communicating with and sloping downwardly from said silo outlet; a charge containment pipe sloping upwardly from a closed bottom end to a discharge end, said feed pipe communicating with said containment pipe intermediate its ends and forming an angle with respect to the containment pipe, said feed pipe being joined to the upper half of said containment pipe at a location which is displaced from a vertical line extending through said silo outlet means; a discharge pipe communicating with and extending downwardly



from said charge containment pipe at the discharge end of the containment pipe for discharging particulate material; and means communicating with said charge containment pipe adjacent said closed end for supplying a charge of compressed air to said charge containment pipe below said location to transfer the material from said charge containment pipe to said discharge pipe.

4,525,106

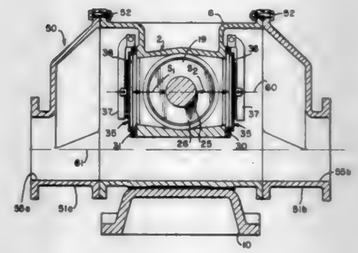
PNEUMATIC CONVEYING DEVICE

Louis J. DiBuo, Newringgold; Paul E. Solt, Allentown, and Marvyn L. Souders, Orefield, all of Pa., assignors to Fuller Company, Bethlehem, Pa.

Filed Dec. 13, 1983, Ser. No. 561,093

Int. Cl.³ B65G *53/48*

U.S. Cl. 406—60 **17 Claims**

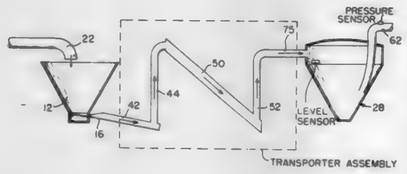


1. A line charging device for use in supplying pulverulent material to a conveying line comprising a barrel having a material inlet at one end for material to be conveyed and impeller means rotatably mounted in said barrel for transporting material from said material inlet through the barrel; said barrel having a pair of material outlets at the other end wherein said material outlets are diametrically opposed to each other; a discharge housing mounted on the said other end for receiving material from the material outlets; said discharge housing having a gas inlet on one side adapted to be connected to a source of gaseous fluid under pressure and a gas and entrained material outlet on the other side adapted to be connected to a pneumatic conveying line.

4,525,107
BARGE HAVING A PNEUMATIC LOADING AND UNLOADING SYSTEM

Robert J. C. Feldsted, 2403 Boyer Ave. East, Seattle, Wash. 98102

Filed Sep. 22, 1982, Ser. No. 421,361
Int. Cl.[3] B65G *53/28*
U.S. Cl. 406—25 25 Claims

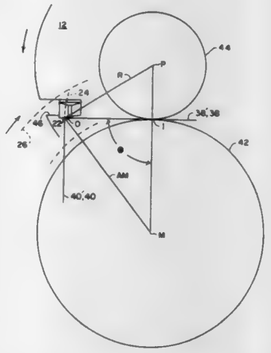


1. A barge, including a system for unloading cement or another dry, bulk, powdered material from the barge into a predetermined receptable, comprising:
(a) a barge hull;
(b) at least one hopper disposed in the hull to receive and to store the material;
(c) a collector system in the hull to unload the material from the hopper and to convey the material to a vacuum-pressure pneumatic conveyor, including:
(i) an air-assisted gravity conveyor disposed within each hopper to gather the material to a plurality of predetermined longitudinally spaced points in each hopper;
(ii) a suction nozzle communicating with each hopper at each predetermined point to unload the material from the hopper by vacuum suction; and
(iii) a transporter assembly connected to each nozzle to transport the material from the nozzle to a vacuum-pressure pneumatic conveyor;
wherein the transporter assembly includes:
(i) an air-assisted horizontal gravity conveyor connected to the nozzle to receive the material from the nozzle on a porous membrane defining two chambers, wherein pressurized air is introduced in the conveyor in a first chamber below the membrane and passes through the membrane into the second chamber and through the material on the membrane to fluidize the material so that the material will flow by gravity in the conveyor, yet wherein a vacuum to power the nozzle can be maintained in the second chamber above the material on the membrane; and
(ii) a vacuum lift tube connected to the gravity conveyor and communicating with a storage vessel of a vacuum-pressure pneumatic conveyor to lift the material by suction from the gravity conveyor into the storage vessel during a loading cycle.
(d) a vacuum-pressure pneumatic conveyor having:
(i) a storage vessel; and
(ii) a discharge outlet; wherein the vacuum-pressure pneumatic conveyor is disposed in the hull, is connected with the collector system, and alternately fills its storage vessel with the material in the collector during a loading cycle and discharges the material from the storage vessel through the discharge outlet during a discharge cycle;
(e) a discharge conduit connected to the discharge outlet for conveying the material from the discharge outlet to the receptacle during the discharge cycle;
(f) a source of compressed air in the hull to power the pneumatic conveyor during the discharge cycle; and
(g) a source of negative pressure in the hull to power the pneumatic conveyor during the loading cycle.

4,525,108
CUTTER AND METHOD FOR GEAR MANUFACTURE

Theodore J. Krenzer, West Rush, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Nov. 18, 1982, Ser. No. 442,689
Int. Cl.[3] B26D *1/12*; B21K *21/00*
U.S. Cl. 407—22 2 Claims



1. A face mill type cutter assembly for cutting a range of workgears with a continuously indexing gear cutting machine which utilizes bar stock cutting blades which include a shank portion and a cutting end portion, said shank portion in cross section having a back face, two side faces, a front face, and a fifth face forming a cutting face which defines a rake angle A with said front face, said cutting end portion having two profile surfaces and a top surface wherein one profile surface is inclined an angle B with respect to one of said side faces and intersects said cutting face to form a cutting edge, said cutting face being preserved during periodic resharpening of said cutting end portion characterized by:
a rotatable cutter head having a front face and an axis of rotation, slots formed in said rotatable head for receiving said bar stock blades, a leading edge of each of said slots intersecting said face of said rotatable head in substantial alignment with a plane which includes an angle H with a connecting line between centers of said rotatable head and a workgear within said range viewed in a pitch plane of said workgear, and said slots being inclined by an angle D with respect to the axis of rotation of said rotatable head in accordance with the equality

$$\tan |D| = \tan |A| \cdot \tan |B|$$

when said workgear within said range includes an angle H of approximately 80° to 85°.

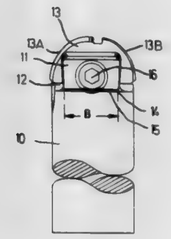
2. A method of making a cutter assembly for cutting a range of workgears with a continuously indexing gear cutting machine using bar stock type cutting blades which include a shank portion and a cutting end portion, said shank portion in cross section having a back face, two side faces, a front face, and a fifth face forming a cutting face which defines a rake angle A with said front face, said cutting end portion having two profile surfaces and a top surface wherein one profile surface is inclined an angle B with respect to one of said side faces and intersects said cutting face to form a cutting edge, said cutting face being preserved during periodic resharpening of said cutting end portion comprising the steps of:
forming a rotatable head having an axis of rotation, and front and back faces and with slots formed through said front and back surfaces for receiving said blades,
aligning a leading edge of each of said slots with a line which includes an angle H of approximately 80° to 85° with a connecting drawn line between a center of said rotatable head and a center of one of said workgears selected from said range when viewed in the pitch plane of said one workgear, and
inclining said slots an angle D with respect to the axis of rotation of said rotatable head in accordance with the equality

$$\tan |D| = \tan |A| \cdot \tan |B|.$$

4,525,109
CUTTING TOOL HAVING A CUTTING BLADE IN A SHANK SLOT

Sven O. Bylund, Sandviken, Sweden, assignor to Santrade Ltd., Lucerne, Switzerland

Filed Jan. 9, 1984, Ser. No. 569,490
Claims priority, application Sweden, Jan. 18, 1983, 8300230
Int. Cl.[3] B26D *1/00, 1/12, 3/00*; B23P *15/28*
U.S. Cl. 407—36 10 Claims



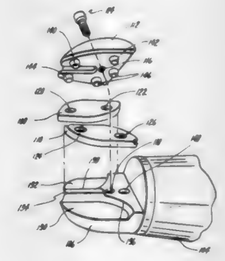
1. A cutting tool for milling, boring, or turning comprising:
a shank including a slot opening axially outwardly and defined by first and second mutually facing side surfaces which are each substantially planar, and a support surface disposed adjacent an axially inner end of said slot,
said first side surface including a pair of radially spaced first contact surfaces which converge in a direction toward said second side surface, said first contact surfaces also converging in an axially inward direction,
a cutting blade seated within said slot and having a base edge supported on said support surface and including third and fourth side surfaces facing said first and second side surfaces, respectively,
said third side surface including a recess having a bottom wall and a pair of radially spaced second contact surfaces which are each substantially planar and converge toward said second side surface, said second contact surfaces converging in an axially inward direction,
said blade including an axially extending groove which opens axially inwardly at said base edge,
a clamping screw extending through a bore in one of said first and second side surfaces, and through said groove, and is threadedly mounted in the other of said first and second side surfaces to press said blade between said first and second side surfaces such that said pair of first contact surfaces are disposed within said recess and are forced against said pair of second contact surfaces to center and clamp said blade, said first side surface and said first contact surfaces being spaced from said bottom wall of said recess to form a clearance therebetween when said blade is in a clamped condition.

9. A blade for use in combination with a cutting tool of the type comprising a shank which has a slot opening axially outwardly and including first and second mutually facing side surfaces and a support surface disposed adjacent an axially inner end of said slot, said first side surface including a pair of radially spaced first contact surfaces which are substantially planar and converge at a first angle in a direction toward sid second side surface, said first contact surfaces also converging at a second angle in an axially inward direction, said blade being adapted to be seated in said slot in engagement with said support surface and comprising:
cutting edge means,
a base edge located opposite said cutting edge means and adapted to engage said support surface,
third and fourth side surfaces interconnecting said cutting edge means and said base edge and adapted to face said first and second side surfaces, respectively,
said third side surface including a recess adapted to receive said first contact surfaces, said recess having a bottom wall and a pair of radially spaced second contact surfaces which are substantially planar and converge at said first angle toward said fourth side surface, said second side surfaces converging at said second angle toward said base edge, and
a groove extending partway from said base edge surface toward said cutting edge means and being open at said base edge surface.

4,525,110
INDEXABLE BALL NOSE END MILL

Stojan Stojanovski, 1950 Birchwood, Troy, Mich. 48084

Filed May 18, 1983, Ser. No. 495,643
Int. Cl.[3] B23C *5/02, 5/20*
U.S. Cl. 407—40 8 Claims

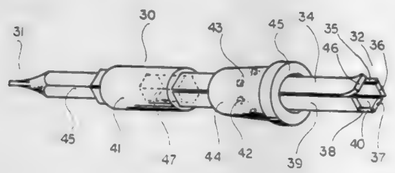


1. An elongated ball nose end mill cutting insert having spaced planar top and bottom surfaces separated by a pair of curved elongated side surfaces, the side surfaces being joined together one to the other at opposite ends thereof, both of the side surfaces being joined to the top surface on opposite sides thereof to form a pair of opposed cutting edges, each side wall forming an angle less than 90 degrees with respect to the top surface, the top surface having a pair of similarly shaped, spaced, frusto-conical recesses disposed generally along a line passing between the ends of the insert, whereby the insert is reversible end-for-end about an axis perpendicular to the top surface.

2. The combination comprising:
an elongated tool holder having an elongated pocket open at a front end thereof, one side and a top, and having a closed side surface;
an elongated cutting insert in said pocket in a cutting position, said insert having spaced, planar top and bottom surfaces separated by side surfaces, one of said side surfaces being joined to the top surface to form a cutting edge, the top surface having first and second similarly shaped, spaced, frusto-conical recesses disposed between the ends of the insert, the insert being mounted in the tool holder pocket such that the cutting edge extends beyond the open side and front end of the pocket;
the tool holder having a third frusto-conical recess spaced from the first and second recesses in the insert on the opposite side of the closed side surface of the pocket as the first and second recesses;
a cap mounted on the holder having three frusto-conical protuberances receivable in said first, second and third recesses; and
fastening means for connecting the cap to the holder such that the protuberances are received in the recesses to cooperate to bias the insert toward the closed side of the

pocket as the cap is moved to a clamping position in which the insert is disposed between the cap and the holder.

4,525,111
SLIDE-ON ROTARY TOOLS
Gunter E. Gutsche, 4476 Forget, St Louis de Terrebonne, Quebec, Canada J0N 1N0
Filed Sep. 27, 1982, Ser. No. 424,422
Int. Cl.³ B23B *45/00*
U.S. Cl. 408—239 A **4 Claims**



1. A rotary tool having a distal end adapted to perform a work function and a proximal end adapted to receive rotation from the shank portion of another rotary tool bit by adapting means comprising:

(a) at least two elongated members axially aligned and radially spaced on said rotary tool, said elongated members having substantially smooth outside surfaces and inside surfaces with respect to said rotary tool, said inside surfaces adapted to receive rotational forces from said shank portion,

(b) compressing means disposed about said elongated members, and adapted for generating concentric pressure between said elongated members and said shank portion, said compression means comprising a slideable member with a tapering cavity having at a first selected portion of said elongated members a greater clearance than at a second selected portion of said elongated members and

(c) friction reducing members disposed within said cavity between said slideable member and said outer surfaces, said friction reducing members for easing the sliding movement of said slideable member and for transferring concentric pressure from said slideable member to said shank portion via said elongated members, so that when said slideable member is moved from said first selected portion toward said second selected portion said concentric pressure is gradually increased.

4,525,112
MILLING MACHINE
Gottfried Blaimschein, and Otto Marzy, both of Steyr, Austria, assignors to GFM Gesellschaft für Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Steyr, Austria
Filed Apr. 9, 1984, Ser. No. 598,418
Claims priority, application European Pat. Off., May 19, 1983, 83890087.6
Int. Cl.³ B23C *3/06*
U.S. Cl. 409—199 **3 Claims**

1. In a milling machine comprising

a machine bed,

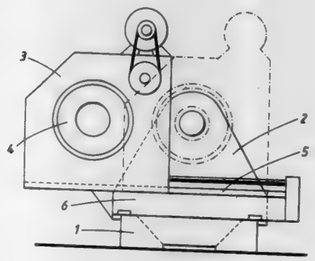
two workpiece-gripping heads spaced apart along said machine bed and defining a longitudinal axis,

track-forming means carried by said machine bed and providing at least one track which is normal to said longitudinal axis,

at least one cutter carriage, which is mounted on and slidable along said at least one track to a central position and a feed-limiting position, and

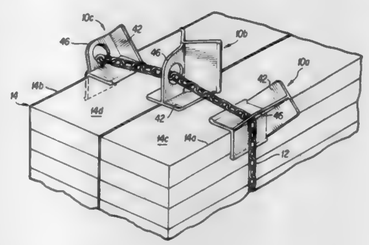
at least one internally cutting, annular milling cutter which is carried by said at least one cutter carriage and arranged to be centered on said longitudinal axis when said at least one cutter carriage is in said central position and adapted to perform a feed movement during a movement of said at least one cutter carriage from said central position to said feed-limiting position,

said at least one track has such a length that said at least one cutter carriage is slidable along said at least one track beyond said feed-limiting position to an offset tool-changing position and



said at least one milling cutter is so arranged that at least a major portion of said at least one milling cutter is disposed outside the contour at least one of said gripping heads in a view taken along said longitudinal axis when said at least one cutter carrier is in said offset tool-changing position.

4,525,113
LOAD HOLDER GUARD
Joseph C. Colman, Roanoke, Va., assignor to Walker Machine and Foundry Company, Roanoke, Va.
Filed Sep. 30, 1982, Ser. No. 429,889
Int. Cl.³ B60P *7/12*; **B61D** *45/00, 49/00*
U.S. Cl. 410—41 **9 Claims**



1. A load holder having two selectively usable load engaging means for holding a load, said load holder comprising:

first load engaging means, said first load engaging means including first and second planar load engaging surfaces which intersect one another in an essentially orthogonal manner along a line of intersection;

second load engaging means, said second load engaging means comprising a surface which intersects and is orthogonal to an edge of said first and said second planar members of said first engaging members; and,

means for rigidly bridging said first engaging means and said second engaging means, said bridging means having therein means for receiving a load binding means, said load binding means being of a type which girdles said load.

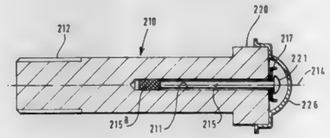
6. A load holder having two selectively usable load engaging means for holding a load, said load holder comprising:

first load engaging means, said first load engaging means including first and second planar load engaging surfaces which intersect one another in an essentially orthogonal manner along a line of intersection;

second load engaging means having the shape of a sector of a hollow cylinder having a load engaging surface comprising an interior surface of said sector, said load engaging surface of said second load engaging means intersecting said edges of said first and second planar surfaces of said first load engaging means; and,

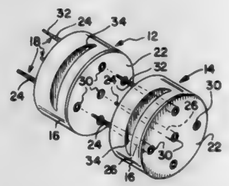
means for rigidly bridging said first engaging means and said second engaging means, said bridging means having therein means for receiving a load binding means, said load binding means being a type which girdles said load.

4,525,114
FASTENER DEVICE
John A. B. Hirst, Wolverhampton, England, assignor to Rotabolt Limited, Dudley, England
Filed Oct. 8, 1981, Ser. No. 309,800
Claims priority, application United Kingdom, Oct. 8, 1980, 8032340; Dec. 5, 1980, 8039044
Int. Cl.³ F16B *31/02*
U.S. Cl. 411—9 **10 Claims**



1. In a device comprising a fastener formed with a screw thread and having a bore extending therein parallel to the longitudinal axis of the thread, and an elongate element in the bore, the improvement wherein one end portion of the element protrudes from the bore and there is provided means which is operative between the fastener and the opposite end portion of the element for preventing movement of said opposite end portion of the element relative to the fastener in at least one axial direction, and wherein when the fastener is in an unstressed condition a member on said one end portion of the elongate element is free to rotate about the longitudinal axis, and means operative when the fastener is subjected to a predetermined tensile stress for bringing said member into contact with the fastener thereby to prevent rotation of said member about the longitudinal axis.

4,525,115
TACK SYSTEM
Ronald S. Garner, Sr., P.O. Box 545, Dayton, Ohio 45402
Filed Apr. 6, 1984, Ser. No. 597,638
Int. Cl.³ F16B *15/00*
U.S. Cl. 411—457 **8 Claims**



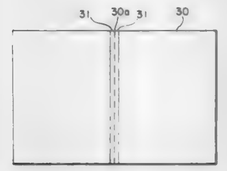
1. For use with bulletin boards and the like, a tack system comprising:

a first tack element having a body including upper and lower opposing faces, pin means protruding outwardly from said lower face, and said upper face having bores therein in a predetermined pattern;

a second tack element having a body including upper and lower opposing faces, and pin means protruding outwardly from said lower face of said second element in said predetermined pattern and shaped to be inserted in said bores so that said second element may be stacked on said first element; and

means for holding said second tack element against said first tack element in stacked relation.

4,525,116
PREFABRICATED BINDABLE SHEET AND BINDING METHOD AND APPARATUS
Albert E. Holmberg, Edina, Minn., assignor to The Holmberg Company, Minneapolis, Minn.
Filed Dec. 27, 1982, Ser. No. 453,814
Int. Cl.³ B42C *9/00*; **B42B** *9/06, 13/00*
U.S. Cl. 412—8 **11 Claims**



7. A continuous method for producing a bound booklet of sheets of paper with printed information on the sheets wherein said sheets are formed from a sheet of paper which is double the size of the ultimate sheet size to be produced and which has a fold line extending across the center of the sheet to designate the ultimate sheet size and which double sheet also has segments of heat-responsive glue along said fold line, said method comprising,

producing printed information on said double size sheet so that two individual sheets are simultaneously printed,

folding each double size sheet along said fold line to form a double sheet assembly wherein said fold line forms the hinge connection between said two sheets with said blue segments being positioned on the outside of said folded double sheet assembly,

assembling said folded sheets with other printed sheets with the glue edges along said fold line being in registration with the edges of adjacent sheets to be bound thereto, pressing said glue edges together, and

applying heat thereto while said sheets are pressed together to activate the glue and bind sheets to said folded sheet assembly while leaving the inside of the fold line free from glue to produce a substantially unrestricted hinge connection between the individual sheets of said folded double sheet assembly within the bound booklet.

9. A prefabricated paper sheet readily bindable into a multiple page booklet and comprising,

a double size sheet,

a fold line formed across the center of said sheet to divide the same into a pair of sheets,

heat-responsive glue segments applied to said paper sheet along a binding line which forms the edge of a bound booklet when assembled with other sheets and which is readily bindable by applying heat and pressure to the glue segments of the assembled sheets,

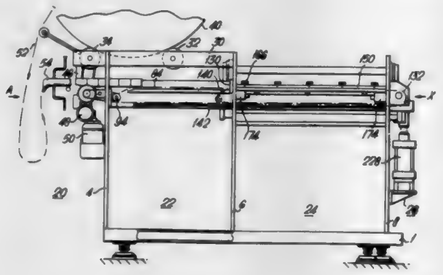
said glue segments being applied to said sheet adjacent said fold line in a manner to expose said glue segments when the double sheet is folded along said fold line.

4,525,117

WIRE BINDING MACHINES

Leonard W. N. Jones, Camberley, England, assignor to James Burn Bindings Limited, Surrey, England

Filed May 17, 1983, Ser. No. 495,439
Claims priority, application United Kingdom, May 21, 1982, 8214896
Int. Cl.³ B42B *4/00, 5/00;* B21F *45/22, 45/00*
U.S. Cl. 412—39 **8 Claims**



1. A machine for binding a packet of perforated sheets into book form, said packet being so bound by a wire binding element closed through the aligned perforations in said packet, said machine comprising

input feed means adapted to supply a continuous length binding element from a source thereof,

cutting means adapted to cut said continuous length binding element into discrete predetermined lengths,

a feed conveyor indexed with said input feed means to deliver said continuous length element from said input feed means to said cutting means,

closing means at a closing station arranged to be fed with said discrete predetermined length elements,

stack means for supporting a stack of perforated sheets at said closing station,

translating means for moving said discrete length elements from said feed conveyor to said closing means, and

a spacing conveyor running parallel to said feed conveyor, said spacing conveyor being laterally spaced from and interposed between said feed conveyor and said closing means at said closing station, said discrete predetermined length elements being translated laterally from said feed conveyor onto said spacing conveyor, after being cut, and thereafter said discrete length elements being translated laterally from said spacing conveyor to said closing means.

4,525,118

BOOK STACKER

Raymond I. Bulka, Oak Lawn; Russell S. Ketcham, Tinley Park, and Kelvin K. Mak, Lyons, all of Ill., assignors to McCain Manufacturing Corporation, Chicago, Ill.

Filed Mar. 7, 1983, Ser. No. 473,135
Int. Cl.³ B65H *31/30*
U.S. Cl. 414—43 **13 Claims**

1. A book stacker in which books making up a partly completed preliminary stack at a halfway station are dropped from the halfway station into a second station therebeneath to come to rest atop a partly completed stack deposited the same way in the second station and comprising:

a shelf at the halfway station for collecting the books comprising the partial stack;

transfer means for feeding the books in a stream one after another to the shelf at the halfway station;

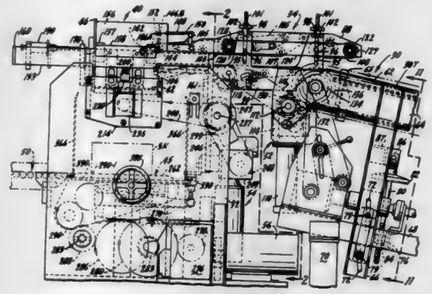
a first conveyor for delivering the books one by one to the transfer means from a lower level;

inclined frame means supporting said first conveyor in an upwardly inclined attitude to meet the transfer means;

means supporting the high end of the frame for vertical adjustment relative to said transfer means;

a normally stationary conveyor at the second station onto which the books in the preliminary stack are dropped from the shelf incidental to achieving a full vertical stack on the conveyor at the second station;

means operable in response to a countdown of books in the preliminary stack for removing the shelf from beneath the preliminary stack after the preliminary stack has been completed;



means operable in response to the achievement of a full stack for operating the conveyor at the second station to deliver to a third station the complete stack of books;

said transfer means including a high speed feed belt driven at a higher speed compared to said first conveyor, said high speed feed belt being interposed between said transfer means and the exit end of said first conveyor to accelerate a book from the conveyor to the transfer means,

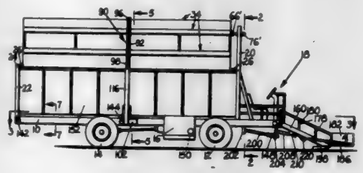
means resiliently supporting the conveyor at the second station to cushion the falling weight of a preliminary stack of books.

4,525,119

APPARATUS FOR COLLECTING AND UNLOADING HAY BALES AND THE LIKE

Frank Cawrse, 35930 Providence School Rd., Lebanon, Oreg. 97355; George F. Cawrse, 38770 Hungry Hill Rd., Scio, Oreg. 97364, and Frank W. Cawrse, 35930 Providence School Rd., Lebanon, Oreg. 97355

Continuation of Ser. No. 65,363, Aug. 9, 1979, abandoned. This application Feb. 16, 1984, Ser. No. 580,841
Int. Cl.³ A01D *87/12;* B60P *1/00*
U.S. Cl. 414—111 **6 Claims**



1. In apparatus for collecting and unloading hay bales and like objects, and comprising:

(a) a mobile vehicle frame,

(b) an elongated framework mounted longitudinally on the vehicle frame for rotation on a horizontal axis,

(c) the framework defining a plurality of longitudinally extending, circumferentially spaced peripheral compartments,

(d) feed conveyor means on the vehicle frame extending longitudinally of and below the rotary framework for registration with each peripheral compartment selectively upon rotation of the framework,

(e) feed conveyor drive means interengaging the vehicle frame and feed conveyor means for moving the later,

(f) shield means mounted on the vehicle frame and extending arcuately upward from opposite sides of the feed conveyor means for enclosing the lower half of the framework for preventing gravity removal of hay bales and the like as the compartments traverse the lower half of rotation of the framework, and

(g) framework drive means interengaging the vehicle frame and framework for rotating the latter stepwise to register each peripheral compartment selectively with the feed conveyor means, the drive means comprising:

(1) an annular ring secured to and encircling the framework centrally of the longitudinal ends thereof and including an outwardly facing annular guide groove having a substantially smooth surface,

(2) an endless flexible drive chain received freely in the guide groove in frictional engagement with the surface thereof,

(3) tightener means on the frame engaging the flexible drive chain for tightening the latter into frictional driving engagement with the surface of the guide groove, and

(4) rotary drive means mounted on the vehicle frame outwardly of the shield means and engaging the drive chain for driving the chain and rotating the framework,

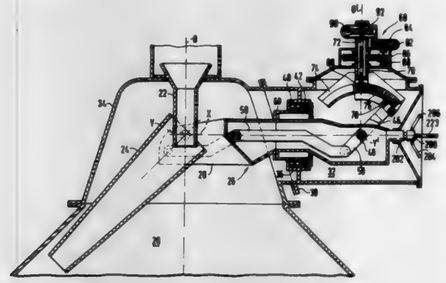
(h) the shield means having an opening therethrough for passage of the drive chain between the annular ring and rotary drive means.

4,525,120

METHOD OF AND APPARATUS FOR CONTROLLABLY CHARGING A FURNACE

Edouard Legille, Luxembourg, and Pierre Mailliet, Howald, both of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Jul. 31, 1981, Ser. No. 288,974
Claims priority, application Luxembourg, Apr. 3, 1981, 83280
Int. Cl.³ F27B *1/20*
U.S. Cl. 414—160 **48 Claims**



8. Apparatus for steering an elongated tubular member positioned within an enclosure, the tubular member having a first longitudinal axis, said apparatus comprising:

suspension fork means, said fork means being rotatably supported in a wall of the enclosure, said fork means including an elongated body portion having a second longitudinal axis, said fork means further including at least a first pair of parallel branches extending from one end of said body portion;

means for pivotally mounting the tubular member adjacent a first end thereof between the branches of said fork means first pair of parallel branches, said mounting means defining a third axis about which the tubular member may pivot, said third axis being transverse to the first longitudinal axis of the tubular member;

control means, said control means being positioned to the exterior of the enclosure, said control means having a fourth longitudinal axis;

pivot means, said pivot means including a rotatable shaft which is engaged by said control means adjacent a first end of said control means, said pivot means shaft defining a fifth axis which is transverse to said fourth axis;

means for imparting motion to said control means at a point displaced from said pivot means to cause said fourth longitudinal axis of said control means to undergo a pattern of movement which it is desired to have the first longitudinal axis of the tubular member follow;

motion transmission means, said motion transmission means extending through said fork means for coupling rotational motion of said control means fourth axis about said pivot means shaft defined fifth axis to the tubular member to thereby cause the tubular member to rotate about said third axis; and

means connecting said pivot means to said fork means whereby rotation of said control means fourth axis about a point of intersection of said fourth and fifth axes is converted into rotation of said fork means about said second longitudinal axis and simultaneous rotation of the tubular member with said means for pivotally mounting the tubular member;

said control means comprising:

rotatable means mounted on said pivot means shaft for rotation therewith, said rotatable means including a driven gear portion;

bracket means, said bracket means supporting said pivot means, said bracket means being rotatable about said fourth axis;

first coupling means for coupling said rotatable means to said fork means, said coupling means including a rotatable connection;

means for imparting rotation to said bracket means whereby said rotatable means and said bracket means may be rotated about said fourth axis; and

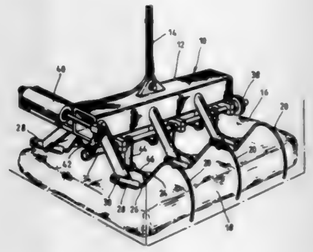
means engaging said driven gear portion of said rotatable means for driving said rotatable means independently of the rotation thereof about said fourth axis, said driving means causing rotation of said pivot means shaft and said first coupling means about said fifth axis.

4,525,121

APPARATUS FOR PICKING UP, CARRYING AND RELEASING ARTICLES

Wesley D. Cawley, 721 Grigsby Dr., Port Neches, Tex. 77651

Filed Mar. 26, 1984, Ser. No. 593,212
Int. Cl.³ B66C *1/59*
U.S. Cl. 414—564 **7 Claims**



1. An apparatus for picking up, carrying and releasing articles comprising,

a support body,

at least one grasping finger on opposite sides of the support body, said fingers shaped in the form of an arc of a circle,

an arm supporting each of the fingers, said arms having first and second ends, the first end of each arm connected to one end of each finger, the first end of each arm being positioned at an angle to the plane of the supported finger, the second end of each arm being at an angle to the first end of the arm,

said second ends of the arms being rotationally supported from the support body, and

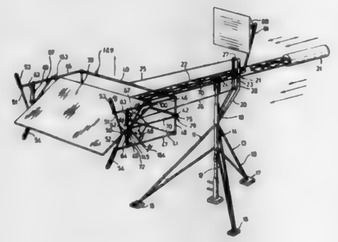
lever arms connected between the support body and the first end of each arm for rotating said first end about the second end whereby the first end of each arm and said fingers follow a circular path for grasping and releasing articles.

4,525,122

WIND-POWERED MACHINE

Ondrej Krnac, 311 Dixon Rd. No. 1007, Weston, Ontario, Canada M9R 1S3

Filed Jul. 18, 1983, Ser. No. 514,867
Int. Cl.³ F03D *5/06*
U.S. Cl. 416—80 **7 Claims**



1. A wind power-generating machine which comprises:

a vane frame and at least one power vane;

vane support means comprising an elongate truss;

tower means for supporting said vane support means;

power actuating means reciprocally movable in response to movement of said power vane;

said power vane being reversibly pivotally mounted in said frame on said elongate truss adjacent a first end thereof for movement about a substantially horizontal axis through a predetermined arc;

said elongate truss being rotatably mounted on said tower means for first movement about a horizontal axis through a predetermined arc in response to vertical movement of said power vane and in a second direction about a vertical axis in response to horizontal movement of said power vane;

a vertical frame mounted for pivotal movement relative to said vane frame,

said vane frame including upper and lower vane arms having spring closed jaws at their outer ends, upper and lower bell cranks connected between the upper and lower jaws, respectively, and the vertical frame;

first spring means between said vane arms and said vertical frame and second spring means between said power vane and said vertical frame;

stop means on said power vane adapted to engage said upper and lower jaws at the upper and lower limits, respectively, of arcuate travel of said power vane,

said jaws being operable by rotation of their respective bell cranks at said upper and lower limits and initiating reversal of the direction of arcuate travel of the power vane through said second spring means; and

a governor means for controlling movement of said power vane,

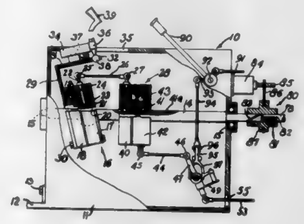
said governor means comprising an arm pivotally mounted on said elongate truss, a governor vane movably mounted on said arm and a cable connecting said governor arm to said upper and lower vane arms.

4,525,123

ROTARY WING AIRCRAFT

Alfred Curci, 183 London Dr., Hamden, Conn. 06514

Filed May 6, 1982, Ser. No. 375,763
Int. Cl.³ B64C *11/30*
U.S. Cl. 416—115 **12 Claims**



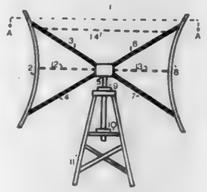
1. In a helicopter, the combination with a power shaft having a main axis and bearings for supporting an even number of blades for individual pivoting about their longitudinal axes, arms mounted with one end on said blades, respectively, for pivoting the latter in the same and opposite directions for cyclic and total pitch control, respectively, of a control lever mounted intermediate its ends on a first pivot with a first axis which lies in a first plane in which said main axis lies, with said control lever having movability of first and second kinds bodily with its pivot axis in said plane and rockable about its pivot axis, respectively, links connecting the opposite ends of said control lever with the other ends of said arms for pivoting said blades in first and second directions on movements of said control lever of said first and second kinds, respectively, an axially immovable control shaft turning with the power shaft and having a universal bearing, a swashplate mounted on said universal bearing and turning with the control shaft, a first operating connection between said swashplate and first pivot, and including a follower member slidable on said control shaft and in follower relation with the swashplate, to impart to said control lever movement of one of said kinds on axial motion of said follower member, a manual control member operatively connected with the swashplate and operable for shifting the latter into any of its universal positions, another manual control member, a second operative connection between said other control member and control lever for imparting to the latter movement of said other kind on manipulating said other control member.

4,525,124

BALANCED STRESS VERTICAL AXIS WIND TURBINE

Thomas A. Watson, and Philip Watson, both of Box 173 Stn. A, Rexdale Ont, Canada M9W 5L1

Continuation-in-part of Ser. No. 385,883, Jun. 7, 1982, abandoned. This application May 13, 1983, Ser. No. 494,295
Int. Cl.³ F03D *3/06*
U.S. Cl. 416—132 B **9 Claims**



1. A vertical axis wind turbine comprising a shaft mounted for rotation about a vertical axis, diagonal radial arms connected in pairs to the shaft and angularily spaced about the shaft, each pair of arms arranged to diverge as they extend

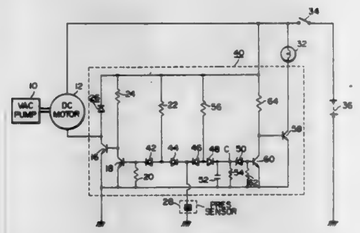
outward from the shaft, each pair of arms have connected to its outer ends an airfoil, the airfoil curved and mounted vertically with its ends pointing away from the shaft; wherein upon rotation a vertical outward force vector is developed in the airfoil, also a vertical inward force vector is developed by the pull in the diagonal arms which is superimposed upon the airfoil, the airfoil and the diagonal arm's parameters are set so that the inward and the outward vertical forces on the airfoil substantially counterbalance each other.

4,525,125

PRESSURE RESPONSIVE PUMP CONTROL SYSTEM HAVING AN ALARM LAMP

Akio Matsumoto, Kanzaki, and Mitsuyoshi Yokota, Ibo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1983, Ser. No. 558,760
Claims priority, application Japan, Dec. 10, 1982, 57-187803[U]
Int. Cl.³ F04B *49/06, 21/00;* **G08B** *21/00*
U.S. Cl. 417—44 **6 Claims**



1. A pump control system comprising a DC motor, a pump driven by said DC motor to generate and supply a pressure to a container, a single pressure sensor for sensing a pressure within said container controlled by said pump, and being operative with a predetermined pressure within said container, a first circuit means responsive to the operation of said single pressure sensor to drive said DC motor, a timing, circuit controlled in response to the operation of said single pressure sensor, an alarm lamp, and a circuit means responsive to an output from said timing circuit means to control the turn-on and -off of said alarm lamp whereby said single pressure sensor provides the sole means for controlling said pump and said alarm lamp.

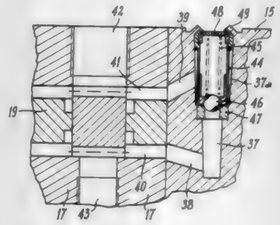
4,525,126

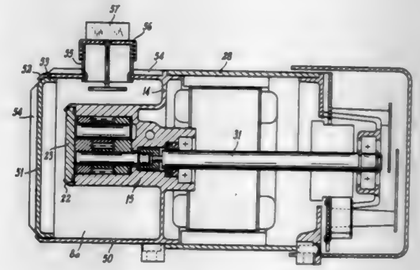
ELECTRO-HYDRAULIC UNIT FOR STEERING, BRAKING, SUSPENSION AND LIKE DEVICES FOR VEHICLES

Roger Laumont, La Varenne St Hilaire, France, assignor to Hydroperfect International H. P. I., Chennevieres, France

Filed Mar. 3, 1983, Ser. No. 471,746
Claims priority, application France, Mar. 4, 1982, 82 03619
Int. Cl.³ F04B *47/08;* **F04C** *13/00;* **B60R** *16/08;* **B62D** *5/06*
U.S. Cl. 417—310 **9 Claims**

1. An electro-hydraulic unit for control devices of vehicles, comprising an electric motor and a hydraulic pump of the gear type, said electric motor having a driving shaft and said hydraulic pump having a driven shaft with said hydraulic pump being driven by the driving shaft of said electric motor and connected to said electric motor, said electric motor and said hydraulic pump having a common interface portion constituting a lateral cheek for said electric motor, and said common interface portion delimiting further a body for said hydraulic pump and having an inner stepped bore, a bearing for supporting said driving shaft of said electric motor, a sealing member surrounding said driving shaft of said electric motor, said bearing and sealing member located in two stepped contiguous portions of said stepped bore, a connecting nut located in a third stepped portion of said stepped bore for connection of said driving shaft of said electric motor with the driven shaft of said hydraulic pump, said common interface portion having





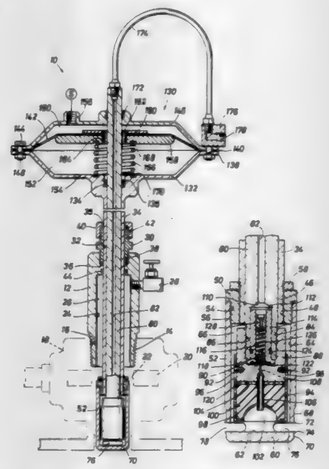
further a recessed bore and channels connecting inlet and outlet ducts of said hydraulic pump with an overpressure valve located in said recessed bore for control of pressure of the outlet of said pump.

4,525,127

FLUID PUMP MECHANISM

Robert H. Welker, Sugar Land, Tex., assignor to Welker Engineering Company, Sugar Land, Tex.

Filed Jan. 5, 1981, Ser. No. 222,362
Int. Cl.³ F04B *43/06*
U.S. Cl. 417—479 **9 Claims**



1. A pump mechanism for pumping measured quantities of fluid, said pump mechanism comprising:

(a) body means adapted to support said pump mechanism

and defining an internal receptacle open at one extremity thereof;

(b) probe means extending in movable sealed relation through said body means, said probe means defining flow passage means;

(c) transducer housing means being supported by said probe means and having a free extremity capable of being extended into a body of fluid to be pumped, said transducer housing means defining pump chamber means therein and further being receivable in protected relation within said internal receptacle of said body means;

(d) wall means being defined at said free extremity of said transducer housing means and forming a wall of said pump chamber means;

(e) a body of elastomeric material being movably positioned within said pump chamber means of said probe means and defining a pumping cavity opening toward said wall means, said body of elastomeric material further defining pumping passage means extending therethrough and communicating with said pumping cavity;

(f) opposed elongated inlet and outlet openings being formed in said transducer housing and being oriented in substantially parallel relation with said wall means, said openings being substantially contiguous with said wall of said pump chamber means and conducting fluid to be pumped to said wall means and said cavity;

(g) means for forcing said body of elastomeric material and said wall means into contact with sufficient force to cause said elastomeric material to be deformed against said wall means and substantially displace said cavity; and

(h) pressure activated valve means in communication with said passage means for allowing unidirectional flow of said fluid from said cavity through said probe means in response to fluid pressure generated upon displacement of said cavity.

4,525,128

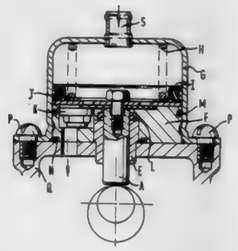
RECIPROCATING EXHAUSTER

John S. Thistleton, Lincoln, England, assignor to Clayton Dewandre Co., Ltd., Lincoln, England

Filed Jun. 9, 1983, Ser. No. 502,839

Int. Cl.³ F04B *21/00*

U.S. Cl. 417—550 **7 Claims**



1. A reciprocating exhauster for mounting on an engine casing to be driven by the engine and comprising a pump member working in a cylinder body so as to define on opposite sides thereof an inlet chamber having an inlet for connection to a vacuum reservoir, and an exhaust chamber having an outlet fitted with an exhaust valve, and a valve arranged to permit fluid to flow from the inlet chamber to the exhaust chamber, the pump member and cylinder body being shaped to minimize the clearance volume of the exhaust chamber wherein the clearance volume of said exhaust chamber is substantially less than the clearance volume of said inlet chamber.

4,525,129

OIL-SEALED VACUUM PUMP

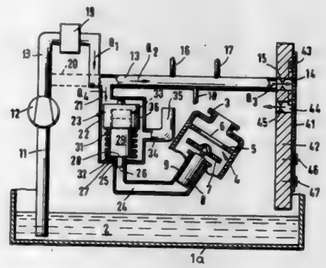
Hanns-Peter Berges; Peter Frieden, both of Cologne, and Wolfgang Leier, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,424

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3150000

Int. Cl.³ F01C *21/04*; F04C *27/02, 25/02*

U.S. Cl. 418—84 **10 Claims**



1. An oil circuit arrangement forming a combination with an oil-sealed vacuum pump having a pump chamber and bearings, said combination comprising:

(a) an oil circuit for supplying said pump chamber and bearings with oil, said oil circuit including first and second branch conduits leading to said bearings and said pump chamber, respectively;

(b) an oil pump coupled to said oil circuit for driving oil therethrough;

(c) valve means coupled to said oil circuit for shutting off oil supply to said pump chamber during standstill of said vacuum pump; and

(d) pressure reducing means coupled to said oil circuit for reducing the oil pressure to atmospheric pressure; said first branch conduit leading to said bearings being situated upstream of, and said second branch conduit leading to said pump chamber and said valve means being situated downstream of said pressure reducing means as viewed in the direction of oil flow in said oil circuit for supplying said pump chamber with oil at atmospheric pressure and for supplying said bearings with oil at higher-than-atmospheric pressure.

4,525,130

ADJUSTABLE MOLDING FRAME

Frederick P. Netznik, 8556 Central Park Ave., Skokie, Ill. 60076

Filed May 7, 1984, Ser. No. 607,933

Int. Cl.³ B29D *27/00*

U.S. Cl. 425—2 **18 Claims**

1. Apparatus for providing a support surface uniquely contoured and configured to a person seated thereon, said apparatus comprising:

a support structure;

a seat pan positioned on said support structure;

a back panel coupled to said seat pan;

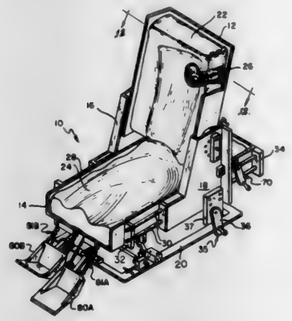
first and second pliable, sealed containers positioned respectively on said seat pan and said back panel;

a deformable material located in said first and second sealed containers;

first and second vacuum pumps coupled respectively to said first and second sealed containers for the evacuation thereof when a person is positioned thereon;

first control means coupling said seat pan and said back panel for adjusting the length of said seat pan in accordance with the dimensions of the person thereon;

second control means coupling said seat pan and said back panel for adjusting the angle therebetween in accordance with the orientation of the person thereon; and



third control means coupling said support structure and said seat pan for rotating said apparatus rearward in orienting the back panel thereof generally horizontally with said person supported primarily thereon.

4,525,131

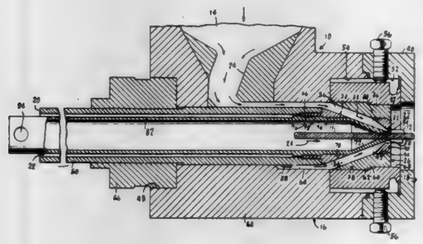
CABLE-COATING EXTRUDER HEAD SYSTEM WITH CHANGEABLE DIE AND GUIDER ELEMENTS

Henry W. Hauser, Jr., Antes Fort, Pa., assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Aug. 29, 1983, Ser. No. 526,962

Int. Cl.³ B29C *30/14*

U.S. Cl. 425—114 **11 Claims**



1. Extruder head apparatus for coating a longitudinally advancing cable with a layer of a fluent coating material, comprising

(a) an extruder head body having a rearward end, a forward end, a central passageway extending between the ends and arranged for substantially axial advance of the cable therethrough, and a lateral passageway for delivering the coating material under pressure to the central passageway from a locality outside the head body;

(b) a die extending across the central passageway at said forward end and defining a die aperture disposed and dimensioned for advance of the cable with clearance therethrough from the central passageway; and

(c) guider means mounted within the central passageway rearwardly of the die for centering the cable in the die aperture, said guider means having an annular lip for closely surrounding the cable adjacent the die and cooperating with the die to define an annular gap around the cable, said guider means further cooperating with the head body to define a passage for conducting the coating material from the lateral passageway through the gap into contact with the cable to apply thereto a coating material layer having a thickness determined by the clearance between the die and the cable;

(d) said guider means including

(i) a generally annular guider body fixedly mounted in said central passageway, extending forwardly of said lateral passageway, and having an internal opening constituting the narrowest constriction within the central passageway rearwardly of the die, and

(ii) a guider insert including said lip, removably received in and detachably engaged by said guider body and extractable and insertable through said rearward end, said guider insert further including an extension projecting rearwardly beyond said rearward end when the guider insert is received in said guider body as aforesaid for manipulation to disengage and extract the guider insert, the guider body and the guider insert being mutually arranged to permit advance of the cable through the central passageway; and

(e) said die including

(i) a die body fixedly mounted in said head body at said forward end, defining a die seat in register with said internal opening, and

(ii) a female die insert removably received in said die seat and defining said die aperture, said die insert and said die seat being mutually shaped to permit rearward removal of the die insert from the die seat and forward insertion of the die insert into the die seat while preventing forward displacement of the die insert beyond the die seat, said die insert having a maximum external transverse dimension sufficiently small to enable the die insert to pass through said internal opening such that the die insert is extractable and insertable through said rearward end when said guider insert is extracted from said guider body.

4,525,132

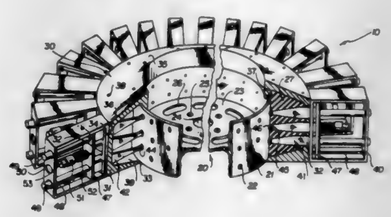
MACHINE FOR MOLDING AND CURING A MASS OF RESILIENT MATERIAL

Rulon A. Williams, 3138 Jean St., Magna, Utah 84044

Filed Nov. 4, 1983, Ser. No. 548,668

Int. Cl.³ B29H *5/02*; B29C *5/00*

U.S. Cl. 425—117 **1 Claim**



1. A machine for molding and curing a mass of resilient material into a desired shape in one operation and bonding the resilient material to an insert material in the same operation, said machine comprises: a mold having a cavity surrounded by a series of fin compressor box means each having a plurality of fins operable to extend inwardly into said mold cavity and upon completion of the curing process of the resilient material to be withdrawn from said mold cavity to permit easy removal of the finished product from said mold cavity, said mold having a closure top; compensating spring means in the fin box means for allowing a variance in the movement of the fins; and air escape holes in said mold cavity wall to allow air in said mold cavity to be ejected therefrom; each of said fins comprising a fin body having a recess in the inner end, a fin spring in said recess, a retractable shaft in said recess, a retainer O ring on said shaft, and a rim seal on said shaft, said retractable shafted being telescope into said recess of said fin body when the rim seal in tandem with the retractable shaft is pushed against and meets resistance against a section of said mold cavity wall as the fins are actuated into said mold cavity, actuating means for telescoping said fins resulting in a larger mass of fin bodies displacing a smaller mass of retractable shafts within said closed mold cavity after said mold cavity is

filled with said resilient material whereby excess air is forcably ejected from said mold cavity permitting the resilient material to fill the voids in said mold cavity from the pressure caused by said displacing fin bodies; each said fin body further having an air passage therethrough in its outer end so that air circulates freely through said fin bodies to avoid the build-up of a differential pressure therein that would hinder the intended movement of the fins and so that a fluid of a controlled temperature can be circulated through said air passage to aid in heating and cooling the resilient material to be cured.

4,525,133

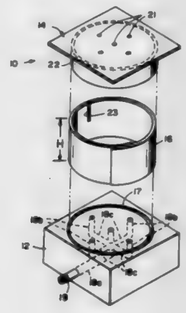
APPARATUS FOR PACKAGING ARTICLES

Conrad E. Bergmann, 1365 Lincoln Ave., San Jose, Calif. 95125

Filed Sep. 29, 1982, Ser. No. 427,695

Int. Cl.³ B29D *27/00*

U.S. Cl. 425—120 **10 Claims**



1. A packaging system for encapsulating an article within a solid plastic foam material comprising:

(a) a base adapted to support an article to be encapsulated within a solid plastic foam material, said base being formed with a passageway in communication with an inlet orifice formed in said base and in communication with an outlet orifice formed in said base;

(b) a wall enclosure disposed on said base and surrounding the area adapted to support the article on said base, said wall enclosure being disposed to form a mold cavity in communication with said outlet orifice;

(c) a cover disposed across the upper end of said wall enclosure above the article; and

(d) means introducing an expandable plastic foam material in liquid form into said inlet orifice, said expandable plastic material in liquid form advances through said passageway and is discharged from said outlet orifice into the space defined by said wall enclosure, said cover and said base for encapsulating the article within the plastic foam material in liquid form, said plastic foam material in liquid form solidifies into a solid plastic foam material for packaging the article within the solid plastic foam material.

4,525,134

APPARATUS FOR MAKING A MULTI-LAYER INJECTION BLOW MOLDED CONTAINER

Robert J. McHenry, St. Charles, and Martin A. Ryan, Geneva, both of Ill., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 59,375, Jul. 20, 1979, abandoned. This application Nov. 25, 1981, Ser. No. 324,824

Int. Cl.³ B29D *23/02*; **B29F** *1/06, 1/10*

U.S. Cl. 425—130 **18 Claims**

1. Apparatus for making a multi-layer rigid article, comprising:

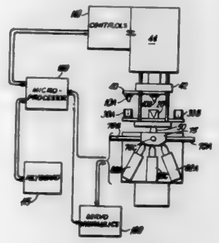
(A) an injection mold and a core pin which together define a cavity for molding a parison having a bottom portion, the cavity having an entrance at the bottom portion of the parison,

(1) an injection nozzle having an exit communicative with the entrance, a flow path for each of three polymer streams, and exit orifices for the polymer streams communicative with said nozzle exit,

(2) means for independently commencing in the nozzle exit the flow of a first polymer stream to become the inside surface layer of the parison and the flow of a second polymer stream to become the outside surface layer of the parison, and the flow of a third polymer stream between the first and second polymer streams to become an inner layer of the parison,

(3) means for independently controlling the flow of each of the three polymer streams relative to each other during each injection cycle,

(4) means for independently terminating the flow of each of the polymer streams, operable to terminate each or any of said polymer streams independently of one an-



other and at predetermined including differing times during each injection cycle,

(5) means associated with the independent commencing means, the independent controlling means and the independent terminating means, for coordinating their respective functions in a predetermined manner during the injection cycle, to permit termination of the flow of the first polymer stream, then termination of the flow of the third polymer stream, and thereafter termination of the flow of the second polymer stream, to thereby enable the apparatus to provide the article with an inner layer formed from the third polymer stream that is continuous and is completely encapsulated within the surface layers,

(b) means for transferring the injection molded parison to a blow molding cavity having the configuration of the article,

(C) means for inflating the parison in the blow molding cavity to form the article.

4,525,135

APPARATUS FOR MOLDING AND PERFORATING A FRP SHEET

Alexandre Forestier, Vaux le Penil; Alain A. Pluquet, Melun; Roger A. Rosa, Morangis; Mansour Tabet, Melun, and Pierre M. Teysseyre, Juvisy sur Orge, all of France, assignors to S.N.E.C.M.A., Paris, France

Division of Ser. No. 342,733, Jan. 26, 1982, Pat. No. 4,449,607. This application Jan. 26, 1984, Ser. No. 574,166

Claims priority, application France, Jan. 29, 1981, 81 01670

Int. Cl.³ B29C *1/14, 17/14*

U.S. Cl. 425—290 **4 Claims**

1. Apparatus for molding a perforated panel having tubular protrusions surrounding the perforations on one side of each panel, said apparatus comprising:

(a) a fixed mold part comprising:

(i) a first cooling plate assembly in which a water circulation cavity is formed;

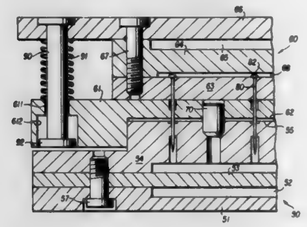
(ii) a molding form which rests on said first cooling plate assembly, said molding form having a plurality of cylindrical recesses in the working face thereof and through holes therethrough which are concentric with said cylindrical recesses; and

(iii) first means for assembling said first cooling plate assembly and said molding form and

(b) a movable mold part comprising:

(i) a second cooling plate assembly in which a water circulation cavity is formed;

(ii) a pin support plate resting on said second cooling plate assembly, a plurality of pins being mounted in said pin support plate, said pins being sized, shaped, and positioned so that, when the apparatus is in use, each one of said pins extends through a corresponding one of said cylindrical recesses and into a corresponding one of said through holes;



(iii) a molding counterform which rests on said pin support plate; and

(iv) second means for assembling said second cooling plate assembly and said pin support plate,

whereby, during use of the apparatus to mold a panel from a roughcast comprising a stack of precut layers of preimpregnated mat comprising glass felt having short fibers of glass held together by epoxy resin, said movable mold part is closed over said fixed mold part to define a molding cast therebetween and said plurality of pins pass through the roughcast, pushing aside the glass fibers and forcing them into said plurality of cylindrical recesses, after which said pins enter said through holes, whereby a perforated panel having tubular protrusions surrounding the perforations on one side of the panel is formed.

4,525,136

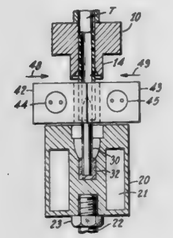
APPLICATION FOR FORMING A PLASTIC TUBE COUPLING

William W. Rowley, 11524 Wilbert Rd., Chardon, Ohio 44024

Division of Ser. No. 338,308, Jan. 11, 1982, Pat. No. 4,446,084. This application Nov. 30, 1983, Ser. No. 556,395

Int. Cl.³ B29C *24/00, 17/00*

U.S. Cl. 425—384 **6 Claims**



1. A two parts mold for reforming plastic tube ends comprising two separable mold parts, one of which has a hole therethrough, such tube ends projecting one at a time axially through said one of the mold parts toward the other of the mold parts, a pin corresponding to the internal diameter of such tube ends mounted on and projecting axially from the other of the mold parts and entering the tube end when inserted through said one of said mold parts means to heat said pin thus to heat such tube end from the interior thereof before the mold parts are closed and means to insulate said pin from the other of the mold parts.

4,525,137

LIQUID FUEL COMBUSTION DEVICE

Mitsuharu Tomioka, Kashihara, and Mitsuhiro Imajima, Yamatokoriyama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

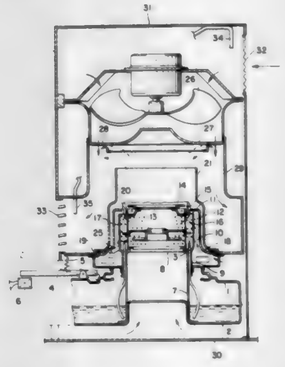
PCT No. PCT/JP82/00102, § 371 Date Nov. 22, 1982, § 102(e) Date Nov. 22, 1982, PCT Pub. No. WO82/03444, PCT Pub. Date Oct. 14, 1982

PCT Filed Apr. 5, 1982, Ser. No. 451,211

Claims priority, application Japan, Apr. 6, 1981, 56-51462; Apr. 9, 1981, 56-54134

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—76 **4 Claims**



1. A liquid fuel combustion device comprising:

a fuel tank for containing liquid fuel;

a combustion section including a first flame cylinder, a second flame cylinder surrounding said first flame cylinder, and an outer cylinder surrounding said first and second flame cylinders;

a wick having one end in said fuel tank for being immersed in the liquid fuel and the other end disposed between said first and second flame cylinder so as to draw the fuel to said other end;

means for guiding a flow of air to said combustion section to provide oxygen at said other end of said wick to support combustion between said first and second flame cylinders of fuel evaporated from said other end of said wick, such that the heat produced by the combustion serves to evaporate the fuel from said other end of said wick;

means, having an oxygen level indicative output, for detecting the oxygen level in the air guided to said combustion section by said guiding means, said oxygen level detecting means including:

first temperature detecting means for detecting the temperature of combustion exhaust gas resulting from combustion in said combustion section,

second temperature detecting means for detecting the temperature of the air guided to said combustion section by said guiding means, and

means for producing a temperature difference signal indicative of the difference between the respective temperatures detected by said first and second temperature detecting means;

means, adjacent said wick, for electrically heating the liquid fuel; and

means, responsive to said oxygen level indicative output, for energizing said electrically heating means so as to assist

evaporation of liquid fuel from said wick, when the oxygen level in the air guided to said combustion section is below a first level, and for stopping combustion of fuel in said combustion section when the oxygen level is below a second level below said first level;

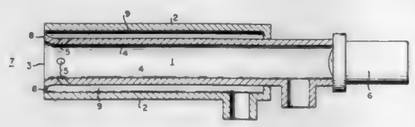
said energizing and stopping means including means, responsive to said temperature difference signal, for energizing said electrically heating means when the temperature difference is below a first temperature value, and for stopping combustion of fuel in said combustion section when the temperature difference is below a second temperature value below said first temperature value.

4,525,138

FLAME SIGNAL ENHANCER FOR POST-MIXED BURNER

William J. Snyder, White Plains; Raymond H. Miller, Hopewell Junction, and Hisashi Kobayashi, Putnam Valley, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 28, 1983, Ser. No. 546,479
Int. Cl.³ F23C *7/00*
U.S. Cl. 431—187 **9 Claims**



1. An apparatus for enhancing the flame signal of a post-mixed burner without significantly altering the flame characteristics comprising:

(a) a passageway formed by a substantially cylindrical tube wall comprised of oxidation resistant material, said passageway having a discharge end;

(b) a tube circumferentially around and axially along the substantially cylindrical tube wall defining an annular flow area between the tube and substantially cylindrical tube wall;

(c) a flame detector which sights down through the passageway;

(d) at least one connecting channel through the substantially cylindrical tube wall proximate the discharge end, communicating between the annular flow area and the passageway; and

(e) a restriction in said annular flow area between the connecting channel and the discharge end such that the pressure of fluid in the annular flow area exceeds the pressure of fluid in the passageway.

4,525,139

BURNER IN A DRUM

Karl R. Bleimann, Matthews; Michael J. Fookes, Salisbury; Richard W. McVicker; John W. Munn, both of Charlotte, and Eugene R. Nelson, Spencer, all of N.C., assignors to Fuchs Systems, Inc., Salisbury, N.C.

Filed Dec. 19, 1983, Ser. No. 562,641
Int. Cl.³ F23C *5/06*
U.S. Cl. 431—189 **16 Claims**

1. A burner assembly comprising:

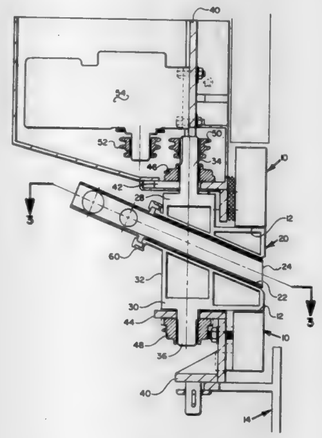
a gland having an opening therethrough;

a mounting frame;

a drum having a curved face, said drum being adapted to fit in to the opening in said gland;

a pivot pin extending from each end of said drum, engageable in said mounting frame and adapted to be journaled for rotation therein;

said drum being provided with a tubular sleeve extending from the curved face through the opposite wall of said drum; and



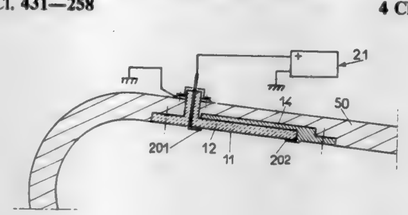
reversible drive means engageable with one of said pivot pins for rotating said pivot pin and said drum through an arc.

4,525,140

IGNITION METHOD AND IGNITER DEVICE FOR IGNITING CARBURATED GASEOUS MIXTURES

Serge Larigaldie, Chatenay-Malabry, and Gérard Labaune, Palaiseau, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales dit O.N.E.R.A., Chatillon, France

Filed Dec. 22, 1981, Ser. No. 333,272
Claims priority, application France, Dec. 29, 1980, 80 27717
Int. Cl.³ H01T *300;* F23Q *3/00*
U.S. Cl. 431—258 **4 Claims**



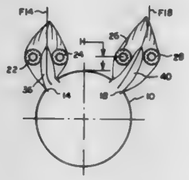
1. A spark discharge device having a controlled discharge path between first and second spaced points comprising first and second electrodes spaced from each other by a solid dielectric having first and second opposed surfaces and an edge between said surfaces, the second surface being positioned to be exposed to carburated gases to be ignited along the discharge path, the first surface being positioned so it is not exposed to the carburated gases, the first and second electrodes being respectively fixedly positioned on the first and second surfaces, the first electrode including a portion astride said edge at the second point and including a portion folded on and in contact with the second surface at the second point, the first electrode further having an elongated path portion disposed on said first surface extending to said first point and defining the discharge path between the first and second points, the second electrode having a small discharge area into the dielectric relative to the area of the elongated path portion along the dielectric, the small area being positioned so it is aligned with the first point, and means for applying a pulsed discharge voltage between the electrodes so that a discharge is established on the second surface between the first and second points along a path corresponding with the path of the first electrode elongated path portion.

4,525,141

REGULATION OF BLUE FLAME COMBUSTION EMISSIONS

Douglas W. DeWerth, Cleveland, and Roger D. Sheridan, Brunswick, both of Ohio, assignors to Gas Research Institute, Chicago, Ill.

Filed Jul. 11, 1983, Ser. No. 512,328
Int. Cl.³ F23D *13/12*
U.S. Cl. 431—347 **33 Claims**



8. An atmospheric burner assembly including an array of ports adapted to have a corresponding array of blue flames extending therefrom during combustion of a fuel gas and a flame insert member for reducing the NO_x emission of the burner assembly, said array of flames tending to assume a normal combustion position during combustion under the influence of the natural buoyancy of the flames during combustion, said flame insert member being rigidly mounted to said burner assembly and providing an assembly of elongated insert elements which are spaced from each other and from the burner, pairs of said insert elements extending along said array of ports and including exterior surface portions providing spaced insert surfaces for contacting said array of flames and reducing the peak flame temperature by radiating heat energy away from the flames, said flames having inner cones, said insert surfaces inducing said inner cones of said flames to extend between and engage said insert surfaces during combustion.

4,525,142

PROCESS FOR TREATING FLUE GAS WITH ALKALI INJECTION AND ELECTRON BEAM

Robert J. Gleason, and Paul L. Feldman, both of Somerville, N.J., assignors to Research-Cottrell, Inc., Somerville, N.J.

Filed Jun. 11, 1984, Ser. No. 619,371
Int. Cl.³ C01B *21/00, 17/00;* B01J *8/00, 1/10*
U.S. Cl. 423—235 **12 Claims**

1. A process for removing pollutants comprising either sulfur oxides or nitrogen oxides or both from effluent gas, the steps comprising:

(a) injecting alkali reagent into the combustion zone of a combustion boiler fired by fuel selected from the group of pulverized coal, liquid hydrocarbon, or mixture thereof, some of said alkali reagent reacting with sulfur oxides in the effluent gas to form a reaction product;

(b) passing said effluent gases and said unreacted alkali out of said combustion boiler and into a cooling stage and cooling said effluent gases and unreacted alkali reagent to below 200° F. such that an additional amount of said alkali reagent react with sulfur oxides in the effluent gas to form a reaction product;

(c) passing the cooled effluent gas and remaining unreacted alkali reagent into an irradiation chamber;

(d) irradiating the effluent gas and unreacted alkali reagent with ionizing radiation in the irradiation chamber causing said unreacted alkali reagent to convert gaseous either sulfur oxides or nitrogen oxides or both either into mist or solid particles or both; and

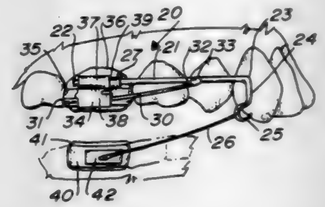
(e) subjecting the irradiated effluent gas to particulate collection in a particulate collection device.

4,525,143

ORTHODONTIC DEVICE TO SERVE AS REMOVABLE ANCHORAGE FOR ELASTIC TRACTION BETWEEN UPPER AND LOWER MOLARS

Richard M. Adams, 31 McAllister Ave., Kentfield, Calif. 94904

Continuation-in-part of Ser. No. 564,231, Dec. 21, 1983, abandoned. This application Mar. 22, 1984, Ser. No. 592,407
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—5 **22 Claims**



1. An orthodontic installation providing a removable anchorage for elastic traction between upper and lower molars, comprising:

a first metal band for attachment around an upper molar, said band having at least one buccal tube,

an assembly comprising a smaller-diameter wire having a posterior end engaging said band, a larger-diameter wire having a posterior end entering said buccal tube from the anterior side of said first band, connecting means connecting said wires together anteriorly of their posterior end, stop means on said assembly to engage a said tube, to limit the length of entry into said tube, and a short hook extending down from the anterior end of said larger-diameter wire,

a second metal band encircling a lower molar corresponding to said upper molar, and having anchor means on its buccal side, and

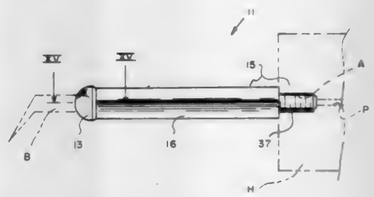
an elastic band joining said lower molar anchor means to said upper hook.

4,525,144

DENTAL ATTACHMENT

Bobby D. Fritz, 801-D Osler Dr., Jonesboro, Ariz. 72401

Filed Aug. 11, 1983, Ser. No. 522,462
Int. Cl.³ A61C *1/07*
U.S. Cl. 433—118 **1 Claim**



1. A dental surgical tool comprising:

(a) an air delivery-type vibratory instrument including a hand-held handle having a fluid passageway therethrough, said handle having a threaded aperture therein;

(b) a cutting blade having a substantially flat shank portion; and

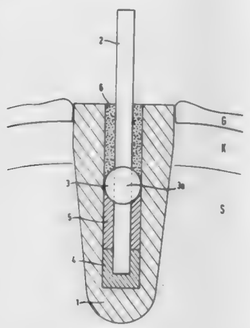
(c) attachment means for attaching said blade to said handle of said vibratory instrument, said attachment means including a collet member having a first end and a second end, said second end of said collet member having a slot receiving said shank portion of said blade, at least a portion of the outer surface of said second end of said collet member flaring outwardly away from said first end, at least a portion of the outer surface of said first end of said collet member being threaded, said attachment means including a sleeve member having a first end and a second end, at least a portion of said first end of said sleeve member being threaded and being received in said threaded aperture of said handle of said vibrating instrument, said second end of said sleeve member having a threaded cavity receiving the threaded portion of said first end of said collet member to cause said blade to be wedged within said slot in said collet member.

4,525,145

CONNECTING DEVICE FOR JOINING A SUPERSTRUCTURE ELEMENT WITH AN IMPLANT MEMBER

Hans Scheicher, Rondell Neuwittelsbach 4, 8000 Munich 19; Dieter Siegele, Freiburg, and Uwe Soltesz, Merzhausen, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angwandten Forschung e.V., Freiburg and Hans Scheicher, Munich, both of, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,630
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **15 Claims**



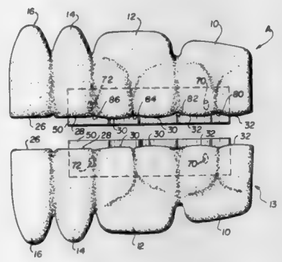
1. An endo-osseous implant adapted to connect a superstructure to the bone and to minimize stress peaks along the length of said implant thereby minimizing bone reduction or degradation, which comprises: an implant member having a bottom part adapted to be embedded in the bone, and having a bore extending therein which is closed at the bottom and open at the top, a rod having a high modulus of elasticity inserted in the bore of said implant member, said rod having a cross-sectional area smaller than that of said bore, and a length greater than that of said implant member, whereby one end thereof extends beyond the open end of said bore; means at the base of said implant member for securing the other end of said rod; projection means essentially surrounding said rod having a cross-sectional area essentially the same as the bore of said implant member, said projection means being located in said bore at a point ranging from about 0–40% of the distance from the middle of the bone embedded part of the implant member measured toward the open end of said bore; and means provided on said one end of said rod for securing a superstructure.

4,525,146

NATURAL APPEARING POSTERIOR TEETH FOR DENTURE PLATES AND THE LIKE

Arnold Lewis, R.D. 4, Cadiz, Ohio 43907, and Norman R. Hagen, 1463 Shirley Ave., Tacoma, Wash. 98406

Filed Dec. 19, 1983, Ser. No. 562,478
Int. Cl.³ A61C *13/08*
U.S. Cl. 433—198 **12 Claims**



1. Natural appearing posterior teeth for denture plates and the like comprising:

(a) a plurality of generally longitudinally aligned interconnected synthetic teeth, including at least a first and a second molar and a bicuspid;

(b) each of said teeth including a crown;

(c) cutting bar means having substantial height secured in said at least a first and second molar and a bicuspid and including a portion extending a relatively short distance above the crown of each of said at least a first and second molar and a bicuspid for providing a masticating surface;

(d) said cutting bar means being continuous and of a generally sinusoidal configuration and including a plurality of crests;

(e) a first crest disposed in said first molar and standing generally longitudinally and laterally a substantial distance along said first molar crown;

(f) a plurality of crests disposed in said second molar, each of said plurality of crests extending generally longitudinally and laterally along said second molar crown a distance less than said first distance;

(g) a last crest disposed in said bicuspid and extending generally longitudinally and laterally a substantial distance along said bicuspid crown and wherein said plurality of crests include at least two crests extending in the same direction and having a trough to peak spacing less than the trough to peak spacing of said first and last crests.

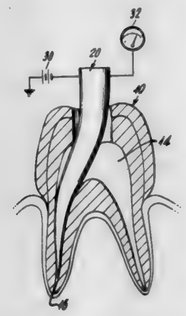
4,525,147

ROOT CANAL IMPLANT, PROXIMITY INDICATIVE, AND METHOD OF IMPLANTATION

Richard J. Pitz, 2 E. 65th St., New York, N.Y. 10021, and Ezekiel J. Jacob, 25 Monroe Pl., Brooklyn, N.Y. 11201

Filed May 31, 1983, Ser. No. 499,392
Int. Cl.³ A61C *5/02*
U.S. Cl. 433—224 **5 Claims**

1. A dental root canal implant comprising a unitary structure of thermoplastic resin and electrically conductive carbon fibers, whereby said implant is capable of conducting electricity



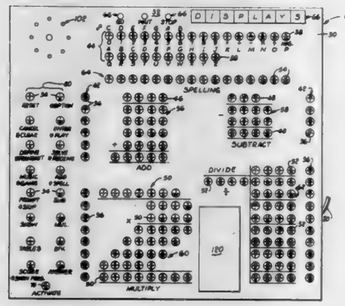
for measuring the proximity of the implant to the apex of a root canal and for heating the thermoplastic resin.

4,525,148

MULTI-MODAL EDUCATIONAL AND ENTERTAINMENT SYSTEM

Sarukkai R. Narayanan, 2120 NW. 113th St., Oklahoma City, Okla. 73120

Filed Mar. 31, 1983, Ser. No. 462,675
Int. Cl.³ G09B *7/00*
U.S. Cl. 434—340 **31 Claims**



1. An improved multi-modal automated educational and entertainment device comprising:

a housing;

logic means for processing and comparing preprogrammed data with input and control data;

memory means for storing programs and input data, the memory means being operably connected to the logic means;

a plurality of first input means for providing control signals and predefined data signals to the logic means, the first input means forming a plurality of non-relational sections within predefined portions of the housing;

a plurality of second input means for providing location indication signals representing the location of variable data, the second input means forming at least one relational section within a predefined portion of the housing; and

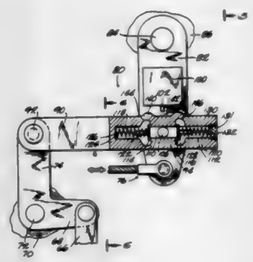
stylus means for selectively activating the first and second input means, said stylus means including marking means for marking said second input means, said relational section arranged to require relational positioning of input data by the stylus means that corresponds to required manual activities utilized in solving mathematical problems and the like.

4,525,149

MARINE PROPULSION DEVICE INCLUDING IGNITION INTERRUPTION MEANS TO ASSIST TRANSMISSION SHIFTING

George L. Broughton; Jeffrey P. Higby, both of Waukegan, Ill., and Robert F. Young, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 16, 1982, Ser. No. 369,072
Int. Cl.³ B63H *5/06*
U.S. Cl. 440—1 **7 Claims**



1. A marine propulsion device including an internal combustion engine, a propulsion unit, a propeller shaft rotatably mounted in said propulsion unit and carrying a propeller, a drive shaft rotatably mounted in said propulsion unit and driven by said internal combustion engine, a transmission drivingly connecting said drive shaft with said propeller shaft and shiftable between a drive position and a neutral position, a movable first member operably connected to said transmission for shifting thereof between a drive position and a neutral position in response to movement of said first member, a second member movable in response to shifting actuation by an operator, a third member connected to said first member, a fourth member connected to said second member for pivotal movement therebetween and connected to said third member for translatory movement therebetween from a reference position whereby to obtain translatory movement of said third member relative to said second member, means releasably holding said fourth member against movement relative to said third member and from the reference position in the absence of shift resistance greater than a predetermined value, and means for selectively interrupting engine ignition only in response to relative movement of said third and fourth members.

4,525,150

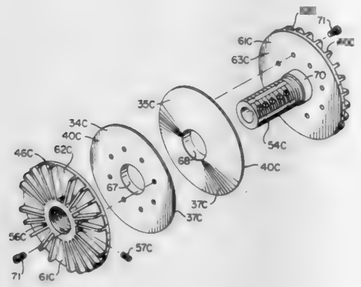
BELT PULLEY AND METHOD OF MAKING THE SAME

Terrence R. Quick; Paul M. Standley; Mark P. Foley, all of Springfield; Anderson W. Howerton, Christian County; Joseph P. Miranti, Jr., Porter Township, Christian County; Larry R. Oliver; Gerald C. Holloway, Jr., both of Springfield, and Kenneth D. Richmond, Garden Grove Township, Christian County, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Aug. 30, 1982, Ser. No. 413,031
Int. Cl.³ F16H *57/04*
U.S. Cl. 474—93 **10 Claims**

1. In a belt pulley having a hub and a peripheral groove for receiving part of an endless belt therein that is to drive said pulley or be driven thereby whereby said pulley is adapted to be rotated about a longitudinal axis of said hub, said pulley having a pair of opposed facing sides defining at least part of said groove therebetween and having a pair of oppositely facing outboard sides, said sides each having an inner peripheral portion and an outer peripheral portion, said pulley having a plurality of circumferentially spaced apart and radially disposed substantially straight vanes extending outwardly from said outboard sides thereof, each said vane having an inner peripheral end and an outer peripheral end respectively disposed adjacent said inner peripheral portion and said outer

peripheral portion of its respective outboard side and having an outer edge that is disposed substantially transverse to said longitudinal axis of said hub from substantially said inner peripheral end thereof to said outer peripheral end thereof and is spaced outwardly from said respective outboard side from substantially said inner peripheral end thereof to said outer peripheral end thereof whereby said vanes are adapted to act



on fluid adjacent said pulley to tend to cool said pulley with said fluid, the improvement comprising a pair of plate means respectively carrying said vanes for said outboard sides of said pulley and being respectively secured to said outboard sides of said pulley to rotate in unison therewith, each said plate means having part of said hub carried thereby and being secured to said part of said hub of the other plate means whereby said parts define said hub of said pulley.

4,525,151

TIMING ADJUSTMENT MECHANISM IN WRAPPING CONNECTOR DRIVING DEVICE

Tsutomu Tomita, Okazaki; Kimihide Horio, and Tadahisa Naganawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 7, 1982, Ser. No. 433,280
Claims priority, application Japan, Mar. 8, 1982, 57-36173
Int. Cl.³ F16H *7/08*
U.S. Cl. 474—101 **11 Claims**

1. A multi-shaft endless connector driving device having a timing adjustment mechanism, the device comprising:

first and second rotatable shafts;

a first drive pulley fixedly mounted on the first rotatable shaft;

a second drive pulley fixedly mounted on the second rotatable shaft, said second pulley fitting tightly on the shaft and being seated on an end surface of said shaft;

an endless non-slip connector trained around said first and second pulleys for transmitting a driving force between said pulleys; and

a timing adjustment mechanism for adjusting the angular relation between the first and second rotatable shafts, the timing adjustment mechanism including:

an idle pulley lever;

bearing means supporting the idle pulley lever for pivoting motion about the axis of rotation of said second rotatable shaft;

a first idle pulley rotatably secured to the idle pulley lever and contacting the endless connector on one side of, and adjacent to, the second drive pulley;

a second idle pulley rotatably secured to the idle pulley lever and contacting the endless connector on the other side of, and adjacent to, the second drive pulley; and

means for pivoting and holding the idle pulley lever within a predetermined angular range for adjusting the angular relation between the first and second rotatable shafts, wherein

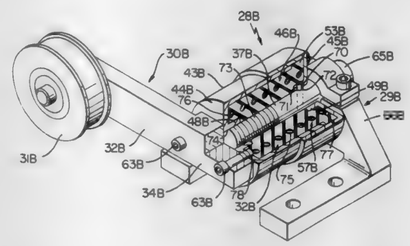
said bearing means supporting the idle pulley lever for pivoting motion about the axis of rotation of the second shaft is coplanar with the second drive pulley and the first and second idle pulleys, whereby the resultant of tension forces in the endless connector acting on the first and second idle pulleys exerts no bending moment on said bearing means.

4,525,152

BELT TENSIONER AND METHOD OF MAKING THE SAME

Billy L. Speer, Wilson "B" Township, Greene County; Lee R. Burris, Porter Township, Greene County, and Jerry W. Rogers, Wilson "A" Township, Greene County, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Jul. 27, 1982, Ser. No. 402,404
Int. Cl.³ F16H *7/12*
U.S. Cl. 474—133 **10 Claims**



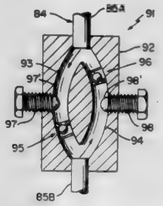
1. In a tensioner for a power transmission belt or the like that is adapted to be operated in an endless path, said tensioner comprising a support means for being fixed relative to said belt, a belt engaging means carried by said support means and being movable relative thereto, polymeric spring means being operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, and coiled mechanical spring means also being operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt whereby said polymeric spring means and said mechanical spring means combine to define the tensioning force for said belt while said polymeric spring means additionally tends to dampen the movement of said belt engaging means relative to said support means, the improvement wherein said mechanical spring means is substantially completely embedded in said polymeric spring means so that said mechanical spring means is substantially completely engaged and surrounded by said polymeric spring means, said mechanical spring means comprising a compression spring.

4,525,153

BELT TENSIONER AND METHOD OF MAKING THE SAME

Leslie B. Wilson, Reeds Spring, Mo., assignor to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 296,695, Aug. 27, 1981, Pat. No. 4,411,638. This application Jul. 21, 1983, Ser. No. 516,009
The portion of the term of this patent subsequent to Oct. 25, 2000, has been disclaimed.
Int. Cl.³ F16H *7/12*; F16F *9/48*
U.S. Cl. 474—138 **16 Claims**



1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a support means for being fixed relative to said belt, a belt engaging means carried by said support means and being movable relative thereto, mechanical spring means operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, and dampening means to dampen the movement of said belt engaging means relative to said support means with a restricting force of said dampening means, said dampening means comprising fluid dampening means operatively associated with said support means and said belt engaging means to dampen the movement of said belt engaging means relative to said support means in at least one direction of movement thereof, the improvement wherein said dampening means comprises a closed fluid loop arrangement that has means that dampens the movement of said belt engaging means with a greater said restricting force when said belt engaging means is being moved in one direction relative to said support means than said restricting force of said dampening means when said belt engaging means is being moved in the opposite direction relative to said support means.

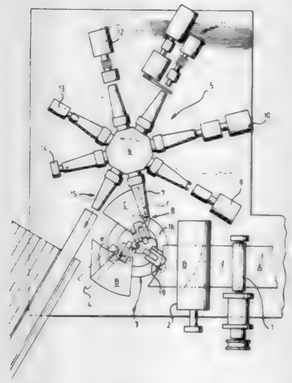
4,525,154

FOIL TRANSFER DEVICE FOR AN INSTALLATION FOR MANUFACTURING HOLLOW TRUNCATED CONE SHAPED ARTICLES AND IN PARTICULAR WINE BOTTLE CAPS

Bernard Sauget, Plaisir, France, assignor to Construction-Gerance-Exploitation "CONGEX" , Les Clayes Sous Bois, France

Filed Nov. 4, 1983, Ser. No. 548,835
Claims priority, application France, Nov. 10, 1982, 82 18932
Int. Cl.³ B31B *49/02*
U.S. Cl. 493—154 **9 Claims**

1. An installation for manufacturing, from flexible foils, hollow truncated cone shaped articles and in particular caps for wine bottles with a widened neck, this installation comprising a pre-cutting out post (2) where foil blanks (B) are cut out in succession from a continuous strip (A), a finishing cutting out post (4) where foils (C) having the final required dimensions are produced from these blanks, a rolling up post (8) where each of these foils is rolled on a respective truncazted cone shaped sleeve (7) of a device (5) for shaping hollow articles, adapted to be driven with a stepped rotational movement, and a transfer device (3) which moves the foil blanks one by one between the pre-cutting out post (2) and the finishing cutting out post (4), then brings the foils from this latter to the rolling up post (8), this installation being characterized in that the transfer device comprises at least one gripping member (19) mounted for pivoting about a first axis (19*a*) on a support (16) which is itself adapted to be moved in synchronism with the stepped rotation of the shaping device (5), by three successive angular steps per revolution about a second axis (16*a*) with respect to which the precutting out (2), finishing cutting out (4) and rolling up (8) posts of the installation are centered, so that between the three angular rotations of its support, the gripping



member (19) is immobilized successively in a first position (P1) in which it grasps a foil blank opposite the pre-cutting out post (2), a second position (P2) in which it presents this blank under the finishing cutting out post (4) and a third position (P3) in which it releases the cut out foil opposite the rolling up post (8), the transfer device (3) further comprising a mechanism (24) for orientating the gripping member (19) for causing it to pivot through a preset angle about the said first axis (19*a*), between its first and its second positions (P1, P2), then holding it as far as its third position (P3) in the orientation which it has in its second position (P2) and placing it again in its first position (P1) in its starting orientation and means for adjusting the starting orientation of the gripping member (19) depending on the conicity to be given to the finished hollow articles.

4,525,155

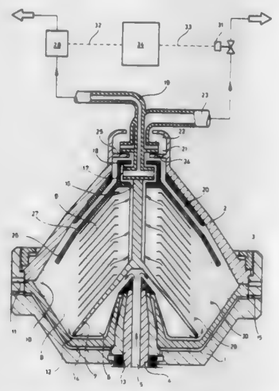
CENTRIFUGAL SEPARATOR AND METHOD OF OPERATING THE SAME

Vilgot Nilsson, deceased, late of Hägersten, Sweden (by Mary Nilsson and Goran Nilsson, legal representatives), assignor to Alfa-Laval Marine and Powering Engineering AB, Tumba, Sweden

Filed Apr. 11, 1984, Ser. No. 599,063
Claims priority, application Sweden, Apr. 20, 1983, 8302215
Int. Cl.³ B04B *11/00*
U.S. Cl. 494—3 **15 Claims**

1. A centrifugal separator comprising a rotor having a separating chamber and an inlet for supplying said chamber with a mixture of light and heavy liquids, the rotor being operable to form in said chamber an interface layer between separated light and heavy liquids of said mixture, first and second outlet means for discharge of separated light and heavy liquids, respectively, from said separating chamber, said second outlet means including a channel extending radially inward from an inlet opening of the channel located in the radially outer part of the separating chamber, control means for initiating discharge through said second outlet means in response to movement of said interface layer radially inward to an inner level in the

separating chamber, said layer moving radially outward when heavy liquid is discharged through said second outlet means, and a control unit responsive to operation of said control



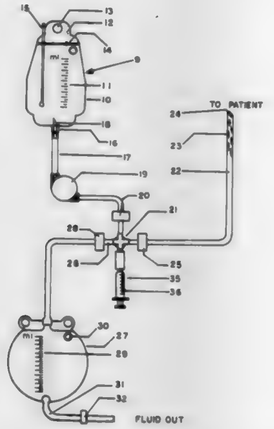
means for stopping said discharge through the second outlet means when a desired amount of heavy liquid has left said chamber through said second outlet means.

4,525,156

METHOD FOR STOMACH LAVAGE

John E. Benusa, 1383 Temple Hills Dr., Laguna Beach, Calif. 92651, and Richard L. Kingston, 1577 E. 6th St., St. Paul, Minn. 55106

Filed Feb. 16, 1983, Ser. No. 439,751
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—28 **10 Claims**



1. A method for providing a closed stomach lavage, comprising the steps of:

(a) supplying liquid by gravity feed from a flexible reservoir bag having graduations thereon, to an attached feed line having a bore size of about 8–10 mm and a length of about 3–10 feet, the feed line having manual closure means, and being connected to a connection-T;

(b) feeding the liquid from the feed line to a connection-T and to a manually closable, multi-perforated stomach lavage tube attached to the connection-T;

(c) supplying liquid through the lavage tube to the stomach of a patient, and manipulating the lavage tube to remove, by siphoning, foreign matter from the stomach, without the formation of red suction bruises;

(d) siphoning the foreign matter from the stomach lavage tube to a manually closable discharge line connected to the connection-T and then to a discharge bag having an effluent line;

the reservoir bag, feed line, lavage tube, discharge line and discharge bag being disconnectably mounted from each other and the connection-T to form a closed system;

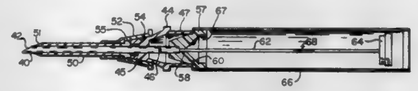
whereby: i. the feed line is sized to admit by hand metering, about 7–8 liters of liquid from the reservoir bag in about 10–30 minutes for multiple washings of about 300–500 ml each during a period of about 8–25 seconds; ii. by gravity feed through the lavage tube to a patient; iii. the volume of liquid admitted from the reservoir bag to the patient being correlated with the graduated scale; v. material from the stomach of the patient being siphoned through the discharge line and into the discharge bag; vi. during use, the connection-T can be disconnected to enable removal of material clogging the connection-T; vii. the closure means on the feed line and lavage tube are open and the discharge line is closed to admit liquid from the reservoir through the feed line, and to the lavage tube, and the closure means on the feed line is closed when the discharge line is open to admit material from the stomach to the discharge line and discharge bag; and, viii. following use, the lavage parts are discarded.

4,525,157

CLOSED SYSTEM CATHETER WITH GUIDE WIRE

Vincent L. Vaillancourt, Livingston, N.J., assignor to Manresa, Inc., Hillsdale, N.J.

Filed Jul. 28, 1983, Ser. No. 518,122
Int. Cl.³ A61M *5/00, 25/00*
U.S. Cl. 604—52 **23 Claims**



1. A catheter system for the introduction and placement of a flexible catheter in and into the lumen of a blood vessel such as an artery or vein by a practitioner and using an advancement of a guide wire into said lumen to guide the catheter as it is positioned in said lumen, said catheter system including:

(a) a hollow cannula of a determined length and having a sharpened entering end and an exit end;

(d) a needle hub axially secured and mounted to said cannula and in an assembled condition providing a manipulable needle, said hub positioned at a selected distance from the sharpened end of the cannula, this hub having a skirt portion providing an interior cavity and open to the rear thereof, this hub having a contoured forward end;

(c) a flashback indicating means disposed at or near the exit end of said cannula, this flashback indicating means in flow communication with said cannula to indicate an initial penetration of said wall of the vessel by a flow of blood through this cannula;

(d) a flexible catheter that is formed with a through bore that is sized so as to be slideable on and along the outer diameter of the cannula, said catheter having an entering end tapered so as to be easily insertable with the introduction of the cannula into the lumen and with a rear end of said catheter attached to a hub, the catheter of a length so that in mounted condition on the cannula and with the hub of the catheter slideably and removably mounted on the contoured forward end of the cannula whereat the sharpened end of the cannula extends beyond the tapered entering end of the catheter, the hub of the needle being manipulated and advanced by a practitioner so that penetration of a wall of a vessel is achieved by the sharpened end of the cannula;

(e) a centering plug within the needle hub and means for retaining said centering plug within said cavity, this plug having a small through guideway axially positioned and terminating so as to be substantially contiguous with the exit end of the cannula and in alignment with the bore of the hollow cannula;

(f) a guide wire positioned and sized so as to be a slide fit in the guideway in the centering plug and in the bore of the cannula and disposed to be advanced by manipulation to and through said guideway and bore of the cannula and as said guide wire exits from the entering end of the cannula the advancing guide wire is bent as it enters and follows the lumen of the vessel;

(g) inhibiting means cooperatively positioned in and with the guideway and guide wire so as to prevent accidental and unwanted advancement of the guide wire into the guideway and bore of the cannula, and

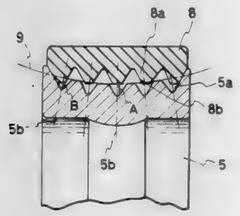
(h) a tubular enclosure of a very thin wall and flexible and secured at one end to the needle hub and providing within said enclosure a sterile environment as and while attached to the needle hub and said guide wire is advanced, whereas and after the guide wire and catheter are advanced to the desired placement in the lumen of the vessel said needle hub and attached cannula, guide wire and tubular enclosure are separated as an array from the catheter and its hub and with said separated array now discarded.

4,525,158

BELT-PULLEY DRIVE MECHANISM

Hideki Tanaka; Masanori Kamimura; Koji Horikawa, and Katsuyuki Kawasaki, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 20, 1983, Ser. No. 563,611
Claims priority, application Japan, Dec. 21, 1982, 57-225562
Int. Cl.³ F16H *7/02*
U.S. Cl. 474—167 **9 Claims**



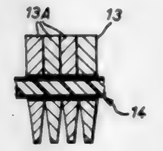
1. A belt-pulley drive mechanism comprising a pulley having a plurality of circumferentially extending grooves of V-shaped cross-sectional configuration, a belt adapted to be passed around the pulley and stretched under tension so that the belt is engaged with the pulley in torque transmitting relationship, said belt being formed with a plurality of longitudinally extending ridges of V-shaped cross-sectional configuration which are adapted to be engaged with said grooves in said pulley when the tension is applied to the belt, at least one of said grooves and said ridges being formed in a cross-section along a concave line so that a clearance is formed between the pulley and the belt when the tension is removed from the belt, said clearance being larger at a transversely central portion than at side edge portions.

4,525,159

BELT AND PULLEY TRANSMISSION

René Filderman, Neuilly sur Seine, and Michel Pilache, Maisons Lafitte, both of France, assignors to Valeo, Paris, France

Continuation of Ser. No. 320,940, Nov. 13, 1981,. This application Oct. 19, 1984, Ser. No. 662,793
Int. Cl.³ F16G *1/00, 5/00, 1/21, 1/22*
U.S. Cl. 474—201 **7 Claims**



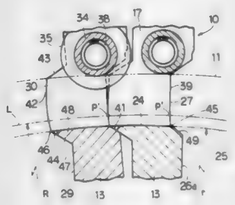
1. A belt drive transmission comprising a nonlubricated push block belt passing over pulleys, said push block belt comprising a stack of blocks carried by at least one support band, said blocks being made of sintered metal, at least one of said blocks having a coefficient of friction with said pulleys which is substantially lower than that of the rest of said blocks, said blocks of sintered metal and the said at least one block all haing sufficient lateral extend to engage the pulleys when passing about the pulleys.

4,525,160

ENDLESS BELT MEMBER FOR A CONTINUOUSLY VARIABLE TRANSMISSION

Susumu Okawa, Numazu; Hideaki Matsui, Gotenba; Yasunobu Jufuku, and Toshimi Kato, both of Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Feb. 14, 1984, Ser. No. 579,968
Claims priority, application Japan, Apr. 14, 1983, 58-66505
Int. Cl.³ F16G *5/18*
U.S. Cl. 474—242 **7 Claims**



1. A continuously variable transmission means for transmitting torque between a V-shaped driving pulley and a V-shaped driven pulley, comprising:

an endless carrier consisting of a plurality of metallic hoops extending between and contacted around peripheral portions of said driving and driven pulleys, the endless carrier assuming a radius when contacted around said peripheral portions; and

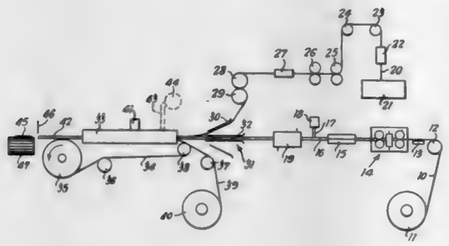
a plurality of V-shaped block members being longitudinally shiftable along the metallic hoops, the block members being linked together and extending around the total circumference of the metallic hoops, each block member having at least one longitudinal projection on a first surface, and at least one longitudinal recess complementary to the projection on a second surface, the second surface being located longitudinally opposite to the first surface, whereby the longitudinal projection on each V-shaped block member engages with the longitudinal recess of an adjacent block member at a point having a radius which is

substantially similar to the radius of the endless carrier when said endless carrier contacts a peripheral portion of one V-shaped pulley.

4,525,161
METHOD FOR PRODUCING TOBACCO SMOKE FILTERS

John A. Luke, Hampshire, England, assignor to British-American Tobacco Company Limited, London, England

Division of Ser. No. 269,702, Jun. 3, 1981, Pat. No. 4,388,934. This application Feb. 14, 1983, Ser. No. 466,150
Claims priority, application United Kingdom, Jun. 18, 1980, 8019887
Int. Cl.³ A24C *5/50*
U.S. Cl. 493—42 **10 Claims**



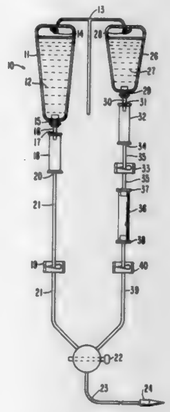
1. A method of producing tobacco smoke filters including the steps of, feeding a continuous tube of smoke filtration material to ensheathing means, feeding fibrous material to said ensheathing means whereby at exit from said ensheathing means said tube is ensheathed in a layer of smoke-pervious layer of said fibrous material, cutting the ensheathed tube into discrete lengths, and in each of said lengths, rendering a cross-section of the ensheathing material impervious to the passage of tobacco smoke, and closing the tube of said length at a location spaced longitudinally from said cross section of said ensheathing material.

4,525,162
PARENTERAL CONTROLLED DELIVERY

John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 568,457, Jan. 5, 1984, which is a continuation of Ser. No. 325,206, Nov. 27, 1981, Pat. No. 4,432,756. This application Mar. 9, 1984, Ser. No. 587,781
The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.
Int. Cl.³ A61M *5/16*
U.S. Cl. 604—56 **33 Claims**

1. A method for administering a drug formulation to a recipient, the method comprising:
(a) admitting intravenously into the recipient a delivery member in communication with an intravenously delivery system, said delivery system comprising:
(1) a primary path in fluid communication with a primary container of a fluid for the flow of the fluid therethrough;
(2) a secondary path in fluid communication with a secondary container of a fluid for the flow of the fluid therethrough;
(3) a formulation chamber in fluid communication with the secondary path, the formulation chamber comprising;
(i) a wall surrounding a lumen;
(ii) inlet means for letting fluid into the chamber;
(iii) outlet means for letting fluid leave the chamber; and,
(iv) a drug in solid form in a means for releasing drug to fluid that enters the chamber and contacts the means to form a fluid drug formulation containing from a trace to a saturated amount of drug, said means maintaining its physical and chemical integrity in the presence of the fluid;
(4) a common path for receiving fluid from the primary path and for receiving fluid from the secondary path, said common path in communication with the delivery member;

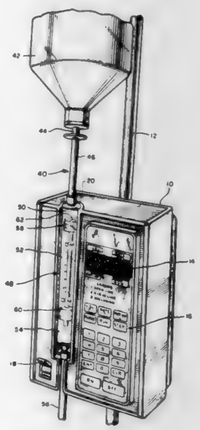


(5) means for controlling fluid flow through the primary, secondary and common paths in fluid communication with the intravenous delivery system; and,
(b) administering the drug formulation to the recipient by permitting fluid to flow into the formulation chamber and letting said drug formulation formed in situ flow into the common path.

4,525,163
INTRAVENOUS SET FLOW CONTROL DEVICE

William H. Slavik, Palos Hills, and William B. Huber, Oak Park, both of Ill., assignors to Nuvatec, Inc., Downers Grove, Ill.

Filed Aug. 6, 1982, Ser. No. 406,118
Int. Cl.³ A61M *5/16*
U.S. Cl. 604—65 **23 Claims**

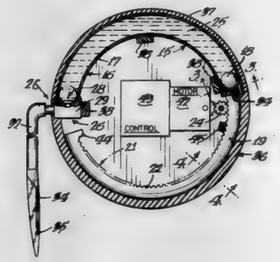


1. A flow control device for use with an intravenous set comprising a drip chamber, a volumetric chamber having a predetermined volume connected to the drip chamber, and externally actuated means for selectively interrupting fluid flow into the volumetric chamber, said flow control device comprising:
means for measuring a drop rate indicative of the rate of drop formation in the drip chamber;
means for designating a selected volumetric flow rate;
means for designating a selected drop rate;
means for storing the selected volumetric flow rate;
means for automatically controlling fluid flow out of the drip chamber to cause the measured drop rate in the drip chamber to approach the selected drop rate;
means for automatically actuating the interrupting means to cause the volumetric chamber to fill and empty repeatedly such that said volumetric chamber repeatedly dispenses said predetermined volume; and
means for automatically and repeatedly measuring the rate at which the volumetric chamber empties to determine a parameter indicative of the volumetric flow rate of fluid out of the volumetric chamber and for automatically modifying the selected drop rate in response to said parameter to cause the volumetric flow rate of fluid out of the drip chamber to approach the selected volumetric flow rate.

4,525,164
WEARABLE MEDICATION INFUSION SYSTEM WITH ARCUATED RESERVOIR

Marvin P. Loeb, Chicago, and Arne M. Olson, Villa Park, both of Ill., assignors to Biotek, Inc., Santa Ana, Calif.

Filed Apr. 24, 1981, Ser. No. 257,002
Int. Cl.³ A61M *5/14*
U.S. Cl. 604—131 **28 Claims**

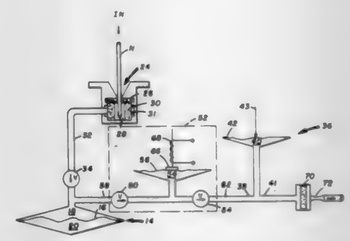


1. A wearable medicator suitable for controlled subcutaneous dispensing of liquid medication into a patient which comprises:
(a) a frame adapted for removable attachment to the patient;
(b) an arcuate tubular reservoir for liquid medication removably mounted on the frame, the reservoir having a dispensing nozzle and a closed opposite end having means for mounting on the frame;
(c) a connecting means attached to the dispensing nozzle for introducing the liquid medication into the patient;
(d) a volume reducing means operably associated with the reservoir so as to dispense the liquid medication from the reservoir;
(e) motor means operably associated with the volume reducing means, the motor means being surrounded by the tubular reservoir; and
(f) control means operably associated with the motor means for controlling the action of the volume reducing means.

4,525,165
FLUID HANDLING SYSTEM FOR MEDICATION INFUSION SYSTEM

Robert E. Fischell, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 34,155, Apr. 27, 1979, Pat. No. 4,373,527. This application Nov. 4, 1982, Ser. No. 439,138
Int. Cl.³ A61M *7/00*
U.S. Cl. 604—131 **30 Claims**



1. An infusion apparatus for providing medication to a living body of a patient comprising:
a medication reservior for storing selected medication;
means for pumping said selected medication responsive to actuating commands for pumping fixed volume pulses at a variable rate, said pump means operating in a pulsatile mode, the input of said pump means being in communication with said reservior;
means for actuating said pump means at a variable rate;
means for accumulating said selected medication, said means for accumulating comprising a variable volume chamber, the input of said accumulator means being in communication with the output of said pump means whereby said accumulator means may be filled at a variable rate governed by said pump means;
means for restricting the flow of said selected medication, the input of said flow restrictor means being in communication with the output of said accumulator means, said flow restricator means in combination with said accumulator means smoothing the pulsatile nature of the flow of said selected medication; and
means for communicating said selected medication from the output of said flow restrictor means to said living body.

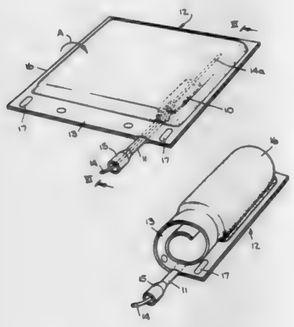
4,525,166
ROLLED FLEXIBLE MEDICAL SUCTION DRAINAGE DEVICE

Roland-Yves J. Leclerc, Nogent-le-Rotrou, France, assignor to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Nov. 18, 1982, Ser. No. 442,583
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146266
Int. Cl.³ A61M *37/00*
U.S. Cl. 604—133 **18 Claims**

1. A suction drainage device comprising a receptacle of flexible material capable of being folded, rolled and the like, fluid-sorbing material disposed in the receptacle, fluid passage means coupling the exterior of the receptacle to the interior of the receptacle and adapted to be communicated with a source of fluid located at the exterior of the receptacle, and a flexible check valve disposed in the receptacle at a side of one edge of the same and being operative to seal and open communication between the interior of the receptacle and said passage means

in response to the condition of the receptacle and a thin tube extending through the flexible valve to the exterior of the



receptacle through said passage means which is adapted to be pulled out of the valve and said passage means.

4,525,167

BODY FLUID SUCTION DEVICE

Edward M. Goldberg, 225 Maple Hill Rd., Glencoe, Ill. 60022, and Seymour Bazell, 9235 N. Latrobe, Skokie, Ill. 60077

Division of Ser. No. 184,235, Sep. 5, 1980, Pat. No. 4,404,924. This application Aug. 4, 1983, Ser. No. 520,434

Int. Cl.[3] **A61M** *1/06*

U.S. Cl. 604—135 **10 Claims**

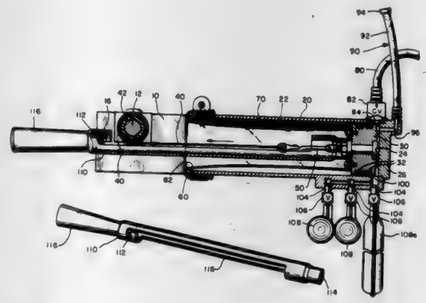
1. A drainage device for receiving body fluids from a patient comprising, in combination:

variable volume container means, provided by an elongated cylindrical chamber with transverse end wall means positioned transversely across and substantially closing one end of the cylindrical chamber;

a movable piston with a side wall, positioned in said cylindrical chamber with peripheral seal means provided on the side wall of the piston and arranged to seal against the inner wall of the elongated cylindrical chamber to provide a seal thereat;

means providing an intake to the interior of the cylindrical chamber adjacent the end thereof closed by said end wall means, whereby to provide, with the container means and the piston therein, a variable volume chamber adapted for receiving into and storing therein body fluids drawn from a patient;

a substantially constant force producing coiled ribbon spring secured to said piston and adapted to bias said piston, in a direction away from the transverse end wall of the container means with a substantially constant force, so that a



substantially constant sub-atmospheric pressure is created inside the container for the range of positions of the movable piston within the cylindrical chamber;

an elongated tool that is selectively connectable to and separable from the variable volume container means, for selectively manually moving the piston toward the transverse end wall means of the cylindrical chamber against the force of the coiled ribbon spring; and

said tool including an elongated rigid bar having an end section constructed and arranged to bear against the side of the piston that is distal from the transverse end wall means of the variable volume container means.

4,525,168

METHOD OF TREATING POLYARAMID FIBER

David R. Kelly, Dalton, Ga., assignor to Professional Chemical & Color, Inc., Dalton, Ga.

Filed Jan. 27, 1984, Ser. No. 574,323

Int. Cl.[3] **D06M** *3/24*

U.S. Cl. 8—130.1 **11 Claims**

1. A method of treating polyaramid fiber, comprising the steps of:

swelling the fiber,

introducing into the swollen fiber a substance capable of forming an ionic bond with an anionic dye, and

shrinking the fiber so as to incorporate said substance into the fiber.

4,525,169

ARTIFICIAL GRAIN LEATHER HAVING DIFFERENT COLOR SPOT GROUPS

Akira Higuchi, Otsu, and Miyoshi Okamoto, Takatsuki, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jul. 5, 1983, Ser. No. 510,887

Claims priority, application Japan, Jul. 8, 1982, 57-118969; May 16, 1983, 58-84198

Int. Cl.[3] **D06N** *3/04, 3/18;* **D06P** *3/86, 3/87*

U.S. Cl. 8—485 **12 Claims**

1. An artificial grain leather having fiber bundles and color spot groups differing in hue, lightness value and combinations thereof between adjacent fiber bundles, comprising a fibrous substrate layer and a transparent coating layer on the surface thereof, said transparent coating layer having a grain pattern on the outer surface thereof, said substrate layer comprising ultra fine fibers, bundles of ultra fine fibers and high molecular weight elastomer, and said ultra fine fibers comprising at least two types of ultra fine fiber material having different dyeability which have been dyed with different dyestuffs.

4,525,170

SOLID FORMULATIONS OF METAL COMPLEX DYES

Paolo Balliello, Rheinfelden, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 19, 1983, Ser. No. 496,036

Claims priority, application Fed. Rep. of Germany, May 27, 1982, 3220042

Int. Cl.[3] **C09B** *67/24;* **D06P** *3/02*

U.S. Cl. 8—524 **9 Claims**

1. A non-effervescent solid formulation of a metal complex dye having a cold water solubility or dispersivity of at least 30 grams per liter, which formulation is obtained by spray drying an aqueous solution or dispersion of a metal complex dye, and which solution or dispersion consists essentially of water, the metal complex dye, an anionic dispersant and 1 to 20% by weight, based on the final formulation, of a non-ionic ethylene oxide adduct having a molecular weight of 200 to 5000.

4,525,171

GRADIENT PROCESS OF GROWING CRYSTALS FROM LIQUID MEDIA

Paul O. Knischka, Steyr, Austria, and Hans J. Grenz, Munich, Fed. Rep. of Germany, assignors to Knischka Rubine Gesellschaft m.b.H, Vienna, Austria

PCT No. PCT/AT83/00008, § 371 Date Nov. 8, 1983, § 102(e) Date Nov. 8, 1983, PCT Pub. No. WO83/03431, PCT Pub. Date Oct. 13, 1983

PCT Filed Mar. 30, 1983, Ser. No. 555,874

Claims priority, application Austria, Mar. 30, 1982, 1226/82

Int. Cl.[3] **B01D** *9/02*

U.S. Cl. 23—300 **2 Claims**

1. A gradient process of growing crystals from liquid media, comprising growing the crystals in a solvent which at the instantaneous temperature and under the instantaneous pressure employed in the growing process has a density which is equal or approximately equal to the density of the crystals which are being grown.

4,525,172

METHOD OF DEWATERING A CAKE OF BIOMASS

Sture Eriksson, Karlstad, Sweden, assignor to Armerad Betong Vägförbättringar Aktiebolag, Stockholm, Sweden

Filed Feb. 6, 1984, Ser. No. 577,006

Claims priority, application Sweden, Feb. 14, 1983, 8300753

Int. Cl.[3] **C10F** *7/06, 5/00, 7/00*

U.S. Cl. 44—32 **19 Claims**

1. Method of dewatering peat or other biomass, said method comprising the steps of:

preparing a water suspension of said biomass; forwarding said biomass suspension to a dewatering plant;

pre-dewatering said biomass suspension in said dewatering plant to produce pre-dewatered biomass, said pre-dewatering being effected by passing said biomass suspension through a series of pre-watering devices so that at least 50% of the water content in said biomass suspension has been removed when said biomass leaves the last of said pre-watering devices in said series;

transferring said pre-dewatered biomass in the form of a cake to at least one closed wash press;

wash press dewatering said pre-dewatered biomass in said at least one closed wash press by subjecting said cake to further dewatering, washing, or displacement of water therein by water which is warmer than said cake, and subsequently subjecting said cake to warming and roller pressure under gradually increased pressure at a temperature which is above 90° C. in the region of highest pressure of said roller pressing;

returning hot return water from said roller pressing to at least the last of said pre-dewatering devices so as to raise the temperature of the biomass in the last pre-dewatering device to thereby reduce viscosity of the biomass and increase drainage rate;

drying said mass in a succeeding dryer subsequent to said wash press dewatering.

3. Method according to claim 1, wherein the displacement of the water in said cake is done by steam without vaporization of the water in said cake.

11. Method according to claim 1, wherein the biomass is subjected to a combination of chemical, thermal, and mechanical treatments in order to improve the drainage ability of the biomass in said pre-dewatering devices by breaking some of the colloidal systems in the biomass, said chemical treatment including adding peat ash to the biomass, and said thermal and mechanical treatments comprising homogenizing the pre-dewatered biomass from each of said pre-dewatering devices and warmer return water from a succeeding pre-dewatering device.

4,525,173

MINERAL SLURRIES

Peter J. Baker, Daventry; David A. Brookes, Orpington, and Martin Johnson, Oakley, all of England, assignors to The British Petroleum Company p.l.c., London, England

Filed May 17, 1983, Ser. No. 495,420

Claims priority, application United Kingdom, May 19, 1982, 8214648

Int. Cl.[3] **C10L** *1/32*

U.S. Cl. 44—51 **8 Claims**

1. A pumpable slurry of coal particles in water consisting essentially of coarse coal particles having a particle size in the range 5 to 50 mm and fine coal particles having a particle size less than 200 micron wherein the slurry contains 50 to 85% by weight of coal particles based on the combined weight of coal particles and water, at least 30% by weight of the coal particles being in the form of coarse particles, 10% to 40% by weight being in the form of fine particles and the balance to 100% by weight being intermediate sized particles.

4,525,174

METHOD AND FUEL COMPOSITION FOR CONTROL OF OCTANE REQUIREMENT INCREASE

Michael C. Croudace, Huntington Beach, Calif., assignor to Union Oil Company Of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 451,279, Dec. 20, 1982, Pat. No. 4,444,565. This application Dec. 27, 1983, Ser. No. 565,986
Int. Cl.[3] C10L *1/18*
U.S. Cl. 44—68 60 Claims

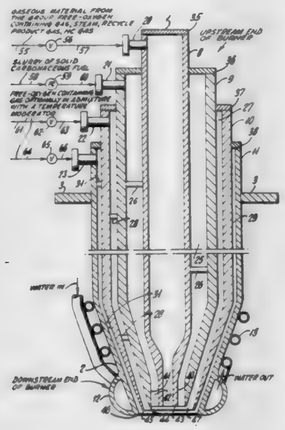
1. A method for operating a spark ignition internal combustion engine which comprises continuously or intermittently introducing, with the combustion intake charge to said engine, a fuel composition containing an octane requirement increase-inhibiting amount of (a) an oil-soluble iron compound, (b) a volatile mono carboxylic acid or ester, and (c) a non-volatile polar compound capable of solubilizing carbonaceous engine deposits, wherein said non-volatile polar compound is introduced either simultaneously with said oil-soluble iron compound and said volatile carboxylic acid or during the intermission.

4,525,175

HIGH TURN DOWN BURNER FOR PARTIAL OXIDATION OF SLURRIES OF SOLID FUEL

Robert J. Stellaccio, Spring, Tex., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 499,620, May 31, 1983, Pat. No. 4,443,230. This application Dec. 16, 1983, Ser. No. 562,335
Int. Cl.[3] C10J *3/48*
U.S. Cl. 48—86 R 6 Claims



1. A high turn-down burner for simultaneously introducing a plurality of streams of free-oxygen containing gas in admixture with a pumpable slurry of solid carbonaceous fuel downward into the reaction zone of a free-flow partial oxidation gas generator comprising: a central cylindrically shaped conduit having a central longitudinal axis that is coaxial with the central longitudinal axis of the burner; an unobstructed converging exit nozzle that develops into a straight cylindrical portion with a circular exit orifice at the downstream end of the central conduit; closing means attached to the upstream end of said central conduit for closing off same; inlet means in communication with the upstream end of the central conduit for introducing a gaseous feedstream selected from the group consisting of free-oxygen containing gas, steam, recycle product gas, and hydrocarbon gas; a second conduit coaxial and concentric with said central conduit along its length, a coverging exit nozzle that develops into a straight cylindrical portion with a circular exit orifice at the downstream end of the second conduit; means for radially spacing said central and second conduits and forming therebetween a first annular passage which develops into a right annular passage near the downstream end; closing means attached to said second conduit and first annular passage at their upstream ends for closing off same, said central conduit passing through the upstream closed end of said second conduit and making a gastight seal therewith, and inlet means in communication with the upstream end of the second conduit for introducing a pumpable slurry feedstream of solid carbonaceous fuel; a third conduit coaxial and concentric with said second conduit along its length, means for radially spacing said second and third conduits and forming therebetween a second annular passage that develops into a converging frustoconical portion towards the downstream end with a converging angle with the longitudinal axis of the burner in the range of about 15° to 60°; closing means attached to the second annular passage and third conduit at their upstream ends for closing off same, said second conduit passing through the upstream closed end of the third conduit and making a gastight seal therewith, and inlet means in communication with the upstream end of the third conduit for introducing a feedstream of free-oxygen containing gas into said second annular passage; an outer conduit coaxial and concentric with said third conduit along its length, an outer converging nozzle near the downstream end of the outer conduit which discharges through a circular exit orifice at the tip of the burner, means for radially spacing said third and outer conduits and forming therebetween an outer annular passage that develops into a converging frustoconical portion towards the downstream end with portions having a converging angle with the longitudinal axis of the burner in the range of about 15° to 60°; closing means attached to the third annular passage and outer conduit at their upstream ends for closing off same, said third conduit passing through the upstream closed end of the outer conduit and making a gastight seal therewith, and inlet means in communication with the upstream end of the outer conduit for introducing a feedstream of free-oxygen containing gas into said third annular passage; a separate feedstream conduit externally connected to each of said inlet means; and flow rate control means in each of said feedstream conduits for separately controlling the flow rate of the feedstream passing through said feedstream conduits; flanging means attached to the outside surface of said outer conduit for aligning the longitudinal central axis of said burner along the central axis of the gas generator while the downstream end of said burner is passed downwardly through a port in the top of the gas generator; an outer rearwardly extending annular water-cooled chamber of elliptical cross-section encircling the downstream end of the burner; wherein the tips of said central, second and third conduits may be retracted upstream from the outer conduit exit orifice, or may terminate with the outer conduit exit orifice in the same plane perpendicular to the longitudinal axis of the burner; and wherein a cylindrical shaped slurry stream with a gaseous core passes through the front portion of the burner and is impacted by two high velocity streams of free-oxygen containing gas or at high turndown of the burner one high velocity stream of free-oxygen containing gas said impact taking place prior to, at, or downstream from the tip of the burner to provide atomization and intimate mixing of the slurry feed with free-oxygen containing gas.

4,525,176

PREHEATING AND DESLAGGING A GASIFIER

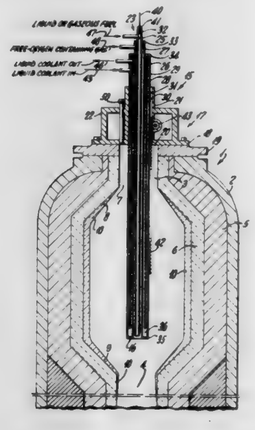
Wolfgang Koog, Pleasantville, N.Y., and Lawrence E. Estabrook, Whittier, Calif., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 29, 1983, Ser. No. 527,611
Int. Cl.[3] C10J *3/08*
U.S. Cl. 48—197 R 13 Claims

1. A process for preheating and deslagging the refractory lined reaction chamber of a vertical free-flow partial oxidation gas generator having a top central inlet passage that terminates at the roof of the reaction chamber, and wherein said reaction chamber has a refractory lined bottom central coaxial outlet passage comprising:

(1) heating the slag and ash layer on the surface of the refractory lining of said reaction chamber to a temperature in the range of about 1800°–2000° F. by burning a fuel and a free-oxygen containing gas in an elongated burner whose central longitudinal vertical axis is coaxial with that of the gas generator, said burner being supported externally from said reaction chamber and having a downstream end that passes down through said top central inlet passage so that at its initial position the tip of the burner is located at or near the downstream end of the top central inlet passage, and withdrawing the gaseous products of combustion through said bottom central outlet passage while controlling or substantially eliminating the amount of secondary air from the atmosphere that can be drawn through said top central inlet passage;

(2) removing the slag and ash layer from the refractory walls of the bottom central outlet passage and from at least a portion of the refractory lined bottom of the reaction



chamber by lowering said burner into the reaction chamber until the tip of the burner is located above the bottom central outlet passage, continuing said burning so as to increase the temperature of said slag and ash layer to their melting point, or above, at a rate of about 50° to 200° F. per hour, and passing the molten slag and flue gas out through the bottom central outlet passage; and then

(3) continuing said burning and withdrawal of flue gas while slowly raising the burner vertically along the central longitudinal axis of the reaction chamber until the tip of the burner reaches said initial position in the top central inlet passage while simultaneously increasing the temperature of successive portions of any remaining slag and ash layer on the refractory lined bottom of the reaction chamber and the slag and ash layer on the refractory walls of the reaction chamber to their melting point, or above, at a rate of about 50° to 200° F. per hour, and flowing the molten slag down the walls and bottom of the reaction chamber and out through said bottom central outlet passage.

4,525,177

METHOD OF MAKING COATED ABRASIVE DISC

Philip M. Grimes, 15 McMurrich St., Toronto, Ontario, Canada (M5R 3M6), and John R. Grimes, 33 Harbour Sq., Toronto, Ontario, Canada (M5J 2G2)

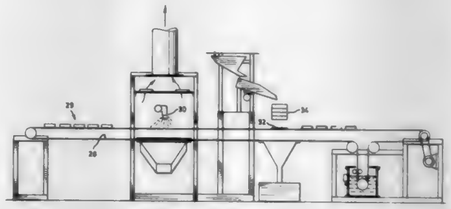
Filed Mar. 3, 1983, Ser. No. 471,698
Int. Cl.[3] B24D *11/00*
U.S. Cl. 51—295 3 Claims

1. A method of making a coated abrasive grinding disc with a resilient thermoplastics material back-up pad comprising the steps of:

making a back-up pad of a resilient moulded thermoplastics material that has resilience to yield to the contour of a workpiece and strength to transmit grinding force to a workpiece in use;

said back-up pad having a work face;

supporting the back-up pad on a support disc that resists warping under conditions of heat encountered in plastics curing with the work face of the pad exposed, and applying a holding force to secure the back-up pad on the support disc to resist warping;



applying a layer of thermosetting adhesive to the work face of the disc;

applying a layer of abrasive grit into the adhesive;

drying the adhesive at an elevated temperature;

applying a sizing coat of thermosetting adhesive over the abrasive grit; and

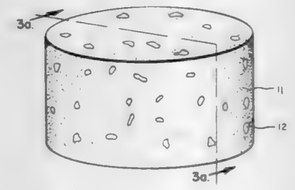
curing the thermosetting adhesive at an elevated temperature.

4,525,178

COMPOSITE POLYCRYSTALLINE DIAMOND

David R. Hall, Provo, Utah, assignor to Megadiamond Industries, Inc., Provo, Utah

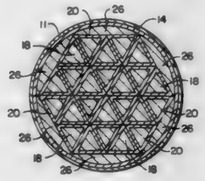
Filed Apr. 16, 1984, Ser. No. 600,399
Int. Cl.[3] B24D *3/02*
U.S. Cl. 51—309 29 Claims



1. A composite material comprising:

a mixture of diamond crystals and precemented carbide pieces formed under sufficient heat and pressure to create a composite polycrystalline body in which adjacent diamond crystals are bonded together and to the precemented carbide pieces, and in which the diamond crystals and the precemented carbide pieces are interspersed in one another, either the carbide pieces or diamond crystals providing a matrix for the composite material.

4,525,179
PROCESS FOR MAKING DIAMOND AND CUBIC BORON NITRIDE COMPACTS
Paul D. Gigl, Worthington, Ohio, assignor to General Electric Company, Worthington, Ohio
Continuation-in-part of Ser. No. 487,115, Apr. 27, 1983, abandoned, which is a continuation of Ser. No. 287,010, Jul. 27, 1981, abandoned. This application Oct. 14, 1983, Ser. No. 542,081
Int. Cl.³ B24D *3/02*
U.S. Cl. 51—309 **37 Claims**

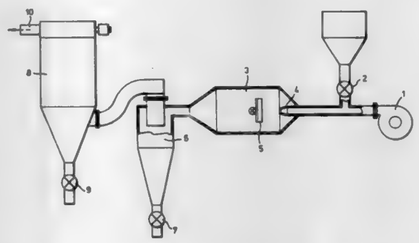


1. In a process for preparing a compact which comprises:
A. subjecting a mass of abrasive crystals selected from the group consisting of diamond, cubic boron nitride and mixtures thereof, which mass is in contact with a source of metallic catalyst/solvent for recrystallization of the abrasive crystals, to conditions of temperature, pressure and time which result in a compact having intercrystal bonding between adjacent crystal grains;
B. recovering the compact produced; and
C. removing substantially all of the metallic phase from the compact of step B;
the improvement which comprises:
(i) forming the compact with a sub-divided crystalline mass by embedding within the mass of abrasive crystals at least one metallic partition strip of a given shape subdividing the abrasive crystal mass before the mass is subjected to the temperature and pressure conditions of step A, which partition strip is characterized by maintaining segregation between the separate portions of the abrasive crystal mass throughout step A and being sufficiently pliable not to resist the compaction of the abrasive crystal mass; and
(ii) recovering a compact in step C having a shape described at least in part by the partition strip.

4,525,180
PROCESS FOR RECOVERY OF ETHYLENE FROM GASEOUS MIXTURE
Hidefumi Hirai; Makoto Komiyama, and Susumu Hara, all of Tokyo, Japan, assignors to Hidefumi Hirai, Tokyo, Japan
Filed Mar. 15, 1984, Ser. No. 590,417
Claims priority, application Japan, Mar. 19, 1983, 58-46163; Jul. 16, 1983, 58-129785
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—37 **18 Claims**

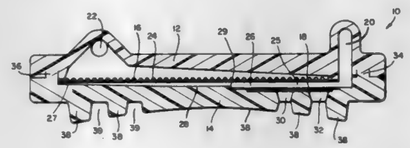
1. A process for recovery of ethylene from a gaseous mixture containing ethylene and water or water vapor, said process comprising selectively absorbing ethylene to the exclusion of water or water vapor with a liquid absorbent comprised of a compound selected from the group consisting of silver halide and cuprous halide, an aluminium halide, a polymer selected from the group consisting of polystyrene and polystyrene derivatives, and an aromatic hydrocarbon.

4,525,181
PROCESS FOR THE REMOVAL OF IMPURITIES IN REACTED ALUMINA
Ole K. Böckman, Oslo, Norway, assignor to Flakt AB, Sweden
Continuation of Ser. No. 339,875, Jan. 18, 1982, abandoned. This application Nov. 6, 1984, Ser. No. 669,045
Claims priority, application Norway, Feb. 5, 1981, 810393
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—71 **9 Claims**



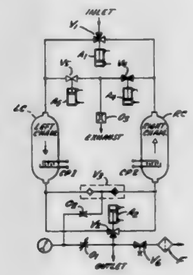
1. In a process for the removal of impurities from alumina crystals which have been used as adsorbent in a dry purification system for purifying waste gases from aluminum electrolysis furnaces for the industrial production of aluminum, wherein said alumina crystals are used essentially to absorb HF which is emitted in the gaseous phase, the impurities being present essentially as agglomerates of sublimate particles in the reacted alumina crystals, the improvement comprising disintegrating the agglomerates of sublimate particles to a dust of finely divided particles of less than about one micron and finely divided agglomerates of particles of less than about one micron with liberation of said particles from the alumina crystals while essentially avoiding any disintegration of the aluminum crystal, the disintegration being carried out by blowing the reacted alumina crystals in a gas/air stream against a substantially transverse impinging surface against which the stream of reacted alumina crystals collide, and selectively separating the alumina crystals from the dust of finely divided sublimate particles and finely divided agglomerates of sublimate particles.

4,525,182
I.V. FILTER APPARATUS
Donald B. Rising, Stow, and Richard G. Naegeli, Jr., Bedford, both of Mass., assignors to Millipore Corporation, Bedford, Mass.
Filed Aug. 29, 1983, Ser. No. 527,546
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—159 **10 Claims**



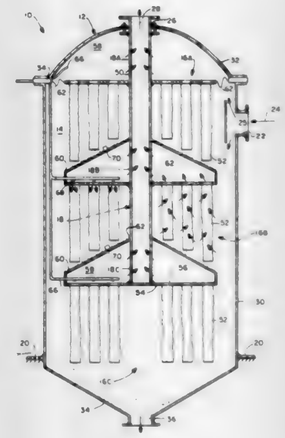
1. A vented filter apparatus comprising a first housing portion and second housing portion, said housing portions being joined together about the periphery of said housing portions, thereby to form a space between said portions, an inlet into said space and an outlet from said space, a liquid wettable membrane positioned on a first surface of said first housing portion within said space to seal said inlet from said outlet, said second housing portion having a first surface and a second surface forming a first space section and a second space section, a liquid non-wettable membrane positioned adjacent said inlet on said first surface of said second housing portion within said space and spaced apart from said liquid wettable membrane, said first space section being positioned adjacent said non-wettable membrane and being positioned between said liquid wettable membrane and said second surface, said first space section being positioned adjacent said non-wettable membrane, said second space section being in fluid communication with said first space section and having a maximum height between about 2 mm and about 0.05 mm adjacent said inlet and a height less than about 0.3 mm furthest from said inlet, said second surface within said second space section being hydrophilic and at least a portion of the second surface within said second space section positioned opposite the wettable membrane sloping toward the wettable membrane in a direction away from said inlet such that the height of the second space section adjacent said outlet is always smaller than the height of the first space section adjacent said inlet and a gas vent adjacent said liquid non-wettable membrane adapted to permit passage of gas from said first space section through said non-wettable membrane.

4,525,183
VALVES FOR DESICCANT DRYERS
Harry D. Cordes; Thomas G. Haberer, and Marcel G. Verrando, III, all of Ocala, Fla., assignors to Pall Corporation, Glen Cove, N.Y.
Continuation-in-part of Ser. No. 444,717, Nov. 26, 1982, abandoned. This application Nov. 17, 1983, Ser. No. 551,560
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—179 **15 Claims**



1. A valve for directing gas in a compressed gas desiccant drier system having two desiccant beds which are sequentially placed on stream so that one desiccant bed dries the compressed gas while the other desiccant bed is being regenerated comprising, in combination, a housing having at least two openings to allow for the ingress and egress of compressed gas; a seat for at least one of the openings and integral therewith; a support secured to the interior of the housing and comprising a cylindrical chamber portion in the interior thereof; a rod axially aligned with the seat and being slidably carried by the support, said rod comprising a piston integral therewith and slidably positioned within the cylindrical chamber portion so as to be isolated from the compressed gas, the piston isolating a first portion of the chamber on one side thereof from a second portion of the chamber on the other side thereof; a disc-like sealing member corresponding to each seat sized larger than the passageway through the seat, the sealing member being disposed on the rod and movable with respect to the seat between sealing face-to-face contact therewith to prevent flow of gas through the passageway and a sufficient distance away from the seat to allow substantially unimpeded flow of gas through the valve; and means communicating with each cylindrical chamber portion for introducing to and exhausting fluid from the first and second chamber portions, so that as pressurized fluid is selectively admitted into one chamber portion and exhausted from the other, the piston, rod and sealing member are selectively moved into the sealing and flow-through positions.

4,525,184
VERTICALLY TIERED PARTICLE FILTERING APPARATUS
Owen J. Tassicker, Cupertino, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed May 20, 1983, Ser. No. 496,520
Int. Cl.³ B01D *46/02, 29/38*
U.S. Cl. 55—302 **23 Claims**



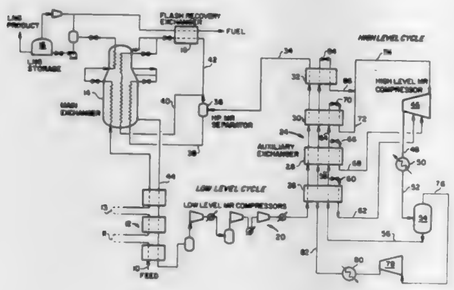
1. An apparatus especially suitable for filtering out particulate material of a predetermined minimum size from carrier fluid such as flue gases produced by combustion or other such processes, said apparatus comprising:
(a) a main vessel defining an interior compartment and having inlet means through which a particulate laden carrier fluid can pass in order to enter said compartment and separate outlet means through which said carrier fluid, once filtered, can pass in order to leave said compartment;
(b) a single vertically extending outlet pipe disposed within said compartment in a specific position out of the way of said inlet means so as not to prevent said particulate laden fluid from passing into said compartment through the inlet means and cooperating with said outlet means so that the entering fluid, once filtered, must first pass into the pipe before it can leave the vessel compartment through said outlet means, said pipe including a plurality of vertically spaced-apart sections along its length having their own inlet means into the pipe for the passage therein of fluid, once the latter has been filtered;
(c) means for supporting said pipe in said specific position within said compartment;
(d) a plurality of vertically spaced filter assemblies, equal in number to said inlet defining pipe sections, connected with and supported substantially solely by said single outlet pipe at spaced-apart locations along the latter adjacent respective ones of said pipe sections but otherwise unconnected with one another, each of said assemblies cooperating with its adjacent inlet defining pipe section for allowing particulate laden fluid within said compartment to enter said pipe through the inlets in said adjacent pipe section while filtering out particulate material of said predetermined minimum size, whereby particulate laden fluid entering the vessels leaves it in a filtered condition.

4,525,185

DUAL MIXED REFRIGERANT NATURAL GAS LIQUEFACTION WITH STAGED COMPRESSION

Charles L. Newton, Bethlehem, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 25, 1983, Ser. No. 545,408
Int. Cl.³ F25J *3/00*
U.S. Cl. 62—11 **6 Claims**



1. In a process for the liquefaction of natural gas using two closed cycle, multicomponent refrigerants wherein high level refrigerant cools the low level refrigerant and the low level refrigerant cools and liquefies the natural gas, comprising;

cooling and liquefying a natural gas stream by heat exchange with a low level multicomponent refrigerant in a first closed refrigeration cycle, which refrigerant is rewarmed during said heat exchange,

compressing said rewarmed low level refrigerant to an elevated pressure and aftercooling it against an external cooling fluid,

further cooling said low level refrigerant by multiple stage heat exchanger against a high level multicomponent refrigerant in a second closed refrigeration cycle, with high level refrigerant is rewarmed during said heat exchange,

compressing said rewarmed high level refrigerant to an elevated pressure and aftercooling it against an external cooling fluid to partially liquefy said refrigerant, the improvement for varying the composition of the high level refrigerant such that lighter molecular weight components are available to perform the lower level refrigeration duty by;

phase separating said high level refrigerant into a vapor phase refrigerant stream and a liquid phase refrigerant stream,

subcooling and expanding portions of the liquid phase refrigerant stream to lower temperature and pressure in multiple stages to provide the cooling of the low level refrigerant and to cool and liquefy the vapor phase refrigerant stream, and

compressing the vapor phase refrigerant stream and condensing it against an external cooling fluid, before subcooling it against the liquid phase stream and expanding it to lower temperature and pressure to provide the lowest stage of cooling to the low level refrigerant.

5. In an installation for the liquefaction of natural gas using two closed cycle, multicomponent refrigerants wherein high level refrigerant cools the low level refrigerant and the low level refrigerant cools and liquefies the natural gas comprising:

a first heat exchanger for cooling and liquefying natural gas against a low level refrigerant;

at least one compressor for compressing low level refrigerant to an elevated pressure;

an auxiliary heat exchanger for cooling the low level refrigerant against high level refrigerant in multiple stages;

a phase separator for separating the low level refrigerant into a vapor phase stream and a liquid phase stream;

means for conveying the vapor phase stream and the liquid phase stream separately to said first heat exchanger and recycling same to said compressor;

at least one compressor for compressing high level refrigerant to an elevated pressure;

an aftercooling heat exchanger for cooling the compressed high level refrigerant against an external cooling fluid, the improvement for varying the composition of the high level refrigerant such that lighter molecular weight components are available to perform the lower level refrigeration duty including;

a phase separator for separating the high level refrigerant into a vapor phase stream and a liquid phase stream;

a compressor and aftercooling heat exchanger for liquefying said vapor phase stream of said high level refrigerant;

means for conveying said high level vapor phase stream through said auxiliary heat exchanger and expanding said stream in order to cool the low level refrigerant stream;

means for conveying said high level liquid phase stream through said auxiliary heat exchanger including means for separating portions of said stream therefrom and then individually expanding them to a lower temperature and pressure to cool said low level refrigerant, and

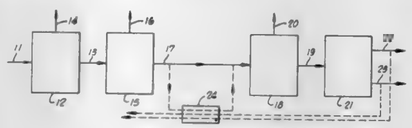
means for recycling the high level refrigerant for recompression.

4,525,186

METHOD FOR PRODUCING ISOTOPICALLY ENRICHED HELIUM-4 AND USE OF SAME AS NUCLEAR REACTOR COOLANT

Leo Garwin, 1512 Camden Way, Oklahoma City, Okla. 73116

Continuation-in-part of Ser. No. 925,158, Jul. 17, 1978, Pat. No. 4,304,634, which is a continuation-in-part of Ser. No. 632,218, Nov. 17, 1975, Pat. No. 4,101,375, which is a continuation-in-part of Ser. No. 307,405, Nov. 17, 1972, abandoned. This application Sep. 28, 1981, Ser. No. 306,009
The portion of the term of this patent subsequent to Jul. 18, 1995, has been disclaimed.
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—22 **6 Claims**



5. A process for cooling a high-temperature gas-cooled nuclear reactor with enhanced safety and efficiency comprising:

providing a helium feedstock recovered from natural gas;

liquefying said feedstock;

separating by distillation the liquefied feedstock into at least an isotopically enriched helium-4 fraction and an isotopically denuded helium-4 fraction;

passing in heat exchange relation with the liquefied feedstock at least one of said fractions to recover the refrigeration contained in said one fraction;

circulating in said reactor as the coolant, said isotopically enriched helium-4 fraction; and

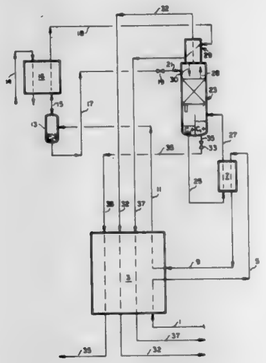
maintaining a concentration of hydrogen gas in said circulating coolant of from about 1 volume percent to about 6 volume percent.

4,525,187

DUAL DEPHLEGMATOR PROCESS TO SEPARATE AND PURIFY SYNGAS MIXTURES

Donald W. Woodward, New Tripoli; Arthur T. Katsaros, Bethlehem, and Howard C. Rowles, Center Valley, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 12, 1984, Ser. No. 579,845
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—31 **24 Claims**



1. A process for separating a high pressure feed gas comprising H_2, CO and C_1+ hydrocarbons into H_2—CO product streams and a C_1+ hydrocarbon stream, said process comprising:

(a) cooling said high pressure feed gas by indirect heat exchange in a high pressure dephlegmator, said feed gas flowing in a generally upward direction to condense and rectify essentially all of the C_1+ hydrocarbons, thereby producing a separate high pressure H_2—CO vapor stream and a high pressure C_1+ enriched liquid stream;

(b) expanding said high pressure C_1+ enriched liquid stream to form a low pressure C_1+ enriched liquid stream;

(c) partially vaporizing the low pressure C_1+ enriched liquid stream to form a low pressure vapor stream and a low pressure C_1+ liquid product;

(d) cooling said low pressure vapor stream by indirect heat exchange in a low pressure dephlegmator using the high pressure H_2—CO vapor stream from the high pressure dephlegmator as a refrigerant by causing said high pressure H_2—CO vapor stream to flow countercurrent to the low pressure vapor stream to condense and rectify essentially all of the C_1+ hydrocarbons, thereby producing a separate low pressure H_2—CO vapor stream and additional low pressure C_1+ liquid product; and

(e) recovering the high pressure H_2—CO vapor stream at a net purity of no more than about 1 mole% of C_1 and higher hydrocarbons, the low pressure H_2—CO vapor stream at a net purity of no more than about 1 mole% of C_1 and higher hydrocarbons, and the low pressure C_1+ liquid product.

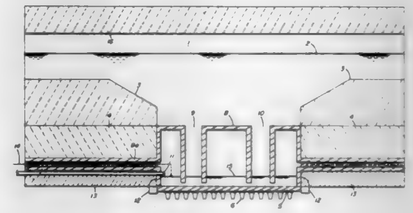
4,525,188

FIBER FORMING BUSHING AND METHOD FOR USING SAME

Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 464,233, Feb. 7, 1983, abandoned. This application May 10, 1984, Ser. No. 609,040
Int. Cl.³ C03B *37/09*
U.S. Cl. 65—1 **10 Claims**

2. In a glass fiber forming bushing comprising a container for receiving molten glass including a bottom member having a plurality of orifices therein, four side members and an open top for receiving molten glass the improvement comprising a closure structure positioned above said container having at least one opening therein for the introduction thereto of molten glass, at least one tubular member contiguous with said opening and extending downwardly into said container to a level above the level of the bottom members and below the level of



said sides, means to introduce gas below said closure member and above said container, means to establish pressure in a space provided between said closure and said container to thereby apply pressure to the surface of molten glass introduced into said container and means to cool molten glass in said container when desired.

4,525,189

PROCESS FOR PRODUCING GLASS PRODUCT HAVING GRADIENT OF REFRACTIVE INDEX

Shigeaki Ohmi, Tokorozawa; Seiichi Shingaki; Hiroyuki Sakai, both of Akishima, and Yoshiyuki Asahara, Higashiyamato, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 488,809
Claims priority, application Japan, May 14, 1982, 57-80124
Int. Cl.³ C03C *15/02*
U.S. Cl. 65—3.15 **7 Claims**

1. A process for producing a glass product having a gradient of refractive indices which comprises:

(a) producing a porous glass body by:

(1) heating a glass body to effectuate a phase separation;

(2) leaching out the acid-soluble phase from said glass body; and then

(3) recovering therefrom the porous glass body;

(b) permeating a solution of dopant comprising $TlNO_3$ and an alkali metal nitrate into the micropores of said porous glass product wherein the concentration of said $TlNO_3$ is between 100 to 400 g/100 ml of H_2O the concentration of said alkali metal nitrate is at least 20 g/100 ml of water;

(c) leaching out a portion of the dopant from the micropores with or without solidifying the dopant in the micropores to form a concentration gradient of the dopant in said porous glass product,

(d) solidifying the dopant in the micropores,

(e) drying the porous glass product,

(f) heat treating said porous glass product to collapse the micropores, and

(g) recovering a glass product having Δn greater than 0.04 wherein Δn is the difference between the central and peripheral portions of the glass.

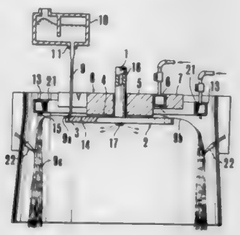
5. The process of claim **1**, wherein said dopant further comprises $Pb(NO_3)_2$.

4,525,190

APPARATUS FOR PRODUCING GLASS FIBERS WITH CENTRIFUGAL FORCE

Kyosuke Kawai, Kanagawa; Mitsuru Nakagawa, Tokyo; Shinji Yanase, and Kiyoshi Kawai, both of Kanagawa, all of Japan, assignors to Japan Inorganic Material Co., Ltd., Kanagawa, Japan

Division of Ser. No. 474,348, Mar. 11, 1983, Pat. No. 4,483,699. This application Aug. 22, 1984, Ser. No. 643,310
Claims priority, application Japan, Mar. 17, 1982, 57-42080
Int. Cl.³ C03B *37/05*
U.S. Cl. 65—14 **2 Claims**



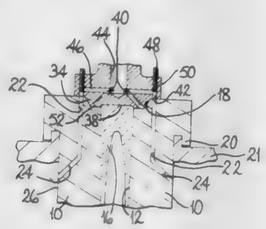
1. An apparatus for producing glass fibers by means of centrifugal force, comprising:
a furnace for melting raw materials for production of glass fibers, said furnace having a flowing-down nozzle at the bottom portion thereof,
a flat rotary disc provided below said furnace, said disc having a peripheral portion with radially engraved grooves coated with a glass layer, for receiving the molten raw materials,
driving means for rotating said disc,
means for jetting combustion gas radially and outwardly onto said peripheral portion of said disc, said means including a ring-shaped burner positioned above said peripheral portion of said disc and being provided with an opening through which the molten raw materials flow down, and
a ring-shaped heat shelter positioned above said disc and inside the ring opening formed by said ring-shaped burner for inhibiting heat flow inwardly along said disc from the molten raw materials.

4,525,191

METHOD OF COOLING A GLASS WARE MOULD

Frank A. Fenton, Wheatley, England, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Jul. 5, 1983, Ser. No. 511,055
Claims priority, application United Kingdom, Jul. 9, 1982, 8219984
Int. Cl.³ C03B *9/38*
U.S. Cl. 65—83 **9 Claims**



1. An improved method for forming a parison of the type including the steps of guiding a gob of molten glass into a mold cavity of a blank mold through a funnel at a mouth of the mold, blowing or pressing the molten glass to cause it to form the parison wihtin the mold cavity, and closely fitting a baffle over the mouth of the mold to seal the mold during or after forming of the parison, wherein the improvement comprises the step of cooling the parison by blowing cooling air through air passages in the baffle which communicate with air passages in side portions of the mold, said side portion air passages in turn being vented to atmosphere.

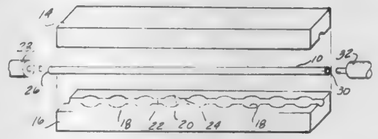
7. Apparatus for cooling the blank mold of a glass container forming machine, comprising:
a blank mold comprised of side portions defining a mold cavity, said side portions having air passages therein which are vented to atmosphere;
a baffle which is configured to fit closely to a mouth formed by the side portions of said blank mold, which mouth provides access to the mold cavity, said baffle having air passages which communicate with the air passages in the side portions of the mold when the baffle is fitted to the mouth of said mold; and
means for supplying cooling air to the baffle air passages, and thereby through the side portion air passages to be vented to atmosphere.

4,525,192

METHOD OF MAKING LEVEL VIALS

Herbert Booms, P.O. Box 192, Bad Axe, Mich. 48413

Filed Dec. 15, 1983, Ser. No. 561,836
Int. Cl.³ C03B *23/08*
U.S. Cl. 65—110 **4 Claims**



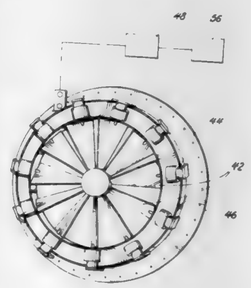
1. A method of making level vials comprising the steps of:
heating an elongated, hollow glass tube;
inserting the heated glass tube into a mold having a plurality of successively spaced, connected mold cavities;
removably sealing one end of the glass tube;
injecting a fluid into the opposite end of the glass tube to expand the glass tube into contact with the walls of the mold cavities thereby simultaneously forming a plurality of vial sections having interconnected, open ends;
simultaneously forming an aperture in each vial section;
simultaneously separating the vial sections; and
simultaneously sealingly closing the open ends of each vial section.

4,525,193

METHOD AND APPARATUS FOR SUPPLYING COOLING AIR IN A GLASS SHEET QUENCH

Ronald A. McMaster, Woodville, and John S. Nitschke, Perrysburg, both of Ohio, assignors to Glasstech, Inc., Perrysburg, Ohio

Filed Nov. 14, 1983, Ser. No. 551,572
Int. Cl.³ C03B *27/04*
U.S. Cl. 65—114 **8 Claims**



1. A method for operating an air supply system for a glass sheet quench having a quench cycle and a cooling cycle, the system including a drive system of a variable speed blower and opposed blastheads which are spaced from each other and supply pressurized gas from the blower to a heated glass sheet positioned between the blastheads, the method including the steps of:
restricting the flow of pressurized gas from the blower when changing the speed of the blower;
operating the blower at substantially full power at a first speed to intially cool the heated glass sheet;
at least partially removing the restriction to permit increased flow of the pressurized gas; and
thereafter operating the blower at less than the full power to further cool the glass sheet, whereby the system supplies the pressurized gas at a pressure to quench the glass sheet at one of said first and second blower speeds during the quench cycle and the system supplies the pressurized gas at a pressure to cool the glass sheet at the other of said first and second blower speeds during the cooling cycle.

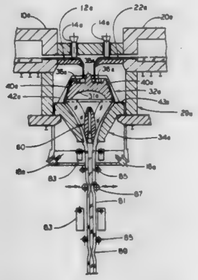
6. In an air supply system for a glass sheet quench including a drive system of the variable speed blower and opposed blastheads, which are spaced from each other and supply pressurized gas from the blower to a heated glass sheet positioned between the blastheads, the improvement comprising:
means for restricting air flow from the blower; and
control means for controlling the means for restricting when changing the speed of the blower and then to permit increased flow of the pressurized gas, said control means also controlling the drive system to operate the blower at substantially full pressure at a first speed to supply pressurized gas to quench the glass sheet during the quench cycle; and for controlling the drive system to operate the blower at a pressure reduced from the full pressure at a second speed different from the first speed to supply pressurized gas to cool the glass sheet during a cooling cycle.

4,525,194

APPARATUS FOR SIMULTANEOUS PRODUCTION OF DOUBLE GLASS PANELS

Boris L. Rudoi, 1170 Chambers Rd., Columbus, Ohio 43212

Continuation of Ser. No. 501,652, Jun. 6, 1983, abandoned. This application Sep. 17, 1984, Ser. No. 650,697
Int. Cl.³ C03B *17/00*
U.S. Cl. 65—145 **7 Claims**



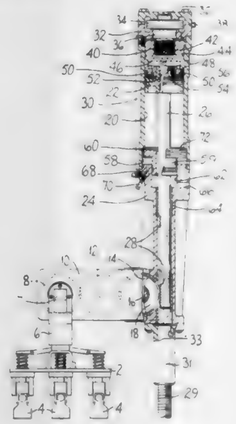
1. An apparatus for the continuous production of glass articles of sheet or tube form comprising in combination, a molding body having an upper and lower portion, said upper portion including a pair of diverging walls forming working surfaces and a reservoir means for receiving a molten glass mass supply disposed above said diverging walls, the overflow of said glass mass from said reservoir means communicating with the upper portion of a respective one of said diverging walls to flow downwardly on said walls; said lower portion of said molding body supporting said upper portion and including an inner cavity having inwardly converging walls means, the upper opening of said cavity being greater than the greatest width dimension between the diverging walls of said upper portion to communicate the glass mass flowing from said upper portion to the converging walls of said lower portion, the lower end of said inwardly diverging walls of said lower portion terminating in an outlet conforming to the approximate shape and size of the glass article to be formed; and a recess in said lower portion forming a second reservoir means extending along the edges of said inner cavity in communication with the glass mass flowing from said diverging walls of said upper portion of said molding body, said recess provided with a lower inner lip which directs the overflow of said glass mass in said recess to the converging walls formed in said lower portion of said molding body.

4,525,195

TAKE-OUT MECHANISM FOR A GLASSWARE FORMING MACHINE

Thomas V. Foster, Cantley, England, assignor to Emhart Industries, Inc., Farmington, Conn.

PCT No. PCT/GB82/00046, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO82/02887, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 22, 1982, Ser. No. 433,125
Claims priority, application United Kingdom, Feb. 27, 1981, 8106256
Int. Cl.³ C03B *35/04*
U.S. Cl. 65—260 **4 Claims**



1. A take-out mechanism for a glassware forming machine comprising a tong carrier movable in an arcuate path between a first position at which tongs supported by the carrier can grip an article of glassware and a second position at which the tongs can release the article onto a support, an arm on which the tong carrier is mounted, moving means operable to move the arm arcuately to move the tong carrier along the arcuate path, said moving means including a first piston and cylinder assembly, means defining a selectively activated air supply for said first piston and cylinder assembly to urge the first piston from a first position toward a second position in order to move the tong carrier towards its second position cushioning means comprising, a second piston and cylinder assembly opposing the action of said piston of the first piston and cylinder assembly as said tong carrier approaches its second position, means on the first piston to engage the second piston only when said first piston is at or near its second position, and means continuously supplying air pressure to said second piston and cylinder to urge said second piston in a direction opposite the direction of movement of said first piston as the tong carrier moves toward its second position, whereby, the second piston and cylinder assembly will cause the tong carrier to move away from its second position when the article has been released onto the support and the air supply to the first piston and cylinder assembly is inactive.

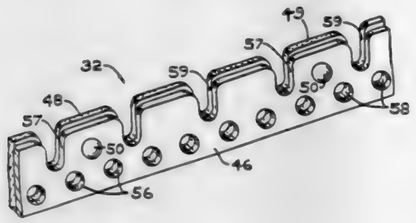
2. A take-out mechanism according to claim 1 characterized in that the first piston and cylinder assembly includes a piston

rod extending centrally through the piston of the second piston and cylinder assembly.

4,525,196
GLASS SHEET HANDLING DEVICES

Michael T. Fecik, Pittsburgh; John J. Ewing, Tarentum, and Edward I. Mates, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 486,653, Apr. 20, 1983, abandoned, which is a continuation-in-part of Ser. No. 341,975, Jan. 22, 1982, abandoned. This application Aug. 24, 1984, Ser. No. 644,168
Int. Cl.³ C03B *23/02*
U.S. Cl. 65—287 **6 Claims**



1. Apparatus for handling a hot glass sheet during conveyance comprising a ring-like support member having a surface adapted to engage a heat-softened glass sheet and further having a relatively thin upper edge portion and a relatively thick lower portion, said surface consisting essentially of a phenolic resin reinforced with fibers composed of an aromatic polyamide composition, and means to support said ring-like member in an essentially horizontal orientation with the width of said ring extending essentially vertically to place an upper edge of said ring-like member in position to receive said hot glass sheet.

4,525,197
FERTILIZER

Robert Eibner, Hilden; Hans-Heinrich Nolle, Erkrath bei Dusseldorf; Alfred Schneider, Meerbusch, and Wilhelm Kohl, Nievenheim, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 283,674, Jul. 15, 1981, abandoned, which is a continuation of Ser. No. 97,878, Nov. 27, 1979, abandoned, which is a continuation of Ser. No. 969,525, Dec. 14, 1978, abandoned, which is a continuation of Ser. No. 548,002, Feb. 7, 1975, abandoned. This application Jul. 23, 1982, Ser. No. 401,326

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1974, 2406714; Dec. 17, 1974, 2459585; Dec. 17, 1974, 2459584; Dec. 17, 1974, 2459586
Int. Cl.³ C05G *1/00*
U.S. Cl. 71—11 **6 Claims**

1. In a fertilizer of the type which is in the form of a dispersion of undissolved nutrient materials in aqueous medium containing nutrient materials in solution, the dispersion also containing as dispersing agent a hydrated magnesium-aluminum silicate, the improvement for eliminating the necessity for continuous or regular mechanical blending to avoid formation of large crystals and phase separation during prolonged storing up to 2 or 3 years comprising at least one additional dispersing agent, selected from the group consisting of sorbitol in an amount 0.1 to 5%, polyvinyl alcohol in an amount of 0.1 to 5% by weight, a caseinate in an amount of 0.1 to 5% by weight and a soluble starch hydrolysate in an amount of 0.1 to 8% by weight, the total concentration of said additional dispersing agent amounting to from 0.1 to 14% by weight, relative to the finished fertilizer.

4,525,198
PROCESS FOR THE PRODUCTION OF UREA GRANULES

Willy H. P. Van Hijfte, Assenede, and Luc A. Vanmarcke, Kaprijke-Lembeke, both of Belgium, assignors to Compagnie Neerlandaise de l'Azote, Brussels, Belgium

Continuation of Ser. No. 263,310, May 13, 1981, abandoned. This application Mar. 11, 1983, Ser. No. 474,477
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—28 **4 Claims**

1. In a process for the production of urea granules, wherein an aqueous urea solution having a urea concentration of at least 70% by weight and containing a crystallization retarder for the urea is sprayed in the form of very fine droplets into a fluidized bed of urea particles at a temperature at which the water evaporates from the solution sprayed onto the particles and urea solidifies on the particles to form granules having a desired size, the improvement which comprises employing as the crystallization retarder for the urea in the aqueous urea solution MgO as such or in the form of selectively or completely calcined dolomite in an amount of 0.1 to 2.0% by weight of MgO, calculated on the urea in the solution, said crystallization retarder imparting improved mechanical strength to said urea granules, reducing caking and dust formation during the granulation process and rendering said urea granules compatible with single and triple superphosphate to form bulk blends of fertilizer.

4,525,199
METHOD OF IMPROVED PEST CONTROL

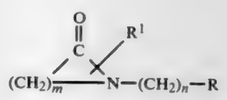
Vithal J. Rajakhyaksha, Mission Viejo, Calif., assignor to Nelson Research & Development Co., Irvine, Calif.

Continuation-in-part of Ser. No. 260,201, May 4, 1981, abandoned, which is a continuation of Ser. No. 725,490, Oct. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 588,247, Jun. 19, 1975, Pat. No. 3,989,816. This application Oct. 13, 1981, Ser. No. 310,948
Int. Cl.³ A01N *25/02*
U.S. Cl. 514—788 **15 Claims**

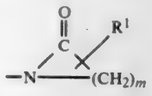
1. An improved method for plant pest control, comprising the steps of:

delivering, as a first ingredient, an effective amount of a plant pesticide to a plant; and

enhancing penetration of the plant pesticide into a target organism associated with the plant, namely a plant, an insect, a fungus, a mollusk, an arachnid, or a nematode, by simultaneously delivering, as a different, second ingredient, a penetration enhancing amount of a compound of the formula:



where R^1 is H or a lower alkyl having 1–4 carbon atoms, m is 5–7, n is 6–17, and R is $—CH_3$ or

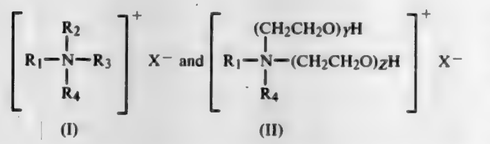


4,525,200
AQUEOUS-SOLUBLE COMPOSITIONS FOR ADJUSTING GROWTH OF ORNAMENTAL AND CROP PLANTS

Masaomi Kimpara, Shizuoka, and Munehiro Suzuki, Toyohashi, both of Japan, assignors to American Cyanamid Company, Stamford, Conn.

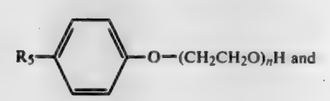
Filed Feb. 22, 1983, Ser. No. 468,441
Int. Cl.³ A01N *25/30*
U.S. Cl. 71—76 **10 Claims**

1. A stable, aqueous soluble composition for adjusting growth of ornamental and crop plants, said aqueous soluble composition exhibiting temperature stability at temperatures of −25° C. to 45° C., comprising: about 30% to 75% by weight, of 2-(chloroethyl)trimethylammonium salt, as the active ingredient; a cationic surfactant or mixture of cationic surfactants, having the structural formulae, I and II,



(I) (II)

wherein R_1, R_2 and R_3 are each C_1–C_4 alkyl; R_4 is C_{10}–C_{18} alkyl or alkenyl, and Y is chlorine, bromine, iodine or nitrate; where the sum of (Y+Z) is defined as a range of 2 to 20; a nonionic surfactant or mixture of nonionic surfactants depicted by structural formulae III and IV,



(III)



(IV)

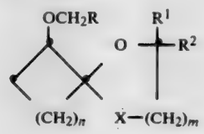
wherein R_5 is C_7–C_{15} alkyl or alkenyl; n is an integer of 6–16; R_6 is C_{10}–C_{18} alkyl or alkenyl; m is an integer of 6–22, wherein the ratio of said cationic to said nonionic surfactants or mixtures thereof is 20/80 to 80/20, and the total cationic and nonionic surfactant combination is about 0.4% to 6.0% of said total composition; a C_1–C_4 alcohol or benzyl alcohol; and sufficient water to total said composition to 100%.

4,525,201
OXASPIRO ALKANE AND ALKENE ETHER HERBICIDES

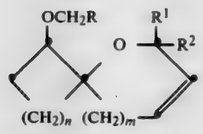
Willy D. Kollmeyer, and Thomas L. Brown, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 24, 1983, Ser. No. 544,762
Int. Cl.³ A01N *43/08, 43/40;* C07D *213/06, 307/04*
U.S. Cl. 71—76 **11 Claims**

1. A novel compound of formulas I or II



I



II

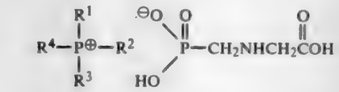
wherein R is an unsaturated group containing up to 4 carbon atoms, a cycloalkyl group containing 3 to 10 carbon atoms, a secondary alkyl group containing 3 to 10 carbon atoms, a phenyl group optionally substituted by 1 or 2 chlorine or fluorine atoms or methyl groups or a 2-pyridinyl group; in formula I, m is 0, 1 or 2; n is 1, 2 or 3; R^1 and R^2 each independently is a hydrogen atom, an alkyl group containing 1 to 6 carbon atoms, or a hydroxyalkyl group or an alkoxymethyl group in which the alkyl portion contains 1 to 6 carbon atoms; X is CH_2 when m is 0, 1 or 2 or X is oxygen when m is 1 or 2; or in formula II, n is 1, 2 or 3; m is 0 or 1; and R^1 and R^2 each independently is a hydrogen atom, an alkyl group containing 1 to 6 carbon atoms, or a hydroxyalkyl or an alkoxymethyl group in which the alkyl portion contains 1 to 6 carbon atoms.

4,525,202
PHOSPHONIUM SALTS OF N-PHOSPHONOMETHYLGLYCINE AND THEIR USE AS HERBICIDES AND PLANT GROWTH REGULANTS

George B. Large, Orinda, and Lawrence L. Buren, Cupertino, both of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

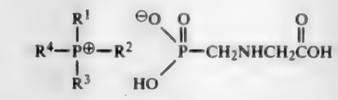
Continuation-in-part of Ser. No. 295,345, Aug. 24, 1981, Pat. No. 4,341,549. This application May 5, 1982, Ser. No. 374,539
The portion of the term of this patent subsequent to Jul. 22, 1999, has been disclaimed.
Int. Cl.³ C07C *9/38*
U.S. Cl. 71—86 **32 Claims**

1. A compound having the formula



in which R^1, R^2, R^3, and R^4 are independently selected from the group consisting of C_1–C_{10} alkyl, benzyl, phenyl, substituted phenyl and substituted benzyl wherein said substituents are independently selected from halogen, lower alkoxy, and lower alkyl; provided that at least one of R^1, R^2, R^3 or R^4 is benzyl, substituted benzyl, or substituted phenyl.

25. A method of regulating the natural growth or development of plants which comprise applying to said plants a regulating, non-lethal amount of a compound having the formula



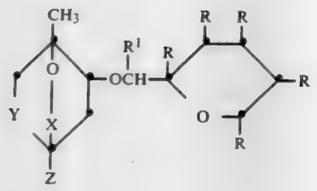
in which R^1, R^2, R^3, and R^4 are independently selected from the group consisting of C_1–C_{10} alkyl, benzyl, phenyl, substituted phenyl, and substituted benzyl wherein said substituents are independently selected from halogen, lower alkoxy, and lower alkyl; provided that at least one of R^1, R^2, R^3 or R^4 is benzyl, substituted benzyl, or substituted phenyl; and an inert diluent carrier.

4,525,203
((3,4,5,6-TETRAHYDRO-2H-PYRAN-2-YL)METHOXY)OXABICYCLOALKANE HERBICIDES

George B. Payne, Modesto, and James E. Powell, Ripon, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 15, 1984, Ser. No. 621,012
Int. Cl.³ A01N *43/00;* C07D *407/00, 315/00*
U.S. Cl. 71—88 **10 Claims**

1. A compound of the formula



where X is a bond or $-C(CH_3)_2-$; Y is a single bond or $-CH_2-$ with the proviso that both X and Y are not a single bond; Z is a hydrogen atom or, an alkyl group containing 1 to 4 carbon atoms; each R independently is a hydrogen atom, a hydroxy group, an oxo group, a methylene group, or an alkyl or alkoxy group containing from 1 to 6 carbon atoms or one pair of adjacent R groups from a carbon-carbon bond; and R^1 is a hydrogen atom or an alkyl group containing from 1 to 6 carbon atoms.

8. A herbicidal or plant growth regulating composition comprising a herbicidally effective amount of a compound according to claim **1** and at least one carrier or surface-active agent.

9. A method of controlling undesirable plant growth at a locus comprises applying to the locus or the plants an effective amount to control undesirable plant growth of a compound according to claim **1**.

4,525,204

METHOD AND COMPOSITIONS FOR REGULATING PLANT GROWTH USING PYRIMIDINE-BUTANOL COMPOUNDS

Graham Holmwood, Wuppertal, and Klaus Lürssen, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

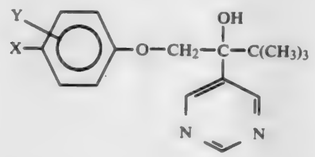
Filed Oct. 24, 1980, Ser. No. 200,170

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1979, 2944850

Int. Cl.[3] **A01N** *9/22*; **C07D** *239/26*

U.S. Cl. 71—92 **8 Claims**

1. Method for regulating the growth of plants which method comprises applying to the plants and their habitat, an effective amount of a pyrimidine-butanol compound of the formula:



(I)

wherein

X is hydrogen, fluorine, chlorine, methyl, methoxy, and benzyloxy; and

Y is hydrogen or chlorine.

4,525,205

HERBICIDAL COMPOSITIONS COMPRISING COMPOUNDS CONTAINING A PHENYLAMINOPHENOXY MOIETY

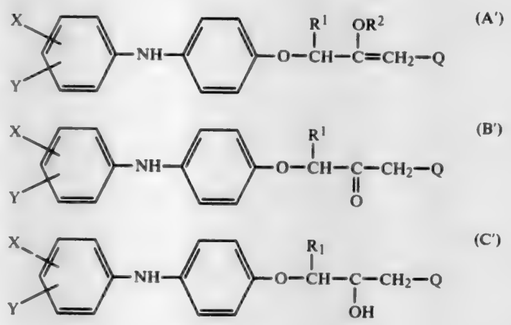
Shy-Fuh Lee, Sunnyvale, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 341,736, Jan. 22, 1982, Pat. No. 4,429,167, which is a continuation-in-part of Ser. No. 299,413, Sep. 4, 1981, Pat. No. 4,408,076, which is a continuation-in-part of Ser. No. 270,938, Jun. 5, 1981, abandoned, which is a continuation-in-part of Ser. No. 196,795, Oct. 1, 1980, abandoned. This application Mar. 23, 1982, Ser. No. 361,161

Int. Cl.[3] **A01N** *37/36*; **C07C** *101/72*

U.S. Cl. 71—108 **26 Claims**

1. A compound selected from those of the following formulas A′, B′, and C′:



(A′)

(B′)

(C′)

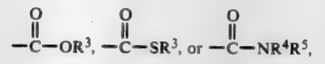
wherein

each of X and Y is independently selected from hydrogen, bromo, chloro, fluoro, lower alkyl, lower alkoxy, lower alkoxycarbonyl, nitro, cyano, trifluoromethyl, chlorodifluoromethyl, fluoromethyl, chloromethyl, and difluoromethoxy;

R^1 is hydrogen or lower alkyl

R^2 is lower alkyl

Q is



in which

R^3 is hydrogen, lower alkyl, lower haloalkyl, lower cyanoalkyl, lower alkenyl, lower haloalkenyl, lower alkynyl, lower alkoxyalkyl, lower dialkylaminoalkyl, lower alkylthioalkyl, lower alkylsulfinylalkyl, lower alkylsulfonylalkyl, tetrahydrofuranylmethyl, tetrahydropyranylmethyl, pyridylmethyl, benzyl, halobenzyl, lower alkylbenzyl, lower alkoxybenzyl, phenyl, halophenyl, lower alkoxyphenyl, lower alkylphenyl, cycloalkyl, cycloalkalkyl, N-alkylideneamino, sodium, potassium, magnesium or calcium; and

each of R^4 and R^5 is independently selected from hydrogen, lower alkyl, lower hydroxyalkyl, lower alkoxyalkyl or lower alkylsulfonyl.

4,525,206

REDUCTION PROCESS FOR FORMING POWDERED ALLOYS FROM MIXED METAL IRON OXIDES

Stuart L. Soled, Madison, N.J.; Aaron Wold, and Robert Kershaw, both of Providence, R.I., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 564,467, Dec. 20, 1983, abandoned. This application Jun. 15, 1984, Ser. No. 620,943

Int. Cl.[3] **B22F** *9/00*

U.S. Cl. 75—0.5 BA **13 Claims**

1. A process for producing a powdered metal-based iron alloy comprising the steps of: (a) heating a mixture comprised of a powdered mixed metal iron oxide, being difficulty reducible in hydrogen gas, with at least a stoichiometric amount of calcium metal, in a non-oxidizing atmosphere, at a temperature below the melting point of the mixed metal iron oxide for a time sufficient to substantially reduce all the metal oxide present, and form said product metal-based iron alloy, as determined by X-ray diffractometry; (b) contacting said reduced mixed metal iron oxide with aqueous acid to remove calcium impurities and by-products; and (c) recovering said product metal-based iron alloy.

4,525,207

PROCESS OF PRODUCING BRIQUETTES TO BE CHARGED TO ZINC-PRODUCING SHAFT FURNACES

Dirk Hankel, Mühlheim, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 339,583, Jan. 15, 1982,. This application Jan. 13, 1984, Ser. No. 570,481

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3101886

Int. Cl.[3] **B22F** *1/02*

U.S. Cl. 75—3 **7 Claims**

1. In a process of producing briquettes to be charged to a zinc producing shaft furnace, wherein a calcine which has been obtained by roasting in a fluidized bed and contains zinc oxide is subjected to hot briquetting, the improvement wherein the calcine has a content of metallic/lead and/or lead oxide corresponding to at least 3% lead, a content of 2 to 6 percent by weight coal consisting essentially of non-caking coal which has a low content of volatile constituents of up to 6 percent, a Pb:C mixture weight ratio of at least 1, and the mixture is briquetted at a compacting temperature of 250° to 470° C. and under an applied pressure amounting to 4 to 20 metric tons per centimeter of the width of the rolls when pressure is dynamically measured.

4,525,208

METHOD FOR RECOVERY OF ZN AND PB FROM IRON AND STEEL DUST

Motohiro Yasukawa; Yukio Ishikawa; Yasuo Ojima; Hiromi Harada, all of Niihama, and Yoshiaki Mori, Sendai, all of Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Jul. 17, 1984, Ser. No. 631,763

Claims priority, application Japan, Jul. 26, 1983, 58-137191

Int. Cl.[3] **C22B** *7/02*

U.S. Cl. 75—25 **10 Claims**

1. A continuous method of recovering zinc and lead from iron and steel dust using an apparatus which includes a rotary kiln, a dust collector, means connecting the dust collector to the rotary kiln, a rotary smelting furnace, means connecting the rotary smelting furnace to the rotary kiln, and heating means located near the rotary smelting furnace, the method comprising the steps of continuously

(a) heating the interior of the rotary smelting furnace with the heating means,

(b) maintaining the temperature within said rotary smelting furnace at 1200° to 1350° C.,

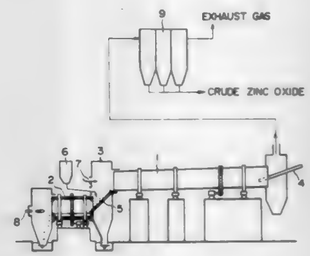
(c) introducing a heated gas into the rotary kiln,

(d) maintaining the temperature within the rotary kiln at 800° to 1000° C.,

(e) adding a reducing agent to the rotary kiln,

(f) adding iron and steel dust with entrained zinc and lead to the rotary kiln so as to form a partially-reduced mass and an exhaust gas containing volatilized zinc and lead,

(g) passing the exhaust gas containing volatilized zinc and lead from the rotary kiln to the dust collector where the zinc and lead are recovered from the exhaust gas,



(h) conveying the partially-reduced mass from the rotary kiln to the rotary smelting furnace,

(i) adding a flux to the partially-reduced mass to form a mixture,

(j) exposing the mixture of step (i) to a reducing atmosphere so as to melt the mixture, thereby effecting volatilization of the zinc and lead retained in the partially-reduced mass, and

(k) discharging the molten mixture of step (j) from the rotary smelting furnace.

4,525,209

PROCESS FOR PRODUCING LOW P CHROMIUM-CONTAINING STEEL

Takashi Yamauchi, Tokuyama; Shigeaki Maruhashi, Kure; Shinkichi Koike, and Keizo Yamada, both of Hachinohe, all of Japan, assignors to Pacific Metals & Co. Ltd. and Nisshin Steel Co. Ltd., both of, Japan

Filed May 2, 1984, Ser. No. 606,182

Int. Cl.[3] **C21C** *7/00*

U.S. Cl. 75—51.5 **5 Claims**

1. A process for producing a low P chromium-containing steel, in a vessel equipped with a lance adapted to top blowing of oxygen and with at least one tuyere of a double tube structure adapted to bottom blowing of oxidizing and non-oxidizing gases alone or in combination, starting from a chromium-containing molten pig iron which contains not more than 4.5% by weight of C, at least 0.010% by weight of P and at least 3.0% by weight of Cr, said process comprising the steps of:

A. adding a solid carbon source to the chromium-containing molten pig iron in the vessel in an amount sufficient to provide a chromium-containing molten pig iron of a carbon content of at least 4.5% by weight at the end of the step D below,

B. agitating the content in the vessel by bottom blowing thereinto a non-oxidizing gas,

C. blowing oxygen to the molten pig iron to provide a chromium-containing molten pig iron of a temperature ranging between 1500° C. and 1700° C. containing not more than 0.15% by weight of Si and at least 4.5% by weight of C,

D. substantially removing a slag formed in the preceding steps from the vessel,

E. adding a dephosphorization flux to the molten pig iron in the vessel, wherein said dephosphorizing flux comprises 30–80% by weight of at least one compound selected from the fluorides and chlorides of alkaline earth metals, 0.4 to 30% by weight of at least one compound selected from lithium oxide and lithium carbonate, 5–50% by weight of

at least one compound selected from iron oxides and nickel oxide, and 0–40% by weight of at least one compound selected from the oxides and carbonates of alkaline earth metals,

F. agitating the content in the vessel by bottom blowing thereinto a non-oxidizing gas to promote effective contact of the molten pig iron with a slag formed, while maintaining the concentration of iron oxides in the slag at a level of at least 1.0% by weight,

G. substantially removing the slag from the vessel, and

H. blowing oxygen to the molten pig iron in the vessel for decarburization, while bottom blowing thereinto a non-oxidizing gas.

4,525,210
Patent Not Issued For This Number

4,525,211
PROCESS FOR PRODUCING A MICROKILLED STEEL SUITABLE FOR FREERUN CONTINUOUS CASTING FOR SUBSEQUENT COLD FORMING

Luzian Pochmarski; Otto Köller, both of Leoben, and Karl Abendstein, Trofaiach, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 15, 1984, Ser. No. 620,921
Claims priority, application Austria, Jun. 16, 1983, 2219/83
Int. Cl.³ C21C *7/02*
U.S. Cl. 75—58 **12 Claims**

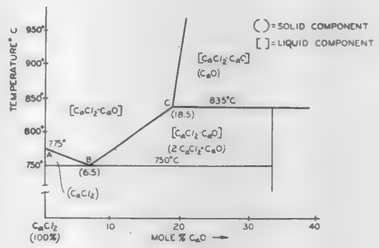
1. A process for producing a microkilled steel suitable for free-run continuous casting for subsequent cold forming, said process comprising standardizing the carbon content of a carbon-containing steel to ≦0.05%, the silicon content to ≦0.05%, the aluminium content to ≦0.006%, the equivalent carbon content being standardized to ≦0.14% according to the equation $C_{eq}=\%C+1/7\%Si+1/5\%Mn+1/7\%Cr+1/20\%Ni+1/9\%Cu+\frac{1}{2}\%Mo+\frac{1}{2}\%V$.

4,525,212
DECONTAMINATION OF ALUMINUM BY CHLORINATION

Ram A. Sharma, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 22, 1983, Ser. No. 564,569
Int. Cl.³ C22B *21/06, 9/05*
U.S. Cl. 75—68 R **2 Claims**

1. In the process of decontaminating aluminum melt by floating a layer of molten flux atop the surface of the melt and bubbling gaseous chlorine through the melt, the improvement wherein said layer comprises a solution of calcium chloride



and calcium oxide wherein said calcium oxide is sufficient to consume as calcium chloride any chlorine and aluminum chloride evolving from the surface.

4,525,213
COMPOSITION FOR WATERPROOFING AND INHIBITING EROSION AND CORROSION OF SILICON DIOXIDE CONTAINING SUBSTRATES

Michael A. Linn, Omaha, Nebr., assignor to Nox-Crete Chemicals, Incorporated, Omaha, Nebr.

Filed Mar. 2, 1984, Ser. No. 584,879
Int. Cl.³ C09K *3/18*
U.S. Cl. 106—2 **16 Claims**

1. A composition for waterproofing and inhibiting erosion and corrosion of silicon dioxide containing substrates, such as masonry structures, steel reinforced masonry structures and the like, comprising:

from about 7% by weight to about 60% by weight of an alkylalkoxysilane including oligomers and mixtures thereof, having a molecular weight of from about 100 to about 1000; and

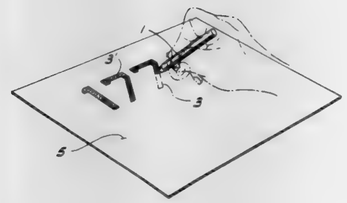
a solvent for said silane, selected from the group consisting of C_6 to C_{10} aromatic and cyclic hydrocarbons, or mixtures thereof, said solvent being free of alcohol groups and having a flash point of from 100° F. to about 160° F.

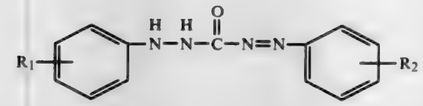
4,525,214
CRAYON ADAPTED FOR DEVELOPMENT OF LATENT IMAGES

Irving Panken, Dayton, Ohio, assignor to The Mazer Corporation, Dayton, Ohio

Filed Mar. 11, 1983, Ser. No. 474,289
Int. Cl.³ C09D *11/00;* **B41M** *3/12;* **B41L** *1/20*
U.S. Cl. 106—19 **14 Claims**

1. A crayon adapted for development of a latent image on a substrate by marking thereover, said latent image being comprised of a carboxylic or organic sulfonic acid salt of a metal selected from the group consisting of zinc, mercury, copper, iron, cobalt, aluminum and titanium, and a binder for said salt, said crayon comprising wax, a complexing agent for the ions of said metal, and a solvent for the complexing agent, said complexing agent being selected from the group consisting of diphenylcarbazone and ring substituted diphenylcarbazone derivatives corresponding to the structural formula





where each of R_1 and R_2 is selected from the group consisting of alkyl having between 1 and about 4 carbon atoms, alkoxy having between 1 and about 4 carbon atoms, and hydrogen, said solvent being compatible with said wax.

4,525,215
INK COMPOSITION

Keiko Shioi, and Mikihiko Nakanishi, both of Osaka, Japan, assignors to Sakura Color Products Corp., Osaka, Japan

Filed Apr. 25, 1984, Ser. No. 604,314
Claims priority, application Japan, Apr. 25, 1983, 58-73641
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—22 **9 Claims**

1. An ink composition for writing on an absorbent or pervious writing surface to form thereon a writing or marking composed of an inner portion of a first color with outer contour portions therearound of a second color, which composition comprises:

a polar organic solvent,

a nonpolar organic solvent which is miscible with the polar organic solvent,

a first dyestuff which is soluble both in the polar organic solvent and a mixture of the polar organic solvent and the nonpolar organic solvent, but which is insoluble in the nonpolar organic solvent, and

a second dyestuff which is soluble both in the nonpolar organic solvent and a mixture of the polar organic solvent and the nonpolar organic solvent, the second dyestuff being different in color from the first dyestuff,

whereby the first dyestuff forms in conjunction with the second dyestuff the inner portion of the first color based on the first and the second dyestuffs, and the second dyestuff forms the outer contour portions of the second color based on the second dyestuff around the inner portion.

4,525,216
INK COMPOSITION

Mikihiko Nakanishi, Kawachi-Nagano, Japan, assignor to Sakura Color Products Corp., Osaka, Japan

Filed Oct. 26, 1982, Ser. No. 436,686
Claims priority, application Japan, Nov. 4, 1981, 56-177689
Int. Cl.³ C09D *11/08*
U.S. Cl. 106—30 **8 Claims**

1. An ink composition for a marking pen which consists essentially of:

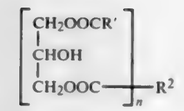
about 40–90% by weight of a volatile organic solvent;

about 1–10% by weight of a pigment;

about 0.5–30% by weight of a resin which is soluble in the solvent; and

about 0.05–10% by weight of at least one anti-drying additive which is selected from the group consisting of

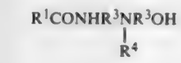
(a) a glyceride of the general formula



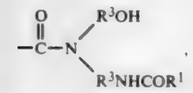
(a)

wherein R^1 represents a fatty acid residue of 7–23 carbons, R^2 represents a mono- or polybasic hydroxycarboxylic acid residue of 1–23 carbons, and n is an integer of 1 or 2,

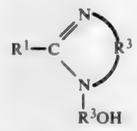
(b) an alkylamide alcohol of the general formula



wherein R^1 is the same as above, R^3 represents an alkylene of 1–4 carbons, and R^4 represents hydrogen or a group of the general formula

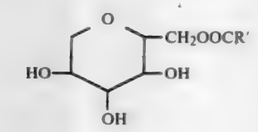


or an intramolecular condensate of the alkylamide alcohol of the formula



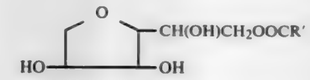
wherein R^4 is hydrogen, or salts of said alkylamide alcohol or intramolecular condensate with fatty acids of 1–8 carbons, and

(c) a sorbitan fatty acid ester of the general formula



(c)

or



wherein R^1 is the same as above.

4,525,217
PROCESS FOR PREPARING FERRIFERROCYANIDE PIGMENTS

Arvind S. Patil, Wyoming; John H. Bantjes, Holland; Louis J. Pepoy, Holland, and Reinhard J. Sappok, Holland, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 2, 1983, Ser. No. 490,364
Int. Cl.³ C09C *1/26*
U.S. Cl. 106—304 **6 Claims**

1. A process for preparing a ferriferrocyanide pigment in the absence of ammonium sulfate in an acidic medium comprising

(a) forming an aqueous reaction mixture comprising

(i) a ferrous salt,
(ii) a compound selected from the group consisting of sulfuric acid, hydrochloric acid, an inorganic potassium salt, and mixtures thereof, and
(iii) an alkali metal ferrocyanide such that the molar ratio of (i) to (ii) to (iii) is about 1:0.9:1 to 1:1.5:1,
(b) oxidizing the acidic solution by aeration;
(c) heating the aerated solution to from 10° C. to 90° C.; and
(d) recovering the pigment.

4,525,218

SELECTIVE HYDROLYSIS OF CELLULOSE TO GLUCOSE WITHOUT DEGRADATION OF GLUCOSE USING ZINC CHLORIDE

Li F. Chen, West Lafayette, Ind., and Che-Ming Yang, Clark, N.J., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed May 11, 1982, Ser. No. 377,078
Int. Cl.³ C13K *1/02*
U.S. Cl. 127—37 **8 Claims**

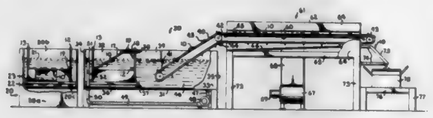
1. A process for the selective hydrolysis of cellulose solids to glucose without degradation of the glucose, which process comprises the steps of:
(a) forming a mixture of cellulose solids together with zinc chloride, said zinc chloride being in the form of an aqueous solution containing from about 60 to about 80% by weight of zinc chloride;
(b) heating the mixture formed in step (a) at a temperature of from about 70° to about 180° C. for a period of time sufficient to convert the cellulose to a liquid form without appreciable formation of glucose;
(c) removing the zinc chloride from the mixture by solvent extraction thereby precipitating the partially hydrolyzed cellulose in the form of cellodextrins; and
(d) separating the precipitated cellodextrins from the extraction media;
(e) hydrolyzing the precipitated cellodextrin to glucose.

4,525,219

AMPULE CLEANING AND QUALITY CONTROL SYSTEM

Larry J. Jones, Overland Park, Kans., assignor to Gard Corporation, Kansas City, Kans.

Filed Apr. 11, 1983, Ser. No. 483,521
Int. Cl.³ B08B *3/12*
U.S. Cl. 134—1 **11 Claims**



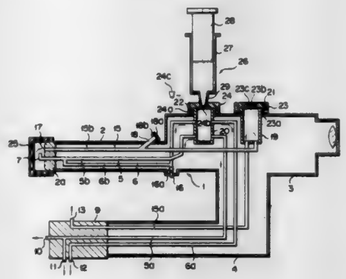
1. A process of cleaning and quality control sifting frangible, sealed, partly filled, floatable ampules comprising the steps of:
(1) placing a number of said ampules in a fluid permeable but fully enclosing container having bottom, top and side walls,
(2) completely submerging the container with said ampules in an ultrasonic cleaning tank and bath containing sufficient liquid therein to completely cover and fill the container whereby the ampules float therein in physical contact with the container top,
(3) transmitting ultrasonic energy into said tank bath in such quantity and in such mode as to both clean the ampules in the container and subject them to sufficient vibrational stress so as to break a substantial percentage of any flawed ampules therein,
(4) removing the container with the cleaned and broken ampules from the ultrasonic cleaning tank bath, and
(5) separating the cleansed intact ampules and the broken ampules from the container and one another in a subsequent separating step.

4,525,220

METHOD OF CLEANING ENDOSCOPE CHANNELS

Hiroyuki Sasa; Hisao Yabe; Yukio Nakajima; Fumiaki Ishii; Koji Takamura, and Takeaki Nakamura, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 14, 1984, Ser. No. 609 977
Claims priority, application Japan, May 16, 1983, 58-85552; May 16, 1983, 58-85557
Int. Cl.³ B08B *3/04, 9/00*
U.S. Cl. 134—21 **7 Claims**



1. A method of cleaning channels of an endoscope which includes a control section, an insertion section extending from the control section and having a nozzle at its distal end, a light guide cable extending from the control section and having a connector at its distal end, an air supply channel extending in the endoscope and having one end communicating with the nozzle and the other end opening to the connector, a liquid supply channel extending in the endoscope and having one end communicating with the nozzle and the other end opening to the connector, a suction channel extending in the endoscope and having one end opening to the distal end of the insertion section and the other end opening to the connector, an air/liquid supply valve cylinder arranged in the control section to communicate with the air supply channel and liquid supply channel and having one end opening to the outside of the control section, and a suction valve cylinder arranged in the control section to communicate with the suction channel and having one end opening to the outside of the control section; said method comprising:
a first step of closing one of the open ends of the air/liquid supply valve cylinder and suction valve cylinder;
a second step of mounting connecting means on the distal end of the insertion section so that liquid is confined to flow between the nozzle and said one end of the suction channel; and
a third step of supplying or sucking liquid from the other of the open ends of the valve cylinders and sending the liquid through the three channels, the air/liquid supply valve cylinder and the suction valve cylinder, thereby cleaning the interiors of the channels and valve cylinders with the liquid.

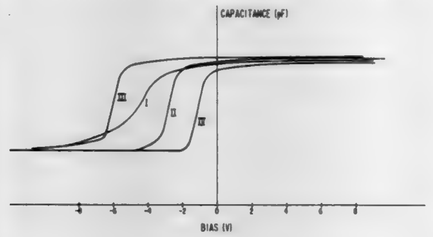
4,525,221

ALLOYING OF ALUMINUM METALLIZATION

Chung P. Wu, Hamilton Township, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 16, 1984, Ser. No. 610,838
Int. Cl.³ H01L *21/24*
U.S. Cl. 148—1.5 **8 Claims**

1. In a method of heating a structure comprising a silicon substrate and a layer of aluminum metallization at least partially in contact therewith to a temperature sufficient to alloy said contact using heating means that will supply a pulse of energy such that the structure is heated to alloying temperature for less than one minute and cooled to below about 200° C.



in not longer than about one minute after cessation of heating, the improvement comprising heating said structure in a reducing atmosphere.

4,525,222

METHOD OF HEAT-TREATING AMORPHOUS MATERIAL

Takashi Meguro, Yasugi; Yasunobu Ogata, Kumagaya, and Yoshizo Sawada, Saitama, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Continuation of Ser. No. 368,867, Apr. 15, 1982, abandoned. This application May 14, 1984, Ser. No. 609,837
Claims priority, application Japan, Apr. 24, 1981, 56-62026
Int. Cl.³ H01F *1/00*
U.S. Cl. 148—121 **3 Claims**

1. A method of heat-treating a Co-base amorphous material having a Curie temperature T_c higher than or equal to the crystallization temperature T_x of said material, comprising a step of holding the amorphous material at a temperature T defined by the following formulae:

$$1.1 \times T_c \geqq T \geqq 0.95 \times T_c$$

and

$$T \geqq T_x$$

for a short time ranging from about 30 seconds to about 3 minutes to enhance the magnetic permeability and to prevent crystallization of said material.

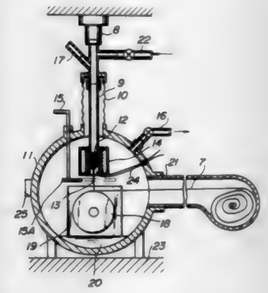
4,525,223

METHOD OF MANUFACTURING A THIN RIBBON WAFER OF SEMICONDUCTOR MATERIAL

Noboru Tsuya, 1-38, Kashiwagi 2-Chome, Sendai, Japan, and Kenichi Arai, Sendai, Japan, assignors to Noboru Tsuya, Sendai, Japan

Continuation of Ser. No. 375,314, May 5, 1982, abandoned, which is a continuation of Ser. No. 55,031, Jul. 6, 1979, abandoned. This application Apr. 9, 1984, Ser. No. 597,565
Claims priority, application Japan, Sep. 19, 1978, 53-114848; Oct. 12, 1978, 53-125485
Int. Cl.³ H01L *21/208*
U.S. Cl. 148—171 **29 Claims**

1. A method of manufacturing a thin ribbon of semiconductor material, comprising:
preparing a material essentially consisting of silicon of more than 90 atomic % with less than 10 atomic % of at least one additional element, for improving the properties of a semiconductor, said additional elements being selected from the group consisting of phosphorus, sulfur, boron, arsenic, tellurium, tin, selenium, aluminum, gallium, indium, silver, and bismuth; and a mixture thereof;
heating said semiconductor material to a melt;
ejecting said melt through a nozzle under pressure from 0.01 to 1.5 atm. onto a moving surface of a cooling substrate to cool said melt at a cooling rate of 10^3–10^6° C./sec;
forming a thin ribbon from the group consisting of p-type, i-type or n-type semiconductor material; whereby the thus obtained thin ribbon of semiconductor material has a polycrystalline structure composed of more than 50% of a grain having a grain size of more than 5 μm, a thickness of



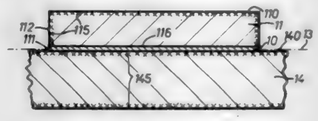
5–200 μm, and a sufficient flexibility such that it is windable on a pipe having a diameter of 34 mm without breaking or cracking.

4,525,224

METHOD FOR THE DOPING OF SUPPORTING SILICON PLATES FOR THE MANUFACTURE OF SEMICONDUCTORS

Thomas Vlasak, Birr, Switzerland, assignor to BBC Brown, Boveri & Cie, Baden, Switzerland

Continuation of Ser. No. 353,810, Mar. 2, 1982, abandoned. This application May 22, 1984, Ser. No. 611,930
Claims priority, application Switzerland, Mar. 2, 1981, 1372/81
Int. Cl.³ H01L *21/223*
U.S. Cl. 148—189 **8 Claims**



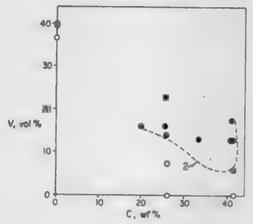
1. A method for selectively diffusing aluminum into at least a first silicon substrate having a first surface, comprising the steps of:
defining on said first surface a first surface portion to be masked and a first unmasked surface portion;
covering at least said first surface portion to be masked with a first layer of silicon dioxide grown onto said first surface portion to be masked;
additionally covering only said first portion to be masked with a masking plate abutting against said first silicon dioxide layer, whereby said first surface portion to be masked is masked by said silicon dioxide layer and said masking plate;
subjecting said first silicon substrate with said first silicon dioxide layer and said masking plate to a source of aluminum impurities under vacuum conditions and at temperatures between 800° C. and 1300° C.; and
diffusing said aluminum impurities into said first silicon substrate at said first unmasked surface portion.

4,525,225

SOLID WATER-IN-OIL EMULSION EXPLOSIVES COMPOSITIONS AND PROCESSES

Michael Cechanski, Nora, Sweden, assignor to Atlas Powder Company, Dallas, Tex.

Filed Mar. 5, 1984, Ser. No. 586,347
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—19.5 **31 Claims**



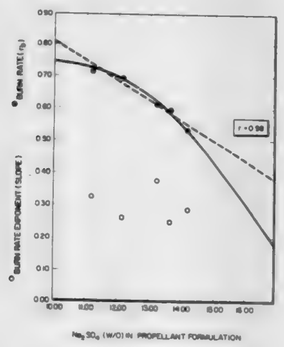
1. A solid water-in-oil emulsion explosive composition comprising:
(a) a continuous emulsion phase formed of a solid carbonaceous fuel derived from an oleaginous liquid and providing a self-sustaining matrix;
(b) a discontinuous emulsion phase formed of an aqueous solution of a detonatable oxidizer salt, the water content of said discontinuous phase being present in a concentration by weight which is less than the concentration by weight of said solid carbonaceous fuel;
(c) a solid non-hygroscopic oxidizer salt dispersed within said emulsion in a solid granular form; and
(d) void cells dispersed within said emulsion in an amount to provide a void cell volume in said emulsion of at least 5 volume percent.

4,525,226

HIGH YIELD NITROGEN GAS GENERATORS

Glen D. Artz, Canoga Park, and Joseph E. Flanagan, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 244,191, Mar. 16, 1981, abandoned. This application Sep. 23, 1982, Ser. No. 421,927
Int. Cl.³ C06B *35/00*
U.S. Cl. 149—35 **2 Claims**



1. A solid propellant gas generator for producing greater than 50-weight percent pure nitrogen gas comprising a stoichiometric blend of sodium azide, NaN_3, and sodium sulfate, Na_2SO_4, and ballistic modifiers.

4,525,227

PROCESS FOR THE MANUFACTURE OF MULTI-LAYER PARTICLE BOARD USING A PHENOL FORMALDEHYDE RESIN HAVING A LOWER SOLIDS CONTENT

Gerd Ripkens, Kamp-Lintfort; Hans Schittek, Neukirchen-Vluyn, and Adolf Buschfeld, Alpen, all of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 414,268, Sep. 2, 1982, abandoned, which is a continuation of Ser. No. 202,529, Oct. 31, 1980, abandoned. This application Dec. 5, 1983, Ser. No. 557,785
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944178
Int. Cl.³ B29J *5/00*; B32B *17/00*
U.S. Cl. 156—62.2 **4 Claims**

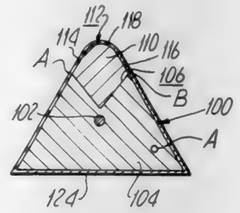
1. In a process for producing a multi-layer particle board having both an inner layer and an outer layer of glued particle board, the improvement which comprises forming said outer layer by gluing particles together into said outer layer with a resin composition comprising very large molecules formed by the condensation of a sufficient quantity of phenol with formaldehyde or another lower aldehyde having from 1 to 4 carbon atoms to produce a resin composition having a solids content of from about 30 to 39 percent by weight, said resin composition having an alkali content between about 2 and 6 percent by weight and a viscosity of from about 30 to 90 seconds (4-mm DIN cup), said resin composition consisting essentially of the reaction product of said formaldehyde or lower aldehyde, said phenol, alkali and water.

4,525,228

METHOD OF WINDING ON FOAM MANDREL

Dennis H. Bowen, North Stoke, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 4, 1983, Ser. No. 520,234
Claims priority, application United Kingdom, Aug. 13, 1982, 8223388
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—155 **11 Claims**



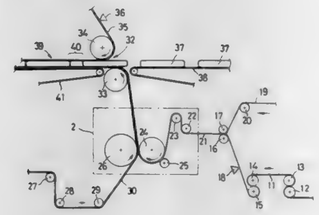
1. A method of producing a fibre-reinforced plastics artefact, comprising the operations of winding filaments onto a mandrel, the filaments being impregnated with a resin and the resin subsequently being cured, wherein the mandrel comprises relatively low density cellular material about a stiff axial spine member, and the method further comprises the operation of removing at least part of the mandrel cellular material from within the artefact after the resin has been partly cured, causing the resin impregnated filaments to conform to the shape of the remaining part of the mandrel, and then completing the curing of the resin.

4,525,229

METHOD FOR ATTACHING ELASTIC BAND TO SANITARY ARTICLES

Migaku Suzuki, Kawanoe; Mitsuzo Ochi, and Satoshi Nozaki, both of Ehime, all of Japan, assignors to UniCharm Corporation, Ehime, Japan

Filed Dec. 14, 1983, Ser. No. 561,479
Claims priority, application Japan, Dec. 15, 1982, 57-219833
Int. Cl.³ B32B *31/08, 31/18*; A61F *13/16*
U.S. Cl. 156—161 **9 Claims**



1. Method for intermittently attaching an elastic band, in a stretched condition, with adhesive, to a continuously moving web forming interconnected articles such as sanitary articles on each side thereof longitudinally at predetermined intervals, said method comprising steps of:
(a) continuously or intermittently applying adhesive on the continuously moving elastic band in a stretched condition;
(b) superposing said elastic band on a continuously moving support tape having a sufficiently high flexibility not to hinder a given expansion and contraction ability of said elastic band and a width larger than that of said elastic band and then nipping such assembly between a first pair of nip rollers to form a combined elastic band;
(c) continuously feeding said combined elastic band onto a surface of a rotary suction drum and severing said combined elastic band by a cutter adapted to be opposed to the surface of said suction drum when the latter has rotated by a predetermined angle;
(d) intermittently feeding said combined elastic band which has been severed and isolated on the surface of said suction drum into the predetermined lengths onto each side and longitudinally of the web being continuously fed around a second nip roller placed to be opposed to said suction drum so as to form the interconnected articles; and
(e) severing said web transversely of said web in the areas defined between the longitudinal ends of the respectively adjacent lengths of the severed combined elastic band attached to said web to form the individual articles.

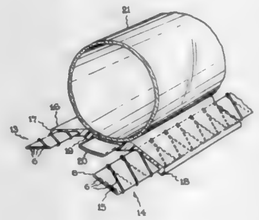
4,525,230

METHOD OF MANUFACTURING A BALLAST RESISTOR SUPPORT MEMBER

Frederick Hetzel, Brookpark, and William G. McCracken, Jr., Highland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 490,745, May 2, 1983, which is a division of Ser. No. 248,550, Mar. 27, 1981, Pat. No. 4,418,328. This application Nov. 5, 1984, Ser. No. 668,683
Int. Cl.³ B32B *5/08*
U.S. Cl. 156—179 **3 Claims**

1. The method of manufacturing a ballast resistor for a gas discharge lamp unit comprising the steps of:
(a) extruding a tube of thermoplastic insulative material through an extrusion die shaped as an oval with a minor axis having sufficient width to permit the introduction of strands of fiberglass within said tube without deforming the shape of the tube;
(b) feeding said strands continuously into said extruded tube after emergence from said extrusion die;
(c) positioning said strands within said tube in a common plane and coextensive with the longitudinal and major axes thereof;
(d) compressing and concurrently cooling said tube to form a substantially flat strip and secure said strands firmly between the opposed walls thereof;
(e) helically winding a restrictive wire uniformly along said flat strip to produce a uniform electrical resistance value



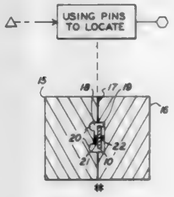
per unit length of said ballast resistor as the result of minimizing both elongation and thickness variation with said placement of the fiberglass strands; and
(f) further extending thermoplastic insulative material around both major surfaces of said wire-wound resistor strip so as to centrally position the strip in said extruded material.

4,525,231

METHOD OF MAKING CUSHIONED AUTOMOTIVE STRAP HANDLE

Jack G. Wnuk, Lapeer, Mich., assignor to Voplex Corporation, Pittsford, N.Y.

Filed Jun. 8, 1983, Ser. No. 502,184
Int. Cl.³ B31C *5/00*
U.S. Cl. 156—185 **15 Claims**



1. A method of making cushioned automotive strap handles having a base strip, a cushion on a side of said base strip, and a cover that is wrapped around said cushion and said base strip and sealed in place, said method comprising:
a. cutting said base strip to length with formed end regions;
b. mounting said formed end regions of said base strip so that a midregion of said base strip spans an injection molding cavity;
c. locating said base strip in a plane spaced from walls of said cavity so that said cavity surrounds said midregion of said base strip;
d. injection molding a resin cladding to surround said midregion of said base strip and provide raised resin shoulders extending along longitudinal side edges of said base strip;
e. using the surrounding engagement of said resin cladding with said base strip to secure said resin shoulders against transverse movement relative to said base strip; and
f. assembling said resin clad base strip with said cushion by wrapping said cover around said cushion and over said raised shoulders and sealing said cover to a seam region of said resin cladding between said shoulders.

10. A method of making cushioned automotive strap handles having a base strip, a cushion on a side of said base strip, and a cover that is wrapped around said cushion and said base strip and sealed in place, said method comprising:

a. index feeding a continuous length of said base strip relative to an injection molding cavity by advancing said base strip when said molding cavity is open and stopping said base strip when said molding cavity is closed so that successive discrete lengths of said base strip span said molding cavity for each injection molding cycle;

b. locating said base strip in a plane spaced from walls of said cavity so that said cavity surrounds said base strip;

c. injection molding a resin cladding to surround a midregion of each of said discrete lengths of said base strip and provide raised resin shoulders extending along longitudinal side edges of said base strip;

d. using the surrounding engagement of said resin cladding with said base strip to secure said resin shoulders against transverse movement relative to said base strip;

e. cutting in regions between said resin claddings to form said base strip to said discrete lengths with formed end regions; and

f. assembling each cut and formed discrete length of resin clad base strip with said cushion by wrapping said cover around said cushion and over said raised shoulders and sealing said cover to a seam region of said resin cladding between said shoulders.

4,525,232

POLYMERIZABLE ACRYLIC COMPOSITIONS HAVING VINYL ETHER ADDITIVE

John M. Rooney, Naas; John Woods, Stillorgan, both of Ireland, and Paul Conway, Bury St. Edmunds, England, assignors to Loctite (Ireland) Ltd., Tallaght, Ireland

Filed Apr. 16, 1984, Ser. No. 600,626
Int. Cl.³ B29C *19/04*
U.S. Cl. 156—273.3 **17 Claims**

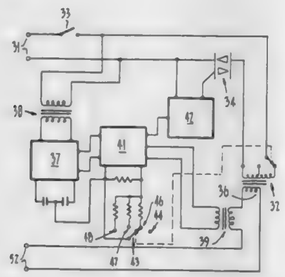
1. In a curable composition activatable by a strong acid comprising an acrylic monomer selected from the group comprising di- and poly-(meth)acrylate esters and monofunctional (meth)acrylate esters having a polar group selected from labile hydrogen, heterocyclic ring, hydroxy, amino, cyano, and halogen groups; a peroxy initiator; and a ferrocene compound, the improvement comprising that the composition further comprises from 0.5–20% of a vinyl ether monomer.

4,525,233

IMPROVEMENTS RELATING TO METHOD AND APPARATUS FOR JOINING SHEET MATERIAL

Ronald H. Brooks, 6 Baxter Ct., Chelsea, Vic. 3196, Australia

Filed Aug. 23, 1983, Ser. No. 525,651
Claims priority, application U.S.S.R., Dec. 24, 1981, PF2085
The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.
Int. Cl.³ B32B *31/26*
U.S. Cl. 156—273.9 **6 Claims**



1. A method of joining together edge portions of carpet or other material with a joining tape which has a heat-softenable adhesive and a reinforcing material, said method comprising the steps of:

(a) locating the joining tape beneath the abutting edge portions so that both edge portions are in contact with the adhesive, and so that the reinforcing material overlaps both edge portions,

(b) securing a strip of metal foil to a paper backing material by stitching to form an elongated heating element of a length greater than the length of the opposed abutting edge portions,

(c) locating the heating element beneath the joining tape so that the metal foil is uppermost,

(d) passing an electric current through said metal foil to generate heat therein,

(e) controlling the current flow so that the heat generated at least softens said adhesive,

(f) pressing the abutting edge portions of said sheets onto said joining tape to adhesively engage the reinforcing material with the edge portions;

(g) stopping the current flow so as to cool the joining tape whereby the adhesive thereon sets and bonds the reinforcing material to the edge portions, and

(h) removing the heating element by longitudinally drawing the metal foil and backing material from beneath the formed seam.

4,525,234

ADHESIVE, PRE-GELLED PLASTISOLS AND PROCESS OF PREPARATION

Julius Herold, Monheim, and Ingeborg Geisen, Düsseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft (KGaA), Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 519,828, Aug. 2, 1983, abandoned. This application Aug. 21, 1984, Ser. No. 643,090
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1982, 3229656
Int. Cl.³ C08J *5/00;* **C08L** *27/06, 33/12, 31/04*
U.S. Cl. 156—332 **12 Claims**

1. A process for preparing an adhesive, pre-gelled plastisol composition which consists essentially in the steps of:

(a) mixing (1) copolymers of vinyl acetate with comonomers selected from the group consisting of ethylene in a vinyl acetate/ethylene ratio by weight of 80:20 to 40:60, and vinyl chloride in a percent by weight ratio of vinyl acetate to vinyl chloride of 5/95 to 10/90, with (2) conventional non-gelled plastisol mixtures based upon (i) polyvinyl chloride and/or polymethyl methacrylate and (ii) one or more suitable plasticizers in a ratio of about 10 to 200 parts of said copolymers of vinyl acetate to 100 parts by weight of polyvinyl chloride and/or polymethyl methacrylate and in a ratio of about 20 to 400 parts of said plasticizer to 100 parts by weight of said copolymers and said component (i), and

(b) heating the mixture from step (a) to a temperature of from about 80° to 130° C., for a time sufficient to effect pre-gelation.

4,525,235

PAPER AND TAPE DISPENSING APPARATUS

Joseph Todisco, Woburn, Mass., assignor to Marson Corporation, Chelsea, Mass.

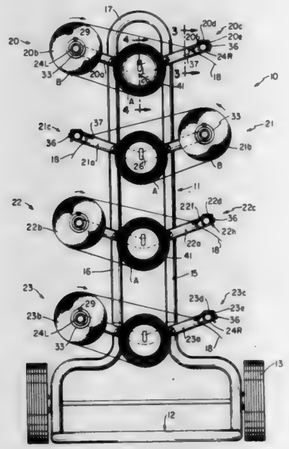
Filed Aug. 14, 1984, Ser. No. 640,735
Int. Cl.³ B31F *5/06;* **B32B** *31/18*
U.S. Cl. 156—511 **5 Claims**

1. An apparatus for dispensing both paper from a roll and tape from a roll to form a paper tape composite which apparatus has a roll of paper and a cutter and paper support comprising

(a) a vertically-oriented frame means positioned on a support surface;

(b) a dispensing unit mounted on the frame means which unit in turn comprises

a pair of spaced-apart projections extending from the frame; each projection being capable of removably receiving a roll of paper or a cutter and paper support means;



a cutter and paper support means attached to one of the projections;

a roll of paper on the other projection; and

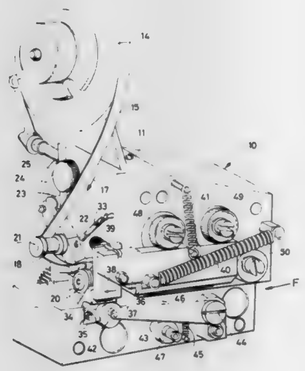
a tape roll axle means positioned between such projections for mounting a tape roll thereon to feed tape from the tape roll toward either projection.

4,525,236

DEVICE FOR THE INSERTION OF SMALL BLOCKING STRIPS OR RIBBONS FOR MULTIPLE SHEET MATERIAL

Guido Verdi, Milan, Italy, assignor to BAMA, SpA, Milan, Italy

Filed Mar. 21, 1983, Ser. No. 477,244
Claims priority, application Italy, Mar. 24, 1982, 21308/82[U]
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—517 **17 Claims**



1. An apparatus for the preparation of blocking strips for insertion thereof into groups of mating holes of materials consisting of laterally punched and coupled sheet groups, whereby each strip has a U-shaped configuration and is fixed to the first and to the last sheet of the sheet group by means of adhesive areas provided in the strip itself, comprising:

means for feeding a continuous ribbon to be cut into small strips;

means for the intermittent advancement of said ribbon along a predetermined path;

cutting means operating at a predetermined and adjustable frequency for engaging said ribbon transversely with respect thereto and to the direction of intermittent advancement of the ribbon along said predetermined path so as to cut said strips from said ribbon;

supporting means for said cutting means, means for imparting two concomitantly reciprocating motions to said supporting means comprising first means for imparting to said supporting means a first reciprocating motion in a direction perpendicular to the predetermined path of said advancement direction of said ribbon and second means for imparting to said supporting means a second reciprocating motion in a direction perpendicular to the direction of said first reciprocating motion; and

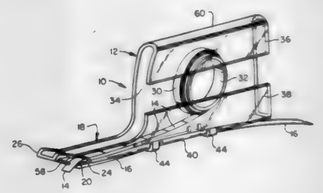
means for the controlled displacement of a continuous strip of sheets coming from a sheet coupling device provided upstream of a device for the insertion of the blocking strips, said displacement means being engaged by said cutting means carrying therewith a just cut small strip concomitantly with said second reciprocating motion imparting means, whereby no relatively motion exists between said cutting means carrying the cut strip and the upper sheet of the sheet group passing onto said displacement means.

4,525,237

METHOD OF REINFORCING LOOSE-LEAF SHEETS AND DISPOSABLE REINFORCING TAB APPLICATOR THEREFOR

Milton Clar, Bethesda, Md., assignor to Leonard S. Blondes, Bethesda, Md., a part interest

Filed May 24, 1982, Ser. No. 381,318
Int. Cl.³ B44C *1/00, 7/00;* **B32B** *31/00*
U.S. Cl. 156—540 **10 Claims**



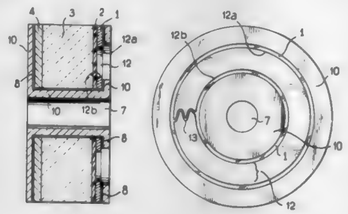
1. A device for applying a reinforcing tab to a sheet in a loose-leaf binder at a region of the sheet between a hole in the sheet through which a ring of the loose-leaf binder passes and an adjacent edge of the sheet, comprising a holder for holding a supply of reinforcing tabs carried on a carrier strip, an elongated member projecting from the holder, the member being sized to fit within the ring of the loose-leaf binder and to position the carrier strip between the edge of the sheet and the hole in the sheet through which the ring passes, a deflecting edge adjacent to one end of the projecting member around which the carrier strip is adapted to be passed to separate a tab therefrom, and applicator means adjacent to the deflecting edge for pressing the separated tab onto the sheet.

4,525,238

PROCESS FOR MANUFACTURING AN ELECTRIC CIRCUIT INTENDED FOR FIRING A PYROTECHNIC DEVICE AND THE CIRCUIT THUS OBTAINED

Claude Flassayer; Bernard Le Grives, and Paul R. Simon, all of Nice, France, assignors to Sfernice Societe Francaise de l'Electro-Resistance, Paris, France

Filed Dec. 8, 1983, Ser. No. 559,464
Claims priority, application France, Dec. 15, 1982, 82 21024
Int. Cl.[3] H01L *21/306*
U.S. Cl. 156—645 **4 Claims**



1. A process for manufacturing an electric circuit comprising an electrically resistant element (**13**), (**14**, **1***c*, **15**) for firing a pyrotechnic device, said process comprising the steps of fixing a sheet (**1**) of an electrically resistant material to an electrically insulating support (**3**), etching two conducting zones (**12***a*, **12***b*), (**1***a*, **1***b*) on said sheet, separating said conducting zones by an electrically resistant element (**13**), (**14**, **1***c*, **15**), and covering each of said two conducting zones (**12***a*, **12***b*), (**1***a*, **1***b*) at least partially by a layer (**10**) of a conducting material intended to provide the electric contact with the terminals supplying the electric current to the circuit, this process comprising the following steps:

first applying a fine nickel layer (**6***a*) and then a fine copper layer (**6**) to the sheet (**1**),

piercing a hole (**7**) through said sheet (**1**), support (**3**), fine nickel layer (**6***a*) and fine copper layer (**6**),

depositing a fine copper layer (**8**) on the assembly, depositing a protecting mask (**9**) in the openings etched in the resisting sheet, depositing a copper layer (**10**) of a thickness between 20 and 40 microns and then a tin-lead layer of a thickness between 5 and 15 microns in the hole (**7**) and on the two faces of the assembly,

removing the protecting mask (**9**) and removing the fine copper layer (**8**) protected by the mask (**9**) by chemical action and,

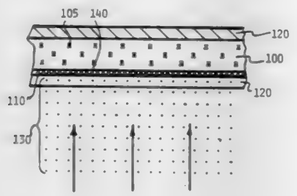
removing the external tin-lead layer (**11**) by chemical action.

4,525,239

EXTRINSIC GETTERING OF GAAS WAFERS FOR MESFETS AND INTEGRATED CIRCUITS

Fan-Ching Wang, Rohnert Park, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 23, 1984, Ser. No. 602,833
Int. Cl.[3] B44C *1/22;* **C03C** *15/00, 25/06*
U.S. Cl. 156—645 **7 Claims**



1. A method for isolating imperfections in a GaAs wafer having first and second surfaces, comprising the steps of:

forming an insulating layer over the first and second surfaces;

mechanically treating one of the first and second surfaces to produce a surface damage layer;

heating said substrate in a forming gas to a temperature no higher than a temperature required to maintain the substrate at a semi-insulating condition;

maintaining said temperature over a period of time sufficient for the imperfections to migrate in the substrate toward said damaged surface layer; and

removing said insulating layer over said surface not mechanically damaged.

4,525,240

DISSOLUTION OF METALS UTILIZING TUNGSTEN

Moenes L. Elias, Canfield, and Walter L. Burger, Salem, both of Ohio, assignors to Plastic Specialties and Technologies, Inc., Barrington, Ill.

Filed Aug. 22, 1983, Ser. No. 525,079
Int. Cl.[3] C23F *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*
U.S. Cl. 156—659.1 **19 Claims**

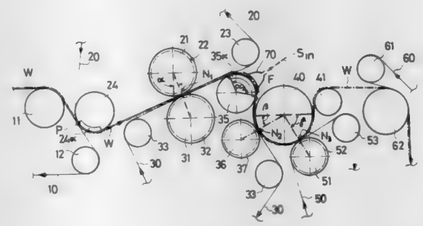
1. A method of metal dissolution which comprises contacting a metal with an aqueous solution containing from about 0.2 to about 4.5 gram moles per liter of sulfuric acid, from about 0.25 to about 8 gram moles per liter of hydrogen peroxide and a catalytically effective amount of tungsten.

4,525,241

PRESS SECTION OF A PAPER MACHINE

Jorma Laapotti, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Feb. 28, 1983, Ser. No. 470,197
Claims priority, application Finland, Mar. 5, 1982, 820776
Int. Cl.[3] D21F *3/04, 9/00, 9/02*
U.S. Cl. 162—301 **19 Claims**



1. A closed press section of a paper machine, comprising:

a first upper fabric on which a paper web from a forming wire of a wire section of a paper machine is carried,

a first double-felted press nip constituted by two hollow-faced rolls through which said first upper fabric and web pass,

a second lower fabric passing through said first press nip which carries the web after said first press nip, the web being dewatered in said first press nip through both of its faces,

a smooth-faced central roll constituting one roll of at least two single-felt nips, the web being detached from said second lower fabric and adhering to the face of said smooth-faced central roll to move therewith into a next one of said single-felt nips which is provided with its own press fabric, and

wherein said press section is devoid of press nips formed with rolls of the suction type, said hollow-faced rolls constituting said first double-felted press nip comprising solid-mantle hollow-faced rolls,

said second lower fabric having a run prior to a first one of said single-felt nips which is turned in a downward direction over a peripheral sector of a roll situated within a loop of said second lower fabric, said pheripheral sector having a magnitude in the range of about 30° to 160°,

wherein the web passes through said first double-felted press nip and said at least two single-felt nips so that the face of the web which did not contact the forming wire of the wire section contacts the smooth face of said central roll in said at least two single-felt press nips, and wherein

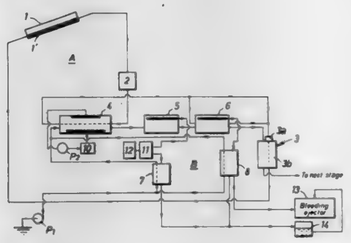
said at least two single-felt press nips formed with said smooth-faced central roll include first and second single-felt press nips which are positioned below a horizontal plane passing through the axis of said central roll and load the central roll in an upward direction to compensate for the weight of the central roll, said first and second single-felt press nips constituting means for dewatering the web in a downwardly direction.

4,525,242

DESALTING SYSTEM UTILIZING SOLAR ENERGY

Tomimaru Iida, 5-20-11, Todoroki, Setagaya-ku, Tokyo, Japan

Filed Jul. 9, 1982, Ser. No. 396,827
Claims priority, application Japan, Jul. 31, 1981, 56-119235
The portion of the term of this patent subsequent to Mar. 9, 1999, has been disclaimed.
Int. Cl.[3] C02F *1/06, 1/14*
U.S. Cl. 202—177 **5 Claims**



1. A desalting system including a heat collecting circuit and a distillation circuit which comprises in combination:

a solar heat collector provided with a heat collecting pipe therein through which is passed a heat-transfer medium to be heated by solar energy within said heat collector;

means for adiabatically compressing said solar energy heated heat-transfer medium said heat-transfer medium being directed to said compression means via said heat collecting pipe;

means for directing said compressed heat-transfer medium to a first heat exchanger into which seawater is introduced for heating said seawater through the exchange of heat between said adiabatically compressed, solar energy heated heat-transfer medium and said seawater;

means for introducing said seawater into said first heat exchanger;

means for directing said heat-transfer medium, after passing through said first heat exchanger, to a means for adiabatically expanding said heat-transfer medium and for returning said adiabatically expanded heat-transfer medium to said solar heat collector;

means for directing said heated seawater to at least one evaporation means for collecting and separating steam produced from said seawater;

means for directing said steam to at least one additional heat exchanger for condensing said steam into fresh water; and

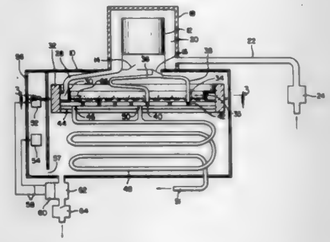
means for collecting and storing said fresh water.

4,525,243

APPARATUS FOR DESALINATING WATER

Stanley Miller, Portland, Oreg., assignor to J. Stanley Miller Corporation, Portland, Oreg.

Filed Mar. 5, 1984, Ser. No. 586,035
Int. Cl.[3] B01D *1/28, 3/10*
U.S. Cl. 202—181 **7 Claims**



1. Apparatus for desalinating water comprising

a tank for receiving water to be desalinated and for holding residual water at a selected level,

said tank having upper and lower ends and defining side walls,

a vacuum pump at the upper end of said tank having an inlet communicating with said tank for reducing the interior of said tank to a continuous subatmospheric pressure, to vaporize said water and for heating said water vapors while said water vapors pass therethrough,

said pump also having an outlet,

heat transfer means communicating with said pump outlet for receiving said heated water vapors and being submerged in said tank adjacent a water level in the tank,

heat pickup means adjacent said pump for receiving heat generated by the operation of said pump,

inlet means for water to be desalinated leading through said heat pickup means and providing discharge of inlet water at said heat transfer means above the water level for vaporization by heat from said heat transfer means which have been heated by heat generated by the change in pressure and heating of said pump,

a float within said tank, said heat transfer means being mounted on said float and said inlet means terminating on said float,

and condensing means leading from said heat transfer means for forming a condensate from water vapor forced into said heat transfer means from said pump outlet.

4,525,244

VAPOR RECOMPRESSION REBOILING PROCESS

Jean-Paul Gourlia; Philippe Jacob, both of Lyons, and Robert Jamen, Irigny, all of France, assignors to Elf France, France

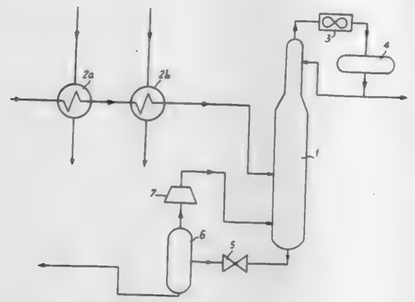
Filed Nov. 24, 1982, Ser. No. 444,511
Claims priority, application France, Dec. 4, 1981, 81 22742
Int. Cl.[3] B01D *3/02*
U.S. Cl. 203—26 **5 Claims**

1. A process for reboiling a distillation column operating under pressure in which the products are normally discharged at the top of the column and in which a part of the bottom product is withdrawn from the bottom of the column and provides a low thermal level heat source, characterized in the steps of:

expanding the withdrawn bottom product as a whole in an expansion balloon flask;

withdrawing the liquid fraction resulting from the expansion of the bottom product;

compressing only the vapor fraction of the bottom product from the resulting expansion and;



then reinjecting the compressed vapor fraction into the column to provide a selected reboiling heat.

4,525,245

SEPARATION OF N-BUTYL ACETATE FROM N-BUTANOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., and An-I Yeh, 709 S. 12th Ave., both of Bozeman, Mont. 59715

Filed May 7, 1984, Ser. No. 608,040
Int. Cl.³ B01D *3/40*; C07C *67/48*
U.S. Cl. 203—51 **2 Claims**

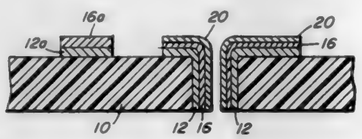
1. A method for recovering n-butyl acetate from a mixture of n-butyl acetate, n-butanol and water which comprises distilling a mixture of n-butyl acetate, n-butanol and water in a rectification column in the presence of an extractive agent, recovering essentially pure n-butyl acetate and water as overhead product and obtaining the extractive agent and n-butanol from the stillpot or reboiler, the extractive agent comprises at least dimethylsulfoxide.

4,525,246

MAKING SOLDERABLE PRINTED CIRCUIT BOARDS

Maurice E. Needham, Andover, Mass., assignor to Hadco Corporation, Salem, N.H.

Filed Jun. 24, 1982, Ser. No. 391,969
Int. Cl.³ C25D *5/02*; H01K *3/42*
U.S. Cl. 204—15 **4 Claims**



1. In a process for making a copper-circuit-bearing printed circuit board of the solder-compatible type wherein circuit board hole barrels and pads around said holes are coated with a quantity of solder sufficient to facilitate making soldered connections to said printed-circuit board, the improvement wherein

a first, thin non-solderable solder layer is electroplated directly over said copper circuit, said first solder layer is covered with a protective mask except in the areas defined by hole pads and hole barrels, and

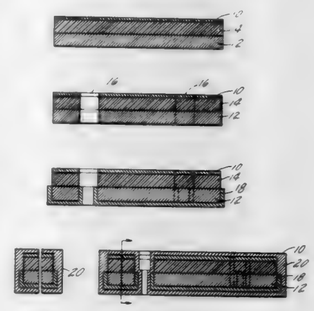
said hole pads and hole barrels are then given a heavier, solder-functional coating of solder before said protective mask is removed from said first solder layer.

4,525,247

MICROWAVE CIRCUIT BOARDS AND METHOD OF MANUFACTURE THEREOF

Rodger P. McMonagle, Tempe, Ariz., assignor to Rogers Corporation, Rogers, Conn.

Filed Jul. 12, 1982, Ser. No. 397,546
Int. Cl.³ C25D *11/08*; H05K *1/09*
U.S. Cl. 204—24 **30 Claims**



1. A method of preparing a circuit board from a laminate of dielectric material sandwiched between layers of copper and aluminum comprising the steps of:

forming at least one through-hole in the laminate;

anodizing the exposed areas of the aluminum layer in H_3PO_4 while electrically isolating the aluminum from the copper;

electroplating a conductive metal over the anodic coating on the aluminum;

etching exposed areas of the dielectric material; and

electroless plating a conductive metal coating over all exposed surfaces of the laminate.

4,525,248

PROCESS FOR THE ELECTROLYTIC DEPOSITION OF LAYERS OF NICKEL ALLOYS

Vaclav Landa, Hrusicka, and Jaromir Vitek, Prague, both of Czechoslovakia, assignors to Stani vyzkumny ustav materoalu, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 242,636, Mar. 11, 1981, abandoned. This application May 27, 1983, Ser. No. 498,957
Claims priority, application Czechoslovakia, Jun. 18, 1980, 4292-80
Int. Cl.³ C25D *5/34, 3/56*
U.S. Cl. 204—29 **9 Claims**

1. A process of cathodic deposition of alloys selected from the group consisting of nickel/molybdenum, nickel/tungsten and nickel/phosphorus, the process comprising degreasing the surface of an object to be metal-plated, activating said surface by rinsing in a sulphosalicylic acid solution, and finally metal-plating said surface in an aqueous sulfo-salicylic acid electrolyte containing nickel as a major ingredient and substances selected from the group consisting of compounds of molybdenum, tungsten and phosphorus in concentrations varying within the range from 0.001 to 0.25×10^3 mol.m^{-3}.

4,525,249

TWO STEP ELECTRO CHEMICAL AND CHEMICAL ETCH PROCESS FOR HIGH VOLT ALUMINUM ANODE FOIL

Mulk R. Arora, Columbia, S.C., assignor to North American Philips Corporation, New York, N.Y.

Filed Jul. 16, 1984, Ser. No. 631,667
Int. Cl.³ C25F *3/04*
U.S. Cl. 204—129.75 **11 Claims**

1. A two step process for etching aluminum electrolytic capacitor anode foil wherein such foil has a high cubic texture, greater than 70% cubicity, comprising a first step of:

treating said foil in an electrolyte bath containing between 1.5% and 7% hydrochloric acid and 0% to 2% aluminum as a chloride under the influence of direct current at a temperature between 70° C. and 85° C.; and

passing a charge of 6 to 25 coulombs through said foil while



said foil is immersed in said hydrochloric acid bath and having a current density between 0.25 and 0.6 amperes/cm^2; and

in a second step, treating said foil emerging from said first bath in an aqueous bath consisting of from 2 to 11% nitric acid and between 0% to 3.5% aluminum as aluminum nitrate for a period of 3 to 12 minutes at a bath temperature of 80° to 95° C.

4,525,250

METHOD FOR CHEMICAL REMOVAL OF OXIDE LAYERS FROM OBJECTS OF METAL

Ludwig Fahrmbacher-Lutz, Augsburg, and Klaus Seidler, Baienfurt, both of Fed. Rep. of Germany, assignors to Ludwig Fahrmbacher-Lutz, Augsburg, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 329,115
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048083
Int. Cl.³ C25D *5/34*; C25F *1/08*
U.S. Cl. 204—58.5 **9 Claims**

1. A method for chemical removal of oxide layers from the surface of objects made of titanium or a titanium alloy prior to subsequent coating of said object with a metal characterized in that the oxide removal treatment is carried out with a mixture of hydrogen fluoride and one or more alkali fluorides and/or ammonium fluoride in a non-aqueous organic solution substantially free of water and oxygen molecules.

2. A method according to claim 1 characterized in that the metal object from which the oxide layer has been removed is then flushed with an inert solvent in an atmosphere free of water vapor and oxygen, and is then promptly coated with a metal coating composition before the surface of said metal object can re-oxidize, said metal coating composition comprising a metal selected from the group consisting of aluminum, copper, nickel, silver, germanium, beryllium, molybdenum, tungsten and zirconium.

4,525,251

PROCESS FOR PRODUCING DIMETHYL ESTERS OF HIGHER DIBASIC ACID

Kazunori Yamataka, and Toshiro Isoya, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP82/00451, § 371 Date Sep. 12, 1983, § 102(e) Date Sep. 12, 1983, PCT Pub. No. WO83/02463, PCT Pub. Date Jul. 21, 1983
PCT Filed Nov. 26, 1982, Ser. No. 536,160
Claims priority, application Japan, May 28, 1981, 56-80016; Jun. 4, 1981, 56-85017; Jan. 12, 1982, 57-2261; Aug. 27, 1982, 57-147810
Int. Cl.³ C07B *29/06*
U.S. Cl. 204—79 **10 Claims**

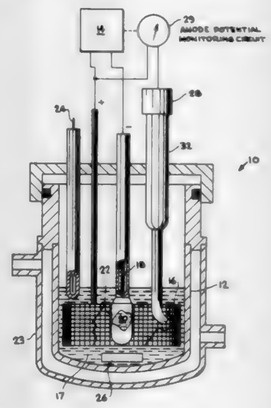
1. In a process for producing long-chain dimethyl esters of higher dibasic acids, the improvement comprising condensing electrolytically and batchwise a mixture of acid esters consisting of monomethyl adipate or monomethyl glutarate essentially free of glutaric anhydride and glutaric acid and a monomethyl ester of a C_8–C_{11} dicarboxylic acid in a methanolic solution containing alkali metal salts of said acid esters, in a molar ratio of at least 2 of the monomethyl adipate or the monomethyl glutarate essentially free of glutaric anhydride and glutaric acid to the monomethyl ester of a C_8–C_{11} dicarboxylic acid, while keeping the water concentration in said methanolic solution at 0.15–3.5% by weight, wherein said electrolytic condensation is conducted until the sum of concentrations of the monomethyl glutarate essentially free of glutaric anhydride and glutaric acid and the monomethyl ester of a C_8–C_{11} dicarboxylic acid is reduced to 1% by weight or less.

4,525,252

METHOD FOR SYNTHESIZING N_2O_5

Raymond R. McGuire, Brentwood; Clifford L. Coon, Fremont; Jackson E. Harrar, Castro Valley, and Richard K. Pearson, Pleasanton, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 399,948, Jul. 20, 1982, Pat. No. 4,432,902.
This application Oct. 28, 1983, Ser. No. 546,715
The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.
Int. Cl.³ C25B *1/00*
U.S. Cl. 204—101 **9 Claims**



1. A method of synthesizing N_2O_5, comprising:

(a) providing an electrochemical cell including an anode disposed in an anode compartment and a cathode disposed in a cathode compartment, said anode and cathode being operatively connected to a power source;

(b) disposing a solution of N_2O_4 and HNO_3 in said anode compartment, and a solution of HNO_3 in said cathode compartment;

(c) applying and maintaining a controlled potential between said N_2O_4/HNO_3 solution and said anode to minimize side reactions; and

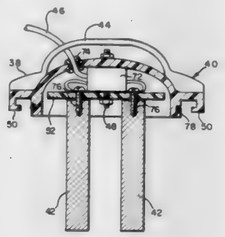
(d) thereafter forming N_2O_5 in said anode compartment.

4,525,253

METHOD AND APPARATUS FOR PURIFICATION OF WATER

Daniel F. Hayes; Robert G. Sias, both of Lake Worth; Lloyd Chesney, West Palm Beach, and John W. Waldron, Highland Beach, all of Fla., assignors to MED Products, Inc., Archer, Fla.

Continuation of Ser. No. 466,549, Feb. 15, 1983, abandoned. This application Jun. 28, 1984, Ser. No. 625,718
Int. Cl.³ C02F *1/46*; C25B *11/04*
U.S. Cl. 204—149 **27 Claims**



1. A method for purifying a body of water, comprising the steps of:

circulating the water over two electrodes, the electrodes being solid bars, the water being circulated in a discontinuous path defined by an enclosure for the electrodes, at least one of the electrodes being wired to ground potential through a resistor, at least one of the electrodes comprising an alloy of:

approximately 85% to 93% copper, by weight;

approximately 1.5% to 5% silver, by weight;

approximately 2.5% to 7% nickel, by weight;

simultaneously releasing copper ions and silver ions into the circulating water at concentration levels which are effective to substantially reduce algae and bacteria levels, but which are substantially less than the levels otherwise necessary to be so effective when released independently, by developing an electrical potential between the electrodes, whereby the water may be purified without need for chlorine treatment; and,

sensing and indicating fouling of the electrodes by monitoring the potential of the electrode wired through the resistor, fouling being detected by a drop in said potential.

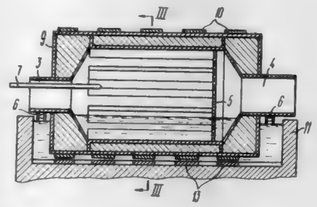
4,525,254

PROCESS AND APPARATUS FOR PURIFYING EFFLUENTS AND LIQUORS

Vitaly A. Feofanov; Boris V. Pilat; Larisa P. Zhdanovich; Anatoly G. Romanenko; Boris S. Lukhanin; Oleg V. Donets, and Valery P. Korobochkin, all of Alma-Ata, U.S.S.R., assignors to Gosudarstvenny Nauchno-Issledovatelsky I Proektny Institut Po Obogascheniju Rud Tsvetnykh Metallov "Kazmekhanobr", Alma-Ata, U.S.S.R.

Filed Oct. 7, 1982, Ser. No. 433,234
Int. Cl.³ C02F *1/46*
U.S. Cl. 204—150 **4 Claims**

1. In a method for purifying effluents and liquors, comprising dissolving a metal anode without applying current from an external source in the presence of a non-soluble cathode made of a material which has a potential higher than the potential of the anode, whereby organic and inorganic impurities are precipitated on the resultant compounds, the improvement consisting of precipitating the impurities as the anode and cathode are alternatively brought in contact with each other, with an



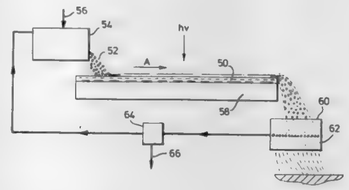
oxygen-containing gas and with the effluents and liquors being treated.

4,525,255

PHOTOCHEMICAL REACTIONS FOR COMMERCIAL SYNTHESIS

James E. Guillet, 31 Sagebrush La., Don Mills, Ontario, Canada (M3A 1X4)

Filed Nov. 16, 1982, Ser. No. 442,181
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—158 R **12 Claims**



1. A process for converting at least one photochemically reactive chemical reactant to photochemical reactions products by exposure to solar radiation, which comprises:

providing a carrier which is buoyant on an aqueous liquid medium, and substantially inert to the chemical reactant and the photochemical reaction products;

applying said at least one reactant to the carrier and supporting it thereon or therein;

floating said carrier supporting said at least one reactant on an aqueous medium in which the carrier is substantially insoluble and inert;

causing photochemical reaction of or between said photochemically reactive chemical reactant or reactants, without the involvement of the supporting aqueous medium therein, by exposing the carrier-supported reactant or reactants to solar radiation while the carrier floats on the aqueous liquid medium;

and recovering from the inert carrier photochemical reaction products obtained from said reactant or reactants.

4,525,256

PHOTOPOLYMERIZABLE COMPOSITION INCLUDING CATALYST COMPRISING DIKETONE PLUS 4-(N,N-DIMETHYLAMINO)BENZOIC ACID OR ESTER THEREOF

Brian Martin, Princeton Junction, N.J., assignor to Johnson & Johnson Dental Products Company, East Windsor, N.J.

Filed Jul. 1, 1983, Ser. No. 510,134
Int. Cl.³ C08F *2/48*, *2/50*
U.S. Cl. 204—159.18 **10 Claims**

1. A photopolymerizable composition comprising at least one olefinically unsaturated compound and a catalytically effective amount of a photosensitive system consisting essentially of:

(a) an effective amount of at least one vicinal diketone compound; and

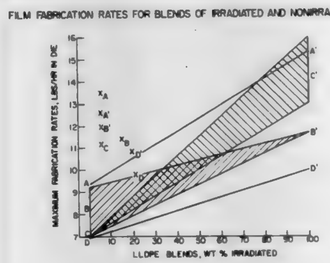
(b) an effective amount of 4-(N,N-dimethylamino)benzoic acid or lower alkyl ester thereof.

4,525,257

LOW LEVEL IRRADIATED LINEAR LOW DENSITY ETHYLENE/ALPHA-OLEFIN COPOLYMERS AND FILM EXTRUDED THEREFROM

Stuart J. Kurtz, Martinsville, and James E. Potts, Millington, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 27, 1982, Ser. No. 452,937
Int. Cl.³ B29F *3/06*; C08F *2/46*
U.S. Cl. 204—159.2 **36 Claims**



1. A polyethylene composition comprising a narrow molecular weight distribution, substantially linear, low density, copolymer of ethylene and one or more alpha-olefins said copolymer prior to crosslinking having a ratio of weight average molecular weight to number average molecular weight of between about 1 and 10 and being predominately free of long chain branching, said copolymer being crosslinked to an extent sufficient to be free of significant gelation and to provide increased extensional viscosity and substantially equivalent high shear viscosity when compared with the corresponding non-crosslinked narrow molecular weight distribution substantially linear, low density copolymer of ethylene.

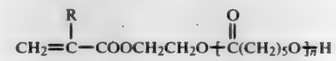
4,525,258

RADIATION-CURABLE RESIN COMPOSITION

Shoji Watanabe, and Kiyoshi Okitsu, both of Hiroshima, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 7, 1983, Ser. No. 464,253
Claims priority, application Japan, Feb. 5, 1982, 57-18004
Int. Cl.³ C08J *3/28*; C08L *63/10*, *67/06*, *75/04*
U.S. Cl. 204—159.23 **7 Claims**

1. A radiation-curable resin composition comprising 0.1 to 10 parts by weight of a photosensitizer and 100 parts by weight of a mixture of 40 to 95 wt% of a resin having a molecular weight of at least 300 and at least one ethylenically unsaturated group in the molecule and 60 to 5 wt% of ϵ-caprolactone modified 2-hydroxyethyl acrylate of methacrylate of the formula:



wherein

R=H or CH_3 and

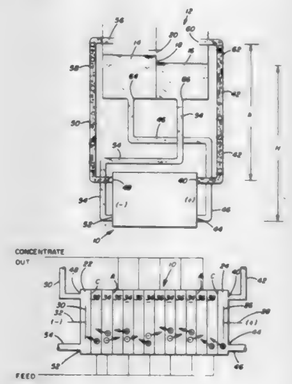
n is 1 to 10.

4,525,259

METHOD AND APPARATUS FOR ELECTRODIALYSIS

Richard E. Horn, and Bradley D. Rodeheaver, both of Pittsburgh, Pa., assignors to Electrochem International, Inc., McDonald, Pa.

Filed Nov. 10, 1983, Ser. No. 550,600
Int. Cl.³ B01D *13/02*; G01N *27/28*
U.S. Cl. 204—182.4 **11 Claims**



1. A method of electrodialysis in electrodialysis apparatus having ion selective permeable membranes defining a stack of chambers including concentrating chambers containing a concentrate liquid and diluting chambers containing a dilute liquid, said diluting chambers positioned between said concentrating chambers, a pair of electrode compartments including a cathode chamber positioned at one end of said stack with a cathode positioned therein and an anode chamber positioned at the other end of said stack with an anode positioned therein, and a direct current source connected to said electrodes which includes,

maintaining a dilute liquid in a pair of chambers adjacent to said pair of electrode chambers to prevent ion migration from the concentrate liquid in said concentrating chambers into said electrode chambers, one of said chambers being a diluting chamber and the other of said chambers being an idling chamber, said idling chamber containing a dilute solution and having a membrane of the same ion permselective type on the side away from the electrode compartment as on the side of said electrode compartment,

circulating liquid from said cathode chamber to a first reservoir and from said first reservoir to said anode chamber,

circulating liquid from said anode chamber to a second reservoir and from said second reservoir to said cathode chamber, and

maintaining electrical isolation between said reservoirs and said anode and cathode chambers while recirculating liquid between said anode and cathode chambers.

4,525,260

CATHODIC ELECTROCOATING COMPOSITION COMPOUNDED WITH LATEX BINDER AND POSSESSING ENHANCED GLOSS

Kirk J. Abbey, Cleveland, Ohio, and James R. Erickson, Katy, Tex., assignors to SCM Corporation, New York, N.Y.

Filed Jul. 14, 1983, Ser. No. 513,620
Int. Cl.³ C25D *13/06*
U.S. Cl. 204—181.7 **7 Claims**

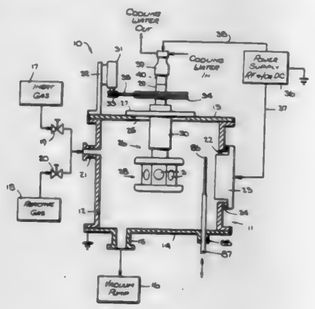
1. A method of electrocoating an electrically conductive surface serving as a cathode in an electrical circuit comprising said cathode, an anode, and an aqueous electrodepositable composition wherein net unidirectional electric current is passed through said circuit for causing deposition of said com-

position on said cathode and the resulting electrodeposit is baked to cure it, said method being characterized by using as said composition one that comprises synthetic, cation-active, film-forming, amino-stabilized latex particles having latex microgel content that is no substantially above about 2%.

4,525,261
SPUTTERING METHOD
Hiroshi Hotta, and Yoshiharu Suzuki, both of Fuji, Japan, assignors to Polyplastics Co. Ltd., Osaka, Japan
Filed Nov. 1, 1983, Ser. No. 547,812
Claims priority, application Japan, Nov. 17, 1982, 57-201410
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 EC **11 Claims**

1. A method for metallizing a polyacetal molded article on the surface thereof by sputtering, which comprises the steps of: first coating the polyacetal molded article with a primer solution comprising a chlorinated polyolefin resin and a chlorine-containing solvent to dissolve therein said resin and then sputtering a metal on the treated polyacetal molded article.

4,525,262
MAGNETRON REACTIVE BIAS SPUTTERING METHOD AND APPARATUS
Walter H. Class, Yonkers, N.Y.; Steven D. Hurwitt, Park Ridge, N.J., and Michael L. Hill, New York, N.Y., assignors to Materials Research Corporation, Orangeburg, N.Y.
Continuation of Ser. No. 342,977, Jan. 26, 1982, abandoned. This application Nov. 28, 1983, Ser. No. 555,449
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 R **18 Claims**



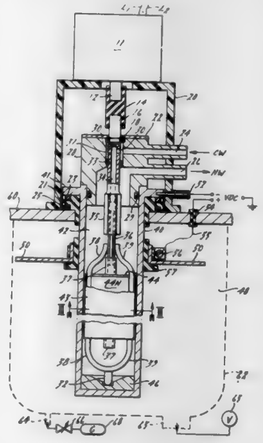
1. A method of reactive film deposition which includes the steps of providing a metallic coating source and at least one substrate on a substrate support in a hermetic chamber so that a surface of the substrate is exposed to the coating source, evacuating the chamber, introducing at least a reactant gas into the chamber, activating said coating source to emit metallic particles for deposition on said exposed substrate surface, and applying a bias voltage to the substrate support sufficient to ionize the reactant gas for reactjng with the metallic particles from said metallic coating source deposited on the substrate, wherein the improvement comprises:
providing a magnetic field having lines of force which leave the substrate support, extend across the surface of the substrate exposed to the coating source, and re-enter the support to enclose said exposed substrate surface in a magnetic electron-trapping field, the strength of said magnetic field decreasing with distance from said exposed substrate surface, and
adjusting the bias voltage to be sufficient to produce a dense localized glow discharge containing reactive gas ions and being disposed closely adjacent to said substrate, such that the reaction rate of said gas with the metallic particles deposited on the substrate is increased without a corresponding increase in back sputtering from the substrate.

4,525,263
METHOD FOR CLEANING A CORROSION PROTECTION ANODE
Warren E. Parkhurst, 445 Albrecht La., Durango, Colo. 81301, and David Moser, 14276 Holt Ave., Santa Ana, Calif. 92705
Division of Ser. No. 575,625, Jan. 31, 1984,. This application Nov. 2, 1984, Ser. No. 667,684
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—196 **1 Claim**



1. A method of cleaning an earth installed liquid anode comprising the steps of reducing the pressure at the liquid anode to thereby allow earth liquids to be driven around the liquid anode and thereafter collecting the earth liquids at the surface of the anode and ejecting them away from the anode.

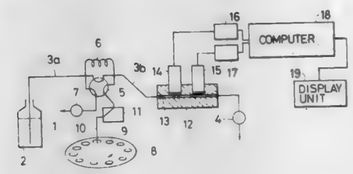
4,525,264
CYLINDRICAL POST MAGNETRON SPUTTERING SYSTEM
David W. Hoffman, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 7, 1981, Ser. No. 327,971
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **4 Claims**



1. A system for sputtering within a vacuum chamber containing a partial pressure of an ionizable gas including:

means providing a generally cylindrical closed surface cathode having a defined length dimension and the outer portion of said closed surface containing material to be sputtered therefrom:
means defining an anode adjacent said cathode;
means for generating a biasing voltage potential and providing connection of said potential between said cathode means and said anode means;
means mounted within said closed surface cathode means for generating a magnetic field oriented to define a closed loop electron confinement tunnel over the length of said cathode;
said magnetic field generating means including at least two flexible magnets each having oppositely disposed surfaces of opposite polarity adjacently wrapped around a support mandrel so that for each magnet one of said oppositely disposed surfaces faces the mandrel while the other surface is exposed and adjacent exposed surfaces are of opposite polarity, and the joint between the adjacent surfaces defines said closed loop electron confinement tunnel.

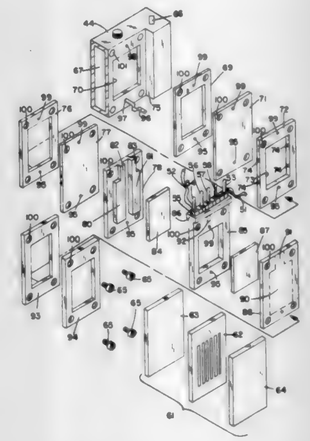
4,525,265
ELECTROCHEMICAL SENSOR CAPABLE OF DETERMINING HYDROGEN PEROXIDE CONCENTRATION AND ANALYZER USING THE SAME
Yumiko Abe, Hitachi, and Kenji Yasuda, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 19, 1984, Ser. No. 571,947
Claims priority, application Japan, Jan. 21, 1983, 58-7333
Int. Cl.³ C12Q *1/58*
U.S. Cl. 204—403 **11 Claims**



1. An analyzer including a urea-nitrogen-determining sensor having an enzyme membrane of immobilized urease and an electrochemical sensor arranged in a common flow passage, said electrochemical sensor comprising an electrically insulating body, a hydrogen peroxide-permeable membrane fitted to the body, said body holding an electrolyte therein, and a work electrode and a counter electrode both of which are disposed in said body, said counter electrode being made of a palladium-containing conductive material, whereby use of said palladium-containing conductive material as the counter electrode avoids deactivation of the urease by the material of said counter electrode.

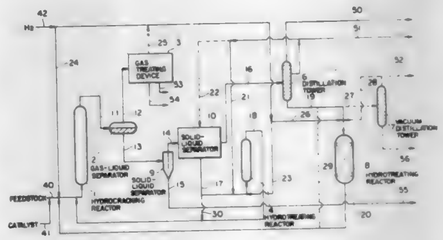
4,525,266
ELECTROCHEMICAL GAS SENSOR
John C. Schmidt, Baltimore; Donald N. Campbell, Timonium, and Sandra B. Clay, Baltimore, all of Md., assignors to Allied Corporation, Morristown, N.J.
Filed Oct. 13, 1983, Ser. No. 541,630
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—412 **15 Claims**

1. An electrochemical gas sensor comprising a sensing electrode, a reference electrode and a counter electrode, said counter electrode being made of carbon, said sensing electrode, reference electrode and counter electrode are spaced apart, and
a nonaqueous electrolyte in contact with said electrodes and in the space between said sensing electrode and each of said counter electrode and said reference electrode, said



electrolyte including n-methyl-2-pyrrolidone and at least one conductive salt.

4,525,267
PROCESS FOR HYDROCRACKING HYDROCARBONS WITH HYDROTREATMENT-REGENERATION OF SPENT CATALYST
Masayoshi Inooka, Yokohama, Japan, assignor to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan
PCT No. PCT/JP81/00134, § 371 Date Sep. 23, 1982, § 102(e) Date Sep. 23, 1982, PCT Pub. No. WO82/04441, PCT Pub. Date Dec. 23, 1982
PCT Filed Jun. 9, 1981, Ser. No. 432,942
Int. Cl.³ C10G *47/30, 65/12*; B01J *23/94, 23/92*
U.S. Cl. 208—58 **24 Claims**



1. A residuum conversion process comprising the steps of:
hydrocracking, in a first zone, a heavy hydrocarbon oil at a temperature of 350°–500° C. and a partial pressure of hydrogen of 10–350 Kg/cm² in the presence of a first catalyst which is maintained in a fluidized state, which contains at least one hydrogenation-active metal component selected from the group consisting of the metals of Groups Ib, IIb, IIIa, IVa, Va, VIa and VIII, manganese and tin and which has a volume mean particle size of not greater than 50μ wherein toluene insoluble carbonaceous materials are disposited on the first catalyst;
discharging at least part of the first catalyst on which toluene-insoluble carbonaceous materials are deposited from said first zone as spent catalyst;
hydrotreating, in a second zone, at least part of the spent catalyst at a temperature of 350°–450° C. and a partial

pressure of hydrogen of 30–350 Kg/cm^2 in the presence of a liquid hydrocarbon and in the further presence of a second catalyst having an average pore diameter of 20–150 Å, a specific surface area of 50 m^2/g or more and a larger bulk volume than said first catalyst and containing at least 5 wt % of one or more metals selected from the group consisting of vanadium, molybdenum, tungsten, nickel, cobalt and copper supported on an acidic carrier, thereby to regenerate the spent catalyst by solubilizing the toluene-insoluble carbonaceous materials deposited thereon; and

recycling the regenerated catalyst to said first zone as at least part of said first catalyst.

17. A process for hydrocracking heavy petroleum oils, wherein a heavy petroleum oil containing at least 80% of heavy components with a boiling point of 350° C. or higher, at least 200 ppm of soluble metals and no more than 0.1% of insoluble solid components, is hydrocracked in the presence of a fluidized catalyst for converting said heavy oil into a light oil containing at least 30% of a fraction of a boiling point of 350° C. or lower and no more than 20 ppm of soluble metals and being substantially free of n-heptane insoluble asphaltenes, said process being characterized by the steps of:

(a) hydrocracking the above-mentioned feed oil under a partial pressure of hydrogen of 30–250 kg/cm^2 and at a temperature of 400°–480° C., using, as the fluidized catalyst, a first finely particulate catalyst having a volume means particle size of 0.1–50μ in a concentration of 0.1–5 wt %, said first catalyst containing at least one hydrogenation-active component selected from the group consisting of metals of Groups Ib, IIb, IIIa, Va, IVa, VIa and VIII, maganese and tin;

(b) separating at least 10% of spent catalyst contained in the product oil of said hydrocracking by solid-liquid separation;

(c) separating the product oil containing the remainder of the spent catalyst into a light oil substantially free of the spent catalyst and a heavy oil containing the spent catalyst;

(d) dispersing at least part of the spent catalyst separated in step (b) in the light oil separated in step (c) having a boiling point of at least 200° C. or a hydrotreated oil thereof, subjecting the dispersed spent catalyst to a hydrotreatment under a hydrogen pressure of 30–250 kg/cm^2 and at a temperature of 350°–450° C. to solubilize at least part of insoluble carbonaceous materials in said spent catalyst thereby to regenerate said spent catalyst, said hydrogeneration being performed in the pressure of a second catalyst having an average pore diameter of 20–150 Å, a specific surface area of 50 m^2/g or more and a larger bulk volume than said first catalyst and containing at least 5 wt % of one or more metals selected from the group consisting of vanadium, molybdenum, tungsten, nickel, cobalt, copper and composited with an acidic carrier; and

(e) recycling said light oil containing the regenerated catalyst to step (a), if necessary along with at least part of the heavy oil obtained in step (c).

22. A process for hydrocrcking heavy hydrocarbon oils containing insoluble solids whereby tar sand bitumen or oil tar with an insoluble solid content of at least 0.2%, or a residue separated therefrom is hydrocracked in the presence of a fluidized catalyst, said process comprising the steps of:

(a) hydrocracking the feed oil using, as the fluidized catalyst, a first catalyst under a hydrogen pressure of 30–250 kg/cm^2 and a temperature fo 400°–480° C., said first catalyst containing at least one hydrogenation-active metal component selected from the group consisting of the metals of Groups Ib, IIb, IIIa, IVa, Va, VIa and VIII, manganese and tin and which has a volume mean particle size of not greater than 50μ;

(b) subjecting the product oil of the hydrocracking to a high gradient magnetic separation to effect separation of magnetizable solids composed of insoluble solid components with high iron and vanadium contents from the product oil;

(c) separating from said product oil a light oil fraction substantially free of insoluble solids;

(d) dispersing at least part of said solids separated in step (b) in the light oil obtained in step (c) and having a boiling point of at least 200° C. or a hydrotreated oil thereof, the resulting dispersion being subjected to a hydrotreatment in the presence of a second catalyst under a hydrogen pressure of 30–250 kg/cm^2 and at a temperature of 350°–450° C. for solubilizing the carbonaceous materials deposited on said solids, said second catalyst having an average pore diameter of 20–150 Å, a specific surface area of 50 m^2/g or more and a larger bulk volume than said first catalyst and containing at least 5 wt % of one or more metals selected from the group consisting of vanadium, molybdenum, tungsten, nickel, cobalt and copper and composited with an acidic carrier;

(e) recycling the thus hydrotreated solids so as to serve as the catalyst in step (a).

4,525,268

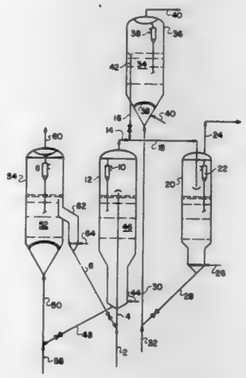
COMBINATION PROCESS FOR UPGRADING RESIDUAL OILS

Dwight F. Barger, Russell, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 401,059, Jul. 23, 1982, abandoned. This application Nov. 10, 1983, Ser. No. 550,985

Int. Cl.^{3} C10G *51/02*

U.S. Cl. 208—73 **11 Claims**



1. A method for converting heavy residual oil feeds comprising metallo-organic compounds boiling above 1050° F. to produce gasoline boiling products which comprises,

A. contacting said residual oil feed for less than about two seconds in substantially plug flow with solid sorbent fluid particle material in a first transport zone at an elevated temperature and for a time sufficient to demetallize and decarbonize said residual oil feed and thermally visbreak multi-ring compounds boiling above 1050° F. to vaporous material boiling below 1050° F., separating vaporous materials from solid sorbent particle material,

B. thereafter immediately contacting said separated vaporous material with an active high temperature crystalline zeolite cracking catalyst discharged by a standpipe to form a flowing suspension in plug flow therewith in a second lateral transport reaction zone above the first transport zone at a temperature within the range of 1050° F. to 1350° F. for a period of time less than about 3 seconds,

C. discharging the suspension in said second transport zone downwardly into a product vapor-catalyst separation zone, recovering vaporous products of said zeolite catalyst cracking operation separately from catalyst particles in said product separation zone,

D. regenerating said solid sorbent particles material and recycling said material for contact with additional heavy oil feed.

4,525,269

PROCESS FOR THE SOLVENT DEASPHALTING OF ASPHALTENE-CONTAINING HYDROCARBONS

Masaki Ikematsu; Isao Honzyo, and Kazuo Sakai, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 454,831, Dec. 30, 1982,. This application May 3, 1984, Ser. No. 606,718

Claims priority, application Japan, Jan. 8, 1982, 57-999; Apr. 2, 1982, 57-53695; Apr. 2, 1982, 57-53696; Apr. 2, 1982, 57-53933; Apr. 2, 1982, 57-53934

Int. Cl.^{3} C10G *21/00, 29/16*

U.S. Cl. 208—309 **8 Claims**

1. A continuous process for solvent deasphalting asphaltene-containing hydrocarbons which consists of (I) mixing

(A) 100 parts by weight of asphaltene-containing hydrocarbons with

(B) 0.005–0.8 parts by weight per 100 parts by weight of said asphaltene-containing hydrocarbons of at least one metal compound selected from the group consisting of carbonates and oxides of magnesium, calcium, aluminum and titanium and

(C) 50–2,000 parts by weight per 100 parts by weight of said asphaltene-containing hydrocarbons of at least one member selected from the group consisting of the following solvents (1)–(4):

(1) aliphatic and alicyclic hydrocarbons having 3–20 carbon atoms,

(2) saturated aliphatic and saturated alicyclic monohydric alcohols having 1–10 carbon atoms,

(3) liquid hydrogen sulfide and

(4) liquid carbon dioxide to form a mixture of the materials (A), (B) and (C) and then (II) making the thus formed mixture stand still to precipitate and separate the asphaltene therefrom thereby obtaining a deasphalted oil.

4,525,270

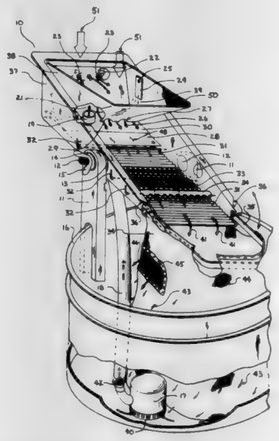
MINERAL SEPARATING PROCESS AND APPARATUS

John C. McCann, 4034 Agua Dulce Blvd., La Mesa, Calif. 92041

Filed Apr. 11, 1983, Ser. No. 483,634

Int. Cl.^{3} B07B *9/00*

U.S. Cl. 209—44 **9 Claims**



1. Mineral separating apparatus comprising:

an elongated sluice box having a bottom wall, a pair of laterally spaced side walls and a rear wall;

a feed hopper having a front wall, a sloping rear wall, and laterally spaced side walls, said front wall and said rear wall being connected together at their bottom ends and having a plurality of primary apertures laterally spaced along the bottom edge where they meet;

said feed hopper being mounted in said sluice box with the top edge of the rear wall of said feed hopper being adjacent the rear wall of said sluice box whereby the rear wall of said sluice box and the rear wall of the feed hopper form an angular cavity;

the bottom edge of said feed hopper being spaced upwardly a predetermined distance from the bottom wall of said sluice box so that a predetermined volume of water can flow through said angular cavity in a predetermined period of time;

the rear wall of said feed hopper having at least one secondary aperture therein adjacent its top edge, an inlet baffle mounted along the back surface of the rear wall of said feed hopper at a position behind said secondary aperture for the purpose of deflecting water directed upwardly against said inlet baffle through said secondary aperture into the interior of said feed hopper;

a water inlet aperture formed in the bottom wall of said sluice box at a position beneath the inlet baffled of said feed hopper whereby water under pressure directed through said water inlet aperture will hit said inlet baffle thereby directing part of it forwardly through said secondary aperture into the interior of said feed hopper; and

means positioned along the top surface of the bottom wall of said sluice box for trapping heavy mineral particles that have been separated from a slurry mixture.

4,525,271

SCREENING APPARATUS FOR GRAINS, SEEDS OR THE LIKE MATERIALS OR GRANULES

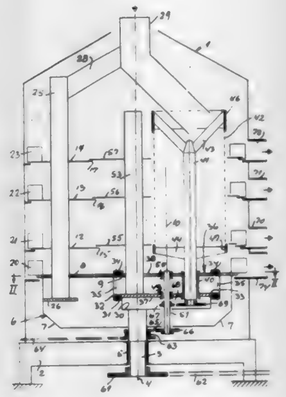
Ole Ewald, Odense, Denmark, assignor to Damas Maskinfabrik A/S, Faaborg, Denmark

Filed Jan. 27, 1984, Ser. No. 574,515

Claims priority, application Denmark, Feb. 3, 1983, 446/83

Int. Cl.^{3} B07B *1/26*

U.S. Cl. 209—303 **6 Claims**



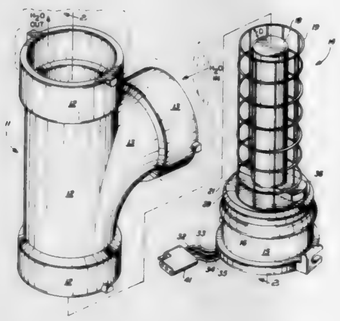
1. Screening apparatus for grains, seeds or the like material or granules, comprising a housing wherein a frame structure is arranged which is adapted to be rotated about a main axis and supports rotatable screening means eccentrically arranged with respect to said axis, and means to vary the eccentricity of said screening means with respect to said axis.

4,525,272

ELECTROCHEMICAL IONIZATION SYSTEM FOR PURIFYING WATER

James H. Henson, Phoenix, Ariz., assignor to Swimaid, Inc., Scottsdale, Ariz.

Filed Feb. 21, 1984, Ser. No. 581,823
Int. Cl.[3] C02F *1/46*
U.S. Cl. 210—149 6 Claims



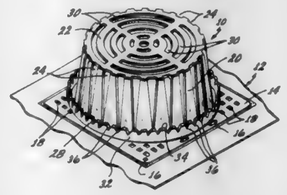
1. Apparatus for purifying water, said apparatus comprising
(a) a hollow housing including a first end and a second end;
(b) a platform member sealingly secured in said first end of said housing;
(c) an anode attached to a base and projecting into said housing away from said platform member and said first end toward said second end of said housing, said anode being comprised substantially of copper;
(d) a wire mesh cathode
(i) attached to said platform member and projecting into said housing away from said platform member and said first end toward said second end of said housing,
(ii) circumscribing and spaced apart from said anode,
(iii) substantially composed of iron,
said housing including a wall having an opening formed therethrough, said wall circumscribing said wire mesh cathode,
(e) a conduit attached to said housing to direct a flow of water into said housing through said opening in said wall thereof such that water entering said housing from said conduit flows in a first direction of travel through said wire mesh cathode toward said anode and said platform member and is deflected away from said platform member and from said first end of said housing toward said second end of said housing in a second direction of travel, the change of direction of travel of water flowing through said housing from said first direction of travel to said second direction of travel causing turbulent intermixing of water passing through said housing to increase the volume of water passing between and contacting said anode and cathode;
(f) means for causing current to flow between said anode and cathode when water from said conduit is flowing through said housing, said current flow causing
(i) oxygen to be produced at and elements in the water to plate out on said iron electrode, the removal of elements from said water depriving algae therein of a food source and said oxygen promoting the oxidation and decay of bacteria and algae in the water,
(ii) said copper electrode to produce a concentration of copper ions in the water, said copper ions killing algae and bacteria in the water.

4,525,273

DRAIN GRATE WITH ADJUSTABLE WEIRS

Duane D. Logsdon, 1708 Calavera Dr., Fullerton, Calif. 92631

Continuation-in-part of Ser. No. 271,501, Jun. 8, 1981, abandoned. This application Jun. 27, 1983, Ser. No. 508,141
Int. Cl.[3] E03F *5/06*
U.S. Cl. 210—164 3 Claims



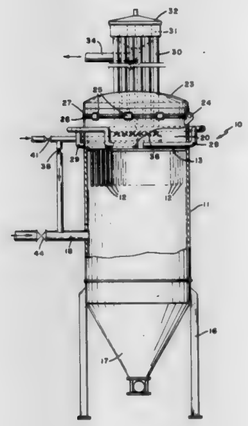
1. In a self supporting foraminous grate for a drain structure an improvement which comprises:
said grate having an exterior and an interior, said exterior of said grate communicating with the ambient environment, said interior of said grate communicating with said drain structure such that fluid in the interior of said grate passes into said drain structure;
a portion of said grate formed as a mounting base, said base sized and shaped to attach to said drain structure maintaining said grate on said drain structure;
a portion of said grate formed as a generally upwardly projecting wall integrally formed with and extending upwardly from said base, said wall formed as a continuous surface of revolution;
a portion of said grate formed as a top surface integrally formed on the uppermost periphery of said wall, said top surface including a plurality of openings in said top surface;
a portion of said grate formed as a guard lip integrally formed with and extending upwardly from said base and culminating in a top edge, said guard lip retarding the flow of solid material towards said wall, said guard lip radially displaced outwardly from wall;
a plurality of weirs located in said wall forming a fluid passageway from the exterior of said grate into the interior of said grate;
said weirs located in said wall in a symmetrical array around the surface of revolution of said wall, each of said weirs shaped as an elongated triangle with the base of each said triangle located proximal to said top surface and the apex of each of said triangles located proximal to said base so as to allow fluid at a first fluid level on said wall proximal to said base to flow at a first rate from the exterior of said grate into the interior of said grate and fluid at a second fluid level on said wall displaced upwardly from said base from said first fluid level to flow at a second rate which is greater than said first rate;
said wall includes a fluid imperforate area located on said wall and extending between said base and the apex of each of said triangular shaped weirs, said imperforate area forming a dam wall between the exterior of said grate and the interior of said grate inhibiting fluid flow into the interior of said grate;
said guard lip is continuous around said wall;
said top edge of said guard lip including a plurality of notches located therein;
said top edge of said guard lip is located at a height greater than said apex of each of said triangular shaped weirs;
said notches in said guard lip are V-shaped and the lowest most portion of said notches are of a greater elevation from said base than is said apex of each of said weirs.

4,525,274

FILTRATE DISCHARGE SYSTEM FOR PRESSURE FILTER

Charles A. Willus, Newtown; Vaino J. Kosonen, West Redding, both of Conn., and Dale R. Sanchez, Orillia, Canada, assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Apr. 6, 1984, Ser. No. 597,780
Int. Cl.[3] B01D *29/24, 29/38*
U.S. Cl. 210—232 9 Claims



1. In a filtration device for filtering a liquid from a solids slurry solution and concentrating a solids underflow therefrom, a cylindrical tank housing a plurality of filter elements suspended from a support plate, a filtrate chamber above said support plate and comprising individual filtrate compartments each for receiving filtrate from a selected number of said filter elements, and said filtrate compartments separated one from the other within said filtrate chamber by radially arranged panel members mounted on said support plate, a filtrate discharge system for said device comprising,
(a) a filtrate discharge outlet from each of said filtrate compartments at the periphery of said cylindrical tank,
(b) filtrate collecting means located outside said tank for receiving filtrate under pressure from said filtrate compartments and including a pressure head box mounted above said tank,
(c) a plurality of filtrate receiving boxes provided in said pressure head box equal in number to the number of said filtrate compartments in the filtrate chamber,
(d) a separate flow pipe connection between each of said filtrate discharge outlets and a filtrate receiving box in said head box, and
(e) valve means for each of said flow pipe connections for opening or closing the flow path between a selected filtrate compartment and its associated filtrate receiving box.

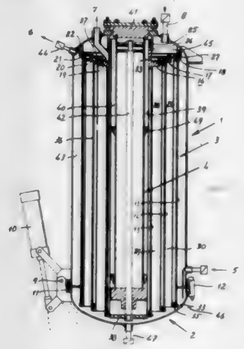
4. The device of claim 1 wherein said cylindrical tank is provided with a removable dome cover and wherein said radially arranged panel members have lower edge portions mounted on said filter element support plate and upper edge portions in sealing engagement with the undersurface of said dome cover in closed position thereof to prevent flow of filtrate between adjacent filtrate compartments in said filtrate chamber.

4,525,275

CONCENTRIC FILTER ELEMENTS

Gunnar Ostlund, Mjölby, Sweden, assignor to Aktiebolaget Svenskt Mjolsocker, Mjolby, Sweden

Filed Mar. 7, 1983, Ser. No. 472,769
Claims priority, application Sweden, Mar. 8, 1982, 8201436
Int. Cl.[3] B01D *29/26*
U.S. Cl. 210—323.2 7 Claims



1. A filter assembly particularly adapted for use with liquids which are difficult to filter, said filter assembly comprising a cylindrical filter container including an inlet for the liquid to be filtered and an outlet for a filtrate, and a filter unit contained within said container, said filter unit comprising a plurality of separate filter elements formed as individual units which are mounted substantially concentrically within said filter container, and which are axially displaceable with respect to said filter container, each said filter element comprising an inner jacket and outer jacket, and at least the inner jacket being perforated and supporting a filter means, a filtrate chamber being provided between said jackets and at least one drain tube extending into said filtrate chamber for enabling draining of the filtrate therefrom, said filter assembly further including a means defining a simple opening for exposing each separate filter element for inspection and cleaning without disassembling the filter assembly.

4,525,276

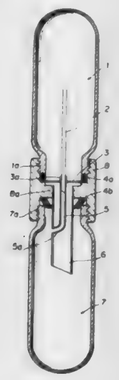
APPARATUS FOR SEPARATION OF IMMISCIBLE LIQUIDS

Shozo Toda, Fujisawa; Kenji Yasuda, and Shozo Kokubo, both of Tokyo, all of Japan, assignors to Tokyo Ohka Kogyo Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 26, 1980, Ser. No. 210,545
Int. Cl.[3] B01D *31/00*
U.S. Cl. 210—433.2 8 Claims

1. A liquid separator which comprises,
a first bottle-like vessel having a mouth,
a second bottle-like vessel having a mouth,
connector means for connecting the mouths of said vessels together and for disconnecting the vessels from each other,
seal means for sealing said mouths with respect to said connector means,
a porous membrane supported by said connector means between the mouths of said vessels, said porous membrane forming a partition between said vessels having a porosity and surface characteristics to permit a liquid to pass therethrough; and
an air passage tube extending between and communicating the interior of said first vessel with the interior of said

second vessel, to enable gas to be displaced from said second vessel to said first vessel as liquid flows from said



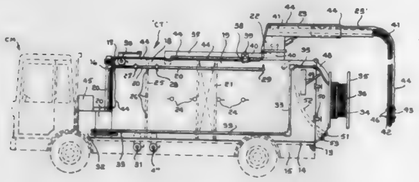
first vessel to said second vessel through said porous membrane.

4,525,277

METHOD FOR CLEANING A SEPTIC TANK

Maurice Poulin, 1559, 50ième Ave., Ste-Lucie des-Laurentides, Canada (J0T 2J0)

Filed Mar. 12, 1984, Ser. No. 588,318
Claims priority, application Canada, Jan. 13, 1984, 445281
Int. Cl.³ B01D *00/00*
U.S. Cl. 210—601 **22 Claims**



1. A method for cleaning a septic tank comprising at least two successive fermentation and decantation compartments connected to each other by means of a lateral opening, each compartment containing a bacteriological liquid medium and a layer of heavy sludges sedimented or not in its bottom, the first one of said successive comparments also containing a layer of light sludges floating on the surface of its bacteriological liquid medium, said method comprising the successive steps of:

pumping the light sludges floating on the surface of the bacteriological liquid medium contained in the first compartment and discharging them into a waste tank;

slowly pumping the bacteriological liquid medium contained in each of the compartments, and storing it into a storage tank;

semi-liquifying the heavy sludges sedimented in the bottom of each of the compartments;

pumping the so semi-liquified sludges and discharging them into said waste tank; and

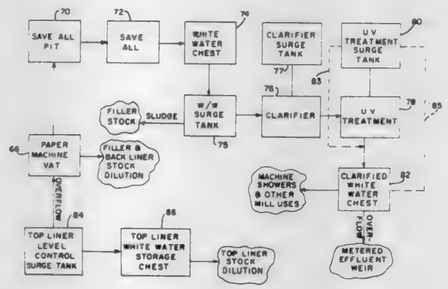
reintroducing the bacteriological liquid medium store in said tank into all the compartments of the tank.

4,525,278

METHOD OF TREATING CHEMICAL PROCESS WATER

Arthur W. Frost, III, Park Ridge, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 13,088, Feb. 21, 1979, Pat. No. 4,221,634. This application Sep. 9, 1980, Ser. No. 185,485
Int. Cl.³ C02F *1/44, 1/32*
U.S. Cl. 210—638 **6 Claims**



1. A method of treating industrial process water having therein a given, first concentration of dissolved organic materials characterized by a relatively simple molecular structure, and a given molecular weight, said method being operative to reduce the concentration of said dissolved organic materials in said process water, said method comprising at least intermittently exposing said process water containing said first concentration of said materials of simple structure to ultra-violet light of such wavelength and intensity as is required for initiating a chemical reaction, including polymerization reactions, among said organic materials, allowing said polymerization and other reactions to continue until reaction products thereof are created which have a molecular weight substantially greater than said given molecular weight, and thereafter collecting said reaction products from said process water, and periodically removing said collected products so as to maintain in said process water a reduced concentration of said dissolved organic materials in relation to said given, first concentration thereof, subjecting at least a portion of said process water to ultrafiltration treatment, thereby subdividing said process water into a filtrate portion and a concentrate portion, recirculating at least a portion of said concentrate so as to subject it to additional ultrafiltration, thereby raising the concentration of said materials of increased molecular weight, and continuing to expose said dissolved materials in said filtrate to said ultraviolet light and the remainder of said process water to said light until said materials achieve molecular weight sufficient to render said materials separable by ultrafiltration.

4,525,279

DEWATERING OF MINERAL SLURRIES

Ian V. Cooper, Georgetown, Canada, assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 4, 1983, Ser. No. 520,376
Int. Cl.³ C02F *1/56*
U.S. Cl. 210—728 **22 Claims**

17. A process for dewatering an aqueous slurry of a mineral, said process comprising

(I) mixing said aqueous slurry with a dewatering-improving amount of a water-soluble or water-dispersible silicone glycol of general formula

$$(CH_3)_3SiO[(CH_3)_2SiO]_n[CH_3(G)SiO]_mSi(CH_3)_3$$

wherein G is a radical attached to Si through a Si—C bond and of the general formula

$$-D(OC_2H_4)_xOH$$

wherein:

D is an alkylene radical containing from 2 to 4 carbon atoms inclusive and x equals 6–8 inclusive; and wherein n is 0 to 5 inclusive and m is 1 to 5 inclusive; and

(II) thereafter separating the mixture formed in step (I) into an aqueous portion and a mineral portion.

4,525,280

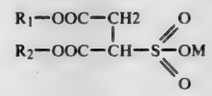
PROCESS FOR SEPARATING A WATER DISPERSION OF ASH, SLAG AND CHAR PARTICULATE MATTER

Stephen R. Vasconcellos, Fishkill; Farrokh Yaghmaie, Wappingers Falls, and Paul E. Howe, Glenham, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 29, 1983, Ser. No. 527,138
Int. Cl.³ C02F *1/54*
U.S. Cl. 210—728 **16 Claims**

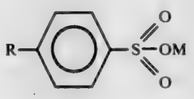
1. A process for separating a water dispersion of particulate solids selected from the group consisting of ash, slag, char and mixtures thereof as produced in the process for the partial oxidation of ash-containing solid carbonaceous fuel comprising:

(1) mixing with said water dispersion of particulate solids at a temperature in the range of about 60° to 700° F., and a pressure in the range of about 1 to 250 atmospheres, a salt of an anionic sulfonate surfactant selected from the group consisting of Formula I, Formula II, and mixtures thereof as represented by:



Formula I

wherein R_1 and R_2, which can be the same or different, are selected from the group consisting of a substituted linear or branched alkyl of 6 to 13 carbons, and a substituted cyclic alkyl of 6 to 12 carbons; and M is selected from the group consisting of Na, NH_4, Ca and triethanolamine; and



Formuala II

wherein R represents a substituted linear alkyl of 6 to 12 carbons; and M is selected from the group consisting of Na,NH_4, Ca, isopropylamine, and triethanolamine; and a water soluble divalent metal salt consisting of a Group II metal in the Periodic Table Of The Elements in chemical combination with a member selected from the group consisting of halide, nitrate, and mixtures thereof, wherein the molar concentrations of said surfactant and metal salt are each greater than about 2×10^{-4}, and sufficient to decrease the hydrophobicity of the particles whereby the wettability of said particulate solids is increased to aid in their precipitation;

(2) precipitating said particulate solids from the water dispersion in (1); and

(3) separating a clarified stream of water substantially free from said particulate solids.

4,525,281

DEWATERING OF MINERAL SLURRIES

Ian V. Cooper, Georgetown, Canada, assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 4, 1983, Ser. No. 520,369
Int. Cl.³ C02F *1/56*
U.S. Cl. 210—735 **20 Claims**

1. A process for dewatering an aqueous slurry of a mineral, said process comprising

(A) mixing said aqueous slurry with a dewatering-improving amount of an aqueous emulsion consisting essentially of (1) an aminofunctional silicone, of the average formula $(R_2SiO)_x(R'SiO_{3/2})_y$ where R is an alkyl radical containing 1 to 4 carbon atoms, where R' is a monovalent organic radical containing at least one amino group and where R' s attached to Si through a Si-C bond, where Y is greater than or equal to 1 and where the sum (x+y) is between 2 and 1000 (2) water, and (3) at least one surfactant and

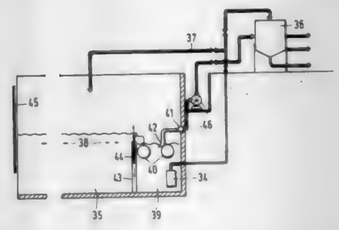
(B) thereafter separating the mixture formed in step (A) into an aqueous portion and a mineral portion.

4,525,282

METHOD OF LOADING AND/OR TRANSFERRING ENVIRONMENTALLY HARMFUL MATERIALS IN SHALLOW-WATER AND MUDLAND REGIONS AND ARTIFICIAL ISLANDS SUITABLE THEREFOR

Erich O. Bartsch, Buchholz, and Gerald Vollstedt, Hamburg, both of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,020
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3230927
Int. Cl.³ B01D *17/00, 17/02*
U.S. Cl. 210—747 **10 Claims**



1. An offshore transfer facility for loading and/or transferring environmentally harmful materials, to a marine vessel within a protected environment in shallow water and mud land regions which facility comprises;

an artificial island disposed in an offshore body of water, and comprising an earthen foundation which rests on the floor of said body of water,

means supported by said foundation, forming an enclosure adapted to floatably accommodate the marine vessel, and being encompassed by said aritifical island,

means forming a displaceable barrier to said enclosure which in displaced position allows passage of said marine vessel to and from said means forming an enclosure,

material handling means on said artificial island being adapted to removably communicate with said marine vessel during a material transfer operation;

and meansfor separating environmentally harmful materials from the water confined within the enclosure.

8. Method for transfer of environmentally harmful materials in shallow-water and mudland regions from a marine vessel in an offshore body of water, which method includes the steps of

providing an artificial island at the offshore site, said island including an internal enclosure having an access way to permit passage of the marine vessel between the enclosure and the body of water,

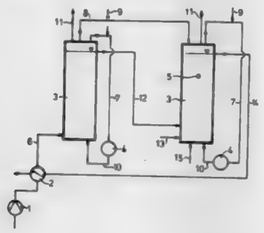
positioning the vessel having environmentally harmful material within the enclsoure,
placing a removable barrier across the said access way to avoid a flow of water therethrough when the marine vessel is positioned therein,
transferring said material between the vessel and the artificial island and,
separating the environmentally harmful material from the water confined within the enclosure,
whereby to avoid contact between said material and the offshore body of water external to said removable barrier.

4,525,283

PROCESS FOR THE DECONTAMINATION OF EFFLUENTS

Otto Horak, Cologne; Werner Falkenberg, Leverkusen; Rolf Müders, Cologne, and Werner Beinert, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 21, 1983, Ser. No. 516,168
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228625; May 4, 1983, 3316265
Int. Cl.³ C02F *1/72*
U.S. Cl. 210—762 **3 Claims**



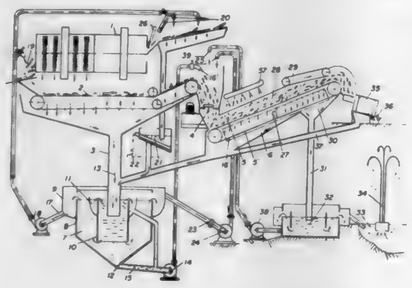
1. A process for the decontamination of an effluent loaded with organic substances, which effluent has, where appropriate after the addition of a redox system, a redox potential of 300–600 mv measured at a platinum electrode versus a silver/-silver chloride electrode, comprising oxidizing the effluent with oxygen or an oxygen-containing gas at a pH of 1 to 4, a temperature of 50° to 200° C. and a pressure of 1 to 60 bar in the presence of a redox catalyst and a co-catalyst comprising coal, lignite or peat which has been pretreated with alkali.

4,525,284

METHOD FOR THE CLARIFICATION OF WATER

Vaino T. Saalasti, Arinatie 4, SF-00370 Helsinki, Finland

Filed May 12, 1983, Ser. No. 494,100
Claims priority, application Finland, Jul. 21, 1982, 822575
Int. Cl.³ B01D *33/30*
U.S. Cl. 210—777 **7 Claims**



1. In a method for the separation of solid organic materials such as fibers, bark particles or bark sludge from water for the purpose of dewatering and utilizing said organic materials to make fuel, the improvement comprising
providing a first porous conveyor and placing on said porous conveyor a thick, mobile layer consisting of constantly renewable, utilizable organic bark material in coarse particulate form;
filtering water containing said solid organic materials through said thick layer of organic material by passing said water through said layer and extracting clarified water from beneath the porous conveyor; and
removing from the surface of said porous conveyor said constantly renewable, utilizable organic material in coarse particulate form and said solid organic materials which have been filtered from the water, said materials removed from said porous conveyor being suitable for use as fuel.

4,525,285

METHOD OF PREVENTING LOSS OF AN OIL-BASE DRILLING FLUID DURING THE DRILLING OF AN OIL OR GAS WELL INTO A SUBTERRANEAN FORMATION

Adelina J. Son, and Royal E. Loftin, both of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 31, 1983, Ser. No. 528,326
Int. Cl.³ C09K *7/06*
U.S. Cl. 252—8.5 M **14 Claims**

1. A method of drilling an oil well in a subterranean formation said formation having connate water with monovalent and polyvalent cations comprising:
a. circulating in the well during the drilling of a drilling fluid having a density from about 8.0 to about 25 pounds per U.S. gallon and comprising:
(1) an oil-base liquid said liquid comprising from about 60 to about 99 percent by volume oil and about 1 to about 40 percent by volume water;
(2) a seepage loss reducer present in the range of from about 1 to about 25 pounds per barrel of drilling fluid and comprising a powdered silicate having a molar ratio of silicon dioxide to alkali metal oxide in the range of from about 1.5:1 to about 3.3:1 wherein said alkali metal is selected from the group consisting of sodium, potassium and mixtures thereof; and,
(3) a weighting agent present in an amount sufficient to produce a density of said drilling fluid of from about 8.0 to about 25.0 pounds per U.S. gallon;
(4) an emulsifying agent present in the range of from about 0.1 percent to about 9.0 percent by weight of the weighting agent and the oil-base liquid and selected from the group consisting of a fatty acid, an amide derivative of a fatty acid and mixtures thereof;
whereby said seepage loss reducer reacts with the monovalent and polyvalent cations to form a seal in the formation.

4,525,286

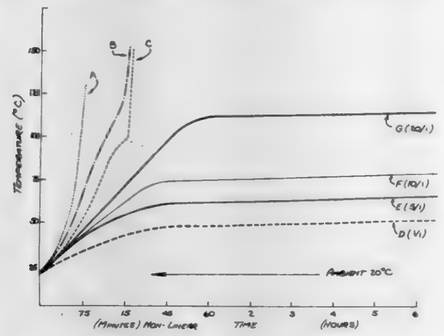
ENHANCED GREASE

Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Mamaroneck, N.Y.

Filed Mar. 6, 1984, Ser. No. 586,820
Int. Cl.³ C10M *5/18*
U.S. Cl. 252—21 **11 Claims**

1. An enhanced grease usable with high-speed bearings and in other applications involving severe operating conditions where standard greases give rise to overheating and excessive wear, said enhanced grease comprising:
A. a first major component constituted by a hybrid lubricant concentrate formed by a stabilized suspension of submicronic polytetrafluoroethyl/ne solid particles in a lubricating oil carrier;
B. a second major component intermingled with the first component and constituted by a standard grease composed of a thickening agent dispersed in a lubricating oil, said first and second components being in a ratio which

results in gelling of the first component to produce a semi-solid gel having thixotropic properties and lubricating characteristics measurably superior to that of the standard grease.



4,525,287

THREAD AND BEARING LUBRICANT

Kenneth J. Carstensen, 4540 N. 44th St. No. 70, Phoenix, Ariz. 85018

Filed Jun. 18, 1984, Ser. No. 621,267
Int. Cl.³ C10M *1/54*
U.S. Cl. 252—26 **15 Claims**

1. A lubricant composition for thread and bearing surfaces to be exposed to high temperature and stress loading which comprises about 15 to 50% thickened jojoba oil as a vehicle, about 0.5 to 10% indium, in solid particulate form, metallic and/or semi-metallic lubricating particulates, and about 0.40 to 10% non-metallic particulates.

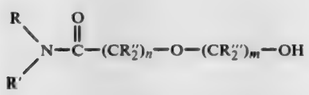
4,525,288

LUBRICANTS CONTAINING HYDROXYALKOXY ACID AMIDES OF ALKYL AMINES AS FRICTION REDUCERS

Raymond C. Schlicht, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,242
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—32.7 E **2 Claims**

1. In a lubricant composition comprising a major amount of an oil of lubricating viscosity and containing an alkenyl succinimide, an overbased calcium sulfonate, a polyethoxylated alkylphenol, a zinc dialkyl dithiophosphate, a diarylamine, a polymethacrylate, an olefin copolymer and a silicon antifoamant, each additive being present in an amount to afford its attendant function, the improvement comprising further including a friction-reducing amount of a hydroxyalkoxyacetamide represented by the formula:



in which R is an alkyl radical having from about 12 to 18 carbon atoms, R′, R″, and R‴ are hydrogen, m is a number from 1 to 10, and n has a value from 1 to 10.

2. A lubricant composition according to claim 1 in which said acetamide is N-oleyl(2′-hydroxy)ethoxy acetamide.

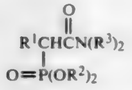
4,525,289

ALPHA-PHOSPHONO LAURAMIDE LUBRICANT ADDITIVES

John K. Howie, Oregonia, and Steven S. Bullock, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

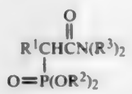
Continuation of Ser. No. 529,899, Sep. 6, 1983, abandoned, which is a continuation of Ser. No. 335,315, Dec. 29, 1981, abandoned. This application Jun. 19, 1984, Ser. No. 622,354
Int. Cl.³ C10M *1/46*
U.S. Cl. 252—49.9 **15 Claims**

1. A compound of the formula



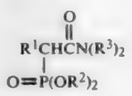
wherein R^1 is a C_{10} hydrocarbyl group; each R^2 is hydrogen or a C_1–C_{12} hydrocarbyl group; each R^3 is hydrogen or a C_1–C_{12} hydrocarbyl group, or the R^3 substituents are joined to form a C_4–C_6 heteroring with the nitrogen atom; provided that the total number of carbon atoms in the R^1, R^2 and R^3 substituents is from about 10 to about 36.

7. A lubricant additive composition comprising from about 10% to about 95% by weight of a lubricant additive carrier material and from about 5% to about 90% by weight of a compound of the formula



wherein R^1 is a C_{10} hydrocarbyl group; each R^2 is hydrogen or a C_1–C_{12} hydrocarbyl group; each R^3 is hydrogen or a C_1–C_{12} hydrocarbyl group, or the R^3 substituents are joined to form a C_4–C_6 heteroring with the nitrogen atom; provided that the total number of carbon atoms in the R^1, R^2 and R^3 substituents is from about 10 to about 36.

8. A lubricant composition comprising a major amount of a base lubricating oil and from about 0.01% to about 2% by weight of a compound of the formula



wherein R^1 is a C_{10} hydrocarbyl group; each R^2 is hydrogen or a C_1–C_{12} hydrocarbyl group; each R^3 is hydrogen or a C_1–C_{12} hydrocarbyl group, or the R^3 substituents are joined to form a C_4–C_6 heteroring with the nitrogen atom; provided that the total number of carbon atoms in the R^1, R^2 and R^3 substituents is from about 10 to about 36.

4,525,290

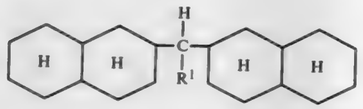
PROCESS FOR IMPROVING TRACTION COEFFICIENT OF TRACTION DRIVE FLUID AT HIGH TEMPERATURES

Toshiyuki Tsubouchi, Kisarazu, and Hitoshi Hata, Ichihara, both of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 502,966, Jun. 10, 1983, abandoned. This application Jun. 29, 1984, Ser. No. 626,311
Claims priority, application Japan, Jun. 24, 1982, 57-107539; Feb. 21, 1983, 58-26325
Int. Cl.³ C07C *13/50*
U.S. Cl. 252—73 **24 Claims**

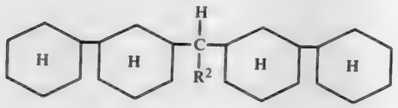
1. A process for improving the coefficient of traction between at least two relatively rotatable elements in a torque

transmitting relationship and for maintaining said coefficient of traction substantially constant over a broad range of operating temperatures which comprises introducing between the tractive surfaces of said elements a traction drive fluid comprising at least one compound represented by the general formulae (I), (II) and (III):



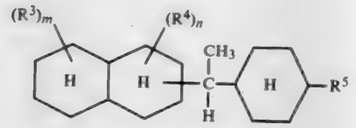
(I)

wherein R^1 is an alkyl group containing from 1 to 3 carbon atoms,



(II)

wherein R^2 is an alkyl group containing 1 or 2 carbon atoms,



(III)

wherein R^3 and R^4 are each a hydrogen or a methyl group, R^5 is a hydrogen or a tert-butyl group, and m and n are each 1 or 2, said compound (III) comprising a mixture of more than 70% of the cis form and less than 30% of the trans form.

4,525,291

LIQUID DETERGENT COMPOSITIONS

Eileen Smith, Chester; Doreen A. Timperley, Widnes, and Dorothy M. Titchener, Chester, all of England, assignors to Interox Chemicals Limited, London, England

Continuation-in-part of Ser. No. 245,141, Mar. 18, 1981, abandoned. This application Feb. 22, 1982, Ser. No. 351,331
Claims priority, application United Kingdom, Apr. 1, 1980, 8010885; Apr. 1, 1980, 8010887; Sep. 30, 1981, 8129512
The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.
Int. Cl.³ C11D *7/54*
U.S. Cl. 252—95 **41 Claims**

1. A stabilised aqueous built alkaline liquid detergent composition comprising at least 4% of an anionic sulphate or sulphonate surfactant and/or of a non-ionic ethoxylate surfactant, at least 5% of a builder selected from alkali metal polyphosphates and carboxylic complexing builders, at least 2% hydrogen peroxide, sufficient alkali metal aryl sulphonate hydrotrope to maintain the composition in a single phase, either by itself or in conjunction with other components, and a stabilising amount of a combination comprising, from 5 to 15% of a low molecular weight mono-hydroxy saturated aliphatic alcohol, from 0.08 to 1% of a polyhydroxy aliphatic carboxylate and from 0.075–1% of an aminomethylene phosphonate or hydroxyalkyl diphosphonate, %'s being by weight, based on the weight of the composition.

4,525,292

BLEACHING DETERGENT COMPOSITIONS COMPRISING SULFOSUCCINATE BLEACH PROMOTERS

Mark E. Cushman, and Lawrence A. Gilbert, both of c/o Procter & Gamble, ITC, Cincinnati, Ohio 45217

Filed Mar. 7, 1983, Ser. No. 472,689
Int. Cl.³ C11D *7/54*
U.S. Cl. 252—102 **18 Claims**

1. A bleaching detergent composition comprising:

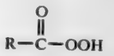
I. a bleaching system to give from about 0.03% to about 1.3% available oxygen in the composition, based upon the theoretical amount of percarboxylic acid, and being selected from the group consisting of:

(a) a mixture of a peroxygen bleaching compound capable of yielding hydrogen peroxide in an aqueous solution; and a bleach activator having the general formula:



wherein R is an alkyl group containing from about 5 to about 18 carbon atoms wherein the longest linear alkyl chain extending from and including the carbonyl carbon contains from about 6 to about 10 carbon atoms and L is a leaving group, the conjugate acid of which has a pK_a in the range of from about 6 to about 13; or

(b) a percarboxylic acid having the general formula



wherein R has the meaning given hereinbefore or mixtures thereof;

II. from about 1% to about 60% of a detergent surfactant; and

III. at least about ¼% of a water-soluble sulfosuccinate.

4,525,293

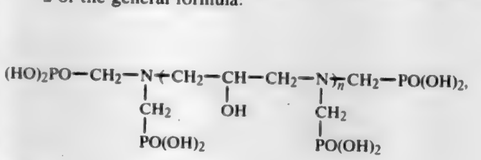
COMPOSITION FOR PREVENTING DEPOSITION OF INORGANIC SALTS

Evgeny D. Kisil, bulvar Engelsa, 10, kv. 168; Svetlana N. Komova, ulitsa Odeevskogo, 68a, kv. 61; Olga A. Kulikova, ulitsa imeni Generala Shulimova 16. kv. 47; Leonid I. Kutyanin, ulitsa Zoi Maresevoi, 15, kv. 21; Larisa V. Popova, ulitsa Kirova, 151, kv. 60, all of Volgograd; Nina M. Dyatlova, 2-0i Samotechny pereulok, 4, korpus 1, kv. 4, Moscow; Rostislav P. Lastovsky, ulitsa Gotvalda, 20, kv. 24, Moscow; Galina F. Yaroshenko, ulitsa Udaltsova, 14, kv. 120, Moscow; Rem A. Khramov, B. Khmelnitskogo, 3, kv. 4, Orenburg; Leonid T. Dytjuk, ulitsa Narodnaya, 13, kv. 51, Orenburg; Rafail K. Samakaev, ulitsa Chkalova, 28, kv. 70, Orenburg, and Anatoly N. Vasnev, Borisovsky proezd, 36, korpus 2, kv. 367, Moscow, all of U.S.S.R.

Filed Oct. 3, 1983, Ser. No. 538,561
Int. Cl.³ C02F *5/12, 5/14*
U.S. Cl. 252—181 **1 Claim**

1. A composition for preventing deposition of inorganic salts comprising:

a phosphonomethylated derivative of 1,3-diaminopropanol-2 of the general formula:

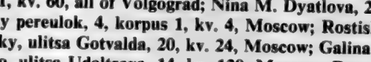


(I)

wherein

n=1 to 20,

amines selected from the group consisting of 1,3-diaminopropanol-2, a derivative of 1,3-diaminopropanol-2 of the general formula:



(II)

wherein

n=2 to 20,

and a mixture of said amines;

hydrochloric acid;

an alkali metal chloride;

a product of interaction of a chlorinated aromatic compound selected from the group consisting of benzyl chloride, chlorobenzyl chloride, benzylidene chloride and mixtures of said compounds with hexamethylene tetramine, the molar ratio between said chlorinated aromatic compound and hexamethylenetetramine being equal to 1:0.25–0.45 respectively;

a water-soluble organic solvent;

water;

said components being present in the following proportions, percent by weight:

phosphonomethylated derivative of 1,3-diaminopropanol-2 of the general formula (I)	5.0–50.0
amines selected from the group consisting of 1,3-diaminopropanol-2, derivative of 1,3-diaminopropanol-2 of the general formula (II)	5.0–10.0
hydrochloric acid	3.0–30.0
alkali metal chloride	3.0–7.0
product of interaction of a chlorinated aromatic compound with hexamethylene tetramine	0.5–2.5
water-soluble organic solvent	0.5–4.0
water	to 100%.

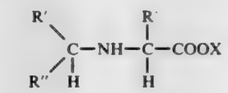
4,525,294

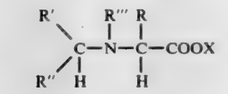
AMINO ACID MIXTURES, THEIR ALKALI METAL SALTS AND PROCESS FOR PREPARING SAME

Guido Sartori, Linden, and Warren A. Thaler, Aberdeen, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 321,058, Nov. 13, 1981, abandoned. This application Apr. 14, 1983, Ser. No. 484,943
The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.
Int. Cl.³ C09K *3/00;* H05B *33/00*
U.S. Cl. 252—182 **6 Claims**

1. A composition comprising a mixture of amino acids and alkali metal salts thereof comprising amino acids and salts represented by the formulae:





wherein R is hydrogen or methyl, X is hydrogen or an alkali metal and R′ and R″ are each selected from the group consisting of:

(a) substituted or unsubstituted, linear or branched, alkyl radicals having one to twenty carbon atoms;

(b) substituted or unsubstituted alkylene radicals each having three to six carbon atoms and R′ and R″ together forming a cyclic ring;

(c) substituted or unsubstituted cycloalkyl radicals having from four to eight ring carbon atoms;

(d) substituted or unsubstituted, hydroxy-alkyl radicals, linear or branched, having from one to twenty carbon atoms;

(e) substituted or unsubstituted aralkyl radicals having from seven to twenty carbon atoms, and

wherein R‴ is selected from the group consisting of substituted or unsubstituted linear alkyl radicals having from one to twenty carbon atoms; and wherein the substituent group of (a) thru (e) above, are selected from the group consisting of hydroxyl groups, ether linkages, silane groups, and heterocyclic rings containing oxygen in their rings.

4,525,295

METHOD OF AND COMPOSITION FOR PRODUCING GLOW PRINTING

Jerry D. Lister, Jefferson County, Ky., assignor to Adver-Togs, Inc., New Albany, Ind.

Division of Ser. No. 153,578, May 27, 1980, Pat. No. 4,302,487. This application May 18, 1981, Ser. No. 264,580
Int. Cl.³ B05D *1/32*
U.S. Cl. 252—301.36 **2 Claims**

1. A composition for achieving direct glow printing on a fabric comprising a plastisol base, a solvent thinning said plastisol base, and a solid phosphorescent pigment introduced into air pockets in the mixture of said plastisol base and said solvent.

4,525,296

HALIDE FREE CORROSION INHIBITORS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Oct. 27, 1980, Ser. No. 200,817
Int. Cl.³ C23F *11/04*
U.S. Cl. 252—391 **15 Claims**

1. A corrosion inhibiting composition of matter comprising a non-halogen acid salt of a sulfur-nitrogen heterocyclic compound selected from the group consisting of thiazoles, thiazolines, and mixtures thereof, said composition also containing an amount of a surfactant effective to enhance corrosion inhibition.

13. A process of inhibiting corrosion in a system containing stainless steel which comprises treating such system with a composition of matter comprising a non-halogen salt of a sulfur-nitrogen heterocyclic compound selected from the group consisting of thiazoles, thiazolines, and mixtures thereof.

4,525,297

ELECTRO-CONDUCTIVE THERMOPLASTIC RESIN FOAM AND PREPARATION PROCESS THEREOF

Toshihiro Yamane, Otsu; Kenzi Ohashi, Hikone, and Toshiharu Sakaguchi, Ageo, all of Japan, assignors to Toray Industries, Inc. and Tokyo Printing Ink Mfg. Co., Ltd., both of Tokyo, Japan

PCT No. PCT/JP83/00109, § 371 Date Nov. 28, 1983, § 102(e) Date Nov. 28, 1983, PCT Pub. No. WO83/03610, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 11, 1983, Ser. No. 557,162
Claims priority, application Japan, Apr. 14, 1982, 57-60908
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—511 **8 Claims**

1. A crosslinked electro-conductive thermoplastic foam consisting of

10 to 90 parts by weight of a crystalline thermoplastic polyolefin resin selected from the group of polyethylene, polypropylene and polypropylene ethylene copolymer,

10 to 90 parts by weight of a low crystalline thermoplastic resin selected from ethylene-vinyl acetate copolymer with the ethylene content of not less than 50 wt % and ethylene-α-

olefin of 3 to 8 carbon atoms copolymer with the ethylene content of not less than 50 wt %, and
5 to 40 parts by weight of electro-conductive carbon per 100 parts by weight of a total of the aforesaid resin components.

4,525,298

ALIPHATIC ALCOHOLS AND ESTERS AND THEIR USE AS PERFUMING INGREDIENTS

Karl H. Schulte-Elte, Onex, and Bernard L. Muller, Geneva, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Nov. 18, 1982, Ser. No. 442,676
Claims priority, application Switzerland, Dec. 7, 1981, 7791/81
Int. Cl.³ C07C *69/24*; C11B *9/00*
U.S. Cl. 252—522 R **3 Claims**

1. 5,7,7-Trimethyloctyl propionate.

3. A perfume composition containing as an active ingredient about 1% to 30% by weight of the compound of claim **1**.

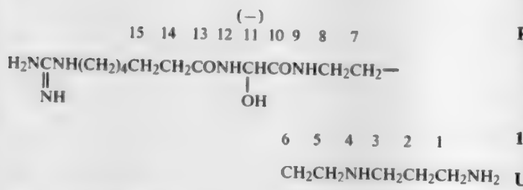
4,525,299

(−)-15-DEOXYSPERGUALIN, PROCESS FOR THE PREPARATION THEREOF, AND INTERMEDIATE OF THE SAME

Hamao Umezawa; Tomio Takeuchi, both of Tokyo, and Shinichi Kondo, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Japan

Filed May 10, 1983, Ser. No. 493,209
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **4 Claims**

1. (−)-15-Deoxyspergualin represented by the following formula



and its non-toxic salts.

4,525,300

HUMAN LEUKEMIA VIRUS-RELATED PEPTIDES, ANTIBODIES OF THE PEPTIDES AND A PROCESS FOR PRODUCTION OF THE ANTIBODIES

Mitsuaki Yoshida; Haruo Sugano, both of Tokyo; Fumio Shimizu, and Kenichi Imagawa, both of Tokushima, all of Japan, assignors to Japanese Foundation for Cancer Research and Otsuka Pharmaceutical Co., Ltd., both of, Japan

Filed Sep. 23, 1983, Ser. No. 535,115
Claims priority, application Japan, Jan. 7, 1983, 58-1495; Feb. 23, 1983, 58-30096
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **13 Claims**

1. A human leukemia virus-related peptide selected from the group consisting of:

(a) a peptide represented by general formula (1):

H-Tyr-Val-Glu-Pro-Thr-Ala-Pro-Gln-Val-Leu-OH (1)

wherein the Tyr moiety may be labelled with radioactive iodine;

(b) a peptide represented by the general formula (2)

R-Ile-Pro-His-Pro-Lys-Asn-Ser-Ile-Gly-Gly-Glu-Val-OH (2)

wherein R is a hydrogen atom or a group represented by the general formula H-Tyr, wherein the Tyr moiety may be labelled with radioactive iodine;

(c) a peptide represented by the general formula (3):

R-Thr-Trp-Thr-Pro-Lys-Asp-Lys-Thr-Lys-Val-Leu-OH (3)

wherein R is a hydrogen atom or a group represented by the general formula H-Tyr, wherein the Tyr moiety may be labelled with radioactive iodine;

(d) a peptide represented by the formula (4):

H-Val-Val-Gln-Pro-Lys-Lys-Pro-Pro-Pro-Tyr-OH (4)

wherein the Tyr moiety may be labelled with radioactive iodine;

(e) a peptide represented by the general formula (5):

R-Met-Gly-Gln-Ile-Phe-Ser-Arg-Ser-Ala-Ser-Pro-OH (5)

wherein R is a hydrogen atom or a group represented by the general formula H-Tyr, wherein the Tyr moiety may be labelled with radioactive iodine;

(f) a peptide represented by the formula (6):

H-Tyr-Pro-Glu-Gly-Thr-Pro-Lys-Asp-Pro-Ile-Leu-Arg-Ser-Leu-Arg-Ser-Leu-OH (6)

wherein the Tyr moiety may be labelled with radioactive iodine.

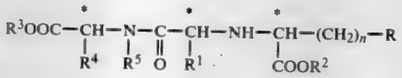
4,525,301

PROCESS FOR THE PREPARATION OF N-ALKYLATED DIPEPTIDES AND THEIR ESTERS

Rainer Henning, Hattersheim am Main, and Hansjörg Urbach, Kronberg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Apr. 26, 1984, Ser. No. 604,220
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315464
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **14 Claims**

1. A process for the preparation of compounds of the formula I



(I)

in which

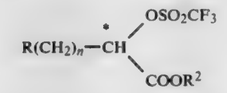
n is 1 or 2,

R denotes hydrogen, an aliphatic radical having 1 to 8 carbon atoms, a cycloaliphatic radical having 3–9 carbon atoms, an aromatic radical having 6–12 carbon atoms, an araliphatic radical having 7–14 carbon atoms, a cycloaliphatic-aliphatic radical having 7–14 carbon atoms, or a radical OR^a or SR^a, in which R^a represents an aliphatic radical having 1–4 carbon atoms, an aromatic radical having 6–12 carbon atoms or a heteroaromatic radical having 5–12 ring atoms,

R^1 denotes hydrogen, an aliphatic radical having 1 to 6 carbon atoms, a cycloaliphatic radical having 3–9 carbon atoms, a cycloaliphatic-aliphatic radical having 4–13 carbon atoms, an aromatic radical having 6–12 carbon atoms, an araliphatic radical having 7–16 carbon atoms, a heteroaromatic radical having 5–12 ring atoms, the side-chain of naturally occurring α-aminoacid, or the side-chain of such an amino acid which is protected

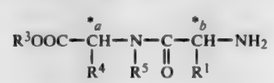
R^2 and R^3 are identical or different and denote hydrogen, an aliphatic radical having 1–6 carbon atoms, a cycloaliphatic radical having 3–9 carbon atoms, an aromatic radical having 6–12 carbon atoms, an araliphatic radical having 7–16 carbon atoms, and

R^4 and R^5, together with the atoms carrying them, form a monocyclic, bicyclic or tricyclic heterocyclic ring system having 5 to 15 carbon atoms, which comprises reacting a compound of the formula II



(II)

in which n, R, and R^2 have the abovementioned meanings, with a compound of the formula IV



(IV)

in which R^1, R^3, R^4 and R^5 have the above-mentioned meanings, splitting off.

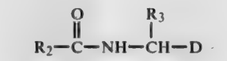
4,525,302

ACRYLATE AND METHACRYLATE POLYMERS AND PROCESSES FOR PREPARING THEM

Xuan T. Phan, Manor Township, Lancaster County, and Paul J. Shannon, Millersville, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Division of Ser. No. 575,799, Feb. 1, 1984, Pat. No. 4,492,619. This application Jul. 20, 1984, Ser. No. 632,653
Int. Cl.³ C08F *20/36*
U.S. Cl. 260—239.3 R **18 Claims**

1. A process for preparing monomeric materials of the formula

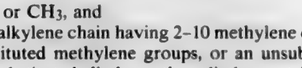


(II)

where

R_2=a lower alkyl group comprising 1–6 carbon atoms, an alkoxy group comprising 1–6 carbon atoms, an aryloxy group, or an alicyclic group,

R_3=H, a lower alkyl group comprising 1–6 carbon atoms, an alicyclic ring, a substituted aromatic ring, an unsubstituted aromatic ring and, where R_3 is other than H, combinations of these moieties,



R_4=H or CH_3, and

E=an alkylene chain having 2–10 methylene or lower alkyl-substituted methylene groups, or an unsubstituted or alkyl-substituted alkylene ether, diether or triether having a total of 3–14 carbon atoms,

provided that R_2 and R_3 taken together may be an alkylene chain comprising 1–10 carbon atoms, said process comprising the steps of

(1) preparing a solution comprising

(a) an alkoxy compound of Formula II where D=OR_1, R_1=a primary alkyl group comprising 1–3 carbon atoms, and R_2 and R_3 are as described above,

(b) an alcohol of the formula



where E and R_4 are as described above,

(c) an acidic catalyst, and, optionally,

(d) an inert organic solvent, and

(2) interacting said alkoxy compound and said alcohol.

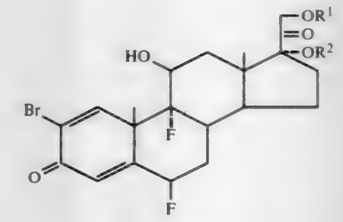
4,525,303

PROCESS FOR PREPARATION OF STEROIDS

Hidetsugu Takagaki, Ichihara; Shigenori Nakanishi, Chiba; Yasuyuki Tanaka, Tokyo; Michihiro Watanabe, Ichihara, and Yoriko Yonehara, Ohmiya, all of Japan, assignors to Dainippon Ink and Chemicals Inc., Tokyo, Japan

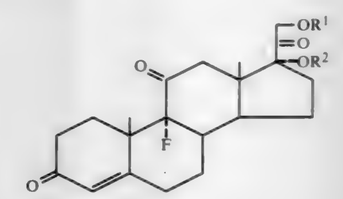
Filed Jun. 17, 1983, Ser. No. 505,292
Claims priority, application Japan, Jun. 21, 1982, 57-105367; Dec. 27, 1982, 57-227076; Dec. 27, 1982, 57-227077
Int. Cl.³ C07J *21/00*
U.S. Cl. 260—239.55 R **14 Claims**

1. A process for preparing a 2-bromo-6β,9α-difluoro-11β,17α,21-trihydroxy-1,4-pregnadien-3,20-dione-17,21-diester (compound 13) represented by the general formula



wherein OR^1 and OR^2 are identical or different, and each represents an acyloxy group or a sulfuric or phosphoric acid ester residue, which comprises

(A) reacting a 17α,21-dihydroxy-9α-fluoro-4-pregnen-3,11,20-trione-17,21-diester (compound 7) represented by the general formula



wherein OR^1 and OR^2 are as defined above, with a ketalizing agent to prepare a 17α,20,21-dihydroxy-3,3-ethylenedioxy-9α-fluoro-5-pregnen-11,20-dione-17,21-diester (compound 8), and

(B) thereafter preparing the compound 13 by

(i) reducing the compound 8 to form a 11β-hydroxy compound (compound 9), reacting the hydroxy compound with a peracid to form a 5α,6α-epoxy compound (compound 10), reacting the epoxy compound with hydrogen fluoride to form a 6β-fluoro-5α-hydroxy-3-keto compound (compound 11), brominating the keto compound to form a 2,2-dibromo compound (compound 12), and dehydrobrominating and then dehydrating the dibromo compound to form the compound 13 , or

(ii) treating the compound 8 with a peracid to form a 5α,6α-epoxy compound (compound 14), reducing the epoxy compound to form a 11β-hydroxy compound (compound 10), reacting the hydroxy compound with hydrogen fluoride to form a 6β-fluoro-5α-hydroxy-3-keto compound (compound 11), brominating the keto compound to form a 2,2-dibromo compound (compound 12), and dehydrobrominating and then dehydrating the dibromo compound to form the compound 13 , or

(iii) treating the compound 8 with a peracid to form a

5α,6α-epoxy compound (compound 14), reacting the epoxy compound with hydrogen fluoride to form a 6β-fluoro-5α-hydroxy-3-keto compound (compound 15), brominating the keto compound to form a 2,2-dibromo compound (compound 16), dehydrobrominating and then dehydrating the dibromo compound to form a 1,4-diene compound (compound 17), and reducing the diene compound to form the compound 13.

2. The process of claim 1 wherein the 17α,21-dihydroxy-9α-fluoro-4-pregnen-3,11,20-trione-17,21-diester (compound 7) used as a starting material is prepared by reacting a 17α,21-dihydroxy-4,9(11)-pregnadien-3,20-dione-17,21-diester with hypochlorous acid or hydrobromous acid to form a halohydrin compound (compound 4), reacting the halohydrin with a basic substance to form a 9β,11β-epoxy compound (compound 5), reacting the epoxy compound with hydrogen fluoride to form a 9α-fluoro-11β-hydroxy compound (compound 6), and oxidizing the hydroxy compound to convert it to a 11-keto compound.

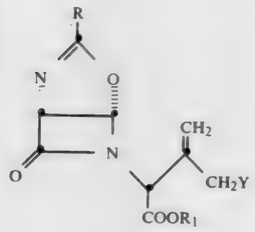
4,525,304

PROCESS FOR PREPARING OXAZOLINOAZETIDINONES

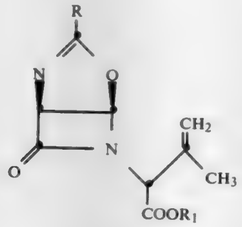
David A. Hall, and Wayne A. Spitzer, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 16, 1982, Ser. No. 442,052
Int. Cl.³ C07D *498/04, 205/08*
U.S. Cl. 260—245.4 16 Claims

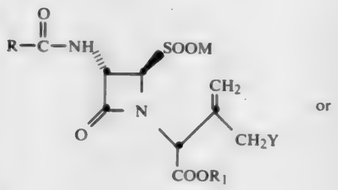
1. A process for preparing compounds of the formula



and

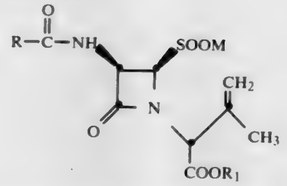


in which Y is hydrogen or hydroxyl, which comprises reacting a sulfinic acid of the formula



or

-continued



with an oxidizing agent selected from the group consisting of a Pb^{+4} compound, an Mn^{+4} compound; sodium hypochlorite, an N-haloimide, and ammonium cerium nitrate; in which, in the above formulae,

M is hydrogen, lithium, potassium, sodium, ammonium, or substituted ammonium;

R_1 is hydrogen, lithium, potassium, sodium, ammonium, substituted ammonium, or a carboxylic acid protecting group; and

R is

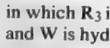
(a) C_1 to C_7 alkyl, C_3 to C_7 alkenyl, halomethyl, 4-carboxybutyl, 3-formylpropyl, 4-protected carboxybutyl, or 4-protected amino-4-protected carboxybutyl;

(b) a group R_2 in which R_2 is 1,4-cyclohexadienyl, phenyl or phenyl substituted on its ring by 1 or 2 groups selected from the group consisting of chloro, bromo, hydroxy, proteced hydroxy, trifluoromethyl, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, carboxy, carboxymethyl, hydroxymethyl, aminomethyl, and protected aminomethyl;

(c) a group of the formula

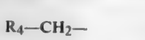
in which R_2 is as defined above and m is zero or one;

(d) a group of the formula



in which R_3 is R_2 as defined above, 2-thienyl, or 3-thienyl; and W is hydroxy, protected hydroxy, carboxy, protected carboxy, amino, or protected amino; of

(e) a group of the formula



in which R_4 is 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-thiazolyl, 5-tetrazolyl, or 1-tetrazolyl.

4,525,305

LEATHER WITH FLUOROCHEMICAL FINISH

Kalyanji U. Patel, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 25, 1982, Ser. No. 436,267
Int. Cl.³ C11C *3/00;* C14C *9/00, 9/02;* D06M *13/40*
U.S. Cl. 260—401 10 Claims

1. Compositions useful for imparting oil and water repellency to fibrous substrates when said substrates are contacted with said compositions, said compositions comprising fluorochemical compounds which are normally solid, water insoluble, aliphatic carboxylic acids and salts thereof which are self-dispersible in water, said compounds containing fluoroaliphatic and aliphatic carboxylic radicals, said fluoroaliphatic radicals having at least three fully fluorinated carbon atoms and a terminal perfluoromethyl group, and urylene and/or carbamato radicals, said radicals bonded together by organic linkages free of interfering moieties, said compounds containing at least 20 weight percent fluorine in the form of said fluoroaliphatic radical.

4,525,306

METHOD FOR PREVENTION OF OXIDATION OF OILS AND FATS AND SOFT CAPSULES CONTAINING THE TREATED OILS AND FATS

Mizuo Yajima, Tokyo, Japan, assignor to Asama Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1982, Ser. No. 404,747
Claims priority, application Japan, Sep. 21, 1981, 56-147822; Oct. 20, 1981, 56-166363
Int. Cl.³ C11B *5/00*
U.S. Cl. 260—428.5 8 Claims

1. A soft gelatin capsule filled with an edible fish oil containing eicosapentaneoic acid and docosahexaenoic acid, said edible fish oil containing admixed therewith from 0.01 to 10 percent by weight of an antioxidant component, based on the weight of said oil, said antioxidant component having been obtained by extracting (A) a starting material selected from the group consisting of herb spices, residues obtained after collecting essential oils from herb spices, oleoresins obtained by extracting herb spices with a polar solvent, oleoresins obtained by extracting herb spices with a non-polar solvent and residues remaining after extraction of herb spices, with (B) a polar solvent whereby to obtain an extract, then steam distilling the extract and then recovering the insoluble part from the residue of the steam distillation, as said antioxidant component.

4,525,307

MODIFIED ALUMINUM TRI-ALKOXIDE COMPOUNDS

Charles E. Pratt, Bethlehem, Pa., assignor to Joseph Ayers, Inc., Bethlehem, Pa.

Filed Aug. 2, 1983, Ser. No. 519,560
Int. Cl.³ C07F *5/06*
U.S. Cl. 556—182 12 Claims

1. A modified aluminum tri-isopropoxide compound wherein about 0.125 to about 0.50 mole of isopropoxide, per atom of aluminum, is replaced with a C_6- to C_{18}- alkoxide.

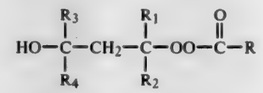
4,525,308

HYDROXY-T-ALKYL PEROXYESTERS

Jose Sanchez, Grand Island, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed May 20, 1983, Ser. No. 496,357
Int. Cl.³ C07C *179/18*
U.S. Cl. 260—453 RZ 3 Claims

1. A hydroxy-t-alkyl peroxyester of the structure

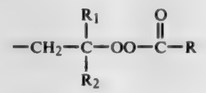


having a ten hour half-life temperature below about 75° C., where

R_1 and R_2 are selected from an alkyl of 1 to 4 carbons,

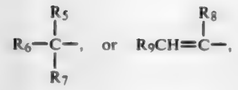
R_3 and R_4 are selected from hydrogen of an alkyl of 1 to 4 carbons,

R_1 and R_3 can be connected together to form a lower alkyl substituted 3 carbon atom alkylene bridge and R_3 can additionally be



and

R is selected from



where

R_5 is selected from hydrogen or an alkyl of 1 to 8 carbons,

R_6 is selected from alkyl of 1 to 8 carbons,

R_7 is selected from the group consisting of an alkyl of 1 to 8 carbons, an alkenyl of 1 to 8 carbons, a hydrocarbyl aryl of 6 to 10 carbons, an alkoxy of 1 to 6 carbons and a hydrocarbyl aryloxy of 6 to 10 carbons, and

R_8 and R_9 are selected from an alkyl of 1 to 4 carbons.

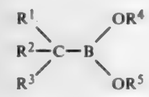
4,525,309

LEWIS ACID CATALYSIS OF THE HOMOLOGATION OF BORONIC ESTERS WITH HALOALKYLMETAL REAGENTS

Donald S. Matteson, Moscow, Id., and Kizhakethil M. Sadhu, Pullman, Wash., assignors to Washington State University Research Foundation, Inc., Pullman, Wash.

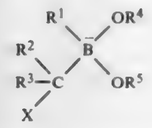
Filed Mar. 15, 1983, Ser. No. 475,531
Int. Cl.³ C07F *5/04*
U.S. Cl. 260—462 C 27 Claims

1. In a process for preparing boronate esters having the general structure



II

from boronate complexes having the general structure,



I

where each of R^1, R^4 and R^5, independently, is an organic group selected from the group consisting of aliphatic, aromatic and functionally substituted aliphatic and aromatic groups, where X is a nucleofugic group, where R^2 is a nucleofugic group or an organic group selected from the group consisting of aliphatic, aromatic and functionally substituted aliphatic or aromatic groups, R^3 is hydrogen or a group selected from the same groups as R^2, and where R^4 and R^5 may be the same or different and may be linked such that the resulting OR^4—R^4O boronic ester group is cyclic, the improvement which comprises contacting the boronate complex (I) in solution in the temperature range −40° to +80° C. with a Lewis acid catalyst, having an acid strength which is sufficiently high to combine with the nucleofugic group X to form a complex, but which is low enough so as not to destory the groups OR^4, OR^5 and OR^4—R^5O, said catalyst having an acid strength on the order of that characteristic of ferric chloride, ferric bromide, zinc chloride and zinc bromide.

4,525,310
METHOD OF PREPARING 3-ALKOXY ACRYLONITRILES

Christoph Theis, Bornheim, and Uwe Prange, Niederkassel, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 467,053

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206878

Int. Cl.³ C07C *121/453*

U.S. Cl. 260—465.6 **8 Claims**

1. A method of preparing 3-alkoxy-acrylonitriles of the formula

$$R^3O-CH=\underset{\displaystyle R^1}{\underset{|}{C}}-C\equiv N, \qquad \text{I}$$

wherein

R^1 is H; straight-chain or branched alkyl moieties of 1 to 20 carbon atoms; straight-chain or branched moieties $-(CH_2)_n-CN$, $-(CH_2)_nOR^4$ or $-(CH_2)_n-CH(OR^4)_2$ wherein n=0 to 5, and R^4 is alkyl; and

R^3 is straight-chain or branched alkyl or alkenyl moieties with 1 to 12 carbon atoms, the moieties $-(CH_2)_p-OR^4$ with p=1 to 5 and R^4 with the above meaning;

comprising reacting a compound of the formula

$$R^1-CH_2-CN \qquad \text{II},$$

which serves as both starting material and solvent wherein R^1 has the above meaning, with an alcoholate of the formula

$$M(OR^2)m \qquad \text{III},$$

wherein M is an alkali metal with m=1 or an alkaline earth metal with m=2 and R^2 is a straight-chain or branched alkyl moiety of 1 to 5 carbon atoms, and with carbon monoxide at elevated pressure of at least about 5 bar and a temperature of 20° to 220° C. to form the corresponding alpha-formyl alkali or alkaline earth salt of compound II; and reacting the resulting salt at a temperature of about 20° to about 220° C. with a halogen compound of the formula

$$R^3\text{-Hal} \qquad \text{IV},$$

wherein R^3 has the above-given meaning and Hal represents chlorine, bromine or iodine.

4,525,311
O,O-DIALKYL-N-(BENZYL OR T-BUTYL)-N-CYANOMETHYL AMINOMETHYLPHOSPHONATES

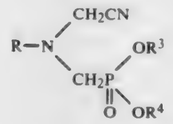
Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 391,023, Jun. 22, 1982,. This application Nov. 21, 1983, Ser. No. 553,452

Int. Cl.³ C07F *9/40*

U.S. Cl. 260—940 **3 Claims**

1. A compound of the formula



wherein R is tert-butyl or benzyl, R_3 is C_1–C_6 alkyl and R^2 is C_1–C_6 alkyl.

4,525,312
OPTICAL FIBRE REINSTATEMENT

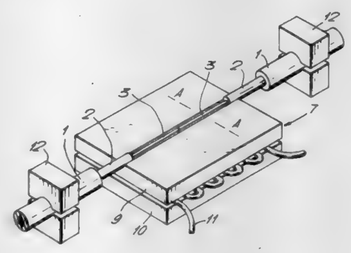
Stephen R. Jones, St. Mary Bourne, England, assignor to Standard Telephones and Cables plc, London, England

Filed Nov. 23, 1983, Ser. No. 554,805

Claims priority, application United Kingdom, Nov. 24, 1982, 8233469

Int. Cl.³ B29D *11/00*; C03C *25/02*

U.S. Cl. 264—1.5 **4 Claims**



1. A method of providing reinstatement primary and secondary coatings on a length of uncoated optical fibre, said length extending between two portions of the optical fibre having existing primary and secondary coatings, the method including the steps of arranging the length of optical fibre in a groove of a single element open mould, the groove being shaped to enable the length of optical fibre to be lifted from the mould after application to said length of said reinstatement primary coating; placing a quantity of uncured liquid primary coating material in the groove such that the length of uncoated optical fibre is immersed in the primary coating material; curing the primary coating material to form said reinstatement primary coating; removing the length of optical fibre from the mould; and injection moulding the reinstatement secondary coating over the reinstatement primary coating such that the reinstatement secondary coating extends between the existing secondary coatings of said two portions.

4,525,313
PROCESS AND APPARATUS FOR PRODUCING SINGLE- OR MULTI-BASE PROPELLANTS

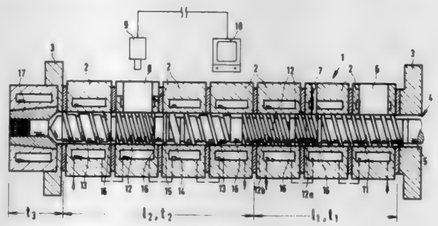
Dietmar Müller, Karlsruhe, Fed. Rep. of Germany, assignor to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany

Filed Nov. 3, 1983, Ser. No. 548,356

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242301

Int. Cl.³ C06B *21/00*

U.S. Cl. 264—3 B **15 Claims**



1. A process for producing an at least single-base propellant in rod form using a twin shaft screw extruder with an intake zone for starting components of said propellant, at least one of said components being moistened with alcohol, with a mixing and kneading zone downstream from and next to said intake zone in which solvent is run into said components for plastifying same and with an outlet zone downstream from said kneading and mixing zone, said outlet zone being next to screw means of said extruder and having a molding head for forming said components as processed in said extruder into at least one rod, said intake zone being kept at a raised temperature, and said kneading and mixing zone and said outlet zone being kept at a generally constant temperature that is greater than the temperature of the inlet zone.

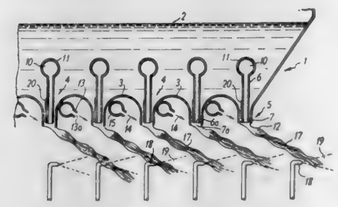
4,525,314
PRODUCING METAL AND METAL GLASS MICROFILAMENTS

Leonard B. Torobin, 120 Interstate North, Suite 158, Atlanta, Ga. 30339

Continuation-in-part of Ser. No. 245,137, Mar. 18, 1981, Pat. No. 4,415,512, and Ser. No. 325,594, Nov. 27, 1981, Pat. No. 4,363,646, which is a continuation-in-part of Ser. No. 152,693, May 23, 1980, Pat. No. 4,303,431, which is a continuation of Ser. No. 59,297, Jul. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 937,123, Aug. 28, 1978, abandoned, and Ser. No. 944,643, Sep. 21, 1978, abandoned. This application Nov. 8, 1982, Ser. No. 439,894

Int. Cl.³ C03B *19/10*

U.S. Cl. 264—9 **18 Claims**



1. A method for making metal microfilaments which comprises heating film forming metal material to form molten film forming metal material, forming a liquid film of molten metal material across an orifice, applying a blowing gas at a positive pressure on the inner surface of the liquid metal material film to blow the metal material film and form an elongated hollow metal material tube or cylinder, forming a thinned wall or weakened portion of the elongated hollow metal material tube or cylinder, subjecting the elongated hollow tube or cylinder during its formation to a pulsating or fluctuating pressure field having periodic oscillations, said pulsating or fluctuating pressure field acting on said elongated hollow tube or cylinder to assist in its formation and to assist in the formation of a multiplicity of metal material microfilaments and in detaching the metal microfilaments from said orifice.

4,525,315
METHOD OF CORRECTING IRREGULARITIES IN THE BUILT-UP OF A MAT DURING THE MANUFACTURE OF PARTICLEBOARD

Ernst Greten, Alfeld, Fed. Rep. of Germany, assignor to GreCon Greten GmbH & Co. KG, Alfeld, Fed. Rep. of Germany

Filed Dec. 8, 1982, Ser. No. 447,970

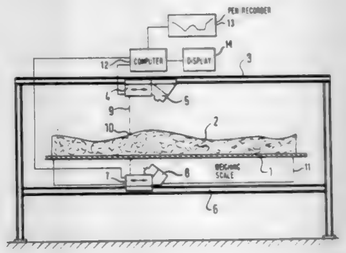
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1981, 3148800

Int. Cl.³ B29J *5/00*; G01N *9/00, 21/86*

U.S. Cl. 264—40.4 **13 Claims**

1. A method of determining and correcting, during manufacture of particleboard, fluctuations in the weight per unit area of loose mat material scatttered by a scattering machine having at least one setting onto a mat carrier, said mat material having an upper surface and a composition comprising particulate material and at least one binder, the method comprising the steps of:

(a) taking a plurality of individual distance measurements in the form of contactless measurements at various measurement positions across the mat material as the mat material moves on said mat carrier through a measurement station, by measuring the distance between a single predetermined measurement plane and the upper surface of the mat at each of said measurement positions, said contactless distance measurement being taken with a laser, said laser being focussed relative to the mat surface in such a way that the size of a scanning light bead of the laser lies at least within the range of the smallest occurring surface irregularities of the mat,



(b) processing the individual measurements obtained as values representative of the weight per unit area of the mat at the respective measurement positions, and

(c) controlling at least one setting of the scattering machine and the material composition in order to compensate for deviations from a desired value of the weight per unit area of the mat at the respective measurement positions.

4,525,316
SHIPPING FLEXIBLE POLYURETHANE FOAM PRODUCT

Edward A. Galla, Whitehall, and Bruce A. Smoyer, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 15, 1984, Ser. No. 580,317

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—54 **20 Claims**

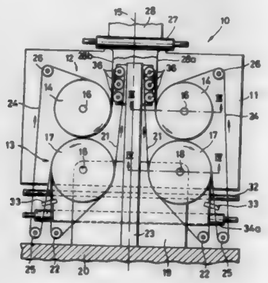
1. In a method for shipping flexible polyurethane foam product comprising (a) reacting a flexible polyurethane foam composition containing a polyisocyanate, a polyether polyol, a surfactant, a catalyst system and water to provide a foam product, (b) conditioning the foam product by storing for a time and at a temperature sufficient to develop substantially full cure, (c) applying a force to compress the product to reduce its size, (d) shipping the compressed product and (e) removing the compression force so that the product may return to its original size, the improvement for reducing the conditioning time or temperature to develop substantially full cure prior to compressing the foam product while ensuring the substantial restitution of the foam product when the compression force is removed which improvement comprises employing in the flexible polyurethane foam composition a polyurethane amine catalyst system in which the major portion is N-(C_1–C_{18}) hydrocarbyl morpholine or N-[di(C_1–C_4)alkylamino (C_2–C_4)alkyl] morpholine.

4,525,317

METHOD AND APPARATUS FOR STRETCHING FILM OR FIBROUS WEB

Tokio Okada; Haruhisa Tani; Shigezo Kojima; Kazuhiko Kurihara, all of Tokyo, and Hirosi Yazawa, Kunitachi, all of Japan, assignors to Nippon Petrochemicals, Co., Ltd., Chiyoda and Polymer Processing Research Institute Ltd., Toyko, both of, Japan

Filed Jun. 10, 1983, Ser. No. 502,976
Claims priority, application Japan, Jun. 15, 1982, 57-102750
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—235.8 **14 Claims**



1. A method of stretching a thermoplastic polymer film or fibrous web, comprising the steps of:

(a) feeding the film or fibrous web longitudinally at a first speed;

(b) stretching the film or fibrous web by

(I) gripping the same along at least two laterally spaced first longitudinal portions between (1) the peripheries of at least two radially disposed first pulleys of substantially the same dimensions rotating at a peripheral second speed in opposite directions and (2) first endless belt means equal in number to the first pulleys, respectively trained around and running with the first pulleys, the first pulleys and the first endless belt means forming at least two first arcuate divergent paths, and moving the gripped first longitudinal portions respectively along the first arcuate divergent paths substantially over a quarter of the full circumference of the pulleys, and then

(II) gripping the once-stretched film or fibrous web along at least two laterally spaced second longitudinal portions adjacent to said first longitudinal portions between (1) the peripheries of second pulleys of substantially the same dimensions, the second pulleys being equal in number to the first pulleys and respectively disposed downstream of and close to the first pulleys in coplanar relation thereto and rotating at a peripheral third speed in directions opposite to those of the respective first pulleys, and (2) second endless belt means equal in number to the second pulleys, respectively trained around and running with the second pulleys, the first and second belt means extending in two adjacent parallel planes, respectively, the second pulleys and the second endless belt means forming at least two second arcuate divergent paths contiguous to said first arcuate divergent paths, respectively, and moving the gripped second longitudinal portions respectively along said second arcuate divergent paths, the movement of the film along said first arcuate divergent paths and said second arcuate divergent paths being in only one direction throughout the stretching of the film wherein the film or fibrous web is in flattened tubular form, and the tubular film or fibrous web is supported at said first longitudinal portions from inside on respective portions of said first endless belt means disposed within the tubular film or fibrous web in abutment against said first longitudinal portions while it is longitudinally fed, is stretched by first being gripped along said first longitudinal portions between said portions of the first endless belt means and the peripheries of the first pulleys disposed outside the tubular film or fibrous web, and by being moved along said first arcuate divergent paths, and second by being gripped along said second longitudinal portions between respective portions of said second endless belt means disposed outside the tubular film or fibrous web and the peripheries of the second pulleys disposed within the tubular film or fibrous web, and by being moved along said second arcuate divergent paths, and after being stretched, is cut along said second longitudinal portions into a plurality of sheets at a portion adjacent to that where the tubular film or fibrous web is released from said second endless belt means and pulleys at the ends of said second arcuate divergent paths;

(c) conditioning the film or fibrous web to a state suitable for stretching during the stretching thereof; and

(d) withdrawing the twice-stretched film or fibrous web longitudinally at a fourth speed.

8. An apparatus for stretching a thermoplastic polymer film or fibrous web, comprising:

(a) means for feeding the film or fibrous web at a first speed along a longitudinal path;

(b) a first gripping means including

(I) at least two first pulleys of substantially the same dimensions disposed radially with respect to a central line along which said longitudinal path extends and rotatable at a peripheral second speed in opposite directions, and

(II) first endless belt means equal in number to said first pulleys, respectively trained around said first pulleys substantially over a quarter of the full circumference of said first pulleys for gripping the film or fibrous web at at least two laterally spaced first longitudinal portions along at least two first arcuate divergent paths between the peripheries of said first pulleys and said first endless belt means, whereby the film or fibrous web is stretched upon rotation of said first pulleys;

(c) a second gripping means including

(I) second pulleys of substantially the same dimensions, the second pulleys being equal in number to said first pulleys and respectively disposed downstream of and close to said first pulleys in coplanar relation thereto and rotatable at a peripheral third speed in directions opposite to those of the respective first pulleys;

(II) second endless belt means equal in number to the second pulleys, respectively trained around said second pulleys substantially over a quarter of their full circumferences for gripping the film or fibrous web at two laterally spaced second longitudinal portions adjacent to said first longitudinal portions along at least two second arcuate divergent paths between the peripheries of said second pulleys and said second endless belt means, said second arcuate divergent paths being contiguous to said first arcuate divergent paths, whereby the film or fibrous web is further stretched upon rotation of said second pulleys and whereby said film or web is stretched while moving only in one direction wherein said first endless belt means are also trained around said second pulleys along said second arcuate divergent paths, said second endless belt means are also trained around said first pulleys along said first arcuate divergent paths, each of said first and second pulleys includes at least two pulley members rotatable independently with respect to one another, each said first endless belt means is trained around one of said pulley members of each of said first and second pulleys, and each said second endless belt means is trained around the other pulley member of each of said first and second pulleys in parallel relation to said first endless belt means,

(d) means for conditioning the film or fibrous web to a state suitable for stretching during the stretching thereof; and

(e) means for withdrawing the stretched film or fibrous web.

4,525,318

APPARATUS FOR MOULDING A PLASTICS COMPONENT ONTO A LENGTH OF FLEXIBLE WEB MATERIAL AND METHOD FOR SAME

Wilhelm Reil, Bensheim; Ulrich Deutschbein, Mühltal, and Manfred Wallich, Nauheim, all of Fed. Rep. of Germany, assignors to Tetra Pak Developpement S.A., Pully, Switzerland

Filed Feb. 17, 1983, Ser. No. 467,448
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1982, 3207701
Int. Cl.³ B29F *1/022*; B29C *5/00*; B29D *31/00*
U.S. Cl. 264—259 **11 Claims**

1. A method for moulding plastic components onto a length of flexible material which comprises:

(a) placing a length of flexible material onto a mandrel;

(b) positioning the mandrel into a moulding position by rotating a wheel to which the mandrel is attached;

(c) moving external mould portions together about the mandrel covered with said material;

(d) moving a head plate carrying an injection moulding nozzle into positive and frictional engagement with the external mould portions to hold them together such that said mandrel, said external mould portions and said head plate define a mould cavity for the plastic component;

(e) injecting plastic material into the cavity through said nozzle;

(f) moving said head plate and said external mould portions away from said mandrel;

(g) moving said mandrel, covered with said length of material having a moulded plastic component on the material, away from said moulding position by again rotating said wheel;

(h) positioning another mandrel covered with another length of tube material into said moulding position by rotating said wheel to which said other mandrel is attached; and

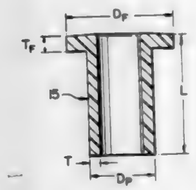
(i) repeating steps c through g with respect to said other material and said other mandrel.

4,525,319

METHOD AND APPARATUS FOR FORMING A SINGLE FLANGE PIPE ADAPTER

Paul E. Kaspe, Ardrossan, Canada, assignor to Prolite Plastics Limited, Edmonton, Canada

Filed Oct. 6, 1983, Ser. No. 539,679
Claims priority, application Canada, Apr. 27, 1983, 426835
Int. Cl.³ B29C *1/00*
U.S. Cl. 264—322 **18 Claims**



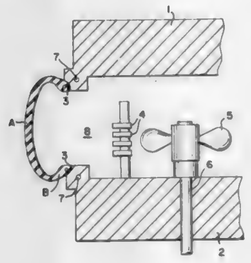
1. A process for manufacturing a single flare flange adapter from a length of suitable thermoplastic resin tube which process comprises the steps of, heating an end portion of the tube to soften it; arranging said tube in a sleeve member with the heated tube end projecting therefrom; inserting a flanged male plug member into the heated end of said tube and relatively moving said sleeve member and said plug member longitudinally towards each other under pressure to cause said flanged plug member to flare the heated end of the tube outwardly through an obtuse angle against a limiting means to form a single flange on the said tube; cooling the formed flanged tube; removing the flanged tube from said members; and stress relieving the flanged tube.

4,525,320

METHOD OF PREHEATING AND PREFORMING A GREEN TIRE

Kazumasa Sarumaru, 8-27 Kinmitsu-cho, Ashiya 659, Japan

Filed Feb. 21, 1984, Ser. No. 581,692
Claims priority, application Japan, May 30, 1983, 58-95519
Int. Cl.³ B29H *5/02, 17/26*
U.S. Cl. 264—502 **6 Claims**



1. A method of preheating and preforming a green tire before final vulcanization, utilizing a pair of generally circular axially movable discs, said method comprising the steps of supporting the tire beads between said pair of discs to form a tightly closed interior space, moving said discs toward each other and thereby axially compressing the tire until the tire has a shape substantially the same as the final tire shape, supplying said interior space with a thermal medium, heating said medium and said tire to a preheat temperature which is substantially lower than the temperature at which the final vulcanization starts, and removing said tire from said discs while at said preheat temperature.

4,525,321

PROCESS FOR PREPARING FLAT ARTICLES BASED ON DEFIBRATED COMPONENTS OF WOOD

Heinz Tönniges, Krefeld, Fed. Rep. of Germany, assignor to Deutsche Fibrit Gesellschaft Ebers & Dr. Müller mbH, Krefeld, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,788

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1982, 3208963

Int. Cl.³ B29J *5/00*

U.S. Cl. 264—517 **17 Claims**

1. In a process for manufacturing a three-dimensional article by compression-moulding under dry conditions into any desired shape where the walls are thin relative their area and which are based on defibrated wood fibres to which binders have been added and which have a moisture content of 1 to 30% by weight relative to all components of an article, the improvement wherein a proportioned amount of the moulding material disposed in an air stream is brought in contact with the bottom side of a preform sieve and a vacuum is applied from above said sieve whereby to form a fibre containing preform, and the thus preformed product is then compression-moulded into the desired final shape of the article.

4,525,322

ETHYLENE POLYMER COMPOSITION FOR BLOW MOLDING

Matthew A. Page; William J. Libbey, and Allan J. Lundeen, all of Ponca City, Okla., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 28, 1983, Ser. No. 508,696

Int. Cl.³ C08L *23/06*

U.S. Cl. 264—531 **7 Claims**

1. Intermittent blow-molding processes using polyethylene resins prepared via Ziegler/Natta catalysts comprising high molecular weight, medium molecular weight and low molecular weight fractions, wherein

(A) The viscosity average molecular weight of high molecular weight component (H-MW) ranges from 590,000 to about 860,000 and comprises from 12 to about 25 percent by weight of the total resin;

(B) The viscosity average molecular weight of the medium molecular weight component (M-MW) is from about 75,000 to about 600,000 and comprises from about 5 to about 83% by weight of the total resin;

(C) The viscosity average molecular weight of the low molecular weight component (L-MW) is from about 10,000 to about 100,000 and comprises from about 5 to about 83% by weight of the total resin; wherein

(D) The ratio of H-MW/M-MW is $\geqq 1.7$ and the ratio of M-MW/L-MW is $\geqq 1.7$, wherein the density of the total resin is from about 0.940 to about 0.970 and the melt index at 2.16 kilogram load is from about 0.01 to about 2.0.

4,525,323

ION BEAM INERTIAL CONFINEMENT TARGET

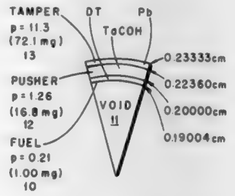
Roger O. Bangerter, Danville, and Donald J. Meeker, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 4, 1977, Ser. No. 821,940

Int. Cl.³ G21B *1/00*

U.S. Cl. 376—106 **3 Claims**

1. In a system comprising means for extracting useful energy in a controlled manner from a target imploded by energy from at least one ion beam, said target having a centrally located quantity of fusion fuel which gives off useful energy in a controlled manner when imploded by ion beam energy, the improvement consisting of: a pusher consisting of TaCOH positioned substantially contiguously about said fuel, said pusher inhibiting energy transport into said fuel and preventing preheat of said fuel, said pusher while containing relatively little mass and because of a small density difference between said fuel and said pusher functioning to decrease fluid instabilities caused by pusher-fuel mixing during final stages of implosion of the fuel; and a tamper surrounding and substantially contiguous about said pusher, said tamper consisting of Pb, said



pusher of TaCOH includes about 1 atomic percent of tantalum, said tamper and said tantalum of said pusher having a combined total density times radial thickness (ρr) of less than 1 gm/cm^2.

4,525,324

DRY STORAGE FACILITY FOR IRRADIATED NUCLEAR REACTOR FUEL ELEMENTS

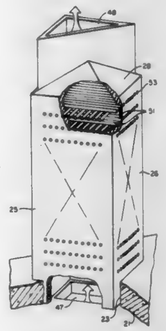
Harry Spilker, Bad Muender, and Klaus Einfeld, Murnau, both of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

Filed Dec. 21, 1982, Ser. No. 451,938

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151310

Int. Cl.³ G21C *19/40, 19/06, 19/08*

U.S. Cl. 376—272 **9 Claims**



1. Dry storage facility for storing radioactive materials such as irradiated nuclear reactor fuel elements releasing heat produced by radioactive decay, the radioactive materials being held in gas-tight, elongated storage containers defining respective longitudinal axes, the dry storage facility comprising:

an enclosure;

a plurality of upwardly extending storage modules disposed in said enclosure for accommodating said elongated storage containers;

said elongated storage containers being grouped into a plurality of sets of containers;

each of said storage modules including first holding means for holding a first portion of said sets of containers in respective ones of a first group of horizontal planes arranged one atop the other;

said storage module including second holding means for holding the remaining portion of said sets in respective ones of a second group of horizontal planes interlayered in interdigital fashion with said first group of horizontal planes;

said fist holding means and said second holding means being arranged in said module so as to cause the longitudinal axes of the containers in one plane to be disposed so that the respective longitudinal axes thereof are disposed crosswise with respect to the longitudinal axes of the containers in the next adjacent plane;

the longitudinal axes of the containers in every other one of said first group of horizontal planes being horizontally displaced from the respective longitudinal axis of the containers in the next adjacent horizontal plane of said first group;

the containers in every other one of said second group of horizontal planes being laterally displaced from the containers in the next adjacent horizontal plane of said second group; and,

convection cooling means for conducting cooling air through said storage modules to cool said containers.

4,525,325

COPPER-NICKEL-TIN-COBALT SPINODAL ALLOY

Ronald J. Livak, Wallingford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jul. 26, 1984, Ser. No. 634,516

Int. Cl.³ C22C *9/02*

U.S. Cl. 420—473 **35 Claims**

1. A copper base spinodal alloy consisting essentially of from about 5 to about 30 percent by weight nickel, from about 4 to about 13 percent by weight tin, from about 3.5 to about 7 percent by weight cobalt and the balance copper, with the sum of the nickel and cobalt contents being no more than 35 percent by weight of the alloy.

16. A process for preparing a copper base spinodal alloy body which comprises:

(a) providing a copper base alloy powder containing from about 5 to about 30 percent by weight nickel, from about 4 to about 13 percent by weight tin, from about 3.5 to about 7 percent by weight cobalt, and the balance copper, with the sum of the nickel and cobalt contents being no more than 35 percent by weight of the powder;

(b) compacting the alloy powder to form a green body having structural integrity and sufficient porosity to be penetrated by a reducing atmosphere;

(c) sintering the green body in the reducing atmosphere to form a metallurgical bond; and

(d) cooling the sintered body at a rate such that age hardening and embrittlement are prevented.

4,525,326

ALUMINUM ALLOY

Pius Schwellinger, Lottstetten, Fed. Rep. of Germany; Alois Ried, Schaffhausen, Switzerland; Jürgen Timm, Steisslingen, and Manfred Heckler, Singen, both of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Aug. 18, 1983, Ser. No. 524,412

Claims priority, application Switzerland, Sep. 13, 1982, 5413/82

Int. Cl.³ C22C *21/02*

U.S. Cl. 420—535 **12 Claims**

1. Heat-treatable aluminum base alloy consisting essentially of 0.3–1.0% magnesium, 0.3–1.2% silicon, 0.1–0.5% iron, up to 0.4% copper, 0.05–0.20% vanadium, a manganese content equal to $\frac{1}{4}$ to $\frac{1}{8}$ of the concentration of iron, and the balance essentially aluminum.

4,525,327

LEAD-ANTIMONY-MAGNESIUM ALLOYS FOR STORAGE CELL SUPPORTS AND METHOD OF MANUFACTURING SAID ALLOYS

Roland Bardin, Villeurbanne; Joël Mack, Lamure sur Azergues, and Jean-Jacques Counioux, Villeurbanne, all of France, assignors to Compagnie Europeenne d'Accumulateurs, Paris, France

PCT No. PCT/FR82/00106, § 371 Date Dec. 28, 1982, § 102(e) Date Dec. 28, 1982, PCT Pub. No. WO83/00261, PCT Pub. Date Jan. 20, 1983

PCT Filed Jun. 24, 1982, Ser. No. 456,041

Claims priority, application France, Jun. 26, 1981, 81 12603

Int. Cl.³ C22C *11/10, 1/03*

U.S. Cl. 420—565 **9 Claims**

1. In a lead-acid storage cell, an electrode support comprising a lead based alloy consisting essentially of between 0.05% and 4% antimony, between 0.02% and 0.3% magnesium, between 0% and 0.3% tin, between 0% and 5% arsenic, between 0% and 0.075% copper, between 0% and 0.006% sulfur, and the balance of said alloy being lead, further characterized in that said alloy contains no barium.

4,525,328

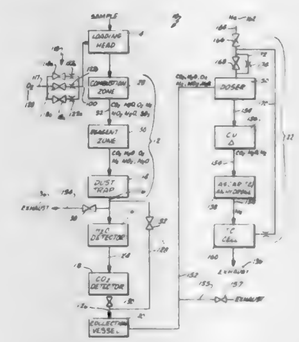
CARBON, HYDROGEN, AND NITROGEN ANALYZER

Roger L. Bredeweg, Stevensville, Mich., assignor to Leco Corporation, St. Joseph, Mich.

Filed Mar. 5, 1982, Ser. No. 355,214

Int. Cl.³ G01N *1/22, 31/10, 31/12*

U.S. Cl. 422—80 **7 Claims**



1. A system for analyzing the elemental content of a sample comprising:

furnace means for combusting a sample into constituent gases;

reservoir means for collecting and equilibrating the constituent gases;

first conduit and valve means actuable for conveying the constituent gases from said furnace means to said reservoir means during combustion of the sample;

second conduit and valve means actuable for conveying the constituent gases from said reservoir means for analysis, said first and second conduit means including a common conduit portion through which the constituent gases pass when conveyed to said reservoir means from said furnace means during combustion of the sample and when conveyed from the reservoir means during analysis;

a detector operably connected to said common conduit portion providing a signal responsive to the amount of at least one of the constituent gases within said common conduit portion; and

control means operably connected to said first and second valve means and to said detector for controlling said first and second valve means and thereby controlling gas flow through said common conduit portion, said control means

including means for opening said first conduit and valve means during combustion of the sample in said furnace means permitting the constituent gases to flow through said common conduit portion to said reservoir means until said signal falls below a minimum value indicating that sample combustion is essentially complete, said control means further including means for opening said second conduit and valve means after the gases are equilibrated within said reservoir means permitting the equilibrated constituent gases to flow through said common conduit portion whereupon said signal is indicative of the amount of the one constituent gas within the equilibrated constituent gases.

4,525,329

PROCESS AND APPARATUS FOR MAKING PHOSPHORUS PENTOXIDE WITH UTILIZATION OF REACTION HEAT

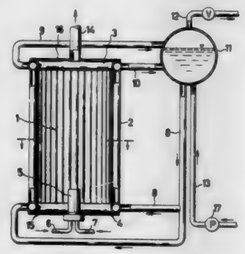
Bernhard Kuxdorf, Brühl; Peter Luhr, Bad Münstereifel; Hugo Werner, Hürth; Ursus Thümmler, Erftstadt, and Friedrich-Wilhelm Dorn, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 16, 1984, Ser. No. 601,027

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315630

Int. Cl.³ C01B *25/12*

U.S. Cl. 422—202 **21 Claims**



1. An apparatus for making phosphorus pentoxide by subjecting elemental phosphorus to combustion with dried air with utilization of the reaction heat for the production of energy, comprising: a cylindrical combustion chamber made of stainless steel, arranged in upright position and presenting a height/diameter-ratio of 2.5:1 to 5:1; said combustion chamber being gastightly closed at its upper end by means of a circular covering plate and at its lower end by means of a circular base plate, and having its walls arranged so as to form a cooling system with cavities therein; said cavities being connected to a circular upper collecting tube and to a circular lower collecting tube, respectively, arranged in horizontal position; a steam separating means being connected by a conduit system to said upper collecting tube and to said lower collecting tube, respectively; said steam separating means being provided with an upper hot steam outlet and being penetrated by a lower fresh water feed pipe; said covering plate being provided with a phosphorus pentoxide outlet; and said base plate being penetrated by one burner centrally disposed in said base plate, said burner being provided with a phosphorus feed line and a dried air feed line, respectively.

11. An apparatus for making phosphorus pentoxide by subjecting elemental phosphorus to combustion with dried air with utilization of the reaction heat for the production of energy, comprising: a cylindrical combustion chamber made of stainless steel, arranged in upright position and presenting a height/diameter-ratio of 2.5:1 to 5:1; said combustion chamber being gastightly closed at its upper end by means of a circular covering plate and at its lower end by means of a circular base plate, and having its walls arranged so as to form a cooling system with cavities therein; said cavities being connected to a circular upper collecting tube and to a circular lower collecting tube, respectively, arranged in horizontal position; a steam separating means being connected by a conduit system to said upper collecting tube and to said lower collecting tube, respectively; said steam separating means being provided with an upper hot steam outlet and being penetrated by a lower fresh water feed pipe; said covering plate being provided with a phosphorus pentoxide outlet; and said base plate being penetrated by 2 to 10 burners disposed axisymmetrically in said base plate, said burners being provided with a phosphorus feed line and a dried air feed line, respectively.

4,525,330

PROCESS FOR THE EXTRACTION OF METAL VALUES AND NOVEL METAL EXTRACTANTS

Raymond F. Dalton, Cheshire; Raymond Price, Huddersfield; Peter M. Quan, Lancashire, and David Stewart, Oldham, all of England, assignors to Imperial Chemical Industries Limited, London, England

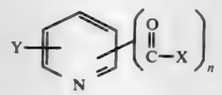
Continuation-in-part of Ser. No. 341,176, Jan. 20, 1982, abandoned. This application Sep. 16, 1982, Ser. No. 418,833

Claims priority, application United Kingdom, Feb. 3, 1981, 8103223; Aug. 26, 1981, 8126079

Int. Cl.³ B01D *11/04;* **C01G** *3/00*

U.S. Cl. 423—24 **19 Claims**

1. In a solvent extraction process for extracting copper values from aqueous solutions of copper salts containing halide or pseudo halide anion which comprises the steps of (1) contacting the aqueous solution containing copper salts with a solution of an extractant in a water-immiscible organic solvent to extract the copper into the solvent in the form of a complex of copper and the extractant; (2) separating the aqueous solution from the solution of the complex in the water-immiscible solvent; and (3) contacting the resultant organic phase with an aqueous strip solution whereby the complex of copper with the extractant is unstable and copper transfers into the aqueous strip solution, the improvement in which the extractant is a substituted pyridine of the formula:



wherein X is the group —OR_1, R_1 being a hydrocarbyl group containing from 5 to 36 carbon atoms, and n is 1, 2 or 3; and wherein Y is hydrogen or is one or more substituents selected from the group consisting of halogen, alkyl, aryl, alkoxy, aryloxy, aralkyl, cyano, nitro and carboxylic acid.

4,525,331

PROCESS FOR PURIFYING MOLYBDENUM TRIOXIDE

Michael J. Cheresnowsky; Timothy A. Brunelli, both of Towanda; Robin W. Munn, Sayre, and Tai K. Kim, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

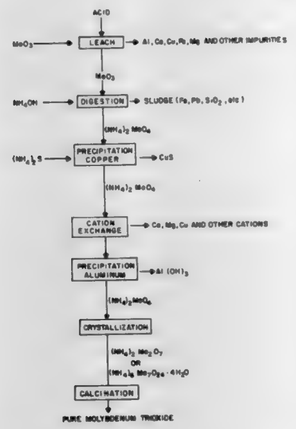
Filed Feb. 24, 1984, Ser. No. 584,843

Int. Cl.³ C01G *39/00*

U.S. Cl. 423—54 **8 Claims**

1. A method for preparing ammonium molybdate having low impurities aluminum, calcium, copper, magnesium, and iron from an impure concentrate of molybdenum trioxide comprising contacting said concentrate with an aqueous solution comprising about 4.2 moles per liter of nitric acid, and about 1.75 moles per liter of ammonium nitrate to solubilize less than about 1.5 percent of the molybdenum values from said concentrate and solubilize a major portion of said impurities, wherein during contacting from about 0.85 parts to less than about one part by weight aqueous solution is present per part of impure concentrate, washing the resulting concentrate, digesting said resulting concentrate with an aqueous solution

of ammonium hydroxide at suitable concentrations to solubilize substantially all of the molybdenum values present in said resulting concentrate as ammonium molybdate and form an ammonium molybdate solution, adding ammonium sulfide to said ammonium molybdate solution in an amount sufficient to convert substantially all of the soluble copper values present in said solution to an insoluble copper sulfide, separating said ammonium molybdate solution from an insoluble residue, and contacting said resulting ammonium molybdate solution with a



chelate cation exchange resin in ammonium form, removing ammonia to adjust the pH of said ammonium molybdate solution of from about 6 to about 8 to convert substantially all of the soluble aluminum values to an insoluble aluminum hydroxide, separating said resulting ammonium molybdate solution from a resulting insoluble residue, and concentrating said resulting ammonium molybdate to form ammonium molybdate having low impurities, aluminum, calcium, copper, magensium, and iron.

4,525,332

RECOVERY OF GERMANIUM FROM AQUEOUS SOLUTIONS

Daniel A. D. Boateng, Montrose; Donald L. Ball, Castlegar, and Godefridus M. Swinkels, Rossland, all of Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Mar. 20, 1984, Ser. No. 591,525

Claims priority, application Canada, Feb. 2, 1984, 446656

Int. Cl.³ C01G *17/00*

U.S. Cl. 423—89 **25 Claims**

1. A process for the recovery of germanium from aqueous solutions containing germanium, zinc and antimony, which process comprises:

(i) germanium sorption from the aqueous solution by contacting the solution with an ion exchange resin which has as its matrix a backbone polymer to which are attached amino active groups chosen from secondary and tertiary amines and quaternary ammonium groups, which resin also exhibits a selectivity ratio of germanium relative to antimony of at least 50:1; and

(ii) elution of the sorbed germanium from the ion exchange resin with an aqueous medium to provide an aqueous solution containing the major part of the germanium sorbed by the resin, and a resin containing a minor part of the sorbed germanium.

4,525,333

PROCESS FOR SEPARATING GALLIUM AND INDIUM FROM AQUEOUS SOLUTIONS

Günther Schimmel; Gero Heymer, both of Erftstadt; Werner Kraüse, Hürth, and Werner Pieper, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 531,156

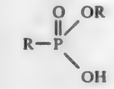
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235136

Int. Cl.³ C01G *15/00*

U.S. Cl. 423—112 **10 Claims**

1. In the process for separating gallium and indium from an aqueous solution by subjecting the solution to liquid/liquid extraction with the use of an organylphosphonic acid ester as extraction solvent and separating the resulting liquid phases from one another, the improvement which comprises: using as the extraction solvent either

(a) a mixture consisting essentially of a compound of general formula I



I

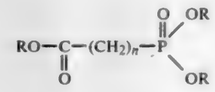
and up to 90% of a compound of general formula II



II

or

(b) a compound of formula III



III

or

a mixture consisting essentially of a compound of formula III with a said mixture of compounds of formulae I and II, in which R stands for an identical or different unsubstituted alkyl, cycloalkyl or aryl group having from 2 to 20 carbon atoms and n stands for a whole number within the range 0 to 4.

4,525,334

PROCESS FOR THE PRODUCTION OF SILICON

Peter Woditsch; Martin Abels, and Berthold Brazel, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 13, 1984, Ser. No. 589,204

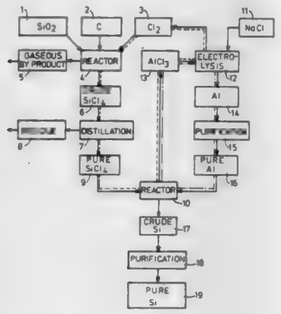
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310828

Int. Cl.³ C01B *33/00*

U.S. Cl. 423—324 **5 Claims**

1. A process for the production of silicon comprising reacting a gaseous silicon compound of the formula SiH_nX_{4-n}, wherein X is selected from the group consisting of fluorine,

chlorine, bromine and iodine and n is 0 to 3, with aluminum in a reactor at an elevated temperature at which by product



AlX_3 is in vapor state so that the reactor at all times contains only gases and solids.

4,525,335

METHOD OF MANUFACTURING CRYSTALLINE SILICON NITRIDE AND METHOD OF SEPARATION THEREOF

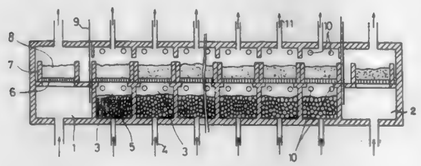
Minoru Tanaka, Kobe, and Tadashi Kawabe, Ako, both of Japan, assignors to Tateho Kagaku Kogyo Kabushiki Kaisha, Ako, Japan

Filed Mar. 17, 1983, Ser. No. 476,200

Claims priority, application Japan, Apr. 1, 1982, 57-55196

Int. Cl.³ C01B *21/068;* B03B *5/30*

U.S. Cl. 423—344 **10 Claims**



1. A method of manufacturing silicon nitride comprising the following steps:

(a) providing a silicon and carbon containing material having both a thin cross section and sufficient porosity to permit the passage of a gas therethrough;

(b) arranging said material on a gas-permeable, heat-resistant support;

(c) placing the material-bearing support in an air tight furnace, said furnace adapted to provide a plurality of temperature zones from a low of about 400 degrees C. through a high in the range 1,350 degrees C. through 1,450 degrees C.;

(d) horizontally moving said material-bearing support successively through each of said temperature zones, in the direction of increasing temperature;

(e) passing a non-oxidizing gas through the heated material, said gas being nitrogen in zones of the furnace wherein the temperature is in excess of about 1,300 degrees C.; and

(f) removing silicon-nitride whisker-containing material from said furnace.

9. A method of separating a collection of silicon nitride comprising dispersing materials having generated and grown silicon nitride on the internal and external surfaces thereof into a mixture of a hydrophobic organic liquid, water, and hydrochloric acid, and after keeping it at rest, separately isolating said whiskers in the water phase and the rest of the material in the organic liquid phase.

4,525,336

PROCESS FOR REMOVING IMPURITIES FROM SILICON FRAGMENTS

Rudolf Griesshammer, Altötting, and Michael Peterat, Emmerting, both of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik Grundstoffe m.b.H., Burghausen, Fed. Rep. of Germany

Filed May 29, 1984, Ser. No. 614,529

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1983, 3332447

Int. Cl.³ C01B *33/02*

U.S. Cl. 423—348 **9 Claims**

1. A process for removing impurities from silicon fragments which result when polycrystalline silicon formed bodies are subjected to a crushing treatment, said process comprising the steps of:

(a) treating the silicon fragments with an aqueous solution of nitrate salts;

(b) annealing the so-treated fragments; and,

(c) treating the annealed fragments with hydrofluoric acid.

4,525,337

PROCESS FOR THE MANUFACTURE OF COMPACT COMPOSITE CARBONACEOUS MATERIALS BY DENSIFICATION OF POROUS CARBONACEOUS SUBSTRATES

Jean Jamet, Janvry; Jean-Jacques Poupeau, St-Remy-les-Chevreuse; Jacqueline Omnes, Paris, and Claude Le Pennec, Vincennes, all of France, assignors to Commissariat a l'Energie Atomique, Paris and Office National d'Etudes et de Recherche Aerospatiales, Chatilcon, both of, France

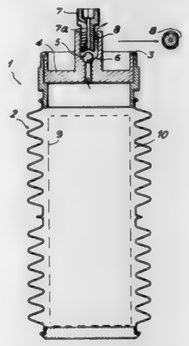
Continuation-in-part of Ser. No. 244,877, Mar. 18, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 477,487

Claims priority, application France, Mar. 28, 1980, 80 07034; Sep. 18, 1980, 80 20089

The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.

Int. Cl.³ C01B *31/04, 31/02*

U.S. Cl. 423—449 **3 Claims**



1. A process for the accelerated densification of a porous carbonaceous substrate comprising decomposing a hydrocarbon substance having a free carbon content of about 30% in the presence of said substrate under high pressure at a high temperature, wherein said decomposition is effected in a liquid phase within a closed reactor and results in the production of hydrogen, and wherein the reactor in which said densification occurs has walls which have a flexibility sufficient to ensure that the internal volume of said reactor adapts, under the effect of the applied pressure, to the volume of the liquid phase contained therein, and wherein said porous carbonaceous substrate has a thickness exceeding 20 mm, and is formed by the multidirectional weaving of continuous carbon fibers which are oriented according to at least three principal direction of space.

4,525,338

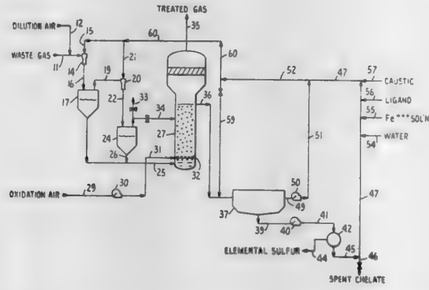
METHOD FOR REMOVAL OF HYDROGEN SULFIDE

Howard W. Klee, Jr., Naperville, Ill., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 462,679, Jan. 31, 1983,. This application Jun. 7, 1984, Ser. No. 618,456

Int. Cl.³ B01D *53/34;* C01B *17/04*

U.S. Cl. 423—573 G **7 Claims**



1. A continuous process for recovering sulfur values from a hydrogen sulfide-containing gaseous stream which comprises the steps of

(a) contacting said hydrogen sulfide-containing gaseous stream with an aqueous solution of a water-soluble oxidized polyvalent metal chelate catalyst at alkaline pH thereby converting the hydrogen sulfide to particulate elemental sulfur and reducing the polyvalent metal chelate catalyst and forming a suspension of particulate elemental sulfur in said aqueous solution and a first product gas stream depleted in hydrogen sulfide,

(b) contacting said suspension with free oxygen-containing gas in an oxidation zone under flotation conditions thereby oxidizing the polyvalent metal chelate to its oxidized form and forming a regenerated aqueous solution and introducing into the same oxidation zone into contact with the regenerated aqueous solution said first product gas stream thereby converting remaining hydrogen sulfide in said first product gas stream to elemental sulfur and forming a second product gas stream doubly depleted in hydrogen sulfide and an aqueous liquid phase containing the oxidized polyvalent metal chelate catalyst and a sulfur particle-gas-liquid foam phase,

(c) separating the foam phase from the aqueous liquid phase,

(d) recycling at least a portion of the aqueous liquid phase to the contacting step of (a), and

(e) recovering elemental sulfur from the foam phase.

4,525,339

ENTERIC COATED ORAL DOSAGE FORM

Charanjit Behl, Bloomfield; George Beskid, Upper Montclair; Navnit Shah, Clifton; Jacques Tossounian, Pine Brook, and Joel Unowsky, Livingston, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 15, 1982, Ser. No. 434,452

Int. Cl.³ A61K *9/62, 9/36, 31/43*

U.S. Cl. 424—16 **15 Claims**

1. An orally administered enteric coated pharmaceutical composition which consists essentially of from about 50 to 500 mg of beta-lactam antibiotic distributed in at least about 33% by weight of an enhancer consisting of a C_2 to C_{12} glyceride mixture of at least one glyceride selected from the group consisting essentially of monoglycerides, diglycerides and triglycerids of fatty acids of C_2 to C_{12} chain length and mixtures thereof and adjuvants suitable for oral enteric administration.

4,525,340

COMPOSITE BODY FOR LONG-TERM DELIVERY OF EFFECTIVE SUBSTANCES

Wolfgang Lange, Obernburg, Fed. Rep. of Germany, and G. J. Boer, Muidenberg, Netherlands, assignors to Akzo NV, Arnhem, Netherlands

Filed Apr. 20, 1983, Ser. No. 486,846

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214667

Int. Cl.³ A61J *3/00;* A61K *9/00*

U.S. Cl. 424—16 **13 Claims**

1. A composite body for long-term delivery of effective substances, comprising a carrier for effective substance and composed of a microporous thermoplastic polymer with pores containing effective substances; and a coating composed of cellulose nitrate in contact with said microporous polymer.

4,525,341

METHOD OF ADMINISTERING VITAMINS

Joseph A. Deihl, Phoenix, Ariz., assignor to Mayor Pharmaceutical Laboratories, Inc., Tempe, Ariz.

Filed Apr. 9, 1984, Ser. No. 598,480

Int. Cl.³ A61K *9/00, 31/59, 31/365, 31/07*

U.S. Cl. 424—43 **1 Claim**

1. A method for autogenously administering vitamins to a human subject concurrently with the use of an aerosol breath spray, comprising the steps of:

(a) forming a sprayable liquid composition comprising

(i) a breath freshening agent,

(ii) at least one vitamin in a diet supplemental amount selected from the class consisting of vitamins A, B, C, D, E, G, H, K and P, and

(iii) a non-toxic liquid carrier for said breath freshening agent and said vitamin; and

(b) spraying an effective amount of an aerosol of said composition into the mouth of said subject.

4,525,342

DENTAL AND ORAL PREPARATION

Ervin Weiss, 18 Kley St., Tel Aviv; Melvin Rosenberg, 12 Yedaam St., Ramat-gan, and Herbert Judas, 5 Habrosh St., Raanana, all of Israel

Filed Feb. 21, 1984, Ser. No. 582,065

Claims priority, application Israel, Mar. 3, 1983, 68027

Int. Cl.³ A61J *7/00, 7/16*

U.S. Cl. 424—49 **5 Claims**

1. A mouthwash for dental and oral hygiene, adapted to desorb microorganisms and absorb odorous mercapto compounds causing halitosis, which mouthwash comprises a system of two physically separate liquid phases, provided in a double compartment doublesquirt bottle adapted to be emulsified by swishing in the mouth, one of said phases being a solution of sodium chloride in water as an aqueous phase, and the other an oily phase which is a vegetable oil, a mineral oil or a hydrocarbon, said aqueous phase and said oily phase being in the ratio between 2:1 and 1:1 by volume.

4,525,343

TOOTH AND MOUTH CARE AGENT

Helmut Raaf, Bockenau, Fed. Rep. of Germany, assignor to Blendax-Werke R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany

Filed Apr. 9, 1984, Ser. No. 597,849

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1983, 3314895

Int. Cl.³ A61K *7/16, 7/22*

U.S. Cl. 424—54 **1 Claim**

1. Tooth and mouth care preparations in the form of toothpaste, mouthwash, mouth spray or tooth powder containing a mixture of 0.05 to 2.5% by weight of hesperidin and 5 to 15% by weight of urea which is an essential active ingredient effective to treat and prevent gingival bleeding.

4,525,344

SKIN CARE AND SHAVING COMPOSITION

Ronald J. Tutsky, P.O. Box 1646, Greenwich, Conn. 06836

Filed Aug. 15, 1983, Ser. No. 523,003

Int. Cl.³ A61K *7/15;* **B26D** *7/08*

U.S. Cl. 424—73 **12 Claims**

1. A substantially waterless shaving composition which is also effective in conditioning skin which comprises about 5–20% by weight of total composition of phospholipid; about 0.5–5% by weight of total composition of vitamin E; about 2–15% by weight of total composition of wheat germ oil and the remainder being a mixture of seed and vegetable oils.

4,525,345

CONSTANT ORDER RELEASE, SOLID DOSAGE INDOMETHACIN FORMULATION AND METHOD OF TREATING ARTHRITIS AND OTHER INFLAMMATORY CONDITIONS

James M. Dunn, Littleton, and Ronald T. Haas, Highland Ranch, both of Colo., assignors to Verex Laboratories, Inc., Englewood, Colo.

Continuation of Ser. No. 334,124, Dec. 24, 1981, abandoned. This application Aug. 6, 1984, Ser. No. 637,843

Int. Cl.³ A61K *9/22, 9/30, 9/52, 9/56*

U.S. Cl. 424—22 **25 Claims**

1. A constant release rate indomethacin formulation in tablet unit dosage form, said tablet comprising an intimate screened, solvent wet-granulated admixture of from 50 to 200 mg of indomethacin, from about 1.7 to 3.7 weight percent of a slow-dissolving water-insoluble cellulose derivative selected from the group consisting of cellulose acetate phthalate and ethyl cellulose, dissolved in the wet-granulation solvent, the wet granulation being completely dried before screening, from about 1.5 to 5.0 weight percent of a tabletting disintegrant, and from about 40 to 80 weight percent of a pharmaceutically acceptable bulking agent or diluent.

4,525,346

AQUEOUS ANTIMICROBIAL OPHTHALMIC SOLUTIONS

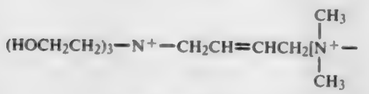
Raymond L. Stark, Midland, Mich., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 509,281, Jun. 29, 1983, abandoned, which is a continuation of Ser. No. 306,317, Sep. 28, 1981, Pat. No. 4,407,791. This application Sep. 29, 1983, Ser. No. 537,331

Int. Cl.³ A61K *31/74, 31/79, 31/14*

U.S. Cl. 424—80 **25 Claims**

1. An aqueous ophthalmic contact lens solution comprising: from about 0.00001 to about 3.0 percent by weight/volume of a quaternary ammonium compound having a number average molecular weight in the range of about 2,000 to about 30,000, said compound having the formula



$$(HOCH_2CH_2)_3-N^+-CH_2CH=CHCH_2[N^+-$$

$$-CH_2CH=CHCH_2]_nN^+-(CH_2CH_2OH)_3(n+2)X^-$$

wherein X=a pharmaceutically acceptable anion;

an effective amount of NaCl to provide isotonicity to said solution; and

an effective amount of buffer to provide said solution with an ophthalmically acceptable pH.

4,525,347

ANTIINFLAMMATORY ANALGESIC GELLED OINTMENT

Toshio Inagi, Hachioji; Toyojiro Muramatsu, Sayama, and Hidetaka Nagai, Hachioji, all of Japan, assignors to Kowa Company Limited, Nagoya, Japan

Continuation-in-part of Ser. No. 304,909, Sep. 23, 1981, abandoned, which is a continuation of Ser. No. 87,574, Oct. 23, 1979, Pat. No. 4,309,414, which is a continuation of Ser. No. 918,021, Jun. 22, 1978, abandoned. This application Feb. 22, 1983, Ser. No. 468,491

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ A61K *31/40, 31/78*

U.S. Cl. 424—81 **2 Claims**

1. An anti-inflammatory analgesic gelled ointment, comprising:

(a) indomethacin in the range of 0.5 to 1.5% by weight;

(b) a medium ranging from 15 to 85% by weight and consisting essentially of a hydroxy compound selected from the group consisting of propylene glycol, butylene glycol, polyethylene glycol, ethanol, and isopropanol, water in the range of 30 to 55% by weight, and a gelating agent ranging from 0.5 to 5% by weight of a carboxyvinyl polymer which has been neutralized with aqueous ammonia;

(c) an adjuvant being present in the range of 0.5 to 5% by weight and selected from the group consisting of a C_1–C_5 alcohol ester of a C_4–C_{14} monocarboxylic acid and a C_1–C_3 alcohol diester of a C_4–C_{10} dicarboxylic acid; and

(d) water in an amount sufficient to make up the balance of said ointment, said ointment being adjusted in its pH of 4.8 to 7.5.

4,525,348

PRANOPROFEN GELLED OINTMENT

Kenzo Arizono; Michio Terasawa, and Michiharu Nobutoki, all of Oita, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Japan

Filed Dec. 19, 1983, Ser. No. 562,570

Int. Cl.³ A61K *31/78*

U.S. Cl. 424—81 **6 Claims**

1. An antiinflammatory and analgesic gelled ointment containing 0.5–5% by weight of pranoprofen, 10–90% by weight of at least one member selected from the group consisting of a mono-, bi- or tri-hydric lower aliphatic alcohol, polyethylene glycol having an average molecular weight in the range of 200–1000, methyl ethyl ketone and acetone, 0.1–5% by weight of a gelling agent selected from the group consisting of carboxyvinyl polymer, hydroxyethyl cellulose, alginic acid and carboxymethyl cellulose, an adequate amount of a water-soluble basic substance selected from the group consisting of ammonia, sodium hydroxide, potassium hydroxide, triethanolamine, diethanolamine, diisopropanolamine, triisopropanolamine and triethylamine, and 10–90% by weight of water.

4,525,349

PROCESS FOR THE LARGE-SCALE PRODUCTION OF A VACCINE AGAINST POLIOMYELITIS AND THE RESULTING VACCINE

Bernard J. Montagnon, and Bernard J. C. Fanget, both of L'Arbresle, France, assignors to Societe Anonyme dite: Institut Merueux, Lyons, France

Filed Dec. 29, 1981, Ser. No. 335,352

Int. Cl.³ A61K *39/13*

U.S. Cl. 424—89 **9 Claims**

1. Process for the large-scale production of poliomyelitis vaccine separately entailing, for each type of poliomyelitis virus used, stages consisting in multiplying a VERO cell strain beginning with a cell stock by means of culturing on microcarriers in suspension in a liquid nutritive medium, said microcarriers being balls with an average diameter of about 50 to 300

microns in the dry state and with a density very slightly greater than 1, made of dextran polymers and bearing on their surfaces grafted radicals of di-ethyl-amino-ethyl, with the concentration of microcarriers in terms of weight being between 1 and 5 grams per liter of said liquid medium, by successive passages into increasing volumes of biogenerators, each passage being carried out for six to eight days, the last passage being carried out in a biogenerator whose tank holds at least 150 liters, said liquid nutritive medium containing serum, while stirring at a rate not greater than 40 r.p.m., drawing off the liquid nutritive medium at the end of the final passage and replacing it by another liquid medium containing no serum, inoculating the biogenerator of the last passage with virus, allowing the virus to develop at a temperatue between 35° C. and 37° C., a pH in the vicinity of 7.4 and a partial oxygen pressure in the vicinity of 10 percent, while stirring at a rate not greater than 40 r.p.m., withdrawing the liquid suspension after virus culture, filtering the suspension drawn off, concentrating the filtered suspension at least 150 times by means of ultrafiltration, carrying out a gel filtration of the concentrated suspension, subjecting the suspension obtained to ion exchange chromatography, diluting the concentrated suspension obtained with a serum free medium, inactivating the suspension thus diluted and purified, then mixing the suspensions of the respective types used and preparing the individual dosages.

4,525,350

METHODS OF STIMULATING HOST DEFENSE SYSTEM WITH COENZYMES Q_4 TO Q_{13}

Adria C. Casey, Ridgefield; Alan D. Adler, West Redding, both of Conn., and Eugene T. Premuzic, Montauk, N.Y., assignors to The New England Institute, Inc., Ridgefield, Conn.

Continuation of Ser. No. 551,430, Feb. 20, 1975, which is a continuation of Ser. No. 343,487, Mar. 21, 1973, abandoned, which is a continuation of Ser. No. 95,026, Dec. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 757,862, Sep. 6, 1968, abandoned. This application Nov. 13, 1978, Ser. No. 960,026

Int. Cl.³ A61K *37/48, 31/12*

U.S. Cl. 424—94 **11 Claims**

1. The method of enhancing a body's resistance to disease which comprises stimulating the host defense system of the body by administering an effective amount of a compound selected from substantially pure coenzymes Q_4 to Q_{13} or mixtures thereof.

4,525,351

LIQUID ADHERENT DISINFECTANT COMPOSITIONS FOR TOPICAL APPLICATION AND METHOD OF PREPARATION

Sybil H. Gehrman, and Randolph S. Porubcan, both of West Allis, Wis., assignors to Chr. Hansen's Laboratory, Inc., Milwaukee, Wis.

Filed Jan. 11, 1983, Ser. No. 457,212

Int. Cl.³ A01N *63/02;* **C12P** *7/56*

U.S. Cl. 424—95 **12 Claims**

1. A method of preparing a liquid adherent disinfectant mixture, comprising:

(a) preparing a fermentable culture medium from water and nonfat dry milk solids (NFDM), said medium containing from 6 to 16% by weight of NFDM and from 1.5 to 4.0% casein;

(b) inoculating the culture medium with a lactic acid producing fermentation culture;

(c) fermenting said inoculated medium with the production of lactic acid at least until the casein precipitates as a coagulum; and

(d) thereafter mechanically disintegrating the casein coagulum in the medium to form fine particles thereof, and dissolving in said medium from 1.8 to 3.4 parts by weight of active detergent per part of disintegrated casein, said detergent being selected from the class consisting of the sodium; potassium and ammonium aliphatic sulfate detergents and mixtures thereof wherein the aliphatic groups contain from 10 to 16 carbons, said disintegrated casein being mixed with said detergent and being effective to disperse and solubilize said disintegrated casein, whereby said final mixture is in a sticky adherent condition.

7. The method of claim 1 in which said culture comprises strains selected from the class of Lactobacilli consisting of *Lactobacillus acidophilus, Lactobacillus bulgaricus, Lactobacillus lactis,* and mixtures thereof.

4,525,352

ANTIBIOTICS

Martin Cole, Dorking; Thomas T. Howarth, Rudwick, and Christopher Reading, Southwater, all of England, assignors to Beecham Group p.l.c., England

Continuation of Ser. No. 964,035, Nov. 27, 1978, abandoned, which is a continuation of Ser. No. 726,480, Sep. 24, 1976, abandoned, which is a division of Ser. No. 569,007, Apr. 17, 1975. This application Dec. 3, 1981, Ser. No. 327,253

Claims priority, application United Kingdom, Apr. 20, 1974, 17410/74; Jun. 21, 1974, 27715/74; Oct. 9, 1974, 43651/74; Dec. 11, 1974, 53525/74

Int. Cl.³ A61K *35/00*

U.S. Cl. 424—114 **65 Claims**

1. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises a synergistically effective amount of clavulanic acid and an antibacterially effective amount of amoxycillin, in combination with a pharmaceutically acceptable carrier.

4,525,353

ANTIBIOTICS

Martin Cole, Dorking; Thomas T. Howarth, Rudwick, and Christopher Reading, Southwater, all of England, assignors to Beecham Group p.l.c., England

Continuation of Ser. No. 78,959, Sep. 26, 1979, abandoned, which is a division of Ser. No. 964,035, Nov. 27, 1978, abandoned, which is a continuation of Ser. No. 726,480, Sep. 24, 1976, abandoned, which is a division of Ser. No. 569,007, Apr. 17, 1975,. This application Feb. 26, 1982, Ser. No. 352,951

Claims priority, application United Kingdom, Apr. 20, 1974, 17410/74; Jun. 21, 1974, 27715/74; Oct. 9, 1974, 43651/74; Dec. 11, 1974, 53525/74; Ireland, Apr. 8, 1975, 792/75

Int. Cl.³ A61K *35/00*

U.S. Cl. 424—114 **55 Claims**

1. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises a synergistically effective amount of clavulanic acid or a pharmaceutically acceptable salt thereof and an antibacterially effective amount of ticarcillin, a pharmaceutically acceptable salt thereof or the phenyl, tolyl or indanyl ester thereof, in combination with a pharmaceutically acceptable carrier.

4,525,354

ANTIBIOTIC AND PROCESS FOR THE PRODUCTION THEREOF

Robert G. Birch, Brighton, Australia, and Suresh S. Patil, Honolulu, Hi., assignors to University of Hawaii, Honolulu, Hi.

Filed Sep. 14, 1983, Ser. No. 531,879

Int. Cl.³ A61K *35/74;* **C12P** *1/04, 1/02*

U.S. Cl. 424—115 **3 Claims**

1. The antibiotic albicidin when produced by culturing *Xanthomonas albilineans* strain NRRL B-15550 at a temperature between 15° C. and about 37° C. in an aqueous nutrient culture medium under aerobic fermentation conditions until a substantial amount of antibiotic activity is produced, said antibiotic being a white crystalline compound sparingly soluble in water, soluble in polar organic solvents, and substantially insoluble in non-polar organic solvents; has a molecular weight of about 842; has the following proton magnetic resonance spectrum;

^{1}HNMR (DMSO-d_6, 300 MHz; δ11.567 (1H, br s), 11.178

(1H, s), 10.597 (1H, s), 10.131 (1H, s), 9.802 (1H, br s), 9.719 (1H, s), 9.042 (1H, d, J=7.8 Hz), 8.039 (1H, d, J=8.8 Hz), 8.009 (1H, d, J=8.8 Hz), 7.939 (1H, d, J=8.9 Hz), 7.870 (1H, d, J=8.9 Hz), 7.828 (1H, d, J=8.8 Hz), 7.811 (1H, d, J=8.8 Hz), 7.600 (1H, br d, J=8.8 Hz), 7.372 (2H, d, J=8.8 Hz), 7.287 (1H, br, q, J=1.2 Hz), 6.858 (2H, d, J=8.8 Hz), 5.003 (1H, br td, J=8.5, 7.8, and 5.6 Hz), 3.931 (3H, s), 3.795 (3H, s), 3.165 (1H, dd, J=−16.9 and 5.6 Hz), 3.097 (1H, dd, J=−16.9 and 8.5 Hz), 2.136 (3H, d, J=1.2 Hz); has the following carbon ^{13}NMR spectrum:

^{13}C NMR (DMSO-d_6, 75 MHz): δ168.89 (s), 168.19 (s), 166.17 (s), 164.86 (s), 163.30 (s), 157.52 (s), 154.49 (s), 149.72 (s), 142.70 (s), 141.86 (s), 140.26 (s), 137.76 (s), 136.15 (s), 135.90 (s), 133.92 (d), 131.31 (d, 2C), 129.51 (s), 128.99 (s), 128.80 (d), 128.36 (d), 127.65 (s), 126.55 (s), 125.70 (d), 125.48 (d), 119.14 (d), 118.95 (d), 118.22 (s), 116.25 (s), 115.39 (d, 2C), 114.94 (d), 110.20 (d), 60.56 (q), 60.22 (q), 50.62 (d), 20.03 (t), 14.57 (q); which has the following ultraviolet absorption spectrum:

λmax 308 nm with shoulder at 275 nm in aqueous solution, pH 7, 0.01M tris-HCl buffer,

λmax 213 nm and λmax 308 nm in methyl alcohol (10 mcg/ml), $E_{1\ cm}^{1\%} = 8 \times 10^2$,

λmax 320 nm with shoulder at 350 nm in 0.06N potassium hydroxide in methyl alcohol; and which is stabile for 3 hours at 37° C. to a concentration of the proteolytic enzyme pronase of about 50 μg/ml.

4,525,355

7-β-UREIDOACETAMIDO-OXACEPHALOSPORINS

Masayuki Narisada, Ibaraki; Fumihiko Watanabe, Osaka; Tetsuo Okada, Sakai, and Hiromu Matsumura, Ashiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

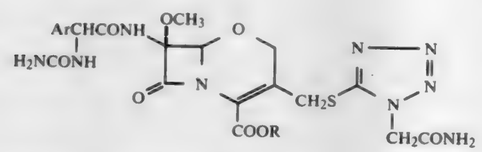
Filed Dec. 27, 1983, Ser. No. 566,023

Claims priority, application Japan, Dec. 27, 1982, 57-229358

Int. Cl.[3] **A61K** *31/535;* **C07D** *498/04*

U.S. Cl. 514—210 **7 Claims**

1. A 7β-ureidoacetamido-7α-methoxy-3-(1-carbamoylmethyl-1H-tetrazol-5-yl)thiomethyl-1-dethia-1-oxa-3-cephem-4-carboxylic acid derivative represented by the following formula:



wherein Ar is phenyl, hydroxyphenyl, or thienyl and R is hydrogen, a light metal, or a carboxy-protecting group.

7. A method for combating bacteria which comprises bringing an effective amount of the compound as claimed in claim **1** to contact with the bacteria.

4,525,356

N-SUBSTITUTED FLAVONE-8-CARBOXAMIDES

Yasuo Itho, Katsuyamashi; Hideo Kato, Fukuishi; Nobuo Ogawa, Katsuyamashi; Kagari Yamagishi, Katsuyamashi; Eiichi Koshinaka, Katsuyamashi, and Kazuya Mitani, Fukuishi, all of Japan, assignors to Hokuriku Pharmaceutical Co., Ltd., Katsuyamashi, Japan

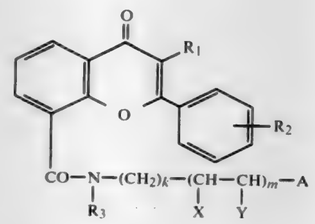
Filed Oct. 28, 1983, Ser. No. 546,481

Claims priority, application Japan, Nov. 2, 1982, 57-191803; Feb. 25, 1983, 58-29409; Apr. 4, 1983, 58-57868; May 9, 1983, 58-79343; Jul. 28, 1983, 58-136735

Int. Cl.[3] **A61K** *31/35, 27/00;* **C07D** *311/30, 405/10*

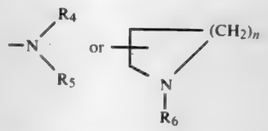
U.S. Cl. 514—234 **18 Claims**

1. N-substituted flavone-8-carboxamide represented by the formula (I):



(I)

wherein R_1 represents a hydrogen atom, a methyl group or an ethyl group; R_2 represents a hydrogen atom, a lower alkyl group, a lower alkoxyl group, a hologen atom or a nitro group; R_3 represents a hydrogen atom or a lower alkyl group; k represents 0, 1, 2, or 3; m represents 0 or 1; X and Y, which must be different, represent a hydrogen atom or a methyl group; A represents an amino group having the formula



wherein, R_4 and R_5, which may be the same or different, represent a lower alkyl group or a cyclic amino group together with the nitrogen atom and with or without an oxygen atom to constitute a piperidino, pyrrolidino or morpholino group; R_6 represents a lower alkyl group and n represents 2 or 3; and pharmaceutically acceptable acid addition salts thereof.

17. A method for the treatment of a subject in need of elimination of an impediment to micturition, comprising the step of administering to a said subject an amount of a compound of claim **1** which is effective for such purpose.

4,525,357

DERIVATIVES OF BICYCLIC 2-IMINOTHIAZOLIDINE OXIMES

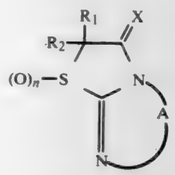
Dean F. Bushey, and Themistocles D. J. D'Silva, both of South Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 163,496, Jun. 27, 1980, Pat. No. 4,405,632. This application Jun. 24, 1983, Ser. No. 507,335

Int. Cl.[3] **C07D** *487/00;* **A61K** *31/53*

U.S. Cl. 514—258 **21 Claims**

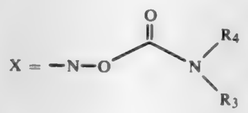
1. Compounds of the formula:



wherein

R_1 and R_2 are the same or different and are individually hydrogen, C_1-C_6 alkyl or halogen;

n=0,1 or 2;



including E & Z isomers;

A is an acyclic, cyclic, or bicyclic alkylene or alkenylene group, or an ortho-substituted phenylene group which forms an unsaturated six membered heterocyclic ring which can also have nitrogen, or carbonyl in addition to the two nitrogens, said alkylene, alkenylene, or phenylene ring systems being optionally substituted with one or two C_1-C_4 alkyl, cyclohexyl, alkoxy, phenoxy, alkylthio halogen, amido, alkylamido, nitrile, or nitro groups;

R_3 and R_4 may be the same or different and are individually hydrogen, C_1-C_4 alkyl or C_1-C_4 alkanoyl which can be substituted with one or two halogens and in the case when R_3 is alkyl R_4 can also be $-(S)_y-R_5$ wherein:

y=1 or 2;

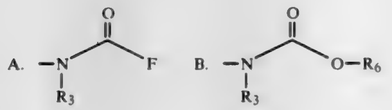
R_5=

(a)C_1-C_{18} alkyl, C_3-C_8 cycloalkyl or perhaloalkyl:

(b) dialkyl amino, pyrrolidino, or group each of which may be unsubstituted or substituted with one or two alkyl groups; or

(c) a phenyl group which may be unsubstituted or substituted with one or two alkyl, chloro, fluoro, cyano, nitro, alkoxy, trifluoromethyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy alkyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, or dialkylamino: or

(d) a group of the formula:



wherein:

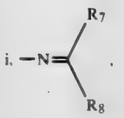
R_6 is:

(1) C_1-C_{12} alkyl, alkoxyalkyl, or a phenylalkyl group; or

(2) a phenyl group which may be unsubstituted or substituted with one or two C_1-C_{12} alkyl, chloro, fluoro, alkoxy, alkylthio, alkylthioalkyl, alkylsulfinyl, alkylsulfinylalkyl, alkylsulfonyl, alkyl sulfonylalkyl, alkynyloxy, dialkylamino, alkoxy imino, formamidino, cyano, dioxolanyl, or dithiolanyl groups in any combination; or

(3) a naphthyl, tetrahydronaphthyl, dihydrobenzofuranyl, benzodioxolanyl, or benzothienyl group all of which may be unsubstituted or substituted with one or two alkyl groups; or

(4) a group of the formula



wherein:

R_7 is chloro, alkyl, alkoxy, alkylthio, cyanoalkylthio, amidoalkylthio or cyano group; or R_7 is hydrogen provided R_8 is not hydrogen;

R_8 is an alkyl, alkylthio, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkylthioalkyl, cyanoalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, alkoxyalkyl, nitroalkyl, hydroxyalkyl, haloalkyl, or phenyl group; said phenyl group may contain one or two alkyl, chloro, or fluoro groups in any combination; or R_8 is hydrogen provided R_7 is not hydrogen;

with the proviso that when R_6 is a phenyl group substituted with an alkyl group, no single alkyl or alkylene moiety in any R_5, R_6, R_7, or R_8 group can include more than eight carbon atoms except where indicated.

4,525,358

2-[4-(DIPHENYLMETHYL)-1-PIPERAZINYL]-ACETIC ACIDS AND THEIR AMIDES

Eugène Baltes, Rhode-St.Genese; Jean de Lannoy, and Ludovic Rodriguez, both of Brussels, all of Belgium, assignors to UCB Pharmaceuticals, Inc., Dover, Del.

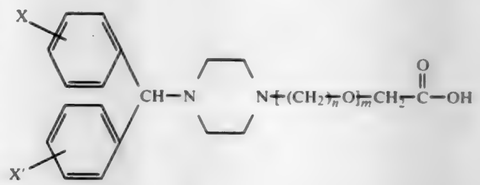
Continuation of Ser. No. 345,918, Feb. 4, 1982, abandoned. This application May 17, 1983, Ser. No. 496,489

Claims priority, application United Kingdom, Feb. 6, 1981, 8103768; Apr. 8, 1981, 8110990

Int. Cl.[3] **A61K** *31/50;* **C07D** *295/14*

U.S. Cl. 514—255 **31 Claims**

1. A compound of the formula



wherein

X and X' represents independently a hydrogen atom, a halogen atom, a straight or branched chain lower alkoxy radical or a trifluoromethyl radical,

m is 1 or 2, and

n is 1 or 2

or a non-toxic pharmaceutically acceptable salt thereof.

4,525,359

TREATMENT FOR SELECTIVE WEIGHT CONTROL

Frank L. Greenway, III, 4560 Admiralty Way, Ste. 301, Marina del Rey, Calif. 90291, and George A. Bray, 234 S. Figueroa, #1035, Los Angeles, Calif. 90012

Filed Dec. 10, 1982, Ser. No. 448,836

Int. Cl.[3] **A61K** *31/48, 31/245, 31/135*

U.S. Cl. 514—653 **16 Claims**

1. A process for achieving a selective reduction in body weight, comprising the steps of:

delivering specifically to the portion of the body where weight reduction is sought a therapeutically effective amount of a beta adrenergic stimulator and

accomplishing a general weight loss program whereby an acceleration of weight loss is achieved from the portion of the body to which the beta adrenergic stimulator was selectively delivered.

4,525,360

ANTI-PSYCHOTIC PHENYLINDENE DERIVATIVES AND ACID ADDITION SALTS THEREOF

Jens K. Perregaard, Olstykke, Denmark, assignor to Kefalas A/S, Copenhagen, Denmark

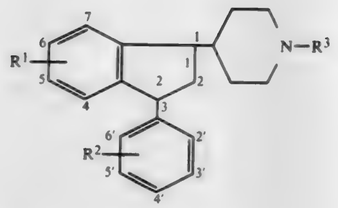
Filed Oct. 5, 1983, Ser. No. 539,308

Claims priority, application United Kingdom, Oct. 7, 1982, 8228729

Int. Cl.[3] **A61K** *31/44, 31/445;* **C07D** *401/06, 211/08*

U.S. Cl. 514—277 **12 Claims**

1. (1) A compound selected from the group consisting of a 3-phenylindene-1 or 3-phenylindene-2 having the following formula:



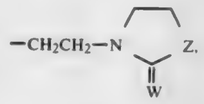
I

wherein the other dotted lines indicate optional bonds;

R^1 is selected from hydrogen, halogen, lower alkyl, lower alkoxy, hydroxymethyl, lower alkoxymethyl, cyano, trifluoromethyl, lower alkylthio and lower alkylsulfonyl;

R^2 is 4'-fluoro; and

R^3 is selected from hydrogen, alkyl and alkenyl (straight or branched chain with C_1–C_6 inclusive) optionally substituted with one or two hydroxy groups, any hydroxy group present being optionally esterified with an aliphatic carboxylic acid having from two to twenty-four carbon atoms inclusive, and the group



wherein Z is selected from NR^4, O and S, where R^4 is selected from H and lower alkyl, and W is selected from O and S, and

(2) a pharmaceutically acceptable acid addition salt thereof.

11. A method for the treatment of psychic disorders in warm-blooded animals, including human beings, by administering an effective quantity of a compound of claim **1** or **2**.

4,525,361

ARALKYL CARBOXYLIC ACID COMPOUNDS IN COMPOSITIONS FOR POTENTIATING IMMUNO ACTIVITY

Hiroshi Morimoto, Nishinomiya; Isuke Imada, Izumi; Masazumi Watanabe, Takatsuki, and Mitsuru Kawada, Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

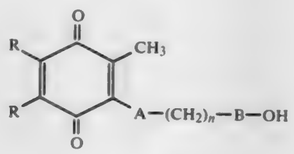
Division of Ser. No. 221,613, Dec. 31, 1980, Pat. No. 4,407,757, which is a division of Ser. No. 961,021, Nov. 15, 1978, Pat. No. 4,271,083, which is a division of Ser. No. 573,158, Apr. 30, 1975, Pat. No. 4,139,545. This application May 23, 1983, Ser. No. 497,014

Claims priority, application Japan, May 2, 1974, 49-50003

Int. Cl.[3] **A61U** *31/12, 31/19, 31/045, 31/235*

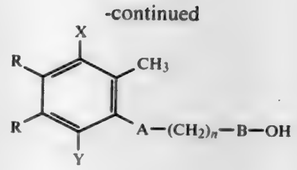
U.S. Cl. 514—689 **7 Claims**

1. A pharmaceutical composition suitable for potentiating immuno activity in a mammal, which comprises, as an active ingredient, a pharmaceutically effective amount of at least one compound selected from the group consisting of



and

-continued



wherein R represents alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, A represents —CH_2—, —CO— or



B represents —CH_2— or —CO—, n represents an integer of 1 to 8, X represents hydrogen or hydroxyl and Y represents hydroxyl, or the corresponding ester with methanol at the function shown by —B—OH when B is —CO—, or the corresponding ester with acetic acid at the function shown by —B—OH when B is —CH_2—, together with a pharmaceutically acceptable carrier therefor.

4,525,362

MOSQUITO DEVELOPMENT INHIBITOR EMPLOYING SUBSTITUTED PHENOLS

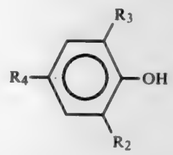
Sol J. Barer, 130 Tillotson Rd., Fanwood, N.J. 07023, and Henry A. Terwedow, Jr., 317 Hill Ave., Glen Ellyn, Ill. 60137

Continuation of Ser. No. 310,206, Oct. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 276,101, Jun. 22, 1981, abandoned, which is a continuation of Ser. No. 208,230, Nov. 19, 1980, abandoned. This application Mar. 1, 1984, Ser. No. 583,791

Int. Cl.[3] **A01N** *31/00, 31/08*

U.S. Cl. 514—712 **5 Claims**

1. A method of inhibiting the development of mosquito larvae to the adult stage which comprises applying to the larvae an amount effective to inhibit development of the mosquito larvae to the adult stage of a compound having the formula



wherein R_2 and R_3 are styryl, and R_4 is hydrogen, methyl or nonyl.

4,525,363

SINGLE COMPATIBILIZING AGENTS FOR ELASTOMER-RESIN COMBINATION GUM BASE

Ronald P. D'Amelia, Hicksville, N.Y.; John J. Stroz, Monroe, and Roy White, Somers, both of Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 29, 1983, Ser. No. 509,262

Int. Cl.[3] **A23G** *3/30*

U.S. Cl. 426—3 **18 Claims**

1. A homogeneous gum base composition consisting essentially of, in weight %,

about 5 to 75% of polyvinyl acetate resin

about 3 to 30% of elastomer selected from the group consisting of styrene-butadiene copolymer and polyisobutylene,

about 0.5 to 50% of a polymer selected from the group consisting of

ethylene-vinyl acetate copolymer,

polyethylene adipate

poly 1,4 butylene adipate

poly 1,3 butylene glycol adipate,

polypropylene glycol glutarate,

polypropylene glycol adipate, and

polypropylene glycol azelate

about 0 to 60% of inorganic filler

about 0 to 18% of wax

about 0 to 10% of hydrogenated vegetable or animal fat

about 0 to 10% of emulsifier

about 0 to 10% of ester gum

and, optionally, colorant, pigment and antioxidant.

4,525,364

FLAVORING WITH A MACROCYCLIC CARBONATE

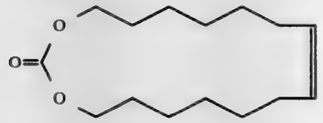
Wilhelmus J. Wiegers, Red Bank, N.J.; Augustinus G. Van Loveren, Rye, N.Y.; Marie R. Hanna, Hazlet, N.J.; Domenick Luccarelli, Jr., Neptune, N.J.; David R. Bowen, Red Bank, N.J., and Manfred H. Vock, Locust, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 511,909, Jul. 8, 1983, Pat. No. 4,490,544. This application Jun. 22, 1984, Ser. No. 623,446

Int. Cl.[3] **A23L** *1/226, 1/235*

U.S. Cl. 426—3 **3 Claims**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff or chewing gum comprising the step of adding to said foodstuff or chewing gum from 0.0001 parts per million up to about 50 parts per million by weight based on total composition of a macrocyclic carbonate having the structure:



4,525,365

COATED FROZEN-DESSERT AND A PROCESS FOR PREPARATION THEREOF

Yukiteru Kato, and Kazuhiro Watanabe, both of Urawa, Japan, assignors to Lotte Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1983, Ser. No. 556,904

Int. Cl.[3] **A23G** *9/00, 9/24*

U.S. Cl. 426—101 **6 Claims**

1. A process for preparing a coated frozen dessert, which comprises adding saccharides and water to amylopectin starch with the weight ratio of the starch to the saccharides being in the range of 1:1 to 1:2.5 and the water being present in the amount of 20–40% by weight of the whole, kneading and heating the mixture thus produced, adding to the kneaded mixture further saccharides and further water and further kneading the mixture to form a viscoelastic material, cooling and forming the material into a layer, encasing a frozen dessert in the layer, and cooling the resulting product.

4,525,366

PROCESS FOR TREATING A MILK SERUM PRODUCT

René J. M. Bolzer, Brece, and Jean Clanchin, Noyal sur Vilaine, both of France, assignors to Laiterie Triballat, Noyal sur Vilaine, France

Filed Apr. 25, 1983, Ser. No. 488,446

Claims priority, application France, Apr. 29, 1982, 82 07402

Int. Cl.[3] **A23C** *9/14*

U.S. Cl. 426—271 **7 Claims**

1. Process for treating a milk serum product in order to delipidate it and free it from microorganisms, which comprises adjusting the pH of the milk serum product to a pH in the range of from about 4.3 to 5.0, causing coagulation in the pH-adjusted milk serum product by heating it to a temperature at which a milk casein substance will coagulate within the adjusted pH range and adding, to the pH-adjusted milk serum product a milk casein substance having a pH of less than about 3.5, and then separating the coagulated material from the treated milk serum product.

4,525,367

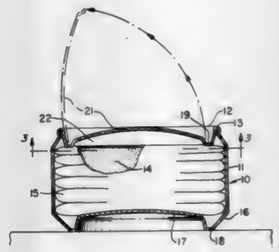
METHOD FOR PREPARING AN EXPANDED FOOD PRODUCT

George E. Allison, 1101 New Hampshire Ave., NW., Washington, D.C. 20037

Continuation of Ser. No. 298,872, Sep. 2, 1981, abandoned, which is a continuation-in-part of Ser. No. 63,243, Aug. 3, 1979, abandoned. This application Nov. 2, 1983, Ser. No. 547,913

Int. Cl.[3] **A23L** *1/18*

U.S. Cl. 426—394 **13 Claims**



1. A process for preparing an expanded food product which comprises providing a mercantile container and structuring said container to include on its surface a pre-designated area that is self-rupturable due to internal pressure sufficient to rupture said area, filling said container with a water-containing, edible, expandable mixture, and heating said mixture-containing container, said mixture containing sufficient water and said heating being at a sufficient temperature for a sufficient length of time to cause the vapor pressure of water in the expandable mixture to increase sufficiently to cause the confining means to spontaneously self-rupture in the pre-designated area and cause the expandable mixture to burstingly expand through the ruptured area to produce a substantially intact, expanded product.

4,525,368

BLANCHING OF MUSHROOMS

Bengt L. Bengtsson, Bjuv; Peter Palmlin, Hëlsingborg, both of Sweden, and Jan Ekholm, Valladolid, Spain, assignors to Nestec S.A., Vevey, Switzerland

Filed Feb. 15, 1984, Ser. No. 580,390

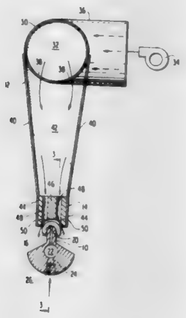
Claims priority, application European Pat. Off., Apr. 2, 1983, 83103282.6

Int. Cl.[3] **A23B** *7/06*

U.S. Cl. 426—438 **4 Claims**

1. A process for blanching mushrooms while substantially preserving their weight and texture comprising treating the mushrooms with an edible frying oil at a temperature from 120° C. to 220° C. for a period of from 2.5 to 30 seconds to blanch the mushrooms, then separating the mushrooms from the frying oil and then deep freezing the oil-blanched mushrooms.

4,525,369
APPARATUS AND METHOD FOR SUPPORTING, GUIDING AND TEMPERATURE-TREATING A PUFF EXTRUDED FOOD PRODUCT
David P. Fowler, Irving, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.
Filed Jun. 22, 1984, Ser. No. 623,410
Int. Cl.³ A23L *1/28*
U.S. Cl. 426—446 **8 Claims**



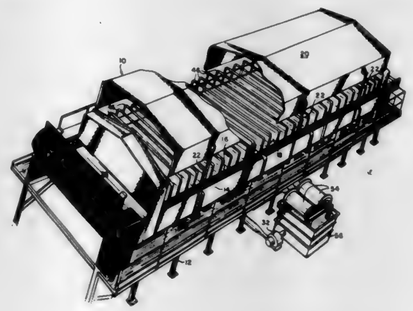
6. A method for supporting, guiding and temperature-treating a continuously moving rope of puff extruded farinaceous food material of generally C-shaped cross-section exiting the extruder from a die orifice, the method comprising:
(a) supporting and temperature-treating the moving rope by directing air upwardly to impinge on the inner concave surface of the C-shaped cross-section;
(b) restraining upward and lateral movement of the rope and temperature-treating the rope by directing air downwardly to impinge on the top and sides of the outer, convex surface of the C-shaped cross-section; and
(c) guiding the moving rope along the upper edge of a former bar which extends into the inner concave portion of the C-shaped cross-section.

4,525,370
WATER TYPE BLANCHER
Richard B. Parkes, Wyncote, Pa., assignor to National Drying Machinery Co., Philadelphia, Pa.
Filed Jun. 14, 1984, Ser. No. 620,723
Int. Cl.³ A23B *7/06;* **A23N** *12/00*
U.S. Cl. 426—508 **18 Claims**

1. A water type vegetable blancher comprising
a frame;
an elongated tank supported upon the frame, the tank comprising a bottom and sidewalls extending upwardly from the bottom;
conveyor means operatively carried above the tank bottom and adapted to transport the vegetables longitudinally of the tank;
deluge means above the conveyor means to hot water blanch the vegetables,
the deluge means comprising a header and a plurality of spaced branches in fluid communication with the header, and deluge heads connected to the branches, the deluge heads being adapted to flood the vegetables with hot water as they are transported by the conveyor means, the hot water falling into the tank through the conveyor means after blanching;
drain means in the bottom of the tank to remove the blanching water; and
water feed means to supply water under pressure to the deluge heads,
the water feed means comprising a pump having its discharge connected to the header and means to heat the water sufficiently to effect hot water blanching of the vegetables.

10. The method of blanching raw vegetables having enzymes comprising
loading the vegetables upon a conveyor and transporting the vegetables through a blanching apparatus for a predetermined period of time;
heating a quantity of water to a preselected temperature for vegetable blanching purposes;
pumping the heated water to a plurality of spaced pipes located above the conveyor;
discharging the heated water from the pipes and flooding the vegetables upon the conveyor with quantities of heated water for a preselected period of time; and
water blanching the vegetables upon the conveyor to inactivate the enzymes.

4,525,371
LECITHINATED NOODLES AND PROCESS FOR MANUFACTURE THEREOF
William A. Blemlek, Pequannock, N.J., assignor to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.
Filed Oct. 25, 1982, Ser. No. 436,391
Int. Cl.³ A23L *1/16*
U.S. Cl. 426—557 **7 Claims**

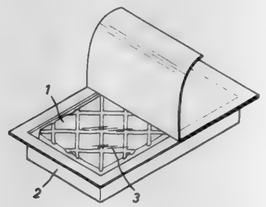


1. A process for producing egg noodles comprising the steps of mixing eggs with lecithin of about 60–90% purity under conditions of time and temperature sufficient to produce a slurry, blending the slurry with flour under conditions of time and temperature sufficient to produce a dough of bread-like consistency, extruding the dough to form noodles, cutting the noodles into pieces and drying the noodles to a uniform stable moisture.

4,525,372
LIGHT CONDIMENT HAVING A MUSTARD BASE AND A PROCESS FOR ITS PREPARATION
Claude Giddey, Geneva, and Georges Dové, Carouge, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland
Filed Mar. 26, 1984, Ser. No. 593,642
Claims priority, application Switzerland, Mar. 25, 1983, 1651/83
Int. Cl.³ A23L *1/225, 1/22*
U.S. Cl. 426—564 **11 Claims**

1. A seasoning or light condiment in the form of a mousse which comprises:
(a)
(i) grains of ground mustard in an amount of 18 to 35% by weight of the total composition of the condiment;
(ii) vinegar amounting to 1.5 to 4% by weight of the total composition of the condiment in terms of acetic acid content; and
(iii) water amounting to 50 to 70% by weight of the total composition of the condiment; and which further comprises:
(b)
(i) an effective amount of a foaming or swelling agent;
(ii) an effective amount of a stabilizing agent; and
(iii) an inert gas or air dispersed throughout the condiment in such a manner that the density of the mousse is less than or equal to 0.9.

4,525,373
PROCESS FOR MANUFACTURING FLAVORED AND PATTERNED TOFU
Yaoji Hosaka, Yashio, Japan, assignor to Toyu Food Co-Operative Corporation, Saitama, Japan
Filed Jun. 1, 1983, Ser. No. 499,990
Claims priority, application Japan, Nov. 19, 1982, 57-201843
Int. Cl.³ A23P *1/00;* **B28B** *1/26*
U.S. Cl. 426—634 **1 Claim**

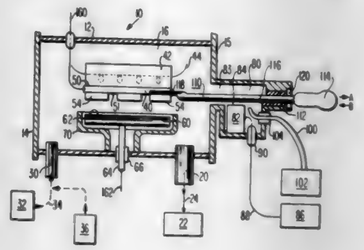


1. A process for manufacturing a flavored and patterned tofu, the steps comprising:
preparing a tofu material by adding a coagulating agent to a soybean soup;
placing said prepared tofu material upon a pattern-mounted plate which is disposed in a bottom of a perforated container;
placing a weight upon a surface of said prepared tofu material in said container, thereby pressing said surface against said pattern-mounted plate by pressure of the weight to provide a predetermined pattern on the surface of said tofu material;
cutting the tofu material provided with such a pattern treatment into a number of pieces;
positioning one piece of tofu in a plastic pack;
pouring a solution having a flavor into the plastic pack to immerse said one piece of tofu therein; and
sealing said plastic pack, said tofu piece remains in said sealed plastic pack for a predetemined period of time whereby the flavor is penetrated into the interior of the tofu piece.

4,525,374
TREATING HYDROPHOBIC FILTERS TO RENDER THEM HYDROPHILIC
Vincent L. Vaillancourt, Livingston, N.J., assignor to Manresa, Inc., Hillsdale, N.J.
Filed Feb. 27, 1984, Ser. No. 583,629
Int. Cl.³ A01N *1/02;* **B05D** *5/00*
U.S. Cl. 427—2 **6 Claims**

1. A method of coating a hydrophilic filter membrane to render said membrane hydrophilic, said method including the steps of coating a polypropylene membrane whose pore size is not larger than two (2) microns with a Triethanolamine Dodecylbenzene Sulfonate (LAS) chemical solution so that said polypropylene membrane is rendered hydrophilic and medically acceptable.

4,525,375
METHOD OF CONTROLLONG THE DEPOSITION OF HYDROGENATED AMORPHOUS SILICON AND APPARATUS THEREFOR
Joseph J. Hanak, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 28, 1983, Ser. No. 479,449
Int. Cl.³ B05D *3/06;* **C23C** *13/08*
U.S. Cl. 427—8 **12 Claims**

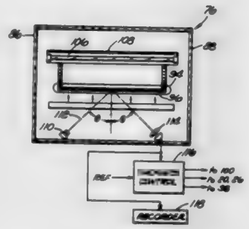


1. An apparatus for deposition of a doped layer of hydrogenated amorphous silicon or semiconducting alloys thereof on a substrate, or the like, wherein the outermost layer of the deposited material generates a photovoltage in response to radiation indicative of the level and type of doping comprising:
(a) a reactor having an evacuable chamber;
(b) a support means disposed within said chamber for supporting said substrate;
(c) means in communication with said chamber for evacuation thereof;
(d) inlet means in communication with said chamber for introducing a reactant gas into said chamber;
(e) charging means for forming a plasma from said reactant gas adjacent the surface of said substrate and inducing a glow discharge;
(f) illumination means for illuminating the surface of said substrate with radiation having a predetermined wavelength;
(g) measurement means for measuring the photovoltage at the outermost surface of said illuminated substrate; and
(h) means for admixing amounts of p type dopant or n type dopant to said reactant gas in response to said measured photovoltage.

9. A method for deposition of a doped layer of hydrogenated amorphous silicon or semiconducting alloys thereof on a substrate wherein the outermost layer of the deposited material generates a photovoltage in response to radiation indicative of the level and type of doping comprising the steps of:
(a) loading at least one substrate into a chamber of a reactor;
(b) heating said at least one substrate;
(c) evacuating said chamber to a subatmospheric pressure;
(d) introducing a reactant gas at subatmospheric pressure into said chamber so that a continuous flow of said reactant gas is effected over a surface of said at least one substrate;
(e) applying a voltage to said reactant gas whereby a plasma is formed within the chamber adjacent said surface causing a glow discharge to occur which results in the deposition of said doped layer;
(f) illuminating said doped layer with said radiation;
(g) measuring the photovoltage at the outermost surface of said doped layer; and
(h) admixing amounts of p type dopant or n type dopant to said reactant gas in response to said measured photovoltage to achieve a desired level and type of doping of the deposited layer.

10. The method as set forth in claim **9** wherein said radiation has a wavelength between 3000 angstroms and 5000 angstroms.

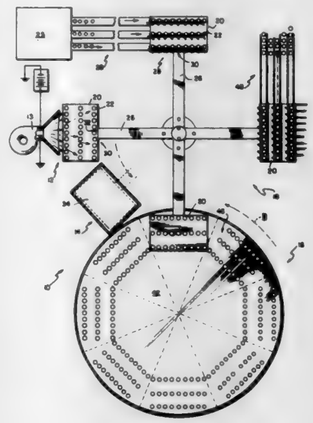
4,525,376
OPTICAL METHODS FOR CONTROLLING LAYER THICKNESS
Robert F. Edgerton, Pontiac, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.
Division of Ser. No. 244,387, Mar. 16, 1982, abandoned. This application Dec. 7, 1982, Ser. No. 447,390
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—10 **2 Claims**



1. A method for controlling the thickness of a layer of material deposited upon a substrate comprising the steps of:
providing a plurality of glow discharge chambers;
providing a flexible substantially continuous sheet of substrate material;
advancing said substrate successively through said glow discharge chambers at a selected speed;
providing a flow of reaction gases to each of said chambers;
providing an Rf power source with an Rf output for generating a plasma from said reaction gases in each of said chambers to uniformly deposit a layer of materials upon said substrate in each of said chambers;
projecting a single continuous white light beam toward the side of said substrate upon which said layers are being deposited and the beam being reflected in a single beam therefrom;
providing an optical detector and directing said reflected white beam to said detector, and distinguishing the intensity of said reflected white light beam as a function of wavelength; and
determining the thickness of said layers upon said substrate by comparing the intensity as a function of wavelength of said reflected white light beam with the intensity as a function of wavelength of a reference signal which is related to said projected beam, and controlling the thickness of said material being deposited on said substrate in proportion to said reference signal by varying at least one of the output of said Rf power source, the speed at which said substrate is advanced through said chambers and the flow of said reaction gases into said chambers.

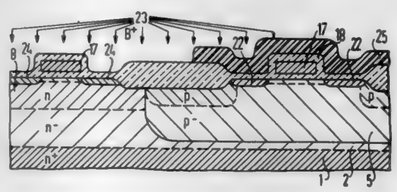
4,525,377
METHOD OF APPLYING COATING
Gerhard E. B. Nickel, Kennesaw, and Alfred C. Alberghini, Dunwoody, both of Ga., assignors to Sewell Plastics, Inc., Atlanta, Ga.
Filed Jan. 17, 1983, Ser. No. 458,347
Int. Cl.³ B05D *1/18*
U.S. Cl. 427—12 **8 Claims**

1. A method for producing a parison of amorphous PET having an outside coating comprising the steps of:
(a) deionizing the surface of an amorphous PET parison;
(b) dipping the parison into an aqueous PVDC dispersion;
(c) withdrawing the parison and an adherent film of the PVDC dispersion below the rate at which film slubbing is observed; and



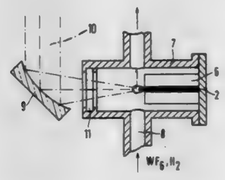
(d) exposing the parison and film to ambient temperature desiccated air until the film is substantially dried.

4,525,378
METHOD FOR MANUFACTURING VLSI COMPLEMENTARY MOS FIELD EFFECT CIRCUITS
Ulrich Schwabe, Munich; Erwin P. Jacobs, Vaterstetten, and Franz Neppl, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jun. 5, 1984, Ser. No. 617,590
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1983, 3330851
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 **7 Claims**



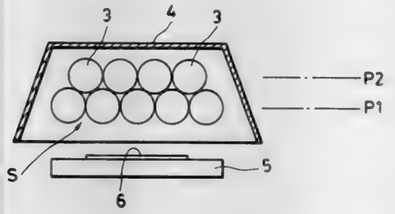
1. A method for manufacturing VLSI complementary MOS field effect transistor circuits (CMOS circuits) wherein p-doped or n-doped tubs are generated in a semiconductor substrate for acceptance of the n-channel and p-channel transistors of the circuits, corresponding dopant atoms for setting various transistor threshold voltages being introduced into the tubs by ion implantation, a masking being provided for the individual ion implantations, and a manufacture of the source, drain, and gate regions as well as a generation of an intermediate and insulating oxide and of an interconnect level being provided, wherein the improvement comprises the steps of:
(a) employing a gate material having a work function ϕ_M higher than n^+-polysilicon gate material, the work function ϕ_M being matched to a thickness of a gate oxide thickness d_{GOX};
(b) setting the gate oxide thickness d_{GOX} to values in a range from 10 to 30 nm; and
(c) executing a single, common channel ion implantation for p-channel and n-channel transistors, said channel ion implantation being matched such that, with a given gate oxide thickness d_{GOX}, threshold voltages of n-channel and p-channel transistors are symmetrical and have a given value.

4,525,379
METHOD OF MANUFACTURING AN ELECTRODE FOR A HIGH-PRESSURE GAS DISCHARGE LAMP AND ELECTRODE FOR SUCH A LAMP
Horst Hübner, Nümbrecht; Hans Lydtin, Stolberg; Ludwig Rehder, and Thomas Zaengel, both of Aachen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 6, 1984, Ser. No. 568,858
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1983, 3300449
Int. Cl.³ C23C *11/02*
U.S. Cl. 427—53.1 **12 Claims**



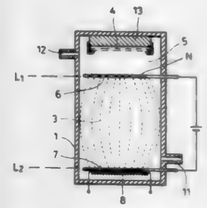
1. A method of manufacturing an electrode for a high-pressure gas discharge lamp, in which a thickened part of a high-melting metal is formed on a carrier of a high-melting metal characterized in that the carrier is coated by reactive deposition from the gaseous phase with a layer protecting against corrosion and then the thickened part is formed by reactive deposition from the gaseous phase.

4,525,380
HEATING METHOD OF SEMICONDUCTOR WAFER
Tetsuji Arai, Tachikawa, and Yoshiki Mimura, Yokohama, both of Japan, assignors to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 22, 1984, Ser. No. 582,273
Claims priority, application Japan, Mar. 16, 1983, 58-42204
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—53.1 **4 Claims**



1. A method for heating a semiconductor wafer comprising:
forming a film on an entire surface of the semiconductor wafer so as to make the reflectivity of said entire surface of the wafer uniform,
and heating said entire surface by exposing said entire surface to a flash of light at one time.

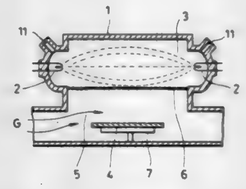
4,525,381
PHOTOCHEMICAL VAPOR DEPOSITION APPARATUS
Kazuya Tanaka, and Shinji Sugioka, both of Kawasaki, Japan, assignors to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 29, 1983, Ser. No. 566,790
Claims priority, application Japan, Feb. 9, 1983, 58-18777; Feb. 9, 1983, 58-18778
Int. Cl.³ B05D *3/06;* **C23C** *13/08*
U.S. Cl. 427—54.1 **10 Claims**



1. A photochemical vapor deposition apparatus comprising a vessel defining a reaction space and a discharge space adjacent to and above said reaction space, an anode of wire netting positioned at a first level and a cathode of wire netting having smaller meshes than the anode arranged in a second level, said first level being closer to said reaction space than said second level, and an electron-emitting substance clogging the meshes on said cathode.

3. A method for depositing material on a substrate by photochemical vapor deposition comprising the steps of:
providing an airtight vessel having a reaction space and an adjacent discharge space;
providing a plurality of spaced discharging electrodes in said discharge space;
placing the substrate in said reaction space;
feeding a photoreactive gas into said vessel;
generating between at least two of said discharging electrodes in a direction generally parallel to a straight line extending between said two discharging electrodes an electric plasma discharge emitting ultraviolet rays; and
impinging the photoreactive gas with the ultraviolet rays outside the electric plasma discharge to cause a photochemical reaction of said photoreactive gas, wherein the step of placing comprises placing the substrate in said reaction space in a position which is in non-perpendicular relation to said direction of plasma discharge.

4,525,382
PHOTOCHEMICAL VAPOR DEPOSITION APPARATUS
Shinji Sugioka, Kawasaki, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 29, 1983, Ser. No. 566,792
Claims priority, application Japan, Jan. 18, 1983, 58-5266
Int. Cl.³ C23C *13/08;* **B05D** *3/06*
U.S. Cl. 427—54.1 **8 Claims**



2. A photochemical vapor deposition apparatus comprising:
means, including an air tight vessel, for defining a reaction space into which a substrate is to be placed and a discharge space in which electric plasma discharge is generated for radiating ultraviolet rays, said reaction space

defining a passage for a photoreactive gas, and said ultraviolet rays causing photochemical reaction of said photoreactive gas;
discharging electrodes arranged on opposite sides of said discharge space; and
a grid comprising a wire-netting of metal interposed between said discharge space and said reaction space.

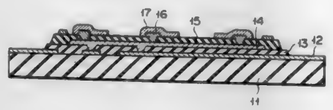
5. A photochemical vapor deposition method for depositing material on a substrate comprising:
providing an air-tight vessel having a reaction space defining a passage for a photoreactive gas, and a discharge space having discharging electrodes on opposite sides;
placing the substrate in the reaction space;
interposing a grid comprising a wire-netting of metal between said reaction space and said discharge space;
feeding photoreactive gas through the reaction space; and
generating electric plasma discharge between said discharging electrodes for radiating ultraviolet rays and transmitting the ultraviolet rays onto said substrate through said grid and said photoreactive gas for causing photochemical reaction of said photoreactive gas to deposit a product material of the photochemical reaction on said substrate.

4,525,383

METHOD FOR MANUFACTURING MULTILAYER CIRCUIT SUBSTRATE

Tamio Saito, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 8, 1982, Ser. No. 415,798
Claims priority, application Japan, Sep. 11, 1981, 56-143476; Nov. 30, 1981, 56-192224; Nov. 30, 1981, 56-192225
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—89 **4 Claims**



1. A method for manufacturing a multilayer circuit substrate comprising the steps of:
providing an insulating substrate formed of an inorganic oxide;
successively and alternately forming wiring pattern layers and insulating layers on said insulating substrate, each of said wiring pattern layers consisting of a copper layer and an adhesive layer, said adhesive layer being deposited on said insulating substrate and each of said insulating layers and each of said copper layers being deposited on each of said adhesive layers and wherein said adhesive layer comprises a first metallic material having a free energy of a formation of oxide higher than that of copper; and
forming, by a low temperature deposition, a layer of an electrically conductive material capable of being subjected to wire bonding of said copper layer.

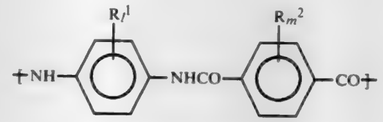
4,525,384

PROCESS FOR PRODUCING WHOLLY AROMATIC POLYAMIDE FILAMENTS HEAT-TREATED UNDER TENSION

Akihiro Aoki; Shozaburo Hiratsuka, both of Iwakuni; Norihisa Yamaguchi, Mihara, and Shoji Makino, Ibaraki, all of Japan, assignors to Teijin Limited, Osaka, Japan

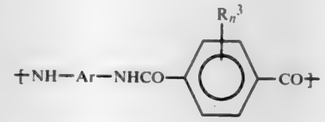
Filed Mar. 6, 1984, Ser. No. 586,792
Claims priority, application Japan, Mar. 7, 1983, 58-35774; Mar. 23, 1983, 58-47269; Jul. 7, 1983, 58-122279; Aug. 26, 1983, 58-154915; Aug. 26, 1983, 58-154916
Int. Cl.³ B29C *25/00*
U.S. Cl. 427—174 **17 Claims**

1. A process for producing wholly aromatic polyamide filaments heat-treated under tension, comprising the steps of:
adhering fine particles consisting essentially of an inert inorganic material to peripheral surfaces of wholly aromatic polyamide filaments to be heat-treated under tension and comprising at least one wholly aromatic polyamide having recurring units of the formula (I):



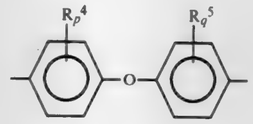
(I)

and at least one type of recurring units selected from those of the formula (II):

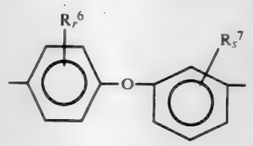


(II)

wherein Ar represents a divalent aromatic radical selected from those of the formulae (III) and (IV):



(III)



(IV)

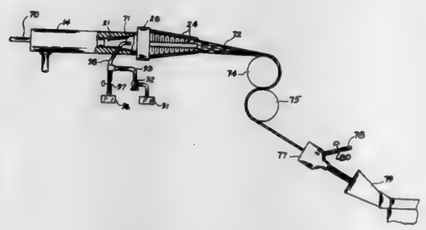
and R^1, R^2, R^3, R^4, R^5, R^6 and R^7 respectively represent independently from each other, a substituent selected from the group consisting of halogen atoms and alkyl radicals having 1 to 2 carbon atoms, and l, m, n, p, q, r, and s respectively represent, independently from each other, zero or an integer of 1 to 2, the sum of said recurring units of the formulae (I) and (II) corresponding to at least 80 molar % of the overall recurring units in said wholly aromatic polyamide to such an extent that the peripheral surface of said non-heat treated filaments are uniformly covered with said inert inorganic material fine particles in an amount of from 0.01% to 5% based on the weight of said non-heat treated filaments; and
heat-treating under tension said non-heat treated filaments covered with said inert inorganic material fine particles at a temperature of 300° C. or more,
in which process said adhering operation is carried out by applying an aqueous liquid containing said inert inorganic material and then by drying the applied aqueous liquid on said non-heat treated filaments and said inert inorganic material consists essentially of at least one member selected from the group consisting of graphite, talc, colloidal silica, hydrophobic silica and mica.

4,525,385

APPLICATION OF ADDITIVES TO CIGARETTE FILTER TOW

James W. Pryor, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Division of Ser. No. 468,011, Feb. 18, 1983, Pat. No. 4,476,807.
This application Jun. 21, 1984, Ser. No. 622,964
Int. Cl.³ B05D *3/12, 1/02*
U.S. Cl. 427—177 **13 Claims**



1. A process for treating a continuous, multifilament filter tow in connection with the manufacture of filter elements therefrom which comprises
(a) introducing said filter tow and a stream of gaseous fluid into a blooming jet device that includes an elongated filter tow passageway substantially circular in cross-sectional shape and provided with orifice means transversely positioned in said passageway, said orifice means being designed to accommodate passage therethrough of the filter tow and the gaseous fluid moving in co-current fashion,
(b) applying an additive to the filter tow by primary nozzle means concentrically positioned with respect to the advancing filter tow in said passageway at a point that is downstream of said orifice means,
(c) withdrawing the additive-treated filter tow from the blooming jet device by delivery roll means, and
(d) advancing the additive-treated filter tow from said delivery roll means through a stuffer jet and into a condensing horn associated with filter rod-forming means.

4,525,386

TECHNIQUE FOR PROPERTY ENHANCEMENT OF OPEN-CELL FOAM MATERIAL

Morey Weisman, 147-23 Charter Rd., Jamaica, N.Y. 11435

Continuation-in-part of Ser. No. 592,715, Mar. 23, 1984, Pat. No. 4,482,582. This application Nov. 8, 1984, Ser. No. 669,517
The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.
Int. Cl.³ B05D *1/24*
U.S. Cl. 427—185 **7 Claims**

1. A technique for enhancing the properties of a body formed of open-cell, synthetic foam plastic material comprising the steps of:
A feeding particles of a filler having the desired properties into a stream of pressurized air which is projected at high velocity, whereby the particles are fluidized in the stream; and
B directing said air stream toward the surface of the body to cause the particles carried thereby to impregnate the cells of the foam plastic material.

4,525,387

PROCESS FOR METALLIZING THE SURFACE OF A CERAMIC

Yoshihiro Ebata, Kawanishi; Nobuyuki Tamari, Ikeda; Yasuo Toibana, Osaka, and Ryozo Hayami, Takarazuka, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Jul. 13, 1984, Ser. No. 630,561
Claims priority, application Japan, Jul. 18, 1983, 58-131575
Int. Cl.³ B05D *3/04, 3/10*
U.S. Cl. 427—190 **13 Claims**

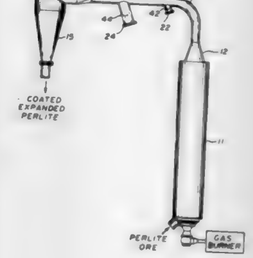
1. A process for metallizing the surface of a ceramic comprising the steps of coating the surface of the ceramic with a mixture of SiO_2 and at least one copper compound selected from the group consisting of copper carbonate, copper sulfate, copper sulfide, copper oxide and copper chloride, heating the coated ceramic at 900° to 1300° C. in an oxidizing atmosphere to form a baked layer on said surface of the ceramic, and then subjecting the ceramic having the baked layer formed thereon to a reduction treatment to form a copper-metallized layer on said surface of the ceramic.

4,525,388

PROCESS FOR EXPANDING AND COATING PERLITE

Thomas E. Rehder, Mundelein, and Terrance L. Williams, Crystal Lake, both of Ill., assignors to USG Corporation, Chicago, Ill.

Filed Dec. 23, 1983, Ser. No. 565,198
Int. Cl.³ B05D *3/02, 3/04, 7/00*
U.S. Cl. 427—221 **9 Claims**



1. A process for manufacturing expanded perlite of the type in which
(a) perlite ore and a stream of hot gases at a temperature above the softening point of perlite are fed to an expansion chamber,
(b) hot expanded perlite in a stream of hot exhaust gases are withdrawn from the expansion zone and conveyed to a separation zone, and
(c) expanded perlite is separated from hot exhaust gases;
the improvement characterized by, intermediate step (b) and step (c), coating the expanded perlite with a hydrophobic material comprising the steps of (1) adjusting the temperature of the exhaust gases to between about 90° C. and about 375° C.; (2) spraying about 0.01% to about 4.0% by weight of hydrophobic coating material onto the expanded perlite, and (3) maintaining the coated perlite at such temperatures for at least about 3 seconds.

2. The process of claim 1 in which in step (2) the coating material is polydimethyl siloxane.

4,525,389

METHOD FOR CONVEYING AND TREATING A GAS EMPLOYED FOR THE COATING OF WORKPIECES BY MEANS OF A CHEMICAL, HETEROGENEOUS VAPOR-PHASE REACTION

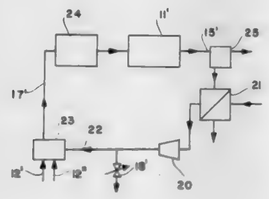
Bruno Stemmler, Karlsfeld, and Hans Zeilinger, Puchheim, both of Fed. Rep. of Germany, assignors to Aktiengesellschaft M.A.N. Maschinenfabrik Augsburg-Nurnberg, Munich, Fed. Rep. of Germany

Filed Dec. 12, 1983, Ser. No. 560,741

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1982, 3245900; Oct. 26, 1983, 3338852

Int. Cl.³ C23C *11/00, 13/00*

U.S. Cl. 427—255.1 **9 Claims**



1. A method for treating and conveying gas mixtures in a coating process through a chemical, heterogeneous vapor-phase reaction in a reaction chamber comprising the steps of:
(a) introducing reactants into said reaction chamber;
(b) extracting the reaction product from said reaction chamber;
(c) separating at least one component of the said extracted reaction product;
(d) dosing said component or components in correlation with said reaction and
(e) reconveying said dosed component or components into said reaction chamber over at least part of the time in which said coating process is carried out.

4,525,390

DEPOSITION OF COPPER FROM ELECTROLESS PLATING COMPOSITIONS

Warren A. Alpaugh, Chenango Forks; William J. Amelio, Binghamton; Voya Markovich, Endwell, and Carlos J. Sambucetti, Croton-on-Hudson, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 9, 1984, Ser. No. 588,035

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—305 **20 Claims**

1. A process for plating copper onto a substrate which is catalytic for the deposition of copper which comprises plating a first layer of copper onto said substrate from a first alkaline electroless copper plating bath containing about 4 to 7 ppm of cyanide ions and an oxygen content of 1.5 ppm or less; plating a second layer of copper onto said first layer of copper from a second alkaline electroless copper plating bath containing about 8 to 10 ppm of cyanide ion and an oxygen content of about 2.5 to 4 ppm; and wherein values of the oxygen content are for baths at a temperature of about 70° C. to 80° C.

4,525,391

VINYL GUM CURE ACCELERATORS FOR CONDENSATION-CURE SILICONE

Richard P. Eckberg, Roundlake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 359,480, Mar. 18, 1982, abandoned. This application Apr. 19, 1984, Ser. No. 602,218

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—391 **20 Claims**

1. A silicone release coating composition comprising:
A. A solventless condensation curable composition comprised of:
(i) a silanol-chainstopped linear diorganopolysiloxane base polymer having the formula, $HO—(SiRR'O)_x—H$, where R and R' are the same or different monovalent hydrocarbon radicals free of aliphatic unsaturation, x is a positive integer such that said base polymer has a molecular weight of approximately 2000 to 20,000 and a viscosity of from 25 to 1000 centipoise at 25° C.;
(ii) a polymethylhydrogen siloxane fluid crosslinking agent having up to approximately 100 weight percent SiH-containing siloxy groups and having a viscosity in the range of approximately 25 to approximately 1000 centipoise at 25° C.;
(iii) an effective amount of precious metal catalyst for facilitating a condensation cure reaction between said base polymer and said crosslinking agent at temperatures between, approximately, 90° C. to 300° C.; and
B. an amount of dimethylvinyl-chainstopped polydimethylmethylvinylsiloxane polymer gum effective for accelerating the cure of said condensation curable composition wherein said gum has an average molecular weight of, approximately, 200,000 to 400,000.

4,525,392

METHOD OF SIMULTANEOUSLY APPLYING MULTIPLE LAYERS TO WEB

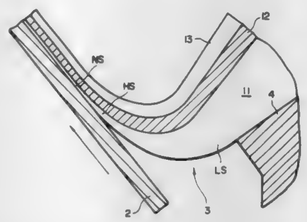
Keiichi Ishizaki, and Shuzo Fuchigami, both of Kanagawa, Japan, assignors to Fuji Photo Film Company, Limited, Kanagawa, Japan

Continuation of Ser. No. 230,073, Jan. 30, 1981, abandoned. This application Oct. 18, 1982, Ser. No. 434,780

Claims priority, application Japan, Jan. 30, 1980, 55-9527

Int. Cl.³ B05D *1/30*

U.S. Cl. 427—420 **4 Claims**



1. A method of simultaneously applying multiple layers of coating liquids to a moving web with a slide hopper type coating apparatus comprising the steps of: preparing a first coating liquid for forming the lowermost of said multiple layers so that said first coating liquid, when run at a low shear rate, has a viscosity equal to or different by no more than ±10 cp from a viscosity of a second coating liquid for forming a layer next to said lowermost layer when said second coating liquid flows at a low shear rate, and that said first coating liquid, when run at a high shear rate has a viscosity lower than a viscosity of said second coating liquid when said second coating liquid flows at a high shear rate; and applying said first and second liquids to said moving web with said slide hopper type coating apparatus.

4,525,393

NOVELTY GREETING GIFT APPARATUS

Pam DiCostanzo, Northbrook, Ill., assignor to PD Giftware Designs, Inc., Deerfield, Ill.

Filed Oct. 4, 1984, Ser. No. 657,610

Int. Cl.³ B44C *5/04*

U.S. Cl. 428—7 **13 Claims**

1. A novelty greeting gift apparatus for conveyance of greeting indicia in a preservable gift environment, said gift apparatus comprising:
first decorative material means stretched into a substantially taut geometric configuration;
inner hoop means having an interior surface and exterior surface;
the bottom peripheral portion of said first decorative tautly stretched material means being closely juxtaposed and overlapping the exterior surface of said inner hoop means;
outer hoop means having an interior surface and exterior surface,
the top peripheral portion of said first decorative tautly stretched material means being closely juxtaposed and underlapping the interior surface of said outer hoop means;
said inner and outer hoop means being concentrically and fixedly juxtaposable proximate to one another with said first decorative material means interposed therebetween so as to maintain said first decorative material means in said substantially taut stretched configuration,
first decorative skirt material means operably attached to the extreme outer circumference of said first decorative material means at a joinder region;



said joinder region being positioned immediately beneath the lowermost edges of said proximately juxtaposed inner and outer hoop means at the location from which said first decorative material means interposed therebetween said inner and outer hoop means emanates downwardly therefrom,
said joinder region serving as an anchor member to effectively lock the position of said first decorative material means in its taut stretched configuration within the respective exterior surface and interior surface of said inner and outer hoop means respectively;
said first decorative skirt material means emanating outwardly from said joinder region beneath said inner and outer hoop means to define a decorative outer skirt member framing said outer loop means;
greeting card means restrainably affixed to the upper surface of said first decorative material means and bearing greeting indicia thereon; and
decorative trim means operably attached to the upper surfaces of one or more of said first decorative material means, inner hoop means, outer hoop means and first decorative skirt means for overall enhancement thereof.

4,525,394

ROSETTE BOW

Rosalie K. Standley, 9 Buckingham St., Sydenham, Victoria 3038, Australia

Filed Jan. 23, 1984, Ser. No. 572,844

Int. Cl.³ A41G *1/00*

U.S. Cl. 428—26 **4 Claims**

1. A method of making artificial flowers comprising the steps of rolling one end of a strip of fabric about itself to form the centre of the flower, extending part of the free end of the strip outwardly therefrom, folding the free end in a line at an angle to the axis of the strip to form a petal and locating the petal so formed freely adjacent the central portion, repeating these steps to form the required number of petals and finally



tying the free end of the strip and the lower ends of the petals so formed about the centre of the flower.

4,525,395

SHAPED ARTICLES FROM POLY (P-METHYLSTYRENE) BLENDS

Arthur B. Robertson, Hillsborough, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,360

Int. Cl.³ B32B *27/32*

U.S. Cl. 428—35 **6 Claims**

1. A shaped article of a blend of poly(p-methylstyrene) and between about 0.1 percent and about 10 percent of a polyunsaturated fatty acid sensitizer thermoformed and irradiated with ionizing radiation between about 5 megarads and about 30 megarads to effect cross-linking to render the shaped article resistant to fatty foods under microwave oven conditions.

4,525,396

PRESSURE-RESISTANT PAPER VESSEL

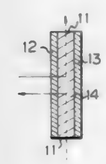
Kenji Takasa, Yokohama, and Masakatsu Nakamura, Kanagawa, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 10, 1983, Ser. No. 522,032

Claims priority, application Japan, Aug. 13, 1982, 57-139742; Oct. 15, 1982, 57-180004

Int. Cl.³ B65D *5/40*

U.S. Cl. 428—35 **13 Claims**



1. A pressure-resistant paper vessel having a pressure resistance at normal temperature of higher than atmospheric pressure but not higher than 10 kg/cm^2 G, at least one surface of said paper vessel with which a pressurized liquid falls into contact, being laminated with a gas barrier plastic film having a carbon dioxide gas permeability of not more than 200; the major portion of the inner surface of said paper vessel with which the pressurized liquid falls into contact, being curved;
said paper vessel being comprised of top and bottom lid members and a vessel barrel portion;
each of said top and bottom lid members being made of pulp, having a thickness of from 0.3 to 3 mm, and having skirt portions on the peripheral edges thereof, with a substantial portion of said lid members having a curved surface, and said skirt portions being substantially free from wrinkles;
said vessel barrel portion being made of a paper having a basic weight of 70 to 500 g/m^2 and having a cylindrical

configuration comprising a tightly bonded multiple layered structure containing at least two papers.

4,525,397

LIQUID SMOKE TREATED CELLULOSIC FOOD CASINGS

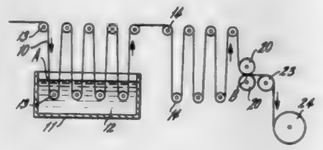
Herman S. Chiu, Chicago, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 62,358, Jul. 31, 1979, abandoned. This application Mar. 31, 1981, Ser. No. 249,494

The portion of the term of this patent subsequent to Aug. 1, 1995, has been disclaimed.

Int. Cl.³ A22C *13/00*; A23L *1/232*

U.S. Cl. 428—36 **21 Claims**



1. A shirred tubular cellulosic food casing having incorporated in the external surface thereof a substantially tar-free admixture of smoke coloring and flavoring constituents derived from natural wood and including acids and neutralized acids, phenols and carbonyls in an amount of at least about 0.8 mg. per square inch of casing surface, such that the casing external surface is darker then the casing interior surface, said casing being suitable without other smoking procedures for imparting smoke color and flavor to food products processed therein with said smoke color resulting from reactions of said coloring constituents with proteins in the food products.

4,525,398

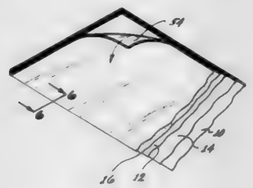
CONDUCTIVE LAMINATE PRODUCT FOR APPLICATION TO VERTICAL AND HORIZONTAL SURFACES

Jack Rooklyn, Northridge, Calif., assignor to Industrial Management Co., Chatsworth, Calif.

Continuation-in-part of Ser. No. 613,088, May 22, 1984, which is a continuation-in-part of Ser. No. 286,611, Jul. 24, 1981, Pat. No. 4,456,944, which is a continuation-in-part of Ser. No. 180,962, Aug. 25, 1980, abandoned. This application Aug. 13, 1984, Ser. No. 640,137

Int. Cl.³ B32B *5/16, 15/04*

U.S. Cl. 428—40 **9 Claims**



1. As an article of manufacture, a conductive laminate product for application to flat surfaces including vertical and horizontal surfaces comprising in combination a layer of relatively thin, hard plastic material, a thin layer of metallic foil, an electrically conductive adhesive material positioned to bond the foil material to the plastic sheet, and a lamination of backing material secured to the metallic foil, the laminations being bonded together by being pressed together at temperature and pressure.

4,525,399

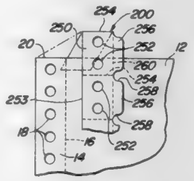
PERFORATED REINFORCING STRIP FOR USE WITH CONTINUOUS FORMS

Robert J. Fields, 2811 Adeline Dr., Burlingame, Calif. 94010

Filed Jun. 6, 1983, Ser. No. 501,509

Int. Cl.³ B32B *3/24*

U.S. Cl. 428—43 **3 Claims**



1. A manufactured article for reinforcing continuous pin-feed forms intended for computer printers comprising a continuous, pliable strip having disposed on one side of said strip a self-adhesive material additionally having a row of holes disposed therein with uniform spacing therebetween, said strip having perforations transverse to the longitudinal axis of the strip and said perforations being disposed between alternative holes of the strip, said strip additionally comprising a plurality of tabs disposed along one edge of the strip said tabs being defined in part by perforations which are disposed within the strip and parallel to the longitudinal axis of the strip.

4,525,400

COMPOSITION FOR PROMOTING ADHESION OF CURABLE SILICONES TO SUBSTRATES

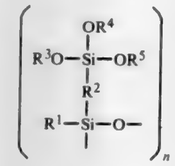
Richard P. Surprenant, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 424,268, Sep. 27, 1982, Pat. No. 4,461,867. This application May 25, 1984, Ser. No. 609,141

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—54 **12 Claims**

1. A diorganocyclopolysiloxane compound of the formula:



wherein R^1 is C_1–C_6 alkyl, C_1–C_6 gamma-trihaloalkyl or phenyl; R^2 is alkylene of from 2 to 6 carbon atoms; R^3, and R^4, and R^5 are, independently, C_1–C_6 alkyl, or C_2–C_6 alkanoyl and n is 3 or 4.

4,525,401

PLASTIC CONTAINER WITH INTERNAL RIB REINFORCED BOTTOM

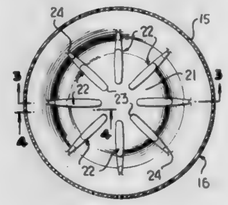
John F. E. Pocock, Neu-Isenburg, Fed. Rep. of Germany; Gautam K. Mahajan; Suppayan M. Krishnakumar, both of Nashua, N.H., and Kenneth F. M. Friendship, Clarendon Hills, Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Nov. 30, 1979, Ser. No. 99,057

Int. Cl.³ B32B *3/02*

U.S. Cl. 428—64 **7 Claims**

1. A bottom structure of a thermoplastic bottle, said bottom structure comprising an outer bottom portion having a radially inner lower edge, an inner generally radially and axially concaved bottom portion disposed within said outer bottom portion in recessed relation and having a radially outer lower edge, and a continuous annular generally arcuate cross-sectional intermediate bottom portion joining the lower edges of said outer bottom portion and said inner bottom portion; the improvement of means reinforcing said continuous intermediate bottom portion against deflection, said means being in the form of a plurality of circumferentially spaced radiating solid



ribs formed on an interior surface of said bottom structure and extending at least generally across said continuous intermediate bottom portion, each of said ribs having end portions terminating respectively in said outer bottom portion and said inner bottom portion, said inner bottom portion including an uppermost thickened dome, and said inner ends of said ribs terminating adjacent said dome.

4,525,402

HIGH-DENSITY INFORMATION DISC LUBRICANTS

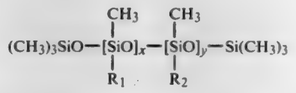
Mohamed E. Labib, Princeton Township, Mercer County, and Eugene S. Poliniak, Willingboro, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 9, 1983, Ser. No. 559,690

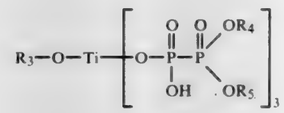
Int. Cl.³ G11B *3/70*; B32B *3/02*

U.S. Cl. 428—64 **5 Claims**

1. In a capacitive electronic disc having a methyl alkyl siloxane lubricant coating thereon, said lubricant being a fractionated and purified material having the formula



wherein R_1 and R_2 are alkyl groups of 4–20 carbon atoms, x is an integer of 2–4, y is an integer of 0–2 and wherein the sum of x and y is 4 or less, the improvement wherein said lubricant includes an effective amount of a titanate coupling agent of the formula



wherein R_3 is methyl, ethyl, or isopropyl and R_4 and R_5 are long chain alkyl groups of 8–20 carbon atoms which can be the same or different.

4,525,403

STABILIZED PILE ARTICLE, PRODUCTION AND USE THEREOF FOR THE TREATMENT OF SURFACES

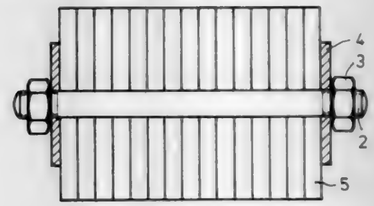
Bernd Hynek, Pulheim; Giselher Valk, Krefeld, and Gerhard Treptau, Grefrath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft and Girmes Vertriebsgesellschaft fur Industrietextilien mbH, both of, Fed. Rep. of Germany

Filed Sep. 21, 1983, Ser. No. 534,329

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236518

Int. Cl.³ B32B *3/02, 33/00*

U.S. Cl. 428—87 **6 Claims**



1. A pile article stabilized on the upper surface thereof by an aqueous polymer dispersion, the quantity of the dispersion being up to 300%, by weight, based on the solids content, and containing up to 350%, by weight, of an abrasive material, based on the unstabilized pile article.

4,525,404

PILE ARTICLES WITH ATTENUATED UPPER PORTION AND A METHOD FOR PRODUCING THE SAME

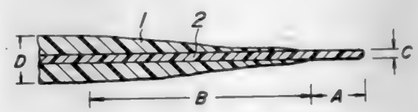
Masao Matsui, Takatsuki; Kazuo Okamoto, and Tutomu Naruse, both of Osaka, all of Japan, assignors to Kanebo, Ltd., Tokyo and Kanebo Synthetic Fibers, Ltd., Osaka, both of, Japan

Filed Jul. 31, 1984, Ser. No. 636,200

Claims priority, application Japan, Aug. 12, 1983, 58-148612; Nov. 12, 1983, 58-212880

Int. Cl.³ A01N *1/00*

U.S. Cl. 428—92 **8 Claims**



1. A pile article which is a cloth-like fibrous structure provided with piles having a length of more than 10 mm, each pile composed of a non-attenuated portion where the fineness does not substantially vary in the length direction, an attenuated portion where the fineness is gradually reduced toward the top end and a fine top end, said piles comprising that

(a) the non-attenuated portion is composed of a core-sheath composite fiber having a flatness ratio of 1.5–5 and a fineness of 8–50d, and has 1–4 wing-shaped projections in cross-section,

(b) the top end is formed of an exposed core of the composite fiber and has a substantially uniform fineness of an average diameter of 5–25 μm and a length of 0.3–5 mm and

(c) the attenuated portion has a length of 1–15 mm.

4,525,405

POLYURETHANE BACKED CARPET CONTAINING A NON-CHLORINATED POLYMER

Linda M. McKinney, and Osborne K. McKinney, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 29, 1983, Ser. No. 566,612
Int. Cl.³ B32B *3/00, 3/26*
U.S. Cl. 428—95 **10 Claims**

3. A carpet backing formulation which comprises

(A) a polyol composition comprising

(1) at least one relatively high molecular weight polyether polyol having an average hydroxyl functionality from 2 to about 8, and an average hydroxyl equivalent weight of from about 500 to about 2200;

(2) at least one relatively low molecular weight polyol having an average hydroxyl functionality of from about 2 to about 8 and having an average hydroxyl equivalent weight of from about 31 to about 230;

(B) at least one polyisocyanate, polyisothiocyanate or mixture thereof;

(C) one or more catalysts;

(D) at least one nonchlorinated thermoplastic polymer having a density of from about 0.90 to about 1.3 g/cc; a melt index from about 0.0 to about 50 g/10 min, a flexural modulus of from about 5,000 to about 30,000 psi and an average particle size of from about 5 to about 150 microns, which polymer is prepared by polymerizing one or more ethylenically unsaturated monomers; and optionally

(E) one or more inorganic filler materials; and wherein

(i) components (A-1) and (A-2) are employed in quantities which provides a hydroxyl equivalent ratio of (A-1):(A-2) of from about 0.8:1 to about 5.5:1;

(ii) component (A) is present in a quantity of from about 25 to about 45 percent by weight based upon the combined weight of components (A), (D) and (E);

(iii) component (D) is present in quantities of from about 0.05 to about 25 percent by weight based upon the combined weight of components (A), (D) and (E);

(iv) component (E) is employed in quantities of from zero to about 75 percent by weight of the combined weight of components (A), (D) and (E); and

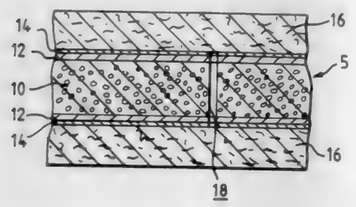
(v) components (A) and (B) are present in quantities which provides an NCX:OH equivalent ratio of from about 0.95:1 to about 1.5:1 and X is oxygen or sulfur.

4,525,406

THERMAL INSULATION LAYER

James F. Pollock, Maidenhead, England, assignor to Secretary of State for United Kingdom Atomic Energy Authority, London, England

Filed Mar. 12, 1984, Ser. No. 588,725
Claims priority, application United Kingdom, Mar. 15, 1983, 8307167; Jul. 12, 1983, 8318861
Int. Cl.³ B32B *3/10, 3/12, 5/32, 15/00*
U.S. Cl. 428—137 **16 Claims**



1. A flexible thermal insulation layer comprising a substantially continuous sheet of permeable, conduction and convection inhibiting material, and including substantially continuous low thermal emissivity surfaces facing outwardly toward each side of the insulation layer, each outwardly-facing low thermal emissivity surface being vapour permeable and being covered by a layer of high voidage material.

6. A thermal insulation layer as claimed in claim 1 wherein the convection and conduction inhibiting structure comprises a cellular foam sheet, through which are defined a plurality of perforations.

4,525,407

ELASTIC COMPOSITES

Irving S. Ness, Palmetto Dunes, S.C., assignor to Chicopee, New Brunswick, N.J.

Continuation-in-part of Ser. No. 412,446, Aug. 27, 1982, abandoned. This application Jun. 8, 1983, Ser. No. 502,366
Int. Cl.³ B32B *3/24, 3/28*
U.S. Cl. 428—138 **16 Claims**



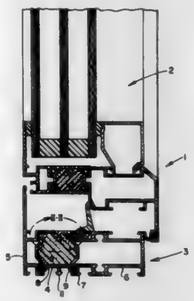
1. A selectively stretchable elastic composite comprising an elastic member in a relaxed condition intermittently bonded to an unstretched or non-gathered substrate less extensible than said elastic member, said composite being rendered elastic by stretching, and wherein the original length of the composite is not foreshortened when said composite is rendered elastic.

4,525,408

INSULATION OF ALUMINUM PROFILES IN A FIXTURE

Lars Johansson, Åseda, Sweden, assignor to Integral Profilsystem Ab, Åseda, Sweden

Filed Sep. 8, 1983, Ser. No. 530,426
Claims priority, application Sweden, Sep. 9, 1982, 8205119
Int. Cl.³ B32B *3/12, 7/04*
U.S. Cl. 428—159 **7 Claims**



1. An insulated composite profile having a predetermined outer dimension comprising:

(a) two profile portions having spaced first surfaces, the spacing between which defines said predetermined outer dimension of said composite profile, each profile portion being provided with a second surface and at least two longitudinally extending grooves on said second surface;

(b) two plastic strips of a hard plastic material having two edge portions, said edge portions engaging said grooves in order to interconnect said profile portions;

(c) said grooves having such a shape as to grip said edge portions with a clearance so that the edge portions cannot escape from the grooves in a direction transverse to the length of the groove but can be inserted into said grooves from the end of each profile portion;

(d) said strips and said profile portions defining a longitudinally extending space;

(e) plastic foam filling said space; and

(f) the clearance between said edge portions and said grooves being at least partially filled with said plastic foam in order to maintain said spacing between said first surfaces of the profile portions as interconnected by said plastic strips and plastic foam and, thereby, maintain said predetermined outer dimension of the composite profile.

4,525,409

NYLON OR POLYESTER TREATED FABRIC FOR BEDDING

James N. Elesh, Evanston, Ill., assignor to Flexi-Mat Corporation, Chicago, Ill.

Filed Sep. 19, 1983, Ser. No. 533,293
Int. Cl.³ B05D *3/02*
U.S. Cl. 428—193 **16 Claims**

1. A process for making a fabric comprising the steps of:

(a) tightly weaving a cloth selected from the group consisting of nylon and polyester threads or a combination thereof;

(b) coating one surface with a fire retardant, water repellent urethane; and

(c) immersing the cloth in a fluid bath containing a bacteriostatic and fungistatic agent, a fire retardant, and a cationic anitstatic agent, said cationic antistat agent comprising a homogeneous, aqueous dispersion of organic cationic polymers, the solids content being about 21%, the weight of said cationic antistat agent being about 8.5 pounds per gallon, the viscosity of said cationic antistat agent being moderately viscous, and the pH of said cationic antistat agent ranging from about 6.0 to about 8.0 when present in water at a concentration of 10%.

4,525,410

PARTICLE-PACKED FIBER ARTICLE HAVING ANTIBACTERIAL PROPERTY

Zenji Hagiwara, Kusatsu; Hideo Ohki, Koshigaya; Shigetaka Hoshino, Sohka; Saburo Nohara, Nishinomiya; Shunya Ida, Nara, and Kenichi Tagawa, Osaka, all of Japan, assignors to Kanebo, Ltd. and Kanto Chemical Co., Inc., both of Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 525,980
Claims priority, application Japan, Aug. 24, 1982, 57-145549
Int. Cl.³ A61K *9/70, 33/34, 33/38;* **D06M** *11/04*
U.S. Cl. 428—198 **4 Claims**

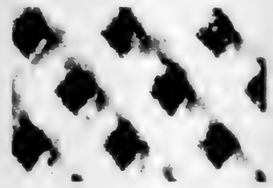
1. A particle-packed fiber article having an anti-bacterial property comprising zeolitic particles retaining therein at least one metal ion having a bactericidal property and having a specific surface area of at least 150 m^2/g and a SiO_2/Al_2O_3 mol ratio of at most 14 and a mixed fiber assembly composed of a natural fiber staple or synthetic fiber staple and a fiber staple containing low-melting thermoplastic synthetic fibers having a melting point at least 30° C. lower than the melting point or the decomposition point of the aforesaid natural fiber staple or synthetic fiber staple, at least a part of the intersection points of the staple of said mixed fiber assembly being stuck to each other by the fusion of the low-melting thermoplastic synthetic fibers, whereby said zeolitic particles are incorporated and retained in the fiber assembly in the state of allowing the contact of the foregoing zeolitic particles with an external fluid.

4,525,411

CLEANING CLOTH

Klaus Schmidt, Kaiserslautern, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Continuation of Ser. No. 302,572, Sep. 15, 1981, abandoned. This application Jul. 13, 1984, Ser. No. 630,348
Claims priority, application European Pat. Off., Sep. 15, 1980, 80105
Int. Cl.³ B32B *27/14*
U.S. Cl. 428—198 **16 Claims**



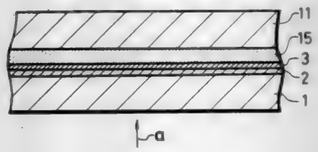
1. A cleaning cloth, which comprises: a fabric of intermingled fibers, said fibers being bonded to each other at a substantial number of interfiber junctions and at least some of said fibers being porous microfibers of a polymeric composition, each microfiber comprising a core of substantially nonporous polymer and a foamed polymer cover layer which surrounds said core, has a sheath-like configuration around said core, is coaxial with said core and contains open micropores, said micropores having a predominantly cylindrical shape, being substantially uniformly distributed within the sheath-like cover layer, encompassing from about 40 to 80% of the cross sectional area of each microfiber and the long axes of the pores being disposed parallel to the microfiber cross-sectional radius.

4,525,412

INFORMATION RECORDING MEDIUM

Yasuaki Nakane, Higashikana; Junichi Akamatsu, Kawagoe; Susumu Sakamoto, Matsudo, and Tadashi Kiyomiya, Ageo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 8, 1983, Ser. No. 549,741
Claims priority, application Japan, Nov. 15, 1982, 57-200238
Int. Cl.³ B32B *15/04;* **G01D** *15/34*
U.S. Cl. 428—199 **6 Claims**



1. An information recording medium comprising:

a light-transmitting substrate,

a recording layer formed on said substrate, said recording layer having the characteristic of changing an optical characteristic when an incident recording light is converted to heat therein,

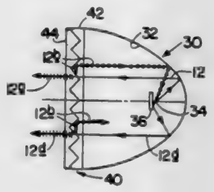
a protective layer having light-absorbing properties coated over said recording layer and arranged to absorb said recording light passing through said recording layer upon recording, and

a planar layer superimposed on said protective layer and capable of suppressing mechanical deformation of said recording layer.

4,525,413
OPTICAL DEVICE INCLUDING BIREFRINGENT POLYMER

Howard G. Rogers, Weston; Ruth C. Bilofsky, Lexington, both of Mass.; Russell A. Gaudiana, Merrimack, N.H., and Ronald A. Sahatjian, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 238,054, Mar. 2, 1981, Pat. No. 4,446,305.
This application Apr. 18, 1984, Ser. No. 601,579
Int. Cl.³ B32B *9/04;* C08G *69/32;* G02B *5/30*
U.S. Cl. 428—212 20 Claims



1. A multilayer light-transmitting device comprising, in assembled bonded relation: a layer of transparent molecularly oriented highly birefringent polymer comprising repeating molecular units exhibiting high electron density substantially cylindrically distributed about the long axes of the polymer material and the repeating units thereof, said highly birefringent polymer exhibiting a birefringence in relation to the molecular configuration of said repeating molecular units and the cylindrical or ellipsoidal electron density distribution about said axes, said birefringence being in relation to said molecular configuration and said electron density distribution according to a diminsionless geometric index G represented by the relationship

$$G = 0.222 \times E \times \frac{L}{D}$$

wherein E is a dimensionless eccentricity factor defined by the relationship

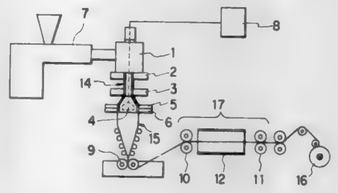
$$E = \frac{1 + e_L}{1 + e_T}$$

where e_L is the longitudinal eccentricity of the electron polarizability of the repeating molecular unit and e_T is the transverse eccentricity of the polarizability of the repeating molecular unit, L is the length of the repeating molecular unit along the main axis thereof and D is the mean diameter of the repeating molecular unit; said repeating molecular units of said birefringent polymer exhibiting a geometric index G of about 0.5 or higher; said multilayer light-transmitting device including at least one additional transparent layer having an index of refraction substantially matching one index of refraction of said layer of transparent molecularly oriented highly birefringent polymeric material and comprising isotropic or birefringent material; said at least one additional transparent layer, when a layer of birefringent material, having one index of refraction thereof substantially different from one index of refraction of said layer of transparent molecularly oriented highly birefringent polymer and having a molecular orientation substantially perpendicular to the molecular orientation of said molecularly oriented highly birefringent polymer.

4,525,414
HEAT-SHRINKABLE COMPOSITE LAMINATE FILM AND PROCESS FOR PREPARING THE SAME

Masaki Ohya; Yoshihiro Matsukura, and Mitsuru Anzai, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1983, Ser. No. 542,702
Claims priority, application Japan, Oct. 29, 1982, 57-190539
Int. Cl.³ B32B *7/02, 27/08*
U.S. Cl. 428—213 8 Claims

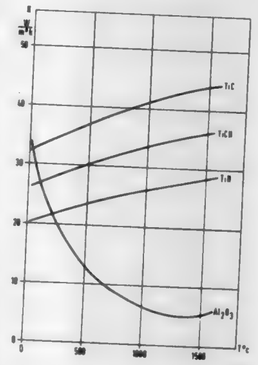


1. A heat-shrinkable composite laminate film comprising an intermediate layer having a thickness of from 3 to 30 μm and comprising a copolymer of from 65 to 95% by weight of vinylidene chloride and from 5 to 35% by weight of a comonomer copolymerizable with vinylidene chloride, an outer layer of an olefin resin having a thickness of from 5 to 50 μm, another outer layer of a polyamide having a thickness of from 5 to 50 μm and two adhesive layers respectively disposed between the intermediate layer and each of the two outer layers, each of the adhesive layers having a thickness of not less than 1 μm and below 5 μm and being at least one resinous material selected from the group consisting of a modified copolymer obtained by modifying a copolymer of ethylene and a vinyl carboxylate or an acrylic ester with an ethylenically unsaturated carboxylic acid or an acid anhydride thereof and a polymeric material obtained by further modifying said modified copolymer with a metal compound.

4,525,415
SINTERED HARD METAL PRODUCTS HAVING A MULTI-LAYER WEAR-RESISTANT COATING

Reuven Porat, Nahariya, Israel, assignor to Iscar Limited, North Nahariya, Israel

Filed Sep. 8, 1982, Ser. No. 415,784
Claims priority, application Israel, Sep. 11, 1981, 63802
Int. Cl.³ B32B *7/02, 15/04*
U.S. Cl. 428—216 6 Claims



1. A sintered hard metal product consisting of a cemented metal carbide substrate and a thin wear-resistant surface coating comprising a plurality of coating layers of different compositions applied onto at least a part of the surface of said substrate and on top of eacch other by chemical vapour deposition, characterized in that said coating layers include:

an innermost layer applied directly onto said substrate and consisting of at least one member selected from nitrides and carbonitrides of Ti, Zr, Hf, V, Nb, Ta, Al and Si;

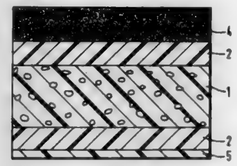
a second layer applied directly on said innermost layer, consisting essentially of aluminum oxide and having a thickness of about 1 to about 3μ;

a third layer composed of one or more sublayers of titanium carbide, titanium nitride and titanium carbonitride, applied on top of said aluminium oxide layer; and a further outermost layer consisting essentially of aluminium oxide and having a thickness of from about 0.4 to about 20 microns.

4,525,416
ADHESIVE TAPE

Peter Hammerschmidt, Wiesbaden, and Günther Crass, Taunusstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 3, 1983, Ser. No. 491,165
Claims priority, application Fed. Rep. of Germany, May 4, 1982, 3216603
Int. Cl.³ B32B *5/30, 5/16, 27/32*
U.S. Cl. 428—220 13 Claims



1. A multilayer, biaxially oriented, delaminatable adhesive security tape, comprising:

an inner layer comprising a polymer or copolymer of an alpha-olefin having 2 to 6 carbon atoms, said layer including a plurality of solid particles having a dimension between about 0.2 and 20 microns in finely distributed form, in a quantity of from about 3 to 20% by weight with respect to the total weight of the polymer forming the inner layer, and a plurality of microcracks and small pores of vacuoles at the boundary zone between said alpha-olefin polymer or copolymer and said solid particles;

on both sides of said inner layer, a cover layer comprising a polymer or copolymer of an alpha-olefin having 2 to 4 carbon atoms;

an adhesive layer on the side of one of said cover layers facing away from the inner layer; and

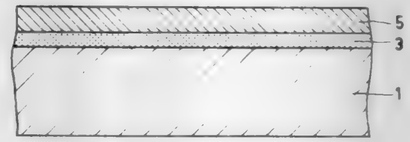
an adhesive repellent layer on the other cover layer, again on its side facing away from the inner layer.

4,525,417
CARBON-CONTAINING SLIDING LAYER

Heinz Dimigen, and Hubertus Hübsch, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 24, 1983, Ser. No. 469,363
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207096; Dec. 15, 1982, 3246361
Int. Cl.³ B32B *15/04;* C23C *15/00*
U.S. Cl. 428—244 12 Claims

1. A workpiece comprising a substrate having a sliding surface provided with a friction-reducing coating; said coating consisting essentially of elemental carbon dispersed in a matrix formed of at least one metallic element in the proportions of 50.1 to 99.9 at % of the elemental carbon and 0.1 to 49.9 at % of the metallic element, the ratio of the metallic element to the elemental carbon differing from the stoichiometric ratio of a carbide.



4,525,418
TWO-LAYERED PACKAGING MATERIAL FOR FOODSTUFFS ONE LAYER OF WHICH COMPRISES A POLYMER BLEND

Horst Dinklage, Dieburg; Herbert Fink, Bickenbach, and Hans-Peter Wolf, Ostercappeln, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Nov. 26, 1982, Ser. No. 444,723
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1981, 3147519
Int. Cl.³ A22C *13/00;* A23G *4/10;* B32B *27/12, 27/36*
U.S. Cl. 428—264 7 Claims

1. A two-layered packaging material for the direct contact packaging of food products, said material comprising cloth coated with a binary mixture of 50 to 100 parts by weight of a first acrylate emulsion polymer having a glass transition temperature, Tg_{max}, below 0° C. and up to 50 parts by weight of a second acrylate emulsion polymer having a glass transition temperature, Tg_{max}, above 30° C., said first acrylate emulsion polymer comprising

(a) at least 90 weight percent, based on the total first polymer, of a lipophilic monomer component comprising at least one member selected from the group consisting of esters of acrylic acid and of methacylic acid with a lower alkanol, and from 0 to 10 weight percent, based on said lipophilic monomer, of at least one further comonomer, the methyl methacrylate content of the first polymer not exceeding 40 weight percent of the total first polymer;

(b) a hydrophilic monomer component having acidic properties, in an amount from 0 to 5 weight percent, based on the total first polymer; and

(c) a crosslinking monomer component in an amount from 0 to 7 weight percent, based on the total first polymer;

and said second emulsion polymer comprising

(a) at least 95 weight percent, based on this total second polymer, of a lipophilic monomer component comprising more than 60 weight percent, based on this total lipophilic component, of methyl methacrylate, and of less than 40 weight percent, based on this lipophilic component, of at least one further member selected form the group consisting of esters of acrylic acid and/or of methacrylic acid with a lower alkanol, and of from 0 to 10 weight percent, based on this lipophilic component, of a further monomer; and

(b) of less than 5 weight percent of a hydrophilic monomer component having acidic properties.

4,525,419

COPOLYESTER PRIMED PLASTIC FILM

Robert G. Posey, Taylors, and Edwin C. Culbertson, Greer, both of S.C., assignors to American Hoechst Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 495,192, May 16, 1983, Pat. No. 4,476,189. This application Jul. 26, 1984, Ser. No. 634,514
The portion of the term of this patent subsequent to Oct. 9, 2001, has been disclaimed.
Int. Cl.[3] **B32B** *15/00, 27/06, 27/10*
U.S. Cl. 428—336 **14 Claims**

1. An oriented self-supporting plastic film having a continuous copolyester primer coating on one or both sides thereof, said self supporting plastic film is selected from the group consisting of biaxially oriented polyethylene, polypropylene and nylon, said plastic film prepared by melt extruding a substantially amorphous plastic film and thereafter orienting the film by stretching in one or two directions and heat setting the film, said copolyester primer coating being applied to said film as an aqueous dispersion prior to stretching in one direction or subsequent to stretching in one direction but prior to stretching in a mutually perpendicular direction, said copolyester primer coating consisting essentially of the polyester condensation product of the following monomers or their polyester forming equivalents:

(A) About 60 to 75 mole percent of terephthalic acid;

(B) About 15 to 25 mole percent of at least one aliphatic dicarboxylic acid of the formula $HOOC(CH_2)_nCOOH$, wherein n ranges from about 1–11;

(C) Greater than from about 6 up to about 15 mole percent of at least one sulfomonomer containing an alkali metal sulfonate group attached to a dicarboxylic aromatic nucleus, and

(D) stoichiometric quantities, of about 100 mole percent of at least one copolymerizable aliphatic or cycloaliphatic alkylene glycol having from about from 2 to 11 carbon atoms.

4,525,420

POLYURETHANE ELASTIC YARNS AND THEIR PRODUCTION

Fusao Imai, and Norio Okumura, both of Tsuruga, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Sep. 22, 1983, Ser. No. 535,443
Claims priority, application Japan, Sep. 22, 1982, 57-165469
Int. Cl.[3] **D02G** *3/00*
U.S. Cl. 428—372 **7 Claims**

1. A polyurethane elastic yarn containing in the polyurethane composition thereof an inorganic filler chosen from carbonates and sulfates of alkaline earth metals belonging to Group II a of the periodic table, said filler comprising from 0.2 to 10% by weight based on the weight of the elastic yarn and having a refractive index ($n_D^{20°C}$) of not more than 1.75.

4,525,421

SURFACE HARD COAT FOR A SYNTHETIC RESIN LENS

Satoshi Kubota; Mikito Nakashima; Takao Mogami, and Tetsuo Nakagawa, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jun. 12, 1984, Ser. No. 619,890
Claims priority, application Japan, Jun. 14, 1983, 58-106092
Int. Cl.[3] **B32B** *27/36*
U.S. Cl. 428—412 **11 Claims**

1. A synthetic resin lens surface hard coating composition, comprising:

about 50–800 parts by weight of at least one organic silicon compound represented by the general formula:

$$R^1-\overset{R^2}{\underset{|}{Si}}-(OR^3)_{3-l}$$

wherein R^1 is a hydrocarbon having from one to six carbon atoms, or an organic group containing a vinyl, methacryloyloxy or an epoxy radical, R^2 is a hydrocarbon group having from one to four carbon atoms, R^3 is a hydrocarbon group or an alkoxy alkyl group having from one to five carbon atoms, or a hydrogen atom, and l is 0 or 1;

100 parts by weight of colloidal silica (based on solid SiO_2), said silica having a particle size diameter of from about 1 to 100 millimicrons;

about 50–600 percent by weight of at least one polyfunctional epoxy compound; and

about 0.01 to 5.0 percent by weight magnesium perchlorate based on the residual solids in the composition after curing.

4,525,422

ADHESION PRIMERS FOR ENCAPSULATING EPOXIES

Sheldon H. Butt, Godfrey, Ill.; Edward F. Smith, III, Madison, and F. Dennis Gyurina, West Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 22, 1982, Ser. No. 443,793
Int. Cl.[3] **B32B** *15/08*
U.S. Cl. 428—418 **6 Claims**

1. A metal plastic composite having improved bond strength, said metal being selected from the group consisting essentially of copper and copper alloys;

an adhesion primer on the surface of the copper or copper alloy, said adhesion primer comprising a glass-like, substantially pore-free phosphate coating; and

the plastic of said composite comprising an epoxy resin adhesively bonded to the surface of said copper or copper alloy having said adhesion primer, said epoxy containing a mold release agent.

4,525,423

FLUOROCHEMICAL COPOLYMERS AND OVENABLE PAPERBOARD AND TEXTILE FIBERS TREATED THEREWITH

Michael M. Lynn, White Bear Lake, and Richard D. Howells, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 13, 1982, Ser. No. 433,973
Int. Cl.[3] **B32B** *29/04, 27/30*
U.S. Cl. 428—421 **3 Claims**

1. Paperboard, having incorporated thereon sufficient fluorochemical copolymer to render said paperboard ovenable, said copolymer comprising (by weight) about:

(a) 60 to 80% of polymer chain repeat units derived from fluoroacrylate monomer of the formula:

$$(R_f)_pQOCOCH=CH_2$$

wherein R_f is a fluoroaliphatic radical-containing group having 3 to 20 carbon atoms, Q is a polyvalent organic connecting group, and p is 1 or 2;

(b) 1 to 30% of polymer chain repeat units derived from halogenated alkyl or alkoxyalkyl acrylate monomer of the formula:

$$R^1O(R^2O)_n[C(O)CH_2O]_mCOCH=CH_2$$

wherein R^1 is a C_{1-20} alkyl, cycloalkyl, haloalkyl, or halocycloalkyl group, R^2 is a C_{1-6} alkylene or haloalkylene group, each R^2 group can be the same as or different from other R^2 groups, at least one R^1 or R^2 group contains a halogen atom, n is zero to about 10 with the proviso that when n is zero R^1 is a C_{1-16} haloalkyl or halocycloalkyl group, and m is zero or 1;

(c) 1 to 15% of polymer chain repeat units derived from monomer of the formula:

$$CH_2\overset{O}{\diagup\diagdown}CHCH_2OCOC(R^3)=CH_2$$

wherein R^3 is H or methyl;

(d) 1 to 6% of polymer chain repeat units derived from cationic monomer of the formula:

$$CH_2=C(R^4)ZY^+X^-$$

wherein R^4 is H or methyl, Z is a divalent electron-withdrawing group which activates free-radical polymerization, Y^+ is a monovalent cationogenic group, and X^- is a water solubilizing anion; and

(e) 0 to 20% of polymer chain repeat units derived from vinylidene chloride;

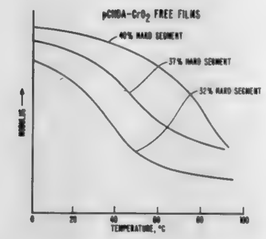
with the proviso that the weight percent of carbon-bonded fluorine in said copolymer is at least about 15%.

4,525,424

FLEXIBLE MAGNETIC RECORDING MEDIA HAVING A POLYESTER-POLYURETHANE BINDER AND CHROMIUM DIOXIDE PIGMENT

Richard L. Bradshaw, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,291
Int. Cl.[3] **G11B** *5/70;* **B32B** *27/40*
U.S. Cl. 428—425.9 **10 Claims**



1. A flexible magnetic recording media, comprising; a flexible substrate, and a ferromagnetic chromium dioxide pigment-loaded-binder adhesively coating said substrate; the improvement comprising said binder being a thermoplastic polyurethane formed as a reaction product of:

(A) a hydroxyl-terminated polyester which itself is a reaction product of a difunctional alcohol (diol) having hydrolytic stability, and a dicarboxylic acid selected from the group consisting of adipic acid, azelaic acid and 1,12-dodecanedioic acid, or mixtures thereof, said polyester having a hydroxyl number of about 50 to 250;

(B) a chain extender comprising a primary or a secondary alcohol selected from the group consisting of 1,4-butanediol, 1,3-butanediol, 1,5-pentanediol, 1,6-hexanediol and 2,5-hexanediol, the resultant hydroxyl number of said polyester and chain extender being about 130 to 300; and

(C) an aromatic diisocyanate;

wherein the relative proportions of (A), (B) and (C) are selected to produce a pigment-loaded polyurethane having a hard segment content in the range of about 37 to 40 percent by weight, and a soft segment molecular weight (M_n) in the range of about 500 to 1500, wherein the pigment loading is in the range 80 to 88% by weight.

4,525,425

WATER AND OIL REPELLENT METAL OXIDE-ORGANIC COMBINATION COATING SYSTEMS AND METHOD OF MAKING SAME

Peter K. Church, Cascade, Colo., assignor to El-Chem Corporation, Cascade, Colo.

Filed May 11, 1981, Ser. No. 262,778
Int. Cl.[3] **B32B** *9/00*
U.S. Cl. 428—428 **43 Claims**

1. A method of forming a water and oil repellent combination coating on a substrate selected from the group consisting of glass, tile, ceramic, porcelain, metals and metal oxides, paints, enamels and organic materials containing sizable amounts of inorganics on or in the surface which comprises the steps of:

applying a liquid based suspension of a hydrated oxide and/or hydroxide of a metal selected from the group consisting of zirconium, aluminum, iron, chromium, tin, titanium, nickel, cobalt, cerium, and mixtures thereof to the surface of the substrate by rubbing the suspension uniformly over the surface while permitting the liquid base to evaporate until the surface is dry or nearly dry and a coating of the oxide is deposited on the substrate surface; and,

treating the oxide and/or hydroxide coating with a combining compound selected from the group consisting of an organic compound, a silicone compound and a fluorocarbon compound and mixtures thereof which combines therewith to form a water and oil repellent and abrasion resistant combined coating on the substrate.

15. A water and oil repellent combination coating on a substrate selected from the group consisting of glass, tile, ceramic, porcelain, metals and metal oxides, paints, enamels and organic materials containing sizable amounts of inorganics on or in the surface which comprises a first layer adhered to the substrate by rubbing until at least nearly dry a hydrated oxide and/or hydroxide of a metal selected from the group consisting of zirconium, aluminum, iron, chromium, tin, titanium, nickel, cobalt, cerium and mixtures thereof and a second layer combined with the first layer comprising an organic compound selected from the group consisting of:

(1) stearic acid
(2) palmitic acid
(3) myristic acid
(4) oleic acid
(5) linoleic acid
(6) linolenic acid
(7) methyl stearate
(8) potassium stearate
(9) sodium stearate
(10) ammonium stearate
(11) triethanolamine stearate
(12) potassium palmitate
(13) sodium palmitate
(14) ammonium palmitate
(15) triethanolamine palmitate
(16) potassium myristate
(17) sodium myristate
(18) ammonium myristate
(19) triethanolamine myristate
(20) potassium oleate
(21) sodium oleate
(22) ammonium oleate
(23) triethanolamine oleate
(24) naptha
(25) n-hexadecane
(26) cetyl alcohol
(27) lanolin
(28) acetone
(29) methyl ethyl ketone
(30) methanol
(31) isopropanol
(32) 2-propanol
(33) 1-pentanol
(34) 1,6-hexanediol

(35) hexyl alcohol
(36) heptal alcohol
(37) 1,1,1-trichloroethane
(38) tetrachloroethylene
(39) methyl chloride
(40) methylene chloride
(41) carbon tetrachloride
(42) mineral spirits
(43) mineral oil
(44) paraffin
(45) Stoddard solvent
(46) lanolin
(47) polydimethylsiloxane
(48) dimethylsilicone wax
(49) methylalkylpolysiloxane
(50) chlorophenylmethylsiloxane
(51) fluorodimethylsiloxane
(52) fluorocarbon
(53) hydroxy terminated (SiOH) dimethyl reactive silicone and mixtures thereof.

4,525,426

ULTRAVIOLET LIGHT ABSORBING AGENTS, METHOD FOR MAKING, COMPOSITIONS, AND ARTICLES CONTAINING SAME

Blair T. Anthony, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 373,361, Apr. 30, 1982, Pat. No. 4,495,360. This application Oct. 9, 1984, Ser. No. 659,053

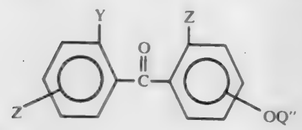
Int. Cl.³ B32B *9/04*

U.S. Cl. 428—447 **6 Claims**

1. An aqueous coating comprising,

(a) a dispersion of a colloidal silica in a solution of the partial condensate of a silanol having the formula, $R^2Si(OH)_3$, where R^2 is selected from the group consisting of alkyl having 1 to 13 carbon atoms and aryl having 6 to 13 carbon atoms, at least 70 weight percent of which is $CH_3Si(OH)_3$, in a mixture of an aliphatic alcohol and water, said dispersion containing from 10 to 50 percent by weight of solids, said solids consisting essentially of 10 to 70 percent by weight of the colloidal silica and 30 to 90 percent by weight of the partial condensate, and

(b) an effective amount of an ultraviolet light absorbing agent comprising a compound having the formula,



where Q'' is

$$-CH_2(CH_2)_nSi(OCH_3)_{3-a}(OR)_a,$$

R is alkyl or alkanoyl having 2 to 6 carbon atoms, Y is H or OH, Z is H, OH, OQ'' or OW, where at least one Z is OH in the ortho position to the carbonyl if Y is H, W is C_mH_{2m+1}, m is 1 to 18, n=0, 1 or 2, and "a" has a value of from about 0.5 to about 2.5 inclusive.

4,525,427

POLYESTER PRIMER COMPOSITION AND METHOD

Charles E. Bayha, Collierville, Tenn., and Daniel H. McQueen, Holly Springs, Miss., assignors to The Alpha Corporation, Collierville, Tenn.

Continuation of Ser. No. 420,101, Sep. 20, 1982, abandoned, which is a continuation-in-part of Ser. No. 379,887, May 19, 1982, abandoned. This application Oct. 12, 1984, Ser. No. 659,867

Int. Cl.³ B32B *15/08*

U.S. Cl. 428—458 **13 Claims**

10. A dented or gouged surface, adhered to which is a primer composition comprising a polyester containing dicyclopentadiene moieties in the polymer backbone formed by a two-stage process, the first stage comprising heating maleic acid and dicyclopentadiene together under inert conditions, to an elevated temperature which, under the conditions of the process, is less than both (1) the temperature at which maleic acid will isomerize to fumaric acid, and (2) the temperature at which dicyclopentadiene will crack to form cyclopentadiene, until an interemdiate is formed, which intermediate is the reaction product of maleic acid and dicyclopentadiene and which intermediate contains maleic acid moieties and dicyclopentadiene moieties in a mole ratio which is about 1; and the second stage comprising heating said intermediate in the presence of a compound containing at least one alcoholic hydroxy group to temperatures up to 240° C. to produce said polymer, wherein the intermediate, as subjected to heating in the second stage, contains less than 2% unreacted dicyclopentadiene, and said polyester comprising about 90% to about 50% by weight of said composition and a diluent comprising from about 10% to about 50% by weight of said composition.

4,525,428

PROCESS FOR PRODUCING MULTICOLOR HEAT-TRANSFER RECORDING PAPER

Toshihiko Matsushita, Funabashi; Sadao Morishita, Ibaraki, and Hideo Makishima, Takasago, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,349

Claims priority, application Japan, Jan. 25, 1983, 58-10758; Jan. 25, 1983, 58-10759

Int. Cl.³ B32B *9/06*

U.S. Cl. 428—488.1 **10 Claims**

1. A process for producing a multicolor heat transfer recording paper, which comprises emulsionizing three hot-melt inks of three primary colors, magenta, cyan and yellow, said inks differing by at least 10° C. in melting point from each other, mixing and dispersing the emulsions, then coating the dispersion on a support and drying the coating.

9. A multicolor heat transfer recording paper produced by the process of claim 1.

4,525,429

POROUS SEMICONDUCTOR DOPANT CARRIERS

Gregory A. Kaiser, Lewiston; Gabriel P. DeMunda, Niagara Falls, both of N.Y., and Richard E. Tressler, Julian, Pa., assignors to Kennecott Corporation, Cleveland, Ohio

Filed Jun. 8, 1983, Ser. No. 502,287

Int. Cl.³ H01F *3/02*

U.S. Cl. 428—566 **4 Claims**

1. A dopant source for the vapor phase transport of dopant at elevated temperatures in the form of a sintered carrier member having a wafer configuration comprising at least 90 percent of silicon carbide, said sintered member being a solid, porous structure having a porosity of at least about 20 percent with an average pore size in the range from about 5 microns to about 250 microns, the pores thereof being impregnated with a dopant containing an element selected from the group consisting of phosphorus, arsenic, antimony, boron, gallium, aluminum, zinc, silicon, tellurium, tin and cadmium.

4,525,430

STEEL FIBRE REINFORCED RUBBER ARTICLE

Luc Bourgois, Kwadestraat 7, B-8748 Waregem (Desselgem), Belgium

Filed Feb. 6, 1984, Ser. No. 577,516

Claims priority, application United Kingdom, Feb. 25, 1983, 8305229

Int. Cl.³ B32B *15/06, 15/00*

U.S. Cl. 428—625 **7 Claims**

1. A steel fibre reinforced rubber article, characterized by the fact that the rubber that is in contact with the fibre has a specific electrical resistance of at least B 5×10^7 Ohm centimeter.

4,525,431

IRON-BASED ALLOYS FOR WELDED STRUCTURAL ELEMENTS, METHOD OF MANUFACTURING SUCH ELEMENTS AND STRUCTURES BUILT THEREFROM

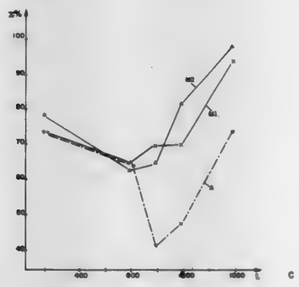
Francois Duffaut, Nevers, France, assignor to Imphy S.A., Paris, France

Filed Nov. 30, 1982, Ser. No. 445,636

Claims priority, application France, Dec. 4, 1981, 81 22756

Int. Cl.³ B22B *15/18*

U.S. Cl. 428—638 **3 Claims**



1. A manufactured structural element for use under cryogenic conditions and containing at least one welded joint wherein said structural element and said welded joint each comprises an alloy consisting essentially by weight of about 35 to about 39 percent nickel, up to 20 percent cobalt, up to 0.25 percent silicon, up to 0.04 percent carbon, up to 0.004 percent sulfur, up to 0.008 percent phosphorous, about 0.2 to about 1.5 percent manganese, about 0.2 to about 0.5 percent titanium, and the balance iron and impurities.

4,525,432

MAGNETIC MATERIAL WIRE

Takashi Saito, Yokohama; Kazumoto Suzuki, Tokyo, and Yoshihiro Naganuma, Funabashi, all of Japan, assignors to Fujikura Ltd., Japan

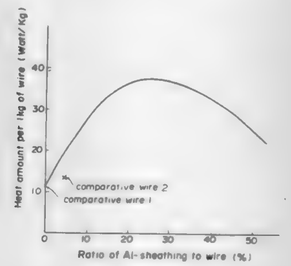
Filed Jun. 20, 1983, Ser. No. 506,013

Claims priority, application Japan, Jun. 21, 1982, 57-105499; Jun. 21, 1982, 57-105500

Int. Cl.³ C23C *1/08*

U.S. Cl. 428—653 **4 Claims**

1. A magnetic material wire for winding around an electric conductor comprising a core of magnetic material having a Curie point of 70° to 250° C., and a high conductive metal sheathing of a uniform thickness covering the core, the ratio of the metal sheathing to the wire in cross-sectional area being in the range of 15 to 40%, which said core containing apart from impurities 32 to 52% by weight of nickel, 0.5 to 9% by weight of chromium, 0.2 to 2% by weight of silicon and balance iron.



4,525,433

COMPOSITE MATERIAL

Alan E. Heywood, St. Albans, England, assignor to Johnson Matthey Public Limited Company, Great Britain

Filed Sep. 8, 1982, Ser. No. 416,067

Claims priority, application United Kingdom, Sep. 8, 1981, 8127071; Nov. 12, 1981, 8134130

Int. Cl.³ C22C *1/02, 5/00, 9/00, 39/00*

U.S. Cl. 428—670 **15 Claims**

1. A composite material comprising two outer layers comprising a platinum group metal or alloy thereof and an inner layer disposed between and bonded to the outer layers, at least one of the outer layers comprising a member selected from the group consisting of a dispersion strengthened platinum group metal and a dispersion strengthened alloy containing a major proportion of a platinum group metal, and the inner layer comprising a noble metal or noble metal alloy which is dissimilar to the metal or alloy of the said outer layers, said inner layer comprising a member selected from the group consisting of metallic palladium, dispersion strengthened palladium, a palladium alloy and a dispersion strengthened palladium alloy.

4,525,434

COPPER ALLOY HAVING HIGH RESISTANCE TO OXIDATION FOR USE IN LEADS ON SEMICONDUCTOR DEVICES AND CLAD MATERIAL CONTAINING SAID ALLOY

Masaki Morikawa, Iwatsuki; Hideaki Yoshida, Kasukabe, and Kunio Kishida, Ohmiya, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo and Fujitsu Limited, Kawasaki, both of, Japan

Filed Sep. 6, 1983, Ser. No. 529,593

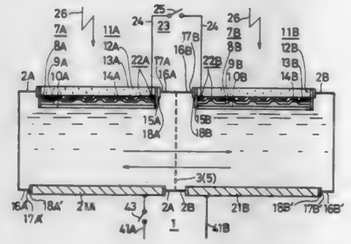
Claims priority, application Japan, Oct. 19, 1982, 57-183554

Int. Cl.³ C23C *5/00*

U.S. Cl. 428—674 **2 Claims**

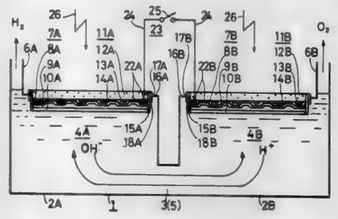
1. A Cu alloy clad material for use in leads on semiconductor devices comprising a substrate wholly or partially covered by a clad metal, wherein the substrate is a Cu or Cu alloy having high electrical conductivity and good heat dissipation, and the clad metal is a Cu alloy having high resistance to oxidation which consists essentially of 7–15% Mn, 10–30% Zn, 0.2–10% Ni, 0.1–3% Al, the percentage being by weight, with the balance being Cu and incidental impurities.

4,525,435
LIGHT ENERGY CONVERSION SYSTEM
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Japan
Filed Mar. 28, 1983, Ser. No. 479,559
Claims priority, application Japan, Mar. 29, 1982, 57-50533
Int. Cl.³ H01M *6/36*
U.S. Cl. 429—111 **13 Claims**



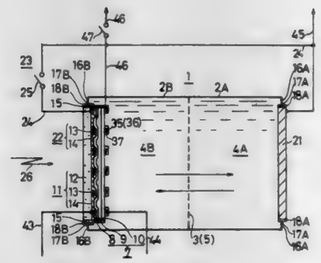
1. A light energy conversion system comprising;
a redox reaction chamber provided with first and second cells intercommunicating through an ion bridge and containing first and second electrolytic solutions, respectively;
a first semiconductor photoelectric conversion structure having a P type first non-single crystalline semiconductor layer, an I type second non-single crystalline semiconductor layer formed on the first non-single crystalline semiconductor layer, and a heavily doped, N type third non-single crystalline semiconductor layer formed on the second non-single crystalline semiconductor layer;
a second semiconductor photoelectric conversion structure having an N type fourth non-single-crystalline semiconductor layer, an I type fifth non-single crystalline semiconductor layer formed on the fifth non-single-crystalline semiconductor layer, and a heavily doped, P type sixth non-single-crystalline semiconductor layer formed on the fifth non-single-crystalline semiconductor layer;
a first electrode in contact with the first electrolytic solution contained in the first cell of the redox reaction chamber;
a second electrode in contact with the second electrolytic solution contained in the second cell of the redox reaction chamber and paired with the first electrode;
a third electrode connected with the first non-single-crystalline semiconductor layer of the first semiconductor photoelectric conversion structure;
a fourth electrode connected with the fourth non-single-crystalline semiconductor layer of the second semiconductor photoelectric conversion structure and paired with the third electrode;
means for electrically enterconnecting the third and fourth electrodes; and
means for connecting a load across the first and second electrodes to supply electric power to the load;
wherein the first semiconductor photoelectric conversion structure is provided in the first cell (a) so that it forms a part of the first cell wall, (b) so that light is incident on the first semiconductor photoelectric conversion structure directly without passing through the first electrolytic solution in the first cell, and (c) so that only the portion of the semiconductor photoelectric conversion structure on the side of the third non-single-crystalline semiconductor layer is held in contact with the first electrolytic solution; and
wherein the second semiconductor photoelectric conversion structure is provided in the second cell (a) so that it forms a part of the second cell wall, (b) so that light is incident on the second semiconductor photoelectric conversion structure directly without passing through the second electrolytic solution in the second cell, and (c) so that only the portion of the semiconductor photoelectric conversion structure on the side of the sixth non-single-crystalline semiconductor layer is held in contact with the second electrolytic solution.

4,525,436
LIGHT ENERGY CONVERSION SYSTEM
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Tokyo, Japan
Filed Mar. 28, 1983, Ser. No. 479,560
Claims priority, application Japan, Mar. 29, 1982, 57-50533
Int. Cl.³ H01M *6/36*
U.S. Cl. 429—111 **10 Claims**



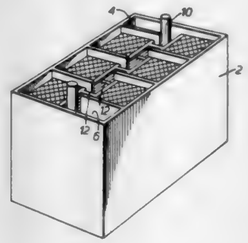
1. A light energy conversion system comprising:
a redox reaction chamber provided with first and second cells in intercommunication through a bridge and respectively containing first and second aqueous solutions of the same kind, and hydrogen and oxygen gas outlet means extending outwardly of the first and second cells, respectively;
a first semiconductor photoelectric conversion structure having a P type first non-single-crystalline semiconductor layer, an I type second non-single-crystalline semiconductor layer formed on the first non-single-crystalline semiconductor layer, and a heavily doped, N type third non-single-crystalline semiconductor layer formed on the second non-single-crystalline semiconductor layer;
a second semiconductor photoelectric conversion structure having an N type fourth non-single-crystalline semiconductor layer, an I type fifth non-single-crystalline semiconductor layer formed on the fourth non-single-crystalline semiconductor layer, and a heavily doped, P type sixth non-single-crystalline semiconductor layer formed on the fifth non-single-crystalline semiconductor layer;
a first electrode connected to the first non-single-crystalline semiconductor layer of the first semiconductor photoelectric conversion structure;
a second electrode connected to the fourth non-single-crystalline semiconductor layer of the second semiconductor photoelectric conversion structure and paired with the first electrode; and
means for electrically interconnecting the first and second electrodes;
wherein the first semiconductor photoelectric conversion structure is provided in the first cell (a) so that it forms a part of the first cell wall, (b) so that light is incident on the first semiconductor photoelectric conversion structure directly without passing through the first aqueous solution in the first cell, and (c) so that only the portion of the semiconductor photoelectric conversion structure on the side of the third non-single-crystalline semiconductor layer is held in contact with the first aqueous solution; and
wherein the second semiconductor photoelectric conversion structure is provided in the second cell (a) so that it forms a part of the second cell wall, (b) so that light is incident on the second semiconductor photoelectric conversion structure directly without passing through the second aqueous solution in the second cell, and (c) so that the portion of the semiconductor photoelectric conversion structure on the side of the sixth non-single-crystalline semiconductor layer is held in contact with the second aqueous solution.

4,525,437
LIGHT ENERGY CONVERSION SYSTEM
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Japan
Filed Mar. 28, 1983, Ser. No. 479,561
Claims priority, application Japan, Mar. 29, 1982, 57-50534
Int. Cl.³ H01M *6/36*
U.S. Cl. 429—111 **11 Claims**



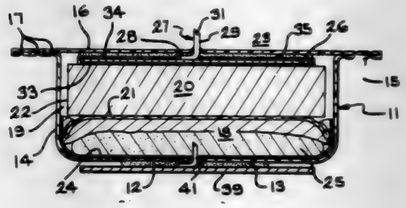
1. A light energy conversion system comprising;
a redox reaction chamber provided with first and second cells intercommunicating through an ion bridge and respectively containing first and second electrolytic solutions;
a semiconductor photoelectric conversion structure having a first non-single crystalline semiconductor layer of a P or N first conductivity type, an I type non-single-crystalline semiconductor layer formed on the first non-single-crystalline semiconductor layer, and a heavily doped, third non-single crystalline semiconductor layer of a second conductivity type opposite that of the first conductivity type of the first non-single-crystalline semiconductor layer formed on the second non-single-crystalline semiconductor layer;
a first electrode in contact with the first electrolytic solution contained in the first cell of the redox reaction chamber;
a second electrode connected to the first non-single crystalline semiconductor layer of the semiconductor photoelectric conversion structure and forming a first electrode pair with the first electrode;
a third electrode at least partly covering the third non-single crystalline semiconductor layer of the semiconductor photoelectric conversion structure and forming a second electrode pair with the first electrode; and
means for electrically interconnecting the first and second electrodes; and
means for connecting a load between the second electrode pair to supply electric power to the load; and
wherein the semiconductor photoelectric conversion structure is provided in the second cell of the redox chamber (a) so that it forms a part of the cell wall, (b) so that light is incident on the semiconductor photoelectric conversion structure directly without passing through the second electrolytic solution in the second cell, and (c) so that only the third non-single-crystalline semiconductor layer of the semiconductor photoelectric conversion structure is held in contact with the second electrolytic solution.

4,525,438
RECOMBINATION MULTICELL ELECTRIC STORAGE BATTERY
Ernest J. Pearson, Manchester, England, assignor to Chloride Group Public Limited Company, London, England
Filed Oct. 31, 1983, Ser. No. 547,226
Claims priority, application United Kingdom, Oct. 29, 1982, 8230957; Jul. 14, 1983, 8319050
Int. Cl.³ H01M *6/42*
U.S. Cl. 429—149 **8 Claims**



1. An electric storage battery comprising a plurality of cells, including two electrical end cells, electrically connected in series, each cell comprising a stack of alternating positive and negative battery plates interleaved with separator material, said separator material being capable of absorbing electrolyte in an amount sufficient to provide an electrical connection between adjacent plates of opposite polarity in the stacks, the battery containing substantially no mobile electrolyte, and each plate, with the exception of every alternate plate in the two electrical end cells, being electrically connected to a substantially coplanar plate of opposite polarity in an adjacent cell by an integral bridge piece, the bridge pieces together constituting intercell connectors, and every alternate plate in the two electrical end cells being connected to a battery terminal, each cell having at least one surface which is adjacent and opposed to a respective surface of a further cell, each pair of cells which is directly connected by an intercell connector being spaced apart and maintained in spaced relationship by only the said intercell connector and each pair of opposed surfaces of a pair of adjacent cells which is not directly connected by an intercell connector being associated with restraining means which prevent relative movement of those cells resulting in contact of the said opposed surfaces.

4,525,439
CONNECTOR APERTURE SEAL FOR A GALVANIC CELL
Robert D. Simonton, 1900 Hampton Rd., Fremont, Ohio 43420
Filed Oct. 7, 1983, Ser. No. 540,022
Int. Cl.³ H01M *6/12, 6/46*
U.S. Cl. 429—162 **9 Claims**



1. An element of a flat alkaline cell comprising a plastic sheet for a cell envelope wall, a metal collector plate having its major surfaces coextensive with the flat dimensions of said cell, a metallic connector, a fused metallic bond between said plate

and said connector on a central portion of a first major surface of said plate, a coating of a material which is adherent to the metal of said plate and is resistant to attack by potassium hydroxide on said first major surface of said plate coextensive with said first major surface, and a layer of hot melt adhesive on said coating, coextensive with and bonded to said coating on said first major surface of said plate over essentially the entire surface surrounding said connector bond, and bonded to said plastic sheet over an area essentially coextensive and in registry with said first major surface of said plate, said sheet having a passage for said connector and said connector passing through said sheet at the central portion of said plate whereby essentially the entire lateral extent of said coating and adhesive on said plate seals against the flow of potassium hydroxide to be contained within the cell to said passage in said envelope sheet.

4,525,440

SOLID STATE CELL WITH ANOLYTE

Luverne H. Barnette, Derry, N.H., and Charles C. Liang, Clarence, N.Y., assignors to Duracell Inc., Bethel, Conn.

Division of Ser. No. 262,890, May 13, 1981, Pat. No. 4,390,446. This application Sep. 30, 1982, Ser. No. 431,881

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—191 **11 Claims**

1. A solid state cell comprising a solid cathode, a solid electrolyte and a solid anolyte characterized in that said anolyte is comprised of a solid active metal anode material admixed with a cationic conductor and wherein said cationic conductor comprises at least 50% by volume of said anolyte.

4,525,441

MULTICOLOR ELECTROPHOTOGRAPHIC PROCESS USING TiO_2

Kei Takahata, Moriyama; Sadao Murasawa, Itami; Hiroshi Ichida, Shiga; Mizuho Okada, and Takao Nakayama, both of Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Filed Nov. 19, 1982, Ser. No. 442,973

Claims priority, application Japan, Nov. 27, 1981, 56-190168

Int. Cl.³ G03G *13/01*

U.S. Cl. 430—46 **16 Claims**



1. An electrophotographic process, characterized by forming a multiple color image by successively carrying out the first color image-reproducing process which comprises exposing, to an optical image, an electrophotographic photosensitive material having a photoconductive, sensitive layer consisting essentially of titanium dioxide and a binder on an electroconductive substrate, then carrying out a positive corona charging to form a positive electrostatic latent image and thereafter carrying out developing to form a toner image, and the second and following color image-reproducing processes which comprise successively carrying out negative corona charging, AC corona charging or both of them, exposure to an optical image, positive corona charging and development to form a toner image.

4,525,442

PHOTOCONDUCTIVE MEMBER CONTAINING AN AMORPHOUS BORON LAYER

Shigeru Shirai, Yamato; Junichiro Kanbe, and Tadaji Fukuda, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 334,572, Dec. 28, 1981, abandoned. This application Jul. 16, 1984, Ser. No. 631,006

Claims priority, application Japan, Jan. 9, 1981, 56-2275; Jan. 10, 1981, 56-2244; Jan. 10, 1981, 56-2245; Jan. 13, 1981, 56-3592; Jan. 13, 1981, 56-3593; Jan. 13, 1981, 56-3594

Int. Cl.³ G03G *5/082*

U.S. Cl. 430—57 **14 Claims**



1. A photoconductive member comprising a support, a photoconductive layer comprising an amorphous material comprising a matrix of silicon atoms containing at least one of hydrogen atoms and halogen atoms, a barrier layer comprising an amorphous material represented by $a-[Si_\gamma(C,N,O)_{1-\gamma}](H,X)_{1-\delta}$, where $0<\gamma<1$, and $0<\delta<1$ existing between said support and said photoconductive layer having the function to substantially prevent injection of charges from the side of said support into said photoconductive layer, and a layer provided on the upper surface of said photoconductive layer and comprising an amorphous material containing boron, wherein the amorphous material containing boron is a member selected from the group consisting of the amorphous materials (1) and (2) wherein $B_yX_{1-y}(0<y<1)$ is (1) and $B(H_\beta X_{1-\beta})_{1-\alpha}(0<\alpha,\beta<1)$ is (2); and wherein B is boron atom, H is hydrogen atom and X is halogen atom.

4,525,443

NOVEL 3-TRIHALOCHALCOGENPROPENONE COMPOUNDS

Michael R. Detty, and Jerome H. Perlstein, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,807

Int. Cl.³ G03G *5/09*

U.S. Cl. 430—83 **12 Claims**

1. A Z-3-trihalochalcogenpropenone selected from the group consisting of Z-3-trihaloseleniumpropenone and Z-3-trihalotelluriumpropenone.

4,525,444

ELECTROPHOTOGRAPHIC RECORDING MATERIAL

Karl-Friedrich Doessel, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,388

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210577

Int. Cl.³ G03G *5/05*

U.S. Cl. 430—96 **9 Claims**

1. An electrophotographic recording material for preparing a printing form or a printed circuit, comprising a layer support and a photoconductive layer comprising a photoconductor, a sensitizer, and/or an activator, wherein said photoconductive layer further comprises a high molecular weight binder which is soluble in an alkaline-aqueous or alcoholic solution,

said binder comprising the product of reacting a sulfonyl isocyanate of the formula

$$R—SO_2—NCO,$$

in which R is alkenyl having up to 4 carbon atoms, or phenyl which can be substituted by alkyl having up to 3 carbon atoms, with a hydroxyl-containing polymer in a molar ratio within the range of (0.5 to 1):1.

4,525,445

ELECTROSTATIC TONER COMPRISING THERMOPLASTIC RESIN BINDER FOR NIGROSINE BASE SALT

Pierre R. De Roo, and Serge M. Tavernier, both of Schoten, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Apr. 11, 1984, Ser. No. 599,164

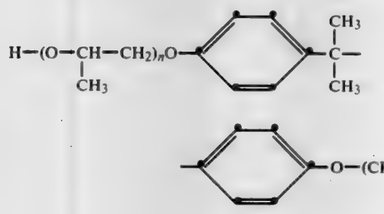
Claims priority, application European Pat. Off., Apr. 13, 1983, 83200514.4

Int. Cl.³ G03G *9/10, 9/14, 9/12*

U.S. Cl. 430—109 **10 Claims**

1. A particulate composition of matter for magnetic brush development of electrostatic charge patterns that is capable of acquiring a net positive charge by mixing with magnetic carrier particles and consists essentially of colorant material and thermoplastic resin binder, said colorant comprising a salt formed from nigrosine base (C.I. 50415B) and at least one carboxylic acid containing one or two carboxylic acid groups and having from 2 to 26 carbon atoms, wherein:

(1) said thermoplastic resin binder includes at least 75% by weight of a polyester derived from fumaric acid or a mixture of fumaric acid and isophthalic acid containing at least 95 mole % of fumaric acid and a polyol blend of propoxylated bisphenol characterized by the formula:



wherein m and n are integers with the proviso that the average sum of m and n is from 2 to 7, said polyester resin being obtained from amounts of acid to polyol such that the ratio of carboxyl groups of said acid to hydroxyl groups of said polyol is in the range of 1.2:1 to 0.8:1 and having a melting point in the range of 60°–90° C.,

(2) said nigrosine base salt has a melting point higher than the melting temperature of the resin binder and is dispersed in said resin binder in a weight ratio of not more than 10% in the form of particles having a particle size range of 0.1 to 10 μm, and

(3) the particle size of the composition is in the range of 3 to 30 μm.

4,525,446

LIQUID DEVELOPER FOR DEVELOPMENT OF ELECTROSTATIC IMAGES COMPRISING ONIUM SALT POLYMER AND AN ANION

Herman J. Uytterhoeven, Bonheiden; Yvan K. Gilliams, Hever; Walter F. De Winter, 's-Gravenwezel; August M. Mariën, Oevel, and Noël J. De Volder, Edegem, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Dec. 20, 1983, Ser. No. 563,561

Claims priority, application European Pat. Off., Jan. 20, 1983, 83200085.5

Int. Cl.³ G03G *9/08, 9/12*

U.S. Cl. 430—117 **13 Claims**

1. A liquid developer composition that is suitable for rendering visible electrostatically charged areas which composition contains in an electrically insulating non-polar carrier liquid having a volume resistivity of at least 10^9 ohm.cm and a dielectric constant less than 3, dispersed colouring matter acting as toner particles and at least one onium salt polymer including recurring units incorporating an onium group together with an anion, characterized in that the said anion has at least one of the characteristics (1) to (4) as follows:

(1) contains a negatively charged atom or group of atoms which is sterically embraced by at least two non-ionic substituents containing at least 4 C atoms;

(2) contains a negatively charged atom which is sterically embraced by at least 4 atoms selected from the group consisting of oxygen and halogen;

(3) contains a negatively charged atom or group of atoms the negative charge of which is delocalized over other atoms linked to said atom or group of atoms;

(4) is a radical anion,

whereby the said polymer is adsorbed with a net positive charge on the toner particles.

4,525,447

IMAGE FORMING METHOD USING THREE COMPONENT DEVELOPER

Susumu Tanaka, Aichi, and Kaoru Takebe, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 27, 1983, Ser. No. 545,933

Claims priority, application Japan, Nov. 8, 1982, 57-196429; Jan. 26, 1983, 58-11789; Aug. 22, 1983, 58-153600

Int. Cl.³ G03G *13/08, 13/09*

U.S. Cl. 430—122 **6 Claims**

1. An image forming method comprising a step of forming an electrostatic latent image having at least three levels of potential with a first potential representing a first image area, a second potential representing a second image area and a background potential for the first and second images; and a step of developing said electrostatic latent image with a magnetic developer of a mixture of at least three components which includes a magnetic carrier, a first toner triboelectrically chargeable to a specific polarity by contact with the magnetic carrier, and a second toner triboelectrically chargeable by contact with the first toner to a polarity opposite to the polarity of first toner but substantially not triboelectrically chargeble by contact with the magnetic carrier and at least said second toner being a magnetic toner.

4,525,448

METHOD OF FABRICATING SUB-HALF-MICRON-SIZE GATES ON SEMICONDUCTOR SUBSTRATES

Chuni L. Ghosh, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 6, 1984, Ser. No. 568,753

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—314 **13 Claims**

1. A method of fabricating a sub-half-micron-size gate on a support surface of a semiconductor substrate, comprising the steps of

covering at least a section of the support surface that includes the desired location of the gate with a photoresist layer;

masking an area of the photoresist layer that covers said location, such masked area having a size exceeding the desired size of the gate;

subjecting the photoresist layer to overexposure with an



attendant reduction in the size of said masked area down to said desired size of the gate

removing the photoresist layer from a region of the support surface surrounding the reduced-size area;

providing a protective coating at least on said region;

clearing said reduced-size area to provide a recess in said protective coating; and

depositing gate material at least in said recess.

4,525,449

METHOD OF TREATMENT OF COLOR PHOTOGRAPHIC MATERIALS

Junya Nakajima; Kiyoshi Imai, and Takashi Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Company, Limited, Kanagawa, Japan

Filed Nov. 1, 1983, Ser. No. 547,617
Claims priority, application Japan, Nov. 1, 1982, 57-192097
Int. Cl.³ G03C *7/40, 5/50*
U.S. Cl. 430—407 **16 Claims**

1. A method of color reversal treatment of an image-wise exposed silver halide color photographic material, comprising the steps of:

treating the material in a first black-and-white developing solution containing a developer and a compound represented by the following general formula (I):

$$R_2\text{-}(S\text{—}R_1)_d\text{—}S\text{—}R_2 \qquad (I)$$

wherein R_1 represents an alkylene group having 2 to 10 carbon atoms, which may have ether bonds, R_2 represents an alkyl group having 2 to 10 carbon atoms, which alkyl group may have substituents or may have ether bonds or ester bonds, and d represents an integer of 0 to 3 and treating the material in a second black-and-white developing solution and fogging and color developing the material.

4,525,450

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL CONTAINING A COUPLER CONTAINING AT LEAST ONE OF A SULFAMOYLPHENYLENESULFONYL, SULFAMOYLAMINOPHENYLENESULFONYL, OR SULFOAMIDOPHENYLENESULFONYL GROUP

Isamu Itoh, and Takeshi Hirose, both of c/o Fuji Photo Film Co., Ltd. No. 210, Nakanuma, Minami Ashigara-shi, Kanagawa, Japan

Filed Mar. 23, 1984, Ser. No. 592,486
Claims priority, application Japan, Mar. 28, 1983, 58-52927
Int. Cl.³ G03C *7/00, 7/32, 1/40*
U.S. Cl. 430—552 **7 Claims**

1. A silver halide color photographic light-sensitive material containing a coupler having at least one of a sulfamoylphenylenesulfonyl group, a sulfamoylaminophenylenesulfonyl group and a sulfonamidophenylenesulfonyl group as a substituent.

4,525,451

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL COMPRISING PHENOL OR NAPHTHOL HAVING SULFAMOYLAMINO GROUP

Nobutaka Ohki, and Yoshinobu Yoshida, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 16, 1984, Ser. No. 600,732
Claims priority, application Japan, Apr. 15, 1983, 58-66629
Int. Cl.³ G03C *1/06, 1/33, 1/40, 7/26*
U.S. Cl. 430—551 **13 Claims**

1. A color photographic silver halide light-sensitive material characterized by containing as a color stain inhibitor a compound comprising a phenol or naphthol ring with at least one substituted or unsubstituted sulfamoylamino group substituted in the ring.

4,525,452

ENZYME IMMUNOASSAY WITH STEP OF IMMERSING SAMPLE IN DEIONIZED WATER

Wendy Jones, Sterling Junction, and Bego Gerber, Belmont, both of Mass., assignors to BTC Diagnostics Limited Partnership, Cambridge, Mass.

Filed Jan. 24, 1983, Ser. No. 460,330
Int. Cl.³ G01N *33/54;* **C12Q** *1/04, 1/29;* **C12R** *1/36*
U.S. Cl. 435—7 **24 Claims**

1. An enzyme immunoassay for the colorimetric detection of an antigen selected from the group consisting of microorganisms and antigenic derivatives of microorganisms, said enzyme immunoassay of the type wherein a biological material comprising said antigen is collected in a collection medium forming a biological sample; a conjugate is formed between an antibody and enzyme, said conjugate is admixed with the sample to be tested for the antigen, said antigen binds with the conjugate to form an antigent/antibody complex in solid phase, the enzyme of the conjugate being bound in the antigen/antibody complex in solid phase, and the presence of said antigen is determined by measuring the activity of said enzyme with a chromogenic substrate, wherein the improvement comprises:

immersing the biological material comprising said antigen in a collection medium consisting of deionized water to form said biological sample, the deionized water deionized to a purity yielding a resistivity of the water of at least 1 megaohm cm; and

maintaining the biological material immersed in said collection medium consisting of deionized water for an immersion period of at least about 15 minutes without adding other reagents to the biological sample during said immersion period, the biological sample permissibly exposed to the atmosphere during the immersion period.

4,525,453

PROCESS FOR RAPIDLY DIFFERENTIATING BETWEEN GRAM-NEGATIVE AND GRAM-POSITIVE MICROORGANISMS

Robert F. Guardino, Rochester, and Robert T. Belly, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 26, 1982, Ser. No. 436,877
Int. Cl.³ C12Q *1/04;* **G01N** *21/54*
U.S. Cl. 435—34 **18 Claims**

1. A method for differentiating between viable gram-positive and viable gram-negative microorganisms comprising intermingling (a) gram-positive and gram-negative microorganisms, (b) an anionic surfactant in an amount sufficient to selectively inhibit the reduction capability of said gram-positive microorganisms, (c) an electron transfer agent, and (d) a compound capable of being reduced to a detectable species, in the absence of any reduction-inhibiting materials, by both gram-positive and gram-negative microorganisms and determining the presence or absence of the detectable species.

4,525,454

PRODUCTION OF L-4-PHENYL-2-AMINOBUTANOIC ACID BY TRANSAMINATION

J. David Rozzell, Cambridge, Mass., assignor to Genetics Institute, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 528,730, Sep. 4, 1983,. This application Aug. 23, 1984, Ser. No. 643,654
Int. Cl.³ C12P *13/04;* **C12N** *9/10, 9/88;* **C12R** *1/19*
U.S. Cl. 435—106 **12 Claims**

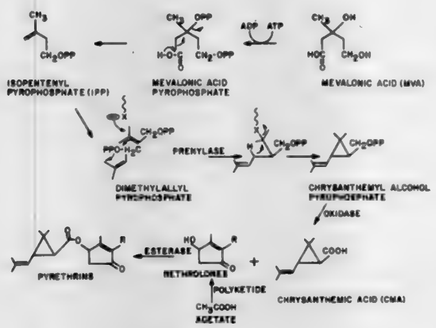
1. A process for producing alpha L-4-phenyl-2-aminobutanoic acid or derivatives thereof, said process comprising reacting 4-phenyl-2-oxobutanoic acid or an ester thereof with L-aspartic acid in the presence of transaminase enzyme to produce L-4-phenyl-2-aminobutanoic acid and oxaloacetate, and decarboxylating said oxaloacetate.

4,525,455

METHOD FOR PREPARING A CELL FREE HOMOGENATE OF *CHRYSANTHEMUM CINERARIAEFOLIUM* (TREV.) BOCC. CONTAINING ENZYMES AND METHODS OF USE

Santo W. Zito, and E. John Staba, both of Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Apr. 29, 1983, Ser. No. 489,957
Int. Cl.³ C12P *7/62, 7/02;* **C12N** *9/14*
U.S. Cl. 435—135 **60 Claims**



1. A method for preparing a cell free homogenate containing bioactive enzyme(s) and cofactor(s) of the pyrethrin pathway of pyrethrin producing Chrysanthemum species or Tagetes species of the family Compositae which comprises homogenizing a mixture comprising:

plant material from pyrethrin producing Chrysanthemum species or Tagetes species of the family Compositae;

a hydrogen bonding inhibitor in an amount effective to competitively inhibit hydrogen bonding of the bioactive enzyme(s) and cofactor(s) by plant phenolics; and

a stabilizing solution comprising a buffer with a pH in the range of about 6–8.5 and a thiol-reducing agent in an amount effective to competitively inhibit oxidation of bioactive enzyme(s) and cofactor(s) containing sulfhydryl groups and/or to competitively inhibit oxidation or covalent bonding of bioactive enzyme(s) and cofactor(s) by plant quinones.

15. A method for the biosynthesis of pyrethrins or labeled pyrethrins comprising:

preparing a cell free homogenate containing bioactive enzyme(s) and cofactor(s) of the pyrethrin pathway of Chrysanthemum species and Tagetes species of the family Compositae; and

adding together and incubating, until such pyrethrins or labeled pyrethrins are biosynthesized, the cell free homogenate and mevalonic acid or labeled mevalonic acid or isopentenyl pyrophosphate or labeled isopentenyl pyrophosphate.

35. A method for the biosynthesis of chrysanthemyl alcohol or labeled chrysanthemyl alcohol comprising:

preparing a cell free homogenate containing bioactive enzyme(s) and cofactor(s) of the pyrethrin pathway of Chrysanthemum species or Tagetes species of the family Compositae;

adding together and incubating the cell free homogenate and mevalonic acid or labeled mevalonic acid isopentenyl pyrophosphate or labeled isopentenyl pyrophosphate; and

hydrolyzing chrysanthemyl alcohol pyrophosphate produced by the incubation.

4,525,456

SUPPORT MATRIX AND IMMOBILIZED ENZYME SYSTEM

Ronald P. Rohrbach, Forest Lake, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 8, 1982, Ser. No. 439,958
Int. Cl.³ C12N *11/14, 11/02, 11/08*
U.S. Cl. 435—176 **20 Claims**

10. A support matrix comprising a core support on whose surface is deposited a water-insoluble functionalized derivative of polyethylenimine, where the polyethylenimine has a molecular weight from about 1200 to about 100,000, selected from the group consisting of carboxylic acid amides of polyethylenimine, sulfonic acid amides of polyethylenimine, and polyalkylated polyethylenimne.

19. An immobilized enzyme system comprising the support matrix of claim 10 to which there is bound an enzyme.

4,525,457

METHOD OF IMMOBILIZING ENZYMATICALLY ACTIVE MATERIALS

Ko Sakata, Kawasaki, and Hirosuke Imai, Yokohama, both of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1983, Ser. No. 487,574
Claims priority, application Japan, Apr. 27, 1982, 57-69510
Int. Cl.³ C12N *11/10, 11/08*
U.S. Cl. 435—178 **6 Claims**

1. A method of immobilizing enzymatically active materials which comprises bringing an aqueous medium comprising a polycation and an enzymatically active material into contact with a water-insoluble polyanion, whereby the enzymatically active material is fixed as a film on the surface of the water-insoluble polyanion.

2. The method of claim 1 wherein the polycation comprises at least one polymer selected from polymers containing a quaternary ammonium ion group in the backbone, polymers containing a quaternary ammonium salt group in the side chains, polymers containing an amine group or a salt thereof in the backbone, or polymers containing an amine group or a salt thereof in the side chains.

4,525,458

METHOD FOR THE PRODUCTION OF SPHINGOMYELINASE

Shigeyuki Imamura; Hideo Misaki, and Naoki Muto, all of Shizuoka, Japan, assignors to Toyo Jozo Company, Ltd., Shizuoka, Japan

Filed Sep. 1, 1982, Ser. No. 413,677
Claims priority, application Japan, Sep. 9, 1981, 56-140902
Int. Cl.³ C12N *9/16;* **C12R** *1/465*
U.S. Cl. 435—196 **1 Claim**

1. A method for the production of sphingomyelinase characterized in that the Streptomyces sp. A 9107 is cultured in a medium and the resulting sphingomyelinase is collected from the culture product.

4,525,459

NEW PURIFIED GLYCOPROTEINS AND USE IN DIAGNOSING INFECTIOUS MONONUCLEOSIS

Mary A. Fletcher, Miami, Fla., assignor to University of Miami, Coral Gables, Fla.

Filed Jan. 27, 1982, Ser. No. 343,235

The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.

Int. Cl.[3] **G01N** *33/50;* **B01J** *39/06, 41/06;* **B01D** *9/02*

U.S. Cl. 436—544 **20 Claims**

1. A mammalian erythrocyte glycoprotein selected from the group consisting of horse and sheep erythrocyte glycoprotein, the amino acid composition of the horse erythrocyte glycoprotein being about 8.1 mole % aspartic acid, about 10.6 mole % threonine, about 10.8 mole % serine, about 9.4 mole % glutamic acid, about 12.3 mole % proline, about 9.2 mole % glycine, about 11.3 mole % alanine, about 4.4 mole % valine, about 0.8 mole % methionine, about 3.5 mole % isoleucine, about 8.2 mole % leucine, about 1.1 mole % tyrosine, about 2.9 mole % phenylalanine, about 1.2 mole % histidine, about 1.3 mole % lysine and about 4.8 mole % arginine, and the amino acid composition of the sheep erythrocyte glycoprotein being about 5.6 mole % aspartic acid, about 8.1 mole % threonine, about 12.9 mole % serine, about 13.0 mole % glutamic acid, about 11.6 mole % proline, about 7.7 mole % glycine, about 9.6 mole % alanine, about 6.2 mole % valine, about 0.5 mole % methionine, about 4.6 mole % isoleucine, about 8.3 mole % leucine, about 4.6 mole % in tyrosine, about 1.2 % phenylalanine, about 1.6% histidine, about 3.2 mole % lysine, about 4.0 mole % arginine, and about 0.3% tryptophan.

12. A process for preparing the mammalian glycoproteins of claim 1 which comprises the steps of:

(a) uniformly suspending dried, ground, hemoglobin-free stroma from mammalian erythrocytes in anhydrous acetone;

(b) refluxing for from about 1 to about 6 hours, filtering and drying the residue;

(c) suspending said dried residue in 100% anhydrous ethanol;

(d) refluxing between about 1 and about 6 hours, filtering and drying the residue;

(e) suspending the dried residue from step (d) in aqueous ethanol of between about 50% and about 80% strength, and repeating step (b);

(f) dissolving the residue from step (e) in water and adding 90% aqueous ethanol, followed by incubating on ice until crystallization occurs, centrifuging and dialyzing the solid layer against a low pH, low ionic strength buffer;

(g) passing the solid from step (f) through a cation exchange resin on a chromatographic column;

(h) collecting the sialic acid containing fractions from the column and drying them;

(i) treating the collected fractions from step (h) by extraction with a known lipid solvent, centrifuging, collecting the aqueous layer and drying it;

(j) repeating step (i) on the product of that step, using a different lipid solvent;

(k) recovering the product of step (j) in lyophilized form;

(l) dissolving the product of step (k) in a low ionic strength buffer containing about 1% neutral detergent;

(m) loading the solution from step (1) on an anion exchange chromatographic column;

(n) washing the column thoroughly with low ionic strength buffer;

(o) eluting the column with aqueous buffer to high salt concentration; and

(p) dialyzing the product of step (o) against water and recovering the product in freeze dried form.

4,525,460

SINGLE-CRYSTAL MATERIAL BASED ON ALUMINIUM GARNETS

Ashot G. Petrosian, ulitsa Abovyana, 39, kv. 16, Erevan; Khachik S. Bagdasarov, ultisa Profsojuznaya, 115, kv. 46, Moscow; Armen S. Kuzanian, ulitsa Moskovskava, 31, kv. 14; Karine L. Ovanesian, ulitsa Tamaniana, 3, kv. 59, both of Erevan, and Tatyana I. Butaeva, ulitsa Charentsa, 27, kv. 3, Erevan, all of U.S.S.R.

PCT No. PCT/SU82/00010, § 371 Date Oct. 24, 1983, § 102(e) Date Oct. 24, 1983, PCT Pub. No. WO83/02962, PCT Pub. Date Sep. 1, 1983

PCT Filed Feb. 26, 1982, Ser. No. 552,137

Int. Cl.[3] **C04B** *27/00;* **C30B** *29/28*

U.S. Cl. 501—86 **6 Claims**

1. A single-crystalline aluminum garnet material consisting of $Re_3Al_5O_{12}$ and 10^{-2} to 3% by weight of the dyeing additive zirconium, wherein Re is an element from the group consisting of yttrium, dysprosium, holmium, erbium, and lutecium.

4,525,461

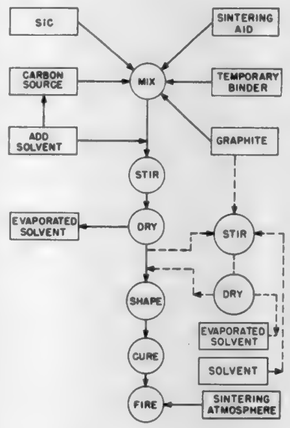
SINTERED SILICON CARBIDE/GRAPHITE/CARBON COMPOSITE CERAMIC BODY HAVING ULTRAFINE GRAIN MICROSTRUCTURE

Wolfgang D. G. Boecker, Lewiston, and Laurence N. Hailey, Niagara Falls, both of N.Y., assignors to Kennecott Corporation, Cleveland, Ohio

Filed Dec. 14, 1983, Ser. No. 561,361

Int. Cl.[3] **C04B** *35/56*

U.S. Cl. 501—90 **39 Claims**



1. A pressureless-sintered silicon carbide/graphite/carbon composite ceramic body essentially free of uncombined silicon consisting essentially of:

(a) from about 1 to about 48 percent by weight of graphitic elemental carbon and having a total uncombined carbon content of from about 1.5 to about 49 percent by weight;

(b) an effective amount of sintering aid;

(c) the balance being silicon carbide;

the composite body having a homogeneous fine grain microstructure of silicon carbide grains and graphite grains with at least 50 percent of its silicon carbide grains on an area basis having a size not exceeding about 8 microns and an aspect ratio less than about 3, the body having a density of at least 75 percent of theoretical density based on the law of mixtures.

4,525,462

DARK BLUE DYED FURNACE SIGHT GLASS WITH HIGH INFRARED ABSORPTION

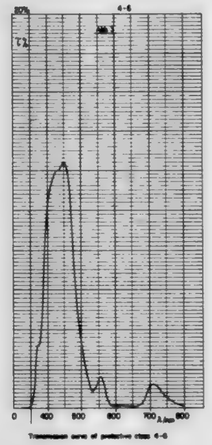
Werner Behr, Alfeld, Fed. Rep. of Germany, assignor to Deutsche Spezialglas AG, Delligsen, Fed. Rep. of Germany

Filed May 26, 1983, Ser. No. 498,421

Claims priority, application Fed. Rep. of Germany, May 27, 1982, 3220072

Int. Cl.[3] **C03C** *3/04*

U.S. Cl. 501—71 **4 Claims**



1. Dark blue dyed furnace sight glass with a high infrared absorption, characterized by the fact that it has been melted from an amount of basic glass containing iron compounds to which a carbon containing reducing agent is added, its blue coloring being due to at least one cobalt compound and its iron, carbon and cobalt contents being such that the absorption characteristics of the glass in the visible spectral area provide distinctly visible details at slight differences in temperature between different portions of a radiating body and in the infrared spectral area provide substantially no transmittance of wavelengths of about 800 nanometers, the glass characterized by the following composition (in percent by weight):

65–72	SiO_2
0–3	Al_2O_3
0–3	ZrO_2
12–16	Na_2O
0–5	K_2O
2.5–10	CaO
0–4	MgO
2.2–4.9	Fe_3O_4
0.1–0.35	CoO
0.2–0.5	C

4,525,463

SPOUT-FILLING MASS

Heinz Dislich, Am Botanischen Garten 8, D-4100 Duisburg 1, and Horst Richter, Duisburg, both of Fed. Rep. of Germany, assignors to Heinz Dislich, Duisberg and Krupp Stahl Aktiengesellschaft, Bochum, both of, Fed. Rep. of Germany, part interest to each

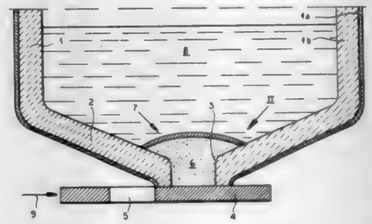
Filed Nov. 3, 1982, Ser. No. 438,807

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1982, 3214168

Int. Cl.[3] **B22D** *41/10*

U.S. Cl. 501—99 **2 Claims**

1. A particulate filling mass for filling the pouring spout of a casting ladle which consists of essentially 10% by weight carbon, 25% by weight quartz sand and the balance a chromite chromium ore containing 44 to 46% by weight Cr_2O_3, the



chromium ore and the quartz sand having particle sizes up to 1 mm, the carbon having a particle size up to 4 mm.

4,525,464

CERAMIC BODY OF ZIRCONIUM DIOXIDE (ZrO_2) AND METHOD FOR ITS PREPARATION

Nils Claussen, Leonberg; Manfred Rühle, Ditzingen, and Günter Petzow, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften, Gottingen, Fed. Rep. of Germany

Filed Jun. 12, 1984, Ser. No. 619,939

Int. Cl.[3] **C04B** *35/48, 35/50*

U.S. Cl. 501—103 **13 Claims**

1. In a ceramic body of zirconium dioxide or zirconium dioxide containing aluminum oxide, the improvement comprising said ceramic body

being partially stabilized with 0.5 to 5 mole-% of yttrium oxide, 5 to 15 mole-% magnesium oxide, calcium oxide, 5 to 15 mole-% cerium oxide, 5 to 15 mole-% of one or more rare earth dioxides or 5 to 15 mole-% of a combination thereof;

being 30 to 100% in the tetragonal lattice modification; and

having, in the surface region, a content of yttrium oxide, cerium dioxide, magnesium oxide, calcium oxide or rare earth oxide that is 2 to 20 mole-% higher than the average content in said ceramic body, such that the body is covered with a thin layer of a more highly stabilized tetragonal lattice form or one predominantly in the cubic lattice form.

3. A method for the preparation of a ceramic body which is partially stabilized with 0.5 to 5 mole-% of yttrium oxide, 5 to 15 mole-% of magnesium oxide, calcium oxide and/or cerium oxide or one or more rare earth dioxides; is 30 to 100% in the tetragonal lattice modification; and has in the surface region a content of yttrium oxide, cerium dioxide, magnesium oxide, calcium oxide or rare earth oxide that is 2 to 20 mole-% higher than the average content, such that the body is covered with a thin layer of a more highly stabilized tetragonal lattice form of one predominantly in the cubic lattice form, comprising the steps of

placing the surface of an already sintered or only presolidified compact of partially stabilized zirconium dioxide in intimate contact with yttrium oxide, cerium dioxide, magnesium oxide, calcium oxide and/or other rare earth oxide powder, or a zirconium dioxide powder containing at least 12 mole-% yttrium oxide and/or other stabilizer oxides, and then

annealing said sintered or presolidified compact at 1000° to 1600° C., to form a more highly stabilized tetragonal or mainly cubic surface layer of 0.1 to 200 micrometers thickness having a 2 to 20 mole-% higher content of yttrium oxide, cerium dioxide, magnesium oxide, calcium oxide or rare earth oxide than the average content in the ceramic body.

4,525,465
WATER-INSOLUBLE BIOSPECIFIC ABSORBENT CONTAINING ARGININAL DERIVATIVE
Tetsuya Someno, Oomiya; Kazuo Kato, Urawa; Tetsushi Saino, Yono; Shinichi Ishii, Sapporo; Tomio Takeuchi, and Hamao Umezawa, both of Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 7, 1983, Ser. No. 540,125
Int. Cl.³ B01J *20/26;* **C12N** *9/72;* **A61K** *37/54;* **C07C** *103/52*
U.S. Cl. 502—7 **10 Claims**

6. CH-Sepharose covalently bound with pyroglutamyl-lysyl-leucyl-argininal.

7. CM-Biogel A covalently bound with pyroglutamyl-lysyl-leucyl-argininal.

8. A process for producing a biospecific adsorbent comprising pyroglutamyl-lysyl-leucyl-argininal covalently bound with a water-insoluble support, which comprises reacting L-pyroglutamyl-L-lysyl-L-leucyl-L-argininal having its aldehyde group protected with a water-insoluble support having its functional group activated, and then removing the aldehyde-protecting group.

4,525,466
PROCESS FOR SYNTHETIZING ZEOLITES HAVING A MORDENITE STRUCTURE AND HAVING HIGH CATALYTIC ACTIVITY
Enrico Moretti; Valentino Zamboni, both of Milan, Italy; Raymond Le Van Mao, Montreal, Canada; Mario Padovan, and Marcello Solari, both of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy
Filed Nov. 24, 1982, Ser. No. 444,355
Claims priority, application Italy, Nov. 27, 1981, 25320 A/81
Int. Cl.³ B01J *29/18*
U.S. Cl. 502—63 **8 Claims**

5. A process for preparing a catalyst for the disproportioning of toluene, containing a mordenite having a SiO_2:Al_2O_3 molar ratio from 16 to 40, said process comprising the steps of mixing an organic base with H_2O and at least a Na compound, an Al compound, and a Si compound, and being characterized in that said base is $(DEPP)^+OH^-$ or a salt thereof, in that the mixture is crystallized at a temperature from 140° C. to 160° C., in that both said temperature and the SP factor are selected within the area AEFD of FIG. 1 of the drawing, the crystallization time being longer than two days, and in that the following molar ratios between the abovesaid compounds, expressed as oxides, are employed: Na_2O:Al_2O_3=1–10; $(DEPP)_2O$:Al_2O_3=1–15; SiO_2:Al_2O_3=20–70; H_2O:Al_2O_3=500–3,000; H_2O:SiO_2=-25–45; thereafter filtering the crystallization mixture, drying it in an oven for 10–12 hours at 120° C. and activating it in air for 2–10 hours at between 400° C. and 600° C.

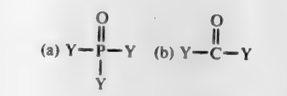
6. The process according to claim 5, characterized in that said mordenite is prepared in the acid form by exchange with NH_4Cl and successive calcining between 300° C. and 650° C., the zeolite powder so exchanged being then kneaded with 10–50% by weight of another binding material and being extruded in preselected form, the extruded mixture being heated, dried and activated by treatment in air at high temperature of 500° C. to the beginning of mordenite structural collapse.

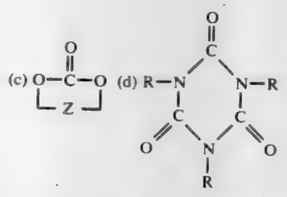
7. The process according to claim 6, in which the binding material is selected from the group consisting of clay, SiO_2 and Al_2O_3.

4,525,467
HIGH EFFICIENCY POLYMERIZATION CATALYST COMPONENT FOR USE IN THE POLYMERIZATION OF PROPYLENE AND HIGHER ALPHA-OLEFINS
Terrence Huff, and Eugene E. Poirot, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.
Filed Jan. 16, 1984, Ser. No. 571,052
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—121 **19 Claims**

8. A catalyst composition for the polymerization of olefins comprising

(A) An aliphatic hydrocarbon soluble mixed aluminum hydrocarbyl-Lewis base cocatalyst composition comprising (i) at least two different classes of aluminum hydrocarbyls, a first (1) being an aluminum hydrocarbyl halide or mixture of aluminum hydrocarbyl halides, the second (2) being one of an aluminum hydrocarbyl hydride, aluminum trialkyl or mixtures thereof, the hydrocarbyl radical can be an alkyl, cycloalkyl, aryl or aralkyl radical having from 1 to 20 carbon atoms and (ii) at least one Lewis base represented by the formula:





wherein each Y can be —OR′, —NR_2′ and R′ with the proviso that at least two be —OR′ or —NR_2′, Z is an alkylene radical forming a 5 or 6 membered ring with the carbonyldioxy group or Z is alkyl substituted alkylene group wherein the alkyl radical can have from 1 to 8 carbon atoms, R is an aryl, allyl or alkyl group having from 1 to 20 carbon atoms and R′ is an alkyl, cycloalkyl, aryl or aralkyl radical having from 1 to 20 carbon atoms,

(B) A group 4b, 5b, 6b, and 8 transition metal compound.

4,525,468
OLEFIN POLYMERIZATION CATALYST
Mark P. Mack, and Mark L. Shannon, both of Ponca City, Okla., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 429,632, Sep. 30, 1982, Pat. No. 4,440,869. This application Apr. 28, 1983, Ser. No. 489,687
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—104 **8 Claims**

1. A method of preparing catalysts for polymerization of alpha-olefins comprising contacting, in substantial absence of proton donors, a soluble magnesium compound of the general formula

$$Mg(OSiR^1R^2R^3)_2$$

with a titanium alkoxide of the formula $Ti(OR^4)_4$ in combination with at least one transition metal alkoxide having a general formula selected from the group consisting of

(a) $M^1(OR^4)_4$ wherein M^1 is at least one metal selected from the group consisting of zirconium, vanadium and hafnium,

(b) $M^2O(OR^4)_3$ wherein M^2 is vanadium,

(c) $[M^3(OR^4)_5]_2$ where M^3 is at least one material selected from the group consisting of niobium and tantalum,

(d) $M^4O_2(OR^4)_2$ and $M^4{}_2O_3(OR^4)_2$ wherein M^4 is chromium, and

(e) at least one material selected from the group consisting of tungsten alkoxides and molybdenum alkoxides,

in a sauturated aliphatic hydrocarbon solvent to form a solution, then forming a precipitate by chlorinating the solution in the substantial absence of free oxygen and recovering the precipitate for use as a catalyst, wherein each of R^1, R^2 and R^3 is, independently, alkyl groups or alkoxy groups containing from 1 to about 20 carbon atoms or aryl groups, aryloxy groups, cycloalkoxy groups or cycloalkyl groups containing from 6 to 14 carbon atoms, and each R^4 is, independently, alkyl groups or etherically substituted alkyl groups containing from 1 to 20 carbon atoms, aryl groups, cycloalkyl groups or etherically substituted aryl groups or cycloalkyl groups containing from 6 to 14 carbon atoms.

4,525,469
CATALYST COMPOSITION FOR POLYMERIZING OLEFINS
Takashi Ueda, Ohtake, and Norio Kashiwa, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan
Filed Oct. 25, 1983, Ser. No. 545,178
Claims priority, application Japan, Oct. 25, 1982, 57-186043
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—125 **10 Claims**

1. A catalyst composition for the polymerization or copolymerization of olefins composed of

(A) a titanium component (a-1) or (a-2),

(a-1) a highly active titanium component containing titanium, magnesium and halogen as essential ingredients, or

(a-2) a highly active titanium catalyst component obtained by treating component (a-1) with an organic compound containing active hydrogen bonded to oxygen, and

(B) an organoaluminum compound component, wherein

(i) when component (A) is the component (a-1), component (B) is an organoaluminum compound component obtained by treating a halogen-containing organoaluminum compound having a halogen/Al atomic ratio of at least 1 but less than 2 with a compound selected from the group consisting of water and organic compounds having active hydrogen bonded to oxygen, and

(ii) when component (A) is the component (a-2), the component (B) is a halogen-containing organoaluminum compound having a halogen/Al atomic ratio of at least 1 but less than 2, and the ratio of the amount (x) of the organic compound having active hydrogen atom bonded to oxygen and/or an oxygen-containing group derived from said organic compound to the amount (y) of titanium, x:y, is 4–100:1.

4,525,470
CATALYST COMPOSITIONS FOR PREPARING POLYORGANOSILOXANES
Charles F. Kohl, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Division of Ser. No. 519,357, Aug. 1, 1983,. This application Aug. 7, 1984, Ser. No. 638,598
Int. Cl.³ B01J *31/02;* **C08G** *77/06*
U.S. Cl. 502—167 **9 Claims**

1. A catalyst composition for preparing polyorganosiloxanes by the reaction of at least one polyorganosiloxane containing a plurality of silicon-bonded hydroxyl groups, said catalyst composition consisting essentially of (1) at least one salt derived from equimolar amounts of an organic amine containing at least one primary, secondary or tertiary nitrogen atom and an acid selected from the group consisting of mono- and polyfunctional carboxylic acids, mono- and polyfunctional organosulfonic acids, phosphoric acid and sulfuric acid, and (2) at least one unreacted acid selected from the group consisting of fluorinated alkanesulfonic acids and sulfuric acid and where the weight ratio of salt (1) to unreacted acid (2) is from 1:30 to 50:1, respectively.

2. A composition according to claim 1 where said salt is derived from a monoalkylamine or a 1,1,3,3-tetraalkylguanidine wherein the alkyl groups of the mono-alkylamine and tetraalkylguanidine contain from 1 to 8 carbon atoms.

7. A composition according to claim 1 where said unreacted acid is a fluorinated alkanesulfonic acid represented by the formula R_fSO_3H where R_f represents a perfluoroalkyl radical containing from 1 to 12 carbon atoms, a $H(CF_2)_dCF_2$ radical or a $F(CF_2)_dCFHCF_2$—radical and d is 0, 1, or 2.

4,525,471
ATTRITION RESISTANT MICROSPHEROIDAL FLUID BED CATALYSTS CONTAINING THE MIXED OXIDES OF VANADIUM AND PHOSPHORUS
Noel J. Bremer, Kent; Dennis E. Dria, Cleveland Heights; Ernest C. Milberger, Solon; Patricia R. Blum, Macedonia, and Mark L. Nicholas, Cleveland, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio
Continuation of Ser. No. 422,120, Sep. 23, 1982, abandoned. This application Apr. 2, 1984, Ser. No. 594,959
Int. Cl.³ B01J *27/14*
U.S. Cl. 502—209 **20 Claims**

1. A process for the preparation of an attrition resistant microspheroidal fluid bed oxidation catalyst containing the mixed oxides of vanadium and phosphorus, comprising:

(a) preparing a vanadium phosphorus mixed oxide containing catalyst precursor;

(b) densifying the catalyst precursor;

(c) comminuting the catalyst precursor to an average particle size less than about one micron in diameter;

(d) forming fluidizable particles having a bulk density greater than or equal to 0.75 grams per cubic centimeter from the densified, comminuted catalyst precursor;

(e) calcining the fluidizable particles under fluidization-type conditions.

4,525,472
PROCESS FOR CATALYST PREPARATION FOR THE HYDRODEMETALLIZATION OF HEAVY CRUDES AND RESIDUES
Alfredo Morales; Roberto Galiasso, and Angel R. Carrasquel, all of Caracas, Venezuela, assignors to Intevep, S.A., Venezuela
Filed Feb. 23, 1983, Ser. No. 469,079
Int. Cl.³ B01J *23/26, 23/28*
U.S. Cl. 502—323 **8 Claims**

1. A catalyst for the hydrotreatment of heavy crudes and residues, comprising

a refractory support material,

said support material having a pore volume of about 1 cm^3/g,

between 40 and 80 percent of said pore volume consisting of pores having diameters greater than 300 Angstroms,

said pores having diameters according to the following approximate percentage distribution:

30 to 35% of pores greater than 1000 Angstroms;

5 to 10% of pores from 300 to 1000 Angstroms;

6 to 11% of pores from 150 to 300 Angstroms;

10 to 12% of pores from 90 to 150 Angstroms;

30 to 40% of pores from 60 to 90 Angstroms;

1 to 7% of pores from 30 to 60 Angstroms; and

less than 1% of pores from 20 to 30 Angstroms

said support material having a surface area of about 270 to about 290 m^2/g; a real density greater than 6 grams per cubic centimeter and

a hydrogenating metallic compound,

the metal component of said hydrogenating compound being selected from the elements of Group VIb of the Periodic Table,

said support material having a limited number of chemical adsorption sites for said hydrogenating metal, such that

during impregnation of said support material by a solution containing said hydrogenating compound between 0.5 and 3% by weight of said hydrogenating compound, calculated as oxide of the corresponding Group VIb metal, with respect to the total weight of the catalyst, is irreversibly adsorbed by said support material.

4,525,473

CEPHALOSPORINS

Shimpei Aburaki, Tokyo; Hajime Kamachi, Urayasu; Yukio Narita; Jun Okumura, both of Yokohama, and Takayuki Naito, Kawasaki, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

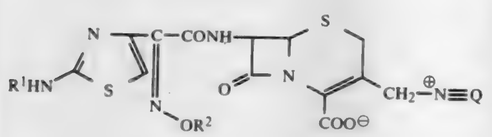
Filed Mar. 30, 1983, Ser. No. 480,602

The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.

Int. Cl.[3] **A61K** *31/545;* **C07D** *501/46*

U.S. Cl. 514—202 **48 Claims**

1. A compound of the formula

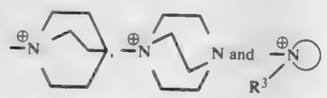


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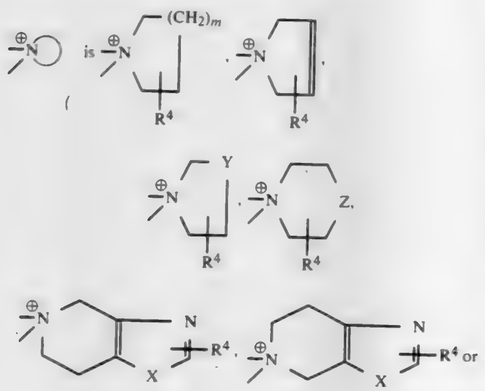
wherein R^1 is hydrogen or a conventional amino-protecting group, R^2 is a straight or branched chain alkyl, alkenyl or alkynyl group containing from 1 to 4 carbon atoms, and



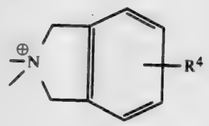
is a quaternary ammonio group selected from



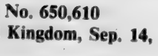
in which R^3 is (lower)alkyl, (lower)alkoxy(lower)alkyl, hydroxy(lower)alkyl with the provision that the hydroxy may not be on the α-carbon, carboxy(lower)alkyl, amino(lower)alkyl with the provision that the amino may not be on the α-carbon, (lower)alkenyl or halo(lower)alkyl, and



-continued



in which R^4 is hydrogen, hydroxy, halogen, (lower)alkyl, hydroxy(lower)alkyl, (lower)alkoxy(lower)alkyl, halo(lower-)alkyl, amino(lower)alkyl, (lower)alkoxy, (lower)alkylthio, (lower)alkenyl, amino, (lower)alkylamino, di(lower)alkylamino, acylamino, acyloxy, carbamoyl, amidino(lower)alkyl, phenyl, pyridyl, amidino or guanidino, m is an integer of from 1 to 3, X is sulfur or —CH=CH—, Y is oxygen or sulfur, Z is oxygen, sulfur or N—R^5, and R^5 is hydrogen or (lower)alkyl, with the provision that



may not be the N-methylpyrrolidinio moiety when R^2 is a C_{1-4} alkyl or alkenyl group; or a nontoxic, pharmaceutically acceptable salt, physiologically hydrolyzable ester or solvate thereof.

4,525,474

INSECTICIDAL N-SUBSTITUTED-2-(NITROMETHYLENE)-TETRAHYDRO-2H-1,3-THIAZINES

Martin Harris, Sittingbourne, England, assignor to Shell Oil Company, Houston, Tex.

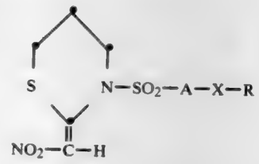
Filed Sep. 14, 1984, Ser. No. 650,610

Claims priority, application United Kingdom, Sep. 14, 1983, 8324664

Int. Cl.[3] **C07D** *279/06;* **A01N** *43/86*

U.S. Cl. 514—226 **6 Claims**

1. A compound of the formula



wherein A is an alkylene moiety of from one to ten carbon atoms, X is oxy (—O—) or thio (—S—) and R is hydrogen or formyl (—C(O)H).

5. An insecticidal composition comprising an effective amount of a compound of claim **1** together with a horticulturally accceptable carrier and optionally a surface-active agent.

4,525,475

PREVENTION OF THROMBOLIC DISORDER WITH IMIDAZOLE DERIVATIVES AND SALTS THEREOF

Peter B. Thorogood, 2 Lansdowne Gardens, London, S.W.8., England

Continuation of Ser. No. 235,000, Feb. 17, 1981, abandoned, which is a continuation-in-part of Ser. No. 123,712, Feb. 21, 1980, Pat. No. 4,328,234. This application Sep. 29, 1982, Ser. No. 427,856

Claims priority, application United Kingdom, Feb. 22, 1979, 7906243

Int. Cl.[3] **A61K** *31/46, 31/445, 31/415*

U.S. Cl. 514—304 **2 Claims**

2. A method of treating or preventing a thrombolic disorder in a mammal which comprises administering to said mammal a non-toxic medicinally effective amount of:

1-[2-(6,6-dimethylbicyclo[3.1.1]heptan-2-yl)ethyl]-imidazole

1-(bicyclo[2.2.1]hept-5-en-2-ylmethyl)imadazole
1-(bicyclo[2.2.1]heptan-2-ylmethyl)imidazole
1-(6,6-dimethylbicyclo[3.1.1]heptan-2-ylmethyl)imidazole
1-(2-cyclo-hexenespirocyclobut-3'-ylmethyl)imidazole
1-(6,6-dimethylbicyclo[3.1.1]hept-2-en-2-ylmethyl-)imidazole
1-[2-(3,3-dimethylbicyclo[2.2.1]heptan-2-ylidene)ethyl-]imidazole
1-(4-azabicyclo[2.2.2]octan-2-ylmethyl)imidazole
1-(8-methyl-8-azabicyclo[3.2.1]octan-3-ylmethyl) or a pharmaceutically acceptable acid addition salt thereof.

4,525,476

N-[1-OXO-3-(5-OXO-2-PYRROLIDINYL)PROPYL]-ALPHA-AMINOACIDS AND DERIVATIVES AS COGNITION ACTIVATORS

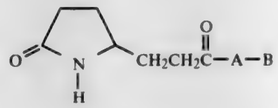
Donald E. Butler; Fred M. Hershenson, and Michael R. Pavia, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 26, 1983, Ser. No. 498,449

Int. Cl.[3] **C07D** *403/06, 401/06, 207/09;* **A61K** *31/40*

U.S. Cl. 514—326 **21 Claims**

1. A compound having the structural formula



wherein A is a divalent alpha-aminoacid group selected from alanine, valine, leucine, isoleucine, phenylalanine, tryptophan, methionine, glycine, serine, threonine, cysteine, tyrosine, asparagine, glutamine, proline, and pipecolic acid, and B is hydroxy, alkoxy of from one to six carbon atoms, haloalkoxy of from two to six carbon atoms where the halo-atom is attached to carbon two to six of the haloalkoxy group, $—NR_1R_2$ where R_1 and R_2 are independently hydrogen or alkyl of from one to six carbon atoms, or $—OR_3$ where R_3 is a pharmaceutically acceptable cation.

4,525,477

2-THIAZOLYL, ISOTHIAZOLYL, OXAZOLYL AND ISOXAZOLYL ALKYLAMINO-3-NITRO-HETEROCYCLIC COMPOUNDS

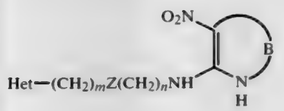
Michael L. Roantree, Welwyn Garden City, and Rodney C. Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 326,877, Dec. 2, 1981, Pat. No. 4,405,624, which is a division of Ser. No. 159,525, Jun. 16, 1980, Pat. No. 4,324,789, which is a division of Ser. No. 43,785, May 30, 1979, Pat. No. 4,238,493. This application Apr. 25, 1983, Ser. No. 488,466

Int. Cl.[3] **C07D** *413/12;* **A61K** *31/44*

U.S. Cl. 514—333 **5 Claims**

1. A compound represented by Structure 1:



Structure 1

in which

Het is attached at a ring carbon and is selected from the group consisting of thiazole, isothiazole, oxazole or isoxazole rings, such rings being unsubstituted or substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen, hydroxy, lower alkoxy or amino;

Z is a sulphur, methylene or oxygen;

m is 0, 1 or 2 and n is 2 or 3 provided that m+n is 3 or 4; and

B is a 1,2-ethanediyl (—CH_2—CH_2—) or 1,3-propanediyl (—$CH_2CH_2CH_2$—) group, which group is unsubstituted or substituted with one lower alkyl, aryl, aryl lower alkyl or heteroaryl lower alkyl groups, aryl being phenyl or phenyl substituted by lower alkyl, lower alkoxy or halogen and heteroaryl being 2-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl said heteroaryl being unsubstituted or substituted by lower alkyl or lower alkoxy, or a pharmaceutically acceptable acid addition salt thereof.

4,525,478

CERTAIN 4-ARYL-1,4-DIHYDRO-3,5-PYRIDINEDICARBOXYLATES HAVING VASODILATING AND ANTI-HYPERTENSIVE PROPERTIES

Yoshinari Sato, Takaishi, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

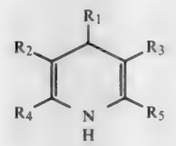
Division of Ser. No. 213,048, Dec. 4, 1980, Pat. No. 4,370,334, which is a division of Ser. No. 39,752, May 17, 1979, Pat. No. 4,284,634, which is a continuation-in-part of Ser. No. 809,788, Jun. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 701,994, Jul. 1, 1976, Pat. No. 4,145,432. This application Sep. 3, 1982, Ser. No. 414,842

Claims priority, application United Kingdom, Jul. 2, 1975, 27945/75; Sep. 29, 1975, 39854/75; Dec. 16, 1975, 51524/75; Apr. 5, 1976, 13761/76; Dec. 17, 1976, 52720/76; Jun. 6, 1978, 26429/76; Oct. 10, 1978, 39978/78

Int. Cl.[3] **C07D** *211/90, 213/55;* **A61K** *31/455*

U.S. Cl. 514—350 **21 Claims**

1. A compound of the formula:



wherein

R_1 is unsubstituted phenyl, monosubstituted phenyl wherein the substitutent is selected from halogen, nitro, trifluoromethyl, lower alkoxy, lower alkenyloxy, cyano, methyl and lower alkoxycarbonyl, disubstituted phenyl wherein the substituents are selected from 2-chloro-5-nitro, 2,4-dichloro, 3,4-dichloro and 3,4-dimethoxy,

R_2 is lower alkoxycarbonyl,

R_3 is lower alkoxycarbonyl, hydroxy(lower)alkoxycarbonyl, lower alkoxy(lower)alkoxycarbonyl, phenyl(lower-)alkoxy(lower)alkoxycarbonyl, phenoxy(lower)alkoxycarbonyl, N,N-di(lower)alkylamino(lower)alkoxycarbonyl, or N-lower alkyl-N-phenyl(lower)alkylamino(lower-)alkoxycarbonyl,

R_4 is hydroxyimino(lower)alkyl, and

R_5 is lower alkyl.

18. A method for effecting vasodilation in humans and mammals which comprises administering thereto an oral daily dose of 0.1 to 500 mg. or 10 to 25% thereof intravenously of the compound of claim **1**.

4,525,479

7-OXABICYCLOHEPTANE SUBSTITUTED THIOCARBAMATE PROSTAGLANDIN ANALOGS USEFUL AS CARDIOVASCULAR AGENTS

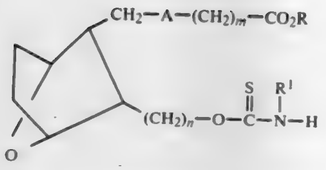
Jagabandhu Das, Plainsboro, and Martin F. Haslanger, Lambertville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 29, 1983, Ser. No. 527,070

Int. Cl.[3] **A61K** *31/34;* **C07D** *307/00*

U.S. Cl. 514—469 **14 Claims**

1. A compound having the structural formula



and including all stereoisomers thereof;

wherein A is CH=CH, a single bond, CH_2 or $(CH_2)_2$;

m is 0 to 8 but where A is CH=CH, m is at least 1; n is 1 to 5; R is H or lower alkyl; and R^1 is lower alkyl; lower alkyl including a halo-substituent an alkoxy substituent, an aryl substituent, an alkyl-aryl substituent, a haloaryl substituent, a cycloalkyl substituent or an alkylcycloalkyl substituent; aryl; aryl including a lower alkyl substituent, a halogen substituent or a lower alkoxy substituent; aralkyl; lower alkoxy; aralkoxy; cycloalkyl; or cycloalkyl including 1 or 2 halogen substituents, 1 or 2 lower alkyl substituents or 1 or 2 lower alkoxy substituents;

as employed above the term lower alkyl or alkyl by itself or as part of another group contains up to 12 carbons;

as employed above the term aryl by itself or as part of another group refers to monocyclic or bicyclic aromatic groups containing from 6 to 10 carbons in the ring portion;

as employed above the term cycloalkyl by itself or as part of another group refers to saturated cyclic hydrocarbon groups containing 3 to 12 carbons; and wherein $(CH_2)_m$ and $(CH_2)_n$ may be substituted by one or more alkyl substituents.

9. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim **1** or a pharmaceutically acceptable salt thereof.

4,525,480

COMPOSITION OF MATTER CONTAINING CINNAMALDEHYDE AND PARABENS

Philip A. Berke, Madison, and William E. Rosen, Summit, both of N.J., assignors to Sutton Laboratories, Inc., Chatham, N.J.

Filed Jun. 10, 1983, Ser. No. 503,166

Int. Cl.³ A01N *37/10*

U.S. Cl. 514—544 **8 Claims**

1. A preservative composition comprising cinnamaldehyde and at least one ester of p-hydroxybenzoic acid selected from the group consisting of methylparaben, propylparaben and mixtures thereof having anti-microbial activity in a weight ratio of about 1:8 to 2:1.

4,525,481

ACETALDEHYDE PRODUCTION FROM SYNTHESIS GAS

Jiang-Jen Lin, Round Rock, and John F. Knifton, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 27, 1984, Ser. No. 584,076

Int. Cl.³ C07C *27/06*

U.S. Cl. 518—700 **12 Claims**

1. A process for preparing acetaldehyde which comprises contacting a mixture of carbon monoxide and hydrogen with an iodide-free catalyst system comprising elemental ruthenium, an iodide-free quaternary phosphonium or ammonium base or salt and a halide-free cobalt-containing compound at a pressure of 500 psig or greater, and at a temperature of about 150° C. or greater.

4,525,482

PROCESS FOR PRODUCING A GAS CONTAINING METHANE

Kozo Ohsaki, Funabashi; Katsutoshi Kikuchi, Chiba, and Yoshitsugu Hirota, Mobara, all of Japan, assignors to Toyo Engineering Corporation, Tokyo, Japan

Filed Mar. 22, 1984, Ser. No. 592,153

Claims priority, application Japan, Mar. 23, 1983, 58-48372

Int. Cl.³ C07C *1/04*

U.S. Cl. 518—707 **16 Claims**

1. In a process for producing a methane-containing gas by contacting a methane synthesis gas comprising hydrogen and carbon monoxide with a methanation catalyst at an elevated temperature within a fixed catalyst bed of a methanation reactor, the improvement which comprises:

flowing said synthesis gas substantially horizontally through said catalyst bed, the flow of said synthesis gas being substantially perpendicular to the longitudinal directions of a plurality of vertically extending cooling tubes which extend through said catalyst bed;

flowing a liquid coolant at the boiling temperature thereof under pressure upwardly through said cooling tubes;

collecting a reaction product gas containing methane from an outlet of said catalyst bed; and

recirculating, without cooling, a portion of said product gas and mixing said portion of said product gas with a fresh feed gas containing hydrogen and carbon monoxide, the molar amount of said product gas to be mixed with said feed gas being less than 5 times the molar amount of said feed gas; and

feeding the mixture of said feed gas and said recirculated product gas into said catalyst bed as said synthesis gas.

4,525,483

CHROMATE ION REMOVAL FROM AQUEOUS SOLUTIONS

Jesse G. Grier, Rte. #1, Gilbertsville, Ky. 42044, and Jimmie R. Hodges, 1408 Crestmont Dr., Downingtown, Pa. 19335

Division of Ser. No. 118,047, Feb. 4, 1980, Pat. No. 4,335,000, which is a continuation-in-part of Ser. No. 956,755, Nov. 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 832,866, Sep. 13, 1977, abandoned. This application Feb. 1, 1982, Ser. No. 344,457

Int. Cl.³ C08D *5/20*

U.S. Cl. 521—28 **2 Claims**

1. A composition of matter comprising an intimate mixture of anion exchange resin in the chloride form and weak cation exchange resin in the conditioned hydrogen form, said cation exchange resin being present in said mixture in an amount of from about 0.25 parts to about 2.0 parts by weight for each part by weight of anion exchange resin.

4,525,484

PARTICULATE POLYSTYRENE CONTAINING BLOWING AGENT AND HAVING IMPROVED EXPANDABILITY

Klaus Hahn, Kirchheim; Paul Wittmer, Landau; Isidoor De Grave, Wachenheim; Rupert Schick, Limburgerhof, and Adolf Echte, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 531,658, Sep. 13, 1983,. This application Jun. 21, 1984, Ser. No. 623,197

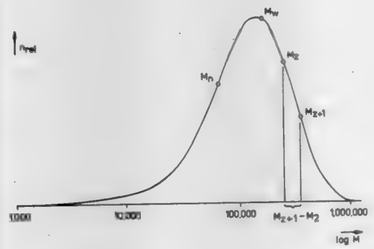
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1982, 3234660

Int. Cl.³ C08J *9/18, 9/20*

U.S. Cl. 521—56 **1 Claim**

1. A particulate polystyrene containing blowing agent and having improved expandability, wherein the polystyrene has a weight-average mean molecular weight M_w, measured by gel permeation chromatography, of from 130,000 to 180,000, and

the high molecular weight flank of the molecular weight distribution curve, the molecular weight being measured by the



same method, is so steep that the difference between the mean values ($M_{Z+1}-M_Z$) is less than 150×10^3.

4,525,485

PRE-EXPANDING PROCESS AND APPARATUS FOR THE SAME

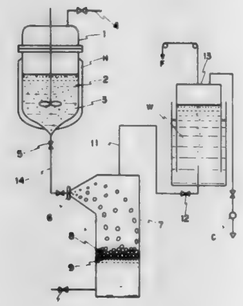
Hirofumi Maeda, Takatsuki; Kyoichi Nakamura, Osaka, and Hisatoshi Fukui, Toyonaka, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 6, 1984, Ser. No. 647,659

Claims priority, application Japan, Sep. 8, 1983, 58-166144; Sep. 8, 1983, 58-166145

Int. Cl.³ C08J *9/22*

U.S. Cl. 521—58 **3 Claims**



1. A process for preparing pre-expanded particles of a thermoplastic resin which comprises; heating under an elevated pressure an aqueous dispersion comprising thermoplastic resin particles containing a volatile foaming agent and an aqueous medium in a pressure vessel; releasing the dispersion from the pressure vessel into a space within a sealed low-pressure vessel wherein the pressure is lower than that in the pressure vessel, whereby expanding the thermoplastic resin particles to give pre-expanded particles; and simultaneously recovering the foaming agent volatilized from the thermoplastic resin particles by discharging the foaming agent out of the space in the low-pressure vessel with controlling the pressure in the low-pressure vessel to substantially a given pressure.

4,525,486

PROCESS FOR PREPARING MODIFIED POLYOLEFIN PARTICLES AND FOAMED ARTICLE MADE FROM THE PARTICLES

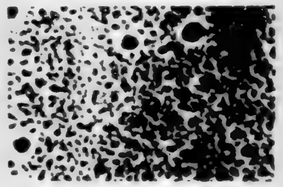
Shigeru Kobayashi, Takatsuki, and Munehiro Nakamura, Kobe, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 28, 1983, Ser. No. 546,523

Claims priority, application Japan, Oct. 30, 1982, 57-191487; Jun. 13, 1983, 58-106368; Jun. 13, 1983, 58-106369

Int. Cl.³ C08J *9/18*

U.S. Cl. 521—59 **17 Claims**



1. A process for preparing modified foamable polyolefin particles which comprises dispersing previously cross-linked polyolefin particles and a polymerizable vinyl monomer capable of dissolving or swelling the cross-linked polyolefin particles in an aqueous medium, the degree of crosslinking of the cross-linked polyolefin particles being from 10 to 80% by weight; impregnating the cross-linked polyolefin particles uniformly inside with the vinyl monomer; polymerizing the vinyl monomer within the impregnated polyolefin particles; and thereafter impregnating the resulting polyolefin particles with a foaming agent.

4,525,487

METHOD FOR MAKING POLYESTER RESIN FOAM BY SPRAYING

James Ahnemiller, Middlebury, and Warren J. Peascoe, Woodbridge, both of Conn., assignors to Uniroyal, Inc., Middlebury, Conn.

Filed Aug. 11, 1983, Ser. No. 522,125

Int. Cl.³ C08J *9/10*

U.S. Cl. 521—78 **5 Claims**

1. A method for making cured and foamed polyester by spraying comprising

(A) providing a mixture of (a) 100 parts by weight liquid unsaturated polyester resin, (b) 0.5–8 parts by weight substituted sulfonyl hydrazide blowing agent, (c) 1–4 parts by weight of an organic metal salt promoter for curing said resin, and 0.025–2 parts by weight quaternary ammonium salt;

(B) providing a catalyst effective to causing curing and expanding the mixture of (A) and

(C) bringing into contact the mixtures (A) and (B) and depositing the resulting blend onto a surface by spraying means;

wherein the sulfonyl hydrazide blowing agent has the formula $R(SO_2NHNH_2)_r$ where r equals 1, and R is C_1–C_{12} alkyl, C_5–C_6 cycloalkyl, C_7–C_{10} aralkyl, phenyl, naphthyl or phenyl substituted with halogen, C_1–C_{12} alkyl or C_1–C_4 alkoxy, whereby there is formed a foam free from cracking or splitting.

4,525,488

PREPARATION OF POLYADDITION PRODUCTS OF MANNICH CONDENSATES AND POLYISOCYANATES IN POLYOLS AND THEIR USE IN POLYURETHANES

Michael Cuscurida, and George P. Speranza, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 13, 1984, Ser. No. 650,383
Int. Cl.³ C08G 18/14
U.S. Cl. 521—164 18 Claims

1. A stable dispersion of polyaddition products made by the reaction of

a. a Mannich condensate made by reacting a phenol with an alkanolamine and formaldehyde, in the absence of subsequent water removal and the absence of subsequent alkylene oxide addition, and

b. an organic polyisocyanate in

c. a polyether polyol.

4,525,489

PHOSPHONIUM CARBOXYLATE CATALYSTS FOR THE PREPARATION OF FOAMS CHARACTERIZED BY ISOCYANURATE, AND/OR URETHANE LINKAGES

Thirumurti Narayan, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 200,508, Oct. 24, 1980, abandoned. This application Aug. 28, 1981, Ser. No. 297,244
Int. Cl.³ C08G 18/14
U.S. Cl. 521—108 12 Claims

1. A process for the preparation of a cellular foam characterized by isocyanurate linkages which comprises reacting an organic polyisocyanate in the presence of a blowing agent and a catalytically sufficient amount of a catalyst which is the reaction product of

(a) a tertiary phosphine,

(b) an alkylene oxide containing from 2 to 18 carbon atoms, and

(c) a carboxylic acid in a ratio of 0.75 mole to 1.25 moles of alkylene oxide to 0.75 equivalent to 1.25 equivalents of acid per equivalent of phosphorus.

4,525,490

HIGH TEAR STRENGTH FLEXIBLE URETHANE FOAM COMPOSITION AND METHOD OF PREPARATION

Stuart B. Smith, Conyers, Ga., assignor to Thermocell Development, Ltd., Knoxville, Tenn.

Filed Jul. 2, 1984, Ser. No. 627,191
Int. Cl.³ C08G 18/14, 18/32, 18/48
U.S. Cl. 521—124 22 Claims

1. A flexible polyurethane foam composition characterized by a high tensile or tear strength, which foam composition is prepared by reacting

(a) 100 parts by weight of a MDI-polyol prepolymer, which prepolymer is prepared by reacting 100 parts of MDI having a functionality of about 2.4 or less with from about 35 to 75 parts by weight of an ethylene oxide-capped polyol;

(b) about 2 to 10 parts by weight of a tetraethylene glycol; and

(c) about 90 to 120 parts by weight of an ethylene oxide-capped polypropylene glycol polyol, the reaction carried out in the presence of a blowing amount of a blowing agent and a catalytic amount of a polyurethane catalyst to produce a flexible polyurethane foam of high tensile or tear strength.

4,525,491

PROCESS FOR PRODUCING A POLYURETHANE ELASTOMER BY REACTION INJECTION MOLDING

Shigeyuki Narisawa, Yokohama; Masahiko Funaki, Chigasaki; Hiroaki Kojima, and Kazuhiko Kuga, both of Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,516
Claims priority, application Japan, Dec. 24, 1982, 57-225784; Apr. 8, 1983, 58-60985
Int. Cl.³ B29D 27/00
U.S. Cl. 521—174 39 Claims

1. A process for producing a shaped article of a non-cellular or microcellular polyurethane elastomer by reaction injection molding by using at least two components of (A) a polyol component comprising a high molecular weight polyol and a chain extender as essential ingredients and (B) an isocyanate component comprising a polyisocyanate compound as essential ingredient, characterized in that substantially all or at least 80% by weight of said high molecular weight polyol is composed of a polyoxyalkylene polyol, and the polyoxyalkylene polyol is a single or mixed polyoxyalkylene polyol which has an average hydroxyl number of from 2.0 to 3.5 and an average hydroxyl value of from 15 to 60 and contains at least 5% by weight, on an average, of oxyethylene groups at the terminal portions of the oxyalkylene chain and in which the total oxyethylene group content is, on an average, less than 21% by weight and the average unsaturated monool content is at most 0.085 meq/g.

37. A shaped article of a polyurethane elastomer produced by the process according to claim 1.

4,525,492

MODIFIED PHENOLIC FOAMS

Mary H. Rastall, Sarnia; Norman H. Ng, Mississauga, and Edwin J. MacPherson, Sarnia, all of Canada, assignors to Fiberglas Canada Inc., Toronto, Canada

Filed Jun. 4, 1982, Ser. No. 385,260
Int. Cl.³ C08G 8/00; C08J 9/04
U.S. Cl. 521—181 20 Claims

1. A method of making a phenolic foam material consisting essentially of the steps of:

(1) preparing a base-catalyzed phenol-formaldehyde resole having a mole ratio of phenol to formaldehyde of between 1:3 and 1:4.5 and containing substantially no free phenol; and

(2) reacting 100 parts by weight, calculated as resin solids, of an aqueous solution of said resole of step (1) with:

(a) 10 to 55 parts by weight of a co-reactant selected from the group consisting of urea, melamine and dicyandiamide to reduce the amount of free formaldehyde contained in said resole;

(b) 0.1 to 10 parts by weight of a surfactant;

(c) 3 to 25 parts by weight of a blowing agent; and

(d) a catalyst consisting of an acidic material to reduce the pH of the mixture to below 4, or a basic material to increase the pH of the mixture to above 8.

9. A foamable phenolic composition consisting essentially of:

(1) 100 parts weight, calculated as resins solids, of an aqueous solution of a base-catalyzed phenol-formaldehyde resole having a mole ratio of phenols to formaldehyde of between 1:3 and 1:4.5 and containing substantially no free phenol;

(2) 10 to 55 parts by weight of a co-reactant selected from the group consisting of urea, melamine and dicyandiamide;

(3) 0.1 to 10 parts by weight of a surfactant;

(4) 3 to 25 parts by weight of a blowing agent; and

(5) a catalyst consisting of an acidic material to reduce the pH of the reaction mixture to below 4, or a basic material to increase the pH of the reaction mixture to above 8.

4,525,493

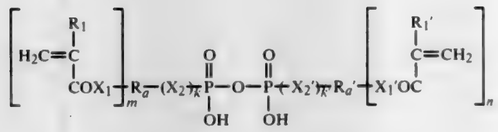
HIGHLY WATER-RESISTANT ADHESIVE

Ikuo Omura, and Junichi Yamauchi, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jan. 25, 1984, Ser. No. 573,618
Claims priority, application Japan, Jan. 31, 1983, 58-15072
Int. Cl.³ A61K 6/02; C08F 4/34, 130/02; C09K 3/00
U.S. Cl. 523—116 23 Claims

1. An adhesive which comprises

(a) 1 part by weight of a compound of the formula



wherein

R_1 and R_1' are H or a methyl group,

X_1, X_1', X_2, and X_2' are O, S, or NR_α;

wherein

R_α is H or a C_{1-6} alkyl group,

m is an integer of 1 to 4,

n is an integer of 0 to 4,

k and k' are 0 or 1,

R_a is a C_{8-40} organic residue having a valence of (m+1), and

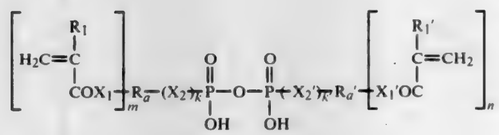
R_a' is a C_{1-40} organic residue having a valence of (n+1); and

(b) 0 to 199 parts by weight of a monomer which is copolymerizable with the compound of (a).

19. A method for restoring a decayed tooth which comprises:

(I) applying an adhesive to the surface of the tooth cavity; said adhesive comprising

(a) 1 part by weight of a compound of the formula



wherein

R_1 and R_1' are H or a methyl group,

X_1, X_1', X_2, and X_2' are O, S, or NRα;

wherein

R_α is H or a C_{1-6} alkyl group,

m is an integer of 1 to 4,

n is an integer of 0 to 4,

k and k' are 0 or 1,

R_a is a C_{8-40} organic residue having a valence of (m+1), and

R_a' is a C_{1-40} organic residue having a valence of (n+1),

(b) 0 to 199 parts by weight of a monomer which is copolymerizable with said compound (a), and

(c) 0.01 to 20 parts by weight of a curing agent per 100 parts by weight of the polymerizable monomers of (a)+(b), and

(II) subsequently filling the cavity with a dental filling material comprising a polymerizable monomer, a filler, and a curing agent.

4,525,494

HIGH STRENGTH FLAME RESISTANT POLY-OLEFINS COMPRISING SURFACE COATED ALUMINA HYDRATE PLUS ORGANIC TITANATE AND METHODS OF MAKING THE SAME

Robert Andy, c/o Washington Penn Plastic Co., Inc., 2833 W. Chestnut St., Washington, Pa. 15301

Filed Jun. 9, 1981, Ser. No. 271,852
Int. Cl.³ C08K 9/04, 5/56; C08F 210/06, 10/06
U.S. Cl. 523—200 7 Claims

1. A flame retardant polypropylene composition comprising about 60% to 64% alumina hydrate surface coated with about 1.0 wt. % of isostearic acid, about 0.25% to 1% organic titanate and the balance polypropylene resin.

4,525,495

MINERAL FILLED COMPOSITES

Linneaus C. Dorman, and Paul A. Meyers, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 22, 1983, Ser. No. 516,081
Int. Cl.³ C08K 3/34
U.S. Cl. 523—205 40 Claims

1. A composite material consisting essentially of from about 25 to about 75 percent by weight of an inorganic mineral filler which has been surface-modified by treatment with a partially hydrolyzed polyoxazoline and from about 75 to about 25 percent by weight of an α-amino acid polymer.

4,525,496

SELF-INVERTING WATER-IN-OIL EMULSIONS OF WATER-SOLUBLE POLYMERS

Timothy J. Adaway; Harold G. Fravel, Jr., both of Midland, and James P. Easterly, Jr., Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 17, 1981, Ser. No. 284,296
Int. Cl.³ G21K 1/10
U.S. Cl. 523—337 15 Claims

1. A self-inverting, stable water-in-oil emulsion comprising (1) a discontinuous aqueous phase containing a water-soluble polymer which discontinuous phase is dispersed in (2) a continuous oil phase wherein the emulsion contains an inverting amount of an inverting surfactant and an emulsifying amount of a water-in-oil emulsifier, said emulsion having been prepared by polymerizing a water-in-oil emulsion of a water-soluble ethylenically unsaturated monomer containing a portion of the inverting surfactant and adding the remainder of said inverting surfactant to the resultant water-in-oil emulsion of water-soluble polymer subsequent to polymerization, said portion added prior to the completion of polymerization being a sufficient amount of a nonionic surfactant to increase the degree of inversion when the water-in-oil emulsion of water-soluble polymer is inverted into a continuous aqueous phase.

4,525,497

PROCESS FOR PRODUCING EPOXY-TYPE-LACQUER

Seishichi Kobayashi; Tetsuo Miyazawa, both of Yokohama, and Hiroshi Ueno, Yokosuka, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jan. 26, 1984, Ser. No. 574,081
Claims priority, application Japan, Jan. 26, 1983, 58-9965
Int. Cl.³ C09D 3/52, 3/58, 3/66, 3/76
U.S. Cl. 523—400 9 Claims

1. A process for producing an epoxy lacquer, which comprises reacting a liquid epoxy resin having about one bisphenol A skeleton on an average on the molecular chain and derived from bisphenol A and an epihalohydrin, with bisphenol A in the presence of a catalyst in an inert organic solvent to prepare a concentrated solution of an epoxy resin having a number average molecular weight of from 2,000 to 10,000, stopping the reaction by adding an organic solvent to the concentrated solution to dilute it and maintain it at a temperature lower than

that at which said catalyst is active, and mixing the resulting diluted solution with a solution of a resin having a functional reactive group acting as a curing agent for the epoxy resin.

4,525,498

POLYESTER FIBER REINFORCED MOLDING COMPOUNDS

Kenneth E. Atkins, South Charleston, and Robert R . Gentry, Saint Albans, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 194,070, Oct. 16, 1980, abandoned, which is a continuation-in-part of Ser. No. 094,949, Nov. 16, 1979, abandoned. This application Jan. 12, 1984, Ser. No. 569,591

Int. Cl.³ C08L *31/04, 63/00, 67/06*

U.S. Cl. 523—511 **23 Claims**

1. In a low profile additive composition containing a thermosetting unsaturated polyester, a thermoplastic polymer additive to control shrinkage, and an ethylenically unsaturated polymerizable monomer suitable for use in molding applications, the improvement which comprises incorporating into said mixture an epoxy compound having at least one 1,2-epoxy group per molecule, said epoxy compound being essentially free of reactive unsaturation.

4,525,499

NON-AQUEOUS DISPERSION TYPE RESIN COMPOSITION

Masaaki Hayashi, Tokyo, and Hiroharu Sasaki, Yamato, both of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Filed May 17, 1984, Ser. No. 611,144

Claims priority, application Japan, May 26, 1983, 58-93277; May 30, 1983, 58-95380; Aug. 26, 1983, 58-155920

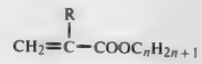
Int. Cl.³ C08L *67/06;* **C09D** *3/64, 3/80, 5/02*

U.S. Cl. 523—523 **13 Claims**

1. A non-aqueous dispersion type resin composition comprising (I) a non-polar or slightly polar aliphatic hydrocarbon solvent as a dispersion medium, and (II) particles stably dispersed in the dispersion medium, wherein each of said particles is composed of:

(A) from 20 to 70% by weight of a disperse particle made of (a) a polyester-modified vinyl copolymer containing a hydroxyl group, (b) a vinyl copolymer containing a hydroxyl group or (c) a vinyl ester-modified vinyl copolymer containing a hydroxyl group, and

(B) from 80 to 30% by weight of a vinyl resin dispsersion stabilizer surrounding the disperse particle as a protective layer, which has a component compatible with the disperse particle or is chemically bonded thereto and which is solvated by the dispersion medium, said dispersion stabilizer being a copolymer of from 5–30% by weight of (i) an N-alkoxymethylated monomer of an α,β-monoethylenically unsaturated carboxylic acid amide, from 5–60% by weight of (v) an α,β-monoethylenically unsaturated monomer represented by the general formula:



where R is H or CH_3, and n is an integer of 6–18, and from 10–90% by weight of (ii) an α,β-monoethylenically unsaturated monomer other than the monomer (i) and (v), and said dispersion medium is capable of dissolving the dispersion stabilizer and incapable of dissolving the disperse particles.

4,525,500

POLYMER-MODIFIED CEMENT MORTARS AND CONCRETES AND PROCESSES FOR THE PRODUCTION THEREOF

Michael E. Lynn, Tonbridge, United Kingdom, assignor to Marley Tile A.G., United Kingdom

Filed Jul. 6, 1982, Ser. No. 395,739

Claims priority, application United Kingdom, Jul. 7, 1981, 8120926

Int. Cl.³ C04B *7/02*

U.S. Cl. 524—5 **13 Claims**

1. A process for the production of mortars and concretes which comprises curing a composition which contains hydraulic cement and an aqueous dispersion of a polymer or copolymer of a methacrylic or acrylic acid ester by means of a two stage curing process, the first stage being carried out at an elevated temperature under conditions of high humidity whereby hydration of the cement is effected, and the second stage being carried out under drying conditions and elevated temperature whereby curing of the polymer or copolymer is effected, the said polymer or copolymer dispersion having a viscosity of less than 1,500 cps when measured by means of a Brookfield LVT viscometer using spindle 2, 12 rpm at a temperature of 23° C., and a minimum film-forming temperature (MFT) of not lower than 5° C., wherein the polymer or copolymer is present in an amount of from 10 to 40% based upon the weight of cement in the composition.

4,525,501

PROTECTION AGAINST SOILING

Edward C. Norman, and Howard A. Dowell, both of Downingtown, Pa., assignors to Enterra Corporation, Lionville, Pa.

Division of Ser. No. 066,022, Aug. 13, 1979, Pat. No. 4,347,266. This application Oct. 5, 1981, Ser. No. 308,261

Int. Cl.³ C08L *5/04*

U.S. Cl. 524—28 **9 Claims**

1. A protective composition that deposits a solid protective coating film which can be flushed off with water, said composition being an aqueous dispersion of a water-dispersed film former containing about ¼% to about 10% of the film former by weight, a hydrophilic plasticizer for the film former, the amount of such plasticizer being more than twice that of the film former by weight, the composition containing a levelling agent for the plasticized film former, the agent being in an amount that causes the composition to essentially uniformly wet a water-repellent surface, the composition being removable by flushing with a water jet after drying and then standing in the hot sun for several days, and the composition also containing not over 2% total surfactant.

4,525,502

WATER BASED RESIN EMULSIONS

Frank J. Traver, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed May 5, 1983, Ser. No. 491,795

Int. Cl.³ C08K *5/17;* **C08L** *83/06;* **C09D** *3/82, 5/02*

U.S. Cl. 524—96 **35 Claims**

1. A uniformly coatable water-based silicone resin emulsion comprising:

(a) 100 parts by weight of at least one organopolysiloxane resin composition consisting essentially of zero to 50 percent by weight monofunctional units of the formula $R_3SiO_{0.5}$, zero to 60 percent by weight difunctional units of the formula R_2SiO, zero to 100 percent by weight trifunctional units of the formula $RSiO_{1.5}$, and zero to 60 percent by weight tetrafunctional units of the formula SiO_2 wherein R is a substituted or unsubstituted monovalent hydrocarbon radical and said organopolysiloxane resin has approximately 1.0 to 1.8 R groups for each silicon atom;

(b) 0.25 to 50 parts by weight of a single emulsifying agent per 100 parts of said organopolysiloxane resin wherein said emulsifying agent is comprised of the salt of a C_6–C_{30} monocarboxylic aliphatic acid and ammonia or a primary, secondary or tertiary amine of the formula $H_aNR'_b$, wherein a and b are positive integers from 1 to 3 and a+b=3, and wherein R′ is a monovalent hydrocarbon, halogenated hydrocarbon or heterocyclic radical of from 1 to 30 carbon atoms, or a mixture of such salts, wherein said emulsifying agent is effective for dispersing said organopolysiloxane resin in a water-based emulsion; and

(c) sufficient water to provide a stable aqueous emulsion.

8. An emulsion as in claim 1 wherein said salt is one or a mixture of the reaction products of a monocarboxylic acid selected from oleic acid, stearic acid, linoleic acid, lauric acid, palmitic acid, linolenic acid, capric acid or caprylic acid, with an amine selected from ammonia, morpholine, or triethanolamine.

4,525,503

PIPERIDINE DERIVATIVES WHICH ARE STABILIZERS FOR SYNTHETIC POLYMERS

Giuseppe Cantatore, Casalecchio di Reno, Italy, assignor to Ciba-Geigy S.p.A., Bologna, Italy

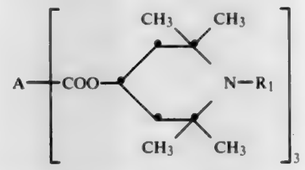
Division of Ser. No. 215,925, Dec. 12, 1980, Pat. No. 4,369,321. This application Sep. 8, 1982, Ser. No. 415,919

Claims priority, application Italy, Dec. 21, 1979, 28324 A/79

Int. Cl.³ C08K *5/34;* **C07D** *401/12*

U.S. Cl. 524—98 **8 Claims**

1. A compound of the formula



or an acid addition salt thereof, in which R_1 represents

(a) hydrogen,

(b) C_1–C_{12}-alkyl,

(c) $—CH_2CN$

(d) C_3–C_{12}-alkenyl,

(e) C_3–C_{12}-alkinyl,

(f) benzyl,

(g) benzyl substituted by 1 to 3 C_1–C_4-alkyl radicals,

(h) hydroxybenzyl,

(i) hydroxybenzyl substituted by 1 to 3 C_1–C_4-alkyl radicals,

(j) a $—COR_8$, $—COOR_8$, $—CH_2COOR_8$ or $—CONR_8R_9$ radical in which R_8 and R_9, which may be identical or different, represent

(1) linear or branched C_1–C_{12}-alkyl,

(2) C_3–C_{12}-alkenyl,

(3) C_5–C_{12}-cycloalkyl,

(4) phenyl,

(5) phenyl substituted by 1 to 3 C_1–C_8-alkyl radicals,

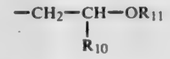
(6) hydroxyphenyl,

(7) hydroxyphenyl substituted by 1 to 3 C_1–C_8-alkyl radicals,

(8) C_7–C_{12}-aralkyl, or

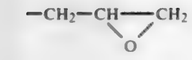
(9) 2,2,6,6-tetramethyl-piperidin-4-yl,

(k) a



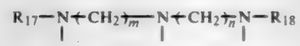
radical, in which R_{10} is hydrogen methyl or phenyl and R_{11} is hydrogen, $—R_8$, $—COR_8$ or $—CONR_8R_9$, in which R_8 and R_9 are as defined above, or

(l) a

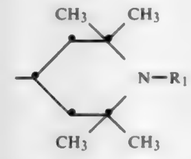


radical;

and A is a radical of the formula



in which R_{17} and R_{18} may be identical or different and represent C_1–C_{12} alkyl, C_5–C_{12} cycloalkyl or a radical of the formula



in which R_1 is as defined above, and m and n, which may be identical or different, are integers from 2 to 6, or A is a trivalent radical of a 6–7-membered heterocyclic compound containing 3 nitrogen atoms in the ring, with the free valencies on the three nitrogen atoms.

4,525,504

STABILIZED POLYESTER COMPOSITIONS SUITABLE FOR OUTDOOR APPLICATIONS

John C. Morris, and Joseph S. Zannucci, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,034

Int. Cl.³ C08K *5/34, 5/07, 5/10*

U.S. Cl. 524—99 **25 Claims**

1. A polyester composition having a 264 psi heat deflection temperature greater than 60° C. comprising

A. a dicarboxylic acid component wherein at least a major portion of which is 1,4-cyclohexanedicarboxylic acid having a trans isomer content of at least 65%,

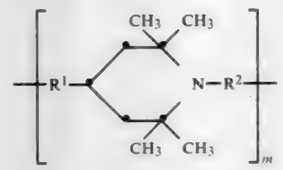
B. a glycol component, wherein at least a major portion of which is 2,2,4,4-tetramethyl-1,3-cyclobutanediol,

C. a stabilizing effective amount of the combination of

1. at least one ultraviolet light stabilizing compound compatible with said polyester, and

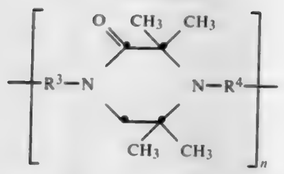
2. at least one hindered amine light stabilizing compound having the formulae

I



or

-continued



II

wherein m and n are each integers of from 1 to 20, R^1, R^2, R^3 and R^4 are each independently selected from hydrogen, substituted or unsubstituted alkyl having 1 to 20 carbon atoms, aryl having 6 to 22 carbon atoms, alkylene having 1 to 20 carbon atoms, cycloalkylene having 3 to 12 carbon atoms, hydroxyalkyl having 1 to 18 carbon atoms, and esters of said hydroxyalkyl; and alkylenecarboxylic acid having 2 to 18 carbon atoms and esters, amides and metal salts of said alkylenecarboxylic acid.

4,525,505

FIRE-RESISTANT POLYAMIDE MOULDING COMPOSITIONS

Heinz Bonten; Werner Nielinger; Dietrich Michael, and Heinrich Haupt, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 14, 1983, Ser. No. 561,302

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1982, 3248330

Int. Cl.³ C08K *5/34*

U.S. Cl. 524—100 **8 Claims**

1. A polyamide moulding composition containing from 10 to 18%, by weight, of melamine and from 1 to 7%, by weight of a thermoplastic polyacetal.

4,525,506

POLYHYDRIC ALCOHOL ETHERS OF 2,2,6,6-TETRAMETHYL-4-PIPERIDONE KETALS AND SYNTHETIC RESIN COMPOSITIONS

Motonobu Minagawa, Koshigaya; Naohiro Kubota, Ageo; Toshihiro Shibata, Omiya, and Ryozo Arata, Urawa, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

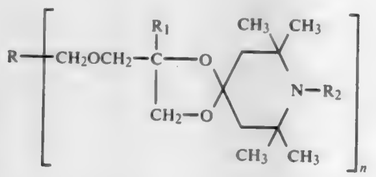
Filed Mar. 25, 1983, Ser. No. 478,610

Claims priority, application Japan, Mar. 31, 1982, 57-53270

Int. Cl.³ C08K *5/34*

U.S. Cl. 524—102 **26 Claims**

1. Polyhydric alcohol ethers of 2,2,6,6-tetramethyl-4-piperidone ketals having the formula:



wherein:

R is selected from the group consisting of alkylene having from one to about eight carbon atoms and alkyleneoxyalkylene in which each alkylene has from two to about eight carbon atoms;

R_1 is selected from the group consisting of hydrogen and alkyl having from one to about four carbon atoms;

R_2 is selected from the group consisting of hydrogen; oxyl O; alkyl, hydroxy alkyl and epoxyalkyl having from one to about eighteen carbon atoms; acyl having from one to about eighteen carbon atoms; cycloalkyl having from three to about eighteen carbon atoms; phenyl; phenalkyl and alkylphenyl having from seven to about twenty-four carbon atoms; and

n is a number from 3 to 6.

4,525,507

HIGH FLASH POINT/LOW SURFACE ENERGY SOLVENT SYSTEMS FOR POLYIMIDE CONFORMAL COATINGS

Mouhanad Chaker, 23 Moore Ct., Burlington, Vt. 05401; Roger J. Clark, R.D. #2, P.O. Box 540, Underhill, Vt. 05489, and James S. Hayes, 828 Hastings La., Warrenton, Va. 22186

Filed Dec. 30, 1983, Ser. No. 567,033

Int. Cl.³ C08L *79/08*

U.S. Cl. 524—104 **7 Claims**

1. An improved wire enamel consisting essentially of the following materials by weight wherein basis is wire enamel weight:

at least 50% by wt. of a polar organic solvent which is a substituted aliphatic hydrocarbon having a dipole moment of about 3 to about 5 Debyes or a substituted aromatic hydrocarbon having a dipole moment of about 0.0 to about 0.62 Debye and is selected from the group consisting of N,N-dimethylacetamide, N,N-dimethylformamide, 1-methyl-2-pyrrolidone, dimethylsulfoxide, toluene, p-xylene, m-xylene and o-xylene;

about 2–8% by wt. of a polyimide precursor which can be cured to yield a polyimide polymer;

about 0.5 to about 25% by weight of a substituted aliphatic hydrocarbon solvent for said polyimide precursor having a surface tension and polarity greater than that of the halogenated aliphatic hydrocarbon described below or a substituted aromatic hydrocarbon having a dipole moment less than or equal to the dipole moment of the halogenated aliphatic hydrocarbon described below, the substituted aliphatic hydrocarbon having a dipole moment of about 1 to about 3 Debyes and a surface tension of about 22 to about 35 dynes/cm, the substituted aliphatic hydrocarbon and the substituted aromatic hydrocarbon being different from the polar organic solvent and being selected from the group consisting of esters, alcohols, ketones, amines and amides;

about 5 to 40% by wt.. of a halogenated aliphatic hydrocarbon having a dipole moment of 0.0 to 0.8 Debye and a surface tension less than 22 dynes/cm, the halogenated aliphatic hydrocarbon having a boiling point less than 49° C.; and

0 to about 1% by wt. of an organosilane which increases the adhesion of the polyimide to an underlying substrate.

4,525,508

PLASTICIZED REINFORCED COMPOSITIONS OF A POLYPHENYLENE ETHER RESIN

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 334,636, Dec. 28, 1981, abandoned, which is a continuation of Ser. No. 755,025, Dec. 28, 1976, abandoned. This application May 12, 1983, Ser. No. 494,031

Int. Cl.³ C08K *3/10, 5/52, 3/26;* **C08L** *71/04*

U.S. Cl. 524—140 **33 Claims**

1. A reinforced, plasticized thermoplastic composition comprising:

(a) a polyphenylene ether resin;

(b) a plasticizer therefor in an amount at least sufficient to reduce the temperature of optimum extrusion at least about 25° F., said amount being at least about 15 parts per hundred parts by weight of said resin; and

(c) a mineral reinforcing agent selected from the group consisting of aluminum silicate (clay), talc, zinc oxide, titanium dioxide, barium sulfate, calcium carbonate, and antimony oxide, said agent being present in an amount at least sufficient to provide enhanced stiffness in comparision with a corresponding composition not containing said mineral reinforcing agent, said amount be at least about 20 parts per hundred parts by weight of resin.

4,525,509

METHOD FOR PRODUCING FREE-FLOWING, WATER-SOLUBLE POLYMER GELS

Wood E. Hunter, Pittsburgh, Pa., and Gary P. Craun, Wickliffe, Ohio, assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Dec. 16, 1983, Ser. No. 562,303

Int. Cl.³ C08J *3/12;* **C08K** *5/52;* **C08L** *39/00*

U.S. Cl. 524—141 **10 Claims**

1. A method for preparing free-flowing, water-soluble polymer gels comprising:

(a) reducing the size of a water-soluble polymer gel made from monomers selected from the group consisting of dimethyldiallyl ammonium chloride, diethyldiallyl ammonium chloride, methacryloyloxyethyl trimethyl ammonium chloride, acryloyloxyethyl trimethyl ammonium chloride, methacryloyloxyethyl trimethyl ammonium methosulfate, acryloyloxyethyl trimethyl ammonium and methacrylamido propyl trimethyl ammonium chloride, alone or copolymerized with acrylamide, methacrylamide and N,N-dimethylacrylamide or mixtures thereof, by a size-reduction means, so as to produce polymer gel particles which are less than ½ inch in their longest dimension; and

(b) adding to the size-reduced polymer gels of Step (a) 0.001 to 20 percent, by weight, of an amphipathic anionic phosphate ester, based on the total weight of said amphipathic compound and said polymer gel, thereby reducing the adhesion of said gel particles to themselves and other substances.

4,525,510

THERMOSETTING LATEX COATING COMPOSITIONS PRODUCED BY COPOLYMERIZATION IN AQUEOUS EMULSION IN THE PRESENCE OF WATER-INSOLUBLE POLYHYDRIC ALCOHOL

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 111,076, Jan. 10, 1976, Pat. No. 4,321,176. This application Feb. 17, 1981, Ser. No. 234,953

Int. Cl.³ C08K *5/42, 5/41*

U.S. Cl. 524—156 **10 Claims**

1. A thermosetting latex coating composition comprising a copolymer of monoethylenically unsaturated monomers copolymerized in aqueous emulsion in the presence of an anionic surfactant and about 1% to about 25%, based on the weight of the materials which are copolymerized, of a liquid water-insoluble polyhydric alcohol, said monomers including at least about 80% of nonreactive monomers and from about 0.5% to about 10%, based on the weight of the materials which are copolymerized, of a monomer carrying a reactive group capable of reacting with the hydroxy groups present when the latex is deposited and dried, said reactive group being a C_1–C_8 N-alkylol group etherified with a C_1–C_8 alcohol.

4,525,511

METHOD AND COMPOSITIONS FOR IMPROVING BONDING TO PAINTED SURFACES

Michael D. Kirby, Lakewood, and Michael P. Mazzeo, Hightstown, both of N.J., assignors to Essex Specialty Products, Inc., Sayreville, N.J.

Filed Apr. 6, 1984, Ser. No. 597,533

Int. Cl.³ C08K *5/42*

U.S. Cl. 524—158 **5 Claims**

1. A primer composition adaptable to application to a painted surface to improve the adhesion of a sealant composition to said surface, said composition comprising a solution, in a volatile solvent, of an hydroxy functional film forming and at least 0.25 percent of a strong acid, by weight of said resin.

4,525,512

COALESCING AGENTS

Barry Hudson, Beverley, England, assignor to BP Chemicals Limited, London, England

Filed Feb. 24, 1984, Ser. No. 583,323

Claims priority, application United Kingdom, Mar. 9, 1983, 8306530

Int. Cl.³ C08K *5/09, 5/10*

U.S. Cl. 524—284 **20 Claims**

1. An ester of the general formula

XR

wherein X represents the group

$$R_1—O—(R_2)_x—O—(R_3)_y—O—CO—$$

in which R_1 is a C_1–C_4 alkyl group, each of R_2 and R_3 represent the same or different straight or branched chain alkylene group, and each of x and y represent an integer from 2 to 4, and R is selected from an ethyl group, a propyl group, X, and $—C_nH_{2n}X$ wherein n is an integer between 1 and 8, and in each of which X has the same notation as above.

4,525,513

FLAME RETARDANT POLYAMIDE COMPOSITION

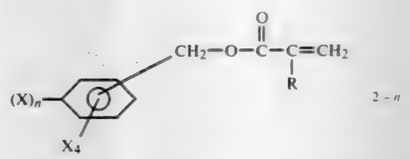
Arie Hochberg, Montclair; John C. Haylock, Sparta, and Charles D. Mason, Chatham Township, Morris County, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 27, 1982, Ser. No. 453,209

Int. Cl.³ C08K *5/10*

U.S. Cl. 524—288 **22 Claims**

1. A composition comprising: from 5 to 20 weight percent of a homopolymer of a monomer having the formula



wherein

n=0 or 1, X is bromine or chlorine and R is hydrogen or methyl, said polymer having a molecular weight between 1×10^3 and 10×10^6, said molecular weight determined by gel permeation chromatography in tetrahydrofuran;

from 80 to 95 weight percent of a polyamide; and

from 0 to 10 weight percent of antimony oxide in place of a corresponding amount of polyamide.

4,525,514

STABILIZER FOR POLYMERIC SUBSTANCE AND POLYMERIC SUBSTANCE COMPOSITION CONTAINING THE SAME

Shinichi Yachigo, Toyonaka; Tamaki Ishii, Suita; Yukoh Takahashi, Toyonaka, and Yutaka Terada, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

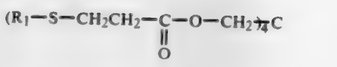
Continuation of Ser. No. 440,704, Nov. 8, 1982, abandoned. This application May 17, 1984, Ser. No. 610,941

Claims priority, application Japan, Nov. 17, 1981, 56-184865

Int. Cl.³ C08K *5/36*

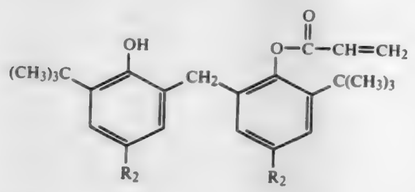
U.S. Cl. 524—291 **6 Claims**

1. A stabilizer for a polymeric substance selected from the group consisting of polybutadiene rubber, styrene-butadiene copolymer rubber, acrylonitrile-butadiene-styrene terpolymer resins and high impact polystyrene resins consisting essentially of a sulfur-containing compound of the general formula:



(I)

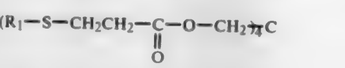
wherein R_1 represents an alkyl group having 4 to 20 carbon atoms and a phenolic compound of the general formula:



(II)

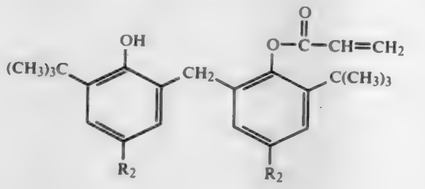
wherein R_2 represents an alkyl group having 1 to 4 carbon atoms, in the ratio (I):(II) of 1:0.1–2 by weight.

4. A polymeric substance selected from the group consisting of polybutadiene rubber, styrene-butadiene copolymer rubber, acrylonitrile-butadiene-styrene terpolymer resins and high impact polystyrene resins, said composition stabilized with a sulfur-containing compound of the general formula:



(I)

wherein R_1 represents an alkyl group having 4 to 20 carbon atoms and a phenolic compound of the general formula:



(II)

wherein R_2 represents an alkyl group having 1 to 4 carbon atoms, in the ratio (I):(II) of 1:0.1–2 by weight.

4,525,515

STORAGE-STABLE, PUMPABLE CONCENTRATED SUSPENSIONS OF WATER-SOLUBLE POLYMERS

Michel Peignier, Versailles, and Claude Renault, Le Conquet, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Jul. 25, 1983, Ser. No. 516,846

Claims priority, application France, Jul. 30, 1982, 82 13318

Int. Cl.³ C08K *5/05, 5/13;* **C08L** *5/00, 33/26*

U.S. Cl. 524—378 **17 Claims**

1. A storage-stable, pumpable, concentrated polymer suspension, comprising a suspension of (i) a particulate water-soluble polymer, in (ii) at least one water-soluble fluid surfactant having an HLB greater or equal to 10, and (iii) water, the amount of water being less than about 30% by weight of the total weight of said suspension, and the ratio by weight of said polymer (i) to said surfactant (ii) ranging from 20–90/80–10.

4,525,516

HALOGENATED ORGANIC PEROXIDES IN FLAME RETARDANT ETHYLENE POLYMER COMPOSITIONS

Rodrigo A. Garcia, Houston, Tex., and Robert J. Martinovich, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 462,849, Feb. 1, 1983, abandoned. This application Mar. 2, 1984, Ser. No. 585,665

Int. Cl.³ C08K *5/14*

U.S. Cl. 524—380 **18 Claims**

1. A composition comprising:

(a) a ethylene polymer,

(b) a flame retardant system, and

(c) a chlorinated di-tertiary-alkyl peroxide;

wherein said flame retardant system is comprised of (i) at least one halogen-containing organic flame retardant selected from the group consisting of:

1,4,7,10-dimethanocycloocta-1,2,3,4,7,8,9,10,13,13,14,14-dodecachloro-1,4,4a,5,6,6a,7.10,10a,11,12,12a-dodecahydro[1,2,5,6]dibenzene and 1,2 bis(pentabromophenoxy)ethane

and (ii) antimony oxide.

4,525,517

VULCANIZABLE POLYMER COMPOSITIONS WITH IMPROVED SCORCH

Kyosaku Sato, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Feb. 13, 1984, Ser. No. 579,547

Int. Cl.³ C08K *5/04*

U.S. Cl. 524—394 **16 Claims**

1. A vulcanizable polymer composition with improved scorch comprising (1) a carboxylated nitrile rubber, said rubber being a copolymer of butadiene, acrylonitrile and one or more, α,β-unsaturated carboxylic acids selected from acrylic, methacrylic, fumaric, maleic and itaconic acids, (2) one or more polyvalent metal oxides, and (3) one or more alkali metal salts selected from the lithium, sodium and potassium salts of C_{12-18}-alkanoic acids.

4,525,518

CHALKING-RESISTANT, CALCINED KAOLIN CLAY PIGMENT AND METHOD OF MAKING

Edward C. Kostansek, Annandale, N.J., assignor to Engelhard Corporation, Edison, N.J.

Division of Ser. No. 326,630, Dec. 2, 1981, Pat. No. 4,427,450. This application Jan. 23, 1984, Ser. No. 546,625

Int. Cl.³ C08K *3/34*

U.S. Cl. 524—447 **2 Claims**

1. An exterior grade paint comprising an improved calcined kaolin clay pigment and film-forming binder, said improved calcined kaolin clay pigment having been obtained by a process which comprises:

(a) fractionating a hydrous clay to obtain a fine fraction having an average particle size less than about 1 micron, e.s.d., and fractionating the same or a different hydrous clay to obtain a coarse fraction having an average size above about 3 microns, e.s.d.,

(b) blending said fine fraction and said coarse fraction clay such that the resulting blend has an average particle size of at least 3 microns, e.s.d.,

(c) calcining said blended clay under conditions of time and temperature such that said hydrous kaolin clay is substantially dehydrated by passing through the characteristic kaolin endotherm, and

(d) milling said calcined blended clay without reducing average particle size below about 3 microns, e.s.d. until an oil absorption in the range of about 10–30 g. oil/100 g. clay as determined by ASTM spatulla rubout is achieved;

said calcined kaolin clay pigment bring present in said paint at a reduced pigment volume concentration below 1 and said film-forming binder being an acrylic or vinyl acrylic resin containing globules 0.1 to 1.0 micron diameter and having a molecular weight of 10,000 to 1,000,000.

2. An exterior grade paint comprising an improved calcined kaolin clay pigment and film-forming binder, said improved kaolin clay pigment having been obtained by a process which comprises:

(a) blending coarse calcined kaolin clay particles having an average particle size above about 3 microns, e.s.d., and fine calcined kaolin clay particles having an average particle size smaller than about 1 micron, e.s.d., the resulting blend having an average particle size of at least 3 microns, e.s.d., and

(b) milling said blended particles without reducing average particle size below about 3 microns, e.s.d. until an oil absorption in the range of about 10–30 g. oil/100 g. clay as determined by ASTM spatula rubout is achieved,

said calcined kaolin pigment being present in said paint at a reduced pigment volume concentration below 1 and said film forming binder being an acrylic or vinyl acrylic resin containing globules 0.1 to 1.0 micron diameter and having a molecular weight of 10,000 to 1,000,000.

4,525,519

STABLE AMPHOTERIC LATICES OF COPOLYMERS BASED ON CONJUGATED DIENES

Frederic Leising, Vaujours, France, assignor to Rhone-Poulenc Specialites Chimiques, France

Filed Jan. 25, 1984, Ser. No. 573,726

Claims priority, application France, Jan. 28, 1983, 83 01302

Int. Cl.³ C08L *41/00*

U.S. Cl. 524—457 **32 Claims**

1. A stable amphoteric latex based on conjugated dienes, formed by:

(A) preparing an amphoteric aqueous dispersion of particles by reacting

(a) at least one unsaturated nitrogen compound capable of being hydrolyzed in an acid or alkaline medium, with

(b) a cationic aqueous emulsion mixture, containing:

(i) at least one non-ionic monomer capable of being copolymerized with said hydrolyzable unsaturated nitrogen compound to form synthetic polymers,

(ii) at least one unsaturated salt of a polycoordinated onium of a Group *5a* or *6a* element capable of copolymerizing with said monomers,

(iii) a cationic or non-ionic polymerization initiator, and

(iv) a cationic or non-ionic emulsifier,

the amount of said unsaturated nitrogen compound being such that the ratio of the number of anionic charges generated by said unsaturated nitrogen compound in a basic medium to the number of cationic charges of the cationic aqueous emulsion mixture in a basic medium is more than 1, and

(B) polymerizing, in said aqueous dispersion, without prior neutralization of said dispersion, at least one conjugated diene or a mixture of said conjugated diene and at least one non-ionic monomer in the presence of an initiator selected from the group consisting of an uncharged initiator and a cationic-charge-generating initiator.

4,525,520

METHOD OF PREPARING MICROCAPSULES

Shunsuke Shioi; Gensuke Matoba, both of Osaka, and Makoto Miyake, Hyogo, all of Japan, assignors to Kanzaki Paper Manufacturing Company, Ltd., Japan

Filed Mar. 23, 1984, Ser. No. 592,553

Claims priority, application Japan, Mar. 28, 1983, 58-54779; Apr. 9, 1983, 58-62418; Jun. 14, 1983, 58-107423; Jan. 9, 1984, 58-3274

Int. Cl.³ C08L *61/28*

U.S. Cl. 524—512 **20 Claims**

1. In a microencapsulation process which causes hydrophobic core material containing an oil-soluble melamine-formaldehyde precondensate to be emulsified in water or in a hydrophilic medium, and to form capsule wall film under conditions for promoting polycondensation, the process which is characterized in that said oil-soluble melamine-formaldehyde precondensate is 40 to 100% in a degree of formaldehyde substitution, 80 to 100% in alkylation degree, and 4 to 11 in hydrophobic degree.

4,525,521

COATING COMPOSITION OF AN ACRYLIC POLYMER HAVING AMINO ESTER GROUPS AND A GLYCIDYL ACRYLIC POLYMER

Herman C. DenHartog, Pontiac, and Aloysius N. Walus, Troy, both of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

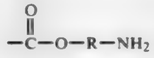
Continuation-in-part of Ser. No. 542,135, Oct. 14, 1983, abandoned. This application Jul. 27, 1984, Ser. No. 635,350

Int. Cl.³ C08L *37/00;* **C08K** *3/10, 5/34;* **C09D** *3/74*

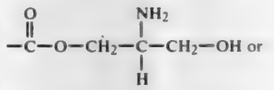
U.S. Cl. 524—517 **17 Claims**

1. A coating composition comprising 20–80% by weight of a binder and 80–20% by weight of a solvent for the binder, wherein the binder consists essentially of about:

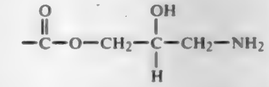
A. 60–80% by weight, based on the weight of the binder, of an acrylic polymer consisting essentially of polymerized monomers of methyl methacrylate and monomers selected from the group consisting of alkyl methacrylate and alkyl acrylate each having 2–12 carbon atoms in the alkyl group and said polymer having pending from the carbon-carbon atoms of the polymer backbone aminoester groups of the formula



where R is an alkylene group having 2–3 carbon atoms or hydroxyamino ester groups of the formula



or



B. 20–40% by weight, based on the weight of the binder, of a glycidyl acrylic crosslinking polymer of polymerized monomers having at least 60% by weight of a glycidyl constituent selected from the group consisting of glycidyl methacrylate and glycidyl acrylate and polymerized monomers selected from the group consisting of alkyl methacrylate and alkyl acrylate each having 2–12 carbon atoms in the alkyl group;

said polymer having a weight average molecular weight of about 6,000–40,000 determined by gel permeation chromatography using polymethyl methacrylate as a standard.

4,525,522

DRILLING FLUIDS BASED ON SULFONATED THERMOPLASTIC POLYMERS HAVING IMPROVED LOW TEMPERATURE RHEOLOGICAL PROPERTIES

S. Richard Turner, Bridgewater, N.J.; Thad O. Walker, Humble, Tex.; Dennis G. Peiffer, East Brunswick, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 13, 1982, Ser. No. 416,935

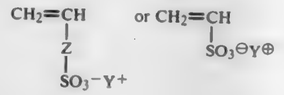
Int. Cl.³ C08L *41/00;* **C09K** *3/00*

U.S. Cl. 524—547 **14 Claims**

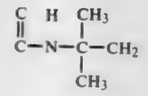
1. An oil-based drilling mud which consisting essentially of:

(a) an organic liquid substantial immiscible in water;

(b) about 1 to about 10 parts by weight of water per 100 parts by weight of the organic liquid;
(c) about 20 to about 50 lb/bbl. of an emulsifier and/or emulsifier package;
(d) weighting material necessary to achieve the desired density; and
(e) about 0.5 to about 20.0 lb/bbl. which is equivalent to 0.15 to 6 lb/bbl said polymer derived from the latex of a water insoluble and oil insoluble neutralized sulfonate-containing styrene polymer, said neutralized sulfonated thermoplastic polymer having about 5 to about 100 meq. of sulfonate groups per 100 grams of the neutralized sulfonate-containing styrene polymer, said latex containing about 20.0 to about 50.0 weight percent of the neutralized sulfonate-containing styrene polymer, said sulfonated polymer being located at oil/water interface of said drilling mud, said sulfonated polymer having about 5 to about 100 meq. of sulfonate groups per 100 grams of said sulfonated polymer, said sulfonated polymer being formed the polymerization of a water soluble monomer and a monomer characterized by the formula:



wherein Z is ϕ or



and $Y\oplus$ is a cation selected from the group consisting of Groups IA, IIA, IB and IIB of the Periodic Table and an amine.

4,525,523

NEGATIVE-WORKING PHOTORESIST COATING COMPOSITION

Hatsuo Nakamura; Tiharu Kato, both of Yokohama; Toshio Yonezawa, Yokosuka; Shigeo Koguchi, Kitakyushu; Kiyoto Mori, Kasukabe, and Masahiko Igarashi, Soka, all of Japan, assignors to Kanto Chemical Co., Inc., Tokyo and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

Filed Aug. 26, 1983, Ser. No. 526,820
Claims priority, application Japan, Aug. 31, 1982, 57-150022
Int. Cl.³ C08L *9/00*
U.S. Cl. 524—572 **8 Claims**

1. A negative-working photoresist coating composition comprising a cyclized polyisoprene having a weight-average molecular weight of 10,000 to 100,000 and a molecular weight distribution of not more than 1.9, an organic solvent of the cyclized polyisoprene, and a bisazido compound as a crosslinking agent.

4,525,524

POLYESTER COMPOSITION

William C. T. Tung, Tallmadge, and George A. Deisz, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 16, 1984, Ser. No. 600,862
Int. Cl.³ C08L *67/02*
U.S. Cl. 524—601 **18 Claims**

1. A liquid system comprised of:
(A) a water/alcohol solvent comprised of from 50 to 80 weight percent water and from 20 to 50 weight percent of at least one alcohol having from 3 to 5 carbon atoms; and
(B) a polyester comprised of repeat units which are derived from (a) a diacid component which is comprised of (1) from 20 to 90 mole percent of at least one member selected from the group consisting of dimethylterephthalate and terephthalic acid, (2) from 1 to 6 mole percent of at least one salt of an organic sulfonic acid monomer, and (3) from 4 to 74 mole percent of at least one member selected from the group consisting of alkyl dicarboxylic acids having from 4 to 36 carbon atoms, diesters of alkyl dicarboxylic acids having from 6 to 36 carbon atoms, aryl dicarboxylic acids having from 9 to 20 carbon atoms, diesters of aryl dicarboxylic acids having from 11 to 22 carbon atoms, alkyl substituted aryl dicarboxylic acids having from 9 to 22 carbon atoms, diesters of alkyl substituted aryl dicarboxylic acids having from 11 to 20 carbon atoms, dimethylorthophthalate, dimethylisophthalate, orthophthalic acid, and isophthalic acids; and (b) a diol component which is comprised of (1) from 20 to 100 mole percent ethylene glycol, and (2) from 0 to 80 mole percent of one or more member selected from the group consisting of glycols having from 3 to 12 carbon atoms; wherein said polyester is terminated with carboxyl end groups and wherein said liquid system has a pH of at least 7.

4,525,525

USE OF BIS-SEMIESTERS OF SULFOSUCCINIC ACID WITH POLYETHER DIOLS BASED ON ETHYLENE OXIDE/PROPYLENE OXIDE OR THEIR SALTS AS SURFACE-ACTIVE AGENTS

Rainer Höfer, Duesseldorf, and Bernhard Bartnick, Monheim-Baumberg, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft (Henkel KGaA), Duesseldorf, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,087
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311601
Int. Cl.³ C08K *5/41;* **C08L** *25/06*
U.S. Cl. 524—742 **17 Claims**

1. A process for reducing the surface tension of an aqueous medium which comprises adding to said medium an effective amount of at least one compound selected from the group consisting of (a) a bis-semiester of sulfosuccinic acid with a polyether diol based on ethylene oxide and propylene oxide; (b) an alkali metal salt of such bis-semiester; and (c) the ammonium salt of such bis-semiester.

4,525,526

SURFACE ACTIVE POLYMERIC SURFACTANTS CONTAINING SIDE CHAIN HYDROPHOBES

Ritchie A. Wessling, Midland, and Dale M. Pickelman, Auburn, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 539,451, Oct. 6, 1983, , which is a division of Ser. No. 272,435, Jun. 10, 1981, Pat. No. 4,426,489, which is a division of Ser. No. 123,321, Feb. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 901,924, May 1, 1978, abandoned. This application Nov. 23, 1983, Ser. No. 554,510
The portion of the term of this patent subsequent to Jan. 17, 2001, has been disclaimed.
Int. Cl.³ C08F *26/00*
U.S. Cl. 524—815 **3 Claims**

1. A method of reducing the surface tension of an aqueous medium having a polymeric surfactant dissolved therein, said polymeric surfactant (a) being a substantially linear, synthetic, water-soluble cationic interpolymer having a critical micelle concentration of 0.01 to about 10 percent in water at 25° C., a charge density of from about 1 to about 5 meq/g and a number average molecular weight of from about 500 to about 40,000; (b) being derived from the addition polymerization of one or more ethylenically unsaturated monomers and (c) being composed of a plurality of nonionic hydrophobic units and a plurality of pH independent hydrophilic cationic units which are randomly distributed in the backbone of said interpolymeric surfactant; said method comprising the use of the aforementioned type of polymeric surfactant in which a portion of the randomly distributed cationic units thereof contains a hydrophobic substituent thereon, said hydrophobic substituent being an aralkyl group of from 8 to about 20 carbon atoms and said portion of such cationic groups which is so substituted being such that an average of from 1 to about 5 of such hydrophobically substituted cationic groups are present per polymeric surfactant molecule.

4,525,527

PRODUCTION PROCESS FOR HIGHLY WATER ABSORBABLE POLYMER

Hisao Takeda, Zama, and Yasunori Taniguchi, Samukawamachi, both of Japan, assignors to American Colloid Company, Skokie, Ill.

Filed Jan. 21, 1983, Ser. No. 460,037
Claims priority, application Japan, Jan. 25, 1982, 57-8983; Mar. 9, 1982, 57-035913; Mar. 9, 1982, 57-035914
Int. Cl.³ C08F *220/06*
U.S. Cl. 524—831 **27 Claims**

1. A method of manufacturing a composition comprising mixing a monomer solution of (A) acrylic acid, neutralized 70 to 100 mole percent, (B) acrylamide in a mole ratio of (A):(B) in the range of 70:30 to 90:10; (C) a water soluble or water miscible polyvinyl monomer cross-linking agent in an amount of 0.001 to 0.3 percent by weight of (A) plus (B); and water to form a mixed monomer solution, wherein the monomers of the mixed monomer solution consist essentially of (A), (B) and (C) and the monomer concentration is at least 70 percent by weight of the monomer solution prior to polymerization initiation; and initiating polymerization of monomers (A) and (B) such that during polymerization, the exothermic heat of reaction is substantially the only heat energy used to accomplish polymerization, cross-linking and to drive off sufficient water to form a water absorbing cross-linked polyacrylate resin composition having a water content of 15 percent by weight or less.

4,525,528

PEROXIDE-CURABLE FLUOROSILICONE COPOLYMER COMPOSITIONS

Richard B. Bush, Schenectady, and Edwin R. Evans, Saratoga, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Oct. 11, 1983, Ser. No. 540,491
Int. Cl.³ C08L *83/04*
U.S. Cl. 524—860 **19 Claims**

1. A peroxide-curable silanol-endstopped or alkenyl-endstopped diorganopolysiloxane copolymer having a molecular weight of from about 400,000 to about 600,000 comprising units of the formulae $RR'SiO$ and R''_2SiO, wherein R is fluoroalkyl of from 3 to 8 carbon atoms, R′ is alkyl of from 1 to 8 carbon atoms, alkenyl of from 2 to 8 carbon atoms, or phenyl, and wherein sufficient $RR'SiO$ units are present to provide about 45–65 mole percent fluorosilicone content and sufficient R''_2SiO units containing alkenyl substituents are present to provide a vinyl content along the polysiloxane chain of about 0.02 weight percent to about 0.5 weight percent as $CH_2{=}CH{-}$.

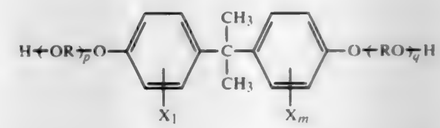
4,525,529

POLYESTER RESIN COMPOSITION

Yasuhiro Ohmura, Kawasaki; Seiichiro Maruyama, and Shigeru Shigemoto, both of Kitakyushu, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Aug. 31, 1982, Ser. No. 413,555
Claims priority, application Japan, Sep. 17, 1981, 56-146615; Sep. 18, 1981, 56-147580
Int. Cl.³ C08L *67/02*
U.S. Cl. 525—64 **9 Claims**

1. A polyester resin composition comprising (a) 100 parts by weight of a copolymeric polyester resin containing from 3% to 15% by weight halogen which is derived from terephthalic acid or ester forming derivative thereof, an alkylene glycol having 2 to 10 carbon atoms or ester forming derivative thereof, and a halogen-containing aromatic diol of the formula:



wherein R is an alkylene group having 2 to 4 carbon atoms, X is a halogen atom, l and m are each an integer of 1 to 4, and p and q are each an integer of 1 to 10, and
(b) from 0.5 to 15 parts by weight of a modified ethylene copolymer consisting essentially of a copolymer of at least 50 mole % ethylene and an α-olefin having at least 3 carbon atoms, said ethylene/α-olefin copolymer being modified by graft polymerization with an α,β-unsaturated carboxylic acid or derivative thereof in an amount of from 0.05% to 1.5% by weight based on the weight of the copolymer.

4,525,530

THERMOPLASTIC RESIN COMPOSITIONS

Sigemi Mathumoto, Takasago; Hidetaka Kubota, and Fumiya Nagoshi, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 271,204, Jun. 8, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,433
Claims priority, application Japan, Jun. 28, 1980, 55-88398
Int. Cl.³ C08L *51/04, 55/02*
U.S. Cl. 525—84 **1 Claim**

1. A thermoplastic resin composition which comprises 20–70 parts by weight of a polyvinyl chloride resin and 80–30 parts by weight of a mixed composition of the following copolymers (A) and (B) at the following mixing ratio:
(A) 90–50% by weight of a copolymer which is the polymerization product of 65–90 parts by weight of α-methylstyrene with 35–10 parts by weight of acrylonitrile and 0–5 parts by weight of a copolymerizable vinyl monomer or monomers, 30 parts by weight or more of said copolymer having polymer chain units with an α-methylstyrene content of 82% by weight or higher; and
(B) 10–50% by weight of a graft copolymer obtained by reacting 35–80 % by weight of a conjugated diene rubber and 65–20% by weight of a monomer or monomers comprising a monovinyl aromatic compound, an unsaturated nitrile compound or an alkyl methacrylate,
wherein copolymer (A) is prepared by the following steps comprising:
charging 65 parts by weight or more of α-methylstyrene and 10 parts by weight or less of acrylonitrile and/or copolymerizable vinyl monomer other than α-methylstyrene into the reactor all at once,
emulsifying the reactants, and
emulsion polymerizing the emulsified monomers while continuously and gradually adding at least 10 and up to 35 parts by

weight of acrylonitrile and 15% or less, based on the acrylonitrile, of the copolymerizable vinyl monomer, wherein the weight ratio of α-methylstyrene to monomers other than α-methylstyrene in the reaction system is maintained at 90/10 or higher until the resultant copolymer reaches 40 parts by weight, based on 100 parts by weight of the resulting copolymer.

4,525,531

POLYMERIC COMPOSITIONS SUITABLE FOR USE IN THE MEDICAL FIELD AND CONTAINING A POLYOLEFIN, A POLYSILOXANE AND AN ELASTOMER

Mimzee Zukosky, Redwood City, and Ronald L. Dieck, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 26, 1983, Ser. No. 488,861
Int. Cl.³ C08L *9/06, 53/02*
U.S. Cl. 525—92 **2 Claims**

1. A polymeric composition which comprises

(a) 12 to 40% by weight of a thermoplastic polymer comprising units derived from an olefin,

(b) 1 to 10% by weight of a polymer which is solid at room temperature and which is a block copolymer comprising polysiloxane blocks and at least 10% by weight of polycarbonate blocks, and

(c) 48 to 88% by weight of a styrene-butadiene elastomer having a Shore D Hardness of less than 60,

the amounts of components (a), (b) and (c) being by weight, based on the total weight of (a), (b) and (c).

4,525,532

IMPACT RESISTANT α-METHYLSTYRENE-STYRENE COPOLYMER BLENDS

Lu H. Tung; Grace Y. Lo, and Jerald A. Griggs, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 22, 1983, Ser. No. 525,335
Int. Cl.³ C08L *53/02*
U.S. Cl. 525—98 **7 Claims**

1. A copolymer blend suitable for impact resistant moldings, the blend consisting essentially of a copolymer of an alkenyl aromatic monomer and an isopropenyl aromatic monomer wherein the ratio of isopropenyl aromatic monomer to alkenyl aromatic monomer is from about 1 to 99 to 99 to 1 in admixture with a member selected from a group consisting of

(1) an AB block copolymer

(2) an ABA block copolymer

(3) an $AB(BA)_n$ block copolymer

and mixtures thereof wherein n is an integer of from about 2 to 10; A represents a block of an alkenyl aromatic monomer-isopropenyl aromatic monomer copolymer; B is a block of conjugated diene elastomer; the A blocks having a ratio of isopropenyl aromatic monomer to alkenyl aromatic monomer of from about 1 to 99 to 99 to 1 by weight, the molecular weight of the copolymer being from about 50,000 to 1,000,000, the block copolymers containing from about 10 to 90 weight percent of a diene elastomer selected from the group consisting of polybutadiene, polyisoprene and copolymers of butadiene and isoprene wherein the 1,2-vinyl content is from about 8 to 50 weight percent; the block copolymers having a molecular weight of from about 30,000 to about 800,000.

4,525,533

POLYMER COMPOSITIONS

Jean-Noel Bertrand, Wezembeek Oppem, and Jean Castelein, Mellery, both of Belgium, assignors to Montefina, S.A., Belgium

Filed Mar. 27, 1984, Ser. No. 593,230
Claims priority, application Luxembourg, Mar. 29, 1983, 84720
Int. Cl.³ C08L *53/02*
U.S. Cl. 525—98 **7 Claims**

1. A polymer composition comprising from about 30% to about 50% by weight of polystyrene, from about 30% to about 64% by weight of polypropylene and from about 6% to about 30% by weight of a sequenced radial type copolymer having a molecular weight not lower than about 100,000 wherein said radial type copolymer comprises from about 50% to about 70% by weight of conjugated diene and from about 30% to about 50% by weight of styrene.

4,525,534

POLYAMINES AND A SINGLE-STAGE PROCESS FOR THE PRODUCTION THEREOF

Werner Rasshofer, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,367
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227219
Int. Cl.³ C08G *18/08, 18/10*
U.S. Cl. 525—127 **13 Claims**

1. A single stage process for the production of primary polyamines containing aromatic and/or aliphatic amino groups comprising hydrolyzing a mixture of

(a) an isocyanate group containing compound having an NCO-content of from 0.5 to 40 wt %,

(b) water,

(c) a basic compound which is substantially insoluble in water and organic solvents, and

(d) a water-miscible solvent.

4,525,535

AQUEOUS GLYCOLURIL THERMOSETTING COATING

Gary P. Craun, Wickliffe, and Henry J. DeGraaf, Stow, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Oct. 22, 1984, Ser. No. 663,596
Int. Cl.³ C08L *61/24*
U.S. Cl. 525—163 **6 Claims**

1. A surface coating composition containing a polymeric binder, the binder comprising on a weight basis:

between about 2% and 50% hydroxylated polyester containing two or more hydroxyl groups per molecule and having a molecular between 200 and 1,000, and between 0% and 90% emulsion polymer, said emulsion polymer being emulsion copolymerized ethylenic monomers, and about 2 to 50% glycoluril, said binder composition being heat curable and thermosetting to form a cured coating film.

4,525,536

HEAT RESISTANT RESIN COMPOSITION

Sadao Ikuma, Suzuka; Yuji Aoki, Yockaichi, and Noboru Watanabe, Matsudo, all of Japan, assignors to Mitsubishi Monsanto Chemical Company, Tokyo, Japan

Filed Jun. 6, 1983, Ser. No. 501,111
Claims priority, application Japan, Jun. 21, 1982, 57-106553
The portion of the term of this patent subsequent to Apr. 26, 2000, has been disclaimed.
Int. Cl.³ C08L *25/12, 33/24, 35/06*
U.S. Cl. 525—194 **7 Claims**

1. A heat resistant resin composition comprising from 10 to 90% by weight of a copolymer A and from 90 to 10% by weight of a copolymer B, in which the copolymer A is composed of an N-aromatic maleimide monomer residue, a maleimide monomer residue wherein the N atom of said maleimide

is bonded to a hydrogen atom, a vinyl aromatic monomer residue and, optionally an other vinyl monomer residue, the total content of the N-aromatic maleimide monomer residue and the maleimide monomer residue being from 10 to 45%, the content of the N-aromatic maleimide monomer residue being greater than the content of the maleimide monomer residue, the content of the vinyl aromatic monomer residue being from 90 to 55% and the content of said other vinyl monomer residue being from 0 to 20%, and the copolymer B is composed of a vinyl cyanide monomer residue, a vinyl aromatic monomer residue and, optionally an other vinyl monomer residue, the content of the vinyl cyanide monomer residue being from 20 to 55%, the content of the vinyl aromatic monomer residue being from 80 to 45% and the content of said other vinyl monomer residue being from 0 to 20%.

4,525,537

METHACRYLIC RESIN SHAPED ARTICLE, PROCESS FOR PRODUCING THE SAME AND PROCESS FOR PRODUCING A SHAPED ARTICLE HAVING A MAT SURFACE FROM SAID RESIN SHAPED ARTICLE

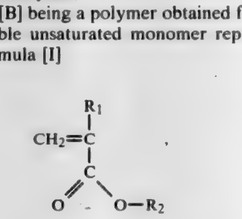
Kazumasa Kamada, Hiroshima; Katsumi Tamai; Kazunori Abe, Ohtake, and Yoshinobu Shiraishi, Ohtake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1983, Ser. No. 500,439
Claims priority, application Japan, Jun. 3, 1982, 57-95524
Int. Cl.³ C08L *33/12*
U.S. Cl. 525—198 **21 Claims**

1. A methacrylic resin shaped article made of a composition which comprises [A] 80 to 99.9% by weight of a polymer which forms a continuous phase and [B] 0.1 to 20% by weight of a polymer which forms a dispersed phase,

said polymer [A] being a polymer obtained from methyl methacrylate alone or from a polymerizable unsaturated monomer mixture containing 80% by weight or more of methyl methacrylate,

said polymer [B] being a polymer obtained from at least one polymerizable unsaturated monomer represented by the general formula [I]



[I]

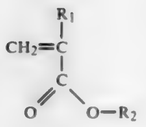
wherein R_1 represents a hydrogen atom or methyl group, and R_2 represents a hydrocarbon radical having at least 2 carbon atoms or a derivative thereof, or obtained from a polymerizable unsaturated monomer mixture containing 50% by weight or more of at least one polymerizable unsaturated monomer represented by the above general formula [I], and the refractive index (n_A) of said polymer [A] and the refractive index (n_B) of said polymer [B] satisfying the following relation:

$$0.998 \leqq n_B/n_A \leqq 1.002.$$

7. A process for producing a methacrylic resin shaped article made of a composition which comprises, for the purpose of producing a methacrylic resin comprising [A] 80 to 99.9% by weight of a polymer which forms a continuous phase and [B] 0.1 to 20% by weight of a polymer which forms a dispersed phase, and the refractive index (n_A) of the resulting polymer [A] and the refractive index (n_B) of said polymer [B] being selected so as to satisfy the following relation:

$$0.998 \leqq n_B/n_A \leqq 1.002$$

dissolving or dispersing, as the said polymer [B], a polymer obtained from at least one polymerizable unsaturated monomer represented by the general formula [I]



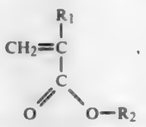
[I]

wherein R_1 represents a hydrogen atom or methyl group and R_2 represents a hydrocarbon radical having at least 2 carbon atoms or a derivative thereof, or obtained from a polymerizable unsaturated monomer mixture containing 50% by weight or more of a polymerizable unsaturated monomer of the above formula [I], into methyl methacrylate monomer, or a partially polymerized methyl methacrylate monomer, or a polymerizable unsaturated monomer mixture containing 80% by weight or more of methyl methacrylate, or a partially polymerized product of said methyl methacrylate monomer mixture, which are to form the said polymer [A], polymerizing the resulting solution or dispersion in the presence of a radical polymerization initiator to form a shaped article.

13. A process for producing a methacrylic resin shaped article having a mat surface which comprises stretching a methacrylic resin shaped article having a latent mat surface at a temperature above the heat distortion temperature of said shaped article, which methacrylic resin shaped article comprising [A] 80–99.9% by weight of a polymer which forms a continuous phase and [B] 0.1 to 20% by weight of a polymer which forms a dispersed phase,

said polymer [A] being a polymer obtained from methyl methacrylate alone or from a polymerizable unsaturated monomer mixture containing 80% by weight or more of methyl methacrylate,

said polymer [B] being a polymer obtained from at least one polymerizable unsaturated monomer represented by the general formula [I]



[I]

wherein R_1 represents a hydrogen atom or methyl group and R_2 represents a hydrocarbon radical having at least 2 carbon atoms or a derivative thereof, or obtained from a polymerizable unsaturated monomer mixture containing 50% by weight or more of at least one polymerizable unsaturated monomer represented by the general formula [I] mentioned above, and the refractive index (n_A) of said polymer [A] and the refractive index (n_B) of said polymer [B] satisfying the following relation:

$$0.998 \leqq n_B/n_A \leqq 1.002.$$

4,525,538

POLYMERIZING MONOMER IN PRESENCE OF POLYMER CONTAINING ELECTROPHILIC MOIETY USING ZIEGLER-NATTA CATALYST

Gregory L. Baker, Bridgewater, and Frank S. Bates, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 18, 1983, Ser. No. 485,856
Int. Cl.³ C08F *279/02*
U.S. Cl. 525—275 **10 Claims**

1. A process of polymerization comprising the steps of polymerizing a composition comprising a monomer having an unsaturated bond with a Ziegler-Natta catalyst characterized in that

a host polymer is contacted with said polymerizing composition at a time which allows the reaction of said host polymer with said polymerizing monomer before the completion of said polymerization wherein said host polymer includes a graft site that comprises an electrophilic moiety

that reacts through nucleophilic attack with said polymerizing monomer, wherein said electrophilic moiety comprises a carbonyl or an epoxy group.

4,525,539

VULCANIZABLE NITRILE-CONTAINING PERFLUOROELASTOMER

Andrew E. Feiring, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 2, 1982, Ser. No. 446,227

Int. Cl.[3] C08F *220/70, 220/42, 8/32, 8/34*

U.S. Cl. 525—326.3 **10 Claims**

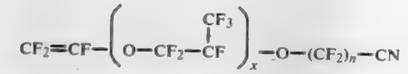
1. A vulcanizable perfluoroelastomer composition comprising

(a) a copolymer consisting essentially of copolymerized units of:

(1) 53–79.8 mole percent tetrafluoroethylene,

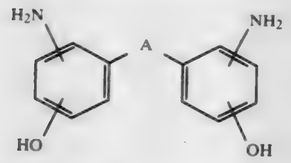
(2) 20–45 mole percent perfluoromethyl perfluorovinyl ether and

(3) 0.2–2 mole percent of a cure site monomer of the formula:

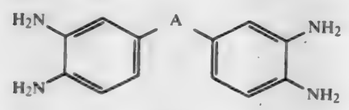


where n=1–4 and x=1–2, and

(b) 0.5–5.0 parts by weight per 100 parts by weight of the copolymer of a vulcanizing agent selected from the group consisting of bisaminophenols of the formula



and tetraamines of the formula



where A is SO_2, O, CO, alkyl of 1–6 carbon atoms, perfluoroalkyl of 1–10 carbon atoms, or a carbon-carbon bond linking the two aromatic rings.

4,525,540

CYCLIC ESTER DIENES, POLYMERIC AND OTHER DERIVATIVES THEREOF

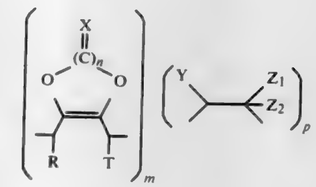
Boris Weinstein, and Edward Orton, both of Seattle, Wash., assignors to Washington Research Foundation, Seattle, Wash.

Filed Jan. 28, 1983, Ser. No. 461,706

Int. Cl.[3] C08F *224/00*

U.S. Cl. 525—327.2 **2 Claims**

1. A polymer having the formula:



wherein:

n is 1 or 2;

X is sulfur when n is 1 and oxygen when n is 1 or 2; and

R and T are the same or different, being hydrogen, a hydrocarbyl group having from 1 to 12 carbon atoms, or a 1 to 6 heteroatom substituted hydrocarbyl group having from 1 to 12 carbon atoms, wherein said heteroatoms are chalcogen, halogen, or nitrogen;

m is at least 1 and when m is 1, p is at least 2;

p is 0 or greater, and m+p are two or greater;

Z_1 and Z_2 are the same or different, being hydrogen, halogen, acyloxy of from 1 to 3 carbon atoms; alkoxy of from 1 to 3 carbon atoms, hydrocarbyl, carboxy, cyano, or carboalkoxy wherein the alkoxy group is from 1 to 3 carbon atoms; and

Y is hydrogen or taken together with Z_1 and the ethylene to which they are attached to form a maleic anhydride group.

4,525,541

METHOD FOR MODIFYING RUBBERS

Shizuo Kitahara, Kawaguchi, and Nagatoshi Sugi, Yokohama, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

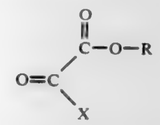
Filed Jun. 22, 1983, Ser. No. 506,875

Claims priority, application Japan, Jun. 29, 1982, 57-112145; Mar. 7, 1983, 58-37159

Int. Cl.[3] C08F *8/32*

U.S. Cl. 525—337 **28 Claims**

1. A method for modifying a rubber, which comprises reacting a rubber having an unsaturated carbon bond with an organic compound represented by the general formula



wherein —R represents a hydrocarbon group and —X represents —H, —CN or



in which Y represents $—R_1$, $—OR_2$ or $—NR_3R_4$, in which R_1, R_2, R_3 and R_4 are hydrocarbon groups,

in the presence of a Lewis acid to introduce an ester group of the organic compound into the rubber by an addition reaction.

components (A) of a polymerizable ethylenically unsaturated monocarboxylic acid; and optionally

(D) up to about 0.4 moles per epoxy equivalent contained in component (A) of maleic anhydride, citraconic anhydride or mixtures thereof; and

wherein components (A) and (B) are present in an amount which provides an epoxy equivalent to carboxyl equivalent ratio of from about 0.8:1 to about 2:1; components (B-2) and (B-1-a) are employed in an amount which provides from about 0.01 to about 0.6 moles of vicinal monoepoxide per mole of acid and/or anhydride; and component (B-1-b) is employed in an amount which provides from about 0.4 to about 1.5 moles per mole of component (B-1-a).

4,525,542

NOVOLAC BASED EPOXY RESIN CURING AGENTS FOR USE IN SOLVENT

William J. DeGooyer, Louisville, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed Sep. 20, 1984, Ser. No. 652,582

Int. Cl.[3] C08L *63/04*

U.S. Cl. 525—484 **16 Claims**

1. A novolac based epoxy resin curing agent comprising the reaction product of an epoxy novolac compound, a primary amine containing polyamine and a monoepoxide, wherein substantially all of the epoxy groups are reacted with the polyamines and wherein at least substantially all of the unreacted primary amine groups in the polyamine/epoxide reaction product groups are further reacted with the monoepoxide.

4,525,543

EPOXY-FREE HYDROXY FUNCTIONAL POLYETHER BASED ON OLEYL ALCOHOL AND SOLVENT-SOLUBLE COPOLYMERS CONTAINING THE SAME

Kazys Sekmakas, Palatine, and Edward J. Murphy, Mount Prospect, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 935,505, Aug. 21, 1978, abandoned, which is a continuation of Ser. No. 548,680, Feb. 10, 1975, abandoned. This application Mar. 26, 1979, Ser. No. 24,052

Int. Cl.[3] C08G *59/14;* **C08L** *63/02*

U.S. Cl. 525—529 **3 Claims**

1. An organic solvent-soluble copolymer of 20%–60% by weight of an epoxy-free hydroxy functional polyether reaction product of a diglycidyl ether of a bisphenol having a molecular weight of about 1000 with a stoichiometric proportion of oleyl alcohol, based on the oxirane functionality of said diglycidyl ether, with monoethylenically unsaturated monomers copolymerizable therewith, said monomers including carboxyl functional monomer providing the copolymer with an acid number in the range of 12–60, said copolymer being formed by copolymerization in organic solvent solution.

4,525,544

VINYL ESTER RESIN COMPOSITION

Donald L. Nelson, and Mary H. Lamont, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 12, 1982, Ser. No. 367,643

Int. Cl.[3] C08F *283/10;* **C08G** *59/16*

U.S. Cl. 525—531 **30 Claims**

1. A vinyl ester resin obtained by reacting

(A) at least one epoxy resin having an average of more than one glycidyl ether group per molecule; and

(B) a product resulting from a reaction of

(1) the reaction product of

(a) at least one α,β-ethylenically unsaturated acid containing 4 or 5 carbon atoms per molecule, anhydrides thereof, isomers thereof or mixtures thereof;

(b) at least one unsaturated hydrocarbon selected from

(i) dienes having from about 9 to about 12 carbon atoms;

(ii) oligomers or cooligomers of dienes having from 4 to 6 carbon atoms optionally containing minor amounts of mono-olefins having from about 4 to about 6 carbon atoms; or

(iii) mixtures thereof; and

(c) if (B-1-a) contains an anhydride, from about 0.4 to about 3 moles of water per mole of anhydride; with

(2) a vicinal monoepoxide; and optionally

(3) up to about 10 percent by weight of the combined weight of (B-1) and (B-2) of a suitable isomerization catalyst for component (B-1-a); optionally

(C) up to about 0.75 mole per epoxy equivalent contained in

4,525,545

HOMOGENIZER PROCESS FOR FORMING EMULSION/SUSPENSION POLYMERS

Chung H. Wei, Wilmington, Del., assignor to General Electric Company, Selkirk, N.Y.

Continuation of Ser. No. 920,599, Jun. 29, 1978, abandoned. This application Jul. 13, 1981, Ser. No. 282,630

Int. Cl.[3] C08F *2/18*

U.S. Cl. 526—65 **5 Claims**

1. In an aqueous, emulsion/suspension polymerization process for forming polymeric materials comprising at least one initial emulsion polymerization reaction of monomer in water to form a rubbery polymer and at least one subsequent suspension polymerization process in which the rubbery emulsion polymerization product is used as a reaction ingredient in a reaction mixture which also comprises at least one monomer adapted to form a rigid polymer, wherein the improvement comprises the mechanical homogenization of the monomer adapted to form said rubbery polymer in water prior to said emulsion polymerization process.

4,525,546

PROCESS FOR PRODUCING POLYETHYLENE AND AN ETHYLENE-α-OLEFIN COPOLYMER

Isaburo Fukawa, Fuji, and Kazutoshi Sato, Kurashiki, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

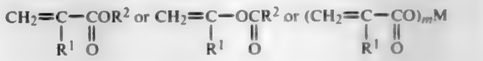
Filed Nov. 16, 1983, Ser. No. 552,564

Claims priority, application Japan, Nov. 29, 1982, 57-207762; Nov. 30, 1982, 57-208490; Jan. 11, 1983, 58-1746; Jan. 11, 1983, 58-1748; Sep. 13, 1983, 58-167524

Int. Cl.[3] C08F *6/02, 10/02*

U.S. Cl. 526—68 **8 Claims**

1. A process for producing polyethylene or an ethylene-α-olefin copolymer, which comprises polymerizing ethylene or a mixture of ethylene with an α-olefin having 3 to 18 carbon atoms by use of a coordination polymerization catalyst containing a transition metal compound and an organo-metallic compound at an average polymerization temperature of 130° C. or more, deactivating said catalyst by adding a copolymer of at least one monomer selected from the group consisting of vinyl monomers having a carbonyl group represented by the formula:



wherein R^1 represents a hydrogen atom or a hydrocarbon group having 1 to 5 carbon atoms; R^2 is a hydrogen atom or a hydrocarbon group having 1 to 20 carbon atoms; M represents a metal element; and m represents the valence of M,

or maleic anhydride with ethylene to be mixed with said catalyst, the number of carbonyl groups in the deactivator being 0.4 to 20-fold of the total number of molecules of the transition metal compound and the organo-metallic compound, separating unaltered monomers from the polymer mixture, and recycling the recovered monomers to the polymerization zone.

4,525,547

PROCESS FOR PRODUCING ETHYLENE COPOLYMER BY GASEOUS PHASE COPOLYMERIZATION

Akifumi Kato, Ohtake; Junichi Yoshida, Iwakuni, and Ryoichi Yamamoto, Waki, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 497,439, May 27, 1983, abandoned, which is a continuation of Ser. No. 310,925, Oct. 13, 1981, abandoned. This application Apr. 2, 1984, Ser. No. 594,957
Claims priority, application Japan, Oct. 15, 1980, 55-142938
Int. Cl.³ C08F *2/34*
U.S. Cl. 526—68 **5 Claims**

1. In a gaseous phase polymerization process for producing an ethylene copolymer having a density of from about 0.923 to about 0.943 g/cc which comprises polymerizing a predominant amount of ethylene and a minor amount of an alpha-olefin having 4 to 10 carbon atoms at a temperature of from room temperature to about 130° C. and below the melting point of the copolymer formed and a pressure of from 1 to 100 $kg/cm^2.G$ in the presence of a catalyst composed of (A) a transition metal catalyst component and (B) an organometallic compound of a metal of Groups I to III of the periodic table; the improvement wherein the copolymerization is carried out under the following conditions (i) and (ii),

(i) at least 1 mole, per mole of ethylene, of a gaseous saturated hydrocarbon having 3 to 6 carbon atoms is caused to be present in the gaseous phase copolymerization system, and

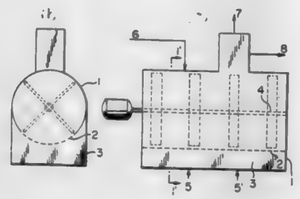
(ii) the gaseous mixture containing the unreacted olefin which has been discharged from the gaseous phase copolymerization system is cooled to a temperature at which the mixture is not liquefied, and the cooled gaseous mixture is recycled to the gaseous phase copolymerization system.

4,525,548

METHOD FOR VAPOR PHASE POLYMERIZATION OF OLEFINS

Kunimichi Kubo, Tokyo; Mamoru Yoshikawa; Motokazu Watanabe, both of Kawasaki; Yasunosuke Miyazaki, Machida, and Mituji Miyoshi, Kanagawa, all of Japan, assignors to Nippon Oil Company Limited, Nishi, Japan

Division of Ser. No. 242,308, Mar. 10, 1981, Pat. No. 4,372,919. This application Aug. 9, 1982, Ser. No. 406,435
Int. Cl.³ C08F *2/34*
U.S. Cl. 526—72 **7 Claims**



1. A method for vapor phase polymerization of olefins which comprises:

feeding an olefin gas into a horizontal cylindrical vessel, having a lower curved surface formed by a perforated plate which is an arc of a circle defined by an angle of from 30 to 180 degrees from the center of said cylindrical vessel, said plate extending substantially the length of said vessel and having a multiplicity of holes which have a diameter in the range of from 0.5 to 5 mm spaced at intervals in the range of from 0.5 to 50 mm, through said plate from an olefin feed chamber mounted below and covering said plate;

feeding a polymer catalyst into said horizontal cylindrical vessel through a polymerization inlet port located in a portion of said vessel other than said lower curved surface formed by said perforated plate;

reacting said olefin in the presence of said catalyst with agitation to form polymer;

removing unreacted olefin through an unreacted olefin discharge port located in a portion of said vessel other than said lower curved surface formed by said perforated plate; and

removing said polymer through a polymer outlet port located in a portion of said vessel other than said lower curved surface formed by said perforated plate.

4,525,549

PROCESS FOR PREPARING CONJUGATE DIOLEFINS, AND MEANS SUITABLE FOR THIS PURPOSE

Antonio Carbonaro, Milan, and Domenico Ferraro, S. Donato Milanese, both of Italy, assignors to Enoxy Chimica S.p.A., Milan, Italy

Filed Apr. 14, 1983, Ser. No. 484,956
Claims priority, application Italy, Apr. 15, 1982, 20746 A/82
Int. Cl.³ C08F *5/52*
U.S. Cl. 526—92 **14 Claims**

1. A catalytic system for polymerizing or copolymerizing conjugate diolefins prepared from:

(a) at least one compound of a metal of Group III B of the periodic system;

(b) at least one aluminium compound of formula AlR R′, where r is alkyl, cycloalkyl or alkylaryl, and R′ is R or H;

(c) water and optionally

(d) an inorganic compound containing Cl or Br in ionizable form, or at least one organic halogen derivative of formula:



where R_1, R_2 and R_3, which can be either different from each other or entirely or partly equal to each other, are H, O, Cl or Br atoms, or alkyl, aryl, alkylaryl, chloro or bromo alkyl, alkoxy or cycloalkoxy residues, and X is Cl or Br.

4,525,550

PREPARATION OF HOMOPOLYMERS AND COPOLYMERS OF α-MONOOLEFINS USING A ZIEGLER CATALYST SYSTEM

Volker Warzelhan, Weisenheim, and Wolfgang Ball, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 3, 1983, Ser. No. 548,446
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242149
Int. Cl.³ C08F *4/64, 10/00*
U.S. Cl. 526—116 **2 Claims**

1. A process for the preparation of homopolymers and copolymers of C_2–C_8-α-monoolefins, by polymerization of the monomer or monomers at from 30° to 200° C., and under a pressure of from 0.1 to 200 bar, using a Ziegler catalyst system comprising

(1) a transition metal catalyst component and

(2) an organoaluminum catalyst component of the formula

$$AlR_mX_{3-m}$$

where X is a radical OR, chlorine, bromine or hydrogen, R is a C_1–C_{18}-hydrocarbon radical and m is a number from 1 to 3, with the provisos (i) that the atomic ratio of the transition metal from the catalyst component (1) to aluminum from catalyst component (2) is from 1:0.1 to 1:500, and (ii) that the transition metal catalyst component

(1) used is a solid-phase product (VI), obtained by a method in which

(1.1) first

(1.1.1) a finely divided, porous, inorganic oxidic substance (I), which has a particle diameter of from 1 to 1,000 μm, a pore volume of from 0.3 to 3 cm^3/g and a specific surface area of from 100 to 1,000 m^2/g and is of the formula $SiO_2.aAl_2O_3$-where a is a number from 0 to 2, and

(1.1.2) a solution (II), as obtained on combining

(II*a*) 100 parts by weight of an alcohol of the formula

Z—OH

where Z is saturated C_1–C_8-hydrocarbon radical, and

(II*b*) from 0.01 to 40 parts by weight of a transition metal composition, are brought into contact with one another to form a suspension (III), with the proviso that the weight ratio of inorganic oxidic substance (I) to transition metal composition (II*b*) is from 1:0.01 to 1:1.2, the suspension (III) is evaporated to dryness at below 200° C., and above the melting point of the alcohol (II*a*) used, a solid-phase intermediate (IV) being formed, and

(1.2) thereafter

(1.2.1) the solid-phase intermediate (IV) obtained from stage (1.1) and

(1.2.2) a solution, in an organic solvent, of an aluminum compound (V) of the formula

$$AlR_mX_{3-m}$$

where X is a radical OR, chlorine, bromine or hydrogen, R is a C_1–C_{18}-hydrocarbon radical, and m is a number from 1 to 3, are brought into contact with one another to form a suspension, with the proviso that the weight ratio of the solid-phase intermediate (IV) to the aluminum compound (V) is from 1:0.05 to 1:2, and the resulting suspended solid-phase product (VI) is the transition metal catalyst component (1), wherein the transition metal catalyst component (1) employed is a solid-phase product (VI) obtained using a transition metal composition (II*b*) comprising (II*b*1) 100 molar parts of a vanadium trihalide in which the halogen can be chlorine and/or bromine, and (II*b*2) from 5 to 400 molar parts of a zirconium tetrahalide in which the halogen can be chlorine and/or bromine with the further proviso that the metal compound components of solid phase product (VI) are derived solely from substance (I), compound (V) and the transition metal compounds in composition (II*b*).

4,525,551

HIGHLY ACTIVE AND EFFICIENT POLYOLEFIN CATALYST

Robert R. Schmidt, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 357,356, Mar. 12, 1982, abandoned. This application Dec. 2, 1983, Ser. No. 558,542
Int. Cl.³ C08F *4/64, 10/00*
U.S. Cl. 526—116 **24 Claims**

1. A process for polymerizing alpha-olefins containing 2 to 14 carbon atoms and mixtures of such alpha-olefins to prepare poly-alpha-olefins having a melt viscosity of from 10 to 2,500,000 cp at 150° C., said process comprising polymerizing such alpha-olefins at a temperature of about 125° C. to about 250° C. with a catalyst containing trialkyl aluminum and a complex of titanium chloride and vanadium halide, said complex being prepared by heating a mixture consisting of titanium tetrachloride and vanadium tetrahalide in a hydrocarbon medium at a temperature of at least 60° C. for at least 0.25 hour, the mol ratio of titanium to vanadium in said mixture being 1/3 to 60/1.

4,525,552

PROCESS FOR PRODUCING POLYOLEFINS

Nobuyuki Kuroda, Yokohama; Toru Nakamura, Kawasaki; Yutaka Shikatani, Yokohama; Kazuo Matsuura, Tokyo, and Mitsuji Miyoshi, Fujisawa, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 329,026, Dec. 9, 1981, abandoned. This application Feb. 8, 1984, Ser. No. 577,327
Claims priority, application Japan, May 7, 1981, 56-68684
Int. Cl.³ C08F *4/02, 10/00*
U.S. Cl. 526—116 **11 Claims**

1. A process for the production of polyolefins which comprises homopolymerizing or copolymerizing α-olefins of 2 to 8 carbon atoms in the presence of a catalyst comprising a solid carrier carrying 1 to 10 percent by weight of a tetravalent titanium compound and/or a vanadium compound and an organometallic compound, the polymerization being effected at a temperature of 50° to 100° C. and at a pressure of 2 to 60 $kg./cm.^2$, said solid carrier resulting from the reaction of:

(a) a magnesium halide;

(b) a compound represented by the formula

$$Al(OR)_nX_{3-n}$$

where R is a hydrocarbon residual group having 1 to 24 carbon atoms, X is a halogen atom and n is $1 \leqq n \leqq 3$, and wherein the mol ratio of said magnesium halide (a) to said compound (b) in terms of Mg/Al is in the range of 1/0.05 to 1/0.5; and

(c) a compound represented by the formula

$$Si(OR')_mX_{4-m}$$

where R′ is a hydrocarbon residual group having 1 to 20 carbon atoms, X is a halogen atom and m is $1 \leqq m \leqq 4$, and wherein said compound (c) is used in an amount of 0.1 to 50 grams per 100 grams of said magnesium halide (a),

at least two components of said solid carrier selected from said magnesium halide (a), said compound (b) and said compound (c) being reacted in the presence of an inert solvent at a temperature of 20° to 400° C.

4,525,553

ACRYLIC POLYMERIZATION CATALYSTS CONTAINING FERRICENIUM SALTS

John M. Rooney, Naas, and Paul Conway, Cobh, both of Ireland, assignors to Loctite (Ireland) Limited, Dublin, Ireland

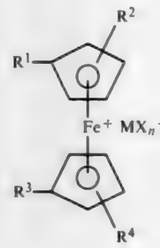
Filed Feb. 21, 1984, Ser. No. 581,857
Int. Cl.³ C08F *4/82*
U.S. Cl. 526—120 **10 Claims**

1. A curable composition comprising

(a) an acrylic monomer;

(b) a peroxy initiator; and

(c) a ferricenium salt represented by the formula:



where R^1, R^2, R^3 and R^4 are the same or different H or alkyl groups or a linkage to a polymeric backbone, M is a metal or metalloid; X is a halide and n is an integer equal to 1+the valency of M.

4,525,554

PROCESS FOR POLYMERIZING OLEFIN

Toru Tanaka, Komae; Kazutoshi Iwatani, Hadano; Nobuo Enokido, Tokyo; Atsushi Murakami, Kawasaki, and Yukio Yamaguchi, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Mar. 4, 1981, Ser. No. 240,480

Int. Cl.³ C08F 4/02, 10/00

U.S. Cl. 526—124 **12 Claims**

1. A process for polymerizing an olefin to obtain substantially narrow molecular weight distribution in the presence of a high yield catalyst system consisting essentially of the steps of combining an organo aluminum compound with a hydrocarbon insoluble solid catalytic component prepared by treating a hydrocarbon solution containing a magnesium compound and a titanium compound, with an aluminum halide having the formula

$$AlR_l^1X_{3-l}^1,$$

wherein R^1 represents an alkyl, aryl or cycloalkyl group and X^1 represents a halogen atom, and l is $1 \leqq l \leqq 2$, the magnesium compound is a compound having the formula

$$Mg(OR^2)_mX_{2-m}^2,$$

wherein R^2 represents an alkyl, aryl or cycloalkyl group; X^2 represents a halogen atom; and m is 1 or 2; the titanium compound is a compound having the formula

$$Ti(OR^3)_nX_{4-n}^3,$$

wherein R^3 represents an alkyl, aryl or cycloalkyl group; X^3 represents a halogen atom; n is 1, 2 or 3; and the molar ratios of said magnesium compound, titanium compound and aluminum halide are in the ranges:

$$1 \leqq Mg/Ti \leqq 4$$

$$1 \leqq \frac{X^1 + X^2 + X^3}{OR^2 + OR^3} \leqq 4.$$

4,525,555

PROCESS FOR PREPARING POLYOLEFINS

Yoshio Tajima, Tokyo; Mituji Miyoshi, Fujisawa; Shoji Sugita, Kawasaki; Kiyoshi Kawabe, Yokohama, and Kazuo Matsuura, Tokyo, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Dec. 15, 1983, Ser. No. 561,936

Claims priority, application Japan, Jan. 14, 1983, 58-3558; Jan. 14, 1983, 58-3559; Jan. 14, 1983, 58-3560; Jan. 14, 1983, 58-3561

Int. Cl.³ C08F 4/44, 10/04

U.S. Cl. 526—125 **5 Claims**

1. A process for preparing a polyolefin, characterized by polymerizing at least one α-olefin in the presence of a catalyst which consists of the combination of:

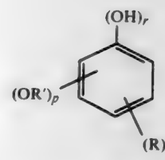
a solid catalyst component consisting of a solid substance obtained by reacting the following components (1) through (3) with one another and (4) a titanium compound supported on said solid substance:

(1) a magnesium halide,

(2) at least one member selected from the group consisting of vinyltrimethoxysilane, vinyltriethoxysilane, vinyltriphenoxysilane, allyltrimethoxysilane, allyltriethoxysilane and allyltriphenoxysilane, and

(3) at least one compound selected from the group consisting of:

(a) compounds represented by the general formula



wherein R is hydrogen, a halogen atom, or a hydrocarbon radical having 1 to 24 carbon atoms, R′ is a hydrocarbon radical having 1 to 24 carbon atoms, and r, p and q are integers satisfying the following conditions: $1 \leqq r \leqq 3$, $0 \leqq p < 6$, $0 \leqq q < 6$, $1 \leqq r+p+q < 6$,

(b) compounds represented by the general formula $P(OR^5)_3$ wherein R^5s, which may be alike or different, are each a hydrocarbon radical having 1 to 24 carbon atoms,

(c) heterocyclic carboxylic acid esters containing oxygen as the hetero-atom;

(d) heterocyclic carboxylic acid esters containing nitrogen as the hetero-atom;

(e) heterocyclic carboxylic acid esters containing sulfur as the hetero-atom.

(f) compounds represented by the general formula $R^6_tSi(OH)_{4-t}$ wherein R^6 is a hydrocarbon radical having 1 to 24 carbon atoms and t is $1 \leqq t \leqq 3$,

(g) compounds represented by the general formula $B(OR^7)_uX_{3-u}$ wherein R^7 is a hydrocarbon radical having 1 to 24 carbon atoms, X is a halogen atom and u is $1 \leqq u \leqq 3$,

(h) compounds represented by the general formula $R^8_2SO_{w+1}$ wherein R^8s, which may be alike or different, are each a hydrocarbon radical having 1 to 24 carbon atoms or an alkoxy group and w is 0 or 1, and

(i) compounds represented by the general formula $R^9NHCOOR^9$ wherein R^9s, which may be alike or different, are each a hydrocarbon radical having 1 to 24 carbon atoms;

an organoaluminum compound; and

a compound selected from the group consisting of monophenyltrimethoxysilane and monophenyltriethoxysilane,

wherein said solid substance is obtained by a co-pulverization at a temperature of 0–200 degrees C. for a time of 0.5 to 30 hours of said components (1), (2) and (3), wherein the ratio of said component (1) to said component (2) is in the range of 1:0.001 to 1:10 in mole ratio, wherein the ratio of said component (1) to said component (3) is in the range of 1:0.001 to 1:10 in terms of mole ratio, and wherein the amount of said compound relative to the titanium compound in said catalyst compnent is in the range of 0.1:1 to 100:1 in terms of Si:Ti ratio.

4,525,556

POLYMERIZATION OF OLEFINS

William M. Coleman, III, Lake Jackson, and Morris S. Edmondson, Alvin, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 407,856, Aug. 13, 1982, abandoned. This application Jan. 31, 1984, Ser. No. 575,616

Int. Cl.³ C08F 4/64, 10/02

U.S. Cl. 526—125 **30 Claims**

1. A process for polymerizing ethylene or a mixture of ethylene and at least one polymerizable ethylenically unsaturated monomer under suitable polymerization conditions in the presence of a supported catalyst composition resulting from reacting in an inert hydrocarbon medium

(A) at least one hydrocarbon soluble organomagnesium component represented by the formula $MgR''_2.xMR''_y$ wherein each R″ is independently a hydrocarbyl group having from 1 to 20 carbon atoms; M is a metal selected from Al, Zn, Si, Sn, B and P; y has a number corresponding to the valence of M and x has a value from about 0.001 to about 10;

(B) a sufficient quantity of at least one halide source so as to convert all of the organic groups attached to a magnesium

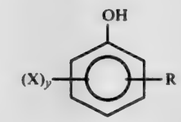
atom in component (A) to a halide group; said halide source being selected from

(1) an active non-metallic halide, said non-metallic halide corresponding to the formula R′X wherein R′ is hydrogen or a hydrocarbyl group having from 1 to about 20 carbon atoms and such that the hydrocarbyl halide is at least as active as sec-butyl chloride and does not poison the catalyst and X is halogen; or

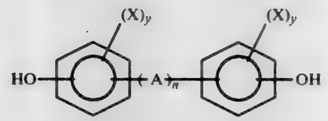
(2) a metallic halide corresponding to the formula $MR_{y-a}X_a$ wherein M is a metal of Group IIIA or IVA of Mendeleev's Periodic Table of Elements, R is a monovalent hydrocarbyl group having from 1 to about 20 carbon atoms, X is halogen, y is a number corresponding to the valence of M and a is a number from 1 to y;

(C) at least one titanium compound represented by the formula $Ti(OR)_xX_{4-x}$ wherein each R is independently a hydrocarbyl group having from 1 to about 20, carbon atoms; X is a halogen and x has a value from zero to 4; with

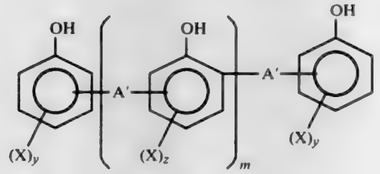
(D) at least one compound containing at least two aromatic hydroxyl groups represented by the formulas



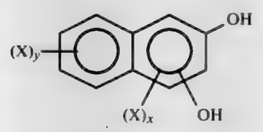
I.



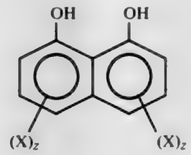
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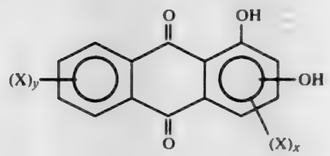
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IV.

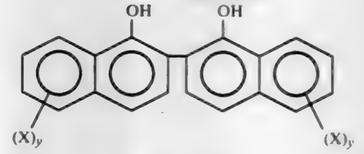


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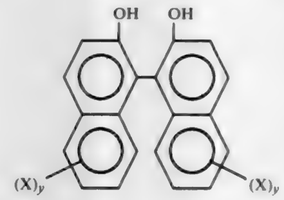


VI.

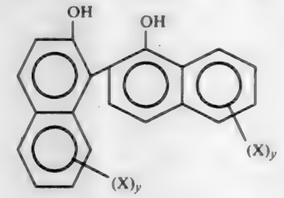
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VII.

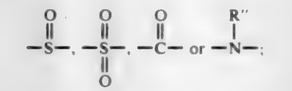


VIII.



IX.

wherein each A is independently a divalent hydrocarbyl group having from 1 to about 10, carbon atoms —O—, —S—, —S—S—,



each A′ is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms; each R is independently —OH,



or a hydroxyl substituted hydrocarbyl or hydrocarbyloxy group having from 1 to about 20 carbon atoms; each R′ is independently hydrogen, hydroxyl or a hydrocarbyl or hydrocarbyloxy group having from 1 to about 10 carbon atoms; each R″ is independently hydrogen or a hydrocarbyl group having from 1 to about 10 carbon atoms; each X is independently a hydroxyl group, a nitro group, a nitrile group, a hydrocarbyl group, a hydrocarbyloxy group, a hydroxyl substituted hydrocarbyl or a hydroxyl substituted hydrocarbyloxy group each such groups having from 1 to about 20 carbon atoms or a halogen; m has an average value of from about 0.01 to about 6; each n independently has a value of zero or 1; each x independently has a value of zero or 1; each y independently has a value of from zero to 4, and z has a value of from zero to 3; and when components (A) and/or (C) do not contain or contain an insufficient quantity of aluminum, then

(E) an aluminum compound represented by the formula $AlR_{y'}X_{y''}$ wherein R is a hydrocarbyl group having from 1 to about 10 carbon atoms; X is halogen and y′ and y″ each have a value of from zero to three with the sum of y′ and y″ being three is employed;

and wherein the components are employed in quantities so as to provide the following ratios:

(1) a Mg:Ti atomic ratio of from about 1:1 to about 200:1;

(2) components (C) and (D) are employed in quantities

which provide a molar ratio of D:C of from about 0.1:1 to about 4:1;

(3) an excess X to Al ratio of from about 0.0005:1 to about 10:1; and

(4) an Al:Ti aromatic ratio of from about 0.1:1 to about 2000:1; and wherein

the catalyst components are added in one of the following orders:

(1) A, B, (C and D, prereacted), E (if required);

(2) A, B, E (if required), (C and D, prereacted);

(3) (A and B, prereacted), (C and D, prereacted), E, (if required);

(4) (A and B, prereacted), E (if required), (C and D, prereacted); and

(5) (A, B and E, if required, prereacted), (C and D, prereacted).

4,525,557

CATALYST AND PROCESS FOR THE POLYMERIZATION OF ETHYLENE

William J. Heilman, and Richard A. Kemp, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

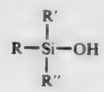
Filed Feb. 27, 1984, Ser. No. 584,165

Int. Cl.[3] C08F *4/44, 110/02;* C01B *15/14*

U.S. Cl. 526—128 **10 Claims**

1. A process for the polymerization of ethylene which comprises polymerizing ethylene in the presence of a catalytic amount of an organo-aluminum compound and a catalytic amount of a catalytic complex prepared by a process which comprises:

(a) reacting a silanol having the formula:



where R, R′ and R″ can be the same or different and are selected from the group consisting of aliphatic hydrocarbons having from 2 to 12 carbon atoms or phenyl or substituted phenyl where such substituents have from one to three alkyl groups having from one to four carbon atoms and wherein R″ can additionally be selected from —OH with a magnesium dialkyl wherein each alkyl group can have from one to 12 carbon atoms to form a first reaction product;

(b) reacting said first reaction product with trichlorosilane to form a second reaction product; and

(c) reacting said second reaction product with a metal compound having the formula:

MeX_4

where Me can be titanium or vanadium and wherein X is chlorine, bromine, or $—OR_1$ where R_1 is a hydrocarbon radical having from 1 to 10 carbon atoms and wherein at least two of the X substituents are selected from chlorine and bromine to form the desired catalytic complex and wherein said catalytic complex the molar ratio of Me to Si is from about 0.33:1 to 11:1 and wherein the molar ratio of Me to Mg is from 0.33:1 to 11:1 and wherein the molar ratio of the organo-aluminum compound to said catalytic complex is from 1:1 to 1000:1.

4,525,558

CATALYTIC COMPONENT FOR POLYMERIZATION OF α-OLEFIN AND METHOD FOR HOMO- OR CO-POLYMERIZATION OF α-OLEFIN

Masaru Takitani; Shizuo Tomiyasu, and Keikichi Baba, all of Shinnanyo, Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 386,585, Jun. 9, 1982, Pat. No. 4,439,539. This application Jan. 26, 1984, Ser. No. 573,995

Claims priority, application Japan, Jun. 11, 1981, 56-89859

Int. Cl.[3] C08F *4/44*

U.S. Cl. 526—142 **2 Claims**

1. A method for homo- or co-polymerization of an α-olefin wherein the polymerization is carried out in the presence of a catalytic composition comprising an α-olefin polymerizing catalytic component and an organo-aluminum compound, said catalytic component being prepared through sequential steps including:

(a) a step in which an organo-magnesium compound expressed by the generic formula of R′MgX′ (wherein R′ represents a hydrocarbon group having 1 to 20 carbon atoms and wherein X′ is either halogen atoms chosen out of chlorine, bromine and iodine or is R′ is reacted with carbon tetrahalide in the presence of an electron donor compound to obtain a solid-liquid product which is subjected to a solid-liquid separation process at a temperature between −50° C. and 100° C. to separate the solid from the solid-liquid separation product;

(b) a step in which the separated solid is heat treated with a carbon halide at a temperature between 40° and 80° C., the amount of the carbon halide is at least 0.1 mol per mol of magnesium contained in the solid product;

(c) a step in which the heat treated solid product of step (b) is treated with phenols at a temperature between 90° C. and 180° C., the amount of the phenols used is 0.01 to 10 mol per mol of magnesium contained in the heat treated solid product of step (b); and

(d) another step in which the phenol treated product is treated further with a halogenated titanium compound at a temperature between room temperature and 150° C., the amount of the halogenated titanium compound used is at least 0.01 mol per mol of the magnesium contained in the phenol treated product.

4,525,559

SUSPENSION POLYMERIZATION OF VINYL CHLORIDE WHEREIN SUSPENSION AGENT IS ADDED AFTER THE MONOMER CHARGE

Gilbert Sielfeld, and Rudolf de Jong, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels AG, Marl, Fed. Rep. of Germany

Filed Aug. 20, 1982, Ser. No. 409,795

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132890

Int. Cl.[3] C08F *2/20*

U.S. Cl. 526—200 **6 Claims**

1. In a process for producing a vinyl chloride polymer or copolymer by suspension polymerization in the presence of a suspension stabilizer, and a monomer-soluble catalyst, comprising carrying out the polymerization in the presence of 0.4–8.0% by weight, based on the amount of monomer, of an ethylene-vinyl actate copolymer having a vinyl acetate content of 42–48% by weight and a viscosity number of 95–210 ml/g, measured in toluene in a concentration of 0.005 g/cm^3 at 25° C.; the improvement wherein the catalyst, the ethylene-vinyl acetate copolymer, and the monomer charges are added to the polymerization charge before addition of the suspension agent.

4,525,560

SOLUTION POLYMERIZATION OF CONJUGATED DIENES

Richard L. Smith, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 152,066, May 20, 1980, abandoned, which is a continuation of Ser. No. 40,020, May 18, 1979, abandoned. This application Mar. 25, 1983, Ser. No. 478,750

Int. Cl.[3] C08F *36/06*

U.S. Cl. 526—201 **31 Claims**

1. In the organolithium initiated solution polymerization of monomers comprising at least one polymerizable conjugated diene, and optionally at least one polymerizable monovinylarene hydrocarbon, the method of producing high levels of polymer solids without the requirement of cooling during polymerization comprising polymerizing the same said monomers in successive increments by contacting each incremental portion of said monomers with an organolithium initiator under solution polymerization conditions using hydrocarbon solvent, said hydrocarbon solvent consisting essentially of a hydrocarbon other than hexane if arenes are included in said monomers, until substantially all of the monomers in said portion have been polymerized, terminating the living polymer of each polymerization step with at least enough terminating agent to deactivate substantially all of the active polymer lithium, and employing at least a portion of the terminated polymer from the preceding polymerization step as at least a portion of the diluent for each succeeding polymerization step, wherein the amount of hydrocarbon solvent per quantity of monomer employed in each polymerization step is such that the weight percent polymer solids after that polymerization step is greater than the weight percent polymer solids produced in the preceding step and wherein the total amount of monomers and the reaction conditions are such that the weight percent polymer solids of conjugated diene polymer that is obtained is greater than the maximum weight percent solids of conjugated diene polymer having essentially the same physical properties that can be obtained by polymerizing all said monomers in one step without the use of cooling during polymerization.

4,525,561

POLYMERIZING PHENOTHIAZINE STABILIZER CHLOROPRENE IN THE PRESENCE OF AN INITIATOR COMPRISING SODIUM DITHIONATE

Rudolf Casper; Peter Wendling, both of Leverkusen; Wolfgang Konter, Neuss; Gottfried Pampus, and Gerhard Hohmann, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 407,124, Aug. 11, 1982, abandoned, which is a division of Ser. No. 234,948, Feb. 17, 1981, abandoned. This application Dec. 16, 1983, Ser. No. 562,418

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006802

Int. Cl.[3] C08F *136/18*

U.S. Cl. 526—220 **3 Claims**

1. In the process of polymerizing an aqueous emulsion of chloroprene monomer stabilized with phenothiazine, the improvement wherein said polymerization is initiated in the presence of said stabilizer and molecular oxygen with a polymerization initiator comprising sodium dithionite.

4,525,562

THERMALLY STABLE DRILLING FLUID ADDITIVE

Arvind D. Patel, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

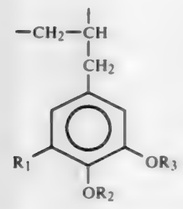
Filed Jun. 7, 1983, Ser. No. 501,900

Int. Cl.[3] C08F *222/04;* C09K *7/00*

U.S. Cl. 526—271 **9 Claims**

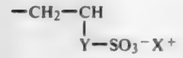
1. A water soluble polymer having thermal stability and exhibiting utility as an aqueous drilling fluid additive comprising:

(a) a major portion of a catechol based monomer having the formula:

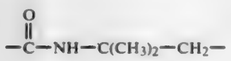


wherein R_1 is a hydrogen, hydroxyl or methoxy; wherein R_2 is a hydrogen, methyl or part of a methylene group and wherein R_3 is a hydrogen, methyl or part of a methylene group;

(b) a minor portion of an unsaturated sulfonic acid of the formula:



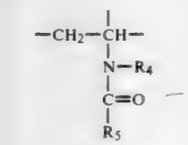
wherein Y represents a direct combination or a bridging element according to the formula:



and X^+ represents a cation;

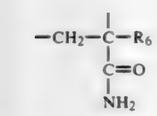
(c) a minor portion of a dicarboxylic acid monomer;

(d) an N-vinyl acylamine having the structure:



wherein R_4 is a hydrogen, a methyl or part of a cyclic trimethylene group and R_5 is a hydrogen, a methyl or part of a cyclic trimethylene group; and

(e) a substituted amide of the formula:



wherein R_6 is a hydrogen or a methyl group.

4,525,563

OXYGEN PERMEABLE SOFT CONTACT LENS COMPOSITION

Takanori Shibata; Toshiharu Yoshikawa, both of Nagoya; Kenichi Isobe, and Shoji Ichinohe, both of Annaka, all of Japan, assignors to Toyo Contact Lens Co., Nagoya and Shin-Etsu Chemical Co., Ltd., Tokyo, both of, Japan

Filed Mar. 13, 1984, Ser. No. 589,251

Claims priority, application Japan, Apr. 6, 1983, 58-60305

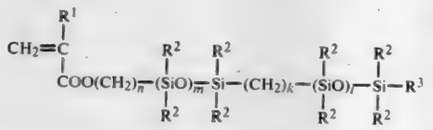
Int. Cl.[3] C08F *30/08*

U.S. Cl. 526—279 **2 Claims**

1. A copolymer suitable for use in the production of an

oxygen permeable soft contact lens, comprising a copolymer of the following monomers:

(a) a hydrophilic siloxanylalkyl ester having the formula (I):



(I)

wherein R^1 is hydrogen atom or methyl group, R^2 is methyl group or $—OSi(CH_3)_3$, R^3 is a hydrophilic group selected from the group consisting of an oligo ether residue, a diol residue, an aminohydrin residue and an acid amido residue, n is an integer of 1 to 4, m and l are 0 or an integer of 1 to 2, and k is an integer of 2 to 4, or an admixture thereof,

(b) a hydrophilic monomer other than said monomer (a), and

(c) a hydrophobic monomer.

4,525,564

HIGH MODULUS, LOW CREEP STRAIN POLYALKENE POLYMER MATERIALS

Giancarlo Capaccio, Leeds, and Ian M. Ward, Bramhope near Leeds, both of England, assignors to National Research Development Corporation, London, England

Division of Ser. No. 943,856, Sep. 19, 1978, Pat. No. 4,268,470, which is a continuation of Ser. No. 739,074, Nov. 5, 1976, abandoned. This application Dec. 17, 1980, Ser. No. 217,511

Claims priority, application United Kingdom, Nov. 5, 1975, 45920/75

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ C08F *10/02*

U.S. Cl. 526—348.1 **6 Claims**

1. An oriented polymer material having a weight average molecular weight greater than 300,000; a ratio of weight average molecular weight to number average molecular weight greater than 5; and a creep strain at room temperature of less than 3% after 15 hours under a stress which produces an initial strain of 1% after 10 seconds, said polymer material being selected from the group consisting of ethylene/propylene block copolymers, ethylene/hexene-1-copolymers, polypropylene or a substantially linear polymer of ethylene containing at least 95% by weight of ethylene and having a density from 0.91 to 1.0 gm/cm³ as measured by the method of British Standard Specification No. 2782 (1970) method 590B on a sample prepared according to British Standard Specification No. 3412 (1966) Appendix A and annealed according to British Standard Specification No. 3412 (1966) Appendix B(1).

4,525,565

SINGLE COMPONENT ORGANOPOLYSILOXANE COMPOSITIONS CONTAINING SILANES WITH ACYLOXY OR KETONIMINOXY GROUPS AS CROSS LINKING AGENTS AND ORGANIC DERIVATIVES OF TITANIUM OR ZIRCONIUM AS CATALYSTS

Bernard Laisney; Michel Letoffe, both of Sainte-Foy-les-Lyon; Patrice Perrin, Lyons, and Jean Ulrich, Saint-Syphorien d'Ozon, all of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Jul. 29, 1983, Ser. No. 518,488

Claims priority, application France, Jul. 30, 1982, 82 13505

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—17 **9 Claims**

1. A single component organopolysiloxane composition which is stable in storage in the absence of water and which comprises a mixture of the following:

(A) 100 parts of a polysiloxane consisting essentially of a α,ω-dihydroxydiorganopolysiloxane having a viscosity of from 700 to 1,000,000 mPa.s at 25° C., comprising a succession of diorganosiloxy units of the formula R_2SiO in which the symbols R, which can be identical or different, represent hydrocarbon radicals having from 1 to 8 carbon atoms and which are optionally substituted with halogen atoms or cyano groups,

(B) 2 to 25 parts of a cross-linking agent of the formula $R_aSi(OCOR^1)_{4-a}$ and/or the formula $R_{a'}Si(ON{=}CR^2_2)_{4-a'}$ wherein the symbols R have the significance given in (A), the symbol R^1 represents a hydrocarbon radical free of aliphatic unsaturation and having from 1 to 15 carbon atoms, the symbols R^2, which can be identical or different, represent alkyl radicals having from 1 to 8 carbon atoms, and the symbols a and a' represent zero or one,

(C) 0.0004 to 0.095 parts of a hardening catalyst, and

(D) 5 to 150 parts of mineral fillers, wherein the composition is further characterized in that the hardening catalyst (C) comprises either an organic derivative of titanium or an organic derivative of zirconium selected from:

(i)(a) organic titanium derivatives which comprise for each titanium atom at least one organosilicon radical bound to said titanium atom by a Ti—O—Si bond, with the other valences being satisfied by radicals from the group comprising Ti—O—C bonds, hydroxyl radicals, oxygen atoms of Ti—O—Ti bonds or chelation bonds, or,

(i)(b) organic titanium derivatives which comprise for each titanium atom at least one organic radical bound to said atom by a Ti—O—C bond, with the remaining valances of the titanium atom being satisfied by radicals of the group comprising hydroxyl radicals, oxygen atoms of Ti—O—Ti bonds or chelation bonds, or,

(ii) organic zirconium derivatives which comprise for each atom of zirconium at least one organic radical bound to said zirconium atom by a Zr—O—C bond, but with the proviso that there are no Zr—OCO-bonds originating from a carboxylic acid residue, with the remaining valences of the zirconium atom being satisfied by radicals of the groups comprising hydroxyl radicals, oxygen atoms of Zr—O—Zr bonds or chelation bonds.

4,525,566

COATING METHOD AND SILICONE COMPOSITION FOR PSA RELEASE COATING

Gary R. Homan, and David L. Stickles, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 2, 1984, Ser. No. 585,748

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—17 **6 Claims**

1. A liquid composition which cures when applied to a substrate and exposed to moisture, said liquid composition being prepared by mixing, under substantially anhydrous conditions, components comprising

(A) 100 parts by weight of an organopolysiloxane fluid bearing an average of at least two silicon-bonded, alkoxysilylorganic radicals per molecule, said radicals having the formula $—QSiR_a^1(OR^2)_{3-a}$ and said organopolysiloxane fluid having the formula $ZR_2^1SiO(Me_2SiO)_x(MeRSiO)_ySiR_2^1Z$,

(B) a titanium ester, or a partial hydrolyzate or partial alcoholate thereof, soluble in said liquid composition, in sufficient amount to provide from 0.5 to 4.0 parts by weight of titanium, and

(C) from 0.5 to 50 parts by weight of an aminoorganosiloxane bearing an average of at least 1 silicon-bonded aminoorgano radical per molecule, said aminoorgano radical having the formula $—Q(NR^3CH_2CH_2)_mNHR^3$, all other silicon-bonded radicals of the aminoorganosiloxane being selected from the group consisting of siloxane oxygen atoms, R^1 radicals and OR^2 radicals; wherein, independently at each occurrence in the components,

R denotes the $—QSiR_a^1(OR^2)_{3-a}$ radical;

R^1 denotes a monovalent hydrocarbon radical having from 1 to 6, inclusive, carbon atoms;

R^2 denotes a methyl, ethyl, propyl or methoxyethyl radical;

R^3 denotes a H atom or an R^1 radical;

Q denotes an alkylene radical;

Z denotes an R radical or an R^1 radical;

Me denotes a methyl radical;

a has a value of 0 or 1;

x has an average value of from about 50 to 500;

y has an average value of from 0 to (x+y)/4; and

m has a value of from 0 to about 3.

4,525,567

IONICALLY CROSS-LINKED SILOXANE POLYMERS

John R. Campbell, Clifton Park, and Robert E. Williams, Jr., Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 4, 1984, Ser. No. 568,165

The portion of the term of this patent subsequent to Jan. 15, 2002, has been disclaimed.

Int. Cl.³ C08G *77/04*

U.S. Cl. 528—27 **3 Claims**

1. Zwitterionic siloxane polymers having at least 0.5 percent tertiary silicon atoms chemically combined in accordance with the formula

$$R^x—Si—(\theta)_3$$

wherein R^x is a zwitterion having a chemically combined unit selected from the group of formulas consisting of:

$$—R'—NH_2^+—R—SO_3^- \text{ and } —R'—NH^+_2—R—COO^-$$

wherein R is a divalent hydrocarbon radical of from 2 to 20 carbon atoms, R' is a divalent radical of from 1 to 20 carbon atoms and θ are siloxane polymer segments having repeating units of a formula selected from the group consisting of

$$—(R_2'SiO)_m— \text{ and } —(R''SiO_{3/2})_m—$$

wherein R'' is a monovalent radical selected from the group consisting of hydrogen, alkyl radicals of from 1 to 10 carbon atoms and aryl radicals of from 1 to 20 carbon atoms and m is an integer of from 1 to about 2000.

4,525,568

STORAGE STABLE, ONE-PACKAGE HEAT CURABLE POLYURETHANE ADHESIVE COMPOSITIONS

Eugene Y. C. Chang, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 9, 1984, Ser. No. 586,885

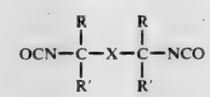
Int. Cl.³ C08G *18/72*

U.S. Cl. 528—60 **12 Claims**

1. A storage stable, one package heat curable polyurethane adhesive composition, said composition comprising:

(a) a mixture of or a prepolymer adduct of:

(i) a poly aliphatic isocyanate compound of the formula:



wherein R and R' are each, independently, selected from hydrogen, alkyl or substituted alkyl and X is a bridging means selected from aliphatic, cycloaliphatic, or aromatic groups, or a prepolymer adduct of said isocyanate compound possessing poly aliphatic isocyanate functionality; and

(ii) a monomeric or polymeric compound containing a plurality of hydroxyl groups; wherein component (ii) is added in an amount so as to provide less than a stoichiometrically equivalent amount of hydroxyl groups to said aliphatic isocyanate groups present in (a), in admixture with

(b) an amount of a curing agent comprising a monomeric or polymeric compound containing at least three hydroxyl groups, at least one of said hydroxyl groups being a secondary hydroxyl group, said curing agent being present in an amount sufficient to provide an approximately stoichiometrically equivalent amount of hydroxyl groups to said excess of aliphatic isocyanate groups in (a); and

(c) optionally, an effective amount of an inert filler.

4,525,569

THERMOSETTING COATING COMPOSITION

Panagiotis I. Kordomenos, Mt. Clemens, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1983, Ser. No. 565,321

Int. Cl.³ C08G *59/16*

U.S. Cl. 528—73 **24 Claims**

1. An organic solvent based thermosetting composition comprising:

(A) crosslinkable hydroxy functional epoxy ester resin having a number average molecular weight (Mn) between about 1,000 and about 5,000, said resin comprising the reaction product of diepoxide chain extended with dicarboxylic acid and chain terminated with acid component comprising hydroxy functional acid; and

(B) polyfunctional, hydroxy-reactive crosslinking agent selected from aminoplast crosslinking agent, blocked polyisocyanate crosslinking agent comprising at least two isocyanate groups blocked by reaction with an active hydrogen bearing blocking agent, and a compatible mixture of any of them, said crosslinking agent being included in an amount such that at the cure temperature of the composition said cross-linking agent will provide between about 0.5 and about 1.6 hydroxy reactive groups per hydroxy group contributed by said epoxy ester resin.

4,525,570

HEAT-SETTING MIXTURES WHICH HAVE A LONG SHELF LIFE AND COMPRISE A POLYISOCYANATE AND COMPOUNDS WHICH ARE REACTIVE TOWARD ISOCYANATE GROUPS, AND THEIR PREPARATION

Rainer Blum, Ludwigshafen; Herbert Spoor, Limburgerhof; Rolf Osterloh, Gruenstadt; Gerhard Mosler, and Bernhard Rubbert, both of Muenster, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,002

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228723

Int. Cl.³ C08G *18/72, 18/48, 18/62*

U.S. Cl. 528—75 **6 Claims**

1. A heat-setting mixture which has a long shelf life at room temperature, can be used as a coating composition, an adhesive or a sealant material or as an undersealant for motor vehicles, and comprises a polyisocyanate and one or more compounds which are reactive toward isocyanate groups and may or may not contain additives, such as protective colloids, solvents, plasticizers, pigments, fillers, dyes or other assistants conventionally used in surface coating technology, wherein the polyisocyanate, in the form of discrete particles having a diameter of from 0.1 to 150 μm, is dispersed in a saturated or unsaturated amino-, hydrazide-, mercaptan- and/or carboxyl-containing polymer, polycondensate or polyadduct which has a functionality of more than 1 and may or may not contain the stated additives and not more than 95% of which may be replaced by polyols, and the polyisocyanate particles are deactivated at their surface, with the proviso that from 0.01 to 20 equivalent percent of the total amount of isocyanate groups present is deactivated.

4,525,571

EPOXY RESIN/CYCLOALIPHATIC AMINE CURING AGENT MIXTURES

Christian Burba, Ascheberg-Herbern, and Herbert Franz, Hamm, both of Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Jun. 27, 1984, Ser. No. 625,044

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 3324873

Int. Cl.³ C08G *59/50*

U.S. Cl. 528—111 **6 Claims**

1. A method for making a curable synthetic resin composition suitable for the production of surface coatings, which method comprises reacting

(1) a solid or liquid polyglycidyl ether having an epoxy value from 0.1 to 0.6 with

(2) a polyamine which is the reaction product of epichlorohydrin and a cycloaliphatic diprimary diamine and which has an average of more than two reactive amino hydrogen atoms per molecule,

said polyglycidyl ether and polyamine being reacted in a molar ratio between 1:>1 and 1:2.

4,525,572

HEAT-CURABLE MIXTURES, STABLE ON STORAGE, BASED ON POLYIMIDES AND CONTAINING POLYMERIZATION CATALYSTS

Hermann Diethelm, Aesch, and Sheik A. Zahir, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 449,023, Dec. 13, 1982, Pat. No. 4,463,147. This application Apr. 16, 1984, Ser. No. 600,867

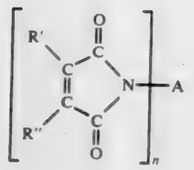
Claims priority, application Switzerland, Dec. 23, 1981, 8253-81

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—170 **10 Claims**

1. A heat-curable mixture, stable on storage and based on a polyimide and a polymerization catalyst, which comprises

(a) a polymaleimide of the formula I

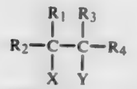


(I)

in which R′ and R″ are a hydrogen atom or a linear or branched alkyl group having 1 to 4 C atoms and A is a divalent, trivalent or tetravalent aliphatic radical having 2 to 30 C atoms, a cycloaliphatic radical, an aromatic radical, a heterocyclic radical or an araliphatic radical and n is 2, 3 or 4, or, when n is 2, A is also a direct bond,

(b) a compound having at least two functional groups of the same or different type and having no olefinic double bond in the molecule, which compound undergoes an addition or polymerization reaction with the maleic double bond, or a still fusible prepolymer of such a component with (a), and

(c) in an amount of 0.1 to 10% by weight, based on the sum of the amounts of (a), (b) and (c), of a polymerization catalyst of the formula II



(II)

in which R_1 and R_3 are each an aromatic radical, R_2 is a hydrogen atom or an aliphatic or aromatic radical, R_4 is an aliphatic or aromatic radical and X and Y, independently of one another, are each a free or masked hydroxyl group or a halogen atom.

4,525,573

THERMOSET POLYMERS AND PREPOLYMERS OBTAINED BY POLYCONDENSATION OF ALKYL PYRIDINE WITH HYDROXYL AROMATIC MONOALDEHYDES

Marcel Ropars, Rocquen Court, and Bertrand Bloch, Paris, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris and Office National d'Etudes et de Recherches Aerospatiales, Bagneux, both of, France

Filed Aug. 24, 1984, Ser. No. 644,195

Claims priority, application France, Sep. 13, 1983, 83 14546

Int. Cl.³ C08G *12/08*

U.S. Cl. 528—232 **18 Claims**

1. Thermoset prepolymers wherein they consist, at least in part, of the polycondensation reaction products of one or more pyridine derivatives containing at least two activated methyl groups in the 2, 4, 6-positions with one or more aromatic monoaldehydes containing at least one hydroxyl group.

4,525,574

POLYESTERS POLYOLS PREPARED FROM GLUTARIC ACID, SUCCINIC ACID AND ADIPIC ACID, AND POLYURETHANES PREPARED THEREFROM

George N. Altounian, Cap Rouge, Canada, assignor to Centre de Recherche Industrielle de Quebec, Pointe-Claire, Canada

Filed Jul. 26, 1983, Ser. No. 517,397

Claims priority, application Canada, Feb. 11, 1983, 427364

Int. Cl.³ C08G *63/22*

U.S. Cl. 528—283 **1 Claim**

1. Process for preparing polyols which comprises

(a) introducing in a reactor a mixture of acids comprising about 50 to 70% by weight of glutaric acid, about 15 to 30% by weight of succinic acid and about 10 to 20% by weight of adipic acid, or esters or anhydrides thereof, with at least one polyhydroxy alcohol selected from the group consisting of secondary alcohols, tertiary alcohols, and highly cluttered alcohols, with a catalyst selected from the group consisting of stannous chloride, stannic chloride and alkyl-tin compounds;

(b) flushing the reaction mixture with an inert gas;

(c) heating the reaction mixture while stirring at a temperature not exceeding about 225° C.;

(d) removing 90 to 95% of the water or methanol formed during step (c);

(e) introducing into the reactor at least one primary alcohol which is not cluttered;

(f) heating to about 225° C. and removing by distillation the maximum of water or methanol;

(g) ending the reaction by placing the reactor under vacuum in order to remove all traces of water or methanol in the reaction mixture and continuing this operation until the polyol obtained has an acid value lower than 3, a hydroxyl functionality at least equal to 2.0 and a hydroxyl number lower than 600.

4,525,575

POLYESTER POLYOLS AND MIXTURES MADE THEREFROM

Robert P. Yeater, Moundsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Aug. 5, 1983, Ser. No. 520,665

Int. Cl.³ C08G *63/66*

U.S. Cl. 528—301 **4 Claims**

1. A polyester polyol having an hydroxyl number of from about 25 to about 130 and an acid number of 2 or less, produced by reacting

(a) from about 40 to about 60 parts by weight of adipic acid,

(b) from about 1 to about 20 parts by weight of ethylene glycol,

(c) from about 1 to about 30 parts by weight of 1,4-butanediol, and

(d) from about 5 to 50 parts by weight of a polyoxyethylene glycol having a molecular weight of from 106 to 680,

the total parts of (a), (b), (c) and (d) being 100.

4,525,576

PROCESS FOR PRODUCING SEQUENTIAL POLYAMINO ACID RESIN

Ikuo Hayashi, Koriyama; Tadao Itikawa, Fukushima; Keizo Ogihara, Sukagawa, and Kiyoshi Shimizu, Koriyama, all of Japan, assignors to Nitto Boseki Co. Ltd., Fukushima, Japan

Filed Oct. 15, 1984, Ser. No. 660,946

Claims priority, application Japan, Oct. 17, 1983, 58-193945

Int. Cl.³ C08G *69/08, 73/10, 69/10*

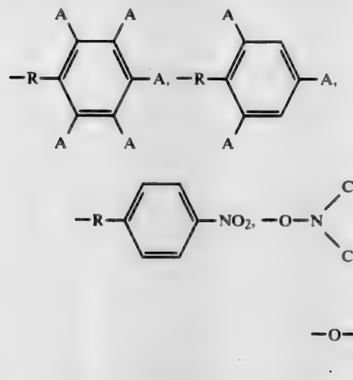
U.S. Cl. 528—313 **8 Claims**

1. A process for producing a sequential polyamino acid resin having a high molecular weight and special amino acid sequence as repeating unit in the resin, which comprises

conducting a polycondensation reaction of a dipeptide active ester acid salt represented by the formula:

$$H—X_1—X_2—Y.Z \quad (I)$$

wherein X_1 and X_2 are independently L-, D- or DL-α-amino acid residues protected or non-protected at a side chain in the formula: $H—X_1—OH$ or $H—X_2—OH$ in which H is a hydrogen atom in an amino group and may be replaced by a protective group for an amino acid, and OH is the hydroxyl moiety in a carboxyl group; H is a hydrogen atom in an amino group; Y is a functional group represented by the formula:



in which A is a chlorine or bromine atom, and R is a sulfur or oxygen atom; and Z is HBr, HCl, HF, CF_3COOH or p-toluenesulfonic acid, in an aprotic polar solvent in the presence of a tertiary amine and phosphorus pentoxide.

4,525,577

POLYMERS OF 3,3-DISUBSTITUTED-FURANDIONE COMPOUNDS

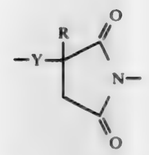
Edmund P. Woo, and Michael J. Mullins, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 214,611, Dec. 9, 1980, abandoned. This application Apr. 17, 1984, Ser. No. 601,147

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—327 **4 Claims**

1. A poly(imide)-containing polymer consisting essentially of recurring units of the formula



wherein:

Y is a divalent hydrocarbon group or a divalent hydrocarbon group containing oxygen, sulfur, nitrogen, silicon, phosphorus, or halogen atoms; and

R is phenyl or C_{1-10} alkyl.

4,525,578

PROCESS FOR THE PREPARATION OF POLYESTERAMIDE FROM CYCLIC LACTONE

Mu-Yen M. Wu, and Lawrence E. Ball, both of Cuyahoga Falls, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 336,543, Jan. 4, 1982, abandoned. This application Sep. 19, 1983, Ser. No. 533,616

Int. Cl.³ C08G *69/44*

U.S. Cl. 528—354 **13 Claims**

1. A process for preparing a solid moldable polyesteramide comprising polymerizing a cyclic lactone containing at least three carbon atoms with an ammonium salt of an alpha, beta-unsaturated monocarboxylic acid, wherein the molar ratio of the ammonium salt to the cyclic lactone is greater than 1.

4,525,579

PROCESS FOR THE PRODUCTION OF OPTIONALLY BRANCHED POLYARYLENE SULPHIDES WITH POLYHALOGENATED POLYAROMATIC COMPOUND

Karsten Idel, Krefeld; Edgar Ostlinning, Duesseldorf; Wolfgang Koch, Bischoffen, and Walter Heitz, Kirchhain, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,420

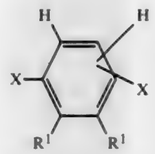
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1983, 3312254

Int. Cl.³ C08G *75/16*

U.S. Cl. 528—388 **9 Claims**

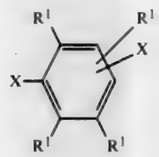
1. A process for the production of high molecular weight polyarylene sulphides having a high melt viscosity wherein:

(a) at least one dihalogen benzene, of which from 0 to 100 mol-% correspond to formula (I):



(I)

and from 100 to 0 mol-% correspond to formula (II):



(II)

X represents chlorine or bromine in the meta- or para-position to each other; and

R^1 which is the same or different, represents hydrogen,

C_1–C_{20} alkyl, C_5–C_{20} cycloalkyl, C_6–C_{24} aryl, C_7–C_{24} alkaryl or C_7–C_{24} aralkyl; and two groups R^1 in the ortho-position to each other when joined together form an aromatic or heterocyclic 6-membered ring having up to three O, N or S, hetero atoms, and one group R^1 is other than hydrogen; and

(b) from 0 to 3.0 mol-%, based on the sum of the aromatic dihalogen compounds (I) and (II), of an aromatic trihalogen or tetrahalogen compound corresponding to formula (III):

$$ArX_n \qquad (III)$$

wherein

Ar represents an aromatic or heterocyclic group having from 6 to 24 carbon atoms and in which up to three ring carbon atoms are replaced by N, O or S hetero atoms;

X represents chlorine or bromine; and

n represents 3 or 4;

(c) at least one alkali metal sulphide with the molecular ratio of (a+b):c being from 0.85:1 to 1.15:1;

(d) in a polar solvent with the molar ratio of (c) and (d) being from 1:2 to 1:15, are reacted together with

(e) from 1 to 50 mol-%, based on the molar quantity of alkali metal sulphide, of a reducing agent and

(f) from 1 to 50 mol-% of a compound corresponding to formula (IV):

$$X_mAr—Y—ArX_m \qquad (IV)$$

Ar and X are as defined above in formula (III); and

Y represents a single bond or Y represents oxygen, sulphur,

$$—SO_2—,\ —\overset{\overset{O}{\|}}{C}—\ \text{or}\ —CR^3R^4\rangle_m,$$

wherein R^3 and R^4 represent hydrogen or an alkyl group having from 1 to 6 carbon atoms; and

m represents an integer of from 1 to 4;

the sum of (I), (II) and (IV) amounting to 100 mol-%, based on the mols of alkali metal sulphide.

4,525,580

METHOD FOR REDUCING COLOR OF POLY(TETRAMETHYLENE ETHER) GLYCOL WITH HYPOCHLORITE

Melvin C. Baker, Youngstown, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 26, 1984, Ser. No. 634,781

Int. Cl.³ C08J *3/00*

U.S. Cl. 528—490 **4 Claims**

1. A method for reducing the color level of a poly(tetramethylene ether)glycol the process comprising bringing the poly(tetramethylene ether)glycol into contact with hypochlorite ions for a time sufficient to bring the poly(tetramethylene ether)glycol to the desired shade.

4,525,581

INCREASING THE EFFICIENCY OF HIGH MOLECULAR WEIGHT CROSSLINKED POLYCARBOXYLIC ACIDS

Walter Denzinger, Speyer; Heinrich Hartmann, Limburgerhof; Gerhard Faulhaber, Bad Durkheim, and Hans-Jürgen Raubenheimer, Ketsch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 20, 1984, Ser. No. 572,244

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1983, 3302496

Int. Cl.³ C08F *6/24*

U.S. Cl. 528—503 **7 Claims**

1. A process for increasing the efficiency of a high molecular weight cross-linked polycarboxylic acid copolymer which is used as a thickener for neutral and alkaline aqueous systems and is obtained by precipitation polymerization or suspension polymerization of the monomeric components of a mixture of (a) from 70 to 99.9% by weight of monoethylenically unsaturated carboxylic acids (b) from 0.1 to 10% by weight of ethylenically diunsaturated or polyunsaturated monomers as crosslinking agents and (c) from 0 to 20% by weight of other monoethylenically unsaturated monomers in an organic solvent in which the monomers are soluble and the copolymer is insoluble at a temperature no higher than 75° C., wherein the copolymer is heated in solid finely divided condition for from 2 minutes to 5 hours at from 80° to 130° C. but below the glass transition temperature of the copolymer, the time and temperature within such heating ranges being so selected as to obtain a copolymer whose gel when neutralized in electrolyte containing water is of higher viscosity than the unheated copolymer.

4,525,582

SILYL, BENZYL, P-NITROBENYL, OR METHYL ESTERS OF DIAZOACETATE, A SYNTHON USED IN THE CONVERSION OF PENICILLIN TO THIENAMYCIN

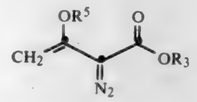
Joseph S. Amato, Brooklyn, N.Y.; Sandor Karady, Mountainside, and Leonard M. Weinstock, Belle Mead, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 391,032, Jun. 22, 1982, Pat. No. 4,444,685, which is a continuation-in-part of Ser. No. 257,695, Apr. 27, 1981, abandoned. This application Jan. 23, 1984, Ser. No. 572,794

Int. Cl.³ C07C *113/00*

U.S. Cl. 534—558 **1 Claim**

1. A compound of the formula:



wherein R_3 is a member selected from the group consisting of trimethylsilyl, t-butyldimethylsilyl, triethylsilyl, methyl, benzyl, and p-nitrobenzyl; and R_5 is the same or different member of the group R_3 as defined above.

4,525,583

QUATERNARY AMMONIUM SUBSTITUTED BENZOTHIAZOLYLPHENYL AZO PYRIMIDINE DYES

Jean-Marie Adam, Rosenau, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

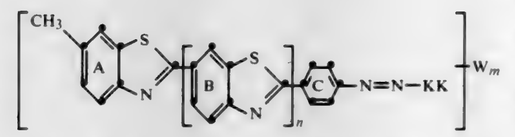
Filed Jan. 13, 1983, Ser. No. 457,822

Claims priority, application Switzerland, Jan. 19, 1982, 310/82

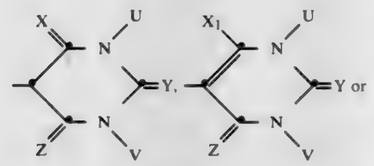
Int. Cl.³ C09B *29/036, 29/36, 44/08;* D06P *1/41*

U.S. Cl. 534—606 **9 Claims**

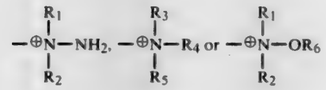
1. A benzthiazole compound of the formula



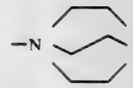
in which KK is the radical of a pyrimidine coupling component of the formula



in which X and Z independently of one another are O or NH, Y is the group O, NH, S or N—CN, U and V independently of one another are hydrogen, C_1–C_4-alkyl which is unsubstituted or substituted by hydroxy or phenyl which is unsubstituted or substituted by C_1–C_4 alkyl, halogen or C_1–C_4 alkoxy, or one of the radicals U or V is CN and the other is hydrogen, X_1 is C_1–C_4-alkyl, Y_1 is hydrogen, NH—C_1–C_4-alkyl, NH-phenyl, N—(C_1–C_4-alkyl)$_2$, phenyl or C_1–C_4-alkyl and V_1 is hydrogen, C_1–C_4-alkyl which is unsubstituted or substituted by hydroxy or phenyl which is unsubstituted or substituted by C_1–C_4 alkyl, halogen or C_1–C_4alkoxy, W is a radical of the formula —CH_2—NH—CO—C_1–C_4-alkyl-$Q^{\oplus}An^{\ominus}$ in which An is an anion and Q is a quaternary radial of the formula



in which R_1 to R_6 independently of one another are C_1–C_4-alkyl which is unsubstituted or substituted by hydroxy, or the radicals R_1 and R_2, or R_3 and R_4 together with the N atom to which they are attached form a heterocyclic ring selected from morpholine, pyrrolidine, piperidine or piperazine, or R_3 and R_4 and R_5, together with the N atom to which they are attached, form a heterocyclic ring selected from pyridinium which is unsubstituted or substituted by C_1–C_4 alkyl or



m is the number 1, 2 or 3 and n is the number 0 or 1, and in which the benzene radicals A, B and C independently are unsubstituted or are substituted by C_1–C_4 alkyl.

4,525,584

4AR,8AS,9R-5,6-PERMISSIBLY SUBSTITUTED-9-HYDROXY-OCTAHYDRO-1H(AND 2H) PYRAZOLO[3,4-B]QUINOLINE

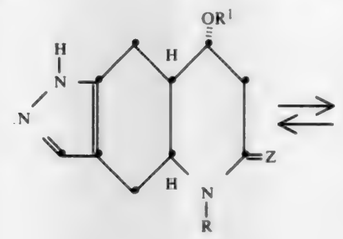
Nancy G. Gallick-Whitaker, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

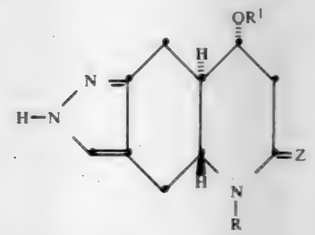
Filed Aug. 3, 1984, Ser. No. 637,355

Int. Cl.³ C07D *471/00;* C07H *17/00;* A01N *43/42;* A61K *31/47*

U.S. Cl. 536—24 **4 Claims**

1. Tautomeric pairs of the formulas





wherein R is methyl, ethyl, allyl, or n-propyl, R^1 is H or D-glucuronyl, and Z is O or H_2.

4,525,585

SODIUM CARBOXYMETHYLCELLULOSE

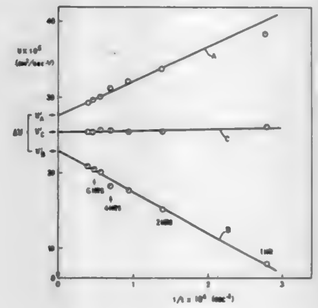
Atsushi Taguchi, and Takeo Ohmiya, both of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 30, 1983, Ser. No. 537,903

Claims priority, application Japan, Oct. 4, 1982, 57-174225

Int. Cl.³ C08B *11/00*

U.S. Cl. 536—98 **5 Claims**



1. A composition consisting essentially of sodium carboxymethylcellulose having (1) an average degree of carboxymethyl substitution ($\overline{DS}$), per anhydroglucose unit, in the range of from 0.4 to 1.08, (2) a number-average degree of polymerization in the range of from 100 to 1500, and (3) a mobility distribution ΔU, as measured by electrophoresis in the range of from

$$\Delta U \times 10^5 < (-3.0 \log \overline{DS} + 3.20) \times 10^5\ cm^2/sec \cdot V$$

to

$$\Delta U \times 10^5 > (-2.0 \log \overline{DS} + 2.0) \times 10^5 \text{ cm}^2/\text{sec} \cdot V,$$

said composition having been prepared by the process comprising the steps of forming an alkali cellulose solution, reacting said alkali cellulose with an etherifying agent consisting essentially of an esterification product of monochloroacetic acid with isopropyl alcohol, and then recovering said composition, said composition having a salinity resistance viscosity ratio of at least 1.02, said salinity resistance viscosity ratio being determined by dividing the viscosity of a 4% aqueous NaCl solution containing 1 wt.% of said sodium carboxymethylcellulose by the viscosity of pure water containing 1 wt.% of said sodium carboxymethylcellulose, said composition having an enzyme resistance of not higher than 9.4 expressed as the number of glucose units formed per 1000 anhydroglucose units when, to a 1% aqueous solution of said sodium carboxymethylcellulose, there is added 5 mg of cellulase per gram of said sodium carboxymethylcellulose, then the solution is hydrolyzed at room temperature for 140 to 145 hours and then the glucose formed as the hydrolyzate is measured by the glucose oxidase method.

4,525,586

COMPOSITION AND PROCESS

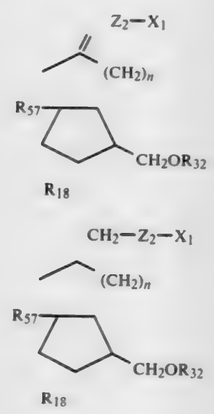
Paul A. Aristoff, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 219,175, Dec. 22, 1980, Pat. No. 4,420,632, which is a continuation-in-part of Ser. No. 140,547, Apr. 15, 1980, abandoned. This application Sep. 19, 1983, Ser. No. 533,489

Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 544—174 **3 Claims**

1. A carbacyclin intermediate of formula VI or VII:



VI

VII

wherein n is one or 2;

wherein R_{57} is (C_1-C_4)alkyl;

wherein R_{18} is hydrogen, hydroxy, hydroxymethyl, $-OR_{10}$ or $-CH_2OR_{10}$, wherein R_{10} is an acid-hydrolyzable protective group;

wherein R_{32} is hydrogen or R_{31}, wherein R_{31} is selected from an acyl protective group, an acid hydrolyzable protective group, a silyl protective group and an arylmethyl hydroxy hydrogen replacing group;

wherein X_1 is

(1) $-COOR_1$, wherein R_1 is

(a) hydrogen,

(b) (C_1-C_{12})alkyl,

(c) (C_3-C_{10})cycloalkyl,

(d) (C_7-C_{12})aralkyl,

(e) phenyl, optionally substituted with one, 2 or 3 chloro or (C_1-C_3)alkyl,

(f) phenyl substituted in the para position by

(i) $-NH-CO-R_{25}$,

(ii) $-CO-R_{26}$,

(iii) $-O-CO-R_{24}$, or

(iv) $-CH=N-NH-CO-NH_2$ wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or $-NH_2$; R_{26} is methyl, phenyl, $-NH_2$, or methoxy; and R_{24} is phenyl or acetamidophenyl; inclusive, or

(g) a pharmacologically acceptable cation;

(2) $-CH_2OH$,

(3) $-COL_4$, wherein L_4 is

(a) amino of the formula $-NR_{21}R_{22}$, wherein R_{21} and R_{22} are

(i) hydrogen,

(ii) (C_1-C_{12})alkyl,

(iii) (C_3-C_{10})cycloalkyl,

(iv) (C_7-C_{12})aralkyl,

(v) phenyl, optionally substituted with one, 2 or 3 chloro or (C_1-C_3)alkyl, hydroxy, carboxy, (C_2-C_5)alkoxycarbonyl, or nitro,

(vi) (C_2-C_5)carboxyalkyl,

(vii) (C_2-C_5)carbamoylalkyl,

(viii) (C_2-C_5)cyanoalkyl,

(ix) (C_3-C_6)acetylalkyl,

(x) (C_7-C_{11})benzoalkyl, optionally substituted by one, 2 or 3 chloro, (C_1-C_3)alkyl, hydroxy, (C_1-C_3)alkoxy, carboxy, (C_2-C_5)alkoxycarbonyl, or nitro,

(xi) pyridyl, optionally substituted by one, 2 or 3 chloro, (C_1-C_3)alkyl, or (C_1-C_3)alkoxy,

(xii) (C_6-C_9)pyridylalkyl optionally substituted by one, 2 or 3 chloro, (C_1-C_3)alkyl, hydroxy, or (C_1-C_3)alkyl,

(xiii) (C_1-C_4)hydroxyalkyl,

(xiv) (C_1-C_4)dihydroxyalkyl,

(xv) (C_1-C_4)trihydroxyalkyl,

with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl,

(b) cycloamino selected from the group consisting of pyrolidino, piperidino, morpholino, piperazino, hexamethyleneimino, pyrrolino, or 3,4-didehydropiperidinyl optionally substituted by one or 2 (C_1-C_{12})alkyl of one to 12 carbon atoms, inclusive,

(c) carbonylamino of the formula $-NR_{23}COR_{21}$, wherein R_{23} is hydrogen or (C_1-C_4)alkyl and R_{21} is other than hydrogen, but otherwise as defined above,

(d) sulfonylamino of the formula $-NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined in (c),

(4) $-CH_2NL_2L_3$, wherein L_2 and L_3 are hydrogen or (C_1-C_4)-alkyl, being the same or different, or the pharmacologically acceptable acid addition salts thereof when X_1 is $-CH_2NL_2L_3$,

wherein Y_1 is trans—CH=CH—, cis—CH=CH—, CH_2CH_2—, or —C≡C—; and

wherein Z_2 is

(1) $-CH_2-(CH_2)_f-C(R_2)_2$, wherein R_2 is hydrogen or fluoro and f is zero, one, 2, or 3, or

(2) trans—CH_2—CH=CH—.

4,525,587

PROCESS FOR PREPARING A CEPHALOSPORIN COMPOUND

Ta-Sen Chou, and Perry C. Heath, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 453,445, Dec. 27, 1982, abandoned. This application Feb. 3, 1984, Ser. No. 576,609

Int. Cl.[3] **C07D** *501/38;* **A61K** *31/565*

U.S. Cl. 544—025 **3 Claims**

1. In a process for preparing (6R,7R)-7-[(Z)-2-(2-triphenylmethylaminothiazol-4-yl)-2-(2-tert.-butoxycarbonylprop-2-oxyimino)acetamido]-3-(1-pyridiniummethyl)-ceph-3-em-4-carboxylate by reacting a (Z)-2-(2-tert.-butoxycarbonylprop-2-oxyimino)-2-(2-triphenylmethylaminothiazol-4-yl)-acetyl halide with (6R,7R)-7-amino-3-(1-pyridiniummethyl)ceph-3-em-4-carboxylic acid dihydrochloride, the improvement which comprises the steps of: (a) carrying out the reaction in N,N-dimethylacetamide and a water-immiscible organic solvent, (b) washing the reaction mixture with water, and (c) adding an organic counter-solvent selected from diethyl ether, methyl ethyl ether, diglyme, tetrahydrofuran, ethyl acetate or methyl acetate so as to produce a crystalline N,N-dimethylacetamide solvate.

4,525,588

CHROMOGENIC NAPHTHOLACTAMS

Rudolf Zink, Therwil, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

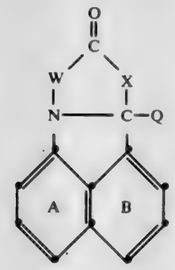
Filed Jun. 7, 1983, Ser. No. 502,039

Claims priority, application Switzerland, Jun. 14, 1982, 3666/82

Int. Cl.[3] **C07D** *239/72, 265/12*

U.S. Cl. 544—89 **10 Claims**

1. A chromogenic naphtholactam of the formula



wherein

each of the rings A and B independently of the other is unsubstituted or substituted by halogen, lower alkyl, lower alkoxy, N,N-dilower alkylamino, N-lower alkyl-N-arylamino, acyl or acylamino,

X is oxygen or



wherein R is hydrogen, lower alkyl or aryl,

W is ethylene, cyclohexylene, or a benzene, naphthalene, pyridine, pyrazine or quinoline ring, or a benzene ring substituted by halogen, methyl or methoxy, and

Q is the radical of a couplable compound selected from the group consisting of a

N-monosubstituted or N,N-disubstituted aniline, a

N-monosubstituted or N,N-disubstituted naphthylamine, a

N-unsubstituted or N-substituted indole, indoline, carbazole, tetrahydrocarbazole, dihydroquinoline, tetrahydroquinoline, dibenzylimide and benzomorpholine, and

a phenol-lower alkyl ether,

a naphthol-lower alkyl ether,

a diphenylether and a phenylpyrazoline,

wherein such a radical of a couplable compound is C-unsubstituted or C-substituted by halogen, hydroxyl, cyano, nitro, lower alkyl, lower alkoxy, lower alkoxycarbonyl or C_1-C_8-acyl and wherein the N-substituent is C_1-C_{12}-alkyl, C_3-C_{12}-alkenyl or benzyl, each of which is unsubstituted or substituted by halogen, nitro, hydroxyl, lower alkyl, lower alkoxy or lower alkoxycarbonyl.

4,525,589

ISOQUINOLINESULFONYL DERIVATIVES

Hiroyoshi Hidaka, 799-25, Kannonji-cho, Tsu-shi, Mie-ken; Takanori Sone, Nobeoka; Yasuharu Sasaki, Nobeoka, and Taisuke Sugihara, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha and Hiroyoshi Hidaka, both of, Japan

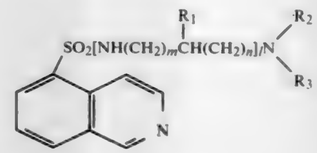
Division of Ser. No. 357,770, Mar. 12, 1982, Pat. No. 4,456,757. This application Jan. 20, 1984, Ser. No. 572,418

Claims priority, application Japan, Mar. 20, 1981, 56-399550; Jun. 1, 1981, 56-82559; Jan. 12, 1982, 57-2229; Jan. 14, 1982, 57-3291

Int. Cl.[3] **C07D** *413/12*

U.S. Cl. 544—128 **8 Claims**

1. A compound of Formula (I):



wherein

l is zero or one;

m and n each is zero or an integer of one to nine;

m+n is an integer of at least one;

R_1 is a hydrogen atom, a C_{1-10} alkyl group, a C_{5-6} cycloalkyl group or a phenyl group;

R_2 and R_3 are independently C_{1-6} alkylene groups and linked through an oxygen atom to form a 5- to 7-membered hetrocyclic ring with the adjacent nitrogen atom;

or the pharmaceutically acceptable acid addition salt thereof.

4,525,590

SIMPLIFIED PROCESS FOR THE PRODUCTION OF POLYAMINES BY THE ALKALINE HYDROLYSIS OF COMPOUNDS CONTAINING NCO-GROUPS

Werner Rasshofer, Cologne; Klaus König, Leverkusen; Holger Meyborg, Odenthal; Walter Meckel, Neuss, and Armin Zenner, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,493

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129979

Int. Cl.[3] **C07D** *251/34;* **C07C** *125/06, 127/24, 127/15*

U.S. Cl. 544—222 **14 Claims**

1. A process for the production of an aromatic and/or aliphatic primary polyamine containing a member selected from the group consisting of urethane, urea, biuret and isocyanurate groups which comprises

(a) converting a compound containing aromatic and/or aliphatic NCO-groups and a member selected from the group consisting of urethane, urea, biuret and isocyanurate groups into the corresponding carbamate by mixing said compound with a base derived from a Group IA, IIA or IIIA metal of the Periodic Chart of Elements and/or quaternary ammonium hydroxides in the presence of water,

(b) directly converting said carbamate into the corresponding free amine by hydrolyzing said carbamate with a strong acid selected from the group consisting of aqueous mineral acids, oxalic acid, formic acid and acetic acid, in a quantity equivalent to the quantity of said base and simultaneously converting any excess base into the corresponding acid salt and

(c) isolating the free amine.

4,525,591

2,4-DIOXOTETRAHYDROPYRIMIDO-(1,2-a)-BENZIMIDAZOLE SUBSTITUTED ISOINDOLINE DYES AND THEIR USE

Wolfgang Lotsch, Beindersheim; Reinhard Kemper, Heidelberg, and Ernst Schefczik, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

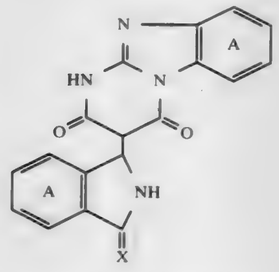
Filed Mar. 1, 1983, Ser. No. 470,946

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208218

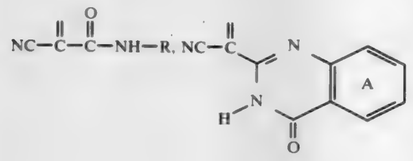
Int. Cl.[3] **C07D** *487/04;* **C09B** *57/04*

U.S. Cl. 544—250 **9 Claims**

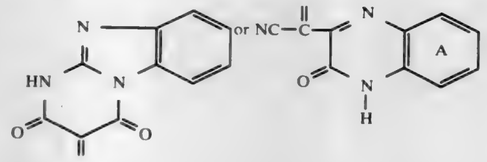
1. An isoindoline dye of the formula



where X is a radical of the formula



-continued



and R is hydrogen, C_1–C_4-alkyl, benzyl, phenyl, naphthl-yl or a heterocyclic radical, selected from the group consisting of thiazol-2-yl, benzothiazol-2-yl, 6-methoxybenzothiazol-2-yl and 1,2,4-triazol-3-yl and benzimidazol-2-yl and the rings A, the phenyl radical, the naphthyl radical and the heterocyclic radical in R may be further substituted by 1 to 3 non-solubilizing groups selected from the group consisting of halogen, alkyl and alkoxy, each of 1 to 6 carbon atoms, 1 to 2 nitro, trifluoromethyl, carbamyl, ureido, sulfamyl, cyano, alkoxycarbonyl, alkanoyl, n-alkylcarbamyl, n-alkylureido and alkanoylamino, each of 2 to 6 carbon atoms in total, alkylsulfonyl and alkylsulfamyl, each of 1 to 6 carbon atoms, phenoxycarbonyl, benzoyl, benzoylamino, phenylsulfonyl, n-phenylcarbamyl n-phenylsulfamyl, phenyl, and n-phenylureido.

4,525,592

PROCESS FOR SQUARAINE COMPOSITIONS

Kock-Yee Law, Fairport, and Frank C. Bailey, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 5, 1983, Ser. No. 557,796

Int. Cl.[3] **C07C** *85/00, 85/02, 85/06*

U.S. Cl. 564—307 **16 Claims**

1. An improved process for the preparation of squaraine compositions which comprises reacting a dialkyl squarate, with an aniline, in the presence of an acid catalyst and an aliphatic alcohol, at a temperature of from about 60 degrees Centigrade to about 160 degrees Centigrade.

4,525,593

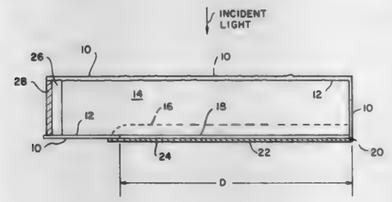
INVERTED, OPTICALLY ENHANCED SOLAR CELL

Eli Yablonovitch, Scotch Plains, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 16, 1984, Ser. No. 601,080

Int. Cl.[3] **H01L** *31/06*

U.S. Cl. 136—255 **11 Claims**



1. A solar cell comprising:

(a) an active material including a layer of crystalline silicon doped with one conductivity type dopant, a layer of SIPOS doped with the opposite conductivity type dopant deposited on at least one portion of the surface of said layer of crystalline silicon away from the incident light;

(b) a first metal contact fixed to said layer of SIPOS; and

(c) a second metal contact fixed to a portion of the edge of said layer of crystalline silicon, the region of said layer of crystalline silicon adjacent to said second metal contact being heavily doped with a greater concentration of said one conductivity type dopant than the remainder of said layer of crystalline silicon.

4,525,594

WAFER-SHAPED SOLAR CELL

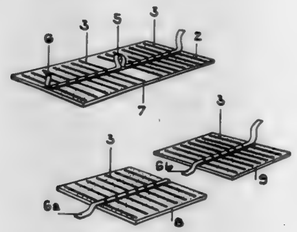
Willi Pschunder, Ilsfeld, Fed. Rep. of Germany, assignor to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Jan. 24, 1984, Ser. No. 573,584

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1983, 3303926

Int. Cl.[3] **H01L** *31/04, 31/18*

U.S. Cl. 136—256 **16 Claims**



1. In a wafer-shaped semiconductor solar cell including a semiconductor wafer having a rear surface contact and conduction paths disposed on the surface of the solar cell wafer which receives the incident light and to which at least one metallic connector member is connected for interconnection of the solar cell with further solar cells, with said at least one connector member being connected, at several spaced points in an electrically conductive and mechanically fixed manner to said conduction paths; the improvement wherein a plurality of connector member portions which are arranged horizontally in one row are attached to said conduction paths, with each said connector member portion being secured to the conduction path at one end only, and having its detached end overlapping the preceding connector member portion in the row in imbricated relationship, whereby said solar cell can be divided into several smaller solar cells with each individual said smaller solar cell being already provided with at least one connector member protruding beyond the resulting wafer edge.

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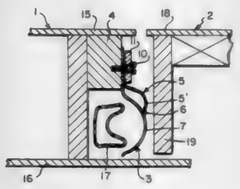
RADIATION RESISTANT CLOSURE

Robert W. Harriman, Milford, Conn., assignor to Keene Corporation, Norwalk, Conn.

Filed May 4, 1983, Ser. No. 491,399

Int. Cl.[3] **H05K** *9/00*

U.S. Cl. 174—35 GC **5 Claims**



1. A radiation resistant joint between a movable member and a fixed member comprising first and second resiliently electrically conductive contact fingers each having a bowed portion, a fixed end and a free end with the fixed end of said second finger in overlapping relationship with the fixed end of the first finger and with both ends fixed to one of said members and with both fingers extending in the same direction and with the free end of said second finger overlapping and engaging the bowed portion of the first finger, and a conductive plate on the other said member adapted to engage the bowed portion of both said fingers.

4,525,596

DAMPING SPACER FOR BUNDLE CONDUCTORS OF HIGH-VOLTAGE ELECTRIC LINES, WITH IMPROVED DAMPING EFFECTIVENESS

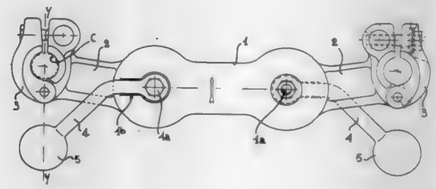
Giorgio Diana, Milan, Italy, assignor to A. Salvi & C. S.p.A., Milan, Italy

Filed Nov. 29, 1983, Ser. No. 556,046

Claims priority, application Italy, Nov. 30, 1982, 24501 A/82

Int. Cl.[3] **H02G** *7/14, 7/12*

U.S. Cl. 174—42 **6 Claims**



1. Damping spacer for bundle conductors of high-voltage electric lines comprising a stiff central body and at least two connecting clamps, each for anchoring to a respective sub-conductor of the bundle, each clamp having a rigid extension connected, through at least one springing or elastically deformable hinge element, to said stiff central body, characterized in that, inertial masses are rigidly associated to said central body, the barycenters of the masses being far from the barycenter of the central body.

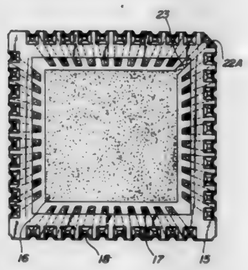
4,525,597

CERAMIC LEADLESS PACKAGES AND A PROCESS FOR MANUFACTURING THE SAME

Shozo Abe, Tsuru, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Oct. 24, 1983, Ser. No. 544,851
Claims priority, application Japan, Oct. 30, 1982, 57-190945
Int. Cl.³ H01L *23/04, 23/50*
U.S. Cl. 174—52 FP **5 Claims**





1. A ceramic leadless package comprising a ceramic substrate having first and second opposite surfaces parallel to each other, a plurality of ceramic projections protruding from the first surface and separated from each other, a metallized layer provided on the end surface of each of the ceramic projections, an electrode portion for an electronic device provided on the central portion of the second surface so as to mount the electronic device thereon, a plurality of metallized layers extending from the circumference of the ceramic substrate toward the electrode portion for the electronic device, a side metallized layer connecting each metallized layer of the first surface to the corresponding each metallized layer of the second surface, wherein the metallized layer of the first surface and the metallized layer of the second surface correspondingly are convex and concave at a position corresponding to each ceramic projection and are connected to each other through the side metallized layer, and the metallized layers provided on the second surface are separated from each other and extend toward the electrode portion for the electronic device provided on the central portion of the second surface, and the metallized layers existent in the concave portions and a greater part of the metallized layers extending toward the center of the second surface are covered with an insulating layer.

5. A process for manufacturing a ceramic leadless package which comprises steps of:

punching a ceramic green sheet at predetermined positions to form through-holes for side metallized layers corresponding to a ceramic leadless package unit;

printing the inner circumferential surface of each of the through-holes with a metallizing paste to form a side metallizing layer;

screen-printing a first surface of the ceramic green sheet with a metallizing paste to form a plurality of metallizing layers for connecting to an external electronic circuit, each extending from the circumference of the through-hole and being electrically connected to the side metallizing layer and at the same time screen-printing a second surface of the ceramic green sheet with a metallizing paste to form an electrode portion for an electronic part to be mounted thereon and a plurality of metallizing layers, each extending from the circumference of the through-hole toward the electrode portion for the electronic part and being electrically connected to the side metallizing layer;

screen-printing the metallizing layers of the second surface except a desired portion of the metallizing layer near the electrode portion for the electronic part with an insulating paste to form an insulating layer;

hot-pressing only a region including the through-hole and a part of the insulating layer adjacent thereto up to a given depth to protrude a part of each metallizing layer from the first surface of the ceramic green sheet; and

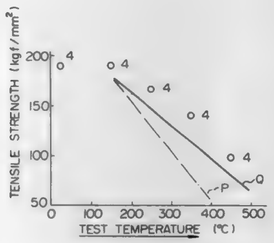
firing and plating the resulting pressed product.

4,525,598

STEEL WIRE FOR USE IN STRANDED STEEL CORE OF AN ALUMINUM CONDUCTOR, STEEL REINFORCED AND PRODUCTION OF SAME

Takashi Tsukamoto; Chuzo Sudo; Kenji Aihara, and Syozi Nishimura, all of Kitakyushu, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Oct. 20, 1982, Ser. No. 435,413
Claims priority, application Japan, Jan. 12, 1982, 57-3607; Jan. 12, 1982, 57-3608; Jan. 21, 1982, 57-8605; Jan. 22, 1982, 57-9290; Jul. 22, 1982, 57-126660
Int. Cl.³ H01B *5/08, 1/02*
U.S. Cl. 174—128 R **4 Claims**



1. In an aluminum conductor, steel reinforced, including a stranded steel wire core, the improvement wherein the stranded steel core includes a galvanized high strength steel wire which consists, by weight, essentially of:

C: 0.4–1.2%,
Mn: not more than 2.0%,
Cr: 0–5.0%,
Ni: 0–1.0%,
Nb: 0–0.2%,
Zr: 0–0.2%,
Si: an amount effective to improve fatigue properties and high temperature strength and not more than 2.0%,
Al: not more than 0.1%,
Cu: 0–1.0%,
V: 0–0.5%,
Ti: 0–0.2%,

with the balance iron with incidental impurities of which the amounts of P, S, N and oxygen are:

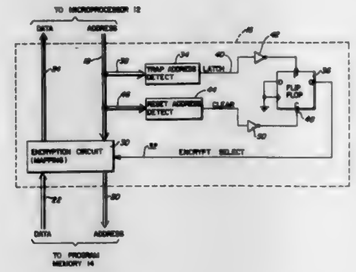
P: not more than 0.025%,
P+S: not more than 0.03%,
S: not more than 0.015%,
N: not more than 0.010%, and
Oxygen: not more than 0.004%.

4,525,599

SOFTWARE PROTECTION METHODS AND APPARATUS

Kevin G. Curran, Sudbury; Steven E. Golson, Wayland, and Christian S. Rode, Cambridge, all of Mass., assignors to General Computer Corporation, Cambridge, Mass.

Filed May 21, 1982, Ser. No. 380,771
Int. Cl.³ H04L *9/00*
U.S. Cl. 178—22.08 **27 Claims**



17. A method for inhibiting the use of a microprocessor emulator to read digital program data stored in memory means in a computer system, comprising the steps of:

(a) storing encrypted digital program data into preselected address locations of memory means;

(b) coupling address and data buses of the microprocessor to the memory means through protection circuit means for encrypting, decrypting and monitoring the addressing of the program data stored in the memory means;

(c) monitoring at least one of the address and data buses to detect an attempted invalid accessing of the memory means, the invalid accessing operation being characterized by an operation not occurring during normal execution of the program; and

(d) returning falsely decrypted program data through the protection circuit means to the microprocessor emulator in response to the detection of the invalid accessing operation.

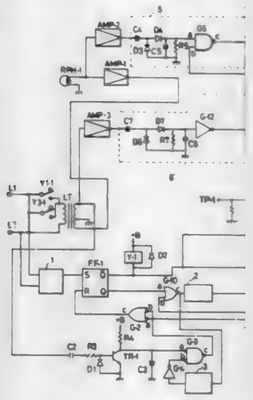
4,525,600

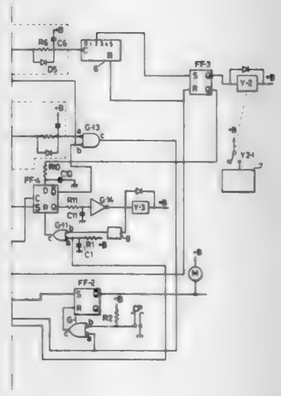
AUTOMATIC TELEPHONE ANSWERING DEVICE

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corportion, Tokyo, Japan

Filed Mar. 1, 1983, Ser. No. 471,214
Claims priority, application Japan, Mar. 5, 1982, 57-34747
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—6.02 **5 Claims**

1. An automatic telephone answering device having an outgoing message tape and an incoming message tape, characterized in that said automatic telephone answering device comprises: an outgoing message tape in which a speed calling signal for dialling a greater length telephone number of a subscriber or a paging signal for paging a remote subscriber followed by prerecorded messages is stored; switching means for switching from said outgoing message tape to said incoming message tape; memory means for storing information indicating that said incoming message tape has been driven; reengaging means for reengaging a loop circuit by said memory means after said automatic telephone answering device is restored to a standby mode; detecting means for detecting a dial tone which is generated after said loop circuit is reengaged; and driving means for driving said outgoing message tape by said dial tone detecting means; whereby a specific signal stored





in said outgoing message tape is delivered automatically onto a telephone line.

4,525,601

TELEPHONE CALL ACCOUNTING SYSTEM

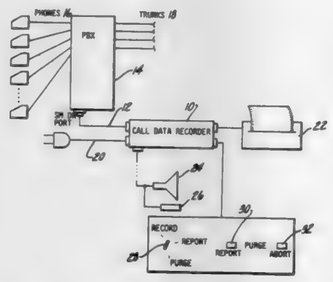
Richard G. Barnich, 6197 Hereford Rd., Saline, Mich. 48176; Michael H. Ferguson, 1455 Marlborough, and Charles K. McGregor, both of Ann Arbor, Mich. 48104

Filed Dec. 13, 1983, Ser. No. 561,154
Int. Cl.³ H04M *15/16, 15/32*
U.S. Cl. 179—7 MM **13 Claims**

6. A method of costing telephone calls from any of a first plurality of telephone sets having one copmbination of an area code and exchange number to any of a second plurality of telephone sets having a different combination of an area code and exchange number, each combination of an area code and exchange number being associated with a unique geographic area, comprising the steps of:

(a) precomputing distance from the geographic area associated with said one combination to the geographic area

associated with each of the different combinations of area codes and exchange numbers; and



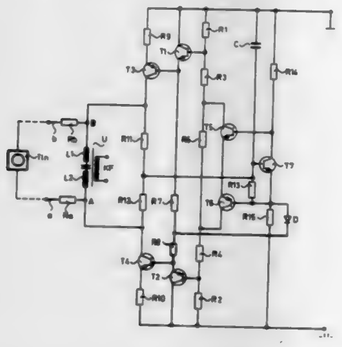
(b) calculating the cost of the calls using the distances pre-computed in step (a).

4,525,602

METHOD OF AND A CIRCUIT FOR ENERGIZING A SUBSCRIBER'S CIRCUIT IN A TELEPHONE SYSTEM

Joerg Robra, Heroldsberg, and Hans Goschin, Nuremberg, both of Fed. Rep. of Germany, assignors to TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH, Nuwenbweg, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,979
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138649
Int. Cl.³ H04M *19/00*
U.S. Cl. 179—16 F **6 Claims**



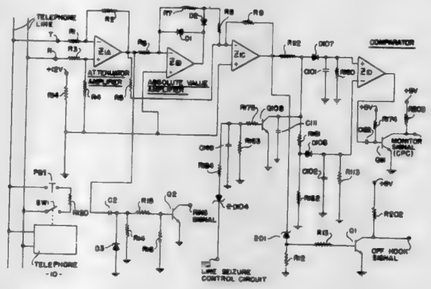
1. A method of energizing a subscriber's circuit in a telephone system having two separate constant-current sources each connected to a respective subscriber circuit line to supply constant current to the circuit lines irrespective of their length, comprising the steps of measuring current differences between the lines by a shunt, applying to at least one of said constant-current sources a reference voltage produced in response to voltage drops across said shunt to compensate for current difference between the lines by increasing via regulating device current in the respective subscriber line to a predetermined maximum value, and after the current in the circuit exceeds said predetermined value, inactivating the regulating device and decreasing the reference voltages in respective current sources.

4,525,603

RING AND LINE MONITOR FOR ANSWERING MACHINE

Raymond G. Bond, Long Beach, Calif., assignor to T.A.D. Avanti, Inc., Compton, Calif.

Filed Jan. 3, 1984, Ser. No. 567,675
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—84 R **2 Claims**



1. In combination: a telephone answering system adapted to be connected to telephone line and which includes control circuitry for deactivating the telephone answering system when a change in line voltage on the telephone line exceeds a predetermined differential; and a telephone adapted to be connected to the telephone line and including resistance means and a switch series connected across the telephone line, said switch being closed when the telephone is picked up to place said resistance means across the telephone line thereby causing a change in the line voltage of the telephone line in excess of said predetermined differential when the telephone line is picked up, and a further switch connected in series with said first-named switch and said resistance means for preventing said change in line voltage when the telephone is picked up and said further switch is open.

4,525,604

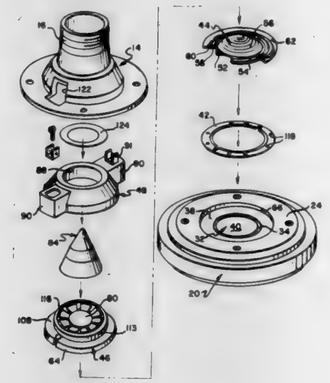
HORN LOUDSPEAKER WITH CONVEX DIAPHRAGM

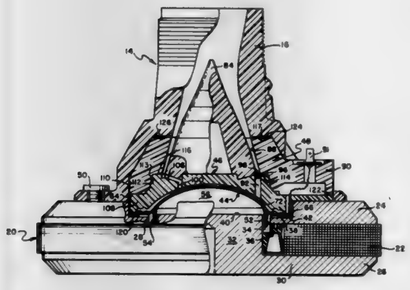
Kent Frye, Buchanan, Mich., assignor to Electro-Voice, Incorporated, Buchanan, Mich.

Filed Jun. 7, 1983, Ser. No. 502,011
Int. Cl.³ H04R *9/00, 1/28, 1/30*
U.S. Cl. 179—115.5 H **10 Claims**

1. A driver for a loudspeaker comprising, in combination, a base, a diaphragm mounted on the base for vibratile motion with respect to the base, said diaphragm having a dome symmetrical about a central axis and having a periphery extending about the dome, a plate mounted on the base having a recess extending therein and forming a surface symmetrical about a central axis coincident with the central axis of the diaphragm, said plate being acoustically sealed to the base about the diaphragm, said diaphragm and plate forming a cavity between the surface of the recess and the diaphragm, said plate having a plurality of channels extending therethrough and communicating with the cavity, a member mounted on the base having a passageway extending therethrough from the base, the plate being disposed within said passageway and tapering inwardly from the base, the channels of the plate communicating with the passageway of the member, a plug disposed within the passageway of the member having a surface at one end mating with and abutting a surface of the plate, said plug extending from the plate and tapering inwardly from the plate, said plug being spaced from the member forming an opening between the plug and the member for transmitting sound, wherein the plate is provided with a first aperture located on the surface of the recess adjacent to the periphery of the dome of the diaphragm, said plate having a first channel extending from the first aperture through the plate along an axis parallel to the axis of symmetry of the recess to a first opening communicating with the said channel, said plate having a second aperture

located on the surface of the recess closer to the axis of symmetry of the recess than the first aperture, said plate having a second channel extending from the second aperture through the plate along an axis parallel to the axis of symmetry of the





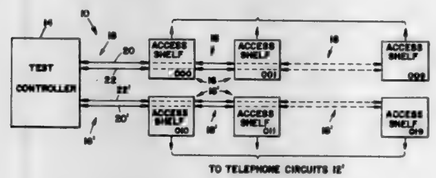
recess to a second opening, a third channel extending from the second opening of the plate along the abutting surfaces of the plug and plate to the perimeter of the plug, said third channel communicating with the sound channel.

4,525,605

SYSTEM FOR ACCESSING ELECTRICAL CIRCUITS AND RELAY SWITCH THEREOF

Ruben Wever, San Jose; Lorin D. Allred, Sunnyvale, and Marco A. Ruiz, Milpitas, all of Calif., assignors to Wiltron Company, Mountain View, Calif.

Filed Dec. 8, 1982, Ser. No. 447,753
Int. Cl.³ H04M *3/32*
U.S. Cl. 179—175.2 R **43 Claims**



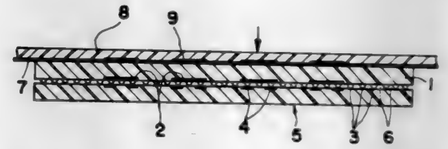
1. A system for accessing a plurality of electrical circuits, the electrical circuits including two-wire, four-wire or six-wire circuits or a combination thereof, comprising:
(a) a common access test bus;
(b) a common control bus;
(c) a plurality of access shelves for connecting the electrical circuits to said common access test bus, each of said plurality of access shelves being individually selectively controllable to connect the plurality of electrical circuits to said common access test bus in response to control signals on said common control bus; and
(d) at least one test controller each having programmed data processing means for selectively generating the control signals onto said common control bus to individually and directly control any one of said plurality of access shelves, said common access test bus and said common control bus being connected to said one test controller and to said plurality of access shelves.

4,525,606

SENSOR SWITCH

Ryoichi Sado, Oaza Kobari Shinjuku 69-7, Ina-cho, Kita-adachi-gun, Saitama-ken, Japan

Filed Jan. 28, 1983, Ser. No. 462,071
Int. Cl.³ H01H *9/00*
U.S. Cl. 200—5 A **32 Claims**



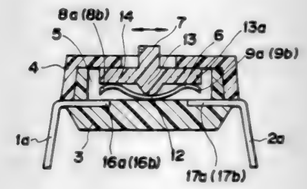
1. A sensor switch, comprising: a printed circuit base board provided on one side surface thereof with at least a pair of stationary contacts, and a flexible sheet member made of a rubber-like elastic material having a rubber hardness of 20 to 100 according to Physical Testing Methods for Vulcanized Rubber which is approved as Japanese Industrial Standard (hereafter, referred to as JIS K 6301) and provided on one side surface thereof with at least a movable contact face having a rubber-like elasticity and provided with a plurality of columnar protrusions made of an electrically insulating pliable rubber-like elastic material and so piled on said printed circuit base board that said movable contact face is faced to said stationary contacts with a space maintained by said protrusions, each of said protrusions being 10 to 70 in rubber hardness (JIS K 6301), 0.05 to 0.5 mm in height and 0.1 to 2 mm in diameter and being arranged adjacent each other with a spacing of 0.1 to 5 mm.

4,525,607

SIMPLIFIED ELECTRIC SWITCH CONSTRUCTION

Yasutaka Senoh, 1783 Nippa-cho, Kohhoku-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Jan. 3, 1984, Ser. No. 567,700
Claims priority, application Japan, Feb. 4, 1983, 58-17947; Feb. 4, 1983, 58-17948
Int. Cl.³ H01H *15/02*
U.S. Cl. 200—16 R **3 Claims**



1. A simplified electric switch comprising:
an insulating base,

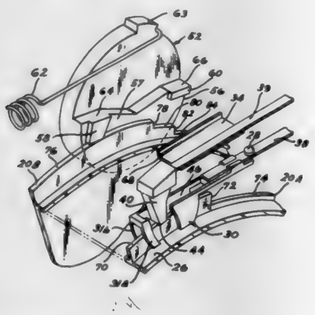
a switch cover mounted on the base, said cover and said base defining a central space therebetween,
opposing internal leads to which the terminals are bonded, the internal leads being mounted on the base,
a rocking type movable contact element, mounted within said central space, in the form of an electrically conductive plate and having a curved belly portion, reversely bent shoulder portions at opposite sides of the belly portion, and pointed contact ends, each shaped into a pyramid, located at both ends of the contact element, the belly portion being centrally provided with a projection, the contact element being mounted with said projection sitting on said base so as to be able to rock on said base, and
a push member having a protrusion engaging the curve of said belly portion from the side opposite said base, the push member further having an arm held for sliding movement between a shoulder portion and the lower surface of the switch cover, whereby movement of the push member toward one of said shoulder portions forces the protrusion to move along the belly portion and to flex said one shoulder portion toward said base thereby bringing the contact ends carried by said one shoulder portion into contact with the corresponding internal leads and exciting the terminals on one side of said base.

4,525,608

TIMER MECHANISM WITH IMPROVED INTERVAL ACCURACY

Donald S. Cushing, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 3, 1982, Ser. No. 446,444
Int. Cl.[3] H01H *43/10*; F16H *5/40, 3/74*
U.S. Cl. 200—38 R **7 Claims**



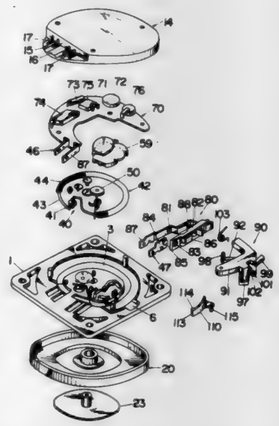
1. A timer comprising:
a control cam having a first and second cam track;
said second cam track having three arcuate segments of progressively shorter fixed radius lengths defining a three step cam track profile;
drive means for rotating the control cam about an axis;
switch means comprising first and second resilient arms carrying opposing contacts and extending generally adjacent said first cam track, said first arm extending between said second arm and said first cam track and said second arm having a lateral projection member in the direction of the second cam track;
a cam-following member extending between said second arm and said first cam track and biased into cam-following engagement with said first cam track by said second arm;
a rocker arm having at one end a cam-follower portion and at the other end a lifter portion, said rocker arm having a pivot point between the ends thereof and spring biased to force the cam-follower portion into cam-following engagement with the second cam track;
said cam-following member and first cam track being operative to prevent closing the contacts when said rocker arm cam-follower portion is riding on the arcuate segment having the longest radius length;
said cam-following member and first cam track being operative to release the cam-following member from the first cam track and support the first arm on the rocker arm and prevent closing the contacts when said rocker arm cam-follower portion is riding on the arcuate segment having the longest radius length;
said cam-following member and first cam track being operative to release the cam-following member from the first cam track and close the contacts when said rocker arm cam-follower portion is riding on the arcuate segment having the second longest radius length;
said rocker arm and second cam track being operative to pivot the rocker arm when the cam follower portion is riding on the arcuate segment having the shortest radius length and the lifter portion engages the lateral projection member of the second arm and opens the contacts; and
means to reset the timer for subsequent cycling.

4,525,609

TIMER APPARATUS

Akio Matsumoto, and Takao Yamada, both of Osaka, Japan, assignors to Matsushita Electric Co., Ltd., Osaka, Japan

Filed Nov. 9, 1983, Ser. No. 550,294
Claims priority, application Japan, Nov. 10, 1982, 57-197997
Int. Cl.[3] H01H *7/00*
U.S. Cl. 200—38 R **7 Claims**



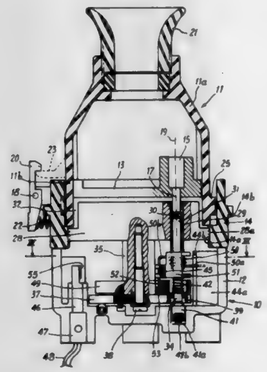
1. A time switch driven by an electric clock motor comprising:
a base plate provided with an input terminal, an output terminal, and the clock motor comprising a rotor which is a bipolarized permanent magnet rotatably journaled on the base plate and an electromagnet ring, said rotor being disposed below the base plate;
a time dial overlying and rotatably mounted on the base plate to be driven by the motor;
electrical circuit means disposed below the base plate to energize the motor;
switch means disposed below the base plate;
a reduction gear train disposed below the base plate for interconnecting the rotor of the motor and the time dial;
switch activating means disposed below the base plate for opening and closing the switch means;
at least one on-tripper mounted on the time dial to be movable therewith so as to operate the switch activating means to open the switch means when it comes into contact with the switch activating means;
at least one off-tripper mounted on the time dial to be movable therewith so as to operate the switch activating means to close the switch means when it comes into contact with said switch activating means;
said electromagnet ring being composed of a ring core interrupted by a gap within which said rotor is disposed and a coil would therearound said ring core;
said base plate having an annular groove for receiving therein said electromagnet;
said groove being coaxial with said time dial and having a diameter slightly smaller than that of the dial; and
the components for the electrical circuit means, the switch means, the switch activating means, and the reduction gear train being arranged substantially in the same plane parallel to the base plate.

4,525,610

QUICK MAKE AND BREAK PLUG AND SOCKET CONNECTOR

Yves Le Magourou, Ermont, France, assignor to Societe d'Exploitation des Procedes Marechal, Paris, France

Filed Oct. 17, 1983, Ser. No. 542,394
Claims priority, application European Pat. Off., Oct. 21, 1982, 82 401934.3
Int. Cl.[3] H01R *33/28*
U.S. Cl. 200—51.13 **18 Claims**



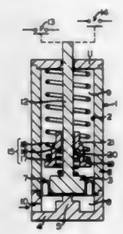
1. A quick make and break electrical connector comprising:
(a) a plug including an insulating body portion and a plurality of plug connector-pins, said body portion comprising means for positioning said plug connector-pins within said plug, said body portion being rigidly mounted within said plug;
(b) a socket having a body portion including means for receiving at least one input terminal of an electrical power supply line, and an insulating block rotatably mounted within said body portion, said insulating block having a plurality of bores therein, a socket connector-pin being slidably positioned within each of said bores, and resilient means for biasing each of said socket connector-pins into engagement with a respective plug connector-pin, wherein said plug and socket are adapted to be rotatably interengaged such that said plug connector-pins rotate together with said insulating block;
(c) means for guiding said plug during rotation of said plug within said socket and during axial movement of said plug within said socket, and means for locking said plug in a fixed position with respect to said socket; and
(d) a first contact stud attached to each of said input terminals and a respective second contact stud being attached to the end of a conducting arm which is rigidly attached to each of said socket connector-pins, each of said conducting arms being pivotable about a lower end of each of said insulating block bores, wherein an electrical connection between each input terminal and a corresponding socket connector-pin is established by coupling respective first and second contact studs, said first and second contact studs occupying different relative angular positions with respect to a central axis of said socket when said plug and socket are not interengaged, said apparatus further comprising means for rotating said studs into a position of angular coincidence.

4,525,611

FLUID PRESSURE SWITCH

Osamu Akamatsu, Akashi, and Masaaki Kitaue, Kobe, both of Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Mar. 24, 1983, Ser. No. 478,576
Claims priority, application Japan, Mar. 24, 1982, 57-47885
Int. Cl.[3] H01H *35/40*
U.S. Cl. 200—83 R **16 Claims**

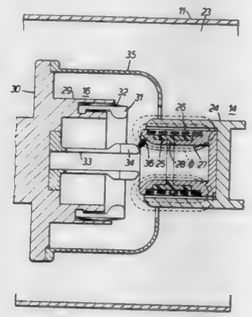


1. A fluid pressure device for operating two or more switch devices upon the detection of two or more distinct fluid pressure levels from a varied range of fluid pressure, said fluid pressure device comprising:
(a) a housing having a cylindrical bore formed therein, said housing further having a pressure inlet communicating with said cylindrical bore;
(b) a piston member axially movable within said cylindrical bore;
(c) a piston rod extending from said piston member and moving therewith, said piston rod having an external portion extending through an opening formed in said housing;
(d) spring means axially surrounding said piston rod for opposing movement of said piston member, said spring means having a spring coefficient which is nonlinear and which changes by at least one increment in response to a predetermined displacement of said piston member, said spring means including a plurality of springs serially arranged surrounding said piston rod;
(e) switch operating means disposed externally of said housing and operably connected to said external portion of said piston rod for selectively operating the switch devices; and
(f) limiting means cooperatively engaging said spring means for independently limiting axial compression of said spring means, and, said limiting means having a middle body member disposed between said first and second spring members such that said first spring member becomes caged by said middle body member upon said piston member reaching a first predetermined piston displacement, said middle body member having a narrow guide end in surrounding proximity to said piston rod, said narrow guide end, upon said piston member reaching a second predetermined piston displacement, contacting a portion of said housing such that said middle body member is rigidly supported by said housing portion.

4,525,612
GAS INSULATED SWITCH

Kazue Kawashima, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 24, 1983, Ser. No. 497,716
Claims priority, application Japan, May 24, 1982, 57/87428
Int. Cl.[3] H01H *33/18*
U.S. Cl. 200—147 R 3 Claims



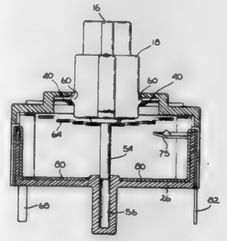
1. A gas insulated switch comprising:
a tank filled with an insulating gas;
first and second contacting parts disposed opposite each other within said tank and each including respectively first and second main current-carrying contactors and first and second arc electrodes installed respectively within said first and second main current-carrying contactors, said first and second main current-carrying contactors disposed opposite each other and adapted for relative movement therebetween such that said first and second main current-carrying contactors freely make contact with or move apart from each other, said first and second arc electrodes disposed opposite each other such that said first and second arc electrodes also freely make contact with or part from each other in accordance with the relative movement of said first and second main current-carrying contactors;
said second arc electrode defining opposite ends, and including a ring-shaped arc-proof piece arranged at one end thereof, an arc drive coil disposed adjacent to said arc-proof piece and electrically connected thereto at one end thereof, and an end ring disposed adjacent said coil and electrically connected to an opposite end thereof; and
said first and second arc electrodes extending exterior of said respective first and second main current-carrying contactors and shaped such that when an electrical connection is made between said first and second arc electrodes, said first arc electrode makes contact with said end ring of said second arc electrode, and such that when said arc electrodes are opened, an arc is generated between said first arc electrode and said ring-shaped arc-proof piece of said second arc electrode producing a current in said drive coil which generates a magnetic flux acting substantially perpendicular to said arc to extinguish said arc.

4,525,613
SPIRAL SPRING KEYBOARD SWITCH WITH HAIRPIN SPRING TACTILE FEEDBACK

Gary C. Butts, Huntington Beach, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jan. 20, 1984, Ser. No. 572,259
Int. Cl.[3] H01H *13/54*
U.S. Cl. 200—159 R 10 Claims

1. An improved key switch assembly, comprising:
a housing including a base;
a first electrical contact secured to said housing;
spring means secured to said housing, said spring means including a second electrical contact;
actuator means abutting said spring means including a keystem for deforming said spring means in response to the depression of said key by a user, the deformation of said spring means forcing said second electrical contact into contact with said first electrical contact;

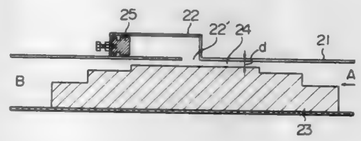


said keystem including at least one cam nub extending outwardly from said keystem;
said housing including a snap action hairpin cam spring disposed around said keystem, said hairpin cam spring being deformed in a snap action by said cam nub upon depression of said key, thereby providing tactile feedback to said user.

4,525,614
ABSORBER DEVICE FOR MICROWAVE LEAKAGE

Ken Ishino, and Yasuo Hashimoto, both of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Nov. 1, 1982, Ser. No. 438,256
Claims priority, application Japan, May 28, 1982, 57-89873; May 31, 1982, 57-79007[U]; May 31, 1982, 57-79008[U]; May 31, 1982, 57-79009[U]; May 31, 1982, 57-79010[U]
Int. Cl.[3] H05B *6/76*
U.S. Cl. 219—10.55 D 21 Claims

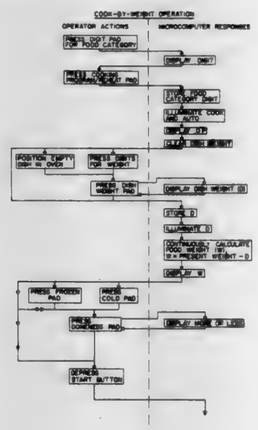


1. A microwave apparatus, comprising:
a main body with an opening;
a door coupled with the main body for closing said opening such that a leakage path exists at the interface between the periphery of the opening and the door;
a wave absorber device disposed adjacent said leakage path, said wave absorber device including an empty choke cavity having a length of approximately a quarter wavelength, said choke cavity being closed on at least three sides and having an entrance facing said leakage path;
a cover means comprising a flat plate closing said entrance, said cover means being formed of a mixture of ferro-magnetic material and dielectric material, said mixture having a dielectric constant less than 15.

4,525,615
METHOD FOR MICROWAVE DEFROSTING

Alvin D. Wyland, Williamsburg, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Jan. 16, 1984, Ser. No. 571,158
Int. Cl.[3] H05B *6/68*
U.S. Cl. 219—10.55 M 10 Claims

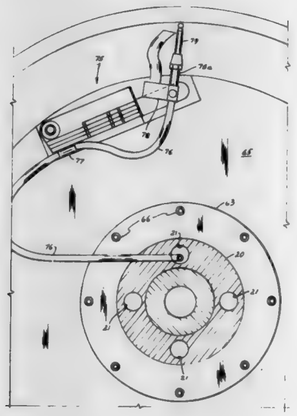


1. The method of defrosting a food body in a microwave oven, comprising the steps of:
providing microwave energy at maximum power of said oven until the surface temperature of said food body rises to approximately 110° F.; and
providing microwave energy in a sequential step at a predetermined power level reduced from said maximum power to maintain said surface temperature of said food body at approximately 110° F. until said food body is defrosted.

4,525,616
INTERNAL PIPE WELDING APPARATUS

Clyde M. Slavens, Houston, Tex., assignor to Evans Pipeline Equipment Company, Houston, Tex.

Filed Jan. 3, 1984, Ser. No. 567,738
Int. Cl.[3] B23K *9/225*
U.S. Cl. 219—60 R 18 Claims

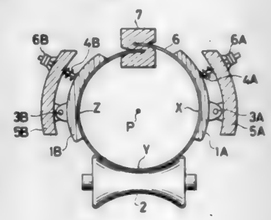


1. Internal pipe welding apparatus, comprising central shaft means, a pair of non-rotatable tubular hub means each disposed around a different end of said central shaft means, each said hub means including a central passage and wall means surrounding said central passage, one of said hub means having a plurality of circularly spaced passages through its said wall from end to end radially outwardly of and parallel to its said central passage, transverse plate means mounted rotatably around said central shaft means between the inner ends of said hub means, means for rotating said transverse plate means about said central shaft means, and at least one welding head means carried by said transverse plate means and rotatable therewith about said central shaft means, whereby said welding heads may be moved along the abutment between two abutted pipe ends to weld said pipe ends together at their interiors.

4,525,617
METHOD AND APPARATUS FOR AUTOMATIC ELECTRIC SEAM RESISTANCE WELDING OF CAN BODIES

Akihiro Saito, Ebina, Japan, assignor to Fujikogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 333,337, Dec. 22, 1981, abandoned.
This application Oct. 3, 1984, Ser. No. 657,058
Claims priority, application Japan, Dec. 24, 1980, 55-183172
Int. Cl.[3] B23K *11/06*
U.S. Cl. 219—83 6 Claims



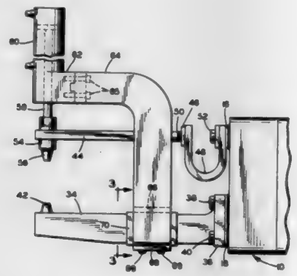
1. A method of automatic electric seam resistance welding of a thin-walled cylindrical can body, the method having the steps of inserting both side ends of a cylindrical can body blank into guide grooves of a guide rail having a Z-shaped cross section for overlapping said side ends; conveying the cylindrical can body blank into an electrode station for seam welding; and welding the overlapped side ends at a high welding speed; the improvement comprising that the step of welding the overlapped side ends is performed at a rate which is at least 40 m/min, and that during the step of conveying the cylindrical can body blank into the electrode station, there is provided the further step of holding the cylindrical can body blank by a holding device comprising segments, each of which has at least one pair of contacting concave members, each of said contacting concave members being pivotable about a stationary pivot pin positioned parallel to, and at a predetermined distance from, a center axis of the cylindrical can body blank, a line between said center axis and said pivot pin intersecting the concave profile of said concave member such that a first portion of the concave member contacts the cylindrical can body blank on one side of said line and a second portion of the concave member contacts the cylindrical can body portion on the other side of said line, and each contacting concave member being provided with an elastic means for limiting pivotal movement of said contacting concave member, whereby movement of said first portion of the concave member toward said center axis results in movement of said second portion of the concave member away from said center axis and vice versa so that shaking of said cylindrical can body blank is diminished and absorbed by said pivotal movement to keep said center axis of said cylindrical can body blank stably at a predetermined position and so that both the side ends come into light contact with the corresponding bottoms of the guide grooves.

4,525,618

RESISTANCE WELDING APPARATUS

Donald J. Beneteau, 1333 Front Rd. South, Amherstburg, Ontario, Canada

Filed Oct. 26, 1983, Ser. No. 545,477
Int. Cl.³ B23K *11/00*
U.S. Cl. 219—89 **8 Claims**



6. Apparatus for resistance welding comprising a transformer having an input face and an output face, a first output terminal block having a substantially planar surface at one portion of said output face and positioned close to and substantially parallel with said output face, a second output terminal block having a substantially planar surface at another portion of said output face and positioned close to and substantially parallel with said output face, said first output terminal block having at least two threaded holes located symmetrically with respect to a vertical center line of said first block, said second terminal block having at least two pair of threaded holes located symmetrically with respect to the vertical center line of said first block, a first welding electrode holder, a U-shaped shunt connecting an end portion of said first electrode holder and said first terminal block and enabling movement of said first electrode holder relative to said transformer, a second welding electrode holder electrically connected to said second output terminal block and positioned generally parallelly to said first electrode holder, a pressure intensifier cylinder, said cylinder having a piston rod connected to said first electrode holder for moving a first electrode carried thereby toward and away from a second electrode carried by said second electrode holder, and supporting arms supporting said pressure intensifier cylinder and adjustably affixed along said second electrode holder whereby said pressure intensifier cylinder can be moved along said second electrode holder to align the first and second electrodes.

4,525,619

AUTOMATIC WELD LINE FOLLOWING METHOD

Eizo Ide, and Hiroshi Fujimura, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

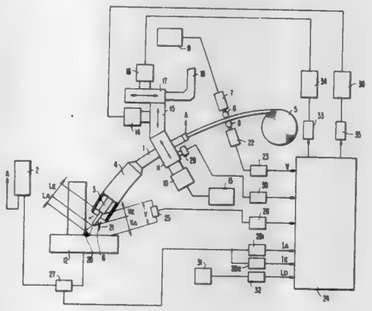
Continuation-in-part of Ser. No. 548,423, Nov. 3, 1983, abandoned. This application Jul. 24, 1984, Ser. No. 634,120
Claims priority, application Japan, Nov. 9, 1982, 57-195248
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—124.22 **1 Claim**

1. In an arc welding method for welding a work by feeding a consumable electrode toward the weld line of said work through the tip of a welding torch and by oscillating said welding torch, a method for automatically following said weld line comprising the steps of:

detecting average and effective values of a welding current, a consumable electrode feeding speed and a voltage between said tip and said work;

arithmetically processing the detected quantities by means of a computer to determine a distance L ($L=L_E+L_A$) between said tip and a weld metal which is equal to the sum of an arc length L_A and the extension L_E of said consumable electrode extending from the tip of said welding torch;

detecting the deviation between the oscillation center of said welding torch and the center of a joint, which is constructed of said work, from the difference in said distance L between said tip and said weld metal in at least two predetermined oscillation positions; and



controlling the position of said torch at all times so that the positional relationship between said oscillation center and said joint center corresponds to a predetermined relationship, whereby an arc point can automatically follow said weld line.

4,525,620

METHOD OF WELDING FERRITIC AND AUSTENITIC STAINLESS STEELS AND PRODUCT THEREOF

Harry E. Deverell, Natrona Heights, and Jack M. Beigay, Freeport, both of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Sep. 15, 1982, Ser. No. 418,315
Int. Cl.³ B23K *9/23*
U.S. Cl. 219—137 WM **18 Claims**

1. In a method of welding ferritic stainless steel to austenitic metal alloy to form a welded article, the ferritic steel having 17 to 35% chromium and the austenitic steel having about 16 to 29% chromium, the ferritic steel containing a total carbon and nitrogen content less than the total carbon and nitrogen content of the austenitic steel, and the weld deposit containing titanium and columbium as stabilizing elements, the improvement comprising:

providing the weld deposit with at least 0.5% up to about 4.0% of stabilizer selected from the group consisting of titanium and columbium, and

providing at least 0.8% stabilizer when the weld deposit contains less than about 22% chormium or less than about 30% total of chromium and three times the molybdenum content;

said stabilizer being sufficient to stabilize the carbon and nitrogen of the weld deposit to provide a corrosion-resistant welded article.

4,525,621

ELECTRONIC WELDING ENERGY SOURCE

Peter Puschner, Vaalserquartier, Gut Fuchstal Dreiländerweg 127, 5100 Aachen, Fed. Rep. of Germany

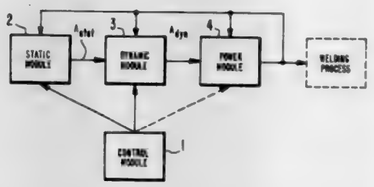
Filed Jan. 3, 1983, Ser. No. 455,010
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1982, 3200086
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—137 PS **6 Claims**

5. A method of controlling the energization of an electrically energized arc welding process comprising the following steps:

A. comparing a signal indicative of the power input voltage of the welding process with a reference signal to develop a static function signal;

B. modifying the static function signal by integration over a predetermined time period to develop a dynamic function signal which varies in accordance with both dynamic and static conditions of the welding process,

step B being carried out via circuit means affording independently adjustable time constants for signals of increasing and decreasing amplitude; and



C. varying the current supplied to the welding process as a function of the dynamic function signal;

step C being carried out via the following sub-steps:

C1. comparing the dynamic function signal with a signal indicative of the power input current of the welding process to develop a current control signal; and

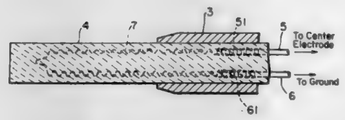
C2. varying the current supplied to the welding process as a function of the current control signal.

4,525,622

CERAMIC GLOW PLUG

Hideo Kawamura, Kanagawa; Nobukazu Sagawa, and Noriyoshi Yamamoto, both of Kagoshima, all of Japan, assignors to Isuzu Motor, Ltd., Tokyo and Kyoto Ceramic Co., Ltd., Kyoto, both of, Japan

Continuation of Ser. No. 335,422, Dec. 29, 1981, abandoned. This application Jan. 30, 1984, Ser. No. 574,637
Claims priority, application Japan, Dec. 29, 1980, 55-188940[U]
Int. Cl.³ F23Q *7/22*
U.S. Cl. 219—270 **9 Claims**



1. A ceramic glow plug, comprising:

a ceramic heat conducting member;

a metal electrical heat generating element contained within said ceramic heat conducting member, said heat generating element comprising a metal coil having a coil pitch angle which does not exceed 60°, said coil pitch angle being defined as an angle formed between a line parallel to a longitudinal axis of said coil and turns of said coil, said coil forming a substantially U-shaped configuration having a pair of end portions and being embedded in said ceramic heat conducting member;

a pair of leads in said heat conducting member;

said heat generating element being electrically connected by compression heat bonding to front end portions of said leads:

a flexible wire connected to one lead at one end;

a center electrode connected to the other end of said flexible wire;

a sheath coupled to the other lead; and

a protection tube surrounding said heat conducting member;

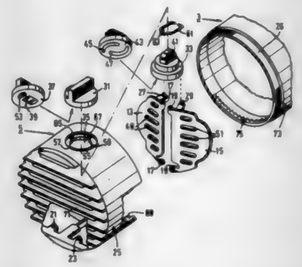
whereby after said coil is inserted into said heat conducting member, said heat conducting member, said leads and said coil are hot-pressed and subjected to compressive force to form said ceramic glow plug with said leads electrically coupled to said end portions.

4,525,623

HAIR-DRIER WITH VALVES FOR CONTROLLING THE AIR FLOW

Artur F. Da Silva, Sao Paulo, Brazil, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 15, 1983, Ser. No. 513,900
Claims priority, application Brazil, Jul. 19, 1982, 6200942
Int. Cl.³ A45D *20/26;* **F24H** *3/00;* **H05B** *1/00*
U.S. Cl. 219—373 **6 Claims**



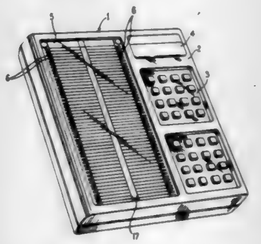
1. A hair-drier which comprises a tubular housing having an air outlet; two valve members pivotally mounted in the housing for controlling the flow of air therethrough; an opening formed in the wall of the housing; a rotatable member extending through said opening for actuating said valve members; two curved slots formed in said actuating member; and a projection on each valve member for respective engagement with said curved slots whereby, upon turning of the actuating member, said valve members are pivoted in opposite directions.

4,525,624

DATA LOGGING DEVICE

Ronald M. Pontefract, York, England, assignor to Rowntree Mackintosh plc, York, England

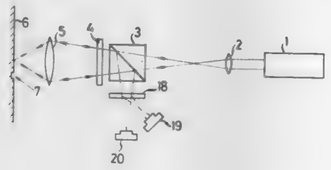
Filed Sep. 13, 1982, Ser. No. 417,502
Claims priority, application United Kingdom, Sep. 15, 1981, 8127857
Int. Cl.³ G06K *15/00*
U.S. Cl. 235—383 **12 Claims**



1. A portable data logging device, comprising data storage means; means to display a list from which items are to be selected and which can be replaced by another list external to the device from a portfolio of lists of given format without reference to any program of said device; means coupled to said storage means and operable to select and indicate item positions of said displayed list and to address a storage location of said storage means, allocated to said selected item position, which location stores an identifying code for said item position; and a keyboard coupled to said storage means and operable by an operator to enter into said storage means data relating

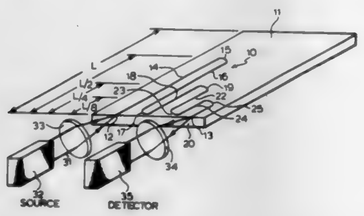
to said indicated item position; wherein said means to select and indicate item positions is operable under the control of said operator to select said item positions sequentially or randomly without reprogramming said device; and wherein there is provided means operable by said operator to enter into said storage means an identity code for the particular list displayed.

4,525,625
FOCUSSING CONTROL WITH ASTIGMATIC DIFFRACTING MEANS
Michiharu Abe, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Jun. 8, 1981, Ser. No. 271,400
Claims priority, application Japan, Jun. 7, 1980, 55-76945
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—201 **6 Claims**



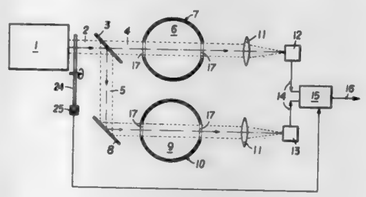
1. A focusing control method for an optical device, comprising the steps of:
(a) converging a light beam from a light source;
(b) illuminating a reflective surface with said light beam to produce a reflected beam;
(c) producing an astigmatic light flux of said reflective beam by a diffraction means;
(d) detecting the magnitude of said light flux by means of a four sided light sensitive device; and
(e) focussing said optical device in response to said detection.

4,525,626
FIBER OPTIC VIBRATION MODAL SENSOR
Stephen T. Kush, Austin, Tex., and Marc E. Meffe, Phoenix, Ariz., assignors to Sperry Corporation, New York, N.Y.
Filed Mar. 24, 1982, Ser. No. 361,274
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—227 **18 Claims**



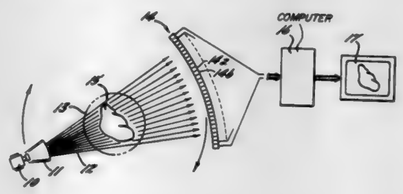
1. An apparatus for monitoring vibration modes of a structure having first and second ends comprising:
an optical fiber positioned along a serpentine path on said structure, having an input end face adjacent said first end of said structure and an output end face, said serpentine path having turning points located at predetermined distances selected from a sequence of distances defined by L/n, where L equals the length of said structure n=1, 2, 3, . . . from said first end, and arranged to position said input and output end faces of said optical fiber adjacent said first end, and
means for launching at least two propagating optical modes in said optical fiber such that a temporal intensity modulated signal responsive to said vibration modes appears at said output end face; and
means coupled to receive said temporal intensity modulated signal from said output end face for detecting intensity modulation thereof and providing output signals representative of said intensity modulation.

4,525,627
METHOD AND DEVICE FOR CONTINUOUS MEASUREMENT OF THE MASS OF AEROSOL PARTICLES IN GASEOUS SAMPLES
Peter W. Krempl, and Wolfgang Schindler, both of Graz, Austria, assignors to A V L Gesellschaft für Verbrennungskraftmaschinen und Messtechnik m.b.H., Graz, Austria
Filed May 4, 1983, Ser. No. 491,553
Claims priority, application Austria, May 6, 1982, 1788/82
Int. Cl.³ G01J *3/42;* **G01N** *21/21, 21/59*
U.S. Cl. 250—345 **8 Claims**



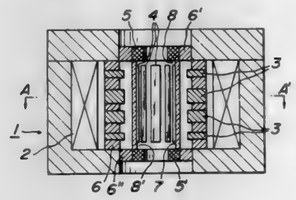
1. A method for the continuous measurement of the mass of aerosol particles in a gaseous sample, preferably in the exhaust of an internal combustion engine, the sample being traversed by electromagnetic radiation in the optical Rayleigh range and the absorption caused being measured and utilized as a measurement value, wherein electromagnetic radiation of a wavelength in the range between 3.8 and 4.15 μm is used, said radiation traversing a reference volume in addition to a test volume containing said sample, and the difference in the radiation intensities after passage of said two volumes is used as a measurement value proportional to the specific mass of—mainly graphitic—particles characterized by broadband absorption which are contained in said sample.

4,525,628
RARE EARTH CERAMIC SCINTILLATOR
Frank A. DiBianca, Chapel Hill, N.C.; Jean-Pierre J. Georges, Waukesha, Wis.; Dominic A. Cusano, and Charles D. Greskovich, both of Schenectady, N.Y., assignors to General Electric Company, Waukesha, Wis.
Filed Jun. 18, 1982, Ser. No. 389,828
Int. Cl.³ G01T *1/202;* **C09K** *11/46*
U.S. Cl. 250—367 **8 Claims**



1. In a radiation detector for use with a source of penetrating radiation, a detector array having a plurality of channels for receiving the radiation, the channels each including a scintillator and a photo-responsive means coupled thereto for producing a set of signals related to the radiation detected in the respective channels, the improvement wherein each scintillator comprises a polycrystalline ceramic scintillator crystal for detecting the radiation in the channels, the crystals being formed of a rare earth oxide doped with a rare earth activator to form a cubic crystal structure which scintillates at a predetermined wavelength, the crystal having a porosity no greater than about 0.1% and being substantially optically transparent to efficiently couple the scintillated radiation to the photo-responsive means.

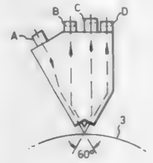
4,525,629
DEFLECTIVE FOCUSING SYSTEM FOR CHARGED PARTICLE BEAM
Hirofumi Morita, Kiyose, and Teruo Hosokawa, Tokorozawa, both of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan
Filed Jun. 7, 1982, Ser. No. 386,115
Claims priority, application Japan, Jun. 15, 1981, 56-90901
Int. Cl.³ G21K *1/08;* **H01J** *3/14*
U.S. Cl. 250—396 ML **16 Claims**



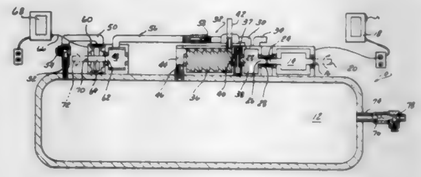
1. A deflective focusing system for a charged particle beam comprising:
a magnetic lens for focusing a charged particle beam;
a plurality of rings made of magnetic material arranged substantially concentric with said magnetic lens inside of said magnetic lens, said rings being arranged dividedly in the direction of the central axis of said magnetic lens so as to form a predetermined magnetic focusing field distribution; and
a one-stage electrostatic deflector having a plurality of deflection electrodes which are divided in a circumferential direction of said magnetic lens, are arranged substatially concentric with said magnetic lens inside of said magnetic lens and are extended in the direction of said central axis so as to form a predetermined electrostatic deflection field distribution, the charged particle beam passing through said concentrically arranged deflection electrodes to be deflected in accordance with a voltage applied to said deflection electrodes.

4,525,630
APPARATUS FOR DETECTING TAPE ON SHEETS
Christopher P. Chapman, Hayling Island, England, assignor to De La Rue Systems Limited, Portsmouth, England
Filed Aug. 11, 1982, Ser. No. 407,209
Claims priority, application United Kingdom, Aug. 11, 1981, 8124512
Int. Cl.³ G01H *21/88*
U.S. Cl. 250—572 **5 Claims**

1. Apparatus for sensing the condition of the surface of a moving printed document, comprising:
(a) illuminating means (A) including a plurality of optical fibres for guiding light to the surface of the document, said fibres having laterally spaced light-emitting ends with a low numerical aperture to direct collimated beams of light at a plurality of adjacent regions in a line across the document in a direction transverse to its movement;
(b) a pair of first and second light receivers for each illuminated region of the document, each pair including individual first and second photoelectric means and associated optical fibres leading to the individual photoelectric means;
(c) light-receiving ends of the optical fibers of the first light receivers (D) being laterally spaced across the path of document movement for receiving light specularly reflected from the plurality of adjacent illuminated regions, and the associated first photoelectric means providing corresponding first electrical signals;
(d) light-receiving ends of the optical fibers of the second light receivers (B) being laterally spaced across the path of document movement for receiving light diffusely reflected from corresponding ones of said regions, and the associated second photoelectric means providing corresponding second electrical signals; and
(e) signal-analyzing means (**10–14**) for receiving the signals from each pair of first and second light receivers and responsive, for each pair, to an increase in the ratio of the instantaneous values of the first and second signals, representing respectively light reflected specularly and diffusely from the corresponding illuminated region, to provide a signal output indicative of the presence of shiny tape on the illuminated surface of the document.



4,525,631
PRESSURE ENERGY STORAGE DEVICE
John H. Allison, 43040 Penny, Sterling Heights, Mich. 48078
Continuation-in-part of Ser. No. 335,983, Dec. 30, 1981, Pat. No. 4,447,738. This application Jan. 10, 1984, Ser. No. 569,722
Int. Cl.³ F01C *13/00*
U.S. Cl. 290—4 R **25 Claims**



1. A pressure energy storage device comprising:
a storage reservoir for storing pressurized fluid;
compressor means having compressor intake means, compressor exhaust means, and an input shaft, said compressor intake means being interconnected with a source of fluid, said compressor exhaust means being interconnected with said storage reservoir for fluid flow therebetween, said compressor means being selectively operable in response to rotary motion of said input shaft to draw fluid from said source of fluid, pressurize said fluid, and deliver said pressurized fluid to said storage reservoir;
primary fluid motor means having primary fluid motor intake means, primary fluid motor exhaust means, and an output shaft, said primary fluid motor intake means being interconnected with said storage reservoir for fluid flow therebetween, said output shaft being rotatably driven by pressurized fluid flowing through said primary fluid motor means from said primary fluid motor intake means to said primary fluid motor exhaust means;

control means selectively operable to permit said pressurized fluid in said storage reservoir to flow through said primary fluid motor means to generate rotary motion of said output shaft; and

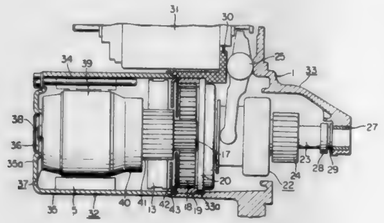
secondary fluid motor means interconnected with said input shaft such that said compressor means is selectively driven by said secondary fluid motor means, said secondary fluid motor means having secondary fluid motor intake means interconnected with a source of pressurized fluid and a secondary fluid motor exhaust means interconnected with a low pressure sink means.

4,525,632

STARTER MOTOR FOR AN INTERNAL COMBUSTION ENGINE

Toshinori Tanaka, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1983, Ser. No. 461,981
Claims priority, application Japan, Feb. 2, 1982, 57-13900[U]
Int. Cl.³ F02N *11/00*
U.S. Cl. 290—38 R **7 Claims**



1. In a reduction gear type starter motor having a yoke and poles for an internal combustion engine having a rear, an intermediate and a front bracket, the motor being interposed between said rear and intermediate brackets, said intermediate bracket containing gear trains in mesh with the rotary shaft of said motor, said front bracket containing an overrunning clutch mounted to the output rotary shaft of said gear trains and a shift lever to actuate said overrunning clutch, a pinion secured to said overrunning clutch being adapted to be meshed with a gear of said internal combustion engine, the improvement comprising only one faucet joint, said front bracket and said intermediate bracket together integrally forming a first integral part containing said overrunning clutch, said shift lever and said pinion, and said rear bracket and said yoke of said motor together integrally forming a second integral part with said poles secured to the inner periphery thereof, said second integral part and said first integral part being connected together by said faucet joint.

4,525,633

WIND TURBINE MAXIMUM POWER TRACKING DEVICE

Max M. Wertheim, and Richard J. Herbermann, both of Huntington, N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

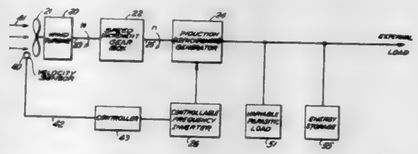
Filed Sep. 28, 1982, Ser. No. 425,760
Int. Cl.³ F03D *9/02;* **H02P** *9/14*
U.S. Cl. 290—44 **18 Claims**

1. In a stand-alone wind power generating system having a wind turbine driving a generator connected to an external load and an energy storage device, the improvement comprising a maximum power tracking device comprising:

means for measuring changes in the velocity of wind incident upon the turbine,

means for applying an excitation frequency to the generator, said generator being an induction generator, and

means for varying said excitation frequency in response to said wind velocity changes so that the shaft speed of the induction generator, and thereby of the wind turbine are adjusted to maintain a pre-determined ratio between said



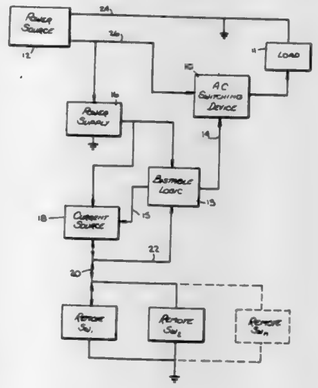
wind velocity incident upon the turbine and said turbine shaft speed.

4,525,634

ALTERNATING CURRENT SWITCHING DEVICE

James S. Southard, P.O. Box 46, Union, Mich. 49130

Filed May 10, 1983, Ser. No. 493,225
Int. Cl.³ H01H *47/00*
U.S. Cl. 307—115 **13 Claims**



1. A switching device providing independent control of the connection of a load to a source of electric power from any one of a plurality of locations which are disposed along a control circuit while at the same time providing an indication at each of the locations of the state of the load connection, the switching device comprising:

load switch means for connecting the load to the source of electric power, the load switch means having an input for a load control signal, the load switch means being responsive to successive load control signals to connect and to disconnect the load and the source of electric power;

control switch means adapted to be connected to the control circuit at each different location of the plurality of locations, each control switch means being adapted to normally present a first impedance to the control circuit and when actuated to momentarily present a second impedance to the control circuit;

means adapted to be connected to the load switch means and to the control circuit for generating a load control signal for the input of the load switch means and for generating an indicator signal for the control circuit, the signal generating means being adapted to generate the load control signal and the corresponding indicator signal in response to the presence of the second impedance on the control circuit; and

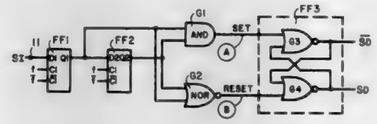
indicator means adapted to be disposed at each different location of the plurality of locations, each indicator means being adapted to be connected to the control circuit and to respond to an indicator signal thereon to indicate the state of the load connection.

4,525,635

TRANSIENT SIGNAL SUPPRESSION CIRCUIT

James E. Gillberg, Flemington, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 15, 1982, Ser. No. 450,062
Int. Cl.³ H03K *17/56, 19/00*
U.S. Cl. 307—247 R **9 Claims**



1. The combination comprising:

an input terminal adapted to receive an input signal;

means comprising first and second flip-flops coupled to said input terminal for storing in said second flip-flop a signal (SI_1) corresponding to the value of said input signal at a time t_1, and for storing in said first flip-flop a signal (SI_2) corresponding to the value of said input signal at a time t_2, where t_2 is subsequent to t_1 and the interval t_1 to t_2 defines a sampling interval;

a set/reset flip flop; and

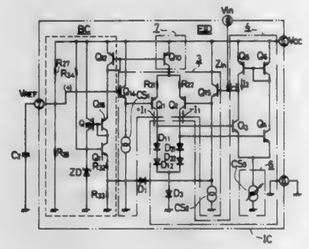
means, coupled between said first and second flip-flops and said set/reset flip-flop, responsive to the signals stored in said first and second flip flops for: (a) placing said set/reset flip-flop in a condition indicative of the value of the input signal stored in said first and second flip-flops when SI_1 is equal to SI_2; and (b) maintaining said set/reset flip-flop in the condition it had prior to t_1 when SI_1 is not equal to SI_2.

4,525,636

VARIABLE ELECTRONIC IMPEDANCE CIRCUIT

Yasuo Kominami; Yuichi Ohkubo, both of Takasaki; Kohki Aizawa, Sagamihara, and Satoshi Sasaki, Tokorozawa, all of Japan, assignors to Hitachi, Ltd. and Pioneer Electronic Corp., both of Tokyo, Japan

Filed Aug. 30, 1982, Ser. No. 413,147
Claims priority, application Japan, Aug. 28, 1981, 56-134007
Int. Cl.³ H03K *3/023, 17/16*
U.S. Cl. 307—264 **13 Claims**



1. A variable electronic impedance circuit comprising:

a power supply terminal to which a power supply voltage is to be coupled for supplying an operational voltage to said circuit;

a voltage-current converter having a first input terminal coupled to receive an input signal voltage;

a variable-gain current amplifier having an input terminal coupled to receive an output current produced by said voltage-current converter and generating an output signal current which is coupled to said first input terminal of said voltage-current converter; and

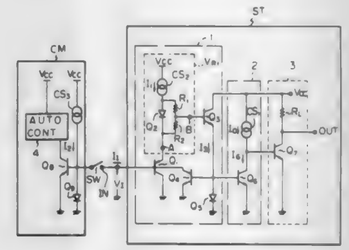
means, coupled to said power supply terminal and said voltage-current converter, for preventing the operation of said voltage-current converter for a predetermined period of time subsequent to the application of said power supply voltage to said power supply terminal.

4,525,637

INTEGRATED CIRCUIT HAVING AN INPUT VOLTAGE-CLAMPING FUNCTION AND AN INPUT CURRENT-DETECTING FUNCTION

Yoshiaki Sano, Kawasaki; Chikara Tsuchiya, and Osamu Maida, both of Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki and Nippon Kogaku K.K., Tokyo, both of, Japan

Filed Sep. 28, 1982, Ser. No. 425,654
Claims priority, application Japan, Sep. 29, 1981, 56-152871
Int. Cl.³ H03K *5/08, 5/153*
U.S. Cl. 307—350 **12 Claims**



1. An integrated circuit having an input voltage-clamping function and an input current-detecting function, comprising:

a single input terminal for receiving an input signal having a voltage and an input current;

an output terminal;

a voltage-clamping circuit, operatively connected to said single input terminal, for clamping the voltage at said single input terminal while the input current supplied to said single input terminal is greater than a first predetermined value;

a current-detecting circuit, operatively connected to said voltage-clamping circuit, for detecting whether the input current supplied to said input terminal is greater than a second predetermined value and for generating a detection signal when the input current is greater than the second predetermined value; and

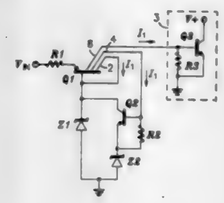
an output circuit, operatively connected between said current-detecting circuit and said output terminal, for providing an output signal at said output terminal in response to said detection signal.

4,525,638

ZENER REFERENCED THRESHOLD DETECTOR WITH HYSTERESIS

Randall C. Gray, Scottsdale, Ariz., assignor to Motorola, Inc. Schaumburg, Ill.

Filed Jan. 16, 1984, Ser. No. 571,232
Int. Cl.³ H03K *5/153*
U.S. Cl. 307—350 **9 Claims**



1. A voltage threshold detector of the type wherein a

switching transistor turns on when an input voltage exceeds a predetermined threshold voltage, comprising:

switching transistor means having base, emitter and first, second and third collector terminals, said first collector terminal coupled to said base;

first impedance means coupled between said emitter terminal of said switching transistor and said input voltage;

first diode means having an anode coupled to a first source of supply voltage and a cathode coupled to the base terminal of said switching transistor, said first diode means for establishing, in conjunction with the base-emitter voltage of said switching transistor, the value of said input voltage necessary to turn on said switching transistor; and

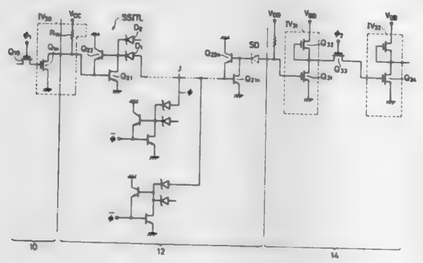
first means coupled to said second collector terminal for reducing the voltage at the base terminal of said switching transistor after said switching transistor has turned on, said third collector terminal representing the output of said voltage threshold detector.

4,525,639

DYNAMIC MOS CIRCUIT BLOCK AND STATIC BIPOLAR TRANSISTOR CIRCUIT BLOCK INTEGRATED CIRCUIT DEVICE

Terumoto Nonaka, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 4, 1982, Ser. No. 374,893
Claims priority, application Japan, May 9, 1981, 56-69784
Int. Cl.³ H03K *19/092, 19/096;* **G11C** *19/28*
U.S. Cl. 307—446 **16 Claims**



1. A digital semiconductor integrated circuit device, for receiving input and outputting output electrical signals, having a common semiconductor substrate and comprising:

at least one dynamic MOS shift register circuit block means for processing digital signals and having a signal input terminal for receiving said input electrical signals, a signal output terminal and a first clock input terminal and being formed in said common substrate;

at least one static induction transistor circuit block means for processing signals and having a signal input terminal, a signal output terminal for outputting said output electrical signals and a second clock input terminal and being formed in said common substrate, said static induction transistor circuit block means comprising a normally-off static induction transistor being operated in a bipolar mode;

said signal output terminal of said at least one dynamic MOS shift register circuit block means being connected to said signal input terminal of said at least one static induction transistor circuit block means; and

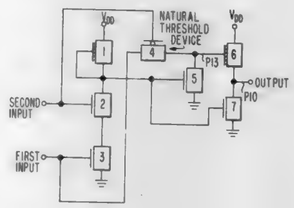
first and second clock signal generating means for, respectively, generating first and second clock signals respectively applied to said first and second clock input terminals, said first and second clock signals having a predetermined timing relationship with each other so that said dynamic MOS shift register circuit block means and said static induction transistor circuit block means are operated in relation with each other according to said predetermined timing relationship.

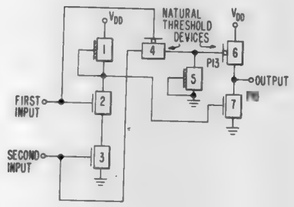
4,525,640

HIGH PERFORMANCE AND GATE HAVING AN "NATURAL" OR ZERO THRESHOLD TRANSISTOR FOR PROVIDING A FASTER RISE TIME FOR THE OUTPUT

David H. Boyle, and Daniel J. Kouba, both of Manassas, Va., assignors to IBM Corporation, Armonk, N.Y.

Filed Mar. 31, 1983, Ser. No. 481,033
Int. Cl.³ H03K *19/017, 19/094, 17/04, 17/693*
U.S. Cl. 307—450 **3 Claims**





1. An AND gate driver circuit comprising:

a NAND block having a first and second input terminals and an output node, for providing a NAND logic function voltage at said output thereof in response to the voltages applied to said input terminals;

an output circuit including an enhancement mode FET device connected between a circuit output node and ground potential, having its gate connected to said output node of said NAND block;

a low threshold voltage FET device connected between said circuit output node and a drain potential, having its gate connected through an impedance means to said ground potential;

a substantially zero threshold voltage FET device having its source/drain path connected between said gate of said low threshold voltage FET device and a first one of said circuit inputs, and having its gate connected to a second one of said circuit inputs; said zero threshold device conducting current between said first one of said circuit inputs and said gate of said low threshold FET device when the potential of said first input begins to rise, and said zero threshold device impeding current flow between said gate of said low threshold FET device and said first one of said circuit inputs when the voltage at said circuit output node rises;

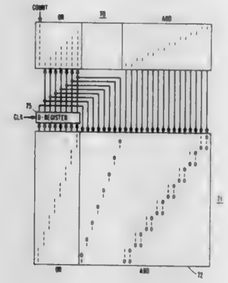
whereby the rise time of the voltage at said circuit output node is reduced.

4,525,641

FLIP-FLOP PROGRAMMER USING CASCADED LOGIC ARRAYS

Claude A. Cruz, Fremont, Calif., and Johannes C. Vermeulen, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1982, Ser. No. 448,652
Int. Cl.³ H03K *19/173, 3/027*
U.S. Cl. 307—465 **3 Claims**



1. A circuit for implementing any given flip-flop circuit comprising, in combination:

flip-flop means of at least one type having input means and output means;

first and second logic array means having input means and output means for supplying as signals at their output means selective logic derivations of signals applied to their input means;

means for coupling said output means of said second array means to the input means of said flip-flop means;

means for coupling said output means of said flip-flop means to said input means of the first and second logic array means; and

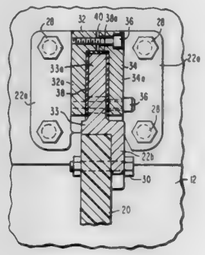
means for coupling said output means of said first logic array means to the input means of said second logic array means.

4,525,642

TURBINE GENERATOR WITH STATOR END WINDING SUPPORT ASSEMBLY INCLUDING RESILIENT BRACKET

Benjamin T. Humphries, Orlando, Fla., and Andrew J. Spisak, Bethel Park, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 5, 1984, Ser. No. 596,880
Int. Cl.³ H02K *3/46*
U.S. Cl. 310—260 **7 Claims**



1. A dynamoelectric machine comprising:

a stator with a core and a stator winding, said core having a generally cylindrical bore;

a rotor shaft mounted for rotation within said bore of said stator;

said stator winding including portions within slots in said core and end winding portions extending in the axial direction from each end face of said core;

a support assembly for said end winding portions comprising means for restraining said end winding portions against excessive motion in radial and axial directions, said means for restraining comprising a brace and a bracket located radially outside each of a plurality of said end winding portions;

said brace comprising a member extending radially outside said end winding portion and supported to bear against said end winding portion;

said bracket having a core mounting fixedly secured to said core and a brace mounting fixedly secured to said brace, said bracket also having one or more resilient elements for allowing relative movement between said core mounting and said brace mounting in the axial direction;

said bracket core mounting comprising a first member with a flange fitting substantially flush against said core and a plate, rigidly united with said flange, extending axially from said flange;

said bracket brace mounting comprising a second member with a flange fitting substantially flush against a surface of said brace and a plate, rigidly united with said flange, having a surface extending parallel with a surface of said first member plate;

at least one of said resilient elements being a sheet of elastomeric material disposed between said parallel surfaces of said first and second members' plates and flexing in shear and compression modes in operation; and

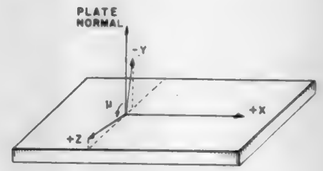
means for securing said first and second members' plates together is provided while relative axial motion therebetween is provided for by said resilient element.

4,525,643

TEMPERATURE COMPENSATED ORIENTATIONS OF BERLINITE FOR SURFACE ACOUSTIC WAVE DEVICES

Bruce H. Chai, Bridgewater, N.J.; Dana S. Bailey, Columbia, Md.; John F. Vetelino, Veazie, Me.; Donald L. Lee, Orono, Me., and Jeffrey C. Andle, Bangor, Me., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 28, 1983, Ser. No. 546,677
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—313 A **3 Claims**



1. A berlinite single crystal having a substantially planar surface defined by the Euler angles λ=about 0°; μ=about 94°-104°; and θ=about 0°.

4,525,644

PIEZOELECTRIC-ENHANCED CIRCUIT CONNECTION MEANS

Sigurd Frohlich, 4141 Mariposa, Santa Barbara, Calif. 93110

Filed Apr. 9, 1984, Ser. No. 597,916
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—328 **5 Claims**

1. In a circuit device of the type having electrical circuit paths at least some of which terminate in connector pads for connecting the circuit device to other circuit devices by means of at least one electrical connector, the improvement comprising:

an electrostrictive material intimately associated with each

of said connector pads and being adapted for selective connection to a source of electrical voltage for selectively increasing the geometrical dimensions of said electrostric-



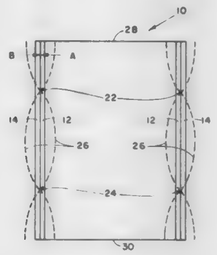
tive material for increasing the mechanical engagement between said connector pads and said electrical connector.

4,525,645

CYLINDRICAL BENDER-TYPE VIBRATION TRANSDUCER

Donald J. Shirley, Boerne, and Thomas E. Owen, Helotes, both of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Oct. 11, 1983, Ser. No. 540,288
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—337 **15 Claims**



1. An electromechanical transducer comprising:

a hollow cylinder with walls formed of a first and a second layer, at least one of said first or second layers being a piezoelectric material polarized in a thickness dimension to cause said piezoelectric material to extend or contract in a longitudinal direction upon electrical signals being applied thereto;

metal electrodes bonded to inside and outside faces of said piezoelectric material, said first layer being rigidly bonded to said second layer by a bonding agent;

means for connecting to said metal electrodes to receive or transmit said electrical signals, when said metal electrodes receive said electrical signals said piezoelectric material will extend or contract in a longitudinal direction to cause symmetrical vibrations of said hollow cylinder only in a radial direction with respect to a longitudinal axis of said hollow cylinder, and when acoustical signals are received said acoustical signals symmetrically vibrate said hollow cylinder in a radial direction to cause said piezoelectric material to extend or contract in a longitudinal direction so that said piezoelectric material generates said electrical signals as transmitted by said metal electrodes;

said first and second layers being sized to give approximately maximum electrical signals or acoustical signals, nodes and anti-nodes being formed by said symmetrical vibrations; and

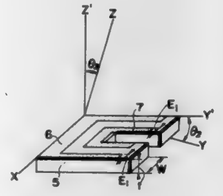
said symmetrical vibrations being caused by said rigid bonding between said first layer and said second layer and differences in said longitudinal extensions or contractions thereof.

4,525,646

FLEXURAL MODE VIBRATOR FORMED OF LITHIUM TANTALATE

Hirofumi Kawashima, Tokyo, Japan, assignor to Seiko Instruments & Electronics, Ltd., Tokyo, Japan

Continuation of Ser. No. 883,256, Mar. 3, 1978, abandoned. This application Oct. 24, 1979, Ser. No. 87,716
Claims priority, application Japan, Mar. 22, 1977, 52-31423
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—360 **24 Claims**



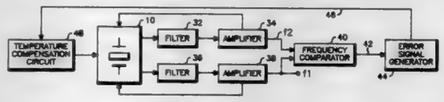
1. A lithium tantalate vibrator for use as a time standard in electronic timepieces comprising: a lithium tantalate crystal having a shape effective to sustain flexural mode vibrations and having an electro-mechanical coupling factor within the range 0.04 to 0.10.

4,525,647

DUAL FREQUENCY, DUAL MODE QUARTZ RESONATOR

Lawrence N. Dworsky, Northbrook, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 557,692, Dec. 2, 1983, abandoned. This application Feb. 4, 1985, Ser. No. 697,688
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—361 **27 Claims**



1. An AT-cut quartz resonator having two different sets of coupled modes simultaneously occurring that produces two resonant frequencies comprising:

a generally rectangular quartz polyhedron;

first and second electrodes disposed on opposing faces of said polyledron for coupling electrical energy thereto;

the ratio of width to height (W/H) of said polyhedron being within the range of 8 to 25;

the width (W) dimension of said polyhedron selected such that a first mode set consisting of a thickness shear mode coupled to a first flexure mode and a second mode set consisting of said thickness shear mode coupled to second flexure mode are simultaneously excitable and result in respective first and second signals of different frequencies, the first signal having a substantial magnitude relative to the magnitude of the second signal; and

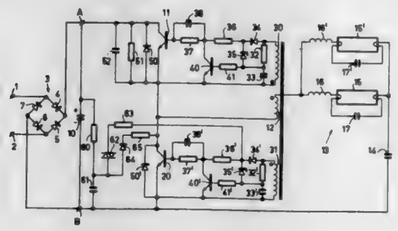
said polyhedron including means for causing one of the first and second signals to have a substantially cubic frequency versus temperature response over a predetermined temperature range, said means comprising said polyhedron having an AT rotation angle within the range of 34.00–34.50 degrees.

4,525,648

DC/AC CONVERTER WITH VOLTAGE DEPENDENT TIMING CIRCUIT FOR DISCHARGE LAMPS

Adrianus M. J. De Bijl, and Henri A. I. Melai, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,532
Claims priority, application Netherlands, Apr. 20, 1982, 8201631
Int. Cl.³ H05B *41/24*
U.S. Cl. 315—224 **9 Claims**



1. A DC/AC converter for the ignition and the supply of alternating current to an electric discharge lamp comprising: two input terminals for connection to a direct voltage source, means connecting the two input terminals to a first series arrangement which comprises at least a first transistor, a load circuit which—in the operating condition—comprises the lamp, and a capacitor, the load circuit and at least the capacitor being shunted by a second transistor, the load circuit including a circuit element shunting the lamp and a reactive circuit element in series with the lamp, a control device connected in circuit so as to make the two transistors alternately conductive and which includes a timing circuit having a variable time constant in order to ensure that the frequency at which the two transistors are alternately rendered conductive, when the converter is switched on but with the lamp not yet ignited, is different from the frequency of the two transistors in the operating condition of the lamp so that the starting current is limited, and wherein the load circuit includes, in series with the lamp, a primary winding of a transformer, and the timing circuit is connected between two terminals of a secondary winding of the transformer and the time constant of said timing circuit is voltage-dependent.

4,525,649

DRIVE SCHEME FOR A PLURALITY OF FLOURESCENT LAMPS

William C. Knoll, Turbotville, Pa., and David L. Bay, Beverly, Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 397,266, Jul. 12, 1982, abandoned. This application Jul. 23, 1984, Ser. No. 633,667
Int. Cl.³ H05B *39/00*
U.S. Cl. 315—96 **5 Claims**

1. A drive circuit for a plurality of series connected fluorescent lamps, said drive circuit comprising:

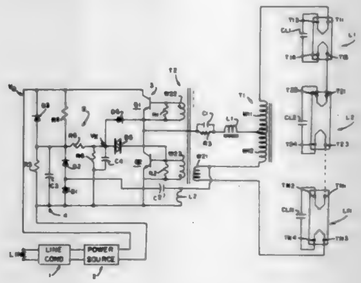
a set of terminals associated with each of said plurality of fluorescent lamps, each set comprising first, second, third and fourth terminals;

a filament connected between each first and second terminal and each third and fourth terminal of each lamp;

an output transformer having first and second ends, said first end being connected to the first terminal of the first lamp of said plurality and said second end being connected to the third terminal of the last lamp of said plurality, said output transformer further being connected, at a point intermediate said first and second ends, to a source of oscillatory drive signals;

a feedback winding connected between said second end of said output transformer and said third terminal of said last lamp for controlling the oscillator;

means connecting the third terminal of said first lamp to the first terminal of said last lamp to form a single wire connecting the lamps in series; and



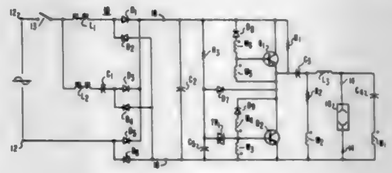
an impedance element connected between said second terminal and said fourth terminal of each of said lamps, wherein the filaments are heated from the transformer through the series impedances and wherein removal of a lamp will automatically stop the oscillator from supplying power.

4,525,650

STARTING AND OPERATING METHOD AND APPARATUS FOR DISCHARGE LAMPS

John M. Hicks, Penn Hills; Joseph C. Engel, Monroeville; Robert J. Spreadbury, Murrysville; Robert T. Elms, Monroeville, and Gary F. Saletta, Irwin, all of Pa., assignors to North American Philips Lighting Corporation, New York, N.Y.

Continuation of Ser. No. 347,274, Feb. 11, 1982, abandoned. This application Jan. 10, 1984, Ser. No. 569,547
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—226 **10 Claims**



1. Apparatus for starting and operating miniature metal-vapor discharge lamp means, said apparatus having input terminals adapted to be connected across a source of AC potential of predetermined magnitude, and said apparatus having output terminals across which said discharge lamp means is adapted to be operatively connected, said apparatus comprising:

AC current-limiting and rectifying means having an input connected to said apparatus input terminals and operable to generate at the output thereof a current-limited low-ripple DC potential;

a lamp means starting circuit comprising series-connected inductor means and capacitor means forming a resonant circuit, said starting circuit capacitor means connected across said apparatus output terminals, a blocking capacitor and a charging impedance connected in series with said starting circuit, and the series combination of said starting circuit, blocking capacitor and charging impedance connected across said output of said AC current-limiting and rectifying means;

a pair of transistors comprising oscillator means electrically connected in series arrangement across said output of said AC current-limiting and rectifying means, and the con-

nection between said transistors being electrically connected to said blocking capacitor means;

air-core transformer means comprising a pair of feedback windings and a pair of driving windings, a first of said feedback windings connecting in series with said starting circuit inductor means and capacitor means, and the second of said feedback windings and a current-controlling impedance means connecting in parallel with said starting circuit inductor means and capacitor means, a first of said driving windings connecting in circuit between the base and the emitter of one of said transistors and the second one of said driving windings connecting in circuit between the base and the emitter of the other of said transistors; and

trigger means responsive to initial energization of said apparatus to apply a turn-on pulse to the base of one of said transistors to initiate oscillations between said transistors to generate square waves; whereby after initial energization of said apparatus and until said lamp means is started said transistors alternately conduct to deliver square waves of current to said lamp means at an oscillation frequency determined by the resonant frequency of said starting circuit series-connected inductor means and capacitor means, and said air-core transformer having a magnetizing inductance such that after said lamp means is started said transistors alternately conduct to deliver square waves of current to said operating lamp at an oscillation frequency determined by the rate of current flow into said second feedback winding.

4,525,651

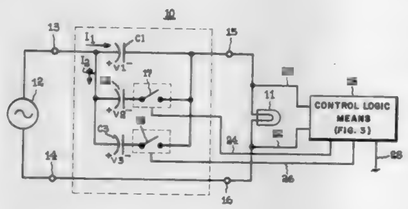
CAPACITIVELY BALLASTED LOW VOLTAGE INCANDESCENT LAMP

Frederic F. Ahlgren, Shaker Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 379,412, May 18, 1982, abandoned. This application Jul. 16, 1984, Ser. No. 630,997

Int. Cl.[3] H05B *37/00, 39/00, 41/14*

U.S. Cl. 315—240 **7 Claims**



1. A ballast circuit means controlling power from an alternating current source to an incandescent lamp, having a filament, at a voltage magnitude that is less than the alternating current source voltage comprising:

(a) a first capacitive element electrically serially connected to said lamp which together are across the ballast means input terminals;

(b) at least one auxiliary capacitive element;

(c) a control means connected across the filament of said lamp generating discrete control signals in response to conditions of the current flowing through the filament; and,

(d) switching means responsive to said control signals for selectively and individually electrically connecting each auxiliary capacitive element in parallel across said first capacitive element for one or more complete cycles of the alternating current source waveform.

4,525,652

AUXILIARY-VOLTAGE SOURCE FOR SUPPLYING ELECTRIC CIRCUITS WHICH ARE AT A HIGH POTENTIAL

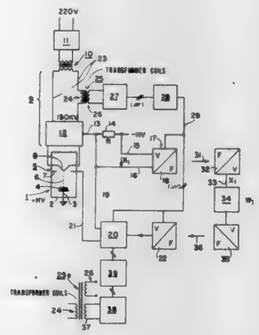
Wolfgang Sperzel, Gelnhausen-Hailer, and Johann Stürmer, Freigericht, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 21, 1983, Ser. No. 544,402

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1982, 3239337; Aug. 26, 1983, 3330728

Int. Cl.[3] H05B *37/02*

U.S. Cl. 315—307 **14 Claims**



1. An auxiliary-voltage DC source for an electric circuit having AC and DC sections, comprising:

a current transformer (**25**, **25***a*) which has a primary winding (**24**) in the AC section and at least a first secondary winding (**26**);

a rectifier (**27**) connected across the first secondary winding (**26**) and having an output for the rectified potential therefrom; and

a parallel regulator (**28**) connected to the output of the rectifier (**27**) and having an output for providing the auxiliary-voltage DC source to the electric circuit.

4,525,653

MODULAR DISPLAY APPARATUS WITH MEANS FOR PREVENTING BRIGHTNESS VARIATIONS

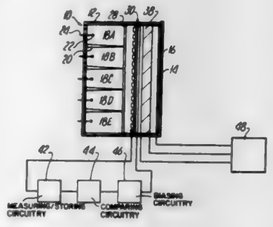
James Smith, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,259

Claims priority, application United Kingdom, Sep. 17, 1982, 8226501

Int. Cl.[3] H01J *29/70, 29/72*

U.S. Cl. 315—366 **14 Claims**



1. A display apparatus for successively producing a series of image frames, said apparatus comprising a flat panel cathode-ray display tube including a luminescent screen, a plurality of electron-emitting means and an apertured control plate disposed between the electron emitting means and the screen,

said display tube comprising a plurality of modules, each including at least one of the electron-emitting means and a portion of the control plate associated with a respective area of the screen, for producing from distributions of emitted electrons respective areas of the image frames,

the improvement comprising:

(a) a plurality of parallel switching electrodes in each module associated with respective rows of apertures in the control plate for controlling the passage of current through said apertures, said switching electrodes being disposed on a side of the control plate facing the electron-emitting means;

(b) at least one brightness control electrode in each module associated with a respective column of apertures in the control plate for controlling the magnitudes of any currents passing through said apertures, said at least one brightness control electrode being disposed on a side of the control plate facing the screen and being oriented transversely to the switching electrodes in the respective module;

(c) means for sequentially measuring the magnitudes of the currents passing through selected apertures in said rows as the switching electrodes are sequentially activated, between successive image frames;

(d) comparing means for determining the differences between the magnitudes of the measured currents and a reference magnitude; and

(e) biasing means for applying bias voltages representing the differences to the respective brightness control electrodes associated with the apertures for which the differences were determined, in synchronism with sequential activation of the switching electrodes associated with said apertures, during production of each image frame, to prevent variations in image brightness corresponding to non-uniform electron distributions in the modules.

4,525,654

TAPE TRANSPORT CONTROL UNIT

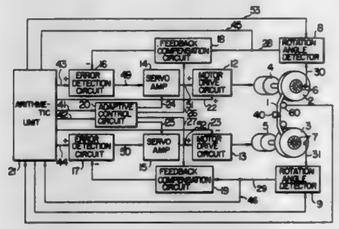
Fujio Tajima, and Hiromu Hirai, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1982, Ser. No. 447,796

Claims priority, application Japan, Dec. 9, 1981, 56-196786

Int. Cl.[3] H02P *5/46*

U.S. Cl. 318—7 **11 Claims**



1. A tape transport control unit in a magnetic tape apparatus in which a supply reel and a take-up reel are driven by separate motors and a magnetic tape on the supply reel is transported from the supply reel to the take-up reel past a read/write head disposed between the reels without routing a buffer through a substantially constant length path and a reel status amount representing a total amount of the tape on the reels varies from time to time, comprising:

reel status amount sensing means for sensing the reel status amount of tape roll radii and reel moments of each of said supply reel and said take-up reel:

reel drive means for comparing a predetermined target signal of each of said supply reel and said take-up reel with a feedback signal obtained by adjusting a signal from said status amount sensing means by means of a feedback compensation circuit, and for driving reel drive motors separately connected to each reel on the basis of the compared signal;

arithmetic and storage means for calculating and storing gain values and feedback constants of said reel drive means which are compensation constants necessary for equalizing dynamic operations of each reel drive means, in accordance with the reel status amount from each reel status amount sensing means; and

means for selecting a compensation constant corresponding to the instantaneous tape roll radii from said compensation constants calculated by and stored in said arithmetic and storage means in response to said sensing means and for setting the selected compensation constant as a compensation constant for said reel drive means.

4,525,655

TWO STAGE ELECTRIC DRIVE

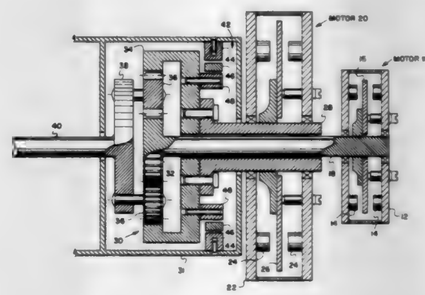
David E. Walker, 1055 Shawnmarr Rd., #90, Mississauga, Ontario, Canada L5H 3V2

Filed Nov. 23, 1979, Ser. No. 96,800

The portion of the term of this patent subsequent to Apr. 25, 1998, has been disclaimed.

Int. Cl.[3] H02K *17/34*

U.S. Cl. 318—45 **8 Claims**



1. An electric motor drive system which comprises;

a first direct current electric motor having a predetermined power rating;

a first drive shaft to which said first electric motor is drivingly coupled;

a second direct current electric motor having a predetermined power rating higher than said first motor;

a second drive shaft to which said second electric motor is drivingly coupled, said second drive shaft comprising a hollow sleeve member with said first drive shaft extending generally axially therethrough;

an epicyclic gear system in turn comprising;

a sun gear to which said first drive shaft is drivingly coupled for rotation in a forward direction;

a ring gear to which said second drive shaft is drivingly coupled for rotation is said forward direction;

a plurality of planetary gears meshing with both said sun gear and said ring gear;

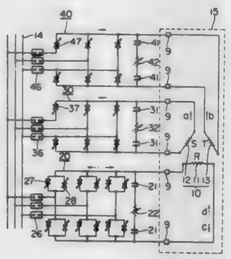
an output drive coupled to said planetary gears for conjoint rotation therewith about said sun gear, and,

one-way freewheel rotation restraining means operatively coupled to said ring gear and restraining rotation of said ring gear in a reverse direction only, said rotation restraining means permitting free rotation in said forward direction whereby said ring gear is free to rotate in said forward direction under the influence of said second motor.

4,525,656
APPARATUS FOR OPERATING PLURAL POLY PHASE A.C. MOTORS HAVING A COMMON LOAD

Kunitoshi Kato, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1983, Ser. No. 523,797
Claims priority, application Japan, Aug. 24, 1982, 57-148080; Sep. 6, 1982, 57-156268
Int. Cl.³ H02P *5/52*
U.S. Cl. 318—85 **6 Claims**



1. An apparatus for operating a plurality of poly phase alternating current motors having a common load, said alternating current motors including a first motor which is a synchronous motor and a second motor which is a synchronous induction motor or synchronous motor, and driving said load in synchronizm through respective connecting means connecting said motors to said load, each of said alternating current motors having respective phase field windings excited variably by direct current supplied by separate exciter circuits, said apparatus comprising:

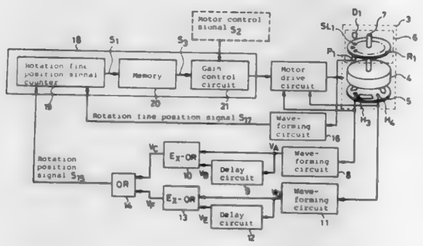
antiparallel connected thyristor means provided to one of said exciter circuits of said first motor; and

means for sensing the gap between the internal phase angles of said first and second motors and supplying gate control signals to said thyristor means to control the magnitude and direction of the current flow to the field winding of said exciter circuit of only said first motor so as to have the internal phase angles of the motors coincide.

4,525,657
TORQUE RIPPLE COMPENSATION CIRCUIT FOR A BRUSHLESS D.C. MOTOR

Hiromi Nakase, Nara; Yasuhiro Gotoh, Kadoma, and Kunilchi Ozawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 7, 1984, Ser. No. 587,252
Claims priority, application Japan, Mar. 9, 1983, 58-39882; Nov. 30, 1983, 58-225912; Nov. 30, 1983, 58-225913
Int. Cl.³ H02P *6/02*
U.S. Cl. 318—254 **4 Claims**



1. Rotation control apparatus for an electronic commutator motor, said electronic commutator motor comprising a predetermined plural number of stator coils disposed with a predetermined mechanical angle around an axis of rotation of said electronic commutator motor, a rotor magnet which has a predetermined number of magnetic poles of N and S disposed alternately with predetermined mechanical angles and held in a rotatable manner around said axis, and a rotation position signal output means for issuing a rotation position signal responding to mechanical rotation of said rotor magnet relative to said stator coils, wherein said rotation control apparatus comprises:

a rotation fine position signal output means for issuing a rotation fine position signal consisting of a predetermined number of pulses during one period of repetition of said rotation position signal in a synchronized relation with the rotation position signal,

a rotation fine position signal counter for producing an electric angle signal which is a signal responding to number of pulses of said rotation fine position signal counted from each time when a pulse of said rotation position signal is issued by receiving said rotation fine position signal,

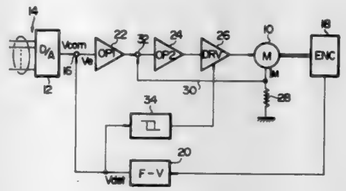
memory means which has preliminarily stored data of compensation function for compensating amount of stator current to compensate torque ripple, to produce uniform torque, and produces a data responding to said electric angle signal,

gain control means for controlling intensities of said stator coils responding to said output of said memory means, to produce compensated uniform current in said stator coils.

4,525,658
SERVOMOTOR DRIVE SYSTEM

Shoji Yanagida, Yokohama, Japan, assignor to Ricoh Co., Ltd., Japan

Filed Jun. 15, 1984, Ser. No. 620,945
Claims priority, application Japan, Jun. 15, 1983, 58-107287
Int. Cl.³ H02P *5/00*
U.S. Cl. 318—317 **8 Claims**



1. A drive system for a servomotor, comprising

a source of a variable command signal representative of the speed at which the servomotor is to operate,

motor speed detecting means for detecting the output speed of the servomotor and producing a detected speed signal representative of the detected output speed of the servomotor,

first and second voltage sources respectively operative to supply predetermined voltages, the voltage from the first voltage source being higher than the voltage from the second voltage source,

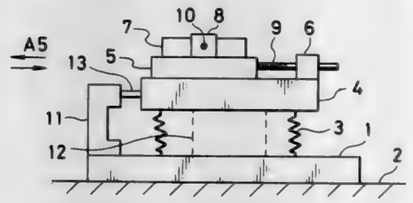
switching means responsive to the detected speed signal from said detecting means and operative to select the first voltage source when the detected speed signal is increased in magnitude to a first threshold level and select the second voltage source when the detected speed signal is decreased in magnitude to a second threshold level lower than the first threshold level, and

drive means responsive to said command signal and operative to provide a path of current from the voltage source selected by said switching means to the servomotor.

4,525,659
POSITIONING STAGE HAVING A VIBRATION SUPPRESSOR

Issei Imahashi, Yamanashi, and Teruo Asakawa, Nirasaki, both of Japan, assignors to Telmec Co., Ltd., Nirasaki, Japan

Filed Sep. 30, 1982, Ser. No. 429,278
Claims priority, application Japan, Oct. 20, 1981, 56-168206
Int. Cl.³ B64C *17/06*
U.S. Cl. 318—649 **1 Claim**



1. A precision positioning device having a vibration suppressor comprising:

a foundation;

a machine base;

a means for resiliently supporting said machine base on said foundation;

a first positioning stage and a second positioning stage disposed on said machine base, said first and second positioning stages being mounted for movement in first and second predetermined directions, respectively, relative to said machine base;

a first electromechanical driving device and a second electromechanical driving device disposed on said machine base, said first and second electromechanical driving devices being adapted for driving said first and second stages in said first and second predetermined directions, respectively, said first and second driving devices thereby creating undesirable reaction forces on said base relative to said first and second predetermined directions, respectively; and

a first force generator and a second force generator establishing an electromagnetic coupling between said foundation and said base, said first and second force generators each comprising:

(i) a means for generating an electromagnetic field associated with one of said foundation and said base; and

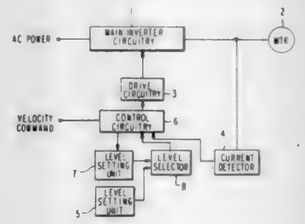
(ii) a conductive coil disposed within the electromagnetic field established by said means for generating, said coil being associated with the other of said foundation and said base; whereby, a first control current and a second control current applied to the coils of said first and second force generators, respectively, provide resistive forces which are substantially equal to and in opposite directions to said undesirable reaction forces thus suppressing vibration of said precision positioning device created by said first and second electomagnetic driving devices, said first and second control currents being proportional to the driving currents applied to said first and second electromagnetic driving devices, respectively.

4,525,660
CONTROL APPARATUS FOR INVERTER

Masayuki Katto, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1984, Ser. No. 580,048
Claims priority, application Japan, Feb. 17, 1983, 58-27136
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—798 **7 Claims**

1. In a control apparatus for an inverter wherein an A.C. power source is subjected to variable-frequency and variable-voltage conversion to drive an induction motor at a variable-speed; an inverter control apparatus comprising: a first current level setting unit (5) for establishing a predetermined current level within a permissible limit of switching elements disposed in the inverter, a second current level setting unit (7) for establishing a current level at a slip value corresponding to a stall torque, in association with a characteristic of the loaded induction motor and an output voltage/output frequency ratio, a current level selector (8) for selecting the smallest one of the

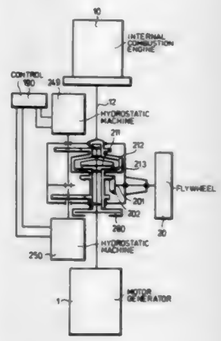


output signals of said first and second current level setting units, a current detector (4) for detecting the inverter output current, and control means (6) for controlling the switching elements in response to a velocity command, the output of the selected current level setting unit, and the detected inverter output current to render the inverter output current smaller than the selected current level signal.

4,525,661
STAND-BY ELECTRICAL SUPPLY SOURCE

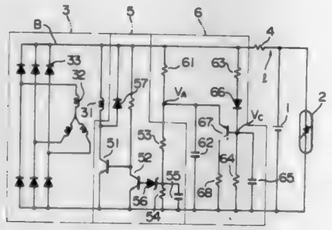
Endre Mucsy, Erzsébet k.u.2/c., H-1146 Budapest, and Kázmér Hoós, Ráth Gy. u. 22., H-1122 Budapest, both of Hungary

PCT No. PCT/HU81/00036, § 371 Date Apr. 22, 1982, § 102(e) Date Apr. 22, 1982, PCT Pub. No. WO82/00927, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 2, 1981, Ser. No. 375,123
Claims priority, application Hungary, Sep. 2, 1980, 2159/80
Int. Cl.³ H02K *7/02, 7/18*
U.S. Cl. 322—4 **7 Claims**



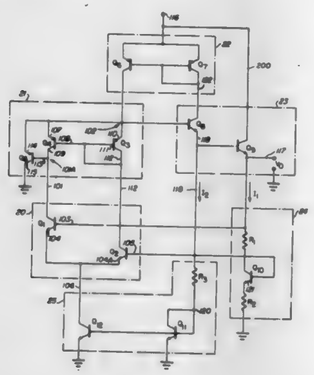
1. A stand-by electrical energy source for equipment to be operated with substantially continuous current supply, comprising three components one of which is at least one electric rotary machine, another of which is a flywheel and the third of which is an auxiliary energy source, planetary gearing comprising a central shaft on which is mounted a sun gear, a planet gear and a ring gear, each of said components being connected with a respective one of said gears, two of said components being interconnected by means of a drive with as infinitely variable transmission.

4,525,662
BATTERY CHARGING CONTROL SYSTEM FOR AUTOMOBILE
Hidetoshi Kato, Anjo; Takeshi Sada; Nobuo Mayumi, both of Oobu, and Hajime Matsuhashi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Nov. 22, 1983, Ser. No. 554,390
Claims priority, application Japan, Nov. 26, 1982, 57-207897
Int. Cl.³ H02J 7/14; H02P 9/30
U.S. Cl. 322—28 **8 Claims**



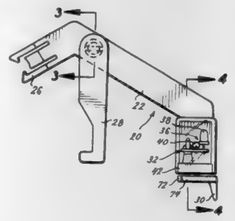
1. A charging control system for an AC generator of an automobile for charging a battery, comprising:
means for detecting minimum value of the charging voltage when the generator charging voltage decreases and for detecting average value of the charging voltage when the generator charging voltage increases; and
means for regulating excitation input of said generator in accordance with the detected values in order to compensate for the changes of said charging voltage.

4,525,663
PRECISION BAND-GAP VOLTAGE REFERENCE CIRCUIT
Paul M. Henry, Tucson, Ariz., assignor to Burr-Brown Corporation, Tucson, Ariz.
Filed Aug. 3, 1982, Ser. No. 404,821
Int. Cl.³ G05F 1/56
U.S. Cl. 323—280 **36 Claims**



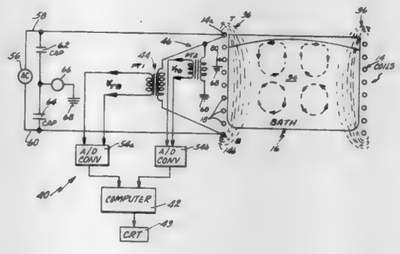
1. A band-gap voltage reference circuit comprising, in combination:
band-gap circuit means;
buffer means coupled to and responsive to said band-gap circuit means for producing a precise output voltage;
constant current supply means connected to said band-gap means and to said buffer means for causing said buffer means to produce said precise output voltage substantially independent of temperature, load and power supply variations; and
feedback circuit means independent of said constant current supply means coupled to said band-gap circuit means and said buffer means for differentially applying to said band-gap circuit means a portion of said output voltage.

4,525,664
ELECTRONIC FUSE TESTER
Earl M. Trammell, Jr., St. Louis, Mo., assignor to Bek-Tech Products Incorporated, St. Louis, Mo.
Continuation-in-part of Ser. No. 354,381, May 3, 1982,. This application Jan. 3, 1983, Ser. No. 455,193
Int. Cl.³ G01R 19/14
U.S. Cl. 324—51 **18 Claims**



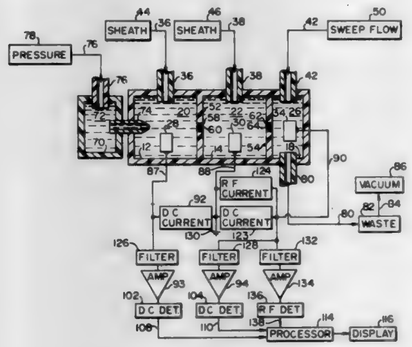
10. A hand held device for testing a fuse as said fuse is mounted between a pair of fuse clips or the like, said device comprising a handle member to facilitate grasping of the device during its use, the handle having a housing member at one end and a fuse puller at its other end, a test circuit, a PC board, said test circuit being mounted to said PC board, two contact members, means to mount said PC board in said housing, means to pivotally mount said contact members in said housing, said PC board mounting means having means to urge said contact members into contact with the PC board and thereby bring them in circuit with the test circuit to thereby enable its energization while mounted therein, said test circuit having illumination means which illuminates in response to a voltage differential sensed between said contact members to thereby indicate a blown fuse.

4,525,665
INDUCTION FURNACE MONITOR
Daniel S. Smalley, 15640 Colfax Cove, Big Rapids, Mich. 49307
Filed Aug. 6, 1982, Ser. No. 405,754
Int. Cl.³ G01R 31/02, 31/08
U.S. Cl. 324—52 **24 Claims**



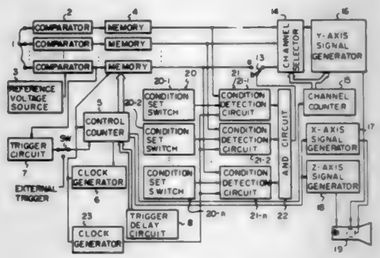
1. A device for detecting and determining the position of a ground fault between first and second positions on a coil-shaped conductor, said first position having a higher voltage potential than said second position, said device comprising:
means for measuring a first voltage between the first position and the second position;
means for measuring a second voltage between the first position and a ground fault; and
calculator means for determining the ratio of said second voltage to said first voltage, said calculator means including means for determining the coil turn of the conductor and the radial position thereon at which the ground fault is located based on the voltage ratio.

4,525,666
CELL BREAKDOWN
Michael R. Groves, Flemington, N.J., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Filed May 3, 1982, Ser. No. 374,222
Int. Cl.³ G01N 27/07
U.S. Cl. 324—71.1 **7 Claims**



1. A particle analyzing apparatus for studying a stream of membrane-sheathed particles in liquid suspension, wherein the particles individually undergo electrical breakdown in an electrical field having at least a minimum electrical breakdown field intensity, said particle analyzing apparatus comprising:
at least two sensing aperture means, including a first sensing aperture means and a second sensing aperture means;
means for moving the liquid suspension of the particles sequentially through all of said sensing aperture means;
first field generating means, for providing a low frequency first electrical field in said first sensing aperture means, having an electrical field intensity less than said minimum electrical breakdown field intensity;
first detecting means responsive to electrical impedance variation for generating a first particle pulse signal with the passage of a given particle through said first sensing aperture means;
second field generating means, for providing a low frequency second electrical field in said second sensing aperture means, having an electrical field intensity which is at least as great as said electrical breakdown field minimum intensity;
second detecting means responsive to electrical impedance variations for generating a second particle pulse signal with the passage of the given particle through said second sensing aperture means; and
means for correlating said first and second particle pulse signals for the given particle.

4,525,667
SYSTEM FOR OBSERVING A PLURALITY OF DIGITAL SIGNALS
Katsutoshi Sawano, Musashimurayama, and Tetsuharu Miyashita, Hachioji, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Sep. 30, 1982, Ser. No. 430,678
Claims priority, application Japan, Oct. 17, 1981, 56-164937
Int. Cl.³ G01R 15/12, 23/16, 7/00; G09F 9/30
U.S. Cl. 324—140 R **3 Claims**



1. A signal observation system for analyzing digital signals, said system comprising:
a plurality of signal channels, each of said signal channels including:
input terminal means for receiving a digital signal;
comparator means coupled to said input terminal means for comparing the digital signal received by said input terminal means to a reference signal and producing a bistable logic signal in response to the comparison;
memory means coupled to said comparator means for storing said bistable logic signal;
switch means for providing a condition signal selected from among a plurality of condition signals, said plurality of condition signals including a logic "0" signal, a logic "1" signal, a logic "don't care" signal, a logic "UP" signal indicating a logic transition from "0" to "1" and a logic "DOWN" signal indicating a logic transition from "1" to "0", said switch means having a switch contact associated with each of said logic signals; and
condition detecting means coupling to said memory means and said switch means for comparing the bistable signal stored in said memory means to said condition signal and producing a coincidence signal when said bistable signal and said condition signals match;
logic means coupled to said condition detecting means of each of said plurality of signal channels for producing a logic signal in response to the logical product of said coincidence signals;
selecting means coupled to one of said memory means and to said logic means for providing an output signal selected from among the bistable signal stored in said one memory means and the logic signal produced by said logic means; and
display means coupled to the other of said memory means and to said selecting means for displaying the bistable signal stored in said other memory means and the output signal provided by said switch means.

4,525,668

SYSTEM FOR MEASURING ELECTRICAL OUTPUT OR ENERGY

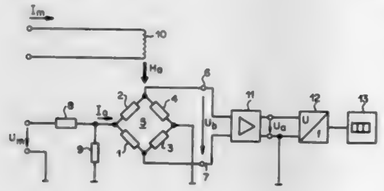
Heinz Lienhard, Zug, and Jan Petr, Oberwil, both of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Dec. 18, 1981, Ser. No. 332,218

Claims priority, application Switzerland, Dec. 24, 1980, 9569/80

Int. Cl.³ G01R *21/06, 33/00, 33/02*

U.S. Cl. 324—142 **10 Claims**



1. An apparatus for the measurement of electrical power including a multiplier receiving on an input thereof an electrical signal proportional to the voltage component of said electrical power, and being subjected to an external magnetic field proportional to the current component of said electrical power,

comprising, in combination,

a substantially flat electrical conductor disposed in a first plane, carrying a current proportional to said current component, and generating said external magnetic field;

said multiplier comprising a Wheatstone bridge including four ferromagnetic and magnetoresistive thin films having hard and easy axes, respectively, said thin films being disposed in a second plane substantially parallel to said first plane, and being coupled to said external magnetic field free of any magnetic core, said hard magnetic axes of each of said thin films extending along the direction of said external magnetic field, said thin films being electrically so interconnected as to form two pairs of electrically oppositely disposed thin films; and

means for generating auxiliary magnetic fields, and for applying said auxiliary magnetic fields to said multiplier, said means being so positioned, in relation to said thin films, that said auxiliary magnetic fields extend along said directions of the hard magnetic axes of said thin films, whereby, following the application of said auxiliary magnetic fields to said thin films, the magnetization of one of said two pairs of electrically oppositely disposed thin films resulting from the application of said external magnetic field thereto is rotated in a direction opposite to that of a correspondingly resulting magnetization of the other pair of electrically oppositely disposed thin films.

4,525,669

POWER MEASUREMENT IN AN ELECTRICAL DISTRIBUTION SYSTEM HAVING THREE OR MORE WIRES

Philip M. Holberton, Norcross; Bruce E. Randall, Alpharetta, and Jay K. Marshall, Marietta, all of Ga., assignors to Sangamo Weston, Inc., Norcross, Ga.

Filed Dec. 20, 1982, Ser. No. 451,306

Int. Cl.³ G01R *21/00, 21/08*

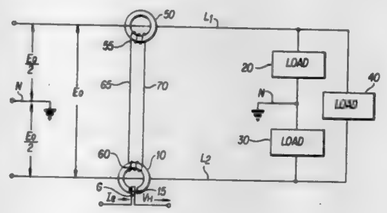
U.S. Cl. 324—142 **12 Claims**

1. A system for measuring alternating current transmitted over an electrical distribution circuit having at least three lines, one line being at ground potential and the other lines being at an elevated potential with respect thereto, the system comprising:

galvanomagnetic transducer means, including a magnetic circuit magnetically coupled to one of the elevated lines;

current transformer means magnetically coupled to each of the other elevated lines; and

means for magnetically linking each of the current transformer means and the magnetic circuit of the transducer means, whereby a magnetic flux is induced in the transducer means which is proportional to the vector sum of the currents in each of the elevated lines.



4,525,670

GENERATOR FOR GENERATING A ROTATIONAL SIGNAL IN ACCORDANCE WITH CHANGING SATURATION MAGNETIC FLUX DENSITY OF A MAGNETIC MEMBER

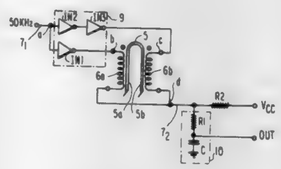
Seiichi Miyagawa, and Takeshi Nakane, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 16, 1982, Ser. No. 399,145

Claims priority, application Japan, Jul. 17, 1981, 56-112550; Dec. 2, 1981, 56-194198

Int. Cl.³ G01B *7/14;* **G01P** *3/48*

U.S. Cl. 324—208 **6 Claims**



1. A generator for generating a rotation signal, comprising:

a magnetic member **(5)** having first and second portions;

a rotatable member **(1)** including at least one permanent magnet **(2, 21 or 22)** having at least one N pole and at least one S pole displaced circumferentially around said rotatable member, said N and S poles and said magnetic member being relatively spaced such that said N pole is adjacent said first portion when said S pole is adjacent said second portion; and

detection means for providing said rotation signal in accordance with changes in the saturation magnetic flux density of said magnetic member, said detection means comprising first and second electrical coil portions each adjacent a respective one of said first and second magnetic member portions, and an electrical processing circuit for applying intermittent pulse signals to said electrical coil portions which are out-of-phase with respect to one another, said electrical processing circuit comprising switching means **(9)** for alternately applying said pulse signals to one and then the other of said first and second coil portions, and a smoothing circuit **(10)** connected in parallel with each of said first and second coil portions and providing said rotation signal output.

4,525,671

APPARATUS FOR SENSING TWO COMPONENTS OF A MAGNETIC FIELD

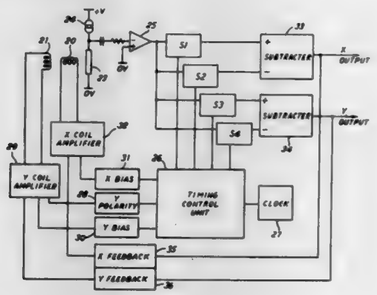
David J. Sansom, Chertsey, England, assignor to EMI Limited, Hayes, England

Filed Sep. 8, 1982, Ser. No. 415,793

Claims priority, application United Kingdom, Sep. 9, 1981, 8127178

Int. Cl.³ G01R *33/06;* **H01L** *43/08;* **H03K** *19/18*

U.S. Cl. 324—252 **7 Claims**



1. Apparatus for sensing first and second orthogonal components h_x and h_y of an external magnetic field h, said apparatus including a planar magnetoresistive element, said element comprising a magnetically anisotropic thin film having an easy axis of magnetization in the plane of the film, said film being provided with electrical contacts connectable to means for passing an electrical current through the film in a direction substantially parallel to said easy axis, said contacts also being connectable to detecting means for sensing a signal indicative of the resistivity of said film when said current is passed therethrough, said apparatus further including application means for selectively applying to the film a first magnetic bias field and a second magnetic bias field, said first bias field acting substantially at right angles to said easy axis in the plane of the film and said second bias field acting substantially parallel to said easy axis, and control means permitting said first and second bias fields to be applied to said element in a plurality of pre-determined relationships, said element, in use, being placed in said external magnetic field h with said component h_x lying in a direction at right angles to said easy axis in the plane of the film and said component h_y lying parallel to said easy axis, and said detection means sensing signals indicative of the resistivity of said film whilst said application means selectively applies said first and second bias fields in a plurality of different relationships, said relationships being chosen such that said components h_x and h_y may be derived from said signals.

4,525,672

APPARATUS AND METHOD FOR LASER PUMPING OF NUCLEAR MAGNETIC RESONANCE CELL

Leo K. Lam, Canoga Park, and Edward Phillips, Woodland Hills, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

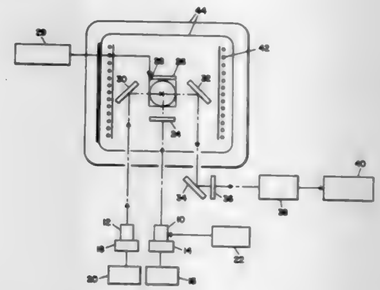
Filed Mar. 30, 1983, Ser. No. 480,608

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—304 **7 Claims**

1. A method for optically pumping an NMR cell of the type wherein an a.c. magnetic field torques the collective magnetic moment of the noble gas nuclei comprising the steps of:

(a) directing a beam of circularly polarized laser light at said cell; and



(b) shaping the spectral profile of said laser light to approximate the absorption profile of said cell.

4,525,673

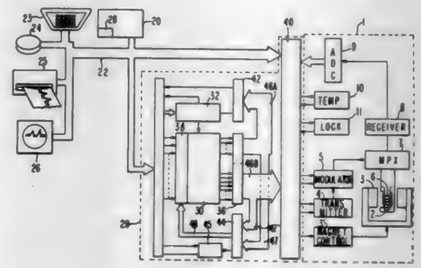
NMR SPECTROMETER INCORPORATING A RE-ENTRANT FIFO

Edward H. Berkowitz, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 107,106, Feb. 26, 1979, Pat. No. 4,375,676, which is a division of Ser. No. 353,263, Mar. 1, 1982, Pat. No. 4,481,608. This application Mar. 12, 1984, Ser. No. 588,834

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—312 **8 Claims**



1. In an NMR spectrometer utilizing a stored program digital processor for execution of a desired sequence of operations, a first class of said operations directed to controlling the status of said spectrometer and another class of said operations directed to acquiring data from said spectrometer,

a digital sequence buffer apparatus including an input register and an output register and a plurality of intermediate registers for retaining a plurality of digital words, each said word comprising an operand portion for specifying the instantaneous configuration of said spectrometer and a persistence portion for specifying the persistence interval of each operand, and a repetition portion for specifying the desired number of sequential repetitions of the currently active word,

first means responsive to the persistence portion of said digital word for sustaining the currently active operand for the desired persistence interval,

second means responsive to the repetition portion for reinitiating the currently active operand at the completion of the persistence interval thereof, said second means operative to continue said repetitions until the operand has been repeated for the desired number of repetitions,

third means for advancing the content of said buffer toward said output register of said buffer apparatus when the persistence portion of the currently active word has been

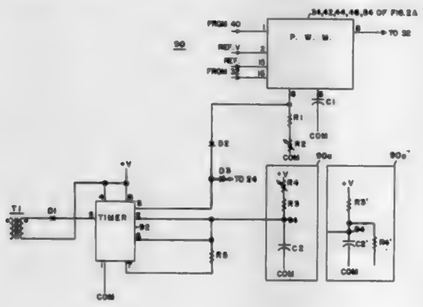
completed for the number of sequential repetitions specified by said repetition portion, and means for re-introducing said sequence of instruction words to the input portion of said sequence buffer whereby said sequence is preserved.

4,525,674

CIRCUIT FOR SYNCHRONIZING A SWITCHING POWER SUPPLY TO A LOAD CLOCK

Neil A. Kammiller, Lakewood, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio

Filed Jul. 28, 1982, Ser. No. 402,628
Int. Cl.³ H03K *1/17, 7/00, 17/00, 17/26*
U.S. Cl. 328—63 **10 Claims**



1. A synchronizing circuit for use in a power supply of the type which uses a waveform of predetermined shape for controlling the operation of the switchable power means contained therein, said supply being connected to a load having a master clock signal said signal having a predetermined frequency, said circuit comprising:

(a) means responsive to said master clock signal for generating a syncing signal for each cycle of said master clock signal;

(b) timing means connected to receive said syncing signal, said timing means generating pulses at a first predetermined rate in the absence of said syncing signal and generating pulses at a second predetermined rate in response to the occurrence of said syncing signal; and

(c) circuit means having an internal clock frequency and connected to receive said timing means pulses said circuit means generating said waveform of predetermined shape with (i) a first predetermined frequency when said pulses are generated at said first predetermined rate and (ii) a second predetermined frequency when said pulses are generated at said second predetermined rate said second frequency being synchronized to said master clock frequency.

4,525,675

ULTRA LINEAR FREQUENCY DISCRIMINATOR CIRCUITRY

Carl T. Richmond; Thomas A. Butler, both of Scottsdale, Ariz., and Joseph E. Andrews, Jr., San Jose, Calif., assignors to Motorola, Inc., Scahumburg, Ill.

Filed Apr. 7, 1983, Ser. No. 483,036
Int. Cl.³ H03K *5/00, 11/00, 9/06*
U.S. Cl. 328—140 **10 Claims**

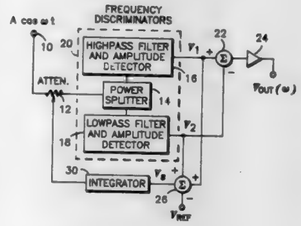
1. Ultra linear frequency discriminator circuitry comprising:

controllable attenuation means having a signal input, with varying frequency and amplitude a control input and an output, for providing different amounts of attenuation to signals applied to the signal input thereof in response to control signals applied to the control input thereof;

first and second discriminator circuits each having a linear response over a predetermined band of frequencies and with response slopes which are equal and of opposite sign;

a power splitter coupling each of said first and second discriminator circuits to the output of said controllable attenuation means;

signal combining means connected to receive output signals from said first and second discriminator circuits for combining the output signals to provide a discriminator circuitry output signal which is a linear function of the frequency of signals applied to the signal input of said controllable attenuation means; and



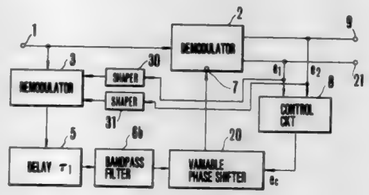
control signal generating means connected to receive the output signals from said first and second discriminator circuits and having an output connected to the control input of said controllable attenuation means for generating a control signal that maintains amplitudes of signals supplied to said power splitter from said controllable attenuation means constant whereby the discriminator circuitry output signal from said signal combining means is independent of the amplitude of signals applied to the signal input of said controllable attenuation means.

4,525,676

PSK DEMODULATION SYSTEM HAVING CARRIER FREQUENCY VARIATION COMPENSATION

Masaaki Atobe, and Yoshimi Tagashira, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1982, Ser. No. 351,258
Claims priority, application Japan, Feb. 24, 1981, 55-25709; Feb. 24, 1981, 55-25710
Int. Cl.³ H03D *3/02*
U.S. Cl. 329—50 **3 Claims**



1. A system for demodulation of phase shift keying signals comprising:

means, including a bandpass filter having an input and an output, which receives the phase shift keying signal for regenerating a carrier wave, said carrier wave passing through said bandpass filter;

demodulator means having an input and output for demodulating the phase shift keying signal in response to the regenerated carrier wave which is input from said carrier wave regenerating means to thereby produce a demodulated signal;

means for detecting phase variations in said regenerated carrier wave with respect to said demodulated signal; and

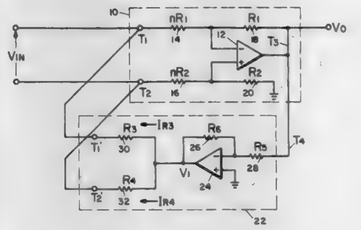
phase control means responsive to the output of the phase variation detecting means to correct the phase of said carrier wave passing through said bandpass filter by controlling the phase of said carrier wave at the output of said band pass filter.

4,525,677

DIFFERENTIAL AMPLIFIER HAVING HIGH COMMON-MODE REJECTION RATIO

William L. Rorden, Grass Valley, Calif., assignor to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Oct. 12, 1983, Ser. No. 540,988
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—258 **4 Claims**



1. A differential amplifier comprising:

a first operational amplifier having an inverting and a non-inverting input terminal and a non-inverting output terminal which also serves as the output terminal of the differential amplifier;

a first resistor having one end connected to the inverting input terminal of the first operational amplifier and its other end forming the first of the differential input terminals of the differential amplifier;

a second resistor connected between the inverting input and non-inverting output terminals of the first operational amplifier;

a third resistor having one end connected to the non-inverting input terminal of the first operational amplifier and its other end forming the second of the differential input terminals of the differential amplifier; and

a fourth resistor connected between the non-inverting input terminal of the first operational amplifier and ground;

wherein the ratio of the value of the first resistor to the value of the second resistor is equal to the ratio of the value of the third resistor to the value of the fourth resistor; and

a fixed gain inverting amplifier having its input terminal connected to the output terminal of the differential amplifier and its output terminals connected to the input terminals of the differential terminals, said fixed gain inverting amplifier including:

a second operational amplifier being connected in a fixed gain inverting configuration having an input and an output terminal with its input terminal forming the input terminal of the fixed gain inverting amplifier; and

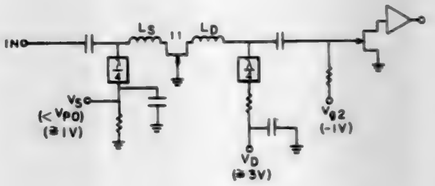
a fifth and a sixth resistor each having one end connected to the output terminal of the second operational amplifier and each of their other ends forming an output terminal of the fixed gain inverting amplifier.

4,525,678

MONOLITHIC LOW NOISE COMMON-GATE AMPLIFIER

Randall E. Lehmann, Garland; Gailon E. Brehm, and David J. Seymour, both of Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 6, 1982, Ser. No. 395,399
Int. Cl.³ H03F *3/60*
U.S. Cl. 330—277 **12 Claims**



1. A microwave amplifier for amplifying an input signal provided over a line having a predetermined source impedance, comprising:

means for receiving said input signal from said line;

a first field-effect transistor comprising a gate, a source, and a drain, said transistor having said source thereof connected to said input means, said gate being grounded;

bias means connected to provide a bias current through said FET, said bias current being selected so that said transistor has a very low noise figure, said gate of said transistor having a width such that said transistor has a transconductance which is greater than the reciprocal of said source impedance at said selected bias current;

load impedance means, connected to the drain of said transistor to provide a load impedance which is greater than said source impedance; and

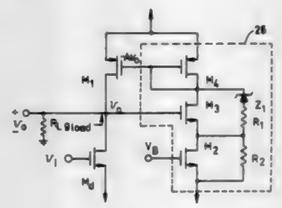
an additional amplifier stage, said additional amplifier stage comprising an interstage input which is connected to said drain of said field effect transistor.

4,525,679

HIGH GAIN AMPLIFYING STAGE BY OUTPUT CONDUCTANCE CANCELLATION

Stephen L. Wong, Oakville, and Clement A. T. Salama, Toronto, both of Canada, assignors to The University of Toronto Innovations Foundation, Toronto, Canada

Filed Dec. 23, 1982, Ser. No. 452,511
Int. Cl.³ H03F *3/16, 1/38;* **H03G** *3/18*
U.S. Cl. 330—277 **6 Claims**



1. A metal-oxide semiconductor (MOS) gain stage fabricated on an integrated circuit and having a load transistor, a driver transistor, a gain stage output taken between the load transistor and the driver transistor, and a variable attenuator connected between the output of the gain stage and an input of the load transistor, said variable attenuator including other MOS transistors, coupled together such that the output conductance of the load transistor is substantially independent of the operating point of the gain stage providing, by positive feedback, a cur-

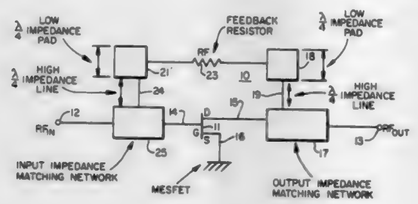
rent generator dependent on the output voltage, the current generator having an effective negative output conductance which substantially cancels the total load conductance of the gain stage over a wide range of output voltages, and said output conductance cancellation constituting means effective such that the voltage gain of the stage is substantially increased.

4,525,680

MICROWAVE/MILLIMETER WAVE AMPLIFIER WITH RF FEEDBACK

Jing-Jong Pan, Melbourne, and John B. Wilson, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Apr. 22, 1983, Ser. No. 488,427
Int. Cl.³ H03F *3/193, 3/60*
U.S. Cl. 330—277 **25 Claims**



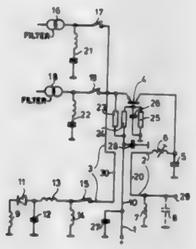
11. A high frequency transistor amplifier circuit comprising:
an input terminal to which high frequency signals to be amplified are to be applied;
an output terminal from which high frequency signals amplified by said amplifier circuit may be derived;
at least one high frequency transistor stage coupled between said input terminal and said output terminal; and
a feedback network coupled between said output terminal and said input terminal, said feedback network including a feedback resistor and high frequency impedance means for coupling said resistor to said terminals, for bypassing thermal noise generated by said resistor away from said at least one high frequency transistor stage, and for providing high attenuation near the frequency of said high frequency signal.

4,525,681

NARROW-BAND AMPLIFIER, MORE SPECIFICALLY TELEVISION INTERMEDIATE FREQUENCY AMPLIFIER

Karl H. Kupfer, Krefeld, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 4, 1983, Ser. No. 481,536
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213406
Int. Cl.³ H03F *3/60*
U.S. Cl. 330—286 **3 Claims**



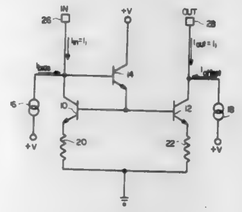
1. A narrow-band amplifier in which an input line is provided on a printed circuit board, at least partly, very closely to an output line of the amplifier, characterized in that a direct current supply line of the amplifier is arranged between the input and output lines, two capacitors being connected to the direct current supply line at a predetermined distance from each other, one of the capacitors forming substantially a short-circuit for the signal frequency and the other being dimensioned such that together with a section of the direct current supply line located between the two capacitors, said other capacitor provides a parallel-resonant circuit which resonates in the region of the signal frequency of the amplifier and that this line section is located in the region of closely adjacent line sections of the input and output lines of the amplifier.

4,525,682

BIASED CURRENT MIRROR HAVING MINIMUM SWITCHING DELAY

Stephen H. Lai, Arlington Heights, and Gopal K. Srivastava, Buffalo Grove, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Feb. 7, 1984, Ser. No. 577,904
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—288 **6 Claims**



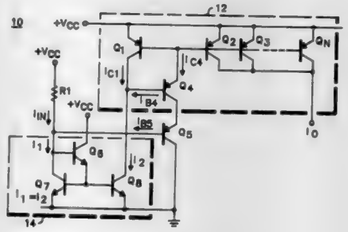
1. A transistorized current mirror having minimum delay comprising:
an input terminal for receiving an input signal;
an output terminal;
current mirror means for developing a current in the output terminal mirroring the current supplied to the input terminal;
means supplying a bias current to said input terminal; and
means supplying an offset current to said output terminal to nullify the effects of said bias current in the output of said current mirror.

4,525,683

CURRENT MIRROR HAVING BASE CURRENT ERROR CANCELLATION CIRCUIT

Barry L. Jason, Bedford, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 5, 1983, Ser. No. 558,254
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—288 **9 Claims**



1. A current mirror circuit, comprising:

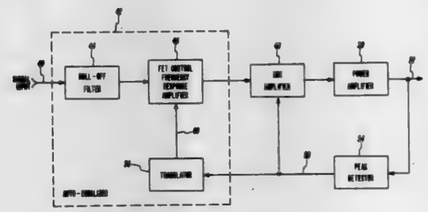
first current mirror circuit means having an input and an output, for generating a bias current;
first error correction circuit means, connected to said first current mirror circuit, for generating a first correction signal directed only to the input of said current mirror circuit; and
second error correction circuit means, connected to said first error correction circuit means and the input of said first current mirror circuit means, for generating a second correction signal directed only to the input of said current mirror circuit, whereby the current error caused by said first error correction circuit means is reduced.

4,525,684

AUTO-EQUALIZER APPARATUS

Richard L. Majefski, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 25, 1984, Ser. No. 623,902
Int. Cl.³ H03F *1/91;* **H03H** *5/00*
U.S. Cl. 330—304 **3 Claims**



1. Auto-equalizer apparatus comprising, in combination:
roll-off filter means including first signal input means and output means;
means for supplying a pulse train type signal to be equalized to said input means of said filter means;
variable Q tuned circuit means, including second signal input means and apparatus signal output means, and further including variable impedance resistance means having a control input;
means connecting said output means of said filter means to said signal input means of said tuned circuit means; and
peak detector means, connected between said apparatus signal output means of said tuned circuit means and said control input means of said tuned circuit means, for providing thereto a feedback control signal which adjusts the resistance of said variable impedance resistance means toward a value which tends to maintain a substantially constant amplitude train of pulses at said apparatus output means.

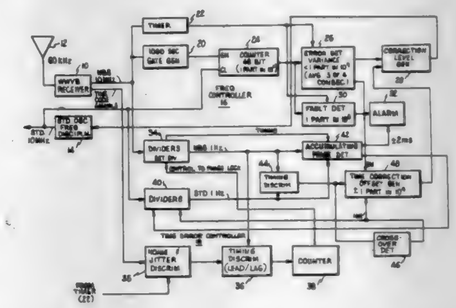
4,525,685

DISCIPLINED OSCILLATOR SYSTEM WITH FREQUENCY CONTROL AND ACCUMULATED TIME CONTROL

Robert J. Hesselberth, Penfield; Thomas P. Donaher, Rochester, and Joel E. Sandahl, Fairport, all of N.Y., assignors to Spectracom Corp., East Rochester, N.Y.

Filed May 31, 1983, Ser. No. 499,737
Int. Cl.³ H03L *7/06*
U.S. Cl. 331—10 **39 Claims**

32. In a disciplined oscillator system utilizing a source of pulses repetitive at fixed intervals of time and having standard oscillator means having a standard frequency output which is variable in frequency in response to a control signal, time controller means comprising means responsive to said standard frequency output and said fixed interval pulses for providing a train of reference pulses time-locked to said fixed interval pulses, and means responsive to the phase difference between



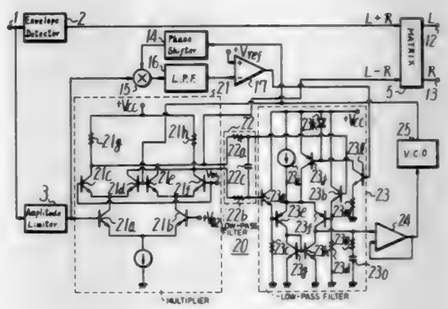
said fixed interval pulses and said reference pulses for producing said control signal.

4,525,686

PHASE-LOCKED LOOP CIRCUIT WITH VARIABLE BANDWIDTH FILTER

Satoshi Yokoya, Chofu, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,106
Claims priority, application Japan, Apr. 15, 1981, 56-56796
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—17 **10 Claims**



1. A phase-locked loop circuit comprising:
oscillator means for producing an oscillation signal;
phase comparator means for phase-comparing an input signal with said oscillation signal to produce a phase-compared signal;
detecting means for detecting when said phase-locked loop circuit is locked within a predetermined frequency range and for producing a lock detecting signal corresponding to said detection in response to said input signal and said oscillation signal; and
filter means for producing an output signal in response to said phase-compared signal and said lock detecting signal to lock the frequency of said oscillation signal to the frequency of said input signal, said filter means including variable current source means for producing a variable current having a first value in the presence of and a second value in the absence of said lock detecting signal, a filter circuit supplying said output signal, and control means connected to said filter circuit for producing said output signal in response to said variable current and said phase-compared signal, said control means including a differential amplifier comprised of first and second transistors, each having a base, collector and emitter terminal, said

filter circuit being connected to the collector terminal of one of said transistors, said variable current being supplied to the emitter terminals of said transistors, and said phase-compared signal being supplied to the base terminals of said transistors.

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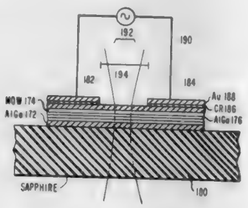
HIGH SPEED LIGHT MODULATOR USING MULTIPLE QUANTUM WELL STRUCTURES

Daniel S. Chemla, Rumson; Theodoor C. Damen, Colts Neck; Arthur C. Gossard, Warren; David A. B. Miller, Lincroft, and Thomas H. Wood, Highlands, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 470,329, Feb. 28, 1983, abandoned. This application Dec. 2, 1983, Ser. No. 558,545

Int. Cl.³ H01L *33/02; G02B 5/14*

U.S. Cl. 332—7.51 **25 Claims**



1. A semiconductor apparatus including:

modulator means jointly responsive to an applied electric field and a first optical signal for translating the first optical signal into a second optical signal, the second optical signal being an amplitude modulated version of the first optical signal, the first and second optical signals being at substantially equal wavelengths, and

means for applying the electric field to said modulator means in order to vary an optical absorption coefficient and an index of refraction therefor,

the semiconductor apparatus being characterized in that the modulator means includes

a multiple layer heterostructure having first and second material layers having first and second bandgaps, respectively, and a semiconductor layer having a third bandgap and being positioned between said material layers, the bottom of the conduction band of said semiconductor layer being below the bottom of the conduction bands of said material layers, and the top of the valence band of said semiconductor layer being above the tops of the valence bands of said material layers, the thickness of said semiconductor layer being sufficient for carrier confinement effects within said semiconductor layer to influence the optical properties of said multiple layer heterostructure.

4,525,688

OSCILLOSCOPE SIGNAL INPUT CIRCUIT INCLUDING AN ATTENUATOR

Desmond L. Murphy, Portland, and Warren K. Wimmer, Tigard, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 1, 1983, Ser. No. 518,904

Claims priority, application Japan, Aug. 2, 1982, 57-133846

Int. Cl.³ H01P *1/22*

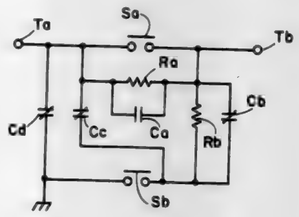
U.S. Cl. 333—81 R **2 Claims**

1. A signal input circuit, comprising:

a first switch connected between an input and an output terminal;

an attenuator network comprising a first parallel resistor-capacitor combination connected between said input and output terminals, and a second parallel resistor-capacitor combination connected between said output terminal and a common terminal; and

a second switch connected between said common terminal and ground,



wherein said first and second switches are operated in opposite state to each other.

4,525,689

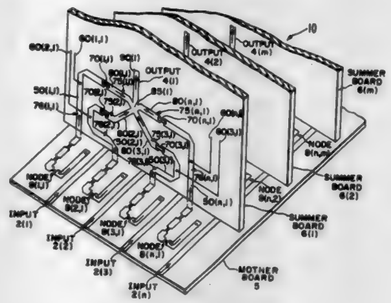
N×M STRIPLINE SWITCH

Gary L. Wagner, Menlo Park, and Michael J. Serrone, Sunnyvale, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 5, 1983, Ser. No. 558,215

Int. Cl.³ H01P *1/15*

U.S. Cl. 333—104 **4 Claims**



1. An n by m switch for selectively switching n electromagnetic input signals onto m outputs, comprising:

n electrically conductive inputs, each of which may convey an input signal, where n is a positive integer;

m electrically conductive outputs, each of which may convey no more than one of the input signals, where m is a positive integer; wherein

each input is coupled to each output via a switching node that permits the associated input signal to be switched onto the associated output, depending upon the activation of a d.c. control current applied to each switching node; and

each input can be simultaneously switched onto any number of outputs;

wherein each output comprises an output transmission line, n connection transmission lines each having first and second ends, and a summation junction comprising the common intersection of the n connection transmission lines and the output transmission line, the first ends of the connection transmission lines being respectively connected to that output's n switching nodes corresponding to the n inputs, and the second end of each connection transmission line being connected to the summation junction; wherein

the n connection transmission lines have lengths such that, when one of the input signals is switched onto said output, the sum of the admittances of the unswitched n−1 connection transmission lines, measured between the summation junction and ground, is substantially equal to zero.

4,525,690

N-PORT COUPLER

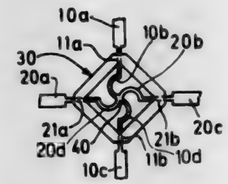
Frans C. De Ronde, Lesigny, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 31, 1983, Ser. No. 499,648

Claims priority, application France, May 28, 1982, 82 09383

Int. Cl.³ H01P *5/16, 5/18*

U.S. Cl. 333—116 **8 Claims**



1. An n-port coupler for coupling n strip-type transmission line ports, said coupler comprising:

(a) n strip-type stubs each electrically-connected at one end to a respective one of the ports and electrically-connected at an opposite end to the other stubs in a central zone of the coupler, said stubs each having a width substantially smaller than the strip width of the ports; and

(b) a strip-type transmission line loop coupled to the stubs at locations which are symmetrically disposed with respect to the central zone, said loop having a width substantially equal to the strip width of the ports and having a mean length effecting establishment of a resonant frequency just below a predefined passband of the coupler.

4,525,691

VARIABLE DELAY LINE

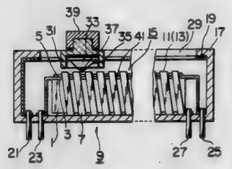
Kazuo Kameya, Saitama, Japan, assignor to Elmec Corporation, Saitama, Japan

Filed Feb. 18, 1983, Ser. No. 467,636

Claims priority, application Japan, Feb. 22, 1982, 57-27137

Int. Cl.³ H03H *7/32*

U.S. Cl. 333—139 **8 Claims**



1. A variable delay line, comprising; an inductance element comprising a conductor formed into a plurality of turns having a prescribed pitch, with a space being maintained between adjacent turns, a capacitor connected between said conductor and ground at each turn, a fixed contact array consisting of fixed contacts formed on said conductor at each turn, and a movable contact element for slidingly contacting said fixed contact array, said movable contact element being capable of engaging single ones of said fixed contacts at a first set of positions thereof, and being capable of engaging two adjacent ones of said fixed contacts at a second set of positions thereof.

4,525,692

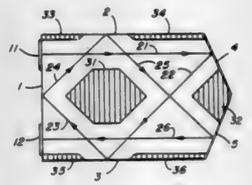
ELECTROACOUSTIC DELAY LINES

Roger G. Claes, Sint-Truiden, Belgium, assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 22, 1983, Ser. No. 487,648

Int. Cl.³ H03H *9/36*

U.S. Cl. 333—142 **16 Claims**



1. An electroacoustic delay line comprising a solid transmission medium and transducer means bonded to the transmission medium, said transmission medium assuming a generally pentagonal profile characterized by:

(a) a first side,

(b) second and third sides extending substantially perpendicularly from the first side and in a substantially parallel relationship with each other,

(c) a fourth side extending from the second side so as to form a first obtuse angle with the second side, and

(d) a fifth side extending from the third side, so as to form a second obtuse angle with the third side, so that said fourth and fifth sides form a third obtuse angle at a point of intersection, said first and second obtuse angles being substantially equal and said third obtuse angle is substantially equal to 135 degrees.

4,525,693

TRANSMISSION LINE OF UNSINTERED PTFE HAVING SINTERED HIGH DENSITY PORTIONS

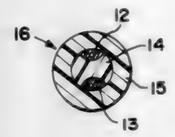
Hirosuke Suzuki, Kotesashi, and Hajime Ohki, Komae, both of Japan, assignors to Junkosha Company Ltd., Tokyo, Japan

Filed Apr. 11, 1983, Ser. No. 483,684

Claims priority, application Japan, May 1, 1982, 57-73821

Int. Cl.³ H01P *3/16*

U.S. Cl. 333—236 **2 Claims**



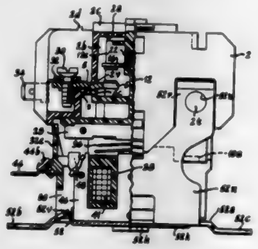
1. An electromagnetic wave energy transmission line comprising a tape of expanded, porous, initially unsintered polytetrafluoroethylene, said tape being wound to form a substantially cylindrical cross section elongate transmission line, at least portions, but not all of the initially unsintered polytetrafluoroethylene within the cross section of said transmission line, being sintered along the entire length of said transmission line to produce high density portions of sintered polytetrafluoroethylene along its length, which high density portions retard the speed of electromagnetic energy such as to prevent rotation of the electric field within the transmission line.

4,525,694

ELECTROMAGNETIC CONTACTOR

William G. Dennison, Cedarburg; Kenneth R. Horr, Shorewood, and Robert I. Kindler, Grafton, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 23, 1983, Ser. No. 535,107
Int. Cl.³ H01H *50/02*
U.S. Cl. 335—132 **18 Claims**



1. An electromagnetic contactor constructed so as to enable economical assembly thereof without any screws or similar fasteners comprising:

an upper housing part of insulating material having an opening at the bottom and a contact compartment therein for slidably receiving and slidably accommodating a movable contact carrier and through-slots in opposite end walls thereof for receiving stationary contacts;

an insulating movable contact carrier having resiliently-biased movable contacts mounted thereon and constructed to be inserted or dropped into said contact compartment through said opening;

complementary inner walls in said contact compartment of said upper housing part and on said contact carrier for freely receiving said contact carrier into said contact compartment when dropped therein and guiding the same within said compartment for relative vertical actuation with respect thereto;

stationary contacts inserted with interference fit through said slots in said opposite end walls of said upper housing part into said contact compartment for engagement by said movable contacts when said contact carrier is actuated and terminals on said stationary contacts accessible on the outside of said upper housing part;

leaf spring retaining means at the bottom of said contact carrier;

an armature having a slot therethrough;

a retainer leaf spring inserted through said slot in said armature and pressed sideways at its ends into said leaf spring retaining means to securely clamp said armature to said contact carrier;

an electromagnet comprising an insulation encapsulated operating coil unit having interfitting portions with said upper housing part to maintain said coil unit fixed with respect to said upper housing part and a magnetic frame about the coil of said coil unit so as to magnetically attract said armature when said coil is energized;

an armature return spring between said coil unit and said armature;

a lower housing part placed over and secured to said upper housing part and embracing said magnetic frame and said coil unit to retain the same clamped with respect to said upper housing part with said return spring partly compressed between said coil unit and said armature;

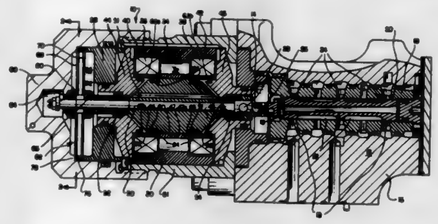
and said insulation encapsulated coil unit comprising integral resilient abutments that are engaged by said lower housing part to take up looseness between said coil unit and said lower housing part and thereby hold said coil unit tightly against said upper housing part.

4,525,695

FORCE MOTOR WITH BALL MOUNTED ARMATURE

Shih Y. Sheng, Santa Ana, and Ray A. York, Villa Park, both of Calif., assignors to Parker Hannifin Corporation, Cleveland, Ohio

Filed Apr. 4, 1984, Ser. No. 596,489
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—262 **4 Claims**



1. A force motor comprising:

a casing

first and second pole pieces arranged on opposite ends of said casing;

a magnetic assembly located within said casing and between said pole pieces, said magnetic assembly including a permanent magnet and one or more electrical coils;

an armature that is movable between said pole pieces in response to an input signal to said magnetic assembly;

a spring assembly having at least one cantilevered spring, said spring assembly being connected to said armature and opposing movement of said armature from a reference position, the opposing force of said spring assembly when said armature is out of said reference position being greater than the force of the permanent magnet of the magnetic assembly with no input current to the coils;

a tube assembly that is concentrically sleeved within said magnetic assembly;

a plurality of balls that are circumferentially maintained between the armature and the tube assembly, said balls contacting both the armature and the tube assembly to longitudinally guide said armature in said tube assembly; and

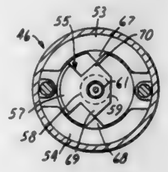
at least one retainer for circumferentially maintaining said balls, said retainer including respective openings corresponding to each ball.

4,525,696

DRIVER FOR ROTATING A MAGNETIC PLAYBACK HEAD

Peter J. Vogelgesang, Roseville, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 211,265, Nov. 28, 1980, Pat. No. 4,433,351.
This application Mar. 10, 1983, Ser. No. 473,996
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—272 **3 Claims**



1. A driver for rotating a magnetic playback head affixed thereto comprising

(a) a housing,

(b) an armature rotatably mounted within said housing,

(c) at least two field magnets affixed at spaced intervals within said housing and positioned around the axis of rotation for said armature,

(d) a driving coil affixed in said housing concentric with at least a portion of said armature whereby a current passing through said coil develops a continuously variable magnetic field polarizing said armature and causing a continuously variable preferential attraction of said armature toward an adjacent one of said field magnets and a corresponding continuously variable repulsion of said armature from an adjacent other of said field magnets, thereby tending to rotate said armature a direction and distance continuously proportional to the magnitude and polarity of said current, and

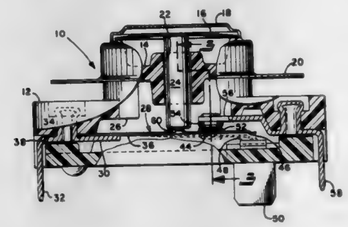
(e) means for concentrating the magnetic flux from said field magnets so as to return said armature to a home position when no current is applied to said coil.

4,525,697

THERMALLY RESPONSIVE CONTROLLER AND SWITCH ASSEMBLY THEREFOR

William H. Jones, Villa Park, and Worthy L. Chambers, Lombard, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 13, 1982, Ser. No. 449,041
Int. Cl.³ H01H *37/52*
U.S. Cl. 337—354 **18 Claims**



1. A thermally responsive switch controller assembly comprising:

(a) body means having a plurality of spaced electrical terminals mounted thereon and adapted for circuit connection thereto;

(b) first stationary contact means mounted on said body means and connected to one of said terminals;

(c) second stationary contact means disposed on said body means in spaced relationship to said first contact means and connected to another of said terminals;

(d) blade means having a first portion thereof stationary with respect to said body means and a second portion moveable with respect to said first and second stationary contact means, said second portion incuding moveable contact means;

(e) actuator means including thermally responsive means operative in response to experiencing a pre-selected temperature to move said blade means from a position completing a first circuit through said first stationary contact means to a position completing a second circuit through said second stationary contact means in which position said first circuit is broken;

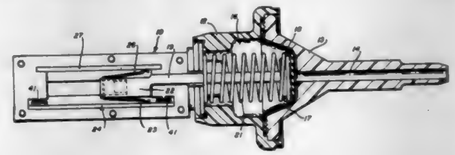
(f) said blade means second portion having a resiliently flexible stem attached to said stationary portion and a substantially rigid first tongue means and resiliently flexible second tongue means extending in cantilever from said stem, said first tongue means including a first moveable contact, said second tongue means including a second moveable contact and said actuator means includes a member operatively contacting said first tongue means, whereupon exposure of said thermal means to said preselected temperature said actuator member moves said first tongue means by resilient flexing of said stem portion for effecting breaking of said first circuit and said second tongue is moved to effect completing said second circuit and thereafter upon further temperature increase further movement of said member substantially is absorbed by said resilient flexing and said second tongue means.

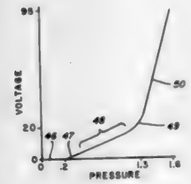
4,525,698

PNEUMATIC SWITCH POTENTIOMETER

Arnold S. Louis, Hastings-on-Hudson, and Robert P. Wiener, White Plains, both of N.Y., assignors to Litton Systems, Inc., Mount Vernon, N.Y.

Filed Feb. 2, 1984, Ser. No. 576,216
Int. Cl.³ H01L *10/10;* **H01C** *10/38*
U.S. Cl. 338—39 **5 Claims**





1. A pneumatically actuated pressure transducer having two terminals, a collector, and a wiper assembly which is movable from a "Switch Open Circuit" position through a range of positions wherein the transducer has a varying voltage output, said pressure transducer comprising:

a potentiometer element including;

a high thermal conductivity substrate comprising a base for said potentiometer element, a resistance path coated onto said substrate, and an area of non-abrasive insulating material adjacent a portion of said resistance path, wherein an area of low resistance material comprises a first portion of said resistance path, an area of high resistance material comprises a second portion of said resistance path, and said low resistance material overlaps said high resistance material to form a transition zone, and

a wiper element movable from said insulating material onto and across said resistive path, whereby the output of said transducer varies from Switch Open Circuit to a first voltage value according to a first output curve, and from said first voltage value to a second higher voltage value according to a second output curve.

4,525,699

ELECTRONIC MONITORING SYSTEM WITH MALFUNCTION INDICATOR

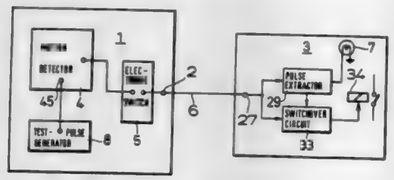
Robert Buck, Neukirch; Michael B. Friedrich, Kressbronn; Hans D. Gesthuysen, Essen-Kettwig, and Gerd Marhofer, Essen-Bredeney, all of Fed. Rep. of Germany, assignors to i f m electronic GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 17, 1983, Ser. No. 467,853
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1982, 3205737
Int. Cl.³ G08B *29/00*
U.S. Cl. 340—512 **11 Claims**

1. In an electronic monitoring system including a detector sensitive to an ambient condition for generating on an output

thereof a useful signal assuming either of two levels in dependence upon the ambient condition being monitored, the combination therewith of:

a source of periodically recurrent test pulses connected to a control input of said detector for giving rise to a corresponding train of checking pulses superimposed upon said useful signal on at least one of said levels thereof; and



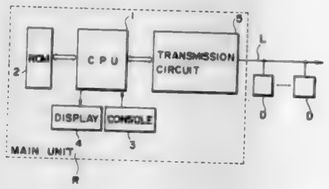
supervisory means coupled to said output for deriving from said useful signal a load-control signal purged from said checking pulses, said supervisory means including pulse-responsive means for emitting an alarm indication upon sensing a malfunction-induced interruption of said train of checking pulses in the presence of said one of said levels.

4,525,700

FIRE ALARM SYSTEM

Tetsuo Kimura, Tokyo; Seiichi Tanaka, Chiba, and Takashi Suzuki, Tokyo, all of Japan, assignors to Nittan Company, Ltd., Tokyo, Japan

Filed Oct. 27, 1983, Ser. No. 546,108
Claims priority, application Japan, Oct. 27, 1982, 57-187495
Int. Cl.³ G08B *26/00*
U.S. Cl. 340—518 **6 Claims**



6. A fire alarm system comprising:

a plurality of sensor terminal means separately connected to a transmission line, each of the sensor terminal means transmitting digital data as response data indicative of presence of a fire when accessed by an address signal corresponding to an address of the respective sensor terminal means;

a main unit means connected to said plurality of sensor terminal means through the transmission line for repeatedly accessing the plurality of sensor terminal means and for comparing the response data from each sensor terminal means with a first reference value; and

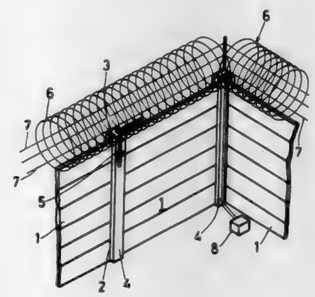
when said main unit means determines that response data from one of the sensor terminal means exceeds the first reference value, the main unit means then compares the response data from other sensor terminal means with a second reference value, and said main unit means then determining that a fire has broken out when the number of sensor terminal means supplying response data exceeding the second reference value is greater than a predetermined number, and thereafter supplying information indicating existence of a fire.

4,525,701

SECURITY ALARM ARRANGEMENT

Michael P. Leih, 55, 4th Ave., Edenvale, Transvaal, South Africa (1610)

Filed Aug. 25, 1982, Ser. No. 411,341
Claims priority, application South Africa, Mar. 16, 1982, 82/1747
Int. Cl.³ G08B *13/12*
U.S. Cl. 340—541 **7 Claims**



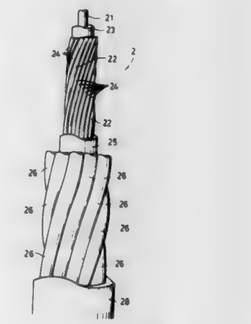
1. A security installation including a deterrent wire arranged to substantially describe a hollow cylinder in general configuration and at least one longitudinally extending, electrically conductive wire passing through the cylindrical deterrent wire in the general direction of the axis thereof, the longitudinally extending wire and deterrent wire being connected to an alarm system such that any contact between the two triggers the alarm system.

4,525,702

FLEXIBLE TYING MEMBER FOR THEFTPROOF DEVICE

Tadao Kitagawa, No. 4-7, Minamidai 2-chome, Kamifukuoka-shi, Saitama-ken, Japan (356); Yutaka Kosuge, No. 23-3-19-604, Sayamadai 3-chome, Sayama-shi, Saitama-ken, Japan (350-13), and Yoichiro Noda, No. 3308, Kubota, Otsukacho, Miyazaki-shi, Miyazaki-ken, Japan (880)

Filed Sep. 28, 1982, Ser. No. 425,325
Claims priority, application Japan, Oct. 9, 1981, 56-161844; Nov. 17, 1981, 56-184285; Nov. 17, 1981, 56-184286
Int. Cl.³ G08B *29/00*; B62H *5/00*; G02B *5/14*
U.S. Cl. 340—556 **9 Claims**



1. In a theftproof device including an elongate flexible tying member, an optical fiber longitudinally extending through said flexible tying member, a pair of photoelectric elements arranged at opposite ends of said optical fiber, and means responsive to a change in an electrical signal generated by one of said photoelectric elements, which corresponds to a change in a photo signal generated by the other of said photoelectric elements and transmitted in said optical fiber, for performing a warning function, the improvement wherein said elongate flexible tying member comprises a first layer including one of said optical fiber and at least one electric wire which longitudinally extends through said flexible tying member and is electrically connected to at least one of said photoelectric elements, a second layer concentrically disposed around said first layer and including the other of said optical fiber and said at least one electric wire, and a third layer concentrically disposed around said second layer and including at least one mechanically reinforcing member longitudinally extending through said flexible tying member

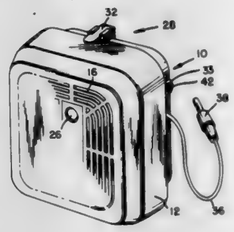
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4,525,703

PORTABLE SMOKE ALARM

Joseph P. Bellino, Shelton, Conn., assignor to General Electric Company, New York, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,361
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—628 **3 Claims**



1. In a portable alarm having a smoke detecting mechanism, a signal alarm means, and a compact foraminous housing enclosing the components in a small package, an electric circuit for selectively connecting and disconnecting the smoke detecting mechanism and the alarm means for respectively arming and unarming the alarm, said electric circuit comprising:

an elongated electrical lead connected at one end thereof to a selected one of said smoke detecting mechanism and said alarm means, said electrical lead extending visibly outside said housing from said one end thereof,

first connector means connected to the other one of said smoke detecting mechanism and said alarm means,

second connector means on the other end of said electrical lead to connect selectively to said first connector means to complete said electric circuit through said electrical lead so as to thereby arm the portable alarm, and

said housing having extendable thin hanger means thereon capable of being reversed, said hanger means being adapted for hanging over a door top in open and closed door position or, upon reversal, to assume a compact position in contact with said housing,

whereby said electrical lead forms a hanging appendage on the exterior of the housing to indicate in a highly visible form the armed/unarmed condition of the alarm.

4,525,704

ENZYMATIC TOXIC GAS SENSOR

Donald N. Campbell, Timonium, and John C. Schmidt, Baltimore, both of Md., assignors to Allied Corporation, Morristown, N.J.

Filed Nov. 9, 1983, Ser. No. 550,272
Int. Cl.³ G08B *17/10*; C12Q *1/00*
U.S. Cl. 340—632 **19 Claims**

7. A dual enzymatic toxic gas sensor wherein the chemical reactions therein are activated by diffusion within the sensor, said sensor comprising:

a first sensor having:

a reservoir containing a buffered electrolyte;

a wick attached at one end thereof to said reservoir;

a porous membrane having one broadside adapted for interfacing with the ambient air;

a structure attached to the other broadside of said membrane, said structure having an enzyme covalently attached thereto;

an electrochemical cell means having a sensing electrode, a reference electrode and a counter electrode; said sensing electrode spaced from said structure and adapted to react with reaction products of said enzyme to generate an electrical current;

substrate means adapted to receive the other end of said wick and containing a substrate which is dissolvable by said buffered electrolyte and diffuses to said enzyme to react with said enzyme in the absence of toxic gases;

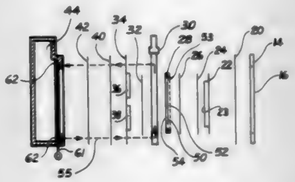
a second sensor having:

a reservoir containing a buffered electrolyte;

a wick attached at one end thereof to said reservoir;

a porous membrane having one broadside adapted for interfacing with the ambient air;

removable cover means normally covering said one broadside from interfacing with ambient air and adaptable to be removed therefrom;



a structure attached to the other broadside of said membrane, said structure having an enzyme covalently attached thereto;

an electrochemical cell means having a sensing electrode, a reference electrode and a counting electrode; said sensing electrode spaced from said structure and adapted to react with reaction products of said enzyme to generate an electrical current;

substrate means adapted to receive the other end of said wick and containing a substrate which is dissolvable by said buffered electrolyte and diffuses to said enzyme to react with said enzyme in the absence of toxic gases; and

circuit means including a bridge circuit, summing means and alarm means responsive to each of said electrochemical cells from said first and second sensors to generate a signal of one value due to the presence of toxic gases and a signal of another value due to the absence of toxic gases for activating said alarm means and responsive to the removal of said cover means to generate one of said signals in response to the electrical current from said electrochemical cell in said second sensor.

4,525,705

SYSTEM FOR DETECTING THE PRESENCE OF A YARN ON A CONTINUOUS SPINNING FRAME

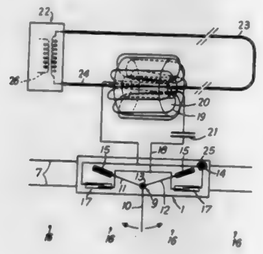
Jacques Edmé , Sainghin en Melantois, and Etienne Deffontaine, Ennevelin, both of France, assignors to Centre Technique Industriel Dit: Insttiut Textile de France, Boulogne Billancourt and Establissement Public Dit: Agence Nationale de Valorisation de la Recherche (Anvar), Paris, both of, France

Filed Jul. 6, 1982, Ser. No. 395,359
Claims priority, application France, Jul. 6, 1981, 81 13274
Int. Cl.³ D03D *51/28*
U.S. Cl. 340—677 **10 Claims**

1. a system for detecting the presence of a yarn strand on a textile machine which comprises:

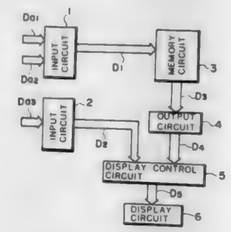
sensor means for detecting the presence of a yarn strand, said

sensor means including a cylindrical-shaped magnetic core, an electric circuit including a conductor wound around said magnetic core and a switch to generate an electric signal in reponse to the presence of a yarn strand;
means for moving said sensor means across courses of yarn strands on said textile machine;



a fixed loop conductor including a leg portion traversing said cylingdrically-shaped magnetic core and disposed parallel to a path of movement of said sensor means;
means for generating oscillations in said looped conductor; and
means for detecting a variation in oscillations in said looped conductor in response to said generated electric signal in said electric circuit.

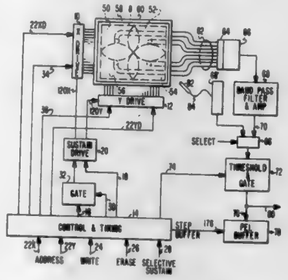
4,525,706
MISFEED MONITORING APPARATUS FOR TRANSFER PRESS
Yoshinori Nishikawa, Kanazawa, and Iwashige Takahashi, Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Jun. 21, 1982, Ser. No. 390,506
Int. Cl.³ G08B 21/00
U.S. Cl. 340—679 **3 Claims**



1. A misfeed monitoring apparatus for a transfer press of a type in which feeder stroke is changeable, comprising:
display means for providing a work station display at each of a plurality of display positions, the number of display positions equalling the number of said work stations, which number changes as the feeder stroke changes; and
flickering means for flickering the display of any work stations at which misfeeding takes place.

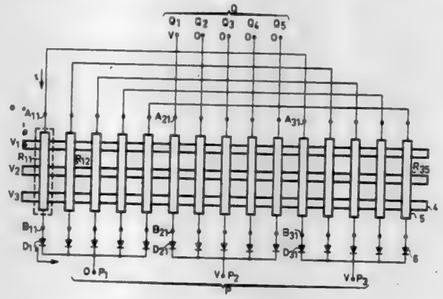
4,525,707
GAS PANEL INTERROGATION BY SELECTIVE SUSTAIN
Harry S. Hoffman, Jr., Saugerties; Donald R. Thompson, and Luther L. Zimmerman, both of Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1981, Ser. No. 336,526
Int. Cl.³ G09F 9/30
U.S. Cl. 340—707 **10 Claims**

1. A gas panel system comprising means including addressing means for executing a selective sustain cycle with the first half of the sustain drive at least partially missing at the positions of all or a large group of cells of the panel so as to constitute, at most, a partial-sustain signal having no independent effect, and



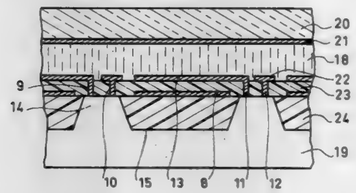
means for supplying the missing half cycle component to a particular cell or cells by operation of said addressing means,
so that the information content at the addressed cells can be read optically.

4,525,708
THERMOELECTRIC EFFECT DISPLAY DEVICE
Michel Hareng; Robert Hehlen; Philippe Marcenac; Serge Le Berre; Pierre Leclerc, and Jean-Noël Perbet, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Aug. 23, 1982, Ser. No. 410,557
Claims priority, application France, Aug. 25, 1981, 81 16218
Int. Cl.³ G09G 3/36
U.S. Cl. 340—713 **4 Claims**



1. A display device for displaying at least one writing line consisting of characters in response to an incident electric signal, comprising:
a smectic liquid crystal layer;
two crossed systems of electrodes provided on opposite sides of said layer;
electric control means reacting to the content of the incident electric signal to provide current for predetermined periods to selected electrodes of one of said systems so as to establish successive heating and cooling phases in liquid crystal strips adjacent said selected electrodes, and for selectively applying across those of the strips of said layer which are in a cooling phase an electric field to produce a selected optical effect;
said one of said systems of electrodes being heated comprising N electrodes and said system of electrodes crossed with said one of said systems comprising M electrodes, where N>M to define a rectangular display array, each of said N electrodes connected in series with a respective non-linear resistance element, said N electrodes of said one electrode system being shorter than said M electrodes of the other crossed electrode system; and
said control means comprising means for selectively applying a first voltage to said M electrodes of said other crossed electrode system to produce said electric field and means for selectively applying a second voltage substantially smaller than said first voltage across opposite ends of selected ones of said N electrodes to implement multiplexing of said two electrode systems on two levels, including a first multiplexing level in which the N electrodes of said one electrode system are multiplexed to produce a heating current through selected of said N electrodes and a second multiplexing level for selectively applying said electric field across selected of said electrodes of said first and second electrode systems.

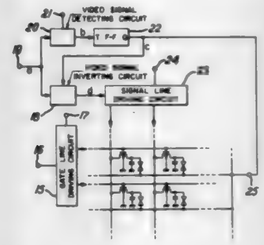
4,525,709
ELECTRICALLY CONTROLLED DISPLAY DEVICE
Michel Hareng; Jean-Noël Perbet, and Michel Defrance, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Aug. 23, 1982, Ser. No. 410,706
Claims priority, application France, Aug. 25, 1981, 81 16216
Int. Cl.³ G09G 3/36
U.S. Cl. 340—719 **7 Claims**



1. A display device comprising:
a cell intended to display images by electrically controlling elementary display pixels formed on a first surface of a substrate wherein said substrate is produced from a substance of which the resistance is a decreasing function of the applied voltage, and wherein each pixel comprises a first and second electrode forming a capacitor, the material of which varies in optical properties as a function of an electrical field generated across said capacitor, each pixel being connected to electrical connections via a varistor element corresponding to a portion of the said substrate, wherein said first surface of the said substrate which is adjacent the said pixels comprises recesses which delimit islets; the said recesses being filled with a dielectric substance having a lower permittivity than that of the said substrate, each islet comprising one of said varistor elements.

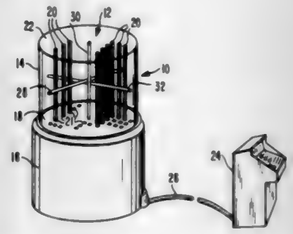
4,525,710
PICTURE DISPLAY DEVICE
Hideo Hoshi, and Hitoshi Kamamori, both of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan
Filed Feb. 16, 1982, Ser. No. 349,384
Int. Cl.³ G09G 3/36
U.S. Cl. 340—784 **12 Claims**

1. In a picture display device having field effect transistors deposited on a semiconductor layer formed on an insulating substrate in a column and row configuration; a first electrode which is one electrode of said field effect transistor; a second electrode which is a transparent electrode deposited on a transparent substrate opposite to said first electrode; and a liquid crystal held between the first electrode and the second electrode and to which a voltage is applied by the first and second electrodes, the improvement comprising: detecting means for detecting the existence of picture signals and producing a detection signal if the picture signals are temporarily interrupted for more than a given period of time; and means for



inverting the voltage polarity applied to the liquid crystal held between the first electrode and the second electrode in response to the detection signal.

4,525,711
THREE-DIMENSIONAL FIBER OPTIC DISPLAY
Alan R. Gery, 20 Serpentine La., Old Bethpage, N.Y. 11804
Filed Sep. 3, 1982, Ser. No. 414,986
Int. Cl.³ G09G 3/22, 1/00
U.S. Cl. 340—815.31 **18 Claims**



1. A three dimensional optical display device, comprising:
a display region having at least one end portion;
a plurality of elongated fiber bundles located within said display region, said bundles being mounted in side-by-side relationship, with each said bundle consisting of a multiplicity of parallel, close-spaced optical fibers, each fiber in a bundle having an inlet tip and an exit tip;
light source means located outside said display region, said bundles extending through said end portion for connection of said fiber inlet tips to said light source means for activation of individual fibers by said light source means; and
control means for energizing said light source means to activate only selected individual fibers, whereby selected fiber exit tips are illuminated to produce a visible light pattern within said display region.

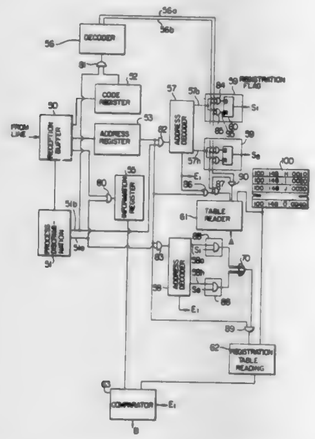
4,525,712
TRANSACTION PROCESSING SYSTEM
Yoshio Okano; Yasuo Okuma; Kuniomi Aizawa, all of Seto; Yasuyoshi Oyama, Owariasahi, and Yoichiro Kitamura, Kashiwa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 18, 1982, Ser. No. 349,856
Claims priority, application Japan, Apr. 24, 1981, 56-61216
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—825.31 **9 Claims**

1. A transaction processing system comprising a central unit and at least one terminal unit connected to said central unit by a communication line, so that transaction data from said terminal unit may be transmitted together with the address of said terminal unit to said central unit so as to carry out data process-

ing in said central unit in correspondence to said transaction data;

said terminal unit including first means for storing first specific information previously assigned to said terminal unit to authorize said terminal unit to use said central unit, and second means for transmitting to said communication line a transaction request message including said first specific information, said transaction data and said terminal unit address;

said central unit including third means for storing second modifiable specific information and registered in correspondence to each terminal unit which might be connected to said central unit, and fourth means connected to said communication line for conducting data processing to carry out a transaction corresponding to the transaction data included in a received transaction request message only when a predetermined relation is detected between said first specific information included in said received transaction request message and said second specific information read out of said third means on the basis of said terminal unit address included in said received transaction request message, wherein data processing of transaction data from a nonauthorized terminal unit is prevented.

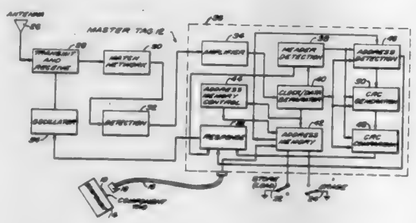


4,525,713

ELECTRONIC TAG IDENTIFICATION SYSTEM

Joseph M. Barletta, Bridgewater, and John P. Yang, Belle Mead, both of N.J., assignors to Lockheed Electronics Co., Inc., Plainfield, N.J.

Filed Mar. 1, 1983, Ser. No. 470,924
Int. Cl.[3] H04Q *9/00;* **G06K** *7/00*
U.S. Cl. 340—825.54 **7 Claims**



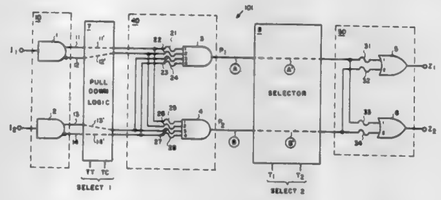
1. An electronic component-identification system for use in identifying a plurality of components, said system comprising a plurality of differently coded passive component tags adapted to be respectively secured to said plurality of components, a master tag including a memory, a transceiver for receiving a coded interrogation signal, means for storing the different codes from said plurality of component tags in said memory of said master tag, said master tag further comprising logic means for comparing the codes stored in said memory with the coded interrogation signal received at said master tag from said transceiver and for producing a component-identification signal for each matching code comparison, and means for applying said component-identification signal to said transceiver for transmission to a remote station.

4,525,714

PROGRAMMABLE LOGIC ARRAY WITH TEST CAPABILITY IN THE UNPROGRAMMED STATE

David W. Still, Phoenix, and Peter C. Economopoulos, Scottsdale, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 3, 1982, Ser. No. 446,816
Int. Cl.[3] H04Q *00/00*
U.S. Cl. 340—825.83 **7 Claims**



1. A programmable circuit array having a plurality of input terminals, each input terminal adapted to receive one of a plurality of input signals, comprising:

(a) input buffer means, having a plurality of output terminals and inverted output terminals, said input buffer means operatively connected to said input terminals, for outputting equivalent input signals and inverted input signals on respective output terminals and inverted output terminals;

(b) programmable product array means, having a plurality of output terminals, operatively connected to said output terminals of said input buffer means thereby receiving said equivalent input signals and said inverted input signals, for generating a plurality of product terms, wherein each output terminal of said programmable product array means transmits one of said product terms;

(c) programmable sum array means for combining said plurality of product terms to generate a plurality of sum terms, each of said plurality of sum terms being an output of said programmable circuit array; and

(d) test means for selectively causing each of said product terms, said equivalent input signals, and said inverted input signals to have a predetermined logic state in response to at least one control signal.

4,525,715

TOROIDAL COUPLED TELEMETRY APPARATUS

Harrison C. Smith, Richardson, Tex., assignor to Tele-Drill, Inc., Richardson, Tex.

Continuation of Ser. No. 324,924, Nov. 25, 1981, abandoned.
This application Jan. 18, 1984, Ser. No. 571,644
Int. Cl.[3] G01V *1/40*
U.S. Cl. 340—854 **2 Claims**

1. In a downhole toroidal coupled telemetry apparatus for telemetering downhole measurements-while-drilling information from a drill collar of an operating drill string within a wellhole to the surface of the earth by launching electromagnetic signals into the earth bulk and picking up said signals, transmitted through the earth, at the surface of the earth at one or more locations adjacent to but spaced from the drill string, said toroidal coupled telemetry apparatus comprising:

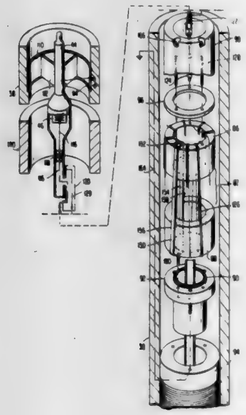
an axially elongated annular core of magnetic-permeability coaxially mounted interiorly within the wall of the drill collar of the drill string;

a plurality of primary electrical conductor windings axially wrapped around the exterior surface of said annular core, said primary electrical conductor windings extending axially around said annular core interiorly within the wall of the drill collar of the drill string;

means positioned within said drill collar for imputing a variable electric current to said primary windings, said current being operable to carry downhole data sensed simultaneously with and during a drilling operation; and

an electrically insulated zone within the sidewall of the drill collar for providing electrical isolation between two areas of the sidewall of the drill collar; wherein the improvement comprises:

secondary electrical conductor winding means at least partially axially wrapped around the exterior surface of said annular core for receiving variable electrical signals induced by said primary electrical conductor windings and carrying downhole data to be transmitted to the surface of the earth, said secondary electrical conductor winding means comprising one-and-one-half turns of an electrical conductor axially wrapped around the exterior surface of said annular core, said electrical conductor being electrically connected at one end directly to the drill collar on one side of said electrically insulated zone within the sidewall of the drill collar and electrically connected at the other end directly to the drill collar on the other side of said electrically insulated zone remote from said electrically insulated zone such that the drill collar comprises the last one-half turn of a two-turn secondary electrical conductor winding means wherein electrical signals from said secondary electrical conductor means carrying downhole data will be electromagnetically launched into the earth bulk surrounding the drill collar and transmitted to the surface by electromagnetic waves through the earth and picked up at the surface of the earth at one or more locations adjacent to but spaced from the drill string.

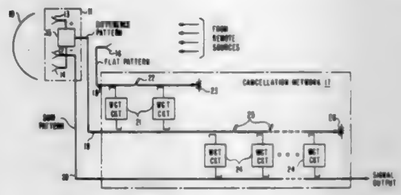


4,525,716

TECHNIQUE FOR CANCELLING ANTENNA SIDELOBES

James W. Carlin, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 10, 1984, Ser. No. 648,814
Int. Cl.[3] G01S *3/16, 3/28*
U.S. Cl. 343—381 **5 Claims**



1. An antenna sidelobe cancellation arrangement comprising:

a first input for receiving a sum pattern signal from an antenna monopulse feed;

a second input for receiving a difference pattern signal from the antenna monopulse feed;

a third input for receiving a flat pattern signal from a standard gain omnidirectional antenna feed; and

a cancellation network comprising:

a first canceller section coupled to the second and third inputs for appropriately shifting the difference pattern signal from the second input by a predetermined amount with the flat pattern signal from the third input to generate an output signal wherein the lobes of the shifted difference pattern signal correspond to the lobes of the sum pattern signal at the first input; and

a second canceller section responsive to the output signal from the first canceller section and the sum signal at the first input for introducing appropriate portion of the shifted difference pattern signal into the sum pattern signal for substantially cancelling interference in the sum pattern signal at an output of the cancellation arrangement.

4,525,717

POSITION DISPLAY INSTRUMENT

Eberhard Wildermuth, Leinfelden-Echterdingen; Dirk Jansen, Ueberlingen/Bodensee; Rudolf Burkhardt, Stuttgart, and Joachim Merz, Esslingen-Mettingen, all of Fed. Rep. of Germany, assignors to Universität Stuttgart, Institut Für Flugnavigation, Stuttgart, Fed. Rep. of Germany

Filed Aug. 18, 1981, Ser. No. 293,953
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1980, 3031258
Int. Cl.[3] G01C *21/20;* **G01S** *5/02*
U.S. Cl. 343—452 **4 Claims**

1. In a position display instrument for light spot display on a map of the position of vehicles, in particular aircraft or helicopters, comprising

a flat map holder for accommodating and holding map sheets in an exact position,

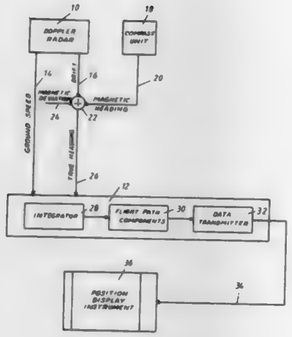
a light transmitter located below the map holder for producing a light spot on the map sheet and movable in two coordinates by positioning means,

a microcomputer, to which the grid coordinates of the vehicle position are applied from a navigational computer and by which the positioning means are controlled,

a memory for storing map data, said memory cooperating with the microcomputer, and

display means connected to the microcomputer and by which the map sheet or map field required for the respective grid coordinates is displayed, the improvement comprising:

(a) the microcomputer comprises means for forming



$$x' = \frac{x - x_M}{M} + a$$

$$y' = \frac{y - y_M}{M} + b.$$

wherein

x,y are the grid coordinates of the vehicle position as provided by the navigational computer,

x_M,y_M are the coordinates of the map center as provided by the memory,

M is the map scale and

a,b are the half the height and width dimensions, respectively, of the map sheet or map field,

(b) the light transmitter (**122**) is arranged by means of the positioning means (**100,102,114,116**), to automatically be positioned at the coordinates thus determined with respect to one map corner,

(c) means are provided for supplying an edge signal to the microcomputer when the light transmitter (**122**) reaches the edge of the map sheet or map field, and

(d) the microcomputer, when receiving the edge signal,

(d_1) forms x' and y' consecutively for the various map data x_M,y_M stored in the memory,

(d_2) tests, each time, for the condition

$$0 \leqq x' < 2a$$

$$0 \leqq y' < 2b$$

and,

(d_3) when this condition is met

(d_{31}) discontinues further testing,

(d_{32}) supplies the identification of the associated new map sheet for display to the display means, and

(d_{33}) controls the positioning means to move the light transmitter (**122**) into the position

$$x' = \frac{x - x_{M1}}{M} + a$$

$$y' = \frac{y - y_{M1}}{M} + b \text{ and,}$$

(d_4) when this condition is not met with any of the stored pairs x_M,y_M, provides a nil return.

4,525,718

ANTENNA WITH COAXIAL CONNECTOR

Kazuyoshi Imazeki, and Nobuaki Yokoyama, both of Tokyo, Japan, assignors to General Research of Electronics, Inc., Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 471,895
Int. Cl.³ H01Q *1/50*
U.S. Cl. 343—702 **8 Claims**



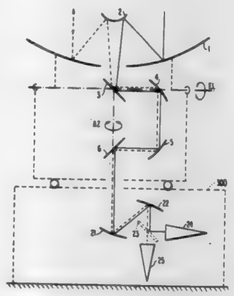
1. An antenna comprising: an antenna body telescopically extendable from a fully retracted position and having a free end; an electrode member mounted to the free end of said antenna body, said electrode member having a tubular, electrically conductive portion electrically coupled to the antenna body and defining an axial bore; base means for mounting said antenna body to a radio, said base means including a casing member for telescopically mounting said antenna body and a receptacle portion for coaxially receiving said electrode member when the antenna body is in said fully retracted position; said electrode member and said receptacle portion of said base means together forming a coaxial connector receptacle when said antenna body is in said fully retracted position.

4,525,719

DUAL-BAND ANTENNA SYSTEM OF A BEAM WAVEGUIDE TYPE

Ikuro Sato, and Ryuichi Iwata, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 7, 1983, Ser. No. 511,614
Claims priority, application Japan, Jul. 12, 1982, 57-120927
Int. Cl.³ H01Q *19/19*
U.S. Cl. 343—761 **8 Claims**



2. A dual-band, beam wave-guide type antenna system comprising a dual reflector antenna having a main reflector and a subreflector and being rotatable about elevation and azimuth axes, first and second feed horns for radiating first and second electromagnetic waves of first and second frequencies, respectively, and beam wave-guide means for coupling said first and second electromagnetic waves from said first and second horn means to said subreflector, said beam wave-guide means comprising:

frequency selective reflector means for receiving said first electromagnetic wave from said first feed horn and reflecting said first electromagnetic wave substantially along a first path, and for receiving said second electromagnetic wave from said second feed horn and passing said second electromagnetic wave substantially along said first path;

a first reflector for receiving electromagnetic waves along said first path from said frequency selective reflector means and for reflecting said electromagnetic waves along a second path; and

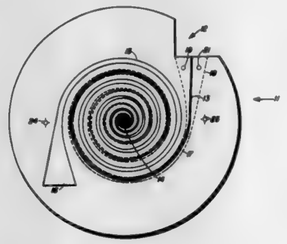
a second reflector for receiving electromagnetic waves along said second path from said first reflector and for reflecting said electromagnetic waves along a third path substantially coincident with said azimuth axis.

4,525,720

INTEGRATED SPIRAL ANTENNA AND PRINTED CIRCUIT BALUN

Robert G. Corzine, and Joseph A. Mosko, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 15, 1982, Ser. No. 434,651
Int. Cl.³ H01Q *1/36*
U.S. Cl. 343—895 **19 Claims**



1. A broadband antenna, comprising:

a first planar dielectric substrate having first and second surfaces;

a spiral conductor formed on said first surface of said first planar dielectric substrate, said conductor originating at an input balun on the outer periphery of said spiral conductor and spiraling inwardly to a center termination;

a first spiral radiator formed on said first surface of said first planar dielectric substrate, said first spiral radiator originating at and coupled to said center termination of said spiral conductor and thereafter spiraling outwardly equidistant between successive rings of said spiral conductor and terminating on the outer periphery of said first spiral radiator at a first balance pad, said first radiator increasing in width along the spiral from said center termination to said balance pad; and

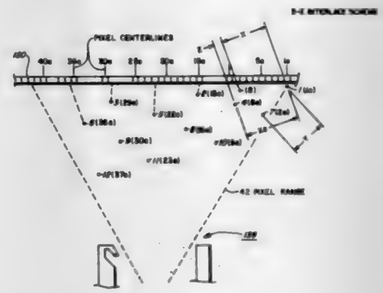
a second spiral radiator formed on said second surface of said first planar dielectric substrate, said second radiator originating at a second balance pad on the outer periphery of said second spiral radiator and spiraling inwardly to a center termination, said second radiator decreasing in width in a balancing manner with said first radiator spiral along the spiral from said second balance pad to said center termination and being coextensive with said spiral conductor forming a first ground plane.

4,525,721

INK JET INTERLACE STRATEGY

Peter A. Crean, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 2, 1983, Ser. No. 471,411
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 **4 Claims**



1. An improved process for controlling the trajectories of ink droplets from a plurality of nozzles of an ink jet printing device of the type having a droplet generator with multiple nozzles for generating streams of droplets, a charging electrode for each nozzle operated by a controller for inducing a charge of either polarity on each droplet as they pass thereby and a means for producing an electric field for deflecting the charged droplets to specific pixel locations on a recording medium according to the induced charge placed thereon by the charging electrodes or to an ink recovering gutter depending upon a print or no print charging decision by the controller, the improved process comprising: charging of said droplets by its associated charging electrode according to a multiple level interlace scheme such that sequentially generated droplets are directed serially to one pixel in each of a predetermined number of groupings of equal pixel locations that make up the total number of linear, adjacent pixel locations which are assigned to each particular nozzle, said interlace scheme assuring that succeeding droplets are directed to predetermined pixels located in groupings always separated by a distance equal to at least two pixel groupings, the multiple level interlace scheme being accomplished by multiple scanning of the total number of pixel groupings for print or no print decisions of said predetermined pixel location in each of said pixel groupings prior to repeating the multiple scanning for subsequent print or no print decisions for a succeeding pixel location in each of said pixel grouping, said multiple scanning of the total number of pixel groupings being continued until each pixel location in each group has been addressed and a droplet produced therefor which will be directed to the recording medium or to the gutter depending upon instructions from the controller, so that droplets directed to contiguous pixels are separated by the distance equivalent to the in-flight spacing between a number of sequentially generated droplets equal to the number of pixel groups and so that adjacent, sequentially generated droplets are separated prior to their impact with the recording medium by a distance equal to at least two pixel groups.

4,525,722

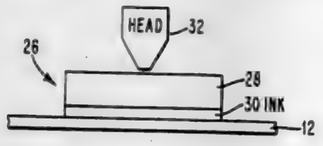
CHEMICAL HEAT AMPLIFICATION IN THERMAL TRANSFER PRINTING

Krishna G. Sachdev; Harbans S. Sachdev, both of Wappingers Falls; Ari Aviram, Yorktown Heights, and Mark A. Wizner, Beacon, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1984, Ser. No. 582,694
Int. Cl.³ B41J *31/02*; G01D *15/10*
U.S. Cl. 346—1.1 **22 Claims**

1. In thermal transfer printing an ink bearing ribbon compris-

ing a support layer and at least one other layer, said one other layer including a fusible ink which is solid at room temperature and which includes a low melting point polymer binder and a suitable colorant, and an exothermic heat amplification mate-



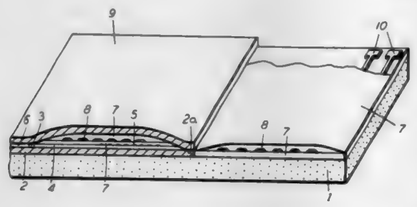
rial, said material giving off heat to said ink when its temperature is raised to at least a threshold amount, and being a hydrazone derivative having a molecular weight between about 150 and about 650.

4,525,723

MAGNETIC RECORDING HEAD

Nobuo Nishimura; Teruhiko Itami; Toshifumi Kimoto; Shunsuke Tomiyama, and Koichi Saitoh, all of Tokyo, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 15, 1982, Ser. No. 449,940
Claims priority, application Japan, Dec. 25, 1981, 56-209114
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.4 **4 Claims**



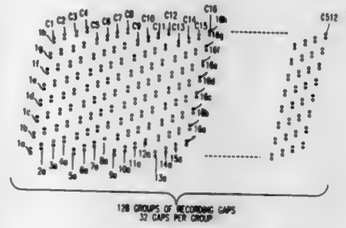
1. A magnetic recording head for producing latent magnetic images in a moving magnetic recording medium comprising:
an elongated, thin film magnetic head core having a gap therein, the magnetic head core being disposed substantially perpendicular to the moving direction of the magnetic recording medium and in contact therewith so that the gap is adjacent the magnetic recording medium;
a thin film electrical conductor coiled about said magnetic head core for exciting the magnetic head core to produce a magnetic flux therein;
a heat generation body disposed in said gap of said magnetic head core and having the same length as said magnetic head core;
a wiring layer positioned within said magnetic head core, the layer having a series of electrically conducting wires connected to said heat generation body and adapted for selectively applying a print signal voltage to a segment of the heat generation body between any two wires connected thereto; and
a high magnetic permeable body having a relatively low magnetic curie point and disposed within the gap of the magnetic head core and in contact with the heat generation body and the moving recording medium.

4,525,724

MAGNETIC RECORDING HEAD ARRAY FOR LONGITUDINAL MAGNETIC PRINTING WITH STAGGERED HEAD ARRANGEMENT AND CLUSTERED WIRING

Peter A. Franaszek, Katonah, and Edward J. Yarmchuk, Purdys, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 394,016
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.5 **13 Claims**



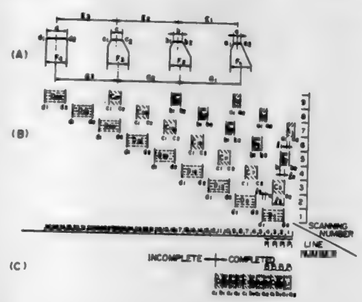
1. In an arrangement of a plurality of magnetic heads formed in a staggered array,
including an x axis directed transversely,
a y axis directed vertically,
said heads including gaps therein,
said heads being formed in a plurality of groups of parallel columns with said gaps in said heads in adjacent columns being aligned in a periodically staggered arrangement with a word line being coupled to all heads along a transverse line basis,
a pair of heads being coupled to each word line in a given one of said groups,
and all of the heads in a said group being coupled to a single bit line with the sense of current for a first one of said pair of heads in a said group being reversed in said bit line for the other said head in said group coupled to said same word line.

4,525,725

METHOD AND APPARATUS FOR FORMING MAGNETIC LATENT IMAGES

Kunio Kinoshita, Hachioji, and Norio Kokaji, Hino, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,511
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.5 **2 Claims**



1. A method for forming latent images in a magnetic printing apparatus, which comprises scanning a magnetic recording medium by a recording head having first, second, . . . and m-th channels (m is an integer of $m \geqq 3$), wherein at a first magnetic latent image recording scanning, first, second, . . . and m-th channels of the recording head form magnetic latent images on the (mn−m+1)-th line (n is a positive integer indicating the scanning frequency of the recording head), the (mn−m+2)-th line, . . . and the (mn)-th line, respectively, and loci of the subsequent channels are overlapped on parts of loci of the preceding channels; at a second magnetic latent image recording scanning, first, second, . . . and m-th channels of the recording head form magnetic latent images on the (mn)-th line, the (mn−1)-th line, . . . and (mn−m+1)-th line, respectively, loci of the subsequent channels are overlapped on parts of loci of the preceding channels; and the track pitches of the first, second, . . . and m-th channels of the recording head satisfy the requirement of the following formula (1):

$$E_1=(am+1)\times P_1 \quad (1)$$

wherein E_1 stands for the track-pitch, a is an optional integer, m stands for the number of channels and P_1 stands for a first latent image scanning line width, at the first magnetic latent image recording scanning and also satisfy the requirement of the following formula (2):

$$E_2=(am-1)\times P_2 \quad (2)$$

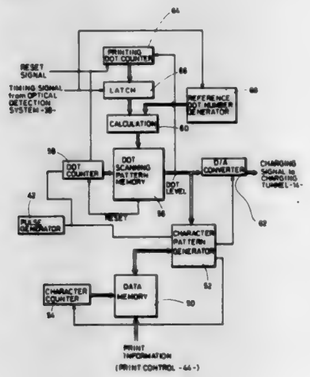
wherein E_2 stands for the track pitch, which is nearly equal to the track pitch E_1, and P_2 stands for a second latent image scanning line width, at the second magnetic latent image recording scanning.

4,525,726

INTERPOLATION DOT CONTROL IN AN INK JET SYSTEM PRINTER

Yuichirou Mori, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1983, Ser. No. 462,700
Claims priority, application Japan, Feb. 10, 1982, 57-20322
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **7 Claims**



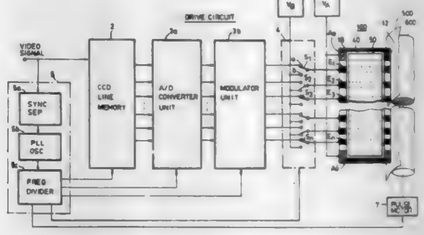
1. An ink jet system printer of the charge amplitude controlling type comprising:
means for emitting printing ink droplets, said printing ink droplets including primary matrix dots and interpolation ink droplets not assigned to primary dots and being developed between adjacent primary matrix dots;
a record receiving member disposed in front of said printer head and selectively receiving said primary matrix dots, said interpolation ink droplets not being applied to said record receiving member;
shift means for shifting said means for emitting printing ink droplets in the lateral direction with respect to said record receiving member;
detection means for developing a timing signal each time said means for emitting printing ink droplets travels a predetermined length in said lateral direction;
counter means for counting said printing ink droplets emitted from said means for emitting printing ink droplets between adjacent timing signals developed from said detection means;
reference number generation means for developing a reference dot number representative of a reference number of droplets between adjacent timing signals in response to said timing signal developed from said detection means;
comparing means for comparing the count number counted by said counter means with said reference dot number developed from said reference number generation means; and
print control means for varying the ratio of said interpolation ink droplets with respect to said primary matrix dots in response to a comparison result developed from said comparing means so as to maintain the density of said primary matrix dots substantially constant.

4,525,727

ELECTROOSMOTIC INK PRINTER

Tadao Kohashi, Moriguchi; Hiroyuki Irie, Osaka; Susumu Ide, Katano, and Hiroshi Esaki, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan

Filed Feb. 16, 1983, Ser. No. 467,355
Claims priority, application Japan, Feb. 17, 1982, 57-24729; Jun. 7, 1982, 57-97934
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **20 Claims**



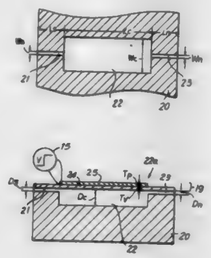
1. A method of operating an electroosmotic ink printer head including an array of recording electrodes successively arranged to define a print line along one edge of said head, an overlying electrode means in spaced overlying relationship with the recording electrodes and means provided between said electrode array and said overlying electrode means for electroosmotically moving ink in a direction toward said print line and in an opposite direction depending on an electrical potential applied to said recording electrodes with respect to the overlying electrode means, said method comprising the steps of:
(a) storing a video input signal in a plurality of storage locations corresponding to said recording electrodes; and
(b) disabling a first group of said recording electrodes by applying thereto a first potential to cause said ink to move in the opposite direction while enabling a second group of said recording electrodes by applying thereto a second potential to cause said ink to move toward said print line as a function of the stored signals for said second group of recording electrodes, and subsequently disabling said second group while enabling said first group, the electrodes of each group being located alternatively with those of the other.

4,525,728

INK JET RECORDING HEAD

Haruhiko Koto, Shiojiri, Japan, assignor to Epson Corporation and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 488,580
Claims priority, application Japan, Apr. 27, 1982, 57-70958
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **8 Claims**



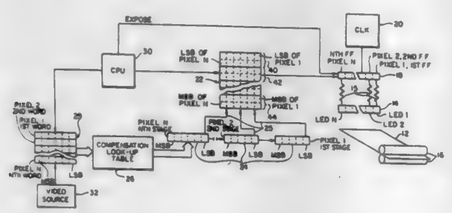
1. An on-demand type ink jet recording head comprising a substrate, a plurality of pressurization chambers of substantially rectangular configuration disposed in adjacent relationship on said substrate, each said pressurization chamber having an inlet and an outlet, each said pressurization chamber having an ink supply passage in fluid communication with the respective inlet thereof for supplying ink to said pressurization chambers, each said pressurization chamber having a nozzle with a first end in fluid communication with the respective outlet thereof and a second end through which ink droplets are ejected, said nozzles extending in a substantially straight line from said respective pressurization chamber associated therewith, each said pressurization chamber having a vibratory plate which forms at least a portion of a wall of said pressurization chambers, a piezoelectric element associated with each said pressurization chamber and coupled respectively to the vibratory plate thereof, said piezoelectric elements being responsive to an electric signal selectively applied thereto for flexing the vibratory plates associated therewith to change the volume of the pressurization chambers associated therewith, said nozzles each having an equivalent nozzle length Ln of 1 mm or less defined between the outlet of said pressurization chamber and the second end of said nozzle, each said pressurization chamber having a width Wc of 1 mm or less and a length Lc of 1 mm or more, said vibratory plate having a thickness Tv of 200 μm or less and said piezoelectric elements having a thickness Tp of 200 μm or less.

4,525,729

PARALLEL LED EXPOSURE CONTROL SYSTEM

Martin A. Agulnek, Sharon; Joseph M. Canter, and Michael L. Reisch, both of Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 4, 1983, Ser. No. 481,830
Int. Cl.³ G01D *15/14;* **H04N** *1/30*
U.S. Cl. 346—154 **14 Claims**



1. Apparatus for recording on a photosensitive medium an image defined by electronic signal information in binary word format comprising:

an array of spaced apart discrete light sources each corresponding to a different pixel of the image to be recorded on the photosensitive medium; and

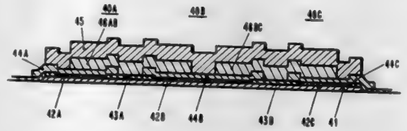
means for simultaneously controlling the energization of all of said discrete light sources at a substantially constant energy level in a series of intervals wherein each interval is timed differently to correspond to a different one of the data bits in the binary words which comprise the image defining electronic signal information and each said light source is energized during each said interval as a function of the state of the data bit corresponding to that interval for that light source.

4,525,730

BURIED JUNCTION JOSEPHSON INTERFEROMETER

Johannes G. Beha, Wadenswil; Heinz Jaeckel, Kilchberg, and Peter Vettiger, Langnau A. Albis, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1982, Ser. No. 445,331
Int. Cl.³ H01L *39/22, 27/12, 45/00, 45/02*
U.S. Cl. 357—5 **6 Claims**



1. A buried junction Josephson interferometer comprising a base electrode, covered in junction areas with a plurality of tunnel barrier layers forming Josephson junctions, a plurality of counter-electrodes deposited over said tunnel barrier layers, an interferometer bridge connecting said counter-electrodes, separated from said base electrode by insulating layers,

characterized in that

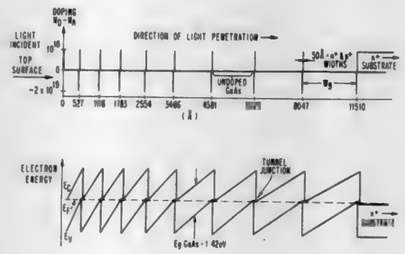
said insulation layers, said counter-electrodes and said interferometer bridge are juxtaposed with said Josephson junctions and said counter-electrodes are located substantially underneath said interferometer bridge but substantially isolated by said insulation layer.

4,525,731

SEMICONDUCTOR CONVERSION OF OPTICAL-TO-ELECTRICAL ENERGY

Terry I. Chappell, Amawalk; Thomas N. Jackson, Ossining, and Jerry M. Woodall, Bedford Hills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,784
Int. Cl.³ H01L *27/14, 29/88, 31/06*
U.S. Cl. 357—12 **9 Claims**



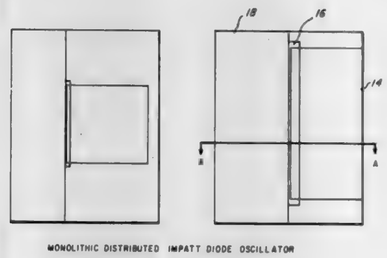
1. In a semiconductor optical-to-electrical energy converter of the type having a plurality of serially connected semiconductor regions joined by quantum mechanical tunneling junctions, the improvement comprising each region being undoped and having a thickness dimension of the order of ballistic transport and each tunneling junction being of the order of the mean free path of a carrier in the semiconductor material of said tunneling junctions.

4,525,732

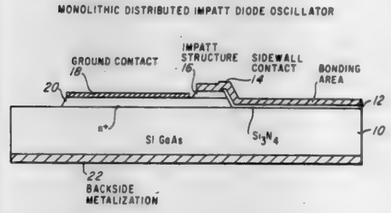
DISTRIBUTED IMPATT STRUCTURE

Burhan Bayraktaroglu, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas City, Tex.

Filed Aug. 31, 1983, Ser. No. 528,210
Int. Cl.³ H01P *1/15, 3/08;* **H01L** *29/90, 27/13*
U.S. Cl. 357—13 **6 Claims**



MONOLITHIC DISTRIBUTED IMPATT DIODE OSCILLATOR



MONOLITHIC DISTRIBUTED IMPATT DIODE OSCILLATOR

1. A microwave device comprising: A semiconductor diode active region interposed between frontside and backside contacts, said semiconductor active region defining a negative resistance diode between said frontside and backside contacts;

said semiconductor active region and said frontside and backside contacts being elongated in a front direction;

said frontside contact being extended beyond said active region in a direction normal to said first direction, to form a transmission line having a principal direction of propagation substantially parallel to said first direction.

4,525,733

PATTERNING METHOD FOR REDUCING HILLOCK DENSITY IN THIN METAL FILMS AND A STRUCTURE PRODUCED THEREBY

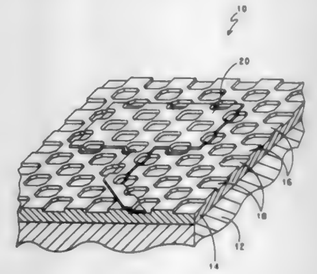
David L. Losee, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1982, Ser. No. 354,422
Int. Cl.³ H01L *21/285*
U.S. Cl. 357—65 **8 Claims**

1. A method of reducing hillock density in a thin film of metal having a high coefficient of thermal expansion on a substrate having a low coefficient of thermal expansion, comprising the steps of:

forming for the purpose of reducing hillocks, a bas-relief pattern of lands and valleys, in an area of the substrate normally free from such pattern;

forming on said pattern a thin film of metal having a high coefficient of thermal expansion, the height and depth dimensions of said lands and valleys being of the same order of magnitude as the thickness of said metal film,



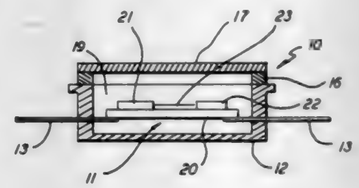
whereby stress relief is provided by said bas-relief pattern thereby reducing hillock formation in said metal film.

4,525,734

HYDROGEN CHARGED THIN FILM CONDUCTOR

James A. Schwarz, Fayetteville, and Robert W. Pasco, Syracuse, both of N.Y., assignors to Syracuse University, Syracuse, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,503
Int. Cl.³ H01L *23/36, 23/48*
U.S. Cl. 357—67 **3 Claims**



1. A conductive thin film stripe that has high resistance to electromigration, at operating temperatures in excess of 100° C., said stripe comprising aluminum alloyed with at least one other element that forms a chemical bond with both aluminum and hydrogen, said at least one other element being selected from the group consisting of Group III-B, Group IV-B, Group VI-B, Group VIII and rare earth elements in the periodic table, and a compound containing hydrogen and said at least one other element that is stable at temperatures in excess of 100° C. whereby hydrogen is retained within the stripe at these elevated temperatures.

4,525,735

SYSTEM FOR MEASURING AND IDENTIFYING LINE SPACING ON A CURVED SURFACE

Frank S. Krufka, Mount Joy, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 15, 1983, Ser. No. 466,595
Int. Cl.³ H04N *9/62*
U.S. Cl. 358—10 **15 Claims**

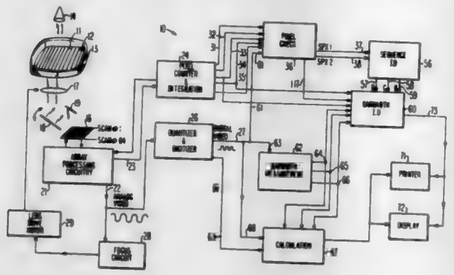
1. A system for measuring matrix barwidths wherein each barwidth includes an opaque line and a transparent space, said barwidths being grouped into sets of barwidths with the corresponding barwidth of each set being sequentially identified, said system having an array of energy responsive pixels, each of said pixels providing an analog pixel signal one level when energy is received from one of said lines, and another level when energy is received from one of said spaces whereby said array provides an analog video signal varying between said

levels in accordance with said lines and spaces, said system comprising:

quantizer circuit means for receiving said analog video signal and providing a digital video signal;

counter means responsive to a particular transition of each of said pixel signals for providing a pixel count output, said pixel count output identifying which of said pixels provided each pixel signal;

pixel check circuit means responsive to said counter means for providing at least two selected pixel signals from at least two selected pixels, said selected pixel signals being spaced on said array whereby the spacing between said selected pixels is less than the width of said space, both of said selected pixel signals initially having one of said levels and subsequently having the other of said levels and returning



to said one level when both of said selected pixels transfer from the space of one of said barwidths to the line of the next of said bar widths;

barwidth sequential identification means responsive to said selected pixel signals for providing barwidth identification signals when said selected pixel signals return to said one level;

measurement circuit means responsive to said digital video signal for sequentially providing width signals representative of the widths of said barwidths;

barwidth identification means responsive to said width signals and to said barwidth identification signals for providing the sequential identification of said barwidths; and

calculation circuit means responsive to said digital video signal and to width signals for providing calculated barwidth signals and calculated space width signals.

4,525,736

SELECTIVE COLOR MODIFICATION

Nathaniel I. Korman, Princeton, N.J., assignor to Ventures Research & Development Group, Albuquerque, N. Mex.

Filed Sep. 13, 1982, Ser. No. 417,345

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—28 **14 Claims**

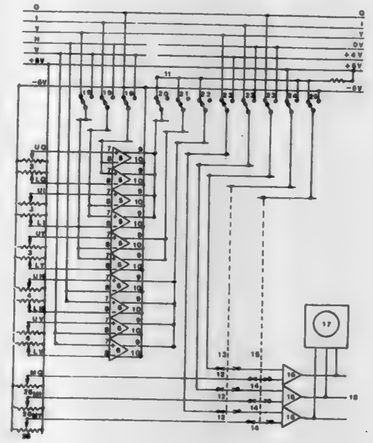
1. A color modification system for color television pictures, said pictures being represented by three color signals corresponding, respectively, to the three attributes of a color, wherein there are:

means for controlling three modification amounts, one for each of the three color signals,

means for controlling upper and lower boundaries for each of the three color signals,

means for finding when the three color signals simultaneously lie within their respective upper and lower boundaries, and

means for adding the three modification amounts to each of the three color signals, respectively, only when the three



color signals are found to lie simultaneously within their respective upper and lower boundaries.

4,525,737

COLOR SOLID STATE IMAGE PICK-UP DEVICE

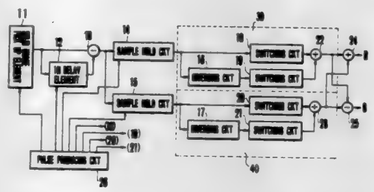
Seiji Hashimoto, Kanagawa; Akira Suga, Tokyo, and Nobuyoshi Tanaka, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 374,883, May 4, 1982, abandoned. This application Jul. 11, 1984, Ser. No. 629,747

Claims priority, application Japan, May 11, 1981, 56-69377; May 11, 1981, 56-69378

Int. Cl.³ H04N *9/07*

U.S. Cl. 358—44 **17 Claims**



1. A color solid state image pick-up device comprising:

(a) a solid state image pick-up arrangement including a plurality of picture elements with photoelectric sensitivities, said picture elements forming rows and columns;

(b) a filter arrangement including plural kinds of color filters each corresponding to the picture element, said plural kinds of color filters having a predetermined repeating pattern in the column and row directions;

(c) correlation process means for obtaining correlative color outputs from a plurality of rows of signals;

(d) inversion control means for inverting the correlative color outputs of the correlative process means at a predetermined period corresponding to the row directional repeating pattern of said color filters for the picture elements.

4,525,738

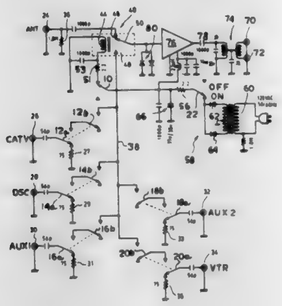
AMPLIFIED VIDEO SIGNAL DISTRIBUTING APPARATUS

Kazuyoshi Imazeki, and Hasashi Wani, both of Tokyo, Japan, assignors to General Research of Electronics, Inc., Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,500

Int. Cl.³ H04N *5/22*

U.S. Cl. 358—181 **6 Claims**



1. An amplified video signal distributing apparatus comprising: a primary input terminal; a plurality of secondary input terminals, means for selecting an input signal appearing at one of said secondary input terminals; at least one output terminal; control signal generating means for generating a primary control signal and a secondary control signal; controllable switchable means responsive to said primary control signal for coupling said primary input terminal to at least one of said output terminals and responsive to said secondary control signal for coupling the input signal selected by said selecting means to said at least one output terminal; wherein said controllable switching means comprises a relay having a first contact coupled to said primary input terminal and a second contact coupled to said selecting means, a movable contactor for coupling one of said first and second contacts in circuit with said at least one output terminal, relay coil means and coil energizing means, said coil means being operative for placing said movable contactor in electrical contact with said first contact when energized and for placing said movable contactor in electrical circuit with said second contact when de-energized; said control signal generating means comprising a switch coupled between said relay coil means and said coil energizing means for selectively energizing and de-energizing said relay coil means; and wherein said selecting means comprises a plurality of switching elements respectively coupled intermediate said plurality of secondary input terminals and said second relay contact for selectively coupling the input signal from any one of said secondary input terminals to said second relay contact; and further including a line terminating impedance element associated with each of said plurality of secondary input terminals; and wherein said plurality of switching elements are mechanically interconnected for coupling only one of said plurality of secondary input terminals to said second relay contact at a time and for coupling each of the remaining ones of said plurality of secondary input terminals to the associated line-terminating impedance element.

4,525,739

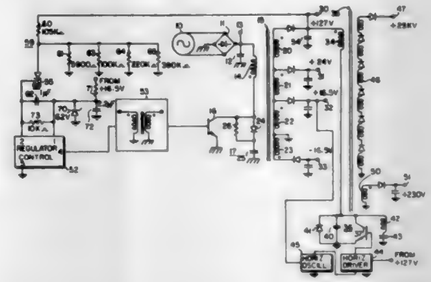
TELEVISION RECEIVER POWER SUPPLY REGULATION RESPONDING TO BEAM CURRENT CHANGES

William V. Fitzgerald, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 451,904, Dec. 21, 1982, abandoned. This application Mar. 30, 1983, Ser. No. 480,514

Int. Cl.³ H04N *3/18*

U.S. Cl. 358—190 **12 Claims**



1. A television receiver incorporating means for providing a plurality of load circuit voltage supplies including means for deriving a high voltage level from one of said load circuit voltage supplies, said high voltage level subject to reduction in response to a receiver operating characteristic, said receiver operating characteristic also loading said one of said load circuit voltage supplies, therefore producing an ac ripple component in the voltage level of said one of said load circuit voltage supplies, said receiver comprising:

a deflection circuit energized by said one of said load circuit voltage supplies for providing an electron beam deflection current, the level of said current determined by the average dc level of the voltage of said one of said load circuit voltage supplies;

control means responsive to a voltage level for controlling the operation of said voltage supply providing means in order to maintain the voltage levels of said voltage supplies substantially constant; and

means coupling said one of said load circuit voltage supplies to said control means comprising detector means for providing a voltage level to said control means representative of the peak level of the voltage of said one of said load circuit voltage supplies, such that said average dc level of the voltage of said one of said load circuit voltage supplies decreases in response to the presence of said ac ripple component to compensate said electron beam deflection current for said reduction in said high voltage level.

4,525,740

TV RECEIVER WITH MULTIPLEXED MICROPROCESSOR KEYBOARD SCANNING AND CHANNEL NUMBER DISPLAY

Arthur N. Borg, Lake Forest, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed May 24, 1982, Ser. No. 381,110

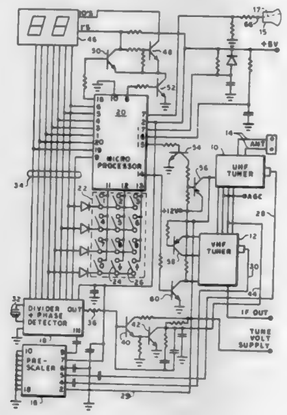
Int. Cl.³ H04N *5/44, 5/50*

U.S. Cl. 358—192.1 **13 Claims**

1. In a television receiver including a keyboard for entering a selected number, a channel number display for presenting a selected channel number, and a video display wherein a video image is generated by the repetitive sequential vertical and horizontal sweep of an electron beam on said video display wherein the vertical sweep of said electron beam is initiated by a vertical pulse occurring within a vertical retrace interval during which said video display is blanked, a method for detecting and displaying a selected channel number comprising:

detecting a vertical pulse;

scanning said keyboard in response to the occurrence of said vertical pulse during said vertical retrace interval for detecting a selected channel number thereon; and



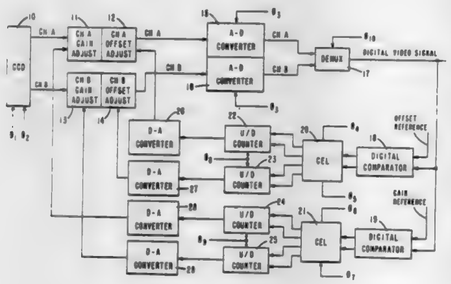
providing said selected channel number detected by the scanning of said keyboard to said channel number display for presenting said selected channel number thereon during the electron beam sweep of said video display.

4,525,741

SELF-ADJUSTING VIDEO CAMERA

Maninderpal S. Chahal, Kitchener, and Roger H. Therrien, Waterloo, both of Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 3, 1982, Ser. No. 438,826
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—212 **18 Claims**



1. A solid state imaging apparatus for receiving a plurality of input analog signals having individual white and black references and generating corresponding digital output signals having gain and offset values equivalent to a preselected gain reference and offset reference, respectively, said apparatus comprising:

a plurality of gain adjust means each receptive of one of said input signals and responsive to a gain adjust signal for adjusting the gain of said signals to said preselected gain reference;

a plurality of offset adjust means each connected to one of said gain adjust means and responsive to an offset adjust signal for adjusting the offset of said signals to said preselected offset reference;

a plurality of analog-to-digital converter means each coupled to said offset adjust means for digitizing said signal;

demultiplexer means coupled to said plurality of analog-to-digital converter means for merging said plurality of digitized signals and generating said digital output signals;

a plurality of gain adjustment feedback loops, one corresponding to each of said input signals, connected between said demultiplexer means and one of said gain adjust means for generating said gain adjust signals; and

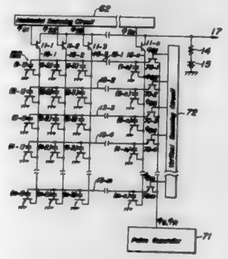
a plurality of offset adjustment feedback loops, one corresponding to each of said input signals, connected between said demultiplexer means and one of said offset adjust means for generating said offset adjust signal.

4,525,742

TWO-DIMENSIONAL SOLID-STATE IMAGE SENSOR DEVICE

Junichi Nishizawa; Takashige Tamamushi, both of Sendai; Fumihiko Ando; Shigeo Yoshikawa, both of Tokyo, and Koji Shimanuki, Kanagawa, all of Japan, assignors to Fuji Photo Film Co. Ltd., Minamiashigara, Japan

Filed Feb. 13, 1984, Ser. No. 579,643
Claims priority, application Japan, Feb. 14, 1983, 58-21688
Int. Cl.³ H01N *3/12*
U.S. Cl. 358—213 **4 Claims**



1. A two-dimensional solid-state image sensor device, comprising:

(a) a plurality of picture cells which are two-dimensionalally arranged in column and row directions;

each picture cell comprising:

(a-1) a static induction transistor having first and second main electrode regions formed of semiconductor regions with one conductivity type which are disposed on opposite sides of a high resistance semiconductor channel region, and a gate region formed of a semiconductor region with the other conductivity type which is adjacent to said channel region to control a current flowing between said first and second main electrode regions, and

(a-2) a transparent electrode disposed via a capacitance on at least a portion of said gate region, in a manner that light is incident through said transparent electrode to said gate region in which the carrier produced by the light excitation is stored to control said current;

(b) a plurality of selection lines, each of which connects the gate regions of said picture cells in each column in common via the capacitances;

(c) means for sequentially selecting said plurality of selection lines;

(d) means for applying a readout pulse voltage to the selected selection lines during one horizontal scanning period and for applying a refresh pulse voltage which is larger than said readout pulse voltage during one horizontal blanking period subsequent to said horizontal scanning period;

(e) a plurality of signal readout lines, each of which connects the first main electrode regions of said picture cells in each row in common;

(f) means for sequentially selecting said plurality of signal readout lines during one horizontal scanning period; and

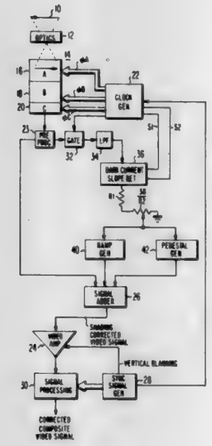
(g) means for applying a readout pulse to said first main electrode regions to obtain a video signal stored in the picture cell selected by the selected selection line.

4,525,743

DARK CURRENT MEASUREMENT AND CONTROL FOR CAMERAS HAVING FIELD-TRANSFER CCD IMAGERS

Robert F. Wood, Jr., Lansdowne Borough, Pa.; John F. Monahan, Marlton, and Peter A. Levine, West Windsor Township, Mercer County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Mar. 28, 1984, Ser. No. 594,400
Int. Cl.³ H04N *5/16*
U.S. Cl. 358—213 **21 Claims**



1. In a television camera including a solid-state imager of the field-transfer type having a first area responsive to scene radiation for developing fields of video samples descriptive of said scene and a second area substantially blocked from said scene radiation for supplying at an output said fields of video samples one line at a time in raster scan order, means for determining the amount of dark current integrated in said second area, comprising:

clock means for supplying clocking signals to said first and second areas for establishing recurrent first intervals during which present fields of video samples descriptive of said scene radiation are developed in said first area while prior developed fields of video samples are line sequentially supplied from the output of said second area, and for establishing recurrent second intervals during which said present fields of video samples are transferred from said first area to said second area and during which remnant signal is supplied at the output of said second area, said remnant signal including a variable pedestal portion and a ramp-like portion representative of dark current integrated in said second area during said recurrent first intervals; and

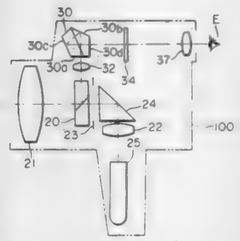
slope responsive means coupled to receive said remnant signal for generating an indication signal having a level responsive to the slope of said ramp-like portion of said remnant signal and substantially unresponsive to the variable pedestal portion of said remnant signal.

4,525,744

VIEWFINDER OPTICAL ARRANGEMENT OF A CAMERA

Soichi Nakamura, Kamakura, and Kunio Konno, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 416,090
Claims priority, application Japan, Sep. 18, 1981, 56-146083
Int. Cl.³ H04N *9/04;* **G03B** *19/14*
U.S. Cl. 358—224 **8 Claims**



1. An optical arrangement of a camera comprising:

(a) a picture-taking lens system;

(b) a beam splitter for extracting a light beam from light passing through said picture-taking lens system; and

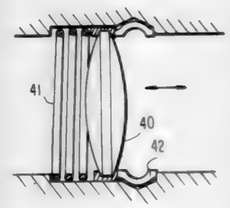
(c) a viewfinder optical system for directing said light beam to a viewfinder eyepiece, said optical system including focus screen means, a master lens for imaging said light beam on said focus screen means, pentaroof prism means disposed between said master lens and said focus screen means for forming an erect image to be viewed, and an eyepiece for observing therethrough an image on said focus screen means, said pentaroof prism means having an entrance surface opposed to said master lens, an exit surface substantially orthogonal to said entrance surface, a first reflecting surface for reflecting the light beam from said entrance surface, and a second reflecting surface for reflecting the light beam from said first reflecting surface toward said exit surface, said second reflecting surface being formed by a roof surface comprising two flat surfaces intersecting each other.

4,525,745

TEMPERATURE COMPENSATION FOR TV PROJECTION LENS AND CRT ASSEMBLY

Sanjar Ghaem-Maghami, and Raymond G. Ehlers, both of Chesapeake, Va., assignors to General Electric Company, Portsmouth, Va.

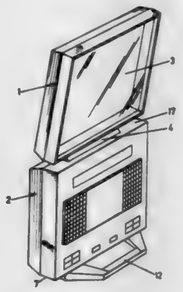
Filed Oct. 22, 1982, Ser. No. 435,838
Int. Cl.³ H04N *5/74;* **G02B** *7/02*
U.S. Cl. 358—237 **10 Claims**



1. In a projection TV system of the type comprising at least one lens and CRT assembly arranged to project an image onto a screen for viewing, the focus of said lens varying with ambient temperature around the lens as the temperature increases from turn-on of the projection TV system to a warmed-up state

of said system, the improvement comprising means connected to said lens and CRT assembly for automatically adjusting the focus of said image on the screen as a function of said ambient temperature.

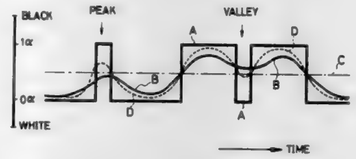
4,525,746
TELEVISION SET
Hans Mangold, Fürth; Hans Eckert, Nuremburg, and Jürgen Schönborn, Fürth-Vach, all of Fed. Rep. of Germany, assignors to Grundig E.M.V., Fürth, Fed. Rep. of Germany
Filed Jan. 18, 1983, Ser. No. 458,918
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202046
Int. Cl.³ H04N *5/64*
U.S. Cl. 358—254 **15 Claims**



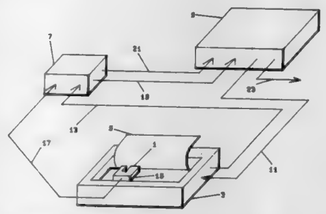
1. A television set comprising:
a video portion including a video screen which is self-contained in a first housing;
a receiver portion which is self-contained in a second housing, said receiver portion capable of receiving and conveying audio and video signals;
detachable connecting means coupled between said video portion and receiver portion so as to permit video or electrical signals to pass from the receiver portion to the video portion and wherein the decoupling of the connecting means from one of said portions allows for the separation of the respective housings;
said connecting means including hinge means capable of allowing the video portion to pivot up and down with respect to the receiver portion; and
said receiver portion includes handle means capable of providing a base on which to support the set while in addition facilitating the carrying of the set.

4,525,747
ANALOG-TO-DIGITAL IMAGE SIGNAL CONVERSION
Toshiyuki Sakai, 158, Nasahara-Motomachi, Takatsuki-shi, Ohsaka-fu; Yuichi Ohta, 2-9, Tennoh-cho, Takatsuki-shi, Ohsaka-fu; Michihiko Minoh, 18, Higashi-Kujo-Aketa-cho, Minami-ku, Kyoto-shi, Kyoto-fu, and Masatoshi Hino, 2-13-2, Kubo, Onomichi-shi, Hiroshima-ken, all of Japan
Filed Aug. 6, 1982, Ser. No. 405,766
Claims priority, application Japan, Aug. 6, 1981, 56-123303; Aug. 6, 1981, 56-123304
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—284 **11 Claims**

1. A system for converting an analog image signal into a digital image signal, said analog image signal being obtained by scanning a two-dimensional image along a horizontal line progressively from top to bottom, said horizontal line including a predetermined number of picture elements in each of which the corresponding part of said analog image signal is converted into a digital value, said system comprising:
analog-to-digital converting means for converting said analog image signal into digital image signal by comparing said analog image signal with a threshold level;
extracting means for extracting peak and valley picture elements from said analog image signal, said picture element being determined as a peak picture element if its concentration is higher than those among all of its adjacent picture elements that are located in predetermined first and second directions with respect to said picture element in question, and said picture element being determined as a valley picture element if its concentration is lower than those among all of its adjacent picture elements that are located in said predetermined first and second directions with respect to said picture element in question; and
control means for controlling said threshold level in accordance with the information as to peak and valley picture elements from said extracting means so that the information as to peak and valley picture elements may be well reflected in said digital image signal.



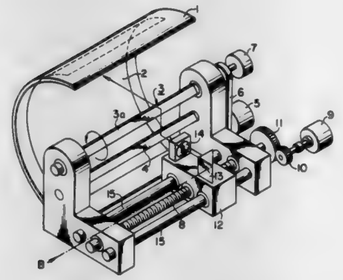
4,525,748
METHOD AND APPARATUS FOR SCANNING AND DIGITIZING OPTICAL IMAGES
Anthony K. Carbone, Rte. 1, Box 250, Bluemont, Va. 22012
Filed Jul. 30, 1982, Ser. No. 403,425
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—286 **30 Claims**



1. In a dot-matrix printer, the improvement comprising:
(a) a sensor for sensing the optical intensity levels of an image-bearing medium inserted on the printer paper feed mechanism, the sensor being mounted to a housing in the printer for continuous linear movement during scanning across the image-bearing medium; and
(b) means responsive to the printer strobe command for sampling the output of the sensor at predetermined intervals.

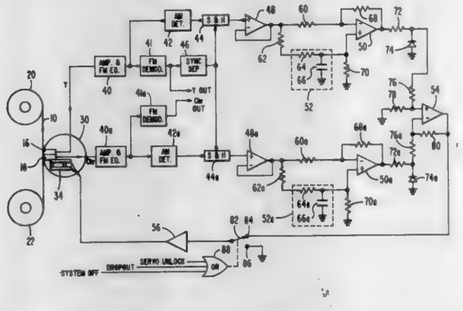
4,525,749
METHOD AND APPARATUS FOR SCANNING AN OBJECT BY USING THE LIGHT
Kiyoshi Maeda, and Masafumi Kawatani, both of Takatsuki, Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan
Continuation of Ser. No. 280,534, Jul. 6, 1981, abandoned. This application Sep. 26, 1983, Ser. No. 535,905
Int. Cl.³ H04N *1/06, 1/20*
U.S. Cl. 358—290 **7 Claims**

1. A method of scanning at least one object comprising the steps of:
mounting an object to be scanned on the cylindrically curved interior surface of a stationary object holder, said surface having an elongated central axis;
rotating an elongated mirror having at least one reflective surface along the central axis of the holder;
disposing an elongated stationary mirror parallel to the rotating mirror having a reflective surface directed to deflect a light beam onto the reflective surface of the rotating mirror;



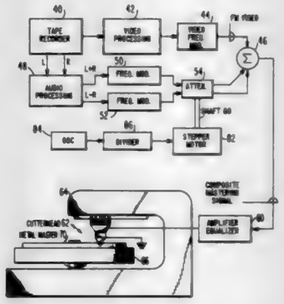
projecting a narrow light beam perpendicular to said axis onto the reflective surface of the stationary mirror which is deflected onto the reflective surface of the rotating mirror and then onto the object in the holder; and
translating the light beam along an axis parallel to the stationary mirror to scan the object.

4,525,750
AUTOMATIC TRACKING SYSTEM FOR MULTITRACK RECORDERS
Kaarlo J. Hamalainen, Marlton, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Sep. 10, 1982, Ser. No. 416,542
Int. Cl.³ G11B *21/10;* **H04N** *5/782, 9/00*
U.S. Cl. 358—327 **5 Claims**



4. Television tape playback apparatus for playing back a first FM-modulated television video signal component from a first elongated prerecorded track of a magnetic tape and for playing back at least a second FM-modulated television video signal component representing a different type of information than said first color television video signal component from a second elongated track prerecorded parallel to said first track, said apparatus comprising:
first and second transducing means adapted for scanning said first and second tracks, respectively, at the same time;
transducer mounting means mechanically coupled to said first and second transducing means for moving said first and second transducing means as a unit at the same time in a direction lateral to the direction of said elongated first and second tracks under the control of a control signal;
first and second FM demodulation means coupled to said first and second transducing means, respectively, for recovering said first and second signal components, respectively, at the same time, said first and second signal components being subject to an undesirable degradation if said first and second transducing means mistrack;
first and second AM detection means coupled to said first and second transducing means, respectively, for detecting the amplitudes of said first and second signal components, respectively, to form first and second detected amplitude signals, respectively, at the same time, at least one of said first and second detected amplitude signals being reduced in response to a first direction of mistracking of said first and second transducing means; and
control means coupled to said first and second AM detection means and to said transducer mounting means for processing said concurrently produced first and second detected amplitude signals for generating a control signal for controlling said movement to position said first and second transducing means over said first and second tracks, respectively, in a feedback manner whereby said undesirable degradation due to mistracking is reduced.

4,525,751
DISC RECORD WITH TAPERED GROOVE
Edward J. Freeman; John E. Economou; John G. Pecorari; Gunter John; Jerome B. Halter; Jack E. James; Richard M. Castle, all of Indianapolis, Ind., and Richard C. Palmer, Blawenburg, N.J., assignors to RCA Corporation, Princeton, N.J.
Filed Aug. 27, 1982, Ser. No. 412,185
Int. Cl.³ H04N *5/92;* **G11B** *3/00*
U.S. Cl. 358—342 **40 Claims**



1. A method for producing a video disc record comprising the steps of:
(a) providing respective sound and picture signals, each modulated on a respective FM carrier wave;
(b) combining said FM carrier waves to provide a composite mastering signal;
(c) forming a spiral groove in a master substrate in accordance with said composite mastering signal; and
(d) varying the amplitude of said sound FM carrier wave without varying the amplitude of said picture FM carrier wave while forming said groove in said substrate.

4,525,752
APPARATUS FOR RECORDING AND REPRODUCING A DIGITAL SIGNAL
Nobuhiko Watanabe, and Masato Tanaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Feb. 10, 1983, Ser. No. 465,461
Claims priority, application Japan, Feb. 15, 1982, 57-22288
Int. Cl.³ G11B *27/02, 5/00*
U.S. Cl. 360—13 **15 Claims**

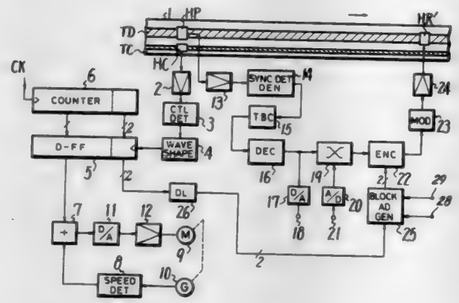
1. Apparatus for recording and reproducing a digital signal, said digital signal being in the form of successive data blocks, each data block including at least plural data words and a block address circulating with a predetermined phase relation to a

reference signal and recorded on a recording medium on which is recorded a control signal, said apparatus being characterized by:

means for reproducing said data blocks including said data words and block addresses from said recording medium;

time base correcting means for correcting a time base error contained in a reproduced data word fed thereto from said means for reproducing said data blocks;

means for reproducing said control signal from said recording medium;



means for generating a reference phase signal having a frequency that is an integral multiple of more than two times the frequency of said control signal;

sampling means for sampling said generated reference phase signal by said reproduced control signal so as to generate a phase compared output signal and a lock mode signal to determine block addresses; and

servo means for controlling the transport speed of said recording medium in response to said phase compared output signal.

4,525,753

CIRCUIT ARRANGEMENT AND METHOD FOR MAGNETIC RECORDING/REPRODUCING

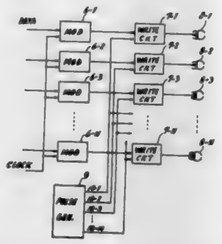
Yasuharu Shimeki, Suita; Misao Kato, Katano; Hiroshi Matsushima, and Toshiro Ishikawa, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Kadoma, Japan

Filed May 26, 1983, Ser. No. 498,515

Claims priority, application Japan, May 27, 1982, 57-90740

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—45 **14 Claims**



1. A circuit arrangement for use with a magnetic recording apparatus for writing digital data on a plurality of tracks on a magnetic recording medium by means of a multi-track head, comprising:

(a) a plurality of modulators each responsive to a signal to be recorded on a single track for producing a modulated signal;

(b) a pulse generator for producing M pulse trains having different phases from another so that pulses of said M pulse trains do not coincide, wherein M is a positive integer other than one; and

(c) a plurality of writing circuits each responsive to each of said modulated signals from said modulators and to each of said pulse trains from said pulse generator, said writing circuits producing respectively writing currents fed to heads of said multi-track head, said writing currents being fed to the heads such that writing currents having the same phase are fed to a plurality of said heads belonging to the same group where said heads of said multi-track head are electrically divided into M groups, said heads of the same group being positioned so that they are not adjacent to each other.

4,525,754

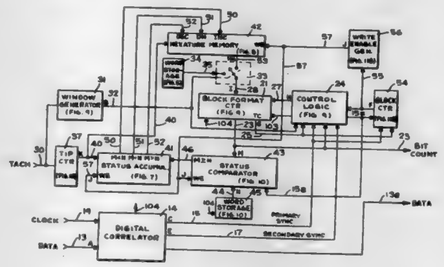
SYSTEM AND METHOD FOR SYNCHRONIZATION OF ROTARY HEAD MAGNETIC RECORDING/REPRODUCING DEVICES

Kirk H. Handley, Menlo Park, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 6, 1983, Ser. No. 483,005

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—51 **15 Claims**



1. A system for providing synchronization of a digital signal recorded on and subsequently reproduced from a magnetic medium having recording tracks of a known length, wherein a synchronization signal is recorded at the beginning of each track and wherein a primary sync signal is provided in response to each reproduced synchronization signal, comprising:

a first means coupled to count the number of data bits corresponding to the length of each said track in synchronization with said reproduced digital signal;

a second means coupled to synchronize said counting means with said primary sync signal;

a third means coupled to detect a timing error between consecutive tracks as a difference signal between a normal occurrence of said primary sync signal with reference to the end of an immediately preceding track and an actual occurrence of said primary sync signal and to responsively provide, updata and store a correction signal; and

a fourth means coupled to apply said stored correction signal to offset said counting means in the absence of said primary sync signal to reduce said timing error.

4,525,755

APPARATUS FOR RECORDING AND PLAYING BACK MAGNETIC TAPE CASSETTES AND THE LIKE

Thomas Meek, Hull, England, assignor to Norwood Industries, Inc., Salt Lake City, Utah

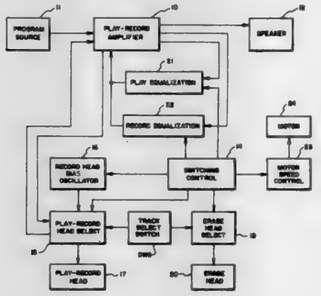
Filed Jul. 19, 1979, Ser. No. 59,274

Int. Cl.³ G11B *15/12, 5/45, 15/46*

U.S. Cl. 360—63 **10 Claims**

1. A record and playback apparatus for use with magnetic tape cassettes or the like, comprising a multi-gap record and playback head, each gap having associated gap coils; a multi-gap erase head, each gap having associated gap coils, the gas of said erase head corresponding to the gaps of the record and

playback head; power supply means for supplying power to the apparatus; a tape transport mechanism for passing the magnetic tape from a cassette or the like across said heads at a selected one of a plurality of speeds, said transport mechanism including a drive motor adapted to operate at a selected one of a plurality of speeds and having two terminals for the supply of power thereto; motor speed control circuitry including a first conductive path, one end of which is electrically connected to one terminal of said motor, and the other end of which is electrically connected one terminal of to the power supply; a second conductive path, one end of which is electrically connected to the other terminal of said motor and the other end of which is electrically connected to the other terminal of the power supply; voltage dropping means electrically connected in one of the conductive paths to apply substantially a first value of voltage to said motor to cause said motor to operate at a selected first desired speed; means for bypassing the voltage dropping means to apply substantially a second value of voltage to said motor to cause said motor to operate at a selected second desired speed, back electromotive force (emf) sensing means inserted between the ends of one of said conductive paths, said back emf sensing means adapted to provide an emf signal as a function of the magnitude of a back emf voltage generated by said motor, said emf voltage having a magnitude proportional to the angular speed of said motor; current control means electrically connected between the ends of one of said conductive paths for controlling the amount of current that flows through the motor; feedback means responsive to said emf signal for directing said current control means to control the amount of current that flows through the motor, said current being maintained at a level defined by a speed reference signal, and reference source means for generating a speed reference signal for each of the desired motor speeds, said speed reference signal being utilized by said feedback means to define the appropriate emf level needed to maintain a desired motor speed; a record and playback amplifier; speaker means; program source means; means for operating the apparatus to play back material previously recorded on said cassette's magnetic tape or to record material on said cassette's magnetic tape; means for selectively electrically connecting a single record and playback gap coil to the record and playback amplifier or for electrically connecting all or a selected number of the multiple record and playback head gap coils simultaneously to the record and playback amplifier, so that play signals are transmitted from the coil or coils to the amplifier or record signals are transmitted from the amplifier to the coil or coils; and means for selectively operating a single erase gap coil or all or a selected number of erase gap coils simultaneously when the apparatus is operated to record, said selected erase gap coil or coils corresponding to the selected record and playback gap coil or coils.



4,525,756

HEAD SHIFT MECHANISM

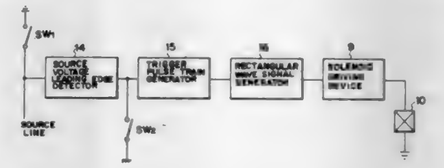
Kazuki Takai; Mitsuhiro Hakumoto, and Yasuo Yamada, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Japan

Filed Jul. 22, 1982, Ser. No. 400,721

Claims priority, application Japan, Jul. 24, 1981, 56-109352[U]; Jul. 25, 1981, 56-110473[U]; Jul. 25, 1981, 56-110474[U]

Int. Cl.³ G11B *21/02*

U.S. Cl. 360—75 **3 Claims**



3. A head shift mechanism in a tape player which comprises:

a solenoid means which moves a head provided in said tape player;

solenoid driving signal generating means which supplies said solenoid means with a driving signal to drive it;

source voltage detecting means which detects a source voltage to the tape player and generates detection signals to actuate said solenoid driving signal generating means; and,

head shift interrupting means which interrupts a head shifting motion of said solenoid means when said head reaches a predetermined position,

said head shift interrupting means including a head position detecting switch provided between said source voltage detecting means and said solenoid driving signal generating means and adapted to be turned off when the head is not located at said predetermined position so as to interrupt said driving signal to said solenoid driving signal generating means therethrough.

4,525,757

ROTARY HEAD ASSEMBLY

Kiyokazu Imanishi, Higashiosaka; Takashi Ichiyanagi, Hirakata; Yasuo Sakurai, Neyagawa; Hirouki Naka, Osaka, and Koji Nakagawa, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

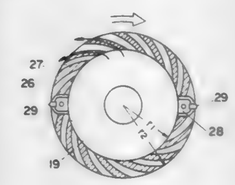
PCT No. PCT/JP83/00214, § 371 Date Mar. 6, 1984, § 102(e) Date Mar. 6, 1984, PCT Pub. No. WO84/00438, PCT Pub. Date Feb. 2, 1984

PCT Filed Jul. 5, 1983, Ser. No. 598,548

Claims priority, application Japan, Jul. 6, 1982, 57-117168; Apr. 18, 1983, 58-68700

Int. Cl.³ G11B *15/60, 5/008, 15/64;* **B65N** *17/32*

U.S. Cl. 360—130.24 **1 Claim**



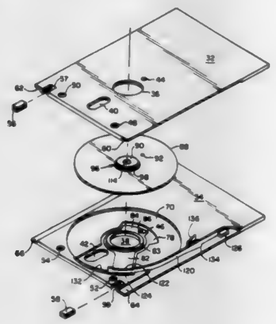
1. A rotary head assembly consisting of a fixed cylinder having a cylindrical part and a rotary cylinder, having a cylindrical part with a diameter approximately equal to that of the cylindrical part of this fixed cylinder, which rotates relatively with respect to said fixed cylinder in close contact with said fixed cylinder and supports the tape together with said fixed

cylinder, wherein pump-out type spiral grooves are provided on either plane of the confronting end faces of said rotary cylinder and fixed cylinder.

4,525,758
CARTRIDGE

Koichiro Nakagawa, Takarazuka; Satoshi Suyama, Neyagawa; Masahiro Yanagi, Settsu, and Yasutaka Nakajima, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 16, 1982, Ser. No. 389,152
Claims priority, application Japan, Jun. 19, 1981, 56-95870; Jun. 19, 1981, 56-91146; Jun. 22, 1981, 56-97113; Jun. 22, 1981, 56-97114; Dec. 21, 1981, 56-207677
Int. Cl.³ G11B *23/02*
U.S. Cl. 360—133 **21 Claims**



1. A cartridge to be inserted into a drive unit, said cartridge comprising:

a casing means having opposite sides and side edges for containing therein a rotatable recording medium disc to be drived by the drive unit, said casing means having one side edge open along more than 50% of its length, said recording medium disc having two opposite sides for recording information and also having a hub fixed therewith at its center;

a center window means, provided at opposite sides of the casing means, for allowing the hub to be inserted therethrough;

head window means, provided at opposite sides of the casing means for allowing a reading head to access information recorded on the two opposite sides of the recording medium disc;

shutter means, provided around the center window means, for normally covering the head window means, said shutter means being rotatable about the center window means in order to uncover the head window means when the cartridge is inserted into the drive unit;

an elongated flexible band means, provided along an outer side of the casing means and connected at one end to the shutter means, for rotating the shutter means, said flexible band means having a portion covering more than 50% of its length exposed outside at the one open side edge of the casing means so that the shutter means are automatically and indirectly rotated by an external force applied to the exposed portion of the flexible band means when the cartridge is inserted into the drive unit; and

means, provided on the casing means, for defining a moving path of the flexible band means along the one open side edge of the casing means;

whereby damage to and malfunctioning of the disc is prevented, when the shutter means covers the head window means.

4,525,759
ALUMINUM STORAGE DISC

Silvester P. Valayil, Shrewsbury, and Vita Aronson, Worcester, both of Mass., assignors to Shipley Company Inc., Newton, Mass.

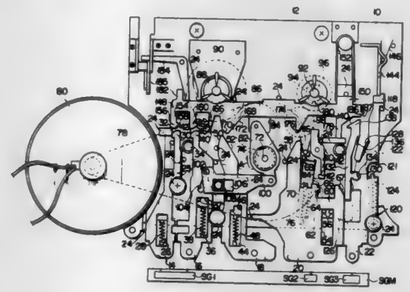
Filed Apr. 2, 1984, Ser. No. 595,927
Int. Cl.³ G11B *5/82*
U.S. Cl. 360—135 **7 Claims**

1. A metal plated aluminum storage disc comprising an aluminum storage disc substrate, an electrically anodized oxide layer over at least a surface of said aluminum storage disc substrate, said anodized oxide layer having cracks propogating throughout its surface which cracks define discrete oxide islands separated from each other by said cracks, and a layer of electrolytically deposited ferromagnetic metal over said discrete oxide islands, said ferromagnetic metal being columnar in structure conforming in size and shape to said oxide islands and extending upwards from said islands.

4,525,760
OPERATING LEVER DEVICE OF A MAGNETIC RECORDING TAPE DRIVING APPARATUS

Shigeru Nemoto; Sinichi Saitou; Goro Kitajima, and Hazime Osada, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 25, 1982, Ser. No. 381,959
Claims priority, application Japan, May 28, 1981, 56-81719
Int. Cl.³ G11B *17/00*
U.S. Cl. 360—137 **9 Claims**



1. In an operating lever device for a magnetic recording tape driving apparatus which comprises a first base plate, a second base plate disposed parallel to the first base plate at a given distance therefrom, a plurality of operating levers located in the space between the first and the second base plates so as to be able to move slidably along the first and second base plates each between first and second positions, a pair of reel shafts protruded from the second base plate to the space outside that between the first and second base plates, and rotatory force generating means for selectively supplying rotatory force to the reel shafts, wherein a tape cassette is set on the second base plate,

one of various operating modes is set when one of the operating levers is located at the second positions, and each one of the operating levers has one end portion which is located outside the space between said first and second base plates when said operating levers slidably move between the first and second positions,

said operating lever device comprising:

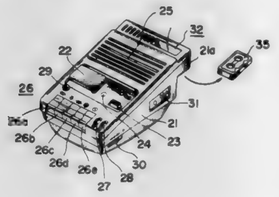
a moving member disposed between said first and second base plates so as to be able to move along the first and second base plates between first and second positions, and having one end portion which is located outside the space between said first and second base plates so as not to face said tape cassette set on the second base plate when said moving member slidably moves between the first and second positions thereof; and

a coupling member located between one plane including the surface of said operating levers which faces said second base plate and the other plane including the surface of said second base plate which faces said tape cassette, the coupling member extending from the one end portion of the moving member to one of the operating levers, crossing at least one of the operating levers and coupled with said one end portion of said one operating lever and said one end portion of said moving member so as to shift said moving member from said first position to said second position thereof by the sliding movement of said one operating lever from said first position to said second position thereof, and to shift said moving member from said second position to said first position thereof by the sliding movement of said one operating lever from said second position to said first position thereof.

4,525,761
TRANSCRIBER WITH ERASING DEVICE

Minoru Kobayashi, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Continuation of Ser. No. 316,515, Oct. 29, 1981, abandoned, which is a continuation of Ser. No. 154,490, May 29, 1980, abandoned. This application Apr. 17, 1984, Ser. No. 600,607
Claims priority, application Japan, May 30, 1979, 54-72658
Int. Cl.³ G11B *5/12*
U.S. Cl. 360—137 **6 Claims**

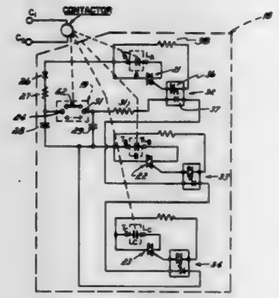


1. In a transcriber having a main body and means for transcribing information recorded on a cassette tape, the improvement comprising a through-hole provided in a part of the main body of the transcriber and an erasing device for magnetic tape stored in a cassette which has a magnet to generate magnetic flux in a prescribed direction to the through-hole, said through-hole being made sufficiently large to permit a tape cassette to pass there-through, and wherein said magnet is surrounded by magnetic material for shielding purposes.

4,525,762
ARC SUPPRESSION DEVICE AND METHOD

Claude R. Norris, 9039 Normandy La., Dayton, Ohio 45459

Filed Oct. 7, 1983, Ser. No. 539,920
Int. Cl.³ H01H *9/30*
U.S. Cl. 361—13 **15 Claims**



1. An arc suppression device, for an electrical power switching device having at least one pair of contacts and an element movable between a first position in which each said contact pair is open and a second position in which each said contact pair is closed, comprising:

a switch having at least two states;

switch actuation means, couplable to the movable element of the switching device, for changing the state of the switch as the movable element moves from one of its said positions to the other;

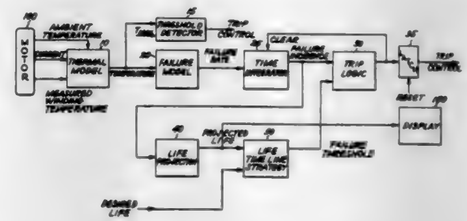
at least one gate controlled thyristor couplable across each pair of contacts of the electrical power switching device; and

electronic circuit means, coupled to the switch and responsive to a change in the state of the switch, for gating on each said thyristor for an interval of time independent of a change of state of said mechanical switch.

4,525,763
APPARATUS AND METHOD TO PROTECT MOTORS AND TO PROTECT MOTOR LIFE

Robert M. Hardy, and William J. Premerlani, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 30, 1983, Ser. No. 556,744
Int. Cl.³ H02H *7/08*
U.S. Cl. 361—24 **19 Claims**



1. Apparatus for predicting the remaining useful life of a motor comprising:

(a) model means coupled to said motor for monitoring temperature of the windings of the motor and for generating a failure rate for said motor in response to temperature of the windings thereof;

(b) integrating means coupled to said model means for integrating the failure rate to produce a failure incidence for said motor; and

(c) life projection means coupled to said integrating means for predicting the remaining useful life of said motor.

4,525,764
SYSTEM FOR DISCONNECTING AN ELECTRICAL POWER SOURCE FROM A LOAD

Charles H. Titus, 323 Echo Valley La., Newtown Square, Pa. 19073

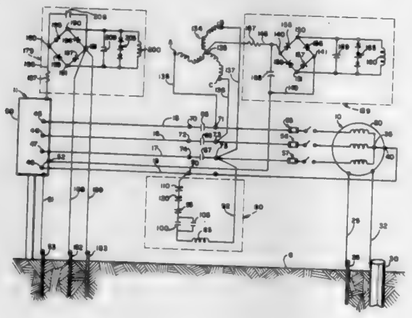
Filed Jun. 10, 1982, Ser. No. 387,182
Int. Cl.³ H02H *3/16*
U.S. Cl. 361—42 **33 Claims**

1. A system for electrically disconnecting a power source from a load when a voltage potential in excess of a predetermined threshold is detected between a test point and a selected voltage reference point, comprising:

(a) switch means electrically connected intermediate the power source and the load for switchably connecting and disconnecting the power source with the load, said switch means including at least one main contact connected between the power source and the load, the main contact being actuatable between a closed position to connect the power source with the load and an open position to disconnect the power source from the load;

(b) voltage-reference means for providing reference voltage at the selected voltage reference point;

(c) voltage-detection means electrically connected with the test point and the selected voltage reference point for detecting when the voltage potential between the test point and the selected voltage reference point exceeds the predetermined threshold, said voltage-detection means including a first relay coil and a rectifier bridge having a.c. input terminals connected with the voltage reference point and the voltage test point and d.c. output terminals connected with the first relay coil to produce a change in energy state of the first relay coil when a voltage potential in excess of the predetermined threshold is detected between the test point and the reference point; and



(d) switch-actuator means for actuating the switch means to disconnect the power source from the load when a voltage potential in excess of the predetermined threshold is detected by the voltage-detection means, the switch-actuator means including a first relay contact coupled with the first relay coil to form a first relay, the first relay contact being actuatable between an open and a closed position in response to the change in energy state of the first relay coil, and a second contact-actuating coil coupled with the main contact to form a second relay, the second contact-actuating coil of the second relay being connected in series with said first relay contact to produce a change in energy state in the second contact-actuating coil to switch the main contact between the closed and open positions in response to actuation of the first relay contact between open and closed positions.

4,525,765

PROTECTIVE CIRCUIT FOR A SWITCHING TRANSISTOR

Antonio Brajder, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 6, 1983, Ser. No. 482,471

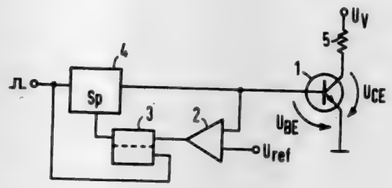
Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3216833

The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.

Int. Cl.³ H02H *3/26*

U.S. Cl. 361—88 **5 Claims**

1. In a protective circuit for a switching transistor having switching-off means for switching off the driving pulses of the switching transistor, wherein the switching-off means is activated by comparator means which compares a voltage from the switching transistor at a first input with a reference voltage at a reference input and which switches off the driving pulses if the switching transistor is overloaded, the improvement comprising said first input of said comparator means being coupled to the base of the switching transistor and comparing the base-emitter voltage of the switching transistor with the reference voltage, said comparator means generating a signal at an output thereof for activating the switching-off means when the base-emitter voltage is outside a normal operating range determined by said reference voltage, memory means coupled between the output of said comparator means and a blocking input of said switching-off means for maintaining said



switching-off means in a state whereby said switching transistor is switched off when said switching transistor becomes overloaded, said memory means including a reset input for deactivating said switching-off means, said reset input activated by said driving pulses.

4,525,766

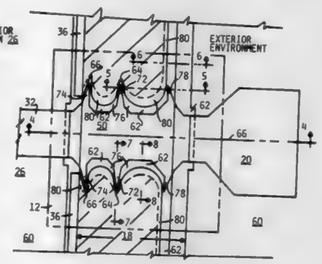
METHOD AND APPARATUS FOR FORMING HERMETICALLY SEALED ELECTRICAL FEEDTHROUGH CONDUCTORS

Kurt E. Petersen, San Jose, Calif., assignor to Transensory Devices, Inc., Fremont, Calif.

Filed Jan. 25, 1984, Ser. No. 573,508

Int. Cl.³ H01G *7/00;* **H05K** *5/02;* **H04N** *9/09*

U.S. Cl. 361—283 **21 Claims**



11. An apparatus for providing a hermetically sealed feedthrough conductor across the planar periphery between a first hermetically sealed region of a semiconductor substrate and a second region of said semiconductor substrate, wherein said first region is hermetically sealed by means of an insulator element electrostatically bonded to said planar periphery, comprising:

a planar insulator layer overlying said semiconductor substrate along the predetermined path of said feedthrough conductor across said periphery and having at least one planar projection extending out on each side of said path and shaped so as to come to a point;

a metal feedthrough conductor layer overlying said planar insulator layer having planar projections corresponding in position to said insulator layer projections such that said insulator layer is substantially covered by said feedthrough conductor layer except for a small border along the perimeter of said metal feedthrough conductor layer; and

said electrostatic bond formed at said planar periphery between said first and second regions creating a hermetic seal in the region of said feedthrough conductor layer by compression bonding of said insulator element to said projections of said insulator layer and said feedthrough conductor layer.

4,525,767

CERAMIC CAPACITOR AND DIELECTRIC COMPOSITIONS

John H. Alexander, Bishop's Stortford, England, assignor to Standard Telephones and Cables plc, London, England

Filed Jun. 11, 1984, Ser. No. 619,391

Claims priority, application United Kingdom, Jul. 13, 1983, 8318901

Int. Cl.³ H01G *4/10, 4/12*

U.S. Cl. 361—321 **9 Claims**

7. A ceramic capacitor comprising a ceramic body formed from a fired dielectric composition comprising barium titanate ($BaTiO_3$), niobium pentoxide (Nb_2O_5) and gadolinium sesquioxide (Gd_2O_3), said ceramic body having opposed surfaces, a metal coating on each said surface, a connection terminal connected to each metal coating, and an encapsulating body of insulating material encapsulating the ceramic body.

4,525,768

CERAMIC CAPACITORS AND DIELECTRIC COMPOSITIONS

Jennifer M. Wheeler, Loughton, England, assignor to Standard Telephones and Cables, PLC, London, England

Filed Feb. 28, 1984, Ser. No. 584,337

Int. Cl.³ H01G *4/12;* **C04B** *35/46;* **H01G** *7/00*

U.S. Cl. 361—321 **24 Claims**

12. A ceramic capacitor including dielectric comprising non-stoichiometric lead magnesium niobate, non-stoichiometric lead iron niobate and one or more oxide additives.

4,525,769

EQUIPMENT BOX FOR A POWER CONVERTER ARRANGEMENT

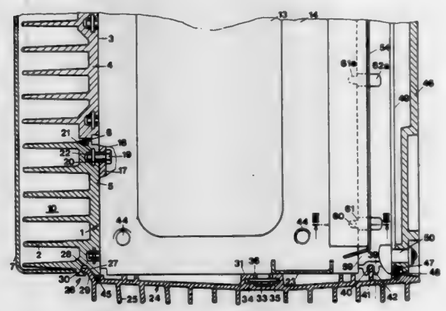
Kjeld Lehmann, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Mar. 16, 1984, Ser. No. 590,445

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1983, 3312810

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—386 **11 Claims**



1. An equipment box for a power converter unit, comprising, a rear wall, side walls and a front wall, said rear wall having vertical cooling ribs on the outside thereof and a planar mounting surface on the inside thereof, a horizontally extending base member and a horizontally extending top member mounted by said rear wall, said base and top members fixing the positions of said side walls, a carrier member hingedly mounted by said base and top members for pivotal movement about a vertical axis between the front and rear walls, plate means removably mounting components on said carrier member in spaced relationship thereto, said side walls and rear wall having plug hinge means pivotally connecting said side walls to said rear wall, said hinge means, in each side wall including a vertical groove formed in one of the respective side wall and the rear wall and a rib formed on the other of the side wall and rear wall that is plugged into the groove and pivoted to abut against at least one of the base and top members.

4,525,770

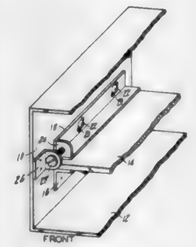
CLAMPING CIRCUIT BOARD GUIDES

Frederick A. Perretta, Trumbull, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 2, 1984, Ser. No. 595,809

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—399 **5 Claims**



4. A circuit board guide receiving a circuit board through the front of a chassis and extending along a side thereof, characterized by:

an L-shaped rail fixedly attached longitudinally along the side of the chassis;

an L-shaped rail movably attached longitudinally along the side of the chassis adjacent to the fixed rail with a space therebetween for receiving an edge of the circuit board;

at least one oblique slot in the side of the movable rail in contact with the side of the chassis;

at least one pin attached to the side of the chassis and extending just through the at least one oblique slot and having a head slightly larger than the slot to movably attach the movable rail to the side of the chassis;

a threaded end-plate on the movable rail; and

a chassis-mounted screw engaging said end-plate for applying longitudinal force to the movable rail, wherein interaction of the at least one pin and the at least one slot causes the applied longitudinal force to be translated into a normal force for clamping the board between the rails.

4,525,771

CIRCUIT BOARD MODULE MOUNTING UNIT

Urs Hänseler, Pfaffhausen; Urs Meier, Bassersdorf, and Franz Muther, Zürich, all of Switzerland, assignors to Contraves AG, Zurich, Switzerland

Filed Sep. 19, 1983, Ser. No. 533,662

Claims priority, application Switzerland, Sep. 30, 1982, 5777/82

Int. Cl.³ H05K *7/18*

U.S. Cl. 361—413 **9 Claims**

1. A circuit board module mounting unit, comprising:

a rack containing two side walls, two front transverse support members and at least two rear transverse support members;

at least one pair of guide rails latchably attached to said transverse support members and defining at least one guide unit;

at least one connector member cooperating with at least one of said rear transverse support members;

at least one module support having at least one connector in electrical connection with said connector member;

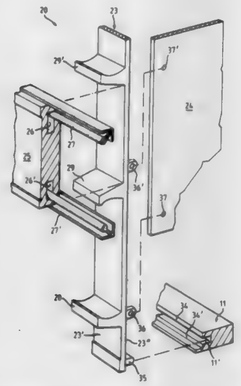
each of said guide rails having a rear end;

securing means including plug means provided on the rear end of at least one of said guide rails and securing said connector member to said at least one rear transverse support member;

at least one of said front transverse support members being provided with groove means;

said module support comprising at least one support element having an upper end and lower end;

a nose member provided on at least one of said ends of the support element, which nose member engages with said



groove means of said at least one front transverse support member for the stabilization of the modular assembly; and

a securing member having at least two predominantly longitudinal elastic shock-absorbing profiled sectional members mounted in mutually laterally spaced relationship on a front surface of the support element and securing each said module support in the rack.

4,525,772

VEHICLE LAMP ASSEMBLY

Anthony F. Peck, Kenilworth, England, assignor to Britax Vega Limited, England

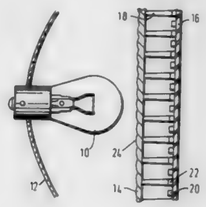
Filed Jun. 1, 1984, Ser. No. 616,390

Claims priority, application United Kingdom, Jun. 7, 1983, 8315518

Int. Cl.³ F21V *11/06*

U.S. Cl. 362—290

9 Claims



1. A vehicle lamp assembly comprising a light source, a light transmitting member, baffle elements of light absorbing material extending perpendicular to the surface of the light transmitting member towards the light source, lens means located between the baffle elements and the light source and arranged to concentrate light from the light source between adjacent baffle elements, the ends of the baffle elements abutting the light transmitting member being of a non-neutral color chosen in accordance with the required appearance of the lamp assembly when the light source is not illuminated and the rest of the baffle elements are black.

4,525,773

LIGHT FIXTURE

Kurt Hesse, Nymphenburger Str. 4, D-1000 Berlin, and Hartmut Engel, Schloss; Heutingsheim, 7141 Freiberg am Neckar, both of Fed. Rep. of Germany

PCT No. PCT/DE83/00073, § 371 Date Dec. 21, 1983, § 102(e) Date Dec. 21, 1983, PCT Pub. No. WO83/03885, PCT Pub. Date Nov. 10, 1983

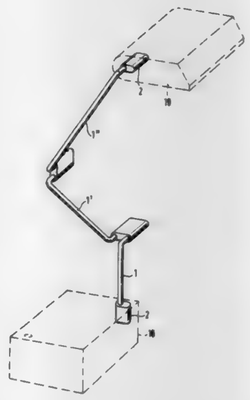
PCT Filed Apr. 20, 1983, Ser. No. 566,136

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214651

Int. Cl.³ F21S *1/12*

U.S. Cl. 362—413

6 Claims



1. Light fixture with a lamp fixture carrier, a tube which surrounds at least one current carrier, and a carrier-piece for the tube, characterized by the fact that said tube can be pushed together with said carrier piece and the lamp fixture carrier, the tube and the receptacles for the ends of the tubes, when pushed together, having connecting fixed contact pins or contact sockets, centrally attached to the corresponding parts, which have contact surfaces that are arranged concentrically to each other and to the central axis of the tube, whereby the connected parts are pivotable relative to the tube around the central axis of the corresponding tube end, a holding groove being provided in the inside tube end, into which a holding spring in a corresponding counter piece locks.

4,525,774

REGULATED AC-DC CONVERTER HAVING SATURATION INDUCTANCE IN RESONANT CIRCUIT

Jirou Kino, Seto, and Toshirou Uemura, Nagoya, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

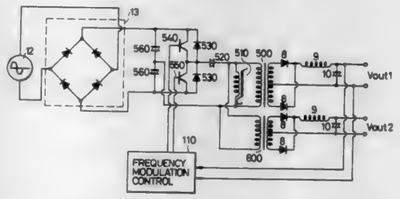
Filed Nov. 3, 1982, Ser. No. 438,948

Claims priority, application Japan, Nov. 24, 1981, 56-188132

Int. Cl.³ H02P *13/22*

U.S. Cl. 363—17

5 Claims



1. A switching power source device in which a DC voltage obtained by rectifying an AC voltage is converted into a high-frequency AC voltage which is subjected to voltage conversion to output at least one AC voltage which is then rectified, comprising:

first rectifying circuit means for rectifying an AC voltage into a DC voltage;

switching means for converting the DC voltage obtained by rectifying the AC voltage in said first rectifying circuit means into a high-frequency AC voltage;

transformer means for subjecting the high-frequency AC voltage obtained by a conversion operation of said switching means to voltage conversion to output at least one AC voltage;

first circuit means for applying the high-frequency AC voltage obtained by the conversion operation of said switching means to said transformer means, said first circuit means including a capacitor connected in series between said transformer means and said switching means;

second rectifying circuit means for rectifying the at least one AC voltage obtained by the voltage conversion operation of said transformer means to output at least one DC voltage; and

frequency modulation control circuit means for subjecting said switching means to frequency modulation control so that at least one DC voltage output from said second rectifying circuit means attains a predetermined level;

wherein said transformer means includes a first non-saturable transformer for receiving the high-frequency AC voltage obtained by the conversion operation of said switching means, said capacitor being connected in series between said first non-saturable transformer and said switching means, said first circuit means including a saturation inductance connected in parallel with said first non-saturable transformer and said switching means and forming a resonant circuit with said capacitor, said second rectifying means rectifying the AC voltage output from said first non-saturable transformer.

4,525,775

ADAPTIVE CONTROL SYSTEM

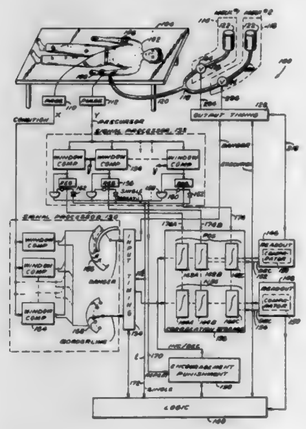
Grigory Eydelman, 141 St. Paul's Pl., West Hempstead, N.Y. 11552

Filed Nov. 1, 1982, Ser. No. 438,381

Int. Cl.³ G06F *15/42*

U.S. Cl. 364—148

26 Claims



1. An adaptive control system providing an output signal in response to the reception, during a measurement interval, of a first input signal and a second input signal, the system comprising:

means for quantizing said first and said second input signals, each of said input signals being quantized into a plurality of ranges of values;

first and second sets of integrators corresponding to first and second ranges of values of said first input signal, individual ones of said integrators in each of said sets corresponding to respective ranges of values of said second input signal;

means for selecting one of said integrators corresponding to the joint occurrence, within said measurement interval, of a specific value range of said first input signal and a specific value range of said second input signal;

means for incrementing the amount of data stored in said one integrator upon said joint occurrence in the ranges of values of said first and said second input signals; and

means for generating said output signal, said generating means being activated by said one integrator in response to the data stored therein.

4,525,776

ARITHMETIC LOGIC UNIT ARRANGED FOR MANIPULATING BITS

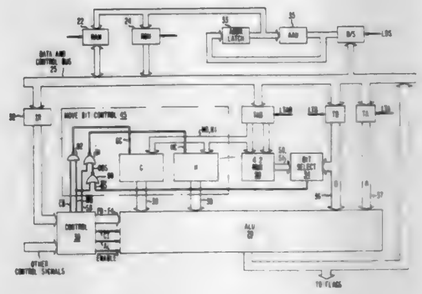
Ismail I. Eldumiati, Holmdel, and Michael K. Maul, Whitehouse Station, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 2, 1980, Ser. No. 155,317

Int. Cl.³ G06F *7/00, 15/20*

U.S. Cl. 364—200

8 Claims



1. A digital computer comprising

an instruction register;

a source of data;

an arithmetic logic unit;

a destination;

means for processing data from the source through the arithmetic logic unit and storing a result of the processing in the destination in response to instructions residing sequentially in the instruction register, each instruction requiring a single instruction interval for fetching data from a selected source in a store to an input of the arithmetic logic unit, processing the fetched data in the arithmetic logic unit, and storing the result of processing the fetched data into a selected destination in the store; and

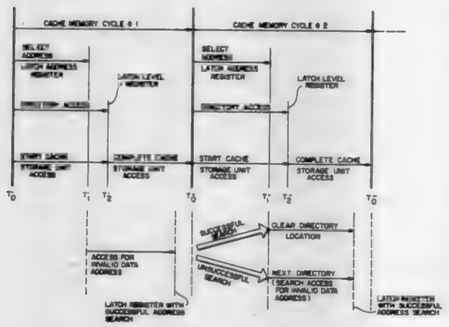
means interconnecting with the selected source, the arithmetic logic unit and the selected destination and being responsive to a move bit instruction residing in the instruction register for moving a single bit from any selected one of a plurality of bit positions in the selected source only once through the arithmetic logic unit to any selected bit position of a plurality of bit positions in the selected destination during a single instruction interval without affecting the state of any other bit of the selected destination.

4,525,777

SPLIT-CYCLE CACHE SYSTEM WITH SCU CONTROLLED CACHE CLEARING DURING CACHE STORE ACCESS PERIOD

Marvin K. Webster, Glendale; Richard T. Flynn, Peoria; Marion G. Porter, and George M. Seminsky, both of Phoenix, all of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Aug. 3, 1981, Ser. No. 289,663
Int. Cl.³ G06F *9/36, 13/00*
U.S. Cl. 364—200 **9 Claims**



1. In a data processing system including at least one central processing unit, at least one main memory, and at least one system controller unit coupled to said central processing unit and said main memory, a cache memory unit associated with said central processing unit comprising:

a cache store unit for storing groups of data signals;

a cache directory for storing address signal groups identifying main memory locations, an address signal group being stored in said cache directory when a data signal group from said identified main memory location is stored in said cache storage unit, said cache directory including a plurality of storage groups, each storage group representing a portion of an address signal group wherein a normal operation involving said cache memory unit includes a first period for accessing said cache directory and a second period for accessing said cache storage unit, said system control unit including apparatus to identify operations altering data signals of said main memory at a preselected location;

means coupled to a system controller unit for applying a location address signal group from said apparatus identifying data signal altering operations to said cache directory during said second period of a normal cache operation;

comparator for determining when said address signal group associated with said preselected location is stored in said cache directory; and

means for invalidating said address signal group associated with said preselected location in said cache directory during a succeeding second period of a normal cache operation after said determining means has found said preselected location address signal group stored in said cache directory.

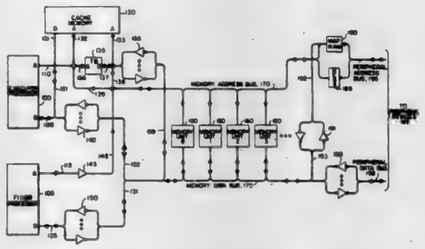
4,525,778

COMPUTER MEMORY CONTROL

David A. Cane, Sudbury, Mass., assignor to Massachusetts Computer Corporation, Westford, Mass.

Filed May 25, 1982, Ser. No. 381,860
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **11 Claims**

1. In a multi-tasking computer system having a memory with data information and a plurality of programs stored therein at least one memory location identified by a first address, said computer system further having a central processor including means for selecting one of said plurality of programs to run in said processor, means for computing a unique offset number for said selected program, means for generating a second address to identify information stored in said one memory location, and a translation store having at least one storage location and being responsive to a first preselected portion of said second address for producing information stored in said storage location, the improvement comprising,



means for receiving from said central processor and for storing an offset number computed for said selected program,

means for logically combining a temporarily-stored offset number with said first preselected portion of said address to produce logical combination signals, and

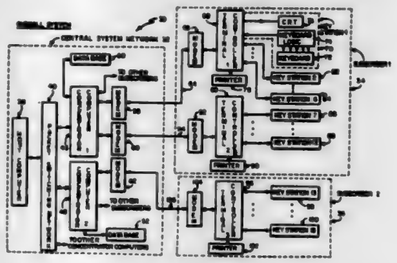
means for applying said logical combination signals to said translation store instead of said first preselected portion of said second address to perform a storage access.

4,525,779

CONVERSATIONAL VIDEO SYSTEM

Martin Davids, Leigh-on-Sea; Peter Blackman, London, and Lily Teo, Romford, all of United Kingdom, assignors to Reuters Ltd., London, England

Filed Mar. 30, 1983, Ser. No. 480,301
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—200 **45 Claims**



1. In a video communication network capable of providing textual data messages to a plurality of subscriber terminals throughout said network, at least a portion of said plurality of subscriber terminals comprising subscriber keystations, each of said subscriber keystations comprising a keyboard means for operator input of textual data messages and associated data control signals to said network via said keyboard means and a video display means for providing a textual video display of at least keyboard generated data input to said network; the improvement comprising at least one message switching interface means for routing video conversational textual data messages throughout said network, a plurality of said keystations being operatively connected to said one message switching interface means, said one message switching interface means comprising message routing logic means and storage means operatively connected to said message routing logic means for providing message routing logic control signals and further comprising

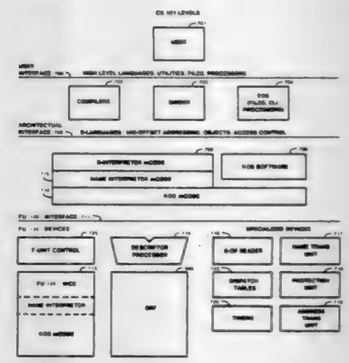
display control logic means and local video display storage means for locally storing video conversational textual data for providing a video display thereof to at least a pair of said keystations which are operatively connected together through said one interface means in a completed call in said network, said keyboard means comprising means for providing unique calling signals to said interface means for initiating calls to a designated keystation portion of said plurality of keystations in said network, said one interface means further comprising means for receiving said calling signals provided thereto for completing a call to said designated connected keystation, said message routing logic means comprising means for controlling the routing of said calling signals to said designated keystations to control the completion of said initiated calls, said display control logic means comprising means for providing on said pair of connected keystation video display means a video display of video conversational textual data transmitted between said connected keystations in said network with which said call is completed via said separate keyboard means associated with said pair of connected keystations, said one message switching interface means storage means comprising means for retrievably storing at least one subscriber created contact list for each of said keystations connected to said one message switching interface means, each of a plurality of said keyboard means being capable of providing at least a different one of said subscriber created retrievably stored contact lists to said one message switching interface storage means for each of a corresponding plurality of associated ones of said subscriber keystations whereby a plurality of different unique contact lists may be retrievably stored in said one message switching interface storage means, said contact lists each being capable of comprising a plurality of different unique designated keystation identification codes each of which corresponds to a different keystation in said network, said keystation keyboard means unique calling signal providing means being capable of providing a unique contact list calling signal corresponding to a designated one of said retrievably stored contact lists to said one message switching interface means message routing logic, said message routing logic comprising means capable of retrieving said stored one designated contact list in response to said unique contact list calling signal and sequentially providing a calling signal to each of said keystations designated by said identification codes in said contact list until a call is completed with the first one of said designated keystations which is available, said one message switching interface means comprising at least one host computer network control means and a plurality of keystation terminal controller interface means operatively connected between said keystations and said one host computer network control means with at least one keystation being operatively connected to and associated with one keystation terminal controller interface means for each of said plurality of keystation terminal controller interface means, said host computer network control means comprising said message routing logic means and said storage means operatively connected thereto, each of said keystation terminal controller interface means comprising said display control logic means and said local video display storage means for locally storing video conversational textual data for providing a video display thereof to at least one of said keystations connected to said keystation terminal controller interface means and local storage means for locally retrievably storing a copy of said subscriber created retrievably stored contact lists created by said one associated subscriber keystation and stored in said host computer network control means storage means and local message routing logic means for locally retrieving said locally stored one designated contact list designated by said one associated subscriber keystation unique calling signal providing means and providing a processed contact request calling signal to said host computer network control means message routing logic means for sequentially providing said calling signal to each of said keystations designated by said identification codes in said contact list, said keyboard means providing said unique calling signals to said associated keystation terminal controller interface means, said keystation terminal controller interface means comprising means for providing said calling signal to said one host computer network control means and for receiving said calling signals therefrom for completing a call to said one connected keystation; whereby a single call may be simultaneously initiated by said one associated subscriber keystation to a plurality of predesignated keystations in said locally stored contact list to establish a textual data video conversation with the first free subscriber in said plurality.

4,525,780

DATA PROCESSING SYSTEM HAVING A MEMORY USING OBJECT-BASED INFORMATION AND A PROTECTION SCHEME FOR DETERMINING ACCESS RIGHTS TO SUCH INFORMATION

Richard G. Bratt, Wayland, Mass.; Gerald F. Clancy, Saratoga, Calif.; Craig J. Mundie, Cary, N.C.; Stephen I. Schleimer, Chapel Hill, N.C., and Steven J. Wallach, Saratoga, Calif., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 266,409, May 22, 1981, abandoned.
This application May 31, 1984, Ser. No. 616,773
Int. Cl.³ G06F *9/34, 9/46, 13/00*
U.S. Cl. 364—200 **17 Claims**



1. In a digital computer system including

memory means for performing memory operations including storing and providing items of data, said items of data including instructions;

processor means connected to said memory means for performing operations in response to said instructions including processing said items of data;

memory organization means operative on said memory means for organizing said memory means into objects identified by unique identifiers and allowing the location of said items therein, each said item being associated with an object and addressable by a logical address specifying the unique identifier of the object with which said item is associated and an offset specifying the location of said item its associated object,

said memory organization means further identifying for each one of said objects a selected set of subjects representing entities for which said processor means responds to said instructions;

memory operation specifier generation means in said processor means responsive to said instructions for providing a memory operation specifier for each item processed by said processor, said memory operation specifier for a given item specifying the object in which said given item is to be located and one of said memory operations; and

memory operations means responsive to a memory operation specifier which includes a logical address and a memory command specifying a memory operation for performing the memory operation specified by the memory command on the item specified by the logical address for

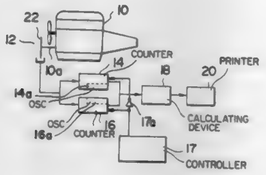
a current subject for which said processor means is currently executing said instructions only when said current subject is one of the subjects in the selected set of subjects identified for the object specified in said memory operation specifier.

4,525,781

METHOD OF DETERMINING FLUCTUATIONS IN INDICATED MEAN EFFECTIVE PRESSURE OF ENGINE AND APPARATUS THEREFOR

Toshiaki Konomi, and Shinobu Ishiyama, both of Shizuoka, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 24, 1981, Ser. No. 305,352
Claims priority, application Japan, Oct. 1, 1980, 55-136995
Int. Cl.³ G01M *15/00*; G06F *15/36*
U.S. Cl. 364—431.01 **8 Claims**



2. Method of determining a deviation in an indicated mean effective pressure of an engine comprising the steps of:

(a) detecting top dead centers of a No. i cylinder and a No. i+1 cylinder of said engine, said No. i+1 cylinder being the next cylinder in said engine to reach top dead center after said No. i cylinder;

(b) detecting rotational speeds ω_{ci} and $\omega_{c(i+1)}$ of a crankshaft at said top dead centers of said No. i cylinder and said No. i+1 cylinder, respectively;

(c) determining a mean pressure Pωi of said No. i cylinder in response to said detecting step (b) in accordance with the following formula:

$$P\omega i=(\omega^2_{c(i+1)}-\omega^2_{ci})I/2Vh$$

where: I is a moment of inertia and Vh is a volume of the cylinder;

(d) calculating a mean value $\overline{P\omega i}$ of a mean pressure Pωi on the basis of a plurality of said mean pressures Pωi;

(e) determining a deviation ΔPii of an indicated mean effective pressure Pii of said No. i cylinder from a subtractive result of $(P\omega i-\overline{P\omega i})$; and

(f) outputting an indication of said deviation of the indicated mean effective pressure Pii of said No. i cylinder to an output device.

7. Apparatus for determining a deviation in an indicated mean effective pressure of an engine comprising:

(a) means for producing a top dead center signal at a first angular position of a crankshaft corresponding to a top dead center of a cylinder;

(b) means for producing a plurality of crank angle signals at a plurality of second angular positions of said crankshaft;

(c) means for producing a plurality of fixed frequency signals;

(d) means for counting said fixed frequency signals between a predetermined number of said crank angle signals;

(e) means for: (1) determining a minimum rotational speed ω_{ci} of said crankshaft at around said top dead center during a compression stroke of a No. i cylinder of said engine in accordance with a count value of said counting means, (2) determining a maximum rotational speed ω_{maxi} of said crankshaft during an expansion stroke of said No. i cylinder in accordance with the count value of said counting means, (3) calculating a mean rotational speed ω_{mii} of said No. i cylinder by using the following formula:

$$\omega_{mii}=\frac{\omega_{ci}+\omega_{maxi}}{2},$$

(4) calculating a ratio Dii of said No. i cylinder by using the following formula:

$$Dii=(\omega_{maxi}-\omega_{ci})/\omega_{mii},$$

(5) determining a minimum rotational speed $\omega_{c(i+1)}$ of said crankshaft at around said top dead center during a compression stroke of a No. (i+1) cylinder in accordance with the count value of said counting means, said No. (i+1) cylinder reaching top dead center immediately after said No. i cylinder,

(6) calculating a mean rotational speed $\omega_{mi(i+1)}$ of said No. (i+1) cylinder by using the following formula:

$$\omega_{mi(i+1)}=\frac{\omega_{c(i+1)}+\omega_{maxi}}{2},$$

(7) calculating a ratio Di(i+1) of said No. (i+1) cylinder by using the following formula:

$$Di(i+1)=(\omega_{maxi}-\omega_{c(i+1)})/\omega_{mi(i+1)},$$

(8) determining a mean pressure Pωi of No. i cylinder in accordance with the following formula:

$$P\omega i=(Dii\cdot\omega^2_{mii}-Dii(i+1)\cdot\omega^2_{mi(i+1)})I/Vh$$

where: I is a moment of inertia and Vh is a volume of cylinder,

(9) calculating a mean value Pωi of said mean pressure Pωi, and

(10) determining a deviation ΔPii of an indicated mean effective pressure Pii of said No. i cylinder from a subtractive result of (Pωi−Pωi); and

(f) means for outputting an indication of said deviation of the indicated mean effective pressure Pi of said No. i cylinder to an output device.

4,525,782

PROCESS FOR DETERMINING MAINTENANCE AND SERVING INTERVALS ON MOTOR VEHICLES

Dieter Wohlfarth, Esslingen, and Walter Kostelezky, Ostfildern, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 19, 1982, Ser. No. 359,922
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110774
Int. Cl.³ G06F *3/14, 15/20*; G07C *5/08*; B60S *5/00*
U.S. Cl. 364—431.01 **33 Claims**

1. A method for determining maintenance and service intervals for a vehicle comprising

storing a limit value for a vehicle command parameter,

sensing an actual value of the command parameter,

performing a first comparison of the sensed actual value with the limit value for the vehicle command parameter,

displaying a maintenance alarm when said first comparison step produces a substantial match of the two values,

storing a limit value for at least one vehicle operating parameter,

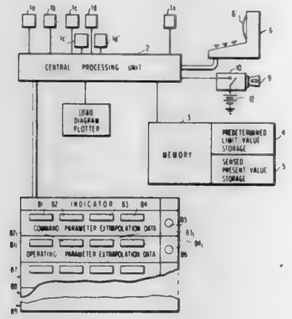
storing a maintenance indication threshold value as a fraction of said limit value for said at least one operating parameter,

sensing an actual value of the at least one operating parameter, performing a second comparison of the sensed actual value with the maintenance indication theshold value for the at least one operating parameter if the first comparison step produced a substantial match, displaying at least an additional maintenance alarm for said operating parameter

when said second comparison step determines that the actual value of said sensed operating parameter exceeds the maintenance indication theshold value.

33. A method of determining maintenance and service intervals in motor vehicles, wherein the driver is given a recommendation by means of a display to perform maintenance or servicing when a value of a guiding parameter, determined to be important for maintenance or servicing, corresponds to a predetermined value of the guiding parameter stored in a memory of a computer, whereby the determined value of this guiding parameter can be changed by other operating parameters, comprising the steps of

receiving in a computer memory additional characteristic values for the condition of vehicle parts requiring maintenance as a function of wear,



comparing said values with values likewise stored in the memory and corresponding to the wear limits of the vehicle parts in question,

generating data representing a load diagram in the computer from additional operating parameters,

determining from at least the additional operating parameters whether the vehicle is being operated primarily in the partial load or full load mode,

extrapolating a wear-limiting value for each of the vehicle parts from at least a corresponding stored value by means of the data representing the load diagram, and

matching the wear-limiting values of the vehicle parts with data representing maintenance or servicing determined by the guiding parameter, when the values and data lie within a fixed range of tolerance of the data.

4,525,783

METHOD AND APPARATUS FOR DETERMINING THE INDIVIDUAL MANIPULATED VARIABLES OF AN INTERNAL COMBUSTION ENGINE, AND IN PARTICULAR OF A GAS TURBINE

Jürgen Pischke, Markgröningen, and Wolfgang Nonnenmann, Pforzheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 78,613, Sep. 24, 1979, abandoned. This application Dec. 5, 1983, Ser. No. 558,556
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1978, 2841750
Int. Cl.³ F02C *9/04*; F02D *28/00, 5/00*
U.S. Cl. 364—431.11 **6 Claims**

1. A method for determining the individual input variables of an internal combustion engine such as a gas turbine or the like, derived from given and measured operating characteristics such as rpm and temperature in a computer having a timing control, a multiplex means for preparing at least some of said input variables, a feedback control program, a data detection program and a data output program, and an output memory having means for delivering data to indicating means and final control means for said engine, comprising the steps of

generating control data by repetitively operating said control program from beginning to end to beginning,

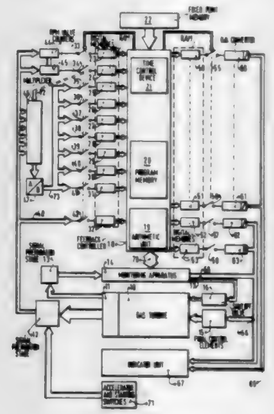
operating at predetermined times alternatively with said control program said data detection program and said data output program,

interrupting said control program at predetermined fixed times, wherein said timing control operates

said data detection program and said data output program when said control program is interrupted, and

feeding the output signals from said data output program in a time-controlled manner to said output memory.

2. An apparatus for determining the individual input variables of an internal combustion engine, such as a gas turbine or the like, derived from given and measured operating characteristics such as rpm and temperature, in a computer having a timing control, a multiplex means for preparing at least some of said input variables, a feedback control program, a data detec-



tion and a data output program, said programs being operated in alternation, and said computer comprising

a controller having an arithmetic unit, a program memory and a time control device;

at least one input memory means for input data, and at least one output memory means for output data,

said output memory means having means for delivering said output data to at least one of an indicating means and a final control means for said engine, and

said input memory means and said output memory means being associated with said arithmetic unit, wherein the time control device interrupts the control program at particular fixed times and said timing control switches the computer over to the data detection and data output program during which input variables are written into said at least one input memory means and output variables are read out of said at least one output memory means.

4,525,784

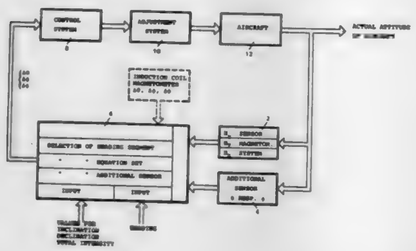
STEERING AND STABILIZATION SYSTEM FOR VEHICLES

Peter Hamel, and Rüdiger Karmann, both of Brunswick, Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 359,001, Mar. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 126,434, Mar. 3, 1980, abandoned. This application Aug. 13, 1984, Ser. No. 640,531
Int. Cl.³ G05D *1/06*; G01C *17/38*; G06F *15/50*
U.S. Cl. 364—434 **9 Claims**

1. A steering and stabilization system for a vehicle including means for the determination of attitude of the vehicle comprising at least two magnetometers mounted in the vehicle and

fixed with respect to the direction of the fore-and-aft axis thereof as to determine each coordinate of a set of three orthogonal coordinates of attitude of the vehicle, and an additional sensor of attitude to provide supplementary information relating to one of the coordinates of attitude determined by said magnetometers, each of said magnetometers being provided with means for inducing a compensating current to its magnetic core for a null point adjustment of its magnetic field for the attitude required for a predetermined course of the vehicle, the system also including a microcomputer on board of said vehicle including input means to receive and store data of the earth's magnetic field, namely the inclination, declination and total intensity, relating to the operational region of the vehicle, as well as data of a predetermined course for said vehicle, and further including input means for the output signals of said magnetometers and said additional sensor, said microcomputer being programmed for the transformation of the orthogonal coordinates determined by said magnetometers into respective geodetic coordinates by said computer during use of the system, for coupling of signals representative of said transformed coordinates with signals representative of said supplementary information and calculating and generating control signals for the steering and stabilization system of the vehicle and for adjustment of said compensating current depending on the attitude required.



4,525,785

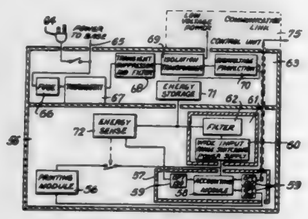
ELECTRONIC POSTAGE METER HAVING PLURAL COMPUTING SYSTEM

John H. Soderberg, Monroe, N.Y.; Alton B. Eckert, Norwalk, and Robert B. McFiggans, Stamford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 277,050, Jun. 24, 1981, abandoned, which is a continuation of Ser. No. 89,413, Oct. 30, 1979, Pat. No. 4,301,507. This application Apr. 28, 1983, Ser. No. 487,418

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—464 **10 Claims**



1. In a postage meter comprising a data entry means, an accounting means coupled to the data entry means for receiving data, and a printing means including a printer and printing systems and coupled to said accounting means for receiving printing data, at least said accounting means and printing means being within secure walls, said postage meter comprising a first microprocessor system for controlling said data entry means, a second microprocessor system for controlling arithmetic operations in said accounting means, and a third microprocessor system for controlling the operation of said printer in accordance with a printing program, and means interconnecting said first and second microprocessor systems and said second and third microprocessor systems for serial bit-by-bit data flow therebetween, said interconnecting means comprising a pair of one-way transmission paths between said first and second microprocessor systems and between said second and third microprocessor systems, data flow on said one-way transmission paths being inhibited only in response to the detection of data flow on the other transmission path of the respective pair of transmission paths.

4,525,786

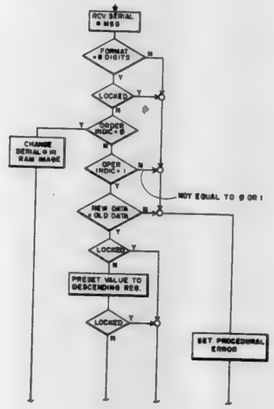
ELECTRONIC POSTAGE METER HAVING A ONE TIME ACTUABLE OPERATING PROGRAM TO ENABLE SETTING OF CRITICAL ACCOUNTING REGISTERS TO PREDETERMINED VALUES

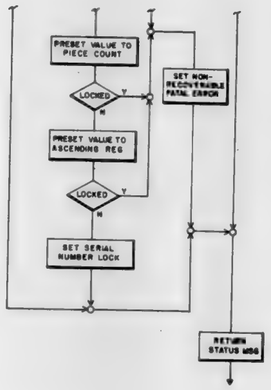
Raymond R. Crowley, Newtown, and John H. Soderberg, Stratford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 12, 1982, Ser. No. 397,398

Int. Cl.³ G06F *3/00, 15/00*

U.S. Cl. 364—466 **14 Claims**





1. A postage meter, comprising:
printing means for printing postage;
a computing means coupled to said printing means for accounting for postage printed by said printing means;
non-volatile memory means coupled to said computing means, said non-volatile memory including memory locations for storing critical meter accounting data;
a program stored coupled to said computing means and adapted to store programs to control the operation of said computing means; and
said program store containing a one-time actuable program operable to cause said computing means to write predetermined data into said non-volatile memory locations for storing critical accounting data such that said critical accounting data is set to predetermined values, and said program store further operable to prevent said computing means from reentering said program for writing said predetermined data into said non-volatile memory if said non-volatile memory locations have been previously set to said predetermined values.

4,525,787

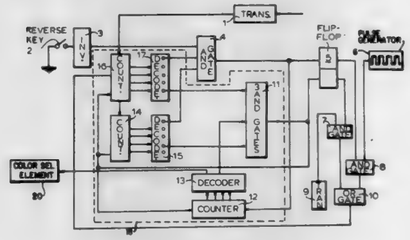
PROGRAM AUTOMATON FOR WEAVING MACHINES

Krum K. Tzvetkov, Sofia, Bulgaria, assignor to Centralen Savet na Nauchnotechnicheski Sayusi, Sofia, Bulgaria

Filed Sep. 17, 1982, Ser. No. 419,325

Int. Cl.³ D03D *51/08*

U.S. Cl. 364—470 **6 Claims**



1. A program automaton for a weaving machine having a transducer coupled to a crankshaft therein, a block for weft programming coupled to said transducer, a block for subroutines coupled in a feedback loop with said block for weft programming, a block of selective electromagnets coupled to said block for weft programming for alternatively selecting a color band, a block for weave programming also coupled to said transducer, an electronic keys block coupled to said block for weave programming, a control block coupled to both said transducer and said electronic keys block for controlling weaving electromagnets, and a block for deweaving of complex programs incorporated in said blocks for weft programming and subroutines, characterized in that said block for deweaving at complex programs comprises:
means for indicating the reversal of said weaving machine;
a first AND-gate coupled to said indicating means;
a counter-switch having an addition and subtraction input, the output of said first AND-gate being coupled to said subtraction input;
a high-frequency pulse generator;
a second AND-gate coupled to the output of said high-frequency pulse generator and also to said first AND-gate; and
counter means also having an addition and a subtraction input, said second AND-gate being coupled through an OR-gate to said subtraction input, said transducer also being coupled to said OR-gate, said counter means having outputs coupled to said first AND-gate.

4,525,788

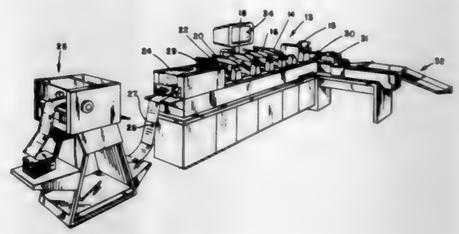
SCANNER INTERFACE CIRCUIT FOR UNIVERSAL MULTI-STATION DOCUMENT INSERTER

Robert K. Gottlieb, Bridgeport, and Peter N. Piotroski, New Canaan, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 1, 1982, Ser. No. 394,390

Int. Cl.³ G06F *15/20;* **G06G** *7/48*

U.S. Cl. 364—478 **11 Claims**



1. In a document inserter having a plurality of feeder stations, a central processor for providing a control signal to the feeder stations, the central processor having a supervisory program stored therein including a data table and a configuration PROM which includes information on the type of feeder stations and the functions to be performed thereby and a feeder interface circuit having a unique address code and which receives address and command signals from the central processor, scanner interface circuits associated respectively with scanners at each of the feeder stations comprising:
address means for providing each scanner with a unique address code a portion of which is identical to the address code of the feeder station with which it is associated,
distributed processor means for storing a scanner program containing instructions for scanning coded documents, and
means interconnecting the scanner interface circuit, the feeder interface circuit and the central processor for enabling scanning of a document at each feeder station in response to appropriate addresses and commands from the central processor.

4,525,789

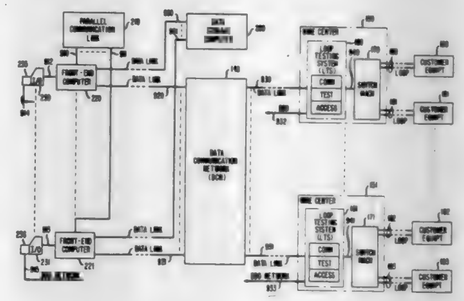
PROGRAMMABLE NETWORK TESTER WITH DATA FORMATTER

Kyran B. Kemper, Mendham, and Harvey Rubin, Morristown, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 399,184

Int. Cl.³ G06F *15/20;* **G01R** *15/12;* **H03G** *3/30*

U.S. Cl. 364—481 **7 Claims**



1. A method for producing a digital word indicative of electrical characteristics of a circuit under test comprising the

steps of applying a source signal to a port of said circuit and detecting a resultant signal produced at said port in response to said source, said method further comprising the steps of

generating a demodulating signal equal in frequency to said source signal,

frequency-shifting said resultant signal by demodulating said resultant signal with said demodulating signal and low-pass filtering to produce a baseband signal,

converting said baseband signal with analog-to-digital (A/D) means into a first encoded data sample represented by a plurality of bits,

determining the number of consecutive zeros in the most significant bit positions of said first encoded sample to obtain a gain factor,

amplifying said baseband signal in proportion to said gain factor to produce an amplified baseband signal,

converting said amplified signal into a second encoded data sample with said A/D means, and

forming said digital word by storing said second encoded sample in locations of said word.

4,525,790

METHOD FOR OSCILLATING ULTRASONIC WAVES AND A MICROCOMPUTER'S BUILT-IN ULTRASONIC WAVE OSCILLATOR CIRCUITRY

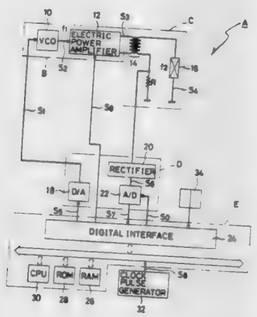
Masahiro Nakamura, Tokyo, Japan, assignor to Ohtake Works Company, Ltd., Tokyo, Japan

Filed Aug. 27, 1982, Ser. No. 412,274

Claims priority, application Japan, Aug. 28, 1981, 56-134248

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—484 **6 Claims**



1. A method for oscillating ultrasonic waves comprising, storing an initial peak high-frequency wave current value signal gained by inspecting an oscillating frequency of an oscillator, storing an up-dated peak high-frequency wave current value signal by comparing said up-dated signal with said initial signal previously stored, and repeating the comparison every time an up-dated high-frequency wave current value signal, flowing through a vibrator of said oscillator, is detected as being of lower value, due to changes in the resonant frequency being inspected, and automatically tracking the resonant frequency of said vibrator to renew said up-dated peak high-frequency wave current value signal flowing through said vibrator.

4,525,791

METHOD AND APPARATUS FOR REDUCING VIBRATIONS OF STATIONARY INDUCTION APPARATUS

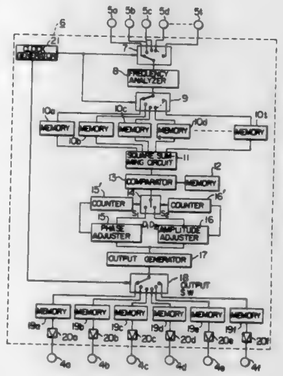
Syuya Hagiwara, Mito, and Yasuro Hori, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,564

Claims priority, application Japan, Aug. 11, 1981, 56-124673

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—508 **11 Claims**



1. A method for reducing vibrations generated in a stationary induction apparatus comprising the steps of detecting the vibrations by vibration sensing means, and applying a vibration applying force capable of suppressing the detected vibrations to said stationary induction apparatus by vibration applying means; wherein said method comprises the further steps of:

energizing said vibration applying means;

receiving detected amplitude values of the vibrations from a plurality of vibration sensors constituting said vibration sensing means;

calculating the sum of the squares of said amplitude values of vibration; and

varying the phase and amplitude of the vibration applying force outputted from said vibration applying means in the direction of decreasing the calculated sum of the squares of amplitude values of vibration.

4,525,792

UNIDIRECTIONAL CAPACITIVE FLUID-GAUGING SYSTEMS

Peter Clinton, Winchester, England, assignor to Smiths Industries Public Limited Company, London, England

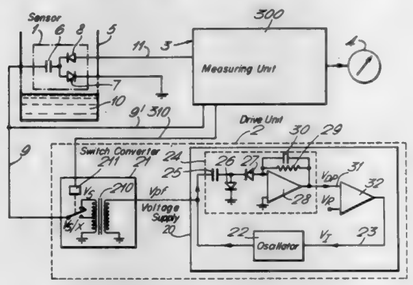
Filed Mar. 10, 1983, Ser. No. 474,094

Claims priority, application United Kingdom, Mar. 29, 1982, 8209169

Int. Cl.³ G01F *23/26;* **H01H** *35/00*

U.S. Cl. 364—509 **9 Claims**

1. In a fluid-gauging system of the kind including a capacitive sensor unit adapted for immersion within a fluid, electrical supply means arranged to supply an alternating electric signal to said sensor unit such that the output of the sensor unit varies in accordance with change in fluid quantity, and a measuring unit connected to receive the output of said sensor unit, said sensor unit including a capacitor and at least one temperature-sensitive unidirectional current device connected to the output of said capacitor, the improvement wherein said supply means includes switching means, means for controlling said switching means to switch said switching means between two states in the first of which the alternating signal is supplied to said sensor unit with a peak amplitude of a first value and in the second of which the alternating signal is supplied to said sensor unit with a peak amplitude of a second value different from said first value, and wherein said measuring unit calculates the voltage across said unidirectional current device from the respective outputs of said sensor unit when said switching means is in said first state and when said switching means is in said second state.



4,525,793

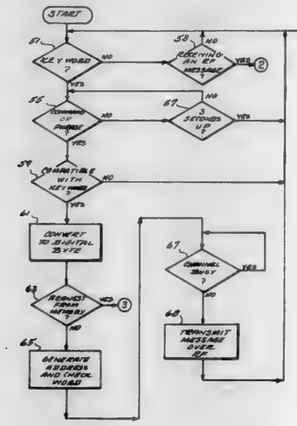
VOICE-RESPONSIVE MOBILE STATUS UNIT

Bill L. Stackhouse, Charlottesville, Va., assignor to General Electric Company, Lynchburg, Va.

Continuation of Ser. No. 337,762, Jan. 7, 1982, abandoned. This application Jul. 17, 1984, Ser. No. 631,017

Int. Cl.³ G10L *1/00*

U.S. Cl. 364—513.5 **5 Claims**



1. A voice responsive mobile status unit for use in an r.f. communication system having r.f. communication links between mobile and fixed base stations, said mobile status unit being associated with at least one of said mobile stations and comprising:

(A) a mobile r.f. transceiver capable of sending and receiving digitized data signals via an r.f. communication link;

(B) speech recognition means capable (1) of receiving analog speech signals, (2) of recognizing any one of a predetermined set of speech phrases from analysis of said analog speech signals, and (3) of producing a corresponding one of a predetermined set of digital data signals in response to such recognition; and

(C) control means connected to said mobile r.f. transceiver and to said speech recognition means for causing transmission of a predetermined digital data message signal over said r.f. communication link in response to the digital outputs of said speech recognition means;

said control means including:

(i) keyword recognition means for recognizing one of a predetermined subset of said digital data signals as an acceptable keyword and for initiating a valid message phrase time window in response to such recognition; and

(ii) valid message recognition means, which is operative during said valid message phrase time window, (1) to recognize one of a predetermined subset of said digital data signals as a valid message for the particular just-recognized keyboard which initiated the current time window and (2) to permit transmission of said digital data message signal only in the event such a valid message phrase is recognized as having occurred within said time window.

4,525,794

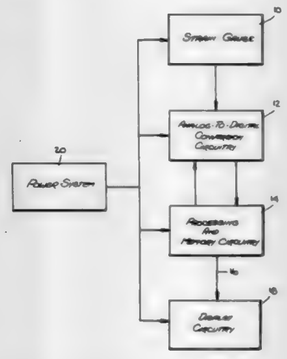
ELECTRONIC BALANCE

Daniel G. Scheffer, Montville; Christopher W. Brock, Whippany, and Douglas B. Schumer, Middletown, all of N.J., assignors to Ohaus Scale Corporation, Florham Park, N.J.

Filed Jul. 16, 1982, Ser. No. 399,647

Int. Cl.³ G06F *15/20;* **G01G** *13/14*

U.S. Cl. 364—567 **8 Claims**



1. An electronic balance comprising:

transducer means for producing a first electrical signal containing analog information representative of the weight of an object being weighed by means of said balance;

analog-to-digital conversion means for producing a series of second signals comprising a series of width-modulated pulses representative of said analog data in said first signal and the information contained in each said pulse including an error, said errors being non-cumulative;

filter means for reducing display flutter by filtering several subsets of said pulses sequentially to produce a series of third electrical signals, each said third electrical signal being representative of the data contained in a corresponding said subset of pulses; said filter means comprising processor means programmed for adding a series of said pulses, reducing the sum of said series by a predetermined fraction, and adding to the reduced sum the total of a second series of said pulses, and reducing the new total by said fraction; each said series including the same number of said pulses, and each said subset of said pulses including several said series; and

means for summing said third electrical signals to produce an output signal representative of said weight.

4,525,795

DIGITAL SIGNAL GENERATOR

Harvey Rubin, Morristown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 399,176

Int. Cl.³ G06F *1/02;* **H03B** *19/00*

U.S. Cl. 364—721 **2 Claims**

1. A method for digitally generating an electrical signal representative of a cosinusoidal tone having a frequency in a

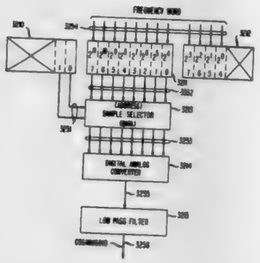
preselected band with: means for providing a frequency word f_w indicative of said frequency; first storage means for storing cosinusoidal amplitudes representative of first quadrant values of a cosinusoidal wave indicative of the highest frequency in said band and discretized at sampling rate f_s; and processing means, including an accumulator, producing samples of said signal at a strobing rate f_r, $f_r < f_s$, said method comprising the steps of

(i) storing the negative of said amplitudes in second storage means,

(ii) scaling said word f_w by a factor directly proportional to said sampling rate and inversely proportional to said strobing rate to produce a converted frequency word f_c, $f_c < f_r/2$,

(iii) adding said converted frequency word to said accumulator,

(iv) determining a quadrant pointer from a plurality of the most significant positions of said accumulator,



(v) determining a sample index from a fraction of the positions in said accumulator unallocated to said plurality;

(vi) selecting one of said storage means as determined by said pointer,

(vii) extracting the contents of a location in said one of said storage means as determined by said pointer and said index to produce one of said samples of said signal, said steps (iii) through (vii) requiring a time period T to produce said one of said samples, $f_s < 1/T \leqq f_r$,

(viii) converting said one of said samples to an analog form in a digital-to-analog converter operating at said strobing rate,

(ix) filtering said analog form in filter means to produce an analog output representative of a portion of said signal, and

(x) repeating steps (iii) through (x) to generate said signal.

4,525,796

PIPELINED OPERATION UNIT FOR VECTOR DATA

Koichiro Omoda; Yasuhiro Inagami, both of Hadano; Shunichi Torii, Musashino, and Shigeo Nagashima, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,720

Claims priority, application Japan, Feb. 13, 1981, 56-19091

Int. Cl.³ G06F *7/00*

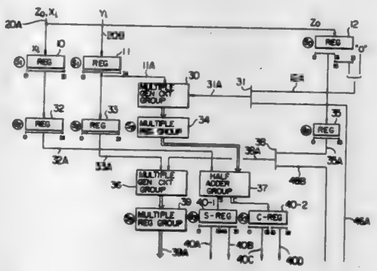
U.S. Cl. 364—730 **12 Claims**

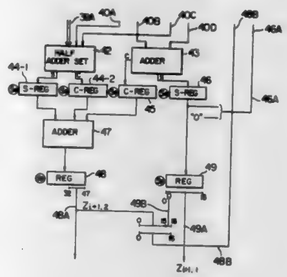
1. An operation unit wherein a plurality of first data, which are sequentially supplied, each undergoes a predetermined operation which involves at least a part of the result obtained by the predetermined operation involving a first data preceding the first data being operated on, said operation unit comprising:

first means connected to receive said first data and second data for performing a first operation on each of said first data involving said second data applied thereto, thereby to produce a first partial data representing a first part of a resultant data obtained as a result of said predetermined operation to each first data on an intermediate data to be used for obtaining a second partial data representing a second part of said resultant data;

second means for performing a second operation on said intermediate data thereby to produce said second partial data; and

input means for applying to said first means, as said second data, a first partial data which is obtained by performing





said first operation on one of said first data preceding the first data being operated on, wherein said first means performs said first operation on each first data in parallel with the execution of said second operation by said second means.

4,525,797

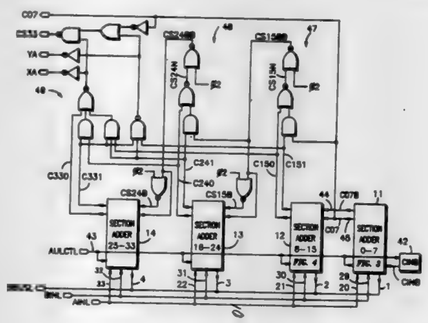
N-BIT CARRY SELECT ADDER CIRCUIT HAVING ONLY ONE FULL ADDER PER BIT

Kirk N. Holden, Lockhart, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 3, 1983, Ser. No. 455,091

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—788 **8 Claims**



1. An n-bit adder circuit, where n is an integer, for simultaneously adding n bits of a first and a second number and simultaneously outputting n sum bits and a carry-out bit in response to a control signal, comprising:

a rank ordered plurality of parallel connected section adders, each of said section adders providing a predetermined portion of said n sum bits and comprising:

a rank ordered plurality of full adder circuits, wherein the n-bit adder circuit comprises only n full adders and each bit of said n sum bits is provided by only one full adder circuit,

each full adder circuit of the section adder of lowest rank having a first input for receiving a predetermined bit of said first number, a second input for receiving a predetermined bit of said second number, a carry-in input terminal, the carry-in input terminal of the lowest ranked full adder being adapted for receiving an input carry-in bit, a carry-out output terminal, the carry-out output terminal of each full adder except the highest ranked being coupled to the carry-in input terminal of the full adder of next higher rank, and an output sum terminal, for providing one of said sum bits in response to a rank order sum select bit;

each full adder circuit of the remaining section adders having a first input for receiving a predetermined bit of said first number, a second input for receiving a predetermined bit of said second number, first and second carry-in input terminals for respectively receiving the carry-out bit and complement thereof of the highest ranked full adder of the next lower ranked section adder, and first and second carry-out output terminals corresponding respectively to carry-out bits of zero and one, all full adders of the remaining section adders and of rank greater than the lowest rank having third and fourth carry-in input terminals coupled to the first and second carry-out bit terminals of the full adder of immediately lower rank; and

a rank ordered plurality of carry sum select logic means, for providing said rank ordered sum select bits associated with the sum of the first and second input numbers, the lowest ranked carry sum select logic means having an input coupled to the carry-out output terminal of the highest ranked full adder of the next to lowest ranked section adder and an output coupled to the first and second carry-in input terminals of the lowest ranked full adder of the next higher ranked section adder, the highest ranked carry sum select logic means having an input coupled to the carry-out terminals of the highest ranked full adder of all section adders and an output for providing the carry-out bit, and the remainder of the rank ordered carry sum select logic means each having an input coupled to the carry-out output terminals of the highest ranked full adders of predetermined section adders and an output coupled to a carry-in input terminal of the lowest ranked full adder of a predetermined section adder.

4,525,798

APPARATUS FOR PERFORMING A HADAMARD TRANSFORMATION

Jean-Claude Rebourg, 95, Avenue de la Clairiére, 78120 Rambouillet, and Claude Despois, 2, Impasse du Domaine Premay en Yvelines, 78660 Ablis, both of France

Filed Jul. 28, 1982, Ser. No. 402,569

Claims priority, application France, Aug. 3, 1981, 81 15034

Int. Cl.³ G06G *7/12*; H03H *15/02*

U.S. Cl. 364—826 **12 Claims**

1. An apparatus for performing a Hadamard transformation, comprising:

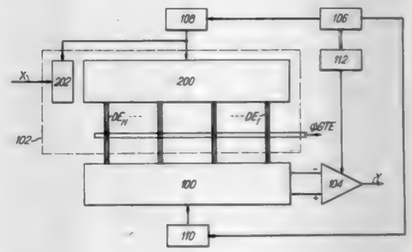
(a) a first input circuit having an input receiving an input signal and having an output delivering sequences of N input samples (X_1, X_2 . . . X_N), at a sample frequency;

(b) a first auxiliary charge transfer device with at least N work electrodes in line (E_1, E_2 . . . E_N), said first auxiliary charge transfer device being realized on a semiconductor substrate having a particular doping type and being connected to said first input circuit, and being provided with means for controlling the transfer from one electrode to the next, with a frequency equal to said sample frequency;

(c) a first set of N diffusion bands (DE_1, DE_2 . . . DE_N) disposed in said semiconductor substrate and having a doping type opposite to that of said substrate, each diffusion band having first and second extremities, said first extremity being connected to one of said work electrodes of said auxiliary charge transfer device;

(d) a first set of N transfer grids (GTE_1, GTE_2 . . . GTE_N) disposed on said N diffusion bands, said transfer grids being connected to a connection raised to a potential (ϕGTS);

(e) a calculation charge transfer device for performing said Hadamard transformation, said calculation charge transfer device having a plurality of electrodes arranged in a line and comprising a first set of N introduction electrodes, a second set of N extraction electrodes, a third set of reading electrodes, said N introduction electrodes



being connected to said second extremity of said N diffusion bands, said calculation charge transfer device comprising further control means for transferring charges from one electrode to the next, with a frequency equal to said sampling frequency;

(f) a differential charge reader comprising a differential amplifier with two inputs, one input being a reversing input and the other input being a nonreversing input, said reversing input being connected to a first group of electrodes belonging to said third set of reading electrodes, said first group of electrodes being set to have a sign −, said nonreversing input being connected to a second group of electrodes belonging to said third set of reading electrodes, said second group of electrodes being set to have a sign +, said reader further comprising sampling means at said sampling frequency and having an output supplying output samples which are transformed samples of said input samples by said Hadamard transformation.

4,525,799

ELECTRONIC CASH REGISTER

Tamotsu Okawa, Nagaokakyo, and Hiromi Yuasa, Muko; both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 9, 1981, Ser. No. 242,147

Claims priority, application Japan, Mar. 26, 1980, 55-39312

Int. Cl.³ G06F *15/02*

U.S. Cl. 364—900 **11 Claims**

1. An electronic cash register, comprising:

memory means having a plurality of registering regions, each registering region allotted for a commodity department,

each said registering region including a specifying information storing portion, each said specifying information storing portion representing that, when specifying information is loaded therein, the corresponding registering region is capable of registering information,

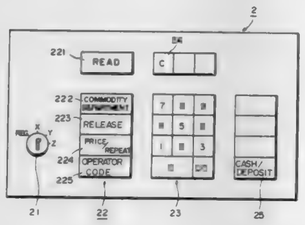
each said commodity department being allotted a corresponding commodity department code for individually identifying the same,

entry means for entering a first commodity department code and a last commodity department code of a series of consecutive commodity department codes, the series being greater than two in number, in case where said series of consecutive commodity department codes are allotted for a plurality of commodity departments which need be made registrable,

first code storing means for storing said first commodity department code entered by said entry means,

second code storing means for storing said last commodity department code entered by said entry means,

region designating means responsive to said commodity department codes stored in said first and second code storing means for designating in succession said registering regions associated with the commodity departments



corresponding to the respective consecutive commodity department codes from said first commodity department code to said last commodity department code,

write enabling means for enabling writing of said specifying information in said specifying information storing portion, and

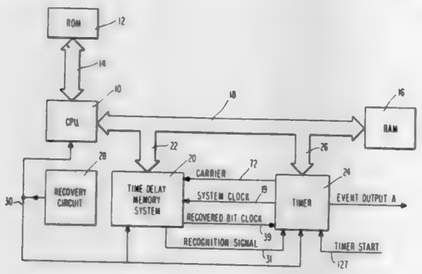
writing means responsive to enabling by said write enabling means for writing said specifying information in said specifying information storing portion of said registering region designated by said region designating means, whereby when an operator wishes to register new or change or output information stored in the registering regions corresponding to the series, the operator only needs to enter the first and last commodity department codes to designate which registering regions are to be accessed.

4,525,800

ENHANCED RELIABILITY DATA STORAGE SYSTEM WITH SECOND MEMORY FOR PRESERVING TIME-DEPENDENT PROGRESSIVELY UPDATED DATA FROM DESTRUCTIVE TRANSIENT CONDITIONS

Donald R. Hamerla, King of Prussia, Pa., assignor to General Electric Co., Philadelphia, Pa.

Filed Jun. 1, 1981, Ser. No. 269,102
Int. Cl.³ G06F *13/02*
U.S. Cl. 364—900 **10 Claims**



8. Apparatus for preserving the integrity of time-dependent, periodically performed, critical calculations from destruction by the adverse effects produced by an externally originated transient condition of approximately known maximum duration, comprising:

(a) a first storage means for holding critical information, said critical information including a time reference and time-dependent values;

(b) means for collecting said critical information from said first storage means;

(c) a second storage means substantially immune to said adverse effects and including an input and an output, said second storage means being adapted to accept said critical information at said input and to reproduce said critical information at said output after a predetermined delay interval;

(d) means for entering said collected critical information in the form of successive critical information frames into said second storage means;

(e) sensing means responsive to the onset of a transient condition to switch said apparatus to a recovery mode;

(f) means for loading said critical information from said second storage means into said first storage means after termination of said adverse effects during said recovery mode; and

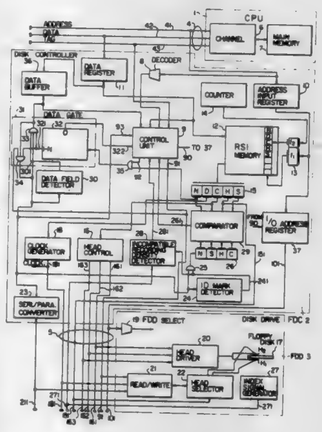
(g) means for compensating the time reference and the time-dependent values of said critical information for said predetermined delay interval imposed by said second storage means.

4,525,801

DISK STORAGE CONTROLLER

Shigeyuki Kuwabara, Isehara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,819
Claims priority, application Japan, Dec. 19, 1980, 55-178893
Int. Cl.³ G06F *3/06*
U.S. Cl. 364—900 **8 Claims**



1. A controller for controlling access to information recorded on a disk recording medium in a disk storage from an upper hierarchy device, comprising:

receiving means for receiving recording status information from said upper hierarchy device, said recording status information indicating one of a plurality of different types of recording parameters of said information as recorded on said recording medium;

circuit means responsive to recording status information and commands from said upper hierarchy device as received by said receiving means for controlling said disk storage in accordance with the recording parameter indicated by said recording status information on said recording medium to effect read and write operations on said disk recording medium; and

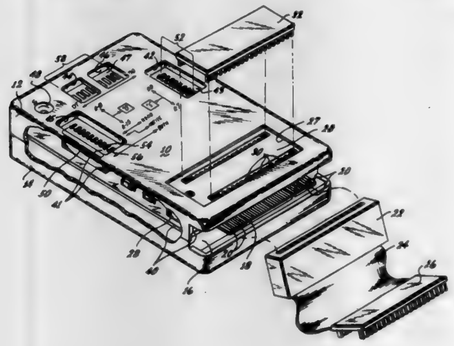
means coupled between said receiving means and said circuit means for controlling the operation of said circuit means so that the read and write operations thereof are compatible with one of said plurality of different types of recording parameters based on said recording status information received by said receiving means.

4,525,802

PORTABLE ELECTRONIC TESTING APPARATUS

Paul Hackamack, Torrance, Calif., assignor to Cache Technology Corporation, Valencia, Calif.

Filed May 14, 1982, Ser. No. 378,185
Int. Cl.³ G01R *15/12*
U.S. Cl. 364—900 **19 Claims**



1. A portable electronic testing apparatus for examining data present at a selected address during the operation of a microprocessor system and with the microprocessor system including a receptacle for receiving a CPU and with both the receptacle and CPU having the same particular electrical connections, the testing apparatus including,

an electrical socket having the same particular electrical connections for receiving the CPU and providing electrical contact to the CPU when the CPU is removed from the microprocessor system and plugged into the electrical socket,

a connector assembly interconnected with the electrical socket, the connection assembly including a plug simulating the electrical connections of the CPU and with the plug for plugging into the receptacle included in the microprocessor system after the CPU is removed from the microprocessor system so as to electrically reconnect the CPU within the operation of the microprocessor system,

address selection means for providing a selection of the address of data to be examined,

comparator means coupled to the electrical socket and thereby to the CPU when the CPU is removed from the microprocessor system and plugged into the electrical socket and also coupled to the address selection means for comparing the address of the data within the microprocessor system with the selected address of the data to be examined and for producing a signal in accordance with a match between the compared addresses,

display means coupled to the electrical socket and thereby to the CPU when the CPU is removed from the microprocessor system and plugged into the electrical socket and responsive to the signal from the comparator means for displaying the data at the selected address within the microprocessor system, and

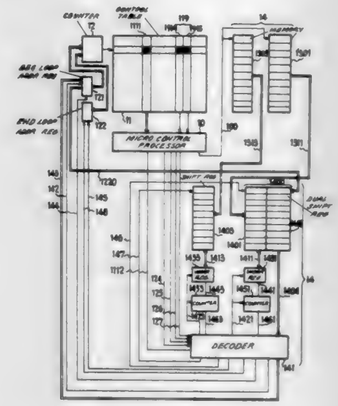
read/write selection means for providing a selection of data written to and/or read from the CPU at the selected address.

4,525,803

METHOD FOR CONTROLLING THE COMPARISON TO BE EFFECTED BETWEEN REFERENCE LOGICAL ENTITIES AND LOGICAL ENTITIES ISSUING FROM A FILE

Jacques Vidalin, Montpellier, and Jean L. Aucouturier, Gradignan, both of France, assignors to L'Universite de Bordeaux 1, Talence, France

Filed Aug. 12, 1982, Ser. No. 407,360
Int. Cl.³ G06F *7/06, 7/22, 13/00*
U.S. Cl. 364—900 **3 Claims**



1. A method for processing information received from a file which includes data elements of different types, each data element consisting of a fixed or variable number of items of information, each item of information in a given data element having a different respective order, data elements of a first type being arranged in sequences which are identified by a data element of a second type, said method comprising the steps of:

(A) storing reference data elements in a table logically divided into horizontal zones and vertical columns, each horizontal zones storing one or more reference data elements which are of a same said type and which are to be simultaneously compared to a data element received from the file such that each said horizontal zone is associated with reference data elements of a respective type, each reference data element consisting of a fixed or variable number of items of information, each item of information in a given reference data element having a different respective order, each reference data element being stored vertically in a respective vertical column of the horizontal zone in which it is located with each item of information of that reference data element being located in a respective line of that vertical column, and the vertical order of said horizontal zones following the order in which the data elements of types corresponding to said zones appear in said file;

(B) storing control information in a control memory which is logically divided into a plurality of lines, each line of said memory containing:

(1) first items of control information including: comparison control information identifying the type of comparison to be made between data elements of a same type received from said file and reference data elements of this type stored in a horizontal zone of said table, which zone corresponds to the line of the memory wherein said comparison control information is stored; and storage control information relating to the storage of the data elements received from said file; and

(2) second items of control information identifying operations to be carried out when a comparison operation is completed between one or more data elements received from the file and one or more corresponding reference

data elements in said table, said second items of control information including jump control information identifying the next line in said control memory and/or the next horizontal zone in said table which is to be jumped to;

(C) sequentially receiving items of information from said file;

(D) executing the operations of comparison and/or storage identified by the first items of control information stored in a first line of said control memory, jumping to the next line of said control memory identified by the jump control information stored in said first line of said control memory and then executing the operations identified by the items of control information stored in said next line of said control memory, each operation of comparison being carried out by simultaneously comparing each item of information of a received data element with each item of information of the same order of each reference data element of the same type as the received data element, said step of executing operations of comparison and/or storage being carried out without interrupting the receipt of data elements from said file, each item of information received from the file initializing the execution of the operations controlled by the control information contained in said control memory and relating to this item of information;

(E) storing in each line of said control memory a data field specifying the existence, if any, of beginnings and ends of loops for said item of information and linkage instructions for linkings, if any, to be effected on said control memory at the end of each execution of a control memory processing;

(F) memorizing, for each line of said control memory: the number of said beginnings and ends of loops to be executed; the restart address for each loop; and the jump address to the consecutive processing on the control table;

(G) counting the number of beginning of loop operations associated with the execution of each control line instruction;

(H) counting the number of end of loop operations associated with the execution of each control line instruction;

(I) comparing the result of said counting steps with said data field; and

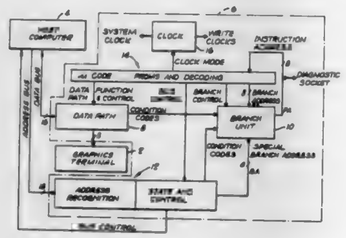
(J) determining, depending on the result of said comparing and on instructions contained in the same line of said control memory, whether to continue looping at the same loop or restart operation at an immediate outer loop or jump to another control table location to execute instructions corresponding to consecutive processing.

4,525,804

INTERFACE APPARATUS FOR HOST COMPUTER AND GRAPHICS TERMINAL

John E. Mosier, Tulsa; Jim B. Surjaatmadja, Duncan; George B. McLawhon, Tulsa, all of Okla., and Jeffrey M. Gallup, Berkeley, Calif., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 22, 1982, Ser. No. 436,128
Int. Cl.³ G06F *5/06, 5/02*
U.S. Cl. 364—900 **7 Claims**



3. An apparatus for interfacing a host computer, having means for generating parallel electrical signals representing control characters and representing display illumination information defined by a twelve-bit X coordinate and a twelve-bit Y coordinate and having a parallel output means including a Unibus data transferal system for outputting the twelve-bit X and Y coordinates, with a graphics terminal, having a serial input means for receiving display illumination information defined by five seven-bit bytes, said apparatus comprising:

parallel receiver means, directly connected to the Unibus data transferal system, for receiving the parallel electrical signals provided by the host computer through the parallel output means;

serial transmission means for sending serial electrical signals from said apparatus to the graphics terminal;

storage means for providing an addressable memory within said apparatus;

control means, responsive to the control characters defined within the parallel electrical signals, for operating said apparatus in either a first mode or a second mode, said control means including:

low-speed transferal means for transferring the parallel electrical signals at a first rate directly between said parallel receiver means and said serial transmission means without storing such signals in said storage means when said apparatus is operating in the first mode; and

high-speed transferal means for transferring the parallel electrical signals including the twelve-bit X coordinate and the twelve-bit Y coordinate to said storage means and for subsequently converting the X coordinate and the Y coordinate into a group of five seven-bit bytes and transferring to said serial transmission means, at a second rate greater than the first rate of said low-speed transferral means, the group of five seven-bit bytes for high-speed serial transmission to the graphics terminal, said high-speed transferal means including:

first multiplexer means, having a first input channel connected to said storage means for receiving a first group of bits within either the X coordinate or the Y coordinate from said storage means, a second input channel connected to said storage means for receiving a second group of bits of the X coordinate or the Y coordinate from said storage means, and a first output channel, for selectively connecting either said first input channel or said second input channel to said first output channel, said first output channel providing a first multiplexer byte of a multiplexer word of information, said first multiplexer byte comprising a selected one of said first and second group of bits;

second multiplexer means, having a third input channel connected to said storage means for receiving said second group of bits of the X coordinate or the Y coordinate from said storage means, a fourth input channel connected to said storage means for receiving said first group of bits of the X coordinate or the Y coordinate from said storage means, and a second output channel, for selectively connecting either said third input channel or said fourth input channel to said second output channel, said second output channel providing a second multiplexer byte of said multiplexer word of information, said second multiplexer byte comprising a selected one of said second and first group of bits; and

electronic register, arithmetic and logic means connected to said first and second output channels for receiving said multiplexer words and for converting those multiplexer words containing binary bits defining the X coordinate and the Y coordinate into five seven-bit bytes of information to be received by the graphics terminal; and

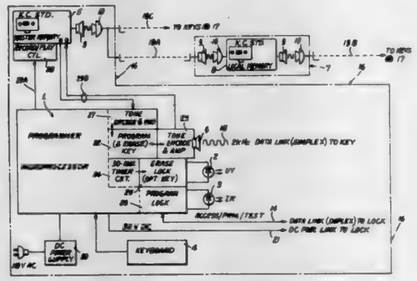
internal bus means for connecting said parallel receiver means, said serial transmission means, said storage means, and said control means.

4,525,805

SECURE LOCKING SYSTEM EMPLOYING RADIANT ENERGY AND ELECTRICAL DATA TRANSMISSION

Richard Prosan, 9970 SW. 11 Ter., Miami, Fla. 33174; James M. Hair, III, P.O. Box 141, Moffett Field, Calif. 94035, and Donald A. Sheppard, 9631 SW. 77th St., Miami, Fla. 33173

Filed Dec. 20, 1982, Ser. No. 451,345
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—900 **8 Claims**



1. An improved security system for use in mobile commerce consisting of an electromechanical lock and electronic key and an integrated program-erase procedure whereby overall systemic complexity and security are increased through the use of electromagnetic wavelengths to erase and reprogram volatile lock memories, comprising:

a computing means located at a first location for programming said lock means and said key means using a first electromagnetic radiating means for programming said lock means with a cipher code and using accoustical wave generating means for programming said key means with a corresponding cipher code;

said computing means also having a second electromagnetic radiating means for erasing said lock means cipher code;

a reprogrammable key means having an accoustical wave receiving microphone and electronic memory storing means for receiving and storing cipher data from the computing means to operate said lock means; and

an accoustical speaker means located at said first location and connected to said computing means for communicating with said microphone on said key means when said key means is at a second location remote from said first location wherein said key means can be programmed to operate said lock means when said lock means is located at said second location and wherein the cipher code can be changed by the computing means only at said first location.

4,525,806

PRINTER SHARING BY PLURALITY OF DISPLAY UNITS IN WORD PROCESSING SYSTEM

Johnny G. Barnes, Austin; John A. Hooten, Round Rock; Patrick J. Hurley, Austin, and Ernest L. Miller, Georgetown, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 247,969, Mar. 26, 1981, abandoned. This application Sep. 30, 1983, Ser. No. 537,618
Int. Cl.³ G06F *3/12, 15/16*
U.S. Cl. 364—900 **6 Claims**

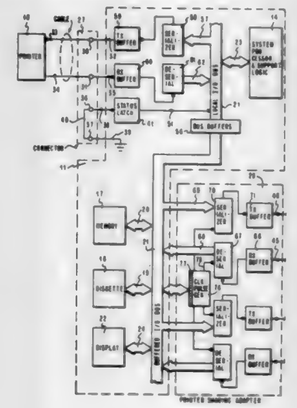
1. In a work processing system comprising a printer and a primary display unit having a text formatting processor, means for displaying text and means for controlling said printer to print formatted text, the improvement wherein said primary display unit comprises

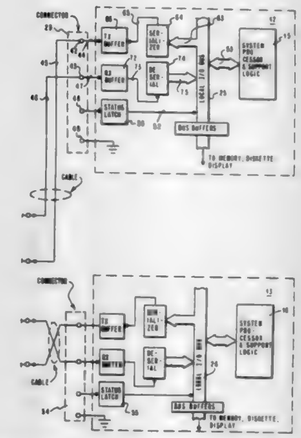
means connected to said printer for controlling the sharing of said printer by said primary display unit and at least one other display unit,

said at least one other display unit having a text formatting processor and means for displaying text and means for controlling the sharing of said printer and means for controlling said printer to print formatted text,

said printer sharing control means in said primary display unit being inactive in the absence of another display unit connected to said primary display unit,

means for selectively connecting said primary display unit to said at least one other display unit, and





means responsive to said connection for activating said printer sharing control means in said primary display unit whereby said other display unit communicates with said printer through said printer sharing control means, thereby sending formatted text to said printer via said printer sharing control means.

4,525,807

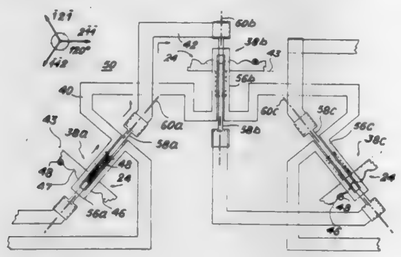
MAGNETIC BUBBLE STORE WITH NON-IMPLANTED MOTIFS AND METHOD FOR CONTROLLING THE SAME

Hubert Jouve, Biviers, and Joël Magnin, Saint-Martin d'Hères, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 17, 1984, Ser. No. 571,484
Claims priority, application France, Jan. 20, 1983, 83 00866
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—36 **26 Claims**

1. A magnetic bubble store, using adjoining non-implanted motifs as bubble-propagating motifs, wherein the store comprises 3n identical, electrically interconnected storage devices, n being a positive integer, which are produced on an identical circuit chip and each comprise minor loops for storing the bubbles, at least one major loop acting as an access loop for the minor loops, first electrical means enabling bubbles to be transferred from the minor loops to the major loop and vice versa, a second electrical means enabling bubbles to be produced on

the major loop, and a third electrical means enabling the bubbles on the major loop to be detected, the third, identical means, each formed by an electric conductor for bubble exten-



sion and contraction and a magneto-resistive element, being disposed in directions making an angle of 120° with one another.

4,525,808

HYBRID MAGNETIC BUBBLE MEMORY DEVICE

Naoki Kodama, Hachioji; Ryo Suzuki, Kodaira; Teruaki Takeuchi, Kokubunji; Masatoshi Takeshita, Hachioji, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 23, 1984, Ser. No. 592,954

Claims priority, application Japan, Mar. 25, 1983, 58-48958

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—36 **2 Claims**



1. A hybrid magnetic bubble memory device including first and second magnetic bubble propagation track means in such a manner that said first magnetic bubble propagation track means is formed of a portion of the boundary between first and second regions of a magnetic medium film having uniaxial anisotropy and adapted to be applied with a magnetic field in a direction perpendicular to said magnetic medium film to generate a magnetic bubble therein, said boundary is produced by implanting said first region with ions under ion-implant conditions different form those for said second region, and said second magnetic bubble propagation track means is formed of a soft magnetic material film on said magnetic medium film and connected with said first magnetic bubble propagation track, wherein said boundary between said first region and said second region is bent at a junction for transferring a magnetic bubble from said second magnetic bubble propagation track means to said first magnetic bubble propagation track means, to divide said boundary into a boundary portion for propagating a magnetic bubble and another boundary portion foreign to magnetic bubble propagation, and an angle between said two boundary portions at the bend in said boundary is put in a range from 45 to 180 degrees.

4,525,809

INTEGRATED CIRCUIT

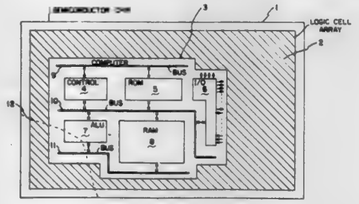
Fumitaka Chiba, and Kyozo Shimizu, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 342,935, Jan. 26, 1982,. This application Aug. 27, 1984, Ser. No. 644,664

Claims priority, application Japan, Jan. 26, 1981, 56/9992

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—51 **4 Claims**



1. An integrated semiconductor circuit comprising a semiconductor substrate having first to fourth edges; a first surface area including a first portion extending along said first edge of said substrate, a second portion extending along said second edge of said substrate, and a third portion extending along said third edge of said substrate; a second surface area having at least first, second and third sides respectively making contact with said first, second and third portions of said first surface area; said first portion of said first surface area lying between said first edge of said substrate and said first side of said second surface area, said second portion of said first surface area lying between said second edge of said substrate and said second side of said second surface area, said third portion of said first surface area lying between said third edge of said substrate and said third side of said second surface area; a computer function block formed on said second surface area of said substrate, said computer function block including in a fixed positional relationship a read only memory on said second surface area, a random access memory on said second surface area, an arithmetic logic unit on said second surface area, a peripheral input-/output circuit on said second surface area, a first bus running adjacent to and along said first side of said second surface area, and a second bus running adjacent to and along said third side of said second surface area; each of said random access memory, said arithmetic logic unit and said peripheral input/output circuit having a plurality of wirings arranged in fixed patterns; a first group of logic unit cells formed on said first portion of said first surface area; a second group of logic unit cells formed on said second portion of said first surface area; a third group of logic unit cells formed on said third portion of said first surface area; first discretionary wirings having arbitrary patterns for arbitrarily interconnecting selected ones of said first, second and third groups of logic unit cells to performed arbitrary logic functions; second discretionary wirings having arbitrary patterns for connecting the selected logic unit cells in said first group of logic unit cells to said first bus of said computer function block; and third discretionary wirings having arbitrary patterns for connecting the selected logic unit cells in said third group of logic unit cells to said second bus of said computer function block; whereby said selected logic unit cells form an additional peripheral circuit or an expanded interface circuit for said computer function block.

4,525,810

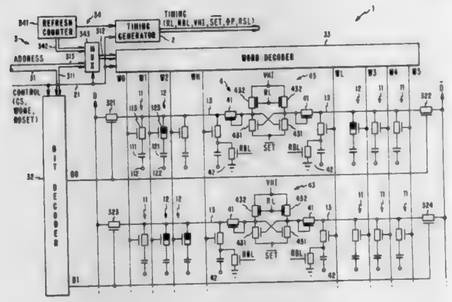
SEMICONDUCTOR MEMORY CAPABLE OF BOTH READ/WRITE AND READ-ONLY OPERATION

William H. Cochran, and Philip T. Wu, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 173,240, Jul. 28, 1980, abandoned. This application May 9, 1983, Ser. No. 492,976

Int. Cl.³ G11C *11/24*

U.S. Cl. 365—102 **13 Claims**



1. A method of accessing fixed data contained in a combined read-only and read/write memory having an array of addressable storage cells each having an FET and a storage element, a first plurality of said FETs being physically constructed so as to have a first threshold voltage and a second plurality of said FETs being physically constructed so as to have a second threshold voltage different from said first threshold voltage, comprising the steps of:

(a) first, accessing each of said cells with a voltage level capable of loading a first of two different data voltages into the storage element of each of said storage cells in said first plurality and a second of said data voltages into the storage element of each of said storage cells in said second plurality;

(b) thereafter, selecting one of said storage cells so as to transfer the data voltage stored in its storage element to an output data line.

4,525,811

SEMICONDUCTOR MEMORY AND METHOD OF PRODUCING THE SAME

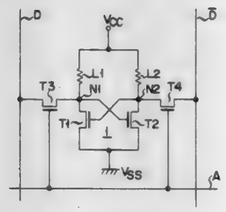
Fujio Masuoka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 29, 1982, Ser. No. 344,047

Claims priority, application Japan, Feb. 6, 1981, 56/16651

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—154 **5 Claims**



1. An integrated static RAM, comprising a flip-flop circuit constituting a memory cell, a MOS transistor for selecting the memory cell, and a peripheral circuit formed in a substrate in which is formed a memory matrix, wherein the gate oxide film of the MOS transistor for selecting the memory cell is thicker than the gate oxide film of the MOS transistor included in the peripheral circuit.

4,525,812

SEMICONDUCTOR MEMORY DEVICE

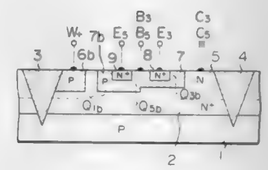
Kazuhiro Toyoda, Yokohama, and Chikai Ono, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 18, 1982, Ser. No. 442,755

Claims priority, application Japan, Nov. 20, 1981, 56-185460

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—155 **7 Claims**



1. A semiconductor memory device having word lines and having bit lines intersecting the word lines, comprising:

a memory cell array having memory cells operatively connected at the intersections of the word lines and bit lines, each of said memory cells comprising:

two PNPN cells cross-coupled with each other, each PNPN cell comprising a load transistor and a multi-emitter transistor operatively connected to said load transistor, said multi-emitter transistor comprising:

a data holding transistor; and

a read/write transistor operatively connected to said data holding transistor, said read/write transistor having a current amplification factor and having means for decreasing the current amplification factor when said read/write transistor operates inveresely.

4,525,813

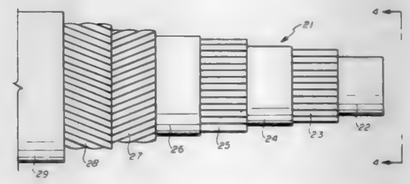
ARMORED UMBILICAL APPARATUS FOR TOWING A MARINE SEISMIC AIR GUN SUB-ARRAY

Eric C. Burrage, P.O. Box 581, Pearland, Tex. 77581

Filed Jan. 21, 1982, Ser. No. 342,510

Int. Cl.³ G01V *1/38*

U.S. Cl. 367—20 **7 Claims**



5. An armored umbilical apparatus for towing a sub-array of a plurality of marine seismic air guns comprising:

a central air hose;

a first plurality of electrical control cables disposed concentrically around said central air hose;

a protective wrapping disposed around said first plurality of electrical control cables;

a second plurality of electrical control cables disposed concentrically around said protective wrapping;

a first protective coating disposed over said second plurality of electrical control cables;

a first stress member comprised of a plurality of high tensile strength steel wires spirally wrapped around said first protective coating;

a second stress member comprised of a plurality of high

tensile strength steel wires spirally wrapped around said first stress member;

flotation means disposed over said second stress member;

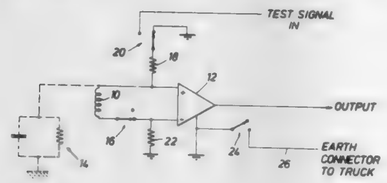
a termination housing attached to one end of said armored umbilical for receiving said central air hose and said first and second plurality of electrical control cables.

4,525,814

LEAKAGE TESTING CABLE CONNECTOR NETWORK

James C. Woodall, Houston, Tex., assignor to Mark Products Incorporated, Houston, Tex.

Filed Aug. 23, 1982, Ser. No. 410,541
Int. Cl.³ G01V *1/38*; G01R *27/26, 31/08*
U.S. Cl. 367—20 **7 Claims**



1. Apparatus for determining the presence of leakage at each of a plurality of data units in a data transmission system having sequentially connected data units cable-connected to a control station, comprising at each of said data units

an electronic data transmission network including a differential amplifier connected to receive a local data signal across its input terminals whose full amplitude value is at least partially decreased in the presence of a leakage connection to earth, said network being connected to electrical circuit common,

an input voltage divider element connected to a first of the input terminals of said differential amplifier for receiving a test voltage,

a complementary voltage divider element connected to the second input terminal of said differential amplifier and connected to the electrical circuit common for the data unit,

a connecting earth conductor from the electrical circuit common to said control station for connecting to the electrical circuit common at said control station, the control station electrical circuit common being connected to earth, and

switch means at said data unit for opening the connection between the local data signal and said second input terminal of said differential amplifier and for connecting the electrical circuit common at said data unit to said connecting earth conductor, the output level from said differential amplifier indicating the presence of a leakage connection to earth.

4,525,815

WELL PIPE PERFORATION DETECTOR

W. Keith R. Watson, P.O. Box 1537, Rancho Sante Fe, Calif. 92067

Filed Feb. 9, 1982, Ser. No. 347,164
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—35 **17 Claims**

1. In apparatus to detect a discontinuity indicative of a hole in the bore wall of an axially extending tubular member, the combination comprising

(a) a carrier adapted to be traveled axially lengthwise in the bore of said member,

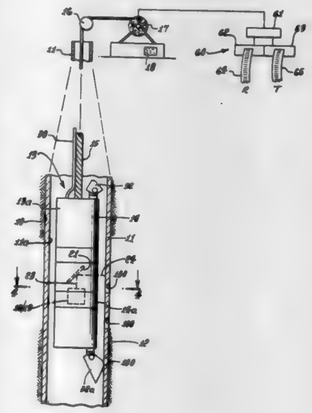
(b) acoustical wave transmitting means located on the carrier to transmit acoustical waves for travel toward the bore wall and reflection therefrom,

(c) acoustical wave detector means at least partially located on the carrier to receive acoustical waves reflected from the bore wall and to detect the presence or absence of such reflected waves, and

(d) control means for providing an indication of said discontinuity, and including means for controlling the transmission to the detector means of said reflected acoustical waves and characterized in that the detector means is controllably exposed to reception of a sequential succession of reflected acoustical waves corresponding to a sequential succession of bore wall portions from which the waves are reflected,

(e) said control means including an acoustical wave reflector, and drive means to rotate the reflector at a location to reflect said (b) means transmitted waves, and to reflect said (c) means reflected waves,

(f) said reflected acoustical waves including first waves



indicative of the absence of a hole in said bore wall, and second waves indicative of the presence of a hole in said bore wall, and wherein said control means includes circuitry to produce attenuated signal versions of said first waves and amplified signal versions of said second waves,

(g) said circuitry including sampling means to provide a selected number of samples of the received signal, per revolution of the reflector, and a processor to receive said samples and to combine them with averaged values of selected time delayed sample values, thereby to derive substantially no output when no discontinuities are detected, and positive outputs when discontinuities are detected,

(h) said circuitry including means to receive said samples and process same to derive an azimuthal indication of the location of the detected discontinuity.

4,525,816

SONAR ARRANGEMENTS

Paul A. Crowther, London, England, assignor to The Marconi Company Limited, England

Filed Sep. 23, 1982, Ser. No. 421,960
Claims priority, application United Kingdom, Sep. 25, 1981, 8129090
Int. Cl.³ G01S *3/82*
U.S. Cl. 367—123 **6 Claims**

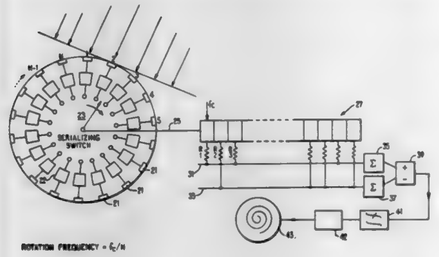
1. A sonar arrangement for generating a rotation directional response beam to an incoming sonar signal comprising:

(a) a circular array of electroacoustic transducers each of which generates an individual electric signal,

(b) means for sequentially sampling the signals from said transducers

(c) clocking means for quantising the signal samples and producing digital representations thereof, and

(d) a shift register arranged to be fed sequentially with digital representations of said signal samples, said shift register being provided with sufficient stages to receive a plurality of cycles of signal samples and being tapped at a predetermined selection of stages with individual positive and negative tap weightings of appropriate magnitude to provide phase compensation of said incoming sonar signal at



those transducers whose signal samples instantaneously occupy said predetermined selection of stages over a plurality of cycles of signal samples, and

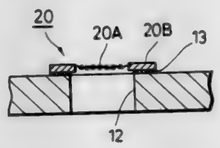
(e) summing means to sum the weighted output signals from said tapped stages and thereby generate said rotating directional response beam.

4,525,817

ACOUSTIC RESISTOR IN AN ELECTROACOUSTIC TRANSDUCER

Suzuki Takuya, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 16, 1983, Ser. No. 523,719
Claims priority, application Japan, Aug. 27, 1982, 57-149002; Aug. 27, 1982, 57-149003
Int. Cl.³ G01V *1/00*; H04R *1/28*
U.S. Cl. 367—140 **10 Claims**



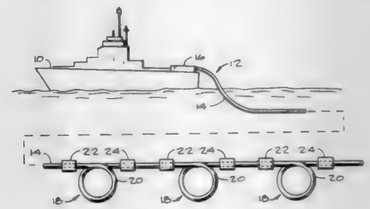
5. An acoustic resistor provided on an electroacoustic transducer to cover each of tone apertures formed in said electroacoustic transducer, said acoustic resistor being formed of a mesh member having an acoustic resistance characteristic and comprising an acoustically resistant portion corresponding to said tone aperture and an acoustically opaque portion surrounding said acoustically resistant portion, said acoustically opaque portion being secured rigidly to the peripheral portion of said tone aperture, and an acoustic resistance component determined by said acoustically resistant portion of the mesh member being imparted to a tone aperture portion of said transducer.

4,525,818

STABLE FIBER-OPTIC HYDROPHONE

Paolo G. Cielo, and Garfield W. McMahon, both of Dartmouth, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Continuation of Ser. No. 89,635, Oct. 29, 1979, abandoned. This application Jul. 28, 1982, Ser. No. 402,808
Claims priority, application Canada, Aug. 9, 1979, 333603
Int. Cl.³ H04B *13/00*
U.S. Cl. 367—149 **17 Claims**



1. An optical fiber hydrophone system adapted to process variations in local acoustical pressure in a fluid body and provide an identifiable output signal, comprising:

signal source and detecting means for providing an optical signal in a selected form, and for detecting and extracting said indentifiable output signal;

a single optical fiber connected at one end to said source and detecting means and operable for conducting optical signals from said source and to said detecting means;

a sensing means in said optical fiber remote from said source and detecting means, said sensing means being adapted for immersion in said body and including two optical reflector means incorporated into said fiber and spaced one from the other by a predetermined length of said optical fiber, at least one of said reflector means being partially reflective and partially transmissive, said variations in acoustical pressure incident on said sensing portion causing a change in said predetermined length thereof and thus a phase and intensity modulation in the portion of said optical signal reflected back and forth between said two optical reflector means and,

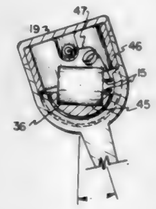
means connected to said source and detecting means for processing the intensity modulated optical signal transmitted back to said source and detecting means in said optical fiber for extraction therefrom of said identifiable output signal.

4,525,819

HORIZONTAL GEOPHONE TRANSDUCER ASSEMBLY

Fred W. Hefer, Houston, Tex., assignor to Oyo Corporation, U.S.A., Houston, Tex.

Filed Dec. 6, 1982, Ser. No. 447,095
Int. Cl.³ H04R *9/00*
U.S. Cl. 367—188 **3 Claims**



1. A seismic transducer comprising in combination:

a rigid casing having a gimbal chamber defining a bottom

wall and means for coupling the casing to the ground to pick up the vibrations thereof;

a horizontal geophone having a pair of terminals being disposed inside said chamber;

a leader cable extending though the casing and means connecting the geophone terminals to said leader cable; and

gimbal means positioned inside the casing chamber and adapted to maintain said horizontal geophone in a horizontal plane for within a predetermined tilt angle range of said casing relative to the vertical, said gimbal means being a medium partially filling said gimbal cavity and being adapted to support said geophone and to transmit vibrations from said ground to said geophone; and said gimbal means including:

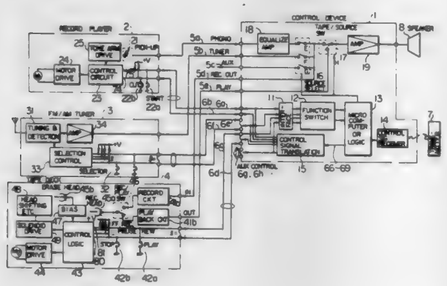
a carriage movably mounded on the bottom wall of said gimbal chamber for limited movement in one direction only in response to an angular tilt of said casing to thereby cause the angle of the geophone's vertical axis to become in substantial alignment with the horizontal.

4,525,820

FUNCTION SELECTING METHOD AND SYSTEM FOR AN AUDIO/VIDEO RECORDING AND REPRODUCING SYSTEM

Takashi Enoki; Hiroaki Nakamura, both of Toyokawa, and Fujio Nakashima, Aichi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,512
Claims priority, application Japan, Mar. 19, 1980, 55-33867
Int. Cl.³ G11B *31/00*; H04N *5/76*
U.S. Cl. 369—2 **7 Claims**



1. A function selection apparatus for selecting a function of an audio/video recording/reproducing system comprising:

a plurality of signal sources;

a control device including a selection circuit having a plurality of function select switches for selecting any one of the plurality of signal sources, said function select switches being disposed in respective signal transmission lines, a plurality of function switches provided corresponding to said plurality of signal sources, and function control means disposed between said plurality of function switches and said selection circuit responsive to the closure of one of said plurality of function switches for controlling one of said plurality of function selection switches corresponding to the closed function switch so as to select one of said signal sources corresponding to the closed function switch;

an external unit comprising reproducing means forming at least one of said plurality of signal sources, said external unit including therein a motive switch and a control circuit for controlling the operation of said reproducing means corresponding to said motive switch when said motive switch is closed;

first control means provided in said control device and responsive to the closure of said motive switch for controlling a corresponding one of said plurality of function switches to make it equivalently closed;

a control transmission line provided between said external unit and said control means for transmitting a signal indicative of the closure of said motive switch to said control means; and

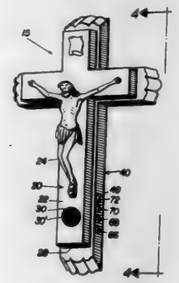
second control means disposed between said plurality of function switches and said motive switch of the external unit and responsive to the closure of one of said function switches corresponding to said external unit to render the motive switch corresponding to the closed function switch equivalently in the closed state.

4,525,821

CROSS

Juan R. Garcia, 4235 NW. 167 Ter., Carol City, Fla. 33055

Filed Mar. 14, 1984, Ser. No. 589,563
Int. Cl.³ A47G *33/02*
U.S. Cl. 369—31 **8 Claims**



1. A cross assembly comprising:

(a) a cross and a casing, said cross removably attached to said casing and selectively positionable in supported engagement with said casing and in outwardly extending, upright relation thereto and in overlying substantially parallel position relative thereto,

(b) attachment means comprising a pin element extending outwardly from an outer surface of said casing in perpendicular relation thereto and a key element having a substantially elongated configuration and mounted on said casing in spaced apart and aligned relation to said pin element, wherein a central longitudinal axis of said key element is aligned with a central axis of said pin element,

(c) said attachment means further comprising a first recess located in a distal end of said cross and dimensioned to receive said pin element therein; a track means formed in an under surface of said cross and dimensioned and configured to simultaneously receive said pin element and said key element therein,

(d) said upright position defined by engagement between said pin element and said first recess and said overlying position defined by engagement between said pin element and said key element with said track means,

(e) said casing further comprising a main recess formed in said outer surface thereof and dimensioned to receive a tape recording machine therein, a tape recording machine disposed within said main recess and including operator means structured to operate said machine,

(f) side opening recess means formed in said casing in communicating relation with said main recess and dimensioned to permit passage therethrough of said operator means for manipulation thereof exteriorly of said casing, and

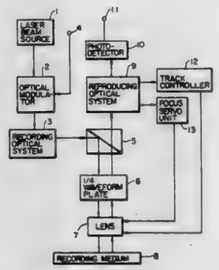
(g) an opening formed in said cross and disposed in overlying relation with said main recess and in substantial registry with a speaker of said tape recording machine.

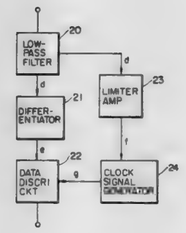
4,525,822

OPTICAL DATA RECORDATION AND REPRODUCTION SYSTEM

Nobuo Nishimura, Kanagawa, Japan, assignor to Fuji Xerox Company, Limited, Tokyo, Japan

Filed Mar. 4, 1982, Ser. No. 354,673
Claims priority, application Japan, May 29, 1981, 56-81280
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—44 **11 Claims**





1. An optical data recordation and reproduction system, comprising:

first optical means including modulation means wherein a beam of light from a source is frequency modulated by digital data such that a recording signal is produced corresponding to said digital data having a pulse width equal to at least a signal period, said modulated light impacting upon a photosensitive recording medium to produce discontinuities in said medium which correspond to the data to be recorded;

a second optical means, in which a beam of unmodulated light directed onto said photosensitive medium is received and is converted to an electrical signal; and

an electrical circuit comprising a differentiator in which said electrical signal is differentiated and sampled to uncover said recorded data.

4,525,823

OPTICAL TRACKING SYSTEM

Toshio Sugiyama; Hideo Suenaga, both of Toyokawa, and Yukio Fukui, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 397,973
Claims priority, application Japan, Jul. 22, 1981, 56-113679
Int. Cl.³ G11B *21/10, 7/00*
U.S. Cl. 369—44 **12 Claims**

1. An optical tracking system comprising:

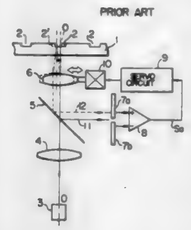
a recording medium having information pits located apart from each other;

an optical system which projects a light beam from a light source onto said recording medium and collects the reflection ray from said recording medium;

a light sensitive means for detecting said reflection ray; and

a control means which samples the output of said light light sensitive means intermittently and controls said optical system so that said light beam scans the central portions of said information pits, said control means including;

a comparator which generates a trigger signal indicating that



said light beam is scanning a pit in response to said reflection ray with its intensity detected by said light sensitive means lower than a predetermined level, and

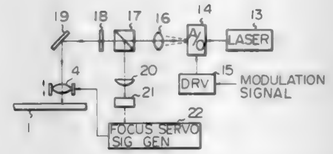
a sample holding circuit which samples the output of said light sensitive means in response to said trigger signal.

4,525,824

INFORMATION RECORDING SYSTEM

Hideki Hatano; Norikiyo Tajiri; Sakashi Otaki, and Shigeru Kato, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,241
Claims priority, application Japan, Jun. 4, 1981, 56-086154
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—45 **4 Claims**



1. An information recording system utilizing a recording medium having a vertical magnetization film on and from which the information is recorded and played back, respectively comprising:

(a) a source of recording light beam;

(b) a modulator for modulating said recording light beam in accordance with a signal representing the information to be recorded, to form sequences of pulses of said recording light beam which carries said information:

(c) an optical transmission means including a focus lens, for focusing said recording light beam on the surface of the vertical magnetization film;

(d) a focus servomechanism for adjusting the postion of said focus lens in accordance with a control signal;

(e) a bias-beam means for continuously applying a bias beam having a power level which does not change the direction of magnetization of the vertical magnetization film to the surface of the magnetization film; and,

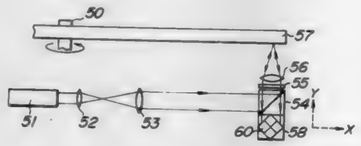
(f) means for producing said control signal based upon the reflection of said bias beam from said magnetization film.

4,525,825

METHOD AND APPARATUS FOR DETECTING FOCUSSING AND TRACKING ERROR SIGNALS

Kenichi Ito; Tohru Musha; Kiichi Kato, and Kimiaki Yamamoto, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Oct. 7, 1981, Ser. No. 309,402
Claims priority, application Japan, Oct. 9, 1980, 55-141174
Int. Cl.³ G11B *7/08*
U.S. Cl. 369—45 **32 Claims**



1. A method for detecting a focussing error signal and a tracking error signal of an objective lens with respect to at least one track direction on a record medium onto which a spot of a light beam is formed by means of said objective lens, each track of said record medium being constituted by crenellated pit construction, having a depth other than an integer multiple of a quarter-wavelength of the light beam, comprising:

focussing the light beam emitted from a light source onto a record medium;

introducing at least a part of a light flux which is reflected from the record medium into an optical member including an optical surface which reflects and/or refracts the incident light flux, said optical member being made of material which has a higher refractive index than that of material into which said light flux enters after being refracted by and transmitted through said optical surface;

detecting at least a part of the light flux reflected by said optical surface by means of a light detector which is arranged in a far field of the track and comprises four divided light receiving regions arranged about an optical axis of the incident light flux; and

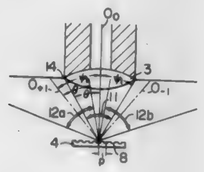
deriving the focussing error signal by detecting a difference between the output signals supplied from two light receiving regions aligned in said track direction and deriving the tracking error signal by determining the difference between the output signals from the two light receiving regions aligned in a direction perpendicular to said track direction.

4,525,826

OPTICAL TRACK POSITION DETECTING APPARATUS AND OPTICAL INFORMATION PROCESSOR USING THE SAME

Shigeru Nakamura, Hachioji; Yoshito Tsunoda, Mitaka; Kazuo Shigematsu, Saitama; Toshimitsu Kaku, Hachioji; Takeshi Maeda, Kokubunji, and Tsuyoshi Kato, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 27, 1982, Ser. No. 402,234
Claims priority, application Japan, Sep. 28, 1981, 56-152086
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—46 **5 Claims**



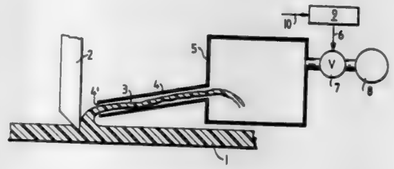
1. An optical track position detecting apparatus comprising a light source, optical means for directing a light flux from said light source to a track on a predetermined recording plane as a focused spot through an optical focusing element, a light detector for detecting a reflected light flux from said track and detection means for detecting a deviation between said focused spot and said track on the basis of an output signal from said light detector, wherein said light detector has at least two light receiving parts arranged symmetrically with respect to a direction of said track, and said light receiving parts detect only changes in light intensity due to respective interferences between a 0-order diffracted light ray and ±1-order diffracted light rays in said reflected light flux, said light receiving parts being disposed within reduced portions of respective overlap areas of the 0-order diffracted light ray and the ±1-order diffracted light rays in said reflected light flux, each of said reduced portions being defined by parallelly shifting said overlap area in opposite directions perpendicularly to the direction of said track by a distance equal to a maximum misalignment of an optical axis of said reflected light flux.

4,525,827

APPARATUS FOR REMOVING A CUT CHIP BY SUCTION

Horst Redlich, Berlin, Fed. Rep. of Germany, assignor to TELDEC Telefunken - Decca Schallplatten GmbH, Hamburg, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,047
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1981, 3142206
Int. Cl.³ G11B *3/58*
U.S. Cl. 369—72 **10 Claims**



1. Apparatus for removing a cut chip produced during cutting of information into a metal record carrier by a cutting stylus comprising, in combination: first means for producing suction air in the immediate vicinity of the cutting stylus and for removing the cut chip by means of the suction air; and second means for controlling the pressure of the suction air in dependence on the depth recording component of the recording.

4,525,828

OPTICAL MAGNETIC RECORDING DEVICE

Yasushi Higashiyama; Shu Chiba, and Norikazu Sawazaki, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

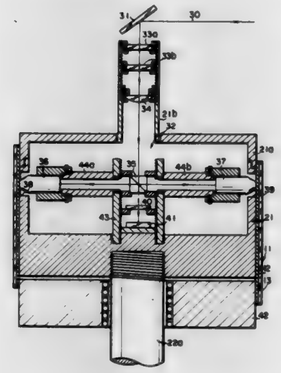
Filed Mar. 19, 1982, Ser. No. 359,808
Claims priority, application Japan, Mar. 24, 1981, 56-42911
Int. Cl.³ G11B *7/12, 11/14*
U.S. Cl. 369—111 **10 Claims**

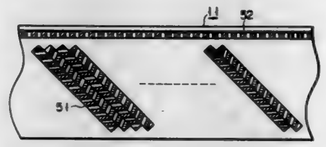
1. An optical recording device for forming recording tracks of an indented pattern on a magnetic recording tape, comprising:

a rotary drum which has a circumferential wall having at least two windows and which is free to rotate about a rotating axis thereof, the magnetic recording tape being driven obliquely on said windows along an outer surface of the circumferential wall,

means for supplying a laser beam modulated by a signal to be recorded, and

an optical system, disposed inside the rotary drum, for converting the laser beam incident on said optical system into at least two slit beams, major axes of sections of which form a predetermined angle and for emitting the slit beams on the magnetic recording tape through said windows, whereby said recording tracks of the indented pattern in





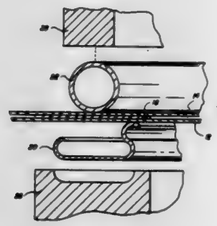
correspondence with the signal are formed obliquely on the magnetic recording tape with respect to a longitudinal direction of the magnetic recording tape by the slit beams so as to form different azimuths between adjacent recording tracks.

4,525,829

OPTICAL DISK ASSEMBLY RETAINING RINGS

Peter Affolter, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,430
Int. Cl.³ G01D *15/32*
U.S. Cl. 369—284 **5 Claims**



1. An optical disk assembly comprising:

A. a flexible, disk-shaped web assembly carrying a record layer, said web assembly having an information storage region and an annular peripheral region radially outward of said storage region; and

B. an annular retaining ring engaging said peripheral region of said web assembly, said retaining ring including

(1) a first ring member on one side of said web assembly, said first ring member having an annular recess with

(a) a generally U-shaped cross-sectional shape open at the side facing said web assembly and

(b) an undercut area, and

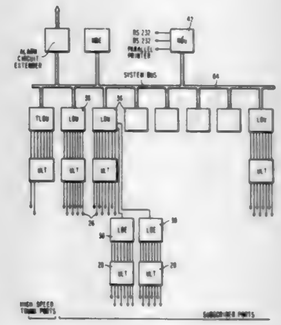
(2) a second ring member of malleable material on the other side of said web assembly, said second ring member having been deformed into said recess and said undercut area to provide a locking interfit with said first ring member with said annular peripheral region of said web assembly interleaved between the ring members in clamped circumferentially-symmetric tension.

4,525,830

ADVANCED NETWORK PROCESSOR

Albert E. Cohen, Merrick; William G. Hance, Selden; Ian Moir, Stony Brook, all of N.Y.; Thao Lane, and Frederic Caussarieu, both of Rennes, France, assignors to Databit, Inc., N.Y. and Ouest Standard Telematique, France

Filed Oct. 25, 1983, Ser. No. 545,030
Int. Cl.³ H04Q *11/04, 11/00*
U.S. Cl. 370—60 **23 Claims**



1. An advanced network processor (ANP) which uses distributed processing and is connectable to a plurality of subscriber input lines for data transmission and communication in accordance with a plurality of subscriber data protocols, said processor comprising, in combination:

(a) a plurality of line director units (LDU), each one of said LDU's including:

(i) a plurality of subscriber circuits to accommodate line terminated input lines;

(ii) a memory; and

(iii) computing means, connected to said subscriber circuits and to said memory, for receiving data from said subscriber circuits, for arranging said data into data packets and for storing said data in said memory, said computing means being programmable to selectively accommodate a plurality of subscriber data protocols;

(b) a plurality of universal line terminator (ULT) units, each one of said ULT's comprising means for interfacing said subscriber input lines and for providing said line terminated input lines to said subscriber circuits; each one of said ULT's being removably connectable to one of said plurality of LDU's so that each of said LDU's may be connected to a respective one of said ULT's which is configured to handle a selection of said subscriber input lines;

(c) a system bus interconnecting said plurality of LDU's; and

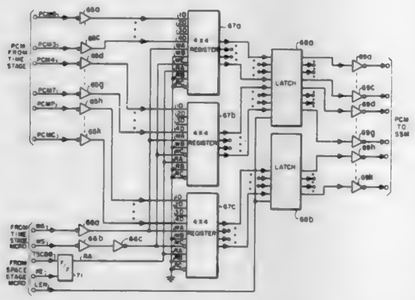
(d) a nodal director unit (NDU) for coordinating data flow between said plurality of LDU's and for performing supervisory functions; said data flow being routed along said system bus.

4,525,831

INTERFACE ARRANGEMENT FOR BUFFERING COMMUNICATION INFORMATION BETWEEN A TRANSMITTING AND RECEIVING STAGE OF A TIME-SPACE-TIME DIGITAL SWITCHING SYSTEM

Nathaniel Simmons, Downers Grove, Ill., and Kamal I. Parikh, Phoenix, Ariz., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Jun. 22, 1983, Ser. No. 506,564
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—63 **12 Claims**



1. An interface arrangement for buffering communication information between a transmitting stage and a receiving stage of a time-space-time digital switching network, said digital switching network including a network clock unit transmitting a master-clock signal and defining at least first and second time slots, said communication information transmitted from said transmitting stage during each time slot, said interface arrangement comprising:

storage means connected to said transmitting stage, said storage means including first and second addressable storage files:

first control signal generating means associated with said transmitting stage and arranged to receive said master-clock signal, said first control signal generating means developing and transmitting to said storage means during said first time slot a first set of control signals for addressing and writing said communication information into said first storage file, and during a second time slot a second set of control signals for addressing and writing said communication information into said second storage file;

second control signal generating means associated with said receiving stage and arranged to receive said master-clock signal, said second control signal generating means developing and transmitting to said storage means during said first time slot a first set of control signals for addressing and reading said communication information from said second storage file, and during said second time slot a second set of control signals for addressing and reading said communication information from said first storage file;

latching means connected to said storage means arranged to capture and transmit to said receiving stage said communications information read from said storage means, responsive to a latch enable control signal generated by said second control signal generating means; and

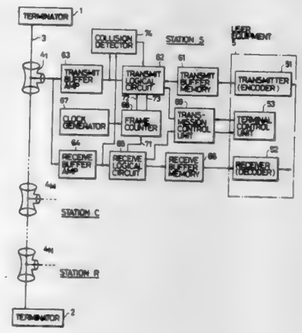
said storage means operated in said first time slot to write said communication information in said first storage file and simultaneously to read said communication information from said second storage file and said storage means operated in said second time slot to write said communication information in said second storage file and simultaneously to read said communication information from said first storage file.

4,525,832

DIGITAL SIGNAL TRANSMISSION SYSTEM

Fumio Miyao, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1983, Ser. No. 509,215
Claims priority, application Japan, Jul. 7, 1982, 57/116811; Jul. 14, 1982, 57/121229
Int. Cl.³ H04J *3/02*
U.S. Cl. 370—85 **12 Claims**



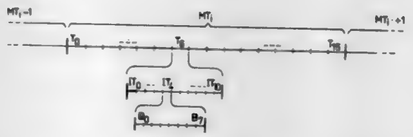
1. A digital signal transmission system for effecting time-division multiplexing/circuit switching transmission and reception of signals in the form of packets among a multiplicity of personal stations by causing digital signals transferred on a transmission cable to be fixedly positioned within periodically repeating frames along a time axis and further dividing each of the frames on said time axis into unit blocks thereby providing said personal stations with chances for digital signal transmissions, the multiplicity of personal stations including a master station which establishes system timing, the digital signal transmission system being characterized by the master station issuing a packet which incorporates therein a distance code and the other personal stations issuing packets which do not incorporate therein said distance code, said distance code being exclusively related to a time for signal propagation from a predetermined datum point located along the transmission cable to the master station on the transmission cable.

4,525,833

PROCESS FOR TIME-SEQUENCED MULTIPLEXING OF DATA ON A TRANSMISSION MEDIUM AND DEVICES TO IMPLEMENT THIS PROCESS

Egidio Cau, and Jean P. Lamiral, both of Paris, France, assignors to Lignes Telegraphiques et Telephoniques, Ste. Honorine, France

Filed Sep. 24, 1982, Ser. No. 422,385
Claims priority, application France, Oct. 9, 1981, 81 19081
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—99 **4 Claims**



1. A process for time-sequenced multiplexing of data on a transmission medium, in which data for transmission is coded in the form of binary words, combined in frames and multiframes, a frame (T) containing a series of binary words representing the data for transmission, and auxiliary bits representing at least synchronization and signalling data, and a multiframe (MT) containing a series of successive frames, the process allowing N data channels to be multiplexed on a single carrier, each frame (T) containing N+1 binary words (IT) of the same length, only the first such word (IT_o) containing binary bits, and following words representing a coded sample of data to be transmitted on each channel respectively, the first word (IT_o) in odd index even ranking frames (T_1, T_2, T_3, T_5, T_7, T_9, T_{11}, T_{13}, T_{15}), in each multiframe containing synchronization signals (VT), signallying data (S) being contained in the first word (IT_o) of even index odd ranking frames (T_2, T_4, T_8, T_{12}, T_{14}), and being paired in the form S_i and $S_{i+(N/2)}$, where S represents the signalling data and i the rank of the channel to which it refers, and in which N equals 10, and in which, for each multiframe, the first word (IT_o) in the first frame (T_o) contains a multiframe synchronization signal (VMT), the first word (IT_o) in every even-ranking frame (T_1–T_{15}) contains the same frame synchronization signal (VT), and the first word (IT_o) in some of the remaining odd-ranking frame contains channel-signalling data as follows:

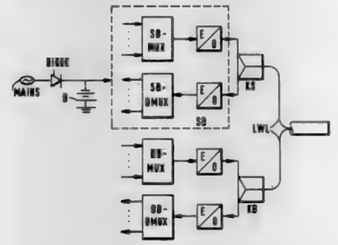
third frame (T_2), signalling of channels **1** and **6**;
fifth frame (T_4), signalling of channels **2** and **7**;
ninth frame (T_8), signalling of channels **3** and **8**;
thirteenth frame (T_{12}), signalling of channels **4** and **9**;
fifteenth frame (T_{14}), signalling of channels **5** and **10**.

4,525,834

SERVICE INTEGRATED DIGITAL TRANSMISSION SYSTEM

Klaus D. Schenkel, Oppenweiler, and Manfred Welzenbach, Backnang, both of Fed. Rep. of Germany, assignors to LICENTIA Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 3, 1981, Ser. No. 327,083
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045876
Int. Cl.³ H04B *9/00*
U.S. Cl. 370—3 **9 Claims**



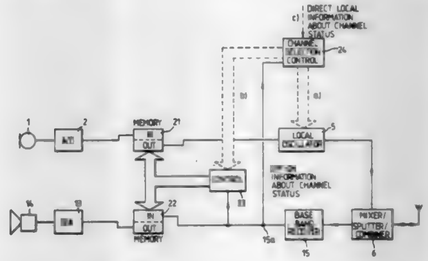
1. In a service integrated digital multiplex signal transmission system for transmitting narrowband and broadband signals between a central exchange terminal and a subscriber terminal, which system includes means defining a light conductor path connected between the terminals, a transmitter device at one terminal composed of narrowband signal transmitting means including a source of narrowband light signals, broadband signal transmitting means including a source of broadband light signals, and optical means connected between the light conductor path and the sources of light signals for supplying such light signals to the light conductor path, and a receiver device at the other terminal composed of broadband light signal receiving means, narrowband light signal receiving means, and optical means connected to the light conducting path for receiving light signals from that path and separately conducting the received narrowband and broadband light signals to respective ones of the receiving means, the device at the subscriber terminal being normally supplied with operating power by local utility mains, and including a charge accumulator for supplying operating power independently of the local mains, connected to the narrowband means at the subscriber terminal for supplying such power only to the narrowband means at the subscriber terminal in the event of interruption of the power supply provided by the local mains, and the system thus being arranged to effect transmission of the light signals over the light conductor path in the event of such local mains power interruption, at a reduced bit rate compared to the bit rate utilized when power is being supplied by the local mains, the improvement wherein said optical means in said transmitter and receiver devices are constructed and connected to said light conductor path such that said optical means and said light conductor path constitute means establishing separate optical transmission channels for the narrowband signals and for the broadband signals between said sources at said one terminal and said receiving means at said other terminal, said optical means at said subscriber terminal comprise a broadband signal directional coupler connected to said broadband means at said subscriber terminal for permitting broadband light signal transmission to be effected by directional multiplexing and a narrowband signal directional coupler connected to said narrowband means at said subscriber terminal for permitting narrowband light signal transmission to be effected by directional multiplexing, said source of broadband light signals comprises a laser diode coupling the broadband light signals to said path, and said source of narrowband light signals comprises a light emitting diode coupling the narrowband light signals to said path.

4,525,835

DUPLEX RADIO SYSTEM UTILIZING TIME COMPRESSION EXPANSION

Ian A. W. Vance, Newport, England, and Stephen D. Bainton, Ottawa, both of Canada, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 6, 1982, Ser. No. 433,079
Claims priority, application United Kingdom, Oct. 13, 1981, 8130812
Int. Cl.³ H04L *5/14*; H04B *1/56*; H04J *3/00*
U.S. Cl. 370—29 **9 Claims**



1. A duplex radio system having a plurality of terminals each operative for transmitting outgoing signals and receiving incoming signals on any of a plurality of transmission channels which can thus have a used or unused status, each of said plurality of terminals comprising:

a direct conversion receiver having a receiver input that has the incoming signals coupled thereto during operation in a receive mode, and a receiver output;

local oscillator means having a control input and an oscillator output and operative for generating and presenting at said oscillator output an output signal at a carrier frequency modulated with any modulating signal supplied to said control input, said oscillator output being coupled to said receiver input to supply thereto at least during operation in said receive mode the output signal of said oscillator means at said carrier frequency;

compression means for time compressing data, including an output connected to said control input of said oscillator means to supply the time compressed data to said control input as said modulating signal;

expansion means for time expanding data received, including an input coupled to said receiver output; and

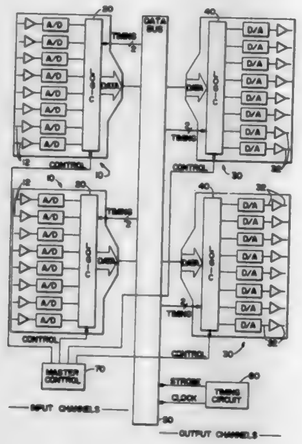
control means having outputs coupled to said compression means and said expansion means to control modulating of said oscillator means with said modulating signal and hence transmission of said time compressed data to be transmitted during a transmit mode of operation, and expansion of said received data during the receive mode of operation.

4,525,836

CIRCUIT FOR CONVERTING A LOGICAL SIGNAL INTO TWO BALANCED LOGICAL SIGNALS

Birney D. Dayton, Nevada City, and Dale L. Leavitt, Auburn, both of Calif., assignors to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Dec. 27, 1982, Ser. No. 453,002
Int. Cl.³ H04J 11/04, 3/02; H04B 3/00
U.S. Cl. 370—67 **13 Claims**



1. A device for selectively routing analog electrical signals from at least one of a plurality of sources to at least one of a plurality of destinations, said device comprising:

analog-to-digital converter means for receiving an input analog signal from at least one selected source and converting the input analog signal into a corresponding sequence of digital signals at a frequency f, said analog-to-digital converter means having one output line for each digit of the digital signals produced thereby and each output line having a single conductor;

a data bus having one line for each digit of the digital signals produced by the analog-to-digital converter means, each line of the data bus having two conductors;

selectively-operable level converting and driving means for converting the digital signal on each output line of the analog-to-digital converter means into a pair of balanced digital signals and applying the resulting sequence of digital signals to the data bus,

selectively-operable sampling means for accepting the sequence of digital signals from the the data bus;

digital-to-analog converter means for converting the sequence of digital signals into a replication of said input analog signal and applying said replication to at least one selected destination; and

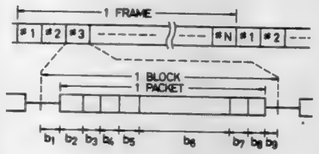
timing means for defining a succession of digital data transmission periods, of duration substantially equal to 1/f, and also defining n discrete intervals within each transmission period, where n is a positive integer greater than one, said timing means being operative to control the level converting and driving means so that the digital signals representative of said input analog signal are applied to the data bus during the ith interval of each of the successive transmission period (where i is a positive integer between one and n inclusive), and to control the sampling means so that it accepts digital signals from the data bus during the ith interval of each of the successive transmission periods.

4,525,837

DIGITAL SIGNAL TRANSMISSION SYSTEM

Yoichi Tan, and Fumio Miyao, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1983, Ser. No. 506,720
Claims priority, application Japan, Jul. 7, 1982, 57-116812; Jul. 7, 1982, 57-116813
Int. Cl.³ H04J 3/02
U.S. Cl. 370—85 **9 Claims**



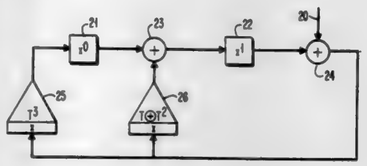
1. A digital signal transmission system for effecting time-division multiplexing/circuit switching transmission of signals in the form of packets among a multiplicity of stations by causing digital signals transferred on a telecommunication cable to be fixedly positioned within periodically repeating frames along a time axis and further dividing each of the frames on said time axis into unit blocks thereby providing said stations with chances for digital signal transmission, each block being capable of containing a packet, and each packet containing an overhead field for containing connection control data and a data field, and operation of the system including phases involving establishment of a call, transmission of data, and termination of the call; which digital signal transmission system is characterized by a transmitting station inserting connection control data not only in the overhead field but also into the data field of the packet being transmitted during periods of connection control such as the phases of the establishment/termination of a call.

4,525,838

MULTIBYTE ERROR CORRECTING SYSTEM INVOLVING A TWO-LEVEL CODE STRUCTURE

Arvind M. Patel, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,846
Int. Cl.³ G06F 11/10
U.S. Cl. 371—37 **16 Claims**



1. A multibyte error correcting system operable to correct up to t_1 errors in each subblock of a block of data and t_2 errors in said block, where t_2 and t_1 are positive integers and $t_2 > t_1$, said block having:

(a) at least one subblock, each of which has at least one codeword containing up to $2^b - 1$ b-bit character positions, where b is any positive integer, each character position consisting of a unique combination of binary bits representing data and $2t_1$ check bytes; and

(b) $2t_2$ b-bit block check bytes, said system comprising:

first syndrome generating means for generating two $2t_1$ syndrome bytes each containing b bits by combining $2t_1$ stored check bytes associates with each stored codeword with newly developed $2t_1$ check bytes during the reading of each said stored codeword, said check bytes corresponding to the modulo 2 sum of bit positions of said codeword selected systematically in accordance with a predetermined parity check matrix;

first syndrome processing circuitry operable to correct up to t_1 errors in each said codeword by processing said $2t_1$ syndrome bytes;

second syndrome generating means for generating $2t_2$ block syndrome bytes each containing b bits by combining said $2t_2$ stored block check bytes with $2t_2$ block check bytes developed after all said codewords of said block have been read and corrected, each of said t_2 block check bytes corresponding to the modulo 2 sum of bit positions of corrected said codewords that are selected systematically in accordance with said parity check matrix;

logic means for developing a new set of block syndrome bytes by modifying said original set of block syndrome bytes to reflect a miscorrection in one of said subblocks; and

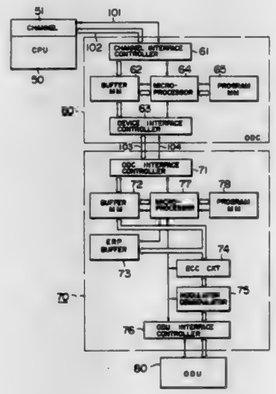
second syndrome processing circuitry for correcting up to t_2 errors in said one subblock by processing said modified set of $2t_2$ block syndrome bytes.

4,525,839

METHOD OF CONTROLLING STORAGE DEVICE

Masafumi Nozawa, Minami-ashigara, and Michio Miyazaki, Odawara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 26, 1982, Ser. No. 436,718
Int. Cl.³ G06F 11/10
U.S. Cl. 371—38 **34 Claims**



19. A method of controlling a storage device using a recording medium with a plurality of recording blocks each having a unique address, said recording medium being divided into a normal recording area which is first accessed in operations of reading and writing data, and an alternative area having alternative blocks for storing data in place of defective blocks in said normal recording area, said method comprising the steps of:

storing a first pointer information indicating the address of an available alternative block in said alternative area;

combining said first pointer information with each of a plurality of data blocks to be written concurrently on said recording medium thereby to produce information sets of a first group;

writing sequentially said information sets of the first group into unused continguous recording blocks within said normal recording area on said recording medium;

reading said information sets of the first group which have been written on said recording medium;

checking said information sets of the first group read from said recording medium to detect defective recording blocks;

combining, if a defective block has been detected, each data block corresponding to the defective block with a second pointer information indicating the individual address of said defective recording block thereby to produce information sets of the second group depending on the number of detected defective blocks; and

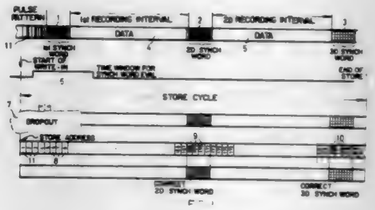
writing sequentially said information sets of the second group into unused recording blocks within said alternative area starting from an alternative block corresponding to said first pointer information.

4,525,840

METHOD AND APPARATUS FOR MAINTAINING WORD SYNCHRONIZATION AFTER A SYNCHRONIZING WORD DROPOUT IN REPRODUCTION OF RECORDED DIGITALLY ENCODED SIGNALS

Richard Heinz, Muehltal, and Reinhard Kutzner, Darmstadt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,345
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151251
Int. Cl.³ G06F 11/00; H04L 7/08
U.S. Cl. 371—47 **10 Claims**



1. Method utilizing random-access temporary storage means, a synchronization word reference source and storage address counting and comparison means, all under control of a program control unit, and also a jump back circuit interconnecting said counting and comparison means with said program control unit, of reproducing digitally encoded data signals registered on a storage medium in data segments bracketed between synchronizing words, each having a beginning address, under conditions in which signal dropout intervals occur, wherein word synchronization is maintained for the data segment following a synchronizing word which is garbled or suppressed by a signal dropout or error, by performing the steps of:

storing in said temporary storage means (**18**, **19**), the entire data of data segments bracketed between reproduced synchronizing words, along with the reproduced synchronizing words which thus bracket said information, with at least two segments of said data being stored at the same time;

generating timing window signals for expected synchronizing words;

determining that a synchronizing word has been missed when no synchronizing word has been recognized during the presence of a said timing window signal,

re-establishing the original ordered relation of said data

information following a missed synchronizing word by calculating back to the beginning address of a missed synchronizing word and by providing correction of data bit position by reference to at least one of the synchronizing words following the end of the data segment that follows said missed synchronizing word.

4,525,841

DOUBLE CHANNEL PLANAR BURIED HETEROSTRUCTURE LASER

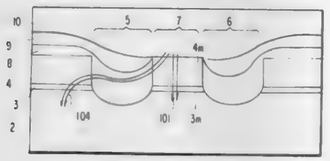
Mitsuhiro Kitamura; Ikuo Mito, and Kohroh Kobayashi, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1982, Ser. No. 434,990

Claims priority, application Japan, Oct. 19, 1981, 56-166666; Dec. 23, 1981, 56-208789; Jan. 29, 1982, 57-13451; Feb. 19, 1982, 57-25715

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—48 **17 Claims**



1. A semiconductor laser having a buried double heterostructure, comprising:

a semiconductor substrate of a first conductivity type;

a multi-layer double heterostructure including successively at least a first cladding semiconductor layer of the first conductivity type, an active semiconductor layer, and a second cladding semiconductor layer of a second conductivity type, said active semiconductor layer having a narrower bandgap than those of said first and second cladding semiconductor layers, said multi-layer double heterostructure having a stripe portion with channels formed along both sides of said stripe and extending through said second cladding semiconductor layer and active semiconductor layer to reach said first cladding layer, and having remaining portions, outside said channels, including said first, active, and second semiconductor layers;

a current blocking layer formed on said channels and said remaining portions of said multilayer double heterostructure except for the top surface of said stripe portion, for blocking a current flow therethrough;

resonant means for feeding light back in the opposite directions of the length of said stripe and parallel to said active semiconductor layer; and

a pair of electrodes for supplying a voltage to forward bias said semiconductor laser.

4,525,842

LASER DEVICE AND METHOD

John D. Myers, 900 Sandalwood East, Perrysburg, Ohio 43551

Filed Feb. 24, 1984, Ser. No. 583,504

Int. Cl.³ H01S *3/08*

U.S. Cl. 372—92 **26 Claims**

1. A laser device, comprising:

a body member formed of an electrical insulating material having a low coefficient of thermal expansion and forming an exoskeleton for said laser device, said body member having an internal chamber opening through its opposed ends, a front laser mirror permanently attached to one of said body member ends sealing said one end, a laser filter within said body member chamber having elongated parallel bores extending generally perpendicularly to the reflective surface of said front laser mirror, a laser reflector surrounding said laser filter within said body chamber permanently aligning said filter within said chamber, a laser flashlamp located within one of said laser filter bores and permanently aligned therein and an elongated laser rod located within the other of said laser filter bores permanently aligned therein, and a back laser mirror aligned



with said laser rod having a reflective surface generally perpendicular to the longitudinal axis of said laser rod, said back laser mirror permanently attached to the opposed end of said body member, opposite said front laser mirror, sealed in said opposed body member end, said body member thus providing a sealed construction with the laser elements in fixed permanent alignment.

4,525,843

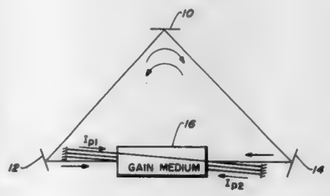
RING LASER WITH WAVEFRONT CONJUGATING BEAMS

Jean-Claude Diels, Denton, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1982, Ser. No. 373,188

Int. Cl.³ H01S *3/083*

U.S. Cl. 372—94 **5 Claims**



1. An improvement for a ring laser gyro which reduces the lock-in frequency comprising: a gain medium coupled between two optical cavity means, one cavity means forming a closed optical ring with counter wave propagations inv said ring, an the other optical cavity means being off axis to said leg containing said gain medium and forming a short linear resonant cavity, whereby wave mixing of radiation in said ring and radiations in said resonant cavity produces wave front conjugation to reduce lock in frequency of said ring laser gyro.

4,525,844

METHOD FOR INTERCHANGING N PARTIAL BANDS

Helmut Scheuermann, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,695

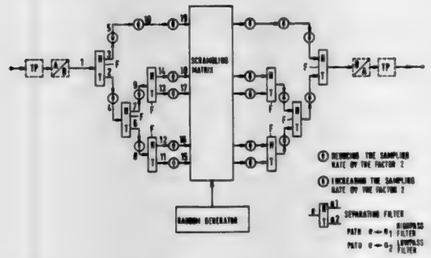
Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120357

Int. Cl.³ H04K *1/04*

U.S. Cl. 375—2.1 **6 Claims**

1. A method for interchanging the frequency positions of n partial bands, each having a bandwidth b, of a signal frequency band, comprising: sampling signals in the frequency band at an input sampling rate equal to $fA = 4\,(fu + 2\mu_o \cdot b)$ where fu is the lower limit frequency of the signal frequency band, and μ_o is

the highest power of two contained in, but not including, n; separating the sampled signals associated with each partial band into separate channels in stages in each of which sample signals are separated into high frequency and low frequency groups and the sampling rate is reduced; altering the positions of the channels in a scrambling matrix controlled by a random sequence generator; and spectrally recombining the signals in



the separate channels into a signal extending across the signal frequency band, wherein said step of separating is performed in $1+\log_2 2\mu_o$ stages by means of n−1 filters connected in a tree structure to each effect one separation to provide n partial band outputs, with the sampling rate being reduced each time by the factor $2\mu_o \cdot b$ divided by a multiple of 2, and each filter separates signals at opposite sides of a transition frequency which is one-fourth of the associated sampling rate.

4,525,845

BALANCED CIRCUIT FOR CONNECTING RECEIVER AND TRANSMITTER TO TRANSMISSION LINE

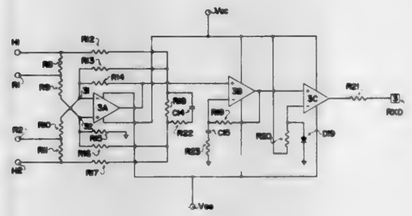
David E. Dodds, and Ludo A. Bertsch, both of Saskatoon, Canada, assignors to Develcon Electronics Ltd., Saskatoon, Canada

Filed Feb. 16, 1983, Ser. No. 467,017

Claims priority, application United Kingdom, Feb. 26, 1982, 8205660

Int. Cl.³ H04Q *1/30*

U.S. Cl. 375—36 **10 Claims**



1. Apparatus for receiving and transmitting electrical signal voltages along a transmission line comprising two first terminals each for connecting to a respective one of a two-wire transmission line, a differential amplifier having a pair of inputs for amplifying differential voltages applied to the inputs thereof to produce an output signal voltage for transmission to signal receiving equipment, balance impedance means having an impedance approximate to the impedance provided by the transmission line, two transmit terminals, means for connecting a signal voltage at said transmit terminals across said transmission lines for transmission therealong and across said balance impedance means, summing connection means for connecting across said differential amplifier inputs the voltage across said transmission lines and the voltage across said balance impedance means inverted relative thereto whereby said transmitted signal voltage produces no output signal voltage from said differential amplifier, and resistance means connected between each of the first terminals and an effective ground and between each of the differential amplifier inputs and the effective ground and arranged whereby a common voltage at the first terminals presents equal voltages at the differential amplifier inputs whereby the common voltage produces no output signal voltage from said differential amplifier.

4,525,846

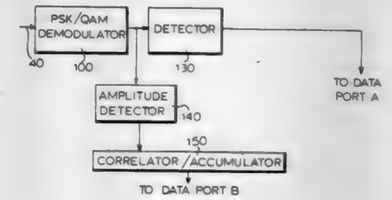
MODEM IN-BAND SECONDARY CHANNEL VIA RADIAL MODULATION

Gordon Bremer, Clearwater; William L. Betts, Madeira Beach, and Robert T. Greene, St. Petersburg, all of Fla., assignors to Paradyne Corporation, Largo, Fla.

Filed Dec. 27, 1982, Ser. No. 453,165

Int. Cl.³ H04L *27/08*

U.S. Cl. 375—39 **2 Claims**



1. A method of transmitting a first and second input series of input bits simultaneously, over a single data channel comprising:

generating a series of symbols having a radial amplitude and corresponding to said first series of input bits;

maintaining the radial amplitude of said symbols at a first level if said second input bits have a first value and alternating said radial amplitude between said first value and a second value for consecutive symbols when said second input bits have a second value;

sending said symbols over said communication channel, to a receiver;

detecting the radial amplitudes of the signals received by said receiver;

correlating the radial amplitudes of a last preselected number of received signals to obtain a correlated value;

comparing said correlated value to a threshold value; and

generating a series of output bits having a first value if said correlated value is above said threshold value; and a second value if said correlated value is below said threshold value.

4,525,847

QAM ENCODER

Gordon Bremer, Clearwater, Fla., assignor to Paradyne Corporation, Largo, Fla.

Filed Nov. 10, 1982, Ser. No. 440,500

Int. Cl.³ H04L *27/20*

U.S. Cl. 375—59 **10 Claims**

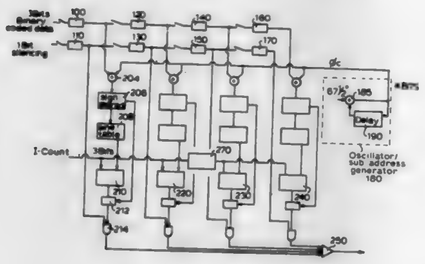
1. An encoder for a QAM transmitter for transmitting a series of symbols, each symbol corresponding to a group of bits, comprising:

a plurality of delay means through which said group of bits is delayed sequentially by a first period;

an oscillator for generating a subaddress signal which is incremented periodically in accordance with a second period which is shorter than said first period;

a plurality of look-up means corresponding to said delay means and having memory means, each of said look-up means receiving a delayed group of bits from a respective delay means and being provided for selecting a value from

said memory means which corresponds to said delayed group of bits and said subaddress signal; and



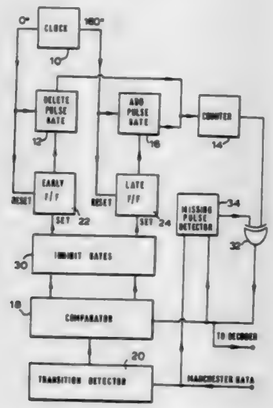
means for adding the value from each of said look-up means to produce said series of symbols.

4,525,848

MANCHESTER DECODER

Raymond W. Simpson, Hamilton Square, N.J., assignor to Prutec Limited, London, England

Filed Jun. 2, 1983, Ser. No. 500,461
Int. Cl.³ H03D *3/22*
U.S. Cl. 375—87 **4 Claims**



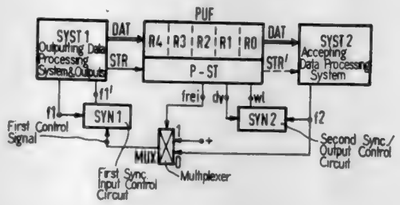
1. A circuit for generating a timing signal in a decoder of a signal receiver for receiving radio signals carrying Manchester encoded data, the circuit comprising an oscillator, a frequency divider for dividing the frequency of signals derived from the oscillator to generate a divider output signal having transitions therein, a comparator for comparing the times of the transitions in the divider output signal with transitions in Manchester data carried by a signal which, in operation, is received by the receiver, and means for selectively adding a pulse to and subtracting a pulse from the pulses applied to the frequency divider by the oscillator in dependence upon the relative timing determined by the comparator in such manner as to lock the phase of the divider output signal on to the phase of the Manchester data, characterized in that a squelch circuit is provided which detects the strength of the signal received by the receiver and produces an output signal in response to a drop in the detected signal strength, the squelch circuit output signal being effective to inhibit phase control by the comparator.

4,525,849

DATA TRANSMISSION FACILITY BETWEEN TWO ASYNCHRONOUSLY CONTROLLED DATA PROCESSING SYSTEMS WITH A BUFFER MEMORY

Gerhard Wolf, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 477,980
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1982, 3213345
Int. Cl.³ H04L *7/00*
U.S. Cl. 375—118 **21 Claims**



1. A data transmission facility connected by data and control lines between asynchronously controlled data accepting and data outputting processing systems for the transfer of data words from a data output of the outputting system to the transmission facility and from the facility to a data input of the accepting system, each system having an associated system clock producing clock pulses of a given timing pattern, comprising:

a buffer memory means having at least three memory section means for intermediate storage of a respective data word from the outputting system;

first and second synchronization circuit means, the first circuit means comprising an input control for the buffer memory means which is synchronous with the data outputting system clock and is connected to the data output of the outputting system for controlling transfer of a data word into the memory section means of the buffer memory means available for the transfer, and the second circuit means comprising an output control synchronous with the system clock of the data accepting system and connected to the buffer memory means for controlling forwarding of a respective data word from a memory section means of the buffer memory means available for output to the data input of the data accepting system;

after storage of a data word in the buffer memory means, said buffer memory means creating a corresponding second control signal which is synchronized via the second synchronization circuit means into a timing pattern of the system clock of the accepting system while avoiding logically undefined intermediate statuses in the respective data and control line, said second synchronization circuit means creating a second synchronization control signal which initiates the forwarding of a stored data word to the data accepting system;

means for generating a first control signal dependent on the given timing pattern of the system clock of the accepting system;

the first synchronization circuit means receiving the first control signal; and

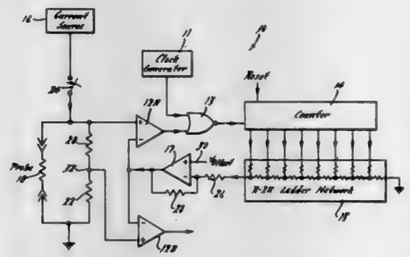
the first synchronization circuit means synchronizing said first control signal into the timing pattern of the outputting system clock while avoiding logically undefined intermediate statuses in the respective data and control lines and creating a first synchronization control signal for initiating output and transfer of a data word together with a strobe signal from the data output of the data outputting system, said strobe signal initiating intermediate storage of said data word.

4,525,850

FLUID LEVEL SENSOR EMPLOYING HOT WIRE PROBE AND DIGITAL SAMPLE AND HOLD CIRCUITRY

Kenneth L. Miller, Brownsboro, Ala., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 15, 1982, Ser. No. 418,343
Int. Cl.³ G01F *23/00, 23/24*
U.S. Cl. 377—19 **3 Claims**



1. In a fluid level sensing system which employs an electrical resistance, current excited probe, an electronic control circuit to measure the output of said probe, to memorize its initial value and to provide a warning signal when a preselected threshold is exceeded comprising:

a clock generator fed into a two input NOR gate; a resettable binary counter which counts clock pulses generated by said clock generator when presented with said pulses by said NOR gate; an R-2R resistor ladder network which receives the ouput from said binary counter and in response to the increased count from said counter incrementally and proportionally increases its voltage output; an inverting operational amplifier which when presented at its inverting input with said increasing voltage output from said R-2R resistor ladder network will generate an output which is a function of an input resistor and feedback resistor connected to said inverting input and an offset voltage which is presented to the non-inverting input to said inverting operational amplifier; an operational amplifier to compare said output of said inverting operational amplifier with the voltage across said electrical resistance probe and present an output based on said comparison to said two input NOR gate to control the transfer of said clock pulses to said resettable binary counter; a voltage divider means across said probe; an operational amplifier to compare said output of said inverting operational amplifier with a preselected threshold voltage which is generated at the division point of said voltage divider means and which generates a trigger pulse when said threshold voltage is exceeded.

4,525,851

FREQUENCY GENERATOR CIRCUIT

Philip S. Smith, and Michael G. Gallup, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

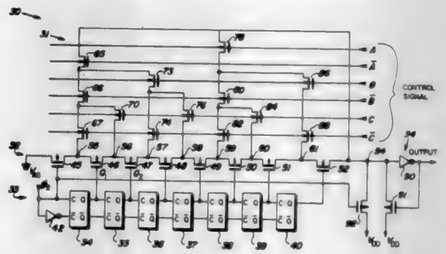
Filed Jun. 6, 1983, Ser. No. 501,314
Int. Cl.³ H03K *21/36*
U.S. Cl. 377—110 **9 Claims**

1. A frequency generator circuit for providing an output signal which is synchronous with a clock signal of predetermined frequency and which has a frequency which is proportional to the frequency of the clock signal, comprising:

frequency divider means having an input for receiving the clock signal, and a plurality of ranked outputs, each of said outputs providing a divided signal having a frequency proportional to the predetermined frequency;

a plurality of switching means connected in series between a reference node and an output node, and forming a plurality of rank ordered nodes, the first of said switching means having a control electrode connected to the input of the frequency divider means and each of the remaining switching means having a control electrode connected directly to a predetermined one of said ranked outputs of the frequency divider means;

decode means connected directly to each of the rank ordered nodes for selectively coupling the output node to a predetermined one of the rank ordered nodes in response to a binary input control signal, comprising:



at least one node select transistor coupled between each rank ordered node and the output node, each of the node select transistors having a control electrode connected directly to the control signal; and

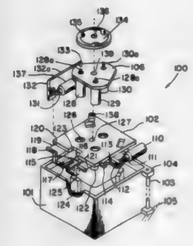
latching means having an input connected to the output node, and an output for latching the output node at a predetermined logic level during an inactive period and otherwise providing the synchronous output signal.

4,525,852

ALIGNMENT APPARATUS

Lawrence M. Rosenberg, San Jose, Calif., assignor to Micronix Partners, Los Gatos, Calif.

Filed Mar. 15, 1983, Ser. No. 475,420
Int. Cl.³ G05G *11/00;* G21K *5/00;* A47B *11/00*
U.S. Cl. 378—34 **20 Claims**



1. Alignment apparatus comprising:

means for supporting an object to be aligned, including

a substantially planar support plate;

a substantially rotatable plate positioned in a plane parallel to said support plate and having a spaced series of piezoelectric linear motors oriented perpendicular therewith, said motors each having a movable shaft adapted to abut and support a rearside of said support plate for moving said support plate in the Z axis;

a theta drive piezoelectric linear motor for rotatably moving said rotatable plate;

a substantially planar x-y motion plate positioned in a plane parallel to said rotatable plate;

first flexure means for connecting said rotatable plate to said x-y motion plate;

a pair of piezoelectric motors connected to said x-y motion plate for driving said motion plate along x and y coordinates in the plane of said motion plate; and

second flexure means for supporting said motion plate, all of

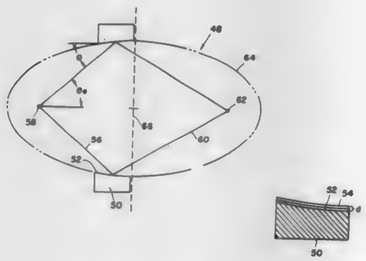
said piezoelectric motors being adapted to be driven variously in off-on, in-out sequences to move said support plate in x, y, z and θ directions as necessary to orient said object to a desired spatial position.

4,525,853

POINT SOURCE X-RAY FOCUSING DEVICE

John E. Keem, Bloomfield Hills, and Gerald F. Marshall, Grosse Pointe Woods, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Oct. 17, 1983, Ser. No. 542,886
Int. Cl.³ G01N *23/20*
U.S. Cl. 378—84 **13 Claims**



1. A point source non-imaging X-ray focusing device, comprising:

a focusing element formed from a section transverse to the axis of revolution of an ellipse, said element having a focusing surface;

a plurality of layer pairs formed on one another on said focusing surface, said layer pairs having X-ray dispersive properties substantially at a predetermined wavelength of interest;

said layer pairs and said surface designed to focus said X-ray wavelength from a point source to a focus point; and

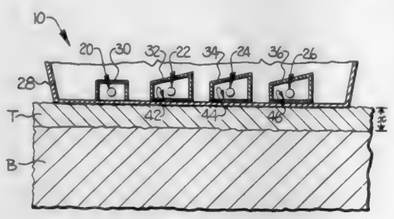
said ellipse having a center plane with respect to said point source and said focus point and said focusing element section being formed from a portion of said ellipse chosen to maximize the total reflected intensity of said X-ray wavelength.

4,525,854

RADIATION SCATTER APPARATUS AND METHOD

John L. Molbert, and Eddie R. Riddle, both of Durham, N.C., assignors to Troxler Electronic Laboratories, Inc., Research Triangle Park, N.C.

Filed Mar. 22, 1983, Ser. No. 477,820
Int. Cl.³ G01N *23/00*; G01T *1/16*; G01V *5/00*; H01J *39/00*
U.S. Cl. 378—089 **18 Claims**



1. A radiation scatter apparatus for use in association with a relatively thin overlay material overlying a substrate material to measure the density of the overlay material, the thickness of the overlay material, and the density of the substrate material, said apparatus comprising:

source means for emitting gamma radiation into the overlay material and the substrate material;

detector means including at least three radiation detectors located in predetermined spaced relation to said source for detecting scattered radiation, each detector being so positioned and having such filtering characteristics so as to measure radiation distinctive from the radiation measured by the other detectors; and

recording means operatively associated with said detector means for separately recording measured radiation information from each said detector for use with derived mathematical relations to determine the density of the overlay material, the thickness of the overlay material, and the density of the substrate material.

12. A method of measuring the density and thickness of an overlay applied in a pavement maintenance or resurfacing operation, said method comprising the steps of:

obtaining a value for the density of the pavement base that is directly under the overlay;

directing gamma radiation from a source into the overlay and pavement base;

detecting radiation scattered therefrom with at least two detectors, each detector being so positioned and having such filtering characteristics as to measure radiation distinctive from the radiation measured by any other detector;

simultaneously solving at least two derived mathematical equations, each equation relating one of the radiation measurements to the density of the pavement base and the two unknown values for the density and thickness of the overlay; and

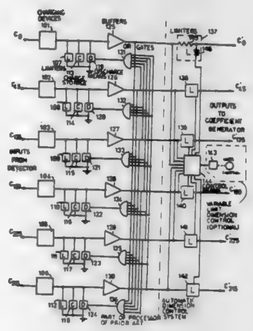
disclosing the calculated values.

4,525,855

VARIABLE RATE AND VARIABLE LIMIT DIMENSION CONTROLS FOR A DIRECTIONAL ENHANCEMENT SYSTEM

Martin E. G. Willcocks, Somersham, England, assignor to John C. Bogue, Los Angeles and Wesley Ruggles, Jr., Marina Del Ray, both of, Calif.

Continuation of Ser. No. 296,881, Aug. 27, 1981, abandoned, which is a continuation of Ser. No. 19,617, Mar. 12, 1979, abandoned, which is a continuation of Ser. No. 885,959, Mar. 13, 1978, abandoned, which is a continuation of Ser. No. 799,437, Mar. 23, 1977, abandoned, which is a continuation of Ser. No. 667,513, Mar. 16, 1976, abandoned. This application May 25, 1983, Ser. No. 497,216
Int. Cl.³ H04S *3/02*
U.S. Cl. 381—22 **2 Claims**



2. In a directional enhancement system for quadraphonic decoders having a matrix quadraphonic decoder, a detector, a processor having attack-decay circuits including charge storage devices, and a matrix multiplier, said processor being operative to provide a plurality of control signals and including a variable rate dimension control system, said variable rate dimension control system comprising:

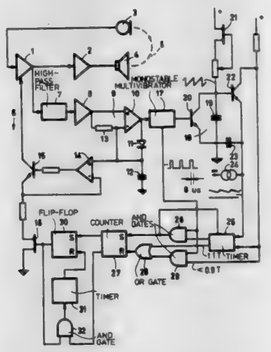
a plurality of voltage variable resistors equal in number to the number of control signals provided in said directional enhancement system, each one of said plurality of voltage-variable resistors having a resistive current path and a control terminal; the resistive current paths each forming part of the discharging devices of the attack-decay control circuits of said processor, and said control terminals being connected in common to an externally variable voltage to vary the rate of decay of charge of each of said charge storage devices forming part of said attack-decay circuit of said processor of said directional enhancement system.

4,525,856

AMPLIFIER ARRANGEMENT FOR ACOUSTIC SIGNALS, PROVIDED WITH MEANS FOR SUPPRESSING (UNDERSIRED) SPURIOUS SIGNALS

Daniël J. H. Admiraal, Lieshout, and Benjamin Lopes Cardozo, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 847,042, Oct. 31, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 6,144
Claims priority, application Netherlands, Nov. 8, 1976, 7612358
Int. Cl.³ H04M *1/20*; H04R *3/02*
U.S. Cl. 381—93 **8 Claims**



1. An amplifier circuit for acoustic signals comprising, gain controllable amplifier means for said acoustic signals, a control circuit coupled to said amplifier means to derive a first control signal for reducing the gain of the amplifier means in the presence in the amplifier means of an undesired acoustic feedback signal exhibiting a regular periodicity characteristic, a high-pass filter coupled to the amplifier means to receive and separate a part of the signal amplified, and a periodicity detector coupled to the output of the filter and operative to discriminate between an acoustic feedback signal having a regular periodicity and signals having an irregular periodicity characteristic thereby to produce a second control signal for operating the control circuit to derive said first control signal when the periodicity detector detects the presence of said acoustic feedback signal exhibiting said regular periodicity at the output of the filter.

4,525,857

CROSSOVER NETWORK

Robert A. Orban, Belmont, Calif., assignor to Orban Associates, Inc., San Francisco, Calif.

Division of Ser. No. 480,921, Mar. 31, 1983, Pat. No. 4,495,643. This application Sep. 4, 1984, Ser. No. 646,793
Int. Cl.³ H03G *5/00*
U.S. Cl. 381—100 **4 Claims**

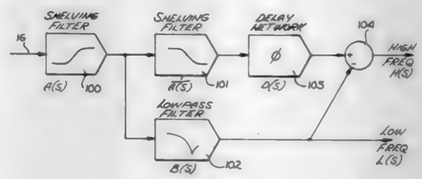
1. A crossover network for an audio signal comprising:

a first shelving filter for receiving said audio signal;

a second shelving filter coupled to the output of said first shelving filter;

a lowpass filter coupled to the output of said first shelving filter;

a delay network coupled to the output of said second shelving filter;



subtracting means for subtracting two signals coupled to the output of said delay network and said lowpass filter;

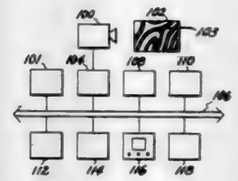
whereby a crossover network is realized with the high frequency band being present at the output of said subtraction means and the low frequency band at the output of said lowpass filter.

4,525,858

METHOD AND APPARATUS FOR RECONSTRUCTION OF THREE-DIMENSIONAL SURFACES FROM INTERFERENCE FRINGES

Harvey E. Cline; Andrew S. Holik, both of Schenectady, and William E. Lorensen, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,076
Int. Cl.³ G06K *9/48*; G09F *9/00*
U.S. Cl. 382—1 **23 Claims**



1. The fully automatic method of processing a pair of optically generated two-dimensional continuous, branched fringe patterns representative of a three-dimensional surface comprising the steps of:

A. transforming a pair of optically generated two-dimensional fringe patterns into first and second electronic images, said pair of fringe patterns representing the same three-dimensional surface, but containing sufficient information to permit the topography of said three-dimensional surface to be determined therefrom;

B. digitizing the first and second electronic images to form first and second arrays of integers;

C. thresholding the digitized images to transform the integers of the first and second arrays to either the digit one or the digit zero;

D. segmenting electronically the thresholded images to define first and second sets of fringes;

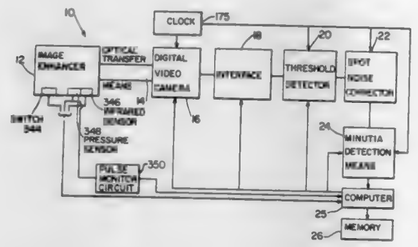
E. detecting electronically the edges of the fringes of the first and second sets of fringes to define first and second sets of contours; and

F. sequencing electronically the first set of contours by comparing the second set of contours to the first set of fringes to determine the spatial coordinates of the three-dimensional surface.

4,525,859
PATTERN RECOGNITION SYSTEM

Ronald E. Bowles, 2105 Sondra Ct., Silver Spring, Md. 20904, and David E. Bowles, 6009 Jamina Downs, Columbia, Md. 21045

Filed Sep. 3, 1982, Ser. No. 414,586
Int. Cl.³ G06K 9/00
U.S. Cl. 382—5 **32 Claims**



1. A system for electronically investigating a pattern that can be divided into an array of points, the system comprising:

signal producing means for producing an electrical signal for each point on a matrix of points, said matrix having "K" points by "L" points, wherein K and L are real integers with one representing the points in the matrix line and the other representing the points in a matrix column, said signal producing means providing a serial stream of signals;

selecting means for progressively selecting locatable known groups of said produced electrical signals, which groups correspond to subarrays of said points, each said subarray having M lines by N columns, including a peripheral set of $2(M-2)+2N$ points and a central set of $M\times N-2(M-2)-2N$ points, wherein said selecting means is comprised of a first storage means for storing and providing said electrical signals from said signal producing means on a first-in, first-out basis;

first determining means for checking and determining for each selected group of said signals whether a first, preselected number of signals corresponding to said central set of points have a first predetermined value and hence whether there is a central hit;

second determining means for checking and determining for each selected group of signals whether no more than a second, preselected number of the signals corresponding to said peripheral set of points have a second predetermined value, and hence whether there is a peripheral hit, wherein said second determining means comprises a memory means for storing $2^{2(M-2)+2N}$ coded outputs, said memory means having an enable input and $2(M-2)+2N$ address lines which are connected to said $2(M-2)+2N$ peripheral storage cells; and said first determining means comprises gate means, the inputs of which are connected to said central storage cells and the output of which is connected to said enable input, said gate means for providing an output signal to enable said memory means when said central storage cells contain said first preselected number of signals such that said memory means outputs the data stored at the memory address indicated by the signals stored in said peripheral storage cells;

third determining means responsive to said first and second determining means for determining the location of each subarray of points for which a central hit and a peripheral hit for the same group of corresponding signals were determined; and

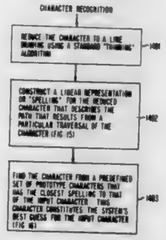
memory means for storing each determined location.

21. The system as claimed in claim 1 wherein said second determining means comprises a decoder means having an enable input connected to said first determining means and having data inputs, said decoder means for producing when enabled a signal representing the decoded data inputs.

4,525,860
CHARACTER RECOGNITION ARRANGEMENT

Richard H. Boivie, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 4, 1982, Ser. No. 337,092
Int. Cl.³ G06K 9/80
U.S. Cl. 382—21 **7 Claims**



1. The machine method of character recognition comprising the steps of

thinning, under control of said machine, a character to be recognized to produce a line drawing or skeleton and storing said thinned character in said machine,

traversing, under control of said machine, said thinned character using a set of traversing rules and controlling said machine to derive, during said traversing, a name, the individual letters of which represent the various physical directions traversed,

machine comparing said derived name to a dictionary of names stored in said machine to determine the stored name that most closely resembles the derived name thereby determining the identity of the character that has been traversed,

said dictionary containing a single stored name for each possible character,

said comparing step includes the steps of subdividing said dictionary of stored names into at least one subdictionary of letter strings each of said letter strings having as a first letter the same letter as the first letter of said derived name, and

examining said subdictionary for matches between particular letters of said derived name and particular letters of one of said subdictionary letter strings.

4,525,861
ZONED DATA COMMUNICATIONS SYSTEM FOR COMMUNICATING MESSAGE SIGNALS BETWEEN PORTABLE RADIOS AND A HOST COMPUTER

Thomas A. Freeburg, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 441,327, Nov. 12, 1982, Pat. No. 4,481,670. This application Aug. 13, 1984, Ser. No. 639,770
Int. Cl.³ H04B 1/00, 7/00
U.S. Cl. 455—33 **2 Claims**

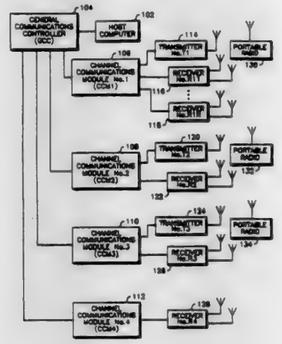
1. A data communications system for communicating message signals from a host computer throughout a geographical area divided into zones, comprising:

a communications controller coupled to the host computer for communicating message signals therebetween;

a radio channel for carrying message signals;

a plurality of remote radio stations located anywhere in the geographical area and including a transmitter and antenna for transmitting message signals on the radio channel and a receiver switchably couplable to either the transmitter antenna or another antenna for receiving message signals; and

a plurality of radio channel communications modules each located throughout the geographical area for covering at least one zone and coupled to the communications controller for communicating message signals on the radio channel to the remote radio stations in the zones covered thereby, each radio channel communications module coupled to a transmitter and antenna for transmitting

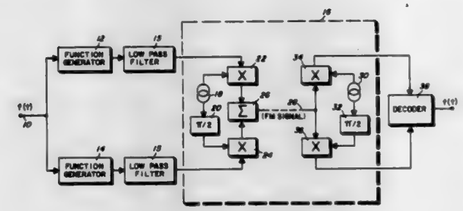


message signals on the radio channel and to a receiver and at least two antennas for receiving message signals from the radio channel.

4,525,862
TRANSFORM MODULATION SYSTEM

Norman W. Parker, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 2, 1980, Ser. No. 165,474
Int. Cl.³ H04B 1/68
U.S. Cl. 455—47 **24 Claims**



1. A transmission system comprising:

first input means for receiving an audio signal;

function generating means for providing a first trigonometric transform function of the audio signal;

carrier generating means for generating a carrier signal;

modulating means for modulating said carrier signal with said trigonometric transform function signal;

single sideband transmission means for transmitting at least the sidebands of the carrier modulated with said transform function signal:

second input means for receiving the modulated transmitted carrier signal;

demodulating means for detecting the transform function and for deriving a Hilbert transform thereof; and

decoder means for deriving the audio signal from the output signals of the demodulating means.

4,525,863
SOLID STATE TRANSMIT/RECEIVE SWITCH

Francis H. Stites, Wayland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 19, 1983, Ser. No. 543,570
Int. Cl.³ H04B 1/48
U.S. Cl. 455—83 **6 Claims**

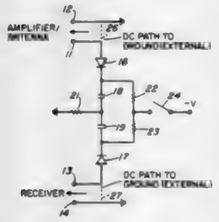
1. A transmit/receive switching circuit for a radio transceiver comprising

first means coupled to a transmitting amplifier and to an antenna;

second means coupled to a receiver;

a serial circuit coupled between said first means and said second means, said serial circuit including a first diode poled in one direction, capacitive means, and a second diode poled in a direction opposite to said one direction;

control means operative during a receiving phase of said transceiver, for providing a first condition to cause both of said serially connected, polarity opposed diodes to simultaneously conduct, so that radio signals received by said antenna can pass through said first means, said serial circuit, and said second means to said receiver, and



operative during a transmitting phase of said transceiver for providing a second condition to cause both of said serially connected, polarity opposed diodes to not simultaneously conduct, so that neither transmission signals from said transmitting amplifier nor radio signals from said antenna can pass through said first means, said serial circuit, and said second means to said receiver;

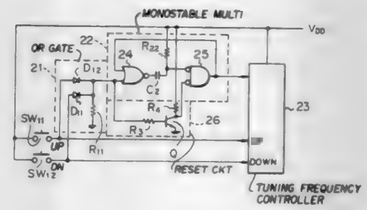
a resistive direct current path across said capacitive means, and

means responsive to the first condition of said control means for selectively applying a voltage potential to said path of such magnitude and polarity to cause both said first diode and said second diode to undergo conduction.

4,525,864
DEVICE FOR GENERATING A TUNING FREQUENCY SET COMMAND SIGNAL OF A TUNER SYSTEM

Yasuo Kawakami, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 27, 1983, Ser. No. 546,043
Claims priority, application Japan, Oct. 29, 1982, 57-190364
Int. Cl.³ H03J 7/20; H04B 1/16
U.S. Cl. 455—160 **2 Claims**



1. A device for generating a tuning frequency command signal of a tuner system, including:

first control signal generation means for generating a first control signal for shifting a tuning frequency of the tuner system in a first direction;

second control signal generation means for generating a second control signal for shifting the tuning frequency in a second direction;

timing means for generating a timing signal during a prede-

termined time period after initiation of the generation of either one of said first and second control signals; and

control means coupled to said timing means and said first and second control signal generation means for controlling the tuning frequency of the tuner system, in accordance with a manual control mode and an automatic control mode, said control means operates to select said automatic control mode when the first or second control signal is present after extinction of said timing signal, characterized by a reset means coupled to said first and second control signal generation means for resetting said timing means at a time when either one of the first and second control signals disappears.

4,525,865

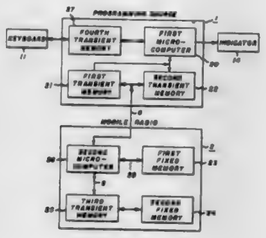
PROGRAMMABLE RADIO

David F. Mears, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Oct. 3, 1983, Ser. No. 538,178

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—186 **9 Claims**



1. Apparatus for programming a plurality of different radios with respectively different commands from a common programming source, each of said radios having a stored symbol identifying the radio and a memory storing commands representing its operating radio characteristics, said apparatus for programming a desired one of said different radios with a given set of commands comprising: means for interrogating said given radio to read its stored symbol, means responsive to a read symbol representing only said desired radio for reading the commands stored in said memory and for modifying said read commands to correspond to said given commands, means to store said modified commands in said radio memory, and means to confirm the accuracy of said stored modified commands including (a) means to read the stored modified commands and to compare them with said given commands at said source, and (b) means for providing a signal in response to said comparison.

4,525,866

STACK MEMORY TUNING

Frank C. Templin, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Nov. 7, 1983, Ser. No. 549,695

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—186 **10 Claims**

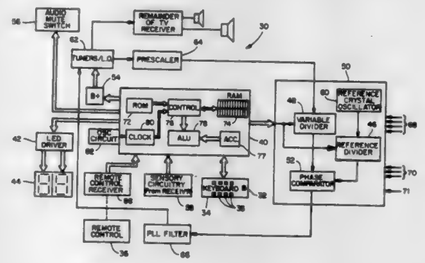
1. A system for tuning a television receiver, comprising:

a viewer operable channel number selection means for selectively generating a plurality of signals each representing a respective channel number;

current memory means responsive to operation of the channel number selection means for temporarily storing the currently selected channel number;

stack memory means comprising a plurality of sequential memory locations which are programmed for storing a plurality of preferred channel numbers in response to viewer operation of said channel number selection means by shifting in a given direction the contents of each memory location thereby vacating at least one memory location and storing the contents of the current memory means in the thus vacated memory location;

viewer operable channel scanning means for scanning said stack memory means for identifying the next higher or next lower channel number stored therein relative to the



channel number stored in said current memory means and for replacing the contents of the current memory means with the thus identified channel number; and

tuning means responsive to the contents of said current memory means for tuning said television receiver to the channel number stored therein.

4,525,867

RADIO RECEIVER

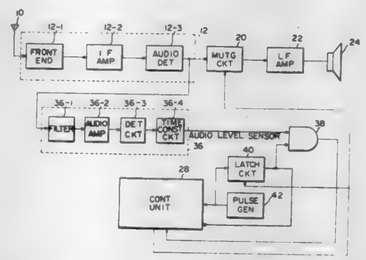
Yuji Shiratani, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 288,366, Jul. 30, 1981, abandoned. This application Jan. 26, 1983, Ser. No. 461,977

Claims priority, application Sweden, Jul. 30, 1980, 8104602; Japan, Aug. 4, 1980, 55-108556; Aug. 4, 1980, 55-108567; Fed. Rep. of Germany, Aug. 4, 1981, 3130864

Int. Cl.³ H04B *1/10, 1/26*

U.S. Cl. 455—194 **3 Claims**



1. A radio receiver comprising: an antenna for inducing a signal thereon; a tuner means which is supplied with said signal from said antenna; a muting circuit electrically coupled to said tuner means to mute an output from said tuner means in response to a command muting signal supplied thereto; an audio level sensor means for sensing an audio level of an audio analog signal resulting from said output from said tuner means, said audio level sensor means being responsive to the sensed audio level of said audio analog signal which is not higher than a predetermined magnitude so as to deliver an audio level sensed signal; and AND gate having one input connected to said audio level sensor means; a pulse generator means for generating timing pulses at predetermined constant equal time intervals, said timing pulses acting as said command muting signal; a latch circuit connected to said pulse generator means to latch therein said timing pulses from said pulse generator means, said latch circuit having its output connected to another input of said AND gate; and a control unit connected to outputs of said AND gate, said latch circuit and said pulse generator means,

said control unit having its output connected to both said latch circuit and said muting circuit; wherein said latch circuit puts said command muting signal from said pulse generator means in a standby state, and said AND gate is responsive to the reception of said audio level sensed signal from said audio level sensor means so as to generate a signal for releasing said command muting signal from said standby state so as to thereby cause said control unit to supply said command muting signal to said muting circuit and to also reset said latch circuit.

4,525,868

INTERFERENCE WAVE DETECTION CIRCUIT FOR USE IN RADIO RECEIVER

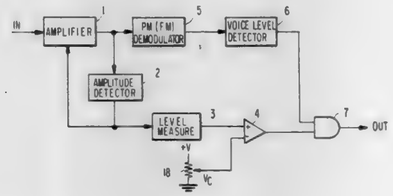
Kouzou Kage, Tokyo, and Hiroshi Watanabe, Miyagi, both of Japan, assignors to Nippon Electric Co., Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Mar. 23, 1983, Ser. No. 478,119

Claims priority, application Japan, Mar. 23, 1982, 57-44671; Mar. 23, 1982, 57-44672; Mar. 23, 1982, 57-44673; Mar. 23, 1982, 57-44674

Int. Cl.³ H04B *1/10, 1/16*

U.S. Cl. 455—206 **17 Claims**



1. An interference wave detection circuit comprising:

amplifier means for amplifying a received carrier wave in response to a control signal;

ampiitude detector means for amplitude-detecting the output of said amplifier means;

means for supplying the output of said amplitude detector means to said amplifier means as said control signal so as to make the output level of said amplifier means constant;

level measuring means for measuring the level of the output fluctuation of said amplitude detector means;

comparator means for comparing the output level of said level measuring means with a predetermined level to provide a compared output as an interference wave detection signal to the output of said interfence wave detection circuit;

discriminating means connected to the output of said amplifier means for judging whether said received carrier wave is modulated or not; and

gate means responsive to the output of said discriminating means for preventing said compared output from reaching to the output of said interference wave detection circuit when said discriminating means judges that said received carrier wave is modulated.

4,525,869

DIVERSITY RECEIVER

Masanori Hamada, and Sadao Ono, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1983, Ser. No. 487,483

Claims priority, application Japan, Apr. 30, 1982, 57-73839

Int. Cl.³ H04B *7/08*

U.S. Cl. 455—277 **6 Claims**

1. A diversity receiver comprising:

a plurality of antennas;

antenna selecting means to which said antennas are connected;

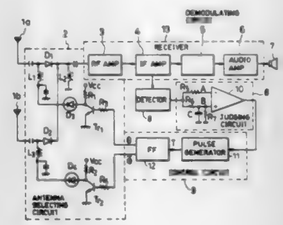
a receiver to which an antenna output from said antenna selecting means is applied;

detector means for detecting signal voltage responsive to said antenna output from an output of an intermediate frequency amplifier of said receiver;

judging means responsive to a signal voltage from said detector means for generating a judgement signal indicating whether receiving condition of the one of said antennas in use is good or not;

control means for actuating said antenna selecting means so as to select one of said antennas which is in a better receiving condition;

said judging means having a comparator and a time constant



circuit, said comparator having two input terminals connected to an output of said detector means by two respective paths, said time constant circuit being connected between one of said paths and ground; wherein said antenna selecting means includes diodes connected between respective outputs of said antennas and an input of said receiver, a voltage supply connected to inputs of said diodes for biasing said diodes conductive for conducting the output from their respective antennas to said receiver input, and means connectir , respective transistors to said inputs of said diodes, said control means having means actuable for alternatively clamping said diodes nonconductive by rendering conductive the corresponding transistor.

4,525,870

AUTOMOTIVE RADIO RECEIVER WITH RADIO FREQUENCY INTERFERENCE ELIMINATION CIRCUIT

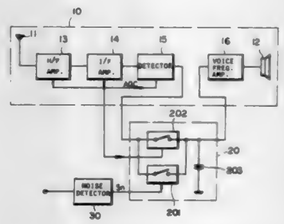
Hiroshige Fukuhara, and Norio Fujiki, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 19, 1982, Ser. No. 399,688

Claims priority, application Japan, Jul. 20, 1981, 56-112344; Aug. 27, 1981, 56-134477; Nov. 27, 1981, 56-190087

Int. Cl.³ H04B *1/10*

U.S. Cl. 455—297 **10 Claims**



1. A radio frequency interference elimination device in an automotive radio receiver comprising

a radio circuit for receiving a radio broadcasting signal suitable for audio reproduction;

a noise detector for detecting radio frequency interference

noise due to automotive electric circuits, said detector being electrically connected to power source wiring to receive radio frequency interference noise therefrom and produce a detector signal when said noise is detected; and a radio frequency interference elimination circuit disposed within said radio circuit and responsive to said detector signal to hold said radio broadcasting signal level at an immediately preceeding level for a given period of time and outputting the held level of radio broadcasting signal for reproduction, said radio frequency interference elimination circuit including first and second switches and a capacitor, said first switch being connected to said noise detector to open in response to said detector signal and said second switch being connected to an automatic gain control circuit to open while the inputted radio broadcasting signal level is lower than an automatic gain control reference level, and said capacitor adapted to be charged by the radio broadcasting signal level.

4,525,871

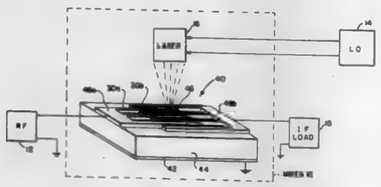
HIGH SPEED OPTOELECTRONIC MIXER

Arthur G. Foyt; Frederick J. Leonberger, both of Lexington, and Richard C. Williamson, Sudbury, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 3, 1982, Ser. No. 345,228

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—325 **3 Claims**



1. An optoelectronic mixer comprising:
(a) a substrate with planar conducting electrodes on a surface thereof;
(b) one of said planar conducting electrode structures having a non-conducting space providing a non-conductive gap on said surface and adapted to be illuminated by photons from a photon source which generates a photon beam controlled by a first source of oscillatory electrical signals whereby a photo-generated plasma forms a conducting path across the gap in accordance with such oscillatory signals thereby periodically completing an electrical circuit between:
(i) a second source of oscillatory electrical signals adapted to be coupled to one side of said electrode and
(ii) a utilization device adapted to be coupled to another of said conducting electrodes;
(c) the product of said first and second oscillatory signals being thereby coupled to said load;
(d) and wherein the photon source is a laser which is biased so that the intensity of the photon beam produced by the laser varies in a linear fashion throughout its operating range such that the mixer is operated in the bilinear mode such that the first and second signals are mixed in a linear fashion.

4,525,872

AMPLIFIER

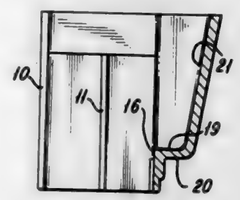
John S. Zochowski, 118 Palmer St., Jamestown, N.Y. 14701

Filed Jun. 27, 1983, Ser. No. 508,012

Int. Cl.³ H04B *1/08*

U.S. Cl. 455—344 **2 Claims**

1. An accessory for a personal paging device adapted to be worn below ear level by a user, said device having a case of generally rectangular cross section containing radio receiving apparatus including a speaker for emitting an audio paging signal and a grille in an upper part of an outer side wall of the case through which the signal is emitted, said accessory comprising an open ended member of generally rectangular cross section slidably fitting over said case, the lower end of said



member fitting tightly against the said outer side wall below and adjacent said grille, and said member having a wall opposite and spaced outwardly from said grille diverging outwardly and upwardly at an acute angle to said outer side wall for increasing the intensity of the sound at ear level of the paging signals emitted from the upper end of said accessory.

4,525,873

DEVICE FOR TRANSMITTING MEASURED VALUES TO A REMOTE LOCATION

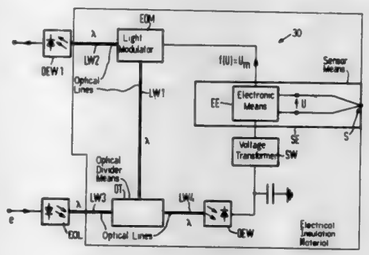
Peter Baues, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,155

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1981, 3138073

Int. Cl.³ H04B *19/00*

U.S. Cl. 455—600 **28 Claims**



1. In a device for transmitting measured values of a measured condition from a test location to a remote location, said device comprising sensor means for testing a condition to be measured and creating an electrical output signal dependent on the value of the condition, said sensor means requiring electrical energy for operation and having electrical parts and at least one sensor element for creating an electrical signal which is dependent on the measured values, and means for communicating the electrical output signal to a remote location, the improvements comprising the means for communicating including a modulator means being disposed adjacent the sensor means for receiving the electrical output signal of the sensor means and modulating light into a light signal in response to the electrical output signal, a first optical line for conveying light to the modulator means, a second optical line for conveying the light signal from the modulator means back to a location remote from the sensor means; said sensor means including electronic means for converting the electrical signal of the sensor element into an electrical output signal for operating the modulator means by creating an output voltage of an alternating voltage whose frequency is modulated by the electrical signal of the sensor element; said device including means for supplying light energy to the first optical line and electrical energy to the sensor means including means for forming a light source at a position remote to the sensor means, a voltage transformer, an electrical rechargeable storage device being connected to the voltage transformer, transducer means being disposed adjacent the sensor means for converting light into electrical energy for operation of the electrical parts of the sensor means, said transducer means being connected to the sensor means by the voltage transformer, optical means for dividing an incoming beam of light into two output beams of light being positioned adjacent the transducer means and sensor means, one of the two output beams being connected to the first optical line, a third optical line extending from said means for forming a light source to the optical means, and a fourth optical line extending from said optical means to the transducer means to supply the other of the two output beams to the transducer means; and said device including structural means to encapsulate the modulator means, the voltage transformer, the storage device, the transducer means and the sensor means in an electrical insulation material with only the sensor element being accessible from the exterior of the structural means.

4,525,874

DEVICE FOR TRANSMITTING MEASURED VALUES TO A REMOTE LOCATION

Peter Baües, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

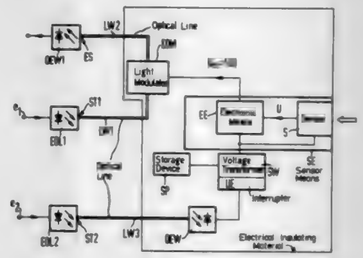
Filed Aug. 18, 1982, Ser. No. 409,156

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1981, 3138074

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—600 **23 Claims**

1. In a device for transmitting measured values of a measured condition from a test location to a remote location, said device comprising sensor means for testing a condition to be measured and creating an electrical output signal dependent on the value of the condition, said sensor means requiring electrical energy for operation and including electrical parts and at least one sensor element for creating an electrical signal which is dependent on the measured values, and means for communicating the electrical output signal to a remote location, the improvements comprising the means for communicating including a modulator means being disposed adjacent the sensor means for receiving the electrical output signal of the sensor means and modulating light into a light signal in response to the electrical output signal, a first source of light positioned at the remote location, a first optical line for conveying light from said first source to the modulator means, a second optical line for conveying the light signal from the modulator means back to a location remote from the sensor means, said sensor means including electronic means for converting the electrical signal of the sensor element into an electrical output signal for operating the modulator means by creating an output voltage of an alternating voltage whose frequency is modulated by the electrical signal of the sensor element; said device including means

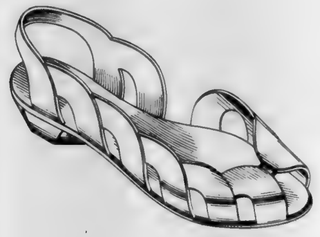


for supplying electrical energy to the sensor means including a second light source at a position remote to the sensor means, a voltage transformer, an electrical rechargeable storage device being connected to the voltage transformer, transducer means being disposed adjacent the sensor means and being connected to the sensor means through the voltage transformer for converting light into electrical energy for operation of the electrical parts of the sensor means, and a third optical line extending from said light source to the transducer means; and said device including structural means to encapsulate the modulator means, the voltage transformer, the storage device, the transducer means and the sensor means in an electrical insulating material with only the sensor element being accessible from the exterior of the structural means.

DESIGNS

JUNE 25, 1985

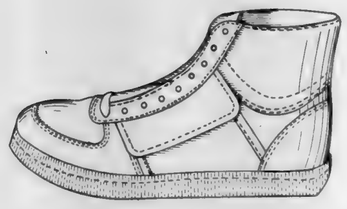
279,325
SHOE AND THE LIKE
Steven M. Foldes, Conyngham, Pa., assignor to Fun Footwear, Co., West Hazleton, Pa.
Filed Nov. 15, 1984, Ser. No. 671,869
Term of patent 14 years
U.S. Cl. D2—282



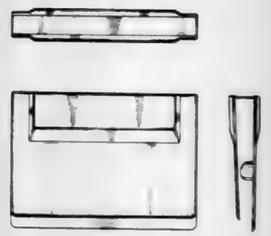
279,326
SHOE AND THE LIKE
Steven M. Foldes, Conyngham, Pa., assignor to Fun Footwear, Co., West Hazleton, Pa.
Filed Oct. 31, 1984, Ser. No. 666,780
Term of patent 14 years
U.S. Cl. D2—298



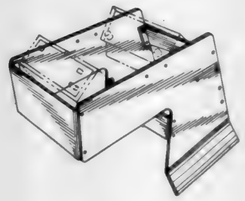
279,327
ATHLETIC BOOT WITH POCKET
Robert J. Gamm, St. Louis, Mo., assignor to Kangaroos U.S.A. Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 107,093, Dec. 26, 1979, Pat. No. Des. 261,823, and Ser. No. 297,838, Aug. 28, 1981,. This application Oct. 23, 1981, Ser. No. 314,137
Term of patent 14 years
U.S. Cl. D2—310



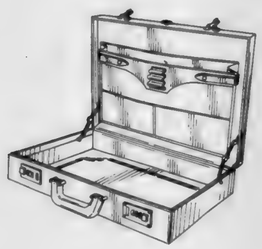
279,328
CASSETTE HOLDER OR SIMILAR ARTICLE
Shigeru Shimmi, 26-11, Kamiishihara 1-chome,, Chofu-shi, Tokyo, and Akiko Kimura, 17-24, Meguro 4-Chome, Meguro-ku, Tokyo, both of Japan
Filed Feb. 17, 1982, Ser. No. 349,486
Term of patent 14 years
U.S. Cl. D3—35



279,329
SUPPORT FOR MOUNTING RADIOS IN A VEHICLE HAVING BENCH SEATS
Stephen Dzak, 414 Muir Dr., Joliet, Ill. 60441
Filed Sep. 24, 1982, Ser. No. 422,983
Term of patent 14 years
U.S. Cl. D3—40



279,330
COMBINED ATTACHE CASE AND TRAVELLING DESK
Edward L. Gerch, 1228 Emerson St., Evanston, Ill. 60201
Filed Jan. 24, 1983, Ser. No. 460,277
Term of patent 14 years
U.S. Cl. D3—76





279,331
CHAIR
Jeremy N. Griffith, Clothiers Creek Rd., Condong, Via Murwillumbah, New South Wales, Australia (2484)
Filed Jun. 1, 1982, Ser. No. 383,933
Claims priority, application Australia, Mar. 2, 1982, 86647
Term of patent 14 years
U.S. Cl. D6—379



279,332
COMBINED SEAT AND BACKREST UNIT FOR AN OFFICE CHAIR
Niels Diffrient, New York, N.Y., assignor to Knoll International, Inc., New York, N.Y.
Filed Jun. 11, 1979, Ser. No. 47,122
Term of patent 14 years
U.S. Cl. D6—379



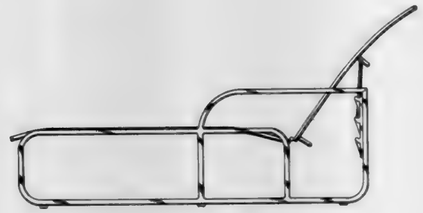
279,333
CONVERTIBLE CRADLE
Kenneth T. Brown, and Virginia W. Brown, both of 1459 Willard St., San Francisco, Calif. 94117
Filed Sep. 29, 1982, Ser. No. 426,762
Term of patent 14 years
U.S. Cl. D6—335



279,334
A COMBINED STRADDLE SEAT AND ARM REST
Richard P. Agan, 2812 47th St., Des Moines, Iowa 50310, and Anna L. Dunahoo, 3914 E. 8th St., Des Moines, Iowa 50316
Filed Feb. 7, 1983, Ser. No. 436,609
Term of patent 14 years
U.S. Cl. D6—354



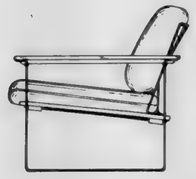
279,335
CHAISE FRAME
Richard Frinier, Longbeach, and Eugene A. Criqui, Covina, both of Calif., assignors to Brown Jordan Company, El Monte, Calif.
Filed Jul. 21, 1982, Ser. No. 400,316
Term of patent 14 years
U.S. Cl. D6—361



279,336
CHAIR
Andrew Duncan, Canterbury, Australia, assignor to Pluto Furniture (Sales) Pty. Ltd., Victoria, Australia
Filed Aug. 27, 1982, Ser. No. 412,189
Term of patent 14 years
U.S. Cl. D6—368



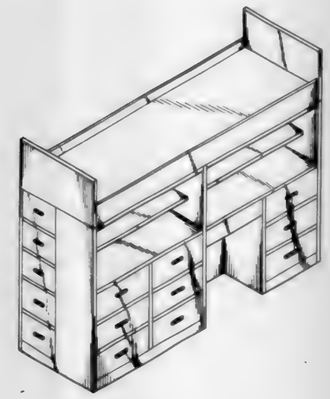
279,337
CHAIR
Noboru Nakamura, Sapporo, Japan, assignor to Mohly Shop Co., Ltd., Osaka, Japan
Filed Sep. 30, 1982, Ser. No. 430,273
Claims priority, application Japan, Apr. 22, 1982, 57-17614
Term of patent 14 years
U.S. Cl. D6—371



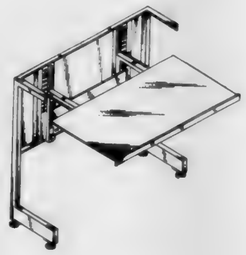
279,338
CHAIR
Giovanni Offredi, Via Ludovico Muratori 29, Milano, Italy
Filed Mar. 10, 1983, Ser. No. 473,875
Claims priority, application Italy, Sep. 17, 1982, 60949B/82
Term of patent 14 years
U.S. Cl. D6—376



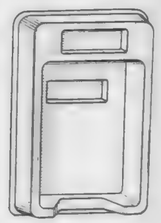
279,339
COMBINED LOFT BED AND CABINET ASSEMBLY OR SIMILAR ARTICLE
Stefano Testa, New Providence, N.J., assignor to Essex Chair Company, Union, N.J.
Filed Jan. 24, 1983, Ser. No. 460,308
Term of patent 14 years
U.S. Cl. D6—384



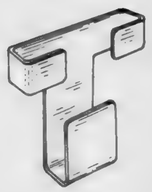
279,340
ADJUSTABLE STAND FOR A COMPUTER KEYBOARD OR THE LIKE
Francis Spear, Conklin, N.Y., assignor to Systems Manufacturing Corporation, Binghamton, N.Y.
Filed Aug. 12, 1982, Ser. No. 407,607
Term of patent 14 years
U.S. Cl. D6—429



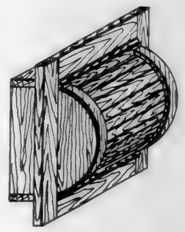
279,341
STACKABLE TRAY FOR DISPLAYING AND DISPENSING CYLINDRICAL PACKAGED ARTICLES
Richard J. Simmons, Carol Stream, Ill., assignor to Plastofilm Industries, Inc., Wheaton, Ill.
Filed Aug. 2, 1982, Ser. No. 404,581
Term of patent 14 years
U.S. Cl. D6—466

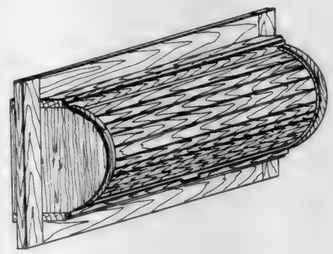


279,342
HOLDER FOR EMPTY CASSETTE CASE
John W. Crawford, 461 Siesta Dr., Aptos, Calif. 95003
Filed Nov. 22, 1982, Ser. No. 443,304
Term of patent 14 years
U.S. Cl. D6—466

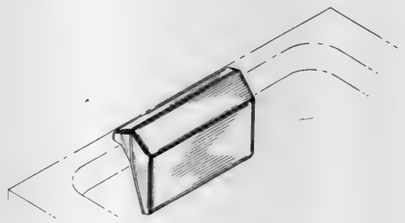


279,343
PAPER ROLL HOLDER
Gerald E. Brewster, 6464 Via Venado, San Luis Obispo, Calif. 93401
Filed Jan. 10, 1983, Ser. No. 456,567
Term of patent 14 years
U.S. Cl. D6—522

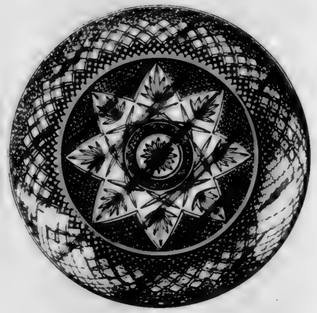




279,344
BATHTUB PILLOW
Herbert V. Kohler, Jr., Kohler, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 17, 1983, Ser. No. 458,631
Term of patent 14 years
U.S. Cl. D6—596



279,345
PLATE OR SIMILAR ARTICLE
Philippe J. Durand, Les Daneaux, Chemin de la Garenne, 62510 Arques, France
Filed Aug. 26, 1982, Ser. No. 411,979
Claims priority, application Hague, May 24, 1982, Hague
Term of patent 14 years
U.S. Cl. D7—28



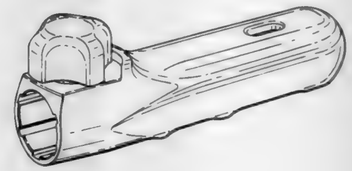


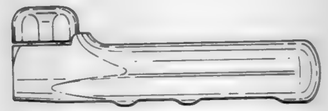


279,346
JUG
Craig Ruxton, Houston, Tex., assignor to Igloo Corporation, Houston, Tex.
Filed Aug. 18, 1982, Ser. No. 409,078
Term of patent 14 years
U.S. Cl. D7—77



279,347
GRIP FOR GARDEN UTENSILS
Franco Clivio, Ulm, and Dieter Raffler, Neu-Ulm, both of Fed. Rep. of Germany, assignors to Gardena Kress+Kastner GmbH, Fed. Rep. of Germany
Filed Feb. 17, 1983, Ser. No. 467,397
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1982, GRA III 1354/82
Term of patent 14 years
U.S. Cl. D8—1



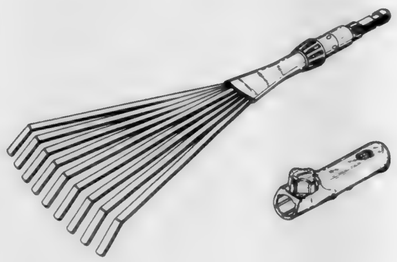


279,348
GARDEN UTENSIL
Franco Clivio, Ulm, and Dieter Raffler, Neu-Ulm, both of Fed. Rep. of Germany, assignors to GARDENA Kress+Kastner GmbH, Fed. Rep. of Germany
Filed Feb. 17, 1983, Ser. No. 467,381
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1982, GRA III 1354/82
Term of patent 14 years
U.S. Cl. D8—11



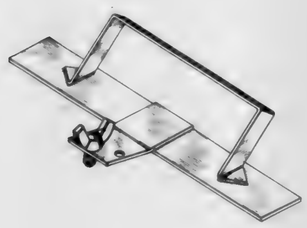


279,349
GARDEN RAKE
Franco Clivio, Ulm, and Dieter Raffler, Neu-Ulm, both of Fed. Rep. of Germany, assignors to GARDENA Kress + Kastner GmbH, Fed. Rep. of Germany
Filed Feb. 17, 1983, Ser. No. 467,388
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1982, 135482
Term of patent 14 years
U.S. Cl. D8—13

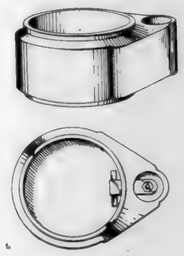




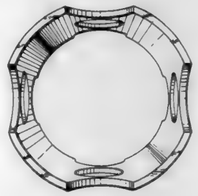
279,350
COMBINED ROCKER BOX HANDLE AND ROCKER ARM POSITIONER
George Hamatani, Rte. 1, Box 400, Clarksburg, Calif. 95612
Filed Oct. 25, 1982, Ser. No. 437,417
Term of patent 14 years
U.S. Cl. D8—71

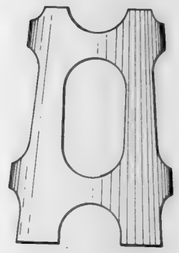


279,351
TRAILER KING PIN LOCK
Will M. Lassiter, 1703 Deep River Rd., High Point, N.C. 27260
Filed Jun. 2, 1982, Ser. No. 500,576
Term of patent 14 years
U.S. Cl. D8—331



279,352
CONCRETE REINFORCING ROD SPACER
Diana L. Mitchell, and Howard Hewitt, both of #240-1107 Homer St., Vancouver, B.C. V6B 2Y1, Canada
Filed Jun. 19, 1984, Ser. No. 622,166
Term of patent 14 years
U.S. Cl. D8—354





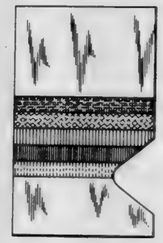
279,353
PACKAGING CUP WITH A PEDESTAL BASE
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Oct. 15, 1982, Ser. No. 434,700
Term of patent 14 years
U.S. Cl. D9—349



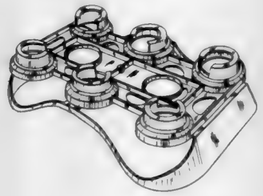
279,354
BOTTLE OR THE LIKE
Paul Marcus, 85 Pascack Rd., Pearl River, N.Y. 10965
Filed Mar. 10, 1983, Ser. No. 473,778
Term of patent 14 years
U.S. Cl. D9—351



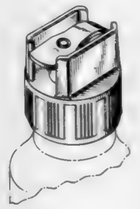
279,355
PACKING BOX FOR VIDEO CASSETTES
Masumi Ujiie, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 19, 1983, Ser. No. 459,200
Claims priority, application Japan, Jul. 19, 1982, 57-32631
Term of patent 14 years
U.S. Cl. D9—432



279,356
BOTTLE CARRIER
James F. Moss, Tulsa, Okla., assignor to Liberty Glass Company, Sapulpa, Okla.
Filed Sep. 24, 1982, Ser. No. 422,958
Term of patent 14 years
U.S. Cl. D9—434



279,357
BOTTLE CAP
David W. Mitchell, Orange, Calif., assignor to Allergan Pharmaceuticals, Inc., Irvine, Calif.
Filed May 20, 1983, Ser. No. 496,753
Term of patent 14 years
U.S. Cl. D9—450



279,358
GROWTH CHART
Larry A. Lichtman, Northridge, Calif., assignor to Sunset Time, Inc., Mission Hills, Calif.
Filed Jun. 27, 1983, Ser. No. 507,770
Term of patent 14 years
U.S. Cl. D10—71



279,359
WRISTWATCH CASE FACE AND KNOB
Elemér Szigeti, 1, Place Eugene Mo, 06000 Nice (Alpes Maritimes), France
Filed Jan. 15, 1982, Ser. No. 339,553
Term of patent 14 years
U.S. Cl. D10—126



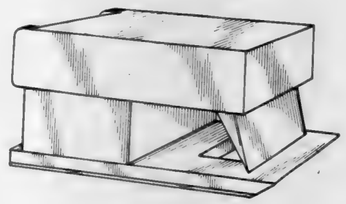


279,360
JEWELRY PIN
Louis H. Hubachek, 24524 Cypress Ave., Lomita, Calif. 90717
Filed Apr. 7, 1983, Ser. No. 482,788
Term of patent 14 years
U.S. Cl. D11—71

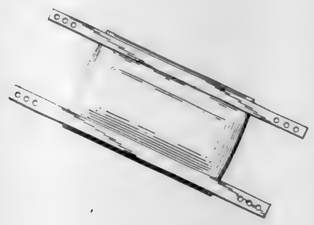




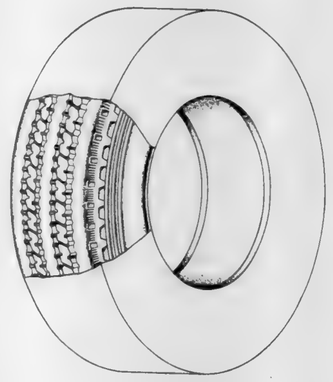
279,361
ICE FISHING SLED
Kenneth T. Peckels, 1678 Hillview Rd., Shoreview, Minn. 55112, and William M. Peckels, 414 36th Ave. N., Minneapolis, Minn. 55412
Filed May 10, 1982, Ser. No. 376,394
Term of patent 14 years
U.S. Cl. D12—9



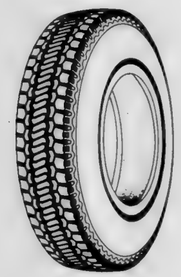
279,362
CHAIR RESTRAINING DEVICE
John B. Sink, 3729 Rolling Rd., High Point, N.C. 27260
Filed Jun. 7, 1982, Ser. No. 385,550
Term of patent 14 years
U.S. Cl. D12—133



279,363
TIRE FOR A VEHICLE WHEEL
Tetsuhiro Fukumoto, Akashi, and Kiyoshi Ochiai, Nishinomiya, both of Japan, assignors to Dunlop Limited, London, England
Filed Nov. 10, 1982, Ser. No. 440,557
Claims priority, application Japan, Jul. 23, 1982, 57-33526
Term of patent 14 years
U.S. Cl. D12—143



279,364
VEHICLE TIRE
Haruo Kusube, Toyota, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Jul. 5, 1983, Ser. No. 510,903
Term of patent 14 years
U.S. Cl. D12—146



279,365
VEHICLE TIRE
Kenji Takehara, Amagasaki, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Apr. 22, 1983, Ser. No. 487,668
Term of patent 14 years
U.S. Cl. D12—147



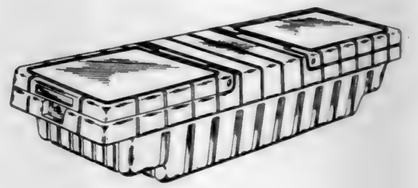
279,366
VEHICLE TIRE
Kenji Takehara, Amagasaki, Japan, assignor to Sumitomo Rubber Industries, Inc., Hyogo, Japan
Filed Apr. 22, 1983, Ser. No. 487,669
Term of patent 14 years
U.S. Cl. D12—147



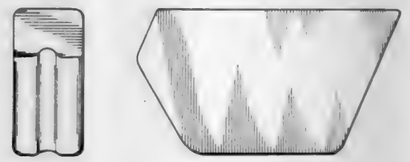
279,367
TIRE TREAD AND BUTTRESS
Daniel J. Lindner, Canal Fulton; Ronald L. Loeffler, Akron, both of Ohio; Harold D. Fetty, Asheville, N.C., and Jeffrey L. Plauny, Stow, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 26, 1983, Ser. No. 536,045
Term of patent 14 years
U.S. Cl. D12—149



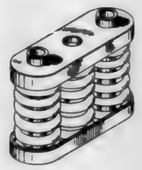
279,368
TRUCK TOOL BOX
John E. Waters, Waco, Tex., assignor to Advanced Plastics, Inc., Jonesboro, Ark.
Continuation-in-part of Ser. No. 516,776, Jul. 25, 1983,. This application Dec. 28, 1983, Ser. No. 566,262
Term of patent 14 years
U.S. Cl. D12—157



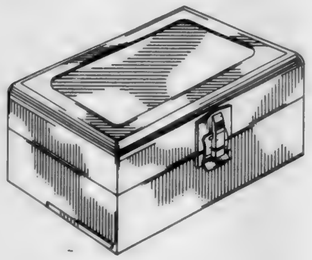
279,369
UTILITY BOX FOR BICYCLES
Gary Van Vlandren, 15 Duchess Ave., South Burlington, Vt. 05401
Filed Oct. 25, 1983, Ser. No. 545,170
Term of patent 14 years
U.S. Cl. D12—158



279,370
SHOCK ABSORBER
Julius R. Ballew, Plateau Heights, Seminole, Tex. 79360
Filed Sep. 29, 1982, Ser. No. 428,373
Term of patent 14 years
U.S. Cl. D12—159

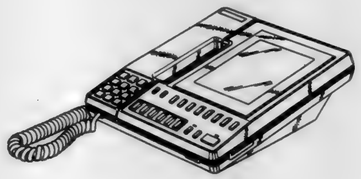


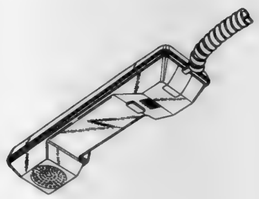
279,371
PHONOGRAPH
Galen C. Arrington, 4535 E. Beverly La., Phoenix, Ariz. 85032; Allen E. Christ; Theodore W. Keller, both of Scottsdale, Ariz., and Clark W. Eichhorn, Phoenix, Ariz., assignors to Galen C. Arrington, Phoenix, Ariz.
Filed Feb. 22, 1983, Ser. No. 468,065
Term of patent 14 years
U.S. Cl. D14—16





279,372
TELEPHONE ANSWERING MACHINE WITH HANDSET
Haruo Baba, Kanagawa; Teisuke Kurosu, Tokyo; Fumiharu Ohta, Kanagawa; Kazumasa Takenaka, Kanagawa, and Satoshi Watanabe, Kanagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Osaka, Japan
Filed Nov. 1, 1982, Ser. No. 438,231
Claims priority, application Japan, May 17, 1982, 57-21563
Term of patent 14 years
U.S. Cl. D14—52



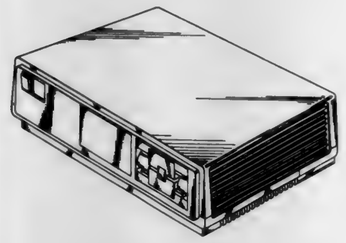


279,373
TELEPHONE
Eric J. Marshall, London, England, assignor to Eric Marshall Associates Limited, England
Filed Oct. 21, 1982, Ser. No. 435,868
Claims priority, application United Kingdom, Apr. 21, 1982, 1006301
Term of patent 14 years
U.S. Cl. D14—53

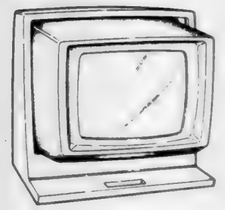




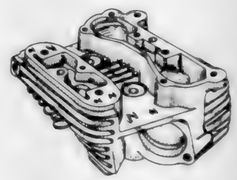
279,374
COMPUTER HOUSING
Paul E. Benigni, Bridgewater; Steven G. Boulay, Dudley, and John C. Costello, Newton Center, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Aug. 9, 1982, Ser. No. 406,479
Term of patent 14 years
U.S. Cl. D14—100

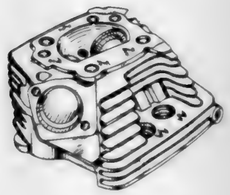


279,375
CRT DISPLAY CABINET
Donald M. Genaro, Haworth, and Alvin R. Tilley, Red Bank, both of N.J., assignors to AT&T Teletype Corporation, Skokie, Ill.
Filed Oct. 8, 1982, Ser. No. 433,605
The portion of the term of this patent subsequent to Jan. 24, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—113

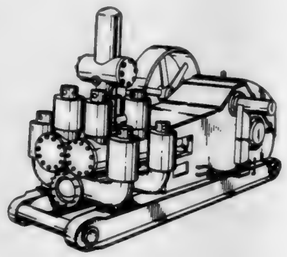


279,376
MOTORCYCLE ENGINE HEAD
William G. Davidson, Elm Grove, Wis., assignor to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.
Filed Oct. 3, 1983, Ser. No. 538,228
Term of patent 14 years
U.S. Cl. D15—5

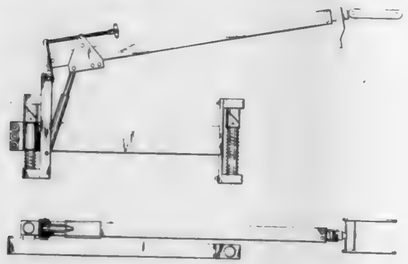




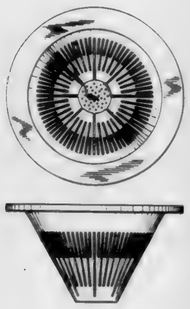
279,377
DUPLEX MUD PUMP
Walter Kuchar, Edmonton, Canada, assignor to Tri-Service Machine Ltd., Edmonton, Canada
Filed May 14, 1982, Ser. No. 378,193
Term of patent 14 years
U.S. Cl. D15—7



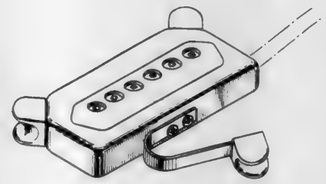
279,378
BALANCE ARM FOR SUPPORTING WORKING TOOLS
Bertil Larsson, Ödsmål, Sweden, assignor to Stalvall & Larsson Forsaljnings AB., Odsmal, Sweden
Filed Dec. 6, 1982, Ser. No. 447,310
Claims priority, application Sweden, Jun. 9, 1982, 82-1511
Term of patent 14 years
U.S. Cl. D15—138



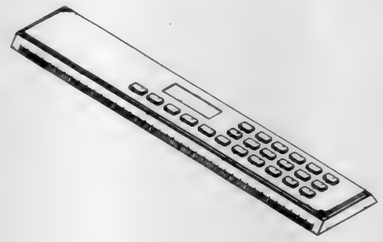
279,379
MOLTEN METALS FILTER
Stuart Z. Uram, Alpine, N.J., assignor to Certech Incorporated, Wood-Ridge, N.J.
Filed Oct. 22, 1982, Ser. No. 435,982
Term of patent 14 years
U.S. Cl. D15—138



279,380
ACOUSTIC PICKUP FOR STRINGED INSTRUMENT
Willi L. Stich, 110 Tyne Blvd., Old Hickory, Tenn. 37138
Filed Feb. 9, 1983, Ser. No. 465,429
Term of patent 14 years
U.S. Cl. D17—20



279,381
CALCULATOR RULER OR SIMILAR ARTICLE
Chee-Chun Leung, Taipei, Taiwan, assignor to Cal-Comp Electronice, Inc., Taipei, Taiwan
Filed May 31, 1983, Ser. No. 499,516
Claims priority, application Taiwan, Jan. 19, 1983, 7230311
Term of patent 14 years
U.S. Cl. D18—2

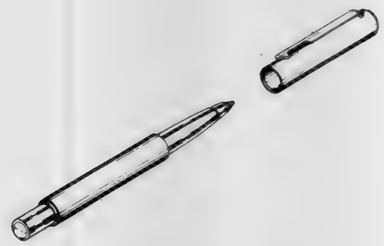


279,382
CASH REGISTER OR SIMILAR ARTICLE
Susumu Hori; Shinichi Kaneko, both of Kawasaki, and Hiroaki Suzuki, Yokohama, all of Japan, assignors to The General Corporation, Kawasaki, Japan
Filed Jun. 2, 1982, Ser. No. 384,265
Claims priority, application Japan, Dec. 2, 1981, 56-53476
Term of patent 14 years
U.S. Cl. D18—4

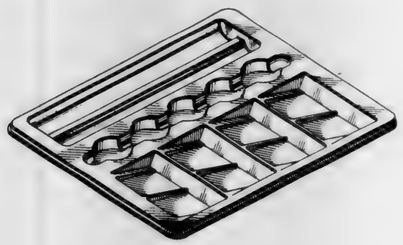


279,383
BALL POINT WRITING INSTRUMENT
Thomas W. Hillebrand, and Clemens A. Sonntag, both of Janesville, Wis., assignors to Parker Pen Company, Janesville, Wis.
Filed Sep. 6, 1983, Ser. No. 529,409
Term of patent 14 years
U.S. Cl. D19—51

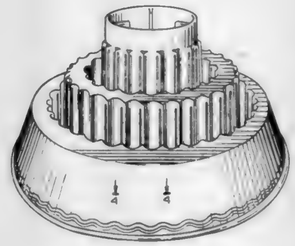




279,384
DRAWER INSERT FOR A DESK STORAGE TRAY SYSTEM
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Nov. 22, 1982, Ser. No. 443,184
Term of patent 14 years
U.S. Cl. D19—75



279,385
DRAWING IMPLEMENT STORAGE DEVICE
Sheldon Lieberman, Allentown, Pa., assignor to Binney & Smith, Easton, Pa.
Filed Sep. 28, 1982, Ser. No. 426,223
Term of patent 14 years
U.S. Cl. D19—77



279,386
PARTY NEEDS MEMO HOLDER
James R. Dunn, Fairfield, Conn., assignor to Coats & Clark, Inc., Stamford, Conn.
Filed Jan. 20, 1983, Ser. No. 459,628
Term of patent 14 years
U.S. Cl. D19—91



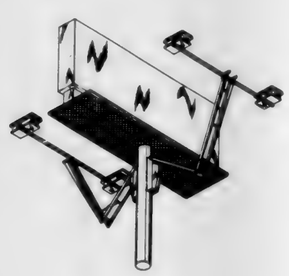
279,387
MENU MEMO HOLDER
James R. Dunn, Fairfield, Conn., assignor to Coats & Clark, Inc., Stamford, Conn.
Filed Jan. 20, 1983, Ser. No. 459,626
Term of patent 14 years
U.S. Cl. D19—91



279,388
INVITATION LIST MEMO HOLDER
James R. Dunn, Fairfield, Conn., assignor to Coats & Clark, Inc., Stamford, Conn.
Filed Jan. 20, 1983, Ser. No. 459,630
Term of patent 14 years
U.S. Cl. D19—91



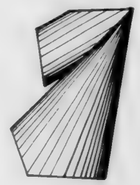
279,389
BILLBOARD DISPLAY APPARATUS
Thomas B. Douglas, and A. Clark Dunklin, both of 4510 N. Central, Dallas, Tex. 75206
Filed Nov. 16, 1983, Ser. No. 552,475
Term of patent 14 years
U.S. Cl. D20—39



279,390
CHESS PIECE
James Danner, 4241 N. Winchester Ave., Chicago, Ill. 60613
Filed Nov. 8, 1982, Ser. No. 439,834
Term of patent 14 years
U.S. Cl. D21—52



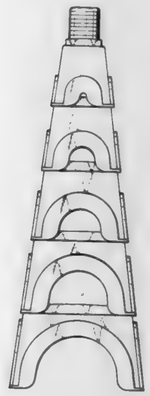
279,391
CHESS PIECE
James Danner, 4241 N. Winchester Ave., Chicago, Ill. 60613
Filed Nov. 8, 1982, Ser. No. 439,833
Term of patent 14 years
U.S. Cl. D21—52



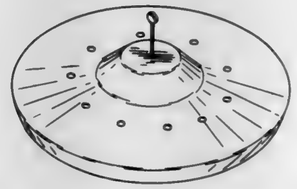
279,392
CHESS PIECE
James Danner, 4241 N. Winchester Ave., Chicago, Ill. 60613
Filed Nov. 8, 1982, Ser. No. 439,835
Term of patent 14 years
U.S. Cl. D21—52



279,393
STACKING TOY
Steven E. Hilko, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 27, 1982, Ser. No. 453,704
Term of patent 14 years
U.S. Cl. D21—59



279,394
TOY FLYING SAUCER
Ernest G. Coleman, R.D. 4, Box 515M, Chestertown, Md. 21620
Filed Mar. 2, 1983, Ser. No. 471,448
Term of patent 14 years
U.S. Cl. D21—86



279,395
TOY TRACKWAY
Herbert Green, 2514 Fox Harbour Ct., Indianapolis, Ind. 46227
Filed Oct. 7, 1982, Ser. No. 433,420
Term of patent 14 years
U.S. Cl. D21—92

279,396
MINIATURIZED BASKETBALL BACKBOARD
Samuel F. Speers, 8341 W. Country Club Dr. N., Sarasota, Fla. 33580
Filed Nov. 22, 1982, Ser. No. 444,689
Term of patent 14 years
U.S. Cl. D21—201



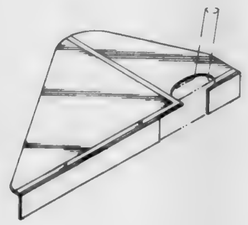
279,397
TENNIS RACQUET
Carlo Gibello, Corso Vittorio Emanuele II, 5, Torino, Italy
Filed Jan. 12, 1983, Ser. No. 457,542
Claims priority, application Italy, Jul. 12, 1982, 53501/82[U]
Term of patent 14 years
U.S. Cl. D21—212



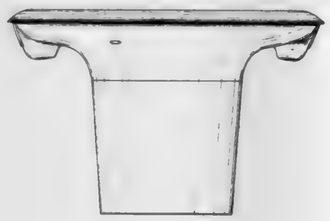
279,398
TENNIS RACQUET
Carlo Gibello, Corso Vittorio Emanuele II, 5, Torino, Italy
Filed Mar. 1, 1983, Ser. No. 471,085
Claims priority, application Italy, Sep. 1, 1982, 53643/82[U]
Term of patent 14 years
U.S. Cl. D21—212



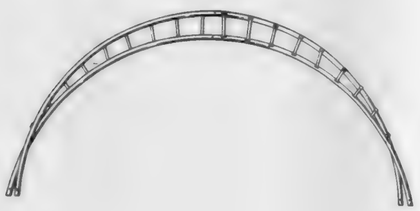
279,399
PUTTING GUIDE GOLF CLUB ATTACHMENT
Helen V. Neumunz, 961 Soldier Hill Rd., Oradell, N.J. 07649
Filed Jul. 13, 1983, Ser. No. 513,321
Term of patent 14 years
U.S. Cl. D21—221



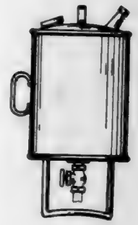
279,400
PORTABLE OUTDOOR BUMPER POOL TABLE
Edward G. Dunn, Sr., 7701 Spring Mill Rd., Indianapolis, Ind. 46260, and Edward G. Dunn, Jr., 136 E. 50th St., Indianapolis, Ind. 46205
Filed Sep. 30, 1982, Ser. No. 430,744
Term of patent 14 years
U.S. Cl. D21—232



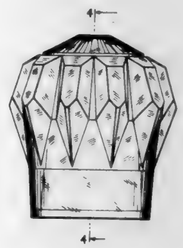
279,401
PLAYGROUND CLIMBER
Donald E. West, Fort Payne, Ala., assignor to Game Time, Inc., Fort Payne, Ala.
Filed Feb. 25, 1983, Ser. No. 469,806
Term of patent 14 years
U.S. Cl. D21—245



279,402
COMBINED STAND AND CONTAINER FOR STORING AND DISPENSING GASOLINE OR THE LIKE
Charles C. Gibson, Rte. 4, Box 281, Hurricane, W. Va. 25526
Filed Jul. 9, 1982, Ser. No. 396,887
Term of patent 14 years
U.S. Cl. D23—2



279,403
FAUCET HANDLE
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed May 20, 1983, Ser. No. 496,804
Term of patent 14 years
U.S. Cl. D23—28



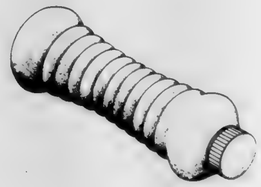
279,404
LAVATORY OR SIMILAR ARTICLE
Dorothee Hiller, Stuttgart, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.
Division of Ser. No. 65,674, Aug. 10, 1979. This application Dec. 10, 1980, Ser. No. 214,928
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 20 MR 1848
Term of patent 14 years
U.S. Cl. D23—62



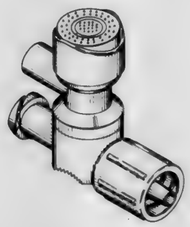
279,405
COMEDONE EXTRACTOR
William C. Lentz, 13931 Squaw Creek Dr., Ft. Wayne, Ind. 46804
Filed Nov. 1, 1982, Ser. No. 438,340
Term of patent 14 years
U.S. Cl. D24—23



279,406
MASSAGE ROLLER
Desmond K. Shiu, Boston, Mass., assignor to Matrix International Industries, Boston, Mass.
Filed Sep. 27, 1982, Ser. No. 423,884
Term of patent 14 years
U.S. Cl. D24—36



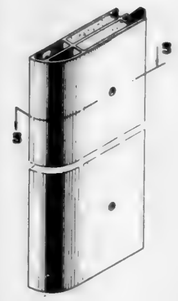
279,407
CATHETER FLUSH FLOW CONTROL DEVICE
James R. Hubbard, Moorestown, N.J., assignor to Graphic Controls Corporation, Buffalo, N.Y.
Filed Apr. 26, 1982, Ser. No. 371,657
Term of patent 14 years
U.S. Cl. D24—53



279,408
FOOD SERVICE BUILDING
Robert M. Davenport, and Cecil R. Cheek, both of Lookout Mountain, Tenn., assignors to Robert M. Davenport Company, Chattanooga, Tenn.
Filed Jan. 25, 1983, Ser. No. 460,931
Term of patent 14 years
U.S. Cl. D25—25



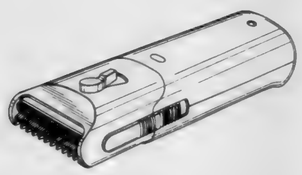
279,409
COMBINED SMOKE GASKET AND INTUMESCENT EXPANDING SEAL DEVICE FOR SLIDING ELEVATOR DOORS AND THE LIKE
George A. Allen, Jr., 3601 Old Gun Rd., Midlothian, Va. 23113
Filed Nov. 23, 1982, Ser. No. 444,687
Term of patent 14 years
U.S. Cl. D25—74



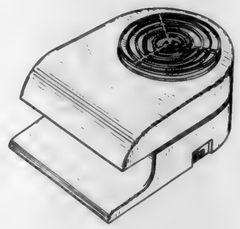
279,410
GARDEN LIGHTING FIXTURE
Imero Fiorentino, and William G. Marshall, both of New York, N.Y., assignors to Imero Fiorentino Associates, Inc., New York, N.Y.
Filed Dec. 29, 1980, Ser. No. 221,003
Term of patent 14 years
U.S. Cl. D26—69



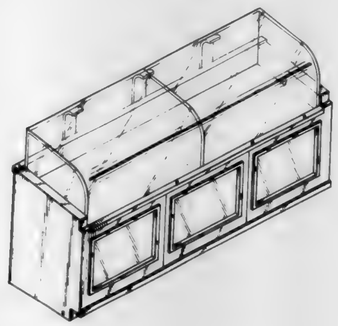
279,411
ELECTRIC HAIR CLIPPER
Noboru Abe, Suita, Japan, and Florian Seiffert, Gründwald, Fed. Rep. of Germany, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Apr. 26, 1983, Ser. No. 488,766
Claims priority, application Japan, Dec. 20, 1982, 57-57028
Term of patent 14 years
U.S. Cl. D28—53



279,412
FINGERNAIL DRYER
May Fung, Hong Kong, Hong Kong, assignor to Etna Products Co., Inc., New York, N.Y.
Filed Oct. 22, 1984, Ser. No. 663,490
Claims priority, application United Kingdom, Jun. 22, 1984, 1020456
Term of patent 14 years
U.S. Cl. D28—58



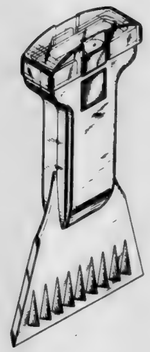
279,413
COMBINED DISPLAY CASE FISH TANK
Andrew Balducci, 7 Todd Ct., East Williston, N.Y.
Filed Jan. 24, 1983, Ser. No. 460,195
Term of patent 14 years
U.S. Cl. D30—11



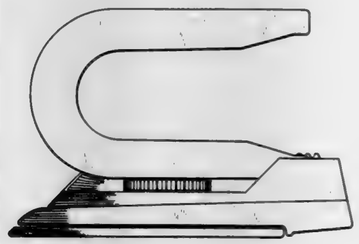
279,414
EAR TAG FOR ANIMALS
Edward E. Dvorak, P.O. Box 79, Manning, N. Dak. 58642
Filed May 18, 1983, Ser. No. 495,682
Term of patent 14 years
U.S. Cl. D30—43



279,415
ILLUMINATED ICE SCRAPER
Harold Osrow, Dix Hills, and Richard Osrow, Kings Park, both of N.Y., assignors to Osrow Products Corporation, Old Bethpage, N.Y.
Filed Jun. 20, 1983, Ser. No. 505,943
Term of patent 14 years
U.S. Cl. D32—49



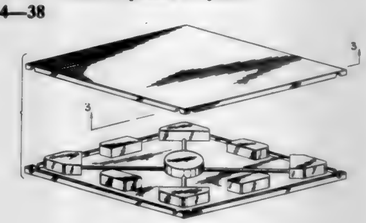
279,416
IRON
Bing Y. Chan, Kowloon, Hong Kong, assignor to Goodway Electrical Company Ltd., Kowloon, Hong Kong
Filed Dec. 22, 1982, Ser. No. 452,042
Claims priority, application United Kingdom, Jun. 29, 1982, 1007451
Term of patent 14 years
U.S. Cl. D32—69



279,417
INFECTIOUS WASTE CONTAINER FOR USE IN HOSPITALS AND OTHER HEALTH CARE FACILITIES
Treesa A. Spencer, 2818 S. Diamond, Santa Ana, Calif. 92704
Filed Oct. 24, 1983, Ser. No. 544,507
Term of patent 14 years
U.S. Cl. D34—1



279,418
PALLET
Henry W. Helmer, 10 Colony Rd., Gretna, La. 70053
Filed Jan. 10, 1983, Ser. No. 457,044
Term of patent 14 years
U.S. Cl. D34—38



279,419
POSTAL CENTER UNIT
Max L. Stevens, and William P. Goeckeler, both of St. Louis County, Mo., assignors to 24 Hour Postal Center, Inc., St. Louis, Mo.
Filed Dec. 6, 1982, Ser. No. 446,952
Term of patent 14 years
U.S. Cl. D99—29



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TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF JUNE, 1985

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A[illegible]n, Peter W. Controllable sled for snow skiing. 4,524,984, Cl. 280-18.000.

Ayers, Ray R.: *See—*
Stevens, James W.; and Ayers, Ray R., 4,525,101, Cl. 405-169.000.

Ayers, William J., Jr.; Carter, Charles R.; Griffith, Richard A.; Loomis, Richard B.; and Notestein, John E., to United States of America, Energy. Sliding-gate valve for use with abrasive materials. 4,524,796, Cl. 137-240.000.

Baas, Willem; Hof, Tette; Comes, Heinrich; Jaunich, Helmut; and Krampe, Hubert, to Hoogovens Groep B.V.; and Foseco Trading A.G. Method of operating a mixer type hot metal car for the transport of molten iron and a device for carrying out the method. 4,524,954, Cl. 266-45.000.

Baba, Keikichi: *See—*
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,525,558, Cl. 526-142.000.

Bacardit, Joan S.: *See—*
Coll, Juan V.; Bacardit, Joan S.; and Bofill, Joaquim F., 4,524,585, Cl. 60-562.000.

Bachle, Walter W., to General Signal Corporation. Cable fitting with variable inner diameter grommet assembly. 4,525,000, Cl. 285-177.000.

Bachmann, Alfred. Tongs for inserting a curtain-carrying sliding member into a profiled curtain rail. 4,524,502, Cl. 29-268.000.

Bachmann, Herbert, to Stopinc Aktiengesellschaft. Linear sliding closure unit. 4,524,956, Cl. 266-236.000.

Bachmann, Rainer, to Black & Decker Inc. Electrically driven tacker or the like for driving fastening elements into a workpiece. 4,524,897, Cl. 227-131.000.

Bagdal, Karl T.: *See—*
Hoover, Bradley R.; and Bagdal, Karl T., 4,524,546, Cl. 51-165.00R.

Bagdasarov, Khachik S.: *See—*
Petrosian, Ashot G.; Bagdasarov, Khachik S.; Kuzanian, Armen S.; Ovanesian, Karine L.; and Butaeva, Tatyana I., 4,525,460, Cl. 501-86.000.

Bagus, Brian M.: *See—*
Bione, Angelo A.; and Bagus, Brian M., 4,524,665, Cl. 84-1.010.

Bailey, Dana S.: *See—*
Chai, Bruce H.; Bailey, Dana S.; Vetelino, John F.; Lee, Donald L.; and Andle, Jeffrey C., 4,525,643, Cl. 310-313.00A.

Bailey, Frank C.: *See—*
Law, Kock-Yee; and Bailey, Frank C., 4,525,592, Cl. 564-307.000.

Bailey, Gregory W. Rotary compression bending machine. 4,524,599, Cl. 72-321.000.

Bainton, Stephen D.: *See—*
Vance, Ian A. W.; and Bainton, Stephen D., 4,525,835, Cl. 370-29.000.

Baker, Gregory L.; and Bates, Frank S., to AT&T Bell Laboratories. Polymerizing monomer in presence of polymer containing electrophilic moiety using Ziegler-Natta catalyst. 4,525,538, Cl. 525-275.000.

Baker, Melvin C., to Du Pont de Nemours, E. I., and Company. Method for reducing color of poly(tetramethylene ether) glycol with hypochlorite. 4,525,580, Cl. 528-490.000.

Baker, Peter J.; Brookes, David A.; and Johnson, Martin, to British Petroleum Company p.l.c., The. Mineral slurries. 4,525,173, Cl. 44-51.000.

Bakish Materials Corp.: *See—*
Neumann, Manfred; Schiller, Siegfried; ZeiBig, Gerhard; Morgner, Henry; and Jasch, Gunter, 4,524,717, Cl. 118-718.000.

Ball, Donald L.: *See—*
Boateng, Daniel A. D.; Ball, Donald L.; and Swinkels, Godefridus M., 4,525,332, Cl. 423-89.000.

Ball, John M.: *See—*
McMahan, William J.; and Ball, John M., 4,524,606, Cl. 73-40.000.

Ball, Lawrence E.: *See—*
Wu, Mu-Yen M.; and Ball, Lawrence E., 4,525,578, Cl. 528-354.000.

Ball, Wolfgang: *See—*
Warzelhan, Volker; and Ball, Wolfgang, 4,525,550, Cl. 526-116.000.

Ballard, Louis F., to MTD Products Inc. Selecting mechanism. 4,524,632, Cl. 74-471.00R.

Balliello, Paolo, to Ciba-Geigy Corporation. Solid formulations of metal complex dyes. 4,525,170, Cl. 8-524.000.

Balsavage, Walter. Magazine and feed mechanism for firearms. 4,524,672, Cl. 89-33.100.

Baltes, Eugene ; de Lannoy, Jean; and Rodriguez, Ludovic, to UCB Pharmaceuticals, Inc. 2-[4-(Diphenylmethyl)-1-piperazinyl]-acetic acids and their amides. 4,525,358, Cl. 514-255.000.

BAMA, SpA: *See—*
Verdi, Guido, 4,525,236, Cl. 156-517.000.

Bangerter, Roger O.; and Meeker, Donald J., to United States of America, Energy. Ion beam inertial confinement target. 4,525,323, Cl. 376-106.000.

Bantjes, John H.: *See—*
Patil, Arvind S.; Bantjes, John H.; Pepoy, Louis J.; and Sappok, Reinhard J., 4,525,217, Cl. 106-304.000.

Barbet, Karl-Heinz: *See—*
Busch, Peter; and Barbet, Karl-Heinz, 4,524,943, Cl. 249-63.000.

Bardin, Roland; Mack, Joel; and Counioux, Jean-Jacques, to Compagnie Europeenne d'Accumulateurs. Lead-antimony-magnesium alloys for storage cell supports and method of manufacturing said alloys. 4,525,327, Cl. 420-565.000.

Barer, Sol J.; and Terwedow, Henry A., Jr. Mosquito development inhibitor employing substituted phenols. 4,525,362, Cl. 514-712.000.

Barger, Dwight F., to Ashland Oil, Inc. Combination process for upgrading residual oils. 4,525,268, Cl. 208-73.000.

Barletta, Joseph M.; and Yang, John P., to Lockheed Electronics Co., Inc. Electronic tag identification system. 4,525,713, Cl. 340-825.540.

Barnes, Johnny G.; Hooten, John A.; Hurley, Patrick J.; and Miller, Ernest L., to International Business Machines Corporation. Printer sharing by plurality of display units in word processing system. 4,525,806, Cl. 364-900.000.

Barnes, Pierre D.; and Marts, Maynard W., to Cessna Aircraft Company, The. Proportional solenoid valve. 4,524,947, Cl. 251-129.000.

Barnette, Luverne H.; and Liang, Charles C., to Duracell Inc. Solid state cell with anolyte. 4,525,440, Cl. 429-191.000.

Barnich, Richard G.; Ferguson, Michael H.; and McGregor, Charles K. Telephone call accounting system. 4,525,601, Cl. 179-7.0MM.

Barron, Charles D.; and Kuus, Felix, to Smith International, Inc. Cablehead side entry sub. 4,524,834, Cl. 166-385.000.

Bartholomew, Donald D., to Proprietary Technology, Inc. Swivelable quick connector assembly. 4,524,995, Cl. 285-54.000.

Bartnick, Bernhard: *See—*
Hofer, Rainer; and Bartnick, Bernhard, 4,525,525, Cl. 524-742.000.

Bartsch, Erich O.; and Vollstedt, Gerald, to Deutsche Texaco Aktiengesellschaft. Method of loading and/or transferring environmentally harmful materials in shallow-water and mudland regions and artificial islands suitable therefor. 4,525,282, Cl. 210-747.000.

Bascou, Jacques, to Regie Nationale des Usines Renault. Retractable key carrier. 4,524,594, Cl. 70-456.00R.

BASF Aktiengesellschaft: *See—*
Blum, Rainer; Spoor, Herbert; Osterloh, Rolf; Mosler, Gerhard; and Rubbert, Bernhard, 4,525,570, Cl. 528-75.000.
Denzinger, Walter; Hartmann, Heinrich; Faulhaber, Gerhard; and Raubenheimer, Hans-Jurgen, 4,525,581, Cl. 528-503.000.
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,525,484, Cl. 521-56.000.
Lotsch, Wolfgang; Kemper, Reinhard; and Schefczik, Ernst, 4,525,591, Cl. 544-250.000.
Warzelhan, Volker; and Ball, Wolfgang, 4,525,550, Cl. 526-116.000.

BASF Wyandotte Corporation: *See—*
Narayan, Thirumurti, 4,525,489, Cl. 521-108.000.
Patil, Arvind S.; Bantjes, John H.; Pepoy, Louis J.; and Sappok, Reinhard J., 4,525,217, Cl. 106-304.000.

Basinger, Richard A.: *See—*
Hemmerle, Clayton J.; and Basinger, Richard A., 4,524,504, Cl. 29-450.000.

Bates, Frank S.: *See—*
Baker, Gregory L.; and Bates, Frank S., 4,525,538, Cl. 525-275.000.

Bates, Robert L., to Agro Land & Cattle Company, Inc. Trolling method and apparatus. 4,524,535, Cl. 43-4.500.

Battelle Memorial Institute: *See—*
Giddey, Claude; and Dove, Georges, 4,525,372, Cl. 426-564.000.

Bauder, Armin, to Audi AG. Reciprocating piston engine. 4,524,735, Cl. 123-196.00R.

Bauder, Armin, to Audi NSU Auto Union Aktiengesellschaft. Cylinder head gasket for internal combustion engines. 4,524,979, Cl. 277-189.000.

Baues, Peter, to Siemens Aktiengesellschaft. Device for transmitting measured values to a remote location. 4,525,873, Cl. 455-600.000.

Baues, Peter, to Siemens Aktiengesellschaft. Device for transmitting measured values to a remote location. 4,525,874, Cl. 455-600.000.

Bauman, Robert C. Soft contact lens with surface identification and method of using same. 4,525,044, Cl. 351-160.00H.

Baur, Walter: *See—*
Hauers, Manfred; and Baur, Walter, 4,524,566, Cl. 53-534.000.

Bay, David L.: *See—*
Knoll, William C.; and Bay, David L., 4,525,649, Cl. 315-96.000.

Bayer Aktiengesellschaft: *See—*
Bonten, Heinz; Nielinger, Werner; Michael, Dietrich; and Haupt, Heinrich, 4,525,505, Cl. 524-100.000.
Casper, Rudolf; Wendling, Peter; Konter, Wolfgang; Pampus, Gottfried; and Hohmann, Gerhard, 4,525,561, Cl. 526-220.000.
Holmwood, Graham; and Lurssen, Klaus, 4,525,204, Cl. 71-92.000.
Horak, Otto; Falkenberg, Werner; Muders, Rolf; and Beinert, Werner, 4,525,283, Cl. 210-762.000.
Hynek, Bernd; Valk, Giselher; and Treptau, Gerhard, 4,525,403, Cl. 428-87.000.
Idel, Karsten; Ostlinning, Edgar; Koch, Wolfgang; and Heitz, Walter, 4,525,579, Cl. 528-388.000.
Rasshofer, Werner, 4,525,534, Cl. 525-127.000.
Rasshofer, Werner; Konig, Klaus; Meyborg, Holger; Meckel, Walter; and Zenner, Armin, 4,525,590, Cl. 544-222.000.
Woditsch, Peter; Abels, Martin; and Brazel, Berthold, 4,525,334, Cl. 423-324.000.

Bayerische Motoren Werke AG: *See—*
Huber, Siegfried, 4,524,465, Cl. 2-424.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Bourauel, Fritz; Flohr, Wolfgang P.; and Weishaupt, Walter, 4,524,612, Cl. 73-117.300.

Bayha, Charles E.; and McQueen, Daniel H., to Alpha Corporation, The. Polyester primer composition and method. 4,525,427, Cl. 428-458.000.

Bayraktaroglu, Burhan, to Texas Instruments Incorporated. Distributed IMPATT structure. 4,525,732, Cl. 357-13.000.

Bazell, Seymour: *See—*
Goldberg, Edward M.; and Bazell, Seymour, 4,525,167, Cl. 604-135.000.

BBC Brown, Boveri & Cie: *See—*
Vlasak, Thomas, 4,525,224, Cl. 148-189.000.

BBC Brown, Boveri & Company, Limited: *See—*
Brugger, Manfred; Janczer, Peter; and Peter, Hans, 4,524,817, Cl. 164-290.000.

Beckwith, Robert S.: *See—*
Bellefeuille, David T.; and Beckwith, Robert S., 4,524,608, Cl. 73-40.50R.

Beecham Group p.l.c.: *See—*
Cole, Martin; Howarth, Thomas T.; and Reading, Christopher, 4,525,352, Cl. 424-114.000.
Cole, Martin; Howarth, Thomas T.; and Reading, Christopher, 4,525,353, Cl. 424-114.000.

Beha, Johannes G.; Jaeckel, Heinz; and Vettiger, Peter, to International Business Machines Corporation. Buried junction Josephson interferometer. 4,525,730, Cl. 357-5.000.

Behl, Charanjit; Beskid, George; Shah, Navnit; Tossounian, Jacques; and Unowsky, Joel, to Hoffmann-La Roche Inc. Enteric coated oral dosage form. 4,525,339, Cl. 424-16.000.

Behr, Werner, to Deutsche Spezialglas AG. Dark blue dyed furnace sight glass with high infrared absorption. 4,525,462, Cl. 501-71.000.

Beigay, Jack M.: *See—*
Deverell, Harry E.; and Beigay, Jack M., 4,525,620, Cl. 219-137.0WM.

Beinert, Werner: *See—*
Horak, Otto; Falkenberg, Werner; Muders, Rolf; and Beinert, Werner, 4,525,283, Cl. 210-762.000.

Bek-Tech Products Incorporated: *See—*
Trammell, Earl M., Jr., 4,525,664, Cl. 324-51.000.

Belden, Byron B.: *See—*
Johnson, James D.; Belden, Byron B.; and Kamp, Terrence A., 4,525,094, Cl. 403-11.000.

Bell, James D., to Union Underwear Company, Inc. Trim attaching machine and method. 4,524,706, Cl. 112-121.290.

Bell Telephone Laboratories, Incorporated: *See—*
Eldumiati, Ismail I.; and Maul, Michael K., 4,525,776, Cl. 364-200.000.

Bellefeuille, David T.; and Beckwith, Robert S. Gas leak meter. 4,524,608, Cl. 73-40.50R.

Bellino, Joseph P., to General Electric Company. Portable smoke alarm. 4,525,703, Cl. 340-628.000.

Belly, Robert T.: *See—*
Guardino, Robert F.; and Belly, Robert T., 4,525,453, Cl. 435-34.000.

Bender, Rolf; Jacob, Werner; and Pfuderer, Horst, to INA Walzlager Schaeffler KG. Antifriction bearing for longitudinal displacement guidance of a gun barrel. 4,524,671, Cl. 89-14.050.

Bendiberica /S.A.: *See—*
Coll, Juan V.; Bacardit, Joan S.; and Bofill, Joaquim F., 4,524,585, Cl. 60-562.000.

Beneteau, Donald J. Resistance welding apparatus. 4,525,618, Cl. 219-89.000.

Bengtsson, Bengt L.; Palmlin, Peter; and Ekholm, Jan, to Nestec S.A. Blanching of mushrooms. 4,525,368, Cl. 426-438.000.

Benusa, John E.; and Kingston, Richard L. Method for stomach lavage. 4,525,156, Cl. 604-28.000.

Berg, Lloyd; and Yeh, An-I. Separation of n-butyl acetate from n-butanol by extractive distillation. 4,525,245, Cl. 203-51.000.

Berges, Hanns-Peter; Frieden, Peter; and Leier, Wolfgang, to Leybold-Heraeus GmbH. Oil-sealed vacuum pump. 4,525,129, Cl. 418-84.000.

Bergmann, Conrad E. Apparatus for packaging articles. 4,525,133, Cl. 425-120.000.

Bergmann, Heinz. Equipment for compacting trash consisting of packing materials and easily compressed wastes. 4,524,685, Cl. 100-210.000.

Bergwerksverband GmbH: *See—*
Meyer, Frank; Cornely, Wolfgang; and Mehesch, Hans, 4,525,103, Cl. 405-261.000.
Stephan, Peter, 4,525,104, Cl. 405-290.000.

Berke, Philip A.; and Rosen, William E., to Sutton Laboratories, Inc. Composition of matter containing cinnamaldehyde and parabens. 4,525,480, Cl. 514-544.000.

Berkowitz, Edward H., to Varian Associates, Inc. NMR spectrometer incorporating a re-entrant FIFO. 4,525,673, Cl. 324-312.000.

Bernardi, Carl E. Automatic apparatus for downsetting lead frame strips. 4,524,601, Cl. 72-422.000.

Berry, Kelvin T.: *See—*
Ashman, Glynn; Winterbottom, Martin E.; and Berry, Kelvin T., 4,524,677, Cl. 92-168.000.

Berry, Milton E.; and Shibata, Mitsuyoshi, to Southwire Company. Apparatus to improve casting band life. 4,524,821, Cl. 164-482.000.

Bertrand, Jean-Noel; and Castelein, Jean, to Montefina, S.A. Polymer compositions. 4,525,533, Cl. 525-98.000.

Bertsch, Ludo A.: *See—*
Dodds, David E.; and Bertsch, Ludo A., 4,525,845, Cl. 375-36.000.

Beskid, George: *See—*
Behl, Charanjit; Beskid, George; Shah, Navnit; Tossounian, Jacques; and Unowsky, Joel, 4,525,339, Cl. 424-16.000.

Beth Israel Hospital Association, The: *See—*
Lanner, Michael; and Coffey, Cynthia L., 4,524,721, Cl. 119-17.000.

Bethmann, Karl W.: *See—*
Bocker, Jurgen; Gersbach, Klaus; Bethmann, Karl W.; and Glotz, Gerhard, 4,524,697, Cl. 102-517.000.

Betts, William L.: *See—*
Bremer, Gordon; Betts, William L.; and Greene, Robert T., 4,525,846, Cl. 375-39.000.

Billard, Alain A.; Santalucia, Andre R.; and Breseghello, Christian, to Societe E. Lacroix-Tous Artifices. Securing apparatus for modules carried on aircraft, in particular for flare launching modules. 4,524,670, Cl. 89-1.530.

Bilofsky, Ruth C.: *See—*
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,525,413, Cl. 428-212.000.

Bindl, Max. Utility water boiler. 4,524,726, Cl. 122-13.00R.

Bio-Chem Valve Corp.: *See—*
Lawrence, John N.; and Sandor, Istvan, 4,524,802, Cl. 137-595.000.

Bione, Angelo A.; and Bagus, Brian M., to Marmon Group, Inc., The. Dynamic controller for sampling channels in an electronic organ having multiplexed keying. 4,524,665, Cl. 84-1.010.

Biotek, Inc.: *See—*
Loeb, Marvin P.; and Olson, Arne M., 4,525,164, Cl. 604-131.000.

Birch, Robert G.; and Patil, Suresh S., to University of Hawaii. Antibiotic and process for the production thereof. 4,525,354, Cl. 424-115.000.

Bisping, Bernhard; Gersbach, Klaus; Luther, Hans; Simon, Walter; Wallow, Peter; Montier, Patrick; Moreau, Pierre A.; and Sauvestre, Jean C., to Etat Francais. Finned subcaliber projectile. 4,524,695, Cl. 102-430.000.

Black & Decker Inc.: *See—*
Bachmann, Rainer, 4,524,897, Cl. 227-131.000.

Blackman, Peter: *See—*
Davids, Martin; Blackman, Peter; and Teo, Lily, 4,525,779, Cl. 364-200.000.

Blaimschein, Gottfried; and Marzy, Otto, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H. Milling machine. 4,525,112, Cl. 409-199.000.

Blair, Richard F.: *See—*
Drexel, Charles F.; and Blair, Richard F., 4,524,616, Cl. 73-203.000.

Blakely, Lewis E., Jr.: *See—*
Brown, George T., Jr.; and Blakely, Lewis E., Jr., 4,524,778, Cl. 128-736.000.

Bleimann, Karl R.; Fookes, Michael J.; McVicker, Richard W.; Munn, John W.; and Nelson, Eugene R., to Fuchs Systems, Inc. Burner in a drum. 4,525,139, Cl. 431-189.000.

Blemlek, William A., to Thomas J. Lipton, Inc. Lecithinated noodles and process for manufacture thereof. 4,525,371, Cl. 426-557.000.

Blendax-Werke R. Schneider GmbH & Co.: *See—*
Raaf, Helmut, 4,525,343, Cl. 424-54.000.

Bloch, Bertrand: *See—*
Ropars, Marcel; and Bloch, Bertrand, 4,525,573, Cl. 528-232.000.

Blondes, Leonard S.: *See—*
Clar, Milton, 4,525,237, Cl. 156-540.000.

Bloom, Stephen R., to Perfection Automotive Products Corp. Wire wheel cover brush. 4,524,480, Cl. 15-159.00A.

Blum, Patricia R.: *See—*
Bremer, Noel J.; Dria, Dennis E.; Milberger, Ernest C.; Blum, Patricia R.; and Nicholas, Mark L., 4,525,471, Cl. 502-209.000.

Blum, Rainer; Spoor, Herbert; Osterloh, Rolf; Mosler, Gerhard; and Rubbert, Bernhard, to BASF Aktiengesellschaft. Heat-setting mixtures which have a long shelf life and comprise a polyisocyanate and compounds which are reactive toward isocyanate groups, and their preparation. 4,525,570, Cl. 528-75.000.

Boardman, Peter W., to Deere & Company. Burning table. 4,524,955, Cl. 266-49.000.

Boateng, Daniel A. D.; Ball, Donald L.; and Swinkels, Godefridus M., to Cominco Ltd. Recovery of germanium from aqueous solutions. 4,525,332, Cl. 423-89.000.

Bocker, Jurgen; Gersbach, Klaus; Bethmann, Karl W.; and Glotz, Gerhard, to Rheinmetall GmbH. Projectile arrangement for a weapon having a gun barrel. 4,524,697, Cl. 102-517.000.

Bockman, Ole K., to Flakt AB. Process for the removal of impurities in reacted alumina. 4,525,181, Cl. 55-71.000.

Boden, Richard M.: *See—*
Wiegers, Wilhelmus J.; Fenn, Ronald S.; Boden, Richard M.; and Schreiber, William L., 4,524,783, Cl. 131-276.000.

Bodziak, Thomas A., to American Standard Inc. Railroad car wheel detector using hall effect element. 4,524,932, Cl. 246-247.000.

Boecker, Wolfgang D. G.; and Hailey, Laurence N., to Kennecott Corporation. Sintered silicon carbide/graphite/carbon composite ceramic body having ultrafine grain microstructure. 4,525,461, Cl. 501-90.000.

Boeder, Dieter, to Rheinmetall GmbH. Cluster bomb projectile. 4,524,694, Cl. 102-393.000.

Boeing Company, The: *See—*
Harris, Alfred W., 4,524,485, Cl. 16-364.000.
Scott, John H., 4,524,710, Cl. 114-275.000.

Boer, G. J.: *See—*
Lange, Wolfgang; and Boer, G. J., 4,525,340, Cl. 424-16.000.

Bofill, Joaquim F.: *See—*
Coll, Juan V.; Bacardit, Joan S.; and Bofill, Joaquim F., 4,524,585, Cl. 60-562.000.

Bogue, John C.: *See—*
Willcocks, Martin E. G., 4,525,855, Cl. 381-22.000.

Bohmer, Herbert: *See—*
Klein, Hans-Jorg; and Bohmer, Herbert, 4,524,867, Cl. 206-232.000.

Boisvert, Richard L.: *See—*
Masse , Lionel; and Boisvert, Richard L., 4,524,904, Cl. 232-7.000.

Boivie, Richard H., to AT&T Bell Laboratories. Character recognition arrangement. 4,525,860, Cl. 382-21.000.

Bolzer, Rene J. M.; and Clanchin, Jean, to Laiterie Triballat. Process for treating a milk serum product. 4,525,366, Cl. 426-271.000.

Bond, Ralph W., to Amana Refrigeration, Inc. Air conditioner with improved fresh air path. 4,524,588, Cl. 62-262.000.

Bond, Raymond G., to T.A.D. Avanti, Inc. Ring and line monitor for answering machine. 4,525,603, Cl. 179-84.00R.

Bonfiglioli, Silverio; and Triolo, Innocenzo, to Weber S.p.A. Carburetor having electronically controlled elements for maintaining engine idling speed at a constant level and for controlling choke-valve position during a warm-up phase. 4,524,742, Cl. 123-438.000.

Bonten, Heinz; Nielinger, Werner; Michael, Dietrich; and Haupt, Heinrich, to Bayer Aktiengesellschaft. Fire-resistant polyamide moulding compositions. 4,525,505, Cl. 524-100.000.

Booms, Herbert. Method of making level vials. 4,525,192, Cl. 65-110.000.

Borg, Arthur N., to Zenith Electronics Corporation. TV Receiver with multiplexed microprocessor keyboard scanning and channel number display. 4,525,740, Cl. 358-192.100.

Bourauel, Fritz; Flohr, Wolfgang P.; and Weishaupt, Walter, to Bayerische Motoren Werke Aktiengesellschaft. Testing installation for motor vehicle operating elements. 4,524,612, Cl. 73-117.300.

Bourgois, Luc. Steel fibre reinforced rubber article. 4,525,430, Cl. 428-625.000.

Bowen, David R.: *See—*
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,525,364, Cl. 426-3.000.

Bowen, Dennis H., to United Kingdom Atomic Energy Authority. Method of winding on foam mandrel. 4,525,228, Cl. 156-155.000.

Bowles, David E.: *See—*
Bowles, Romald E.; and Bowles, David E., 4,525,859, Cl. 382-5.000.

Bowles, Romald E.; and Bowles, David E. Pattern recognition system. 4,525,859, Cl. 382-5.000.

Boyer, Harriet S.: *See—*
Boyer, Ray E.; and Boyer, Harriet S., 4,524,663, Cl. 83-762.000.

Boyer, Ray E.; and Boyer, Harriet S. Power hacksaw. 4,524,663, Cl. 83-762.000.

Boyertown Casket Company: *See—*
Tehsildar, Tehmtan J.; and Colbert, Robert R., 4,524,496, Cl. 27-18.000.

Boyle, David H.; and Kouba, Daniel J., to Motorola, Inc. High performance and gate having an "natural" or zero threshold transistor for providing a faster rise time for the output. 4,525,640, Cl. 307-450.000.

BP Chemicals Limited: *See—*
Hudson, Barry, 4,525,512, Cl. 524-284.000.

Bradshaw, Richard L., to International Business Machines Corporation. Flexible magnetic recording media having a polyester-polyurethane binder and chromium dioxide pigment. 4,525,424, Cl. 428-425.900.

Brajder, Antonio, to Siemens Aktiengesellschaft. Protective circuit for a switching transistor. 4,525,765, Cl. 361-88.000.

Brandeau, Edward P., to Thomas & Betts Corporation. Method of making wire terminations. 4,524,510, Cl. 29-861.000.

Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Hydraulic release arrangement, especially for vehicle clutches. 4,524,855, Cl. 192-88.00A.

Brandenstein, Manfred; Haas, Roland; Friedrich, Wolfgang; and Hans, Rudiger, to SKF Kugellagerfabriken GmbH. Sealing ring assembly for rolling bearings. 4,525,082, Cl. 384-138.000.

Brasky, Joseph L. Self-stripping connector for insulated wires. 4,525,019, Cl. 339-98.000.

Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Mundie, Craig J.; Schleimer, Stephen I.; and Wallach, Steven J., to Data General Corporation. Data processing system having a memory using object-based information and a protection scheme for determining access rights to such information. 4,525,780, Cl. 364-200.000.

Bray, George A.: *See—*
Greenway, Frank L., III; and Bray, George A., 4,525,359, Cl. 514-653.000.

Brayer, Eyal, to 501 S.C.R. Engineers, Ltd. Indicating device for milking apparatus. 4,524,720, Cl. 119-14.140.

Brazel, Berthold: *See—*
Woditsch, Peter; Abels, Martin; and Brazel, Berthold, 4,525,334, Cl. 423-324.000.

Bredeweg, Roger L., to Leco Corporation. Carbon, hydrogen, and nitrogen analyzer. 4,525,328, Cl. 422-80.000.

Brehm, Gailon E.: *See—*
Lehmann, Randall E.; Brehm, Gailon E.; and Seymour, David J., 4,525,678, Cl. 330-277.000.

Bremer, Gordon; Betts, William L.; and Greene, Robert T., to Paradyne Corporation. Modem in-band secondary channel via radial modulation. 4,525,846, Cl. 375-39.000.

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Bremer, Noel J.; Dria, Dennis E.; Milberger, Ernest C.; Blum, Patricia R.; and Nicholas, Mark L., to Standard Oil Company, The. Attrition resistant microspheroidal fluid bed catalysts containing the mixed oxides of vanadium and phosphorus. 4,525,471, Cl. 502-209.000.

Brenner, Friedhelm: *See—*
Kaufmann, Heinrich; and Brenner, Friedhelm, 4,525,057, Cl. 355-3.0FU.

Breseghello, Christian: *See—*
Billard, Alain A.; Santalucia, Andre R.; and Breseghello, Christian, 4,524,670, Cl. 89-1.530.

Breslow, Jeffrey D.: *See—*
Hanson, Steven P.; and Breslow, Jeffrey D., 4,524,967, Cl. 273-1.0GE.

Breunich, Theodore R.: *See—*
Di Noia, Emanuel J.; and Breunich, Theodore k., 4,524,624, Cl. 73-708.000.

Bridges, Jack E.; Taflove, Allen; and Sresty, Guggilam C., to IIT Research Institute. Single well stimulation for the recovery of liquid hydrocarbons from subsurface formations. 4,524,827, Cl. 166-248.000.

Brisco, David P., to Halliburton Company. Tubular connecting device. 4,524,998, Cl. 285-101.000.

Bristol-Myers Company: *See—*
Aburaki, Shimpei; Kamachi, Hajime; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,525,473, Cl. 514-202.000.

Britax Vega Limited: *See—*
Peck, Anthony F., 4,525,772, Cl. 362-290.000.

British-American Tobacco Company Limited: *See—*
Luke, John A., 4,525,161, Cl. 493-42.000.

British Petroleum Company p.l.c., The: *See—*
Baker, Peter J.; Brookes, David A.; and Johnson, Martin, 4,525,173, Cl. 44-51.000.

Brock, Christopher W.: *See—*
Scheffer, Daniel G.; Brock, Christopher W.; and Schumer, Douglas B., 4,525,794, Cl. 364-567.000.

Brockhaus, Herbert, to Audi NsU Auto Union AG. Coupling means between an output control member of an internal combustion engine and an actuator member. 4,524,740, Cl. 123-340.000.

Brockway, Inc.: *See—*
Herring, Walter R., 4,524,883, Cl. 220-462.000.

Bron, Dan. Self-regulating sprinkler nozzle. 4,524,913, Cl. 239-222.170.

Bronstein, Leonard. Contact lens. 4,525,043, Cl. 351-160.00R.

Brookes, David A.: *See—*
Baker, Peter J.; Brookes, David A.; and Johnson, Martin, 4,525,173, Cl. 44-51.000.

Brooks, Ronald H. Improvements relating to method and apparatus for joining sheet material. 4,525,233, Cl. 156-273.900.

Broughton, George L.; Higby, Jeffrey P.; and Young, Robert F., to Outboard Marine Corporation. Marine propulsion device including ignition interruption means to assist transmission shifting. 4,525,149, Cl. 440-1.000.

Brown, George T., Jr.; and Blakely, Lewis E., Jr., to American Thermometer Co., Inc. Skin temperature indicating and recording device. 4,524,778, Cl. 128-736.000.

Brown, George T., Jr., to American Thermometer Co., Inc. Device for detecting, measuring, and recording body thermal emissivity. 4,524,779, Cl. 128-736.000.

Brown, Ivan R.: *See—*
Waldron, Joseph P.; and Brown, Ivan R., 4,524,655, Cl. 82-36.00A.

Brown, Thomas L.: *See—*
Kollmeyer, Willy D.; and Brown, Thomas L., 4,525,201, Cl. 71-76.000.

Browning, James E. Box blade with movable closure blade. 4,524,532, Cl. 37-117.500.
Bruce, Anthony R.: *See—*
Grover, William E.; and Bruce, Anthony R., 4,525,064, Cl. 355-75.000.
Brugger, Manfred; Janczer, Peter; and Peter, Hans, to BBC Brown, Boveri & Company, Limited. Centrifugal casting unit for the production of precision castings. 4,524,817, Cl. 164-290.000.
Brunelli, Timothy A.: *See—*
Cheresnowsky, Michael J.; Brunelli, Timothy A.; Munn, Robin W.; and Kim, Tai K., 4,525,331, Cl. 423-54.000.
Brush, Robert W., Sr.: *See—*
Schildkraut, Alan L.; and Brush, Robert W., Sr., 4,525,017, Cl. 339-89.00M.
BTC Diagnostics Limited Partnership: *See—*
Jones, Wendy; and Gerber, Bego, 4,525,452, Cl. 435-7.000.
Bubley, Henry J., to American Screen Printing Equipment Company. Adjustable carriage drive mechanism. 4,524,687, Cl. 101-123.000.
Buc, John L. Molded container and closure. 4,524,882, Cl. 220-306.000.
Buck, Robert; Friedrich, Michael B.; Gesthuysen, Hans D.; and Marhofer, Gerd, to i f m electronic GmbH. Electronic monitoring system with malfunction indicator. 4,525,699, Cl. 340-512.000.
Buckley, Bruce S., to Buckley, Bruce Shawn. Solar collector, heat exchanger or hot water storage tank and method of forming same. 4,524,757, Cl. 126-426.000.
Buckley, Bruce Shawn: *See—*
Buckley, Bruce S., 4,524,757, Cl. 126-426.000.
Buckley, Damon S.; and Buckley, Marlene E. Carrying case for predrawn syringe. 4,524,868, Cl. 206-364.000.
Buckley, Marlene E.: *See—*
Buckley, Damon S.; and Buckley, Marlene E., 4,524,868, Cl. 206-364.000.
Budd Company, The: *See—*
Pavlick, Michael J., 4,524,699, Cl. 105-4.00R.
Budish, Joseph D. Door latch with lock. 4,524,590, Cl. 70-129.000.
Bulka, Raymond I.; Ketcham, Russell S.; and Mak, Kelvin K., to McCain Manufacturing Corporation. Book stacker. 4,525,118, Cl. 414-43.000.
Bullock, Steven S.: *See—*
Howie, John K.; and Bullock, Steven S., 4,525,289, Cl. 252-49.900.
Burba, Christian; and Franz, Herbert, to Schering AG. Epoxy resin/cycloaliphatic amine curing agent mixtures. 4,525,571, Cl. 528-111.000.
Buren, Lawrence L.: *See—*
Large, George B.; and Buren, Lawrence L., 4,525,202, Cl. 71-86.000.
Burger, Walter L.: *See—*
Elias, Moenes L.; and Burger, Walter L., 4,525,240, Cl. 156-659.100.
Burke, Thomas W.; and Klee, David J., to Air Products and Chemicals, Inc. Discharge of blasting media from a treating chamber. 4,524,550, Cl. 51-424.000.
Burkhardt, Rudolf: *See—*
Wildermuth, Eberhard; Jansen, Dirk; Burkhardt, Rudolf; and Merz, Joachim, 4,525,717, Cl. 343-452.000.
Burnham, J. Kellogg. Coordinated lathe chuck. 4,524,983, Cl. 279-110.000.
Burr-Brown Corporation: *See—*
Henry, Paul M., 4,525,663, Cl. 323-280.000.
Burrage, Eric C. Armored umbilical apparatus for towing a marine seismic air gun sub-array. 4,525,813, Cl. 367-20.000.
Burris, Lee R.: *See—*
Speer, Billy L.; Burris, Lee R.; and Rogers, Jerry W., 4,525,152, Cl. 474-133.000.
Busch, Peter; and Barbet, Karl-Heinz, to TRW Ehrenreich GmbH & Co. KG. Injection mold. 4,524,943, Cl. 249-63.000.
Buschfeld, Adolf: *See—*
Ripkens, Gerd; Schittek, Hans; and Buschfeld, Adolf, 4,525,227, Cl. 156-62.200.
Bush, Richard B.; and Evans, Edwin R., to General Electric Company. Peroxide-curable fluorosilicone copolymer compositions. 4,525,528, Cl. 524-860.000.
Bushey, Dean F.; and D'Silva, Themistocles D. J., to Union Carbide Corporation. Derivatives of bicyclic 2-iminothiazolidine oximes. 4,525,357, Cl. 514-258.000.
Butaeva, Tatyana I.: *See—*
Petrosian, Ashot G.; Bagdasarov, Khachik S.; Kuzanian, Armen S.; Ovanesian, Karine L.; and Butaeva, Tatyana I., 4,525,460, Cl. 501-86.000.
Butler, Donald E.; Hershenson, Fred M.; and Pavia, Michael R., to Warner-Lambert Company. N-[1-oxo-3-(5-oxo-2-pyrrolidinyl)-propyl]-alpha-aminoacids and derivatives as cognition activators. 4,525,476, Cl. 514-326.000.
Butler, Robert F. Process for the reversible transfer of thermal energy and heat transfer system useful therein. 4,524,759, Cl. 126-452.000.
Butler, Thomas A.: *See—*
Richmond, Carl T.; Butler, Thomas A.; and Andrews, Joseph E., Jr., 4,525,675, Cl. 328-140.000.
Butt, Sheldon H.; Smith, Edward F., III; and Gyurina, F. Dennis, to Olin Corporation. Adhesion primers for encapsulating epoxies. 4,525,422, Cl. 428-418.000.
Butterick Company, Inc.: *See—*
Perry, Patricia, 4,524,522, Cl. 33-11.000.
Butts, Gary C., to Apple Computer, Inc. Spiral spring keyboard switch with hairpin spring tactile feedback. 4,525,613, Cl. 200-159.00R.
Bylund, Sven O., to Santrade Ltd. Cutting tool having a cutting blade in a shank slot. 4,525,109, Cl. 407-36.000.
C. Olivetti & C., S.p.A.: *See—*
Falconieri, Remo, 4,525,089, Cl. 400-639.100.
Cache Technology Corporation: *See—*
Hackamack, Paul, 4,525,802, Cl. 364-900.000.
Calgon Corporation: *See—*
Hunter, Wood E.; and Craun, Gary P., 4,525,509, Cl. 524-141.000.
Camco, Incorporated: *See—*
Pringle, Ronald E., 4,524,831, Cl. 166-322.000.
Cameron, Douglas S.: *See—*
Pelletier, Charles A.; Gonso, William E., Jr.; Cameron, Douglas S.; and Leonard, Patrick R., 4,524,607, Cl. 73-40.50R.
Campbell, Bryant A.; DuBois, Dale R.; Manriquez, Ralph F.; and Miller, Nicholas E., to Anicon, Inc. Substrate loading means for a chemical vapor deposition apparatus. 4,524,719, Cl. 118-719.000.
Campbell, Donald N.; and Schmidt, John C., to Allied Corporation. Enzymatic toxic gas sensor. 4,525,704, Cl. 340-632.000.
Campbell, Donald N.: *See—*
Schmidt, John C.; Campbell, Donald N.; and Clay, Sandra B., 4,525,266, Cl. 204-412.000.
Campbell, John R.; and Williams, Robert E., Jr., to General Electric Company. Ionically cross-linked siloxane polymers. 4,525,567, Cl. 528-27.000.
Canada, Her Majesty the Queen in right of, as represented by Minister of National Defence of Her Majesty's Canadian Government: *See—*
Cielo, Paolo G.; and McMahon, Garfield W., 4,525,818, Cl. 367-149.000.
McMahon, Garfield W.; and Armstrong, Bruce A., 4,524,693, Cl. 367-167.000.
Cane, David A., to Massachusetts Computer Corporation. Computer memory control. 4,525,778, Cl. 364-200.000.
Canon Kabushiki Kaisha: *See—*
Hashimoto, Seiji; Suga, Akira; and Tanaka, Nobuyoshi, 4,525,737, Cl. 358-44.000.
Hirabayashi, Hiromitsu; Sakurai, Masaaki; and Kagiura, Kazuo, 4,525,058, Cl. 355-3.0FU.
Shirai, Shigeru; Kanbe, Junichiro; and Fukuda, Tadaji, 4,525,442, Cl. 430-57.000.
Someya, Hiromi; Aihara, Yoshihiko; Mizogui, Toyokazu; and Suzuki, Nobuyuki, 4,525,054, Cl. 354-443.000.
Cantatore, Giuseppe, to Ciba-Geigy S.p.A. Piperidine derivatives which are stabilizers for synthetic polymers. 4,525,503, Cl. 524-98.000.
Canter, Joseph M.: *See—*
Agulnek, Martin A.; Canter, Joseph M.; and Reisch, Michael L., 4,525,729, Cl. 346-154.000.
Canyon Corporation: *See—*
Tada, Tetsuya, 4,524,888, Cl. 222-153.000.
Capaccio, Giancarlo; and Ward, Ian M., to National Research Development Corporation. High modulus, low creep strain polyalkene polymer materials. 4,525,564, Cl. 526-348.100.
Carbaugh, William L.: *See—*
Roche, Joseph R.; Alexander, Gabriel G.; and Carbaugh, William L., 4,524,832, Cl. 166-347.000.
Carbonaro, Antonio; and Ferraro, Domenico, to Enoxy Chimica S.p.A. Process for preparing conjugate diolefins, and means suitable for this purpose. 4,525,549, Cl. 526-92.000.
Carbone, Anthony K. Method and apparatus for scanning and digitizing optical images. 4,525,748, Cl. 358-286.000.
Cardona, Ramon M.; Leno, Theodore M.; and O'Leary, Melody M., to AT&T Teletype Corporation. Paper handling apparatus with continuous drive roll and pressure finger. 4,525,087, Cl. 400-613.200.
Carl Freudenberg, Firma: *See—*
Schmidt, Klaus, 4,525,411, Cl. 428-198.000.
Carl Schenck AG.: *See—*
Arnold, Dieter, 4,524,810, Cl. 141-250.000.
Carl-Zeiss-Stiftung: *See—*
Muchel, Franz, 4,525,042, Cl. 350-519.000.
Carley, Rickey L. Straight-cut guide for saws. 4,524,662, Cl. 83-745.000.
Carlin, James W., to AT&T Bell Laboratories. Technique for cancelling antenna sidelobes. 4,525,716, Cl. 343-381.000.
Carlo Erba Strumentazione S.p.A.: *See—*
Italiano, Pietro; and Riva, Ermete, 4,524,605, Cl. 73-38.000.
Carlson, John H., to USM Corporation. Extended flexspline arrangement. 4,524,639, Cl. 74-640.000.
Carrasquel, Angel R.: *See—*
Morales, Alfredo; Galiasso, Roberto; and Carrasquel, Angel R., 4,525,472, Cl. 502-323.000.
Carstensen, Kenneth J. Thread and bearing lubricant. 4,525,287, Cl. 252-26.000.
Carter, Charles R.: *See—*
Ayers, William J., Jr.; Carter, Charles R.; Griffith, Richard A.; Loomis, Richard B.; and Notestein, John E., 4,524,796, Cl. 137-240.000.
Cascone, Ronald F.; and Solomon, C. Ashley, to Halcon SD Group, Inc., The. Method for the production of variable amounts of power from syngas. 4,524,581, Cl. 60-39.020.
Casey, Adria C.; Adler, Alan D.; and Premuzic, Eugene T., to New England Institute, Inc., The. Methods of stimulating host defense system with coenzymes Q_4 to Q_{13}. 4,525,350, Cl. 424-94.000.
Casio Computer Co., Ltd.: *See—*
Kita, Kazunori, 4,525,075, Cl. 368-10.000.
Casper, Rudolf; Wendling, Peter; Konter, Wolfgang; Pampus, Gottfried; and Hohmann, Gerhard, to Bayer Aktiengesellschaft. Polymerizing phenothiazine stabilizer chloroprene in the presence of an initiator comprising sodium dithionate. 4,525,561, Cl. 526-220.000.

Castelein, Jean: *See—*
Bertrand, Jean-Noel; and Castelein, Jean, 4,525,533, Cl. 525-98.000.
Castle, Richard M.: *See—*
Freeman, Edward J.; Economou, John E.; Pecorari, John G.; John, Gunter; Halter, Jerome B.; James, Jack E.; Castle, Richard M.; and Palmer, Richard C., 4,525,751, Cl. 358-342.000.
Cau, Egidio; and Lamiral, Jean P., to Lignes Telegraphiques et Telephoniques. Process for time-sequenced multiplexing of data on a transmission medium and devices to implement this process. 4,525,833, Cl. 370-99.000.
Caughie, Keith E.; and Caughie, Kenneth L. Football game board. 4,524,975, Cl. 273-247.000.
Caughie, Kenneth L.: *See—*
Caughie, Keith E.; and Caughie, Kenneth L., 4,524,975, Cl. 273-247.000.
Caussarieu, Frederic: *See—*
Cohen, Albert E.; Hance, William G.; Moir, Ian; Lane, Thao; and Caussarieu, Frederic, 4,525,830, Cl. 370-60.000.
Cawley, Wesley D. Apparatus for picking up, carrying and releasing articles. 4,525,121, Cl. 414-564.000.
Cawrse, Frank; Cawrse, George F.; and Cawrse, Frank W. Apparatus for collecting and unloading hay bales and the like. 4,525,119, Cl. 414-111.000.
Cawrse, Frank W.: *See—*
Cawrse, Frank; Cawrse, George F.; and Cawrse, Frank W., 4,525,119, Cl. 414-111.000.
Cawrse, George F.: *See—*
Cawrse, Frank; Cawrse, George F.; and Cawrse, Frank W., 4,525,119, Cl. 414-111.000.
Cechanski, Michael, to Atlas Powder Company. Solid water-in-oil emulsion explosives compositions and processes. 4,525,225, Cl. 149-19.500.
Cecos International, Inc.: *See—*
Zawadzki, Stanley C., Jr.; Stadelmaier, Robert A.; and Perrone, John J., 4,525,100, Cl. 405-129.000.
Celanese Corporation: *See—*
DeGooyer, William J., 4,525,542, Cl. 525-484.000.
Centennial Jewelers, Inc.: *See—*
Finkler, Saul M., 4,524,525, Cl. 33-178.00B.
Centeny, Norman L., to Schwinn Bicycle Company. Laminated, reinforced fork end fitment connector for a bicycle and process for manufacturing same. 4,524,989, Cl. 280-281.00R.
Centralen Savet na Nauchnotechnicheski Sayusi: *See—*
Tzvetkov, Krum K., 4,525,787, Cl. 364-470.000.
Centre de Recherche Industrielle de Quebec: *See—*
Altounian, George N., 4,525,574, Cl. 528-283.000.
Centre Technique Industriel Dit: Insttiut Textile de France: *See—*
Edme , Jacques; and Deffontaine, Etienne, 4,525,705, Cl. 340-677.000.
Cessna Aircraft Company, The: *See—*
Barnes, Pierre D.; and Marts, Maynard W., 4,524,947, Cl. 251-129.000.
Chahal, Maninderpal S.; and Therrien, Roger H., to NCR Corporation. Self-adjusting video camera. 4,525,741, Cl. 358-212.000.
Chai, Bruce H.; Bailey, Dana S.; Vetelino, John F.; Lee, Donald L.; and Andle, Jeffrey C., to Allied Corporation. Temperature compensated orientations of berlinite for surface acoustic wave devices. 4,525,643, Cl. 310-313.00A.
Chaker, Mouhanad; Clark, Roger J.; and Hayes, James S. High flash point/low surface energy solvent systems for polyimide conformal coatings. 4,525,507, Cl. 524-104.000.
Chamberlain, Lewis W. Universal locking device. 4,524,872, Cl. 211-4.000.
Chambers, Worthy L.: *See—*
Jones, William H.; and Chambers, Worthy L., 4,525,697, Cl. 337-354.000.
Champion International Corporation: *See—*
Roccaforte, Harry I.; and Christie, Robert A., 4,524,870, Cl. 206-608.000.
Champoux, Robert L.; and Coppie, Charles M. Apparatus for prestressing fastener holes. 4,524,600, Cl. 72-391.000.
Chang, Eugene Y. C., to American Cyanamid Company. Storage stable, one-package heat curable polyurethane adhesive compositions. 4,525,568, Cl. 528-60.000.
Chapalain, Jean-Pierre. Device for locking straps at the time of lifting loads, with possible adjustment of their useful length. 4,525,007, Cl. 294-74.000.
Chapman, Christopher P., to De La Rue Systems Limited. Apparatus for detecting tape on sheets. 4,525,630, Cl. 250-572.000.
Chappell, Austin W. Detachable car seat tables. 4,524,701, Cl. 108-44.000.
Chappell, Terry I.; Jackson, Thomas N.; and Woodall, Jerry M., to International Business Machines Corporation. Semiconductor conversion of optical-to-electrical energy. 4,525,731, Cl. 357-12.000.
Chastagner, Paul, to Regie Nationale des Usines Renault. Process and device for controlling the idling speed of a heat engine. 4,524,738, Cl. 123-339.000.
Chauvin, Richard: *See—*
McAuliffe, Lawrence, Jr.; and Chauvin, Richard, 4,524,743, Cl. 123-438.000.
Chemische Werke Huels AG: *See—*
Sielfeld, Gilbert; and de Jong, Rudolf, 4,525,559, Cl. 526-200.000.
Chemla, Daniel S.; Damen, Theodoor C.; Gossard, Arthur C.; Miller, David A. B.; and Wood, Thomas H., to AT&T Bell Laboratories. High speed light modulator using multiple quantum well structures. 4,525,687, Cl. 332-7.510.
Chen, Li F.; and Yang, Che-Ming, to Purdue Research Foundation. Selective hydrolysis of cellulose to glucose without degradation of glucose using zinc chloride. 4,525,218, Cl. 127-37.000.
Cheney, Ronald W.: *See—*
Miller, Harold E.; and Cheney, Ronald W., 4,524,764, Cl. 128-80.00C.
Cheng, Paul J. Self-cleaning heat exchanger. 4,524,725, Cl. 122-7.00R.
Cheresnowsky, Michael J.; Brunelli, Timothy A.; Munn, Robin W.; and Kim, Tai K., to GTE Products Corporation. Process for purifying molybdenum trioxide. 4,525,331, Cl. 423-54.000.
Cheslow, Ernest: *See—*
Khalil, Ezzat N.; and Cheslow, Ernest, 4,524,787, Cl. 132-7.000.
Chesney, Lloyd: *See—*
Hayes, Daniel F.; Sias, Robert G.; Chesney, Lloyd; and Waldron, John W., 4,525,253, Cl. 204-149.000.
Chevron Research Company: *See—*
Klee, Howard W., Jr., 4,525,338, Cl. 423-573.00G.
Chiba, Fumitaka; and Shimizu, Kyozo, to Nippon Electric Co., Ltd. Integrated circuit. 4,525,809, Cl. 365-51.000.
Chiba, Shu: *See—*
Higashiyama, Yasushi; Chiba, Shu; and Sawazaki, Norikazu, 4,525,828, Cl. 369-111.000.
Chicago Bridge & Iron Company: *See—*
Laverman, Royce J., 4,524,756, Cl. 126-400.000.
Chicopee: *See—*
Ness, Irving S., 4,525,407, Cl. 428-138.000.
Childress, Timothy T.: *See—*
D'Angelo, Kenneth R.; and Childress, Timothy T., 4,524,963, Cl. 271-3.100.
Childs, Jerry D.: *See—*
Sabins, Fred; and Childs, Jerry D., 4,524,828, Cl. 166-293.000.
Chin, Tung Jin: *See—*
Yamasaki, Hiro; Chin, Tung Jin; and Akiyama, Chuji, 4,524,627, Cl. 73-861.120.
China Steel Corporation: *See—*
Maw-Cheng, Shieh; Seng-Jung, Chen; Li-Jung, Hu; and Jin-Luh, Su, 4,525,210, Cl. 75-58.000.
Chister, Rene . Tobacco smoking pipe having self-contained cleaning assembly. 4,524,782, Cl. 131-180.000.
Chiu, Herman S., to Union Carbide Corporation. Liquid smoke treated cellulosic food casings. 4,525,397, Cl. 428-36.000.
Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
Inooka, Masayoshi, 4,525,267, Cl. 208-58.000.
Chloride Group Public Limited Company: *See—*
Pearson, Ernest J., 4,525,438, Cl. 429-149.000.
Chou, Clifford C.: *See—*
Hargunani, Ashok B.; and Chou, Clifford C., 4,524,603, Cl. 73-12.000.
Chou, Ta-Sen; and Heath, Perry C., to Eli Lilly and Company. Process for preparing a cephalosporin compound. 4,525,587, Cl. 544-025.000.
Chr. Hansen's Laboratory, Inc.: *See—*
Gehrman, Sybil H.; and Porubcan, Randolph S., 4,525,351, Cl. 424-95.000.
Christie, Robert A.: *See—*
Roccaforte, Harry I.; and Christie, Robert A., 4,524,870, Cl. 206-608.000.
Chrysler Corporation: *See—*
Miller, Kenneth L., 4,525,850, Cl. 377-19.000.
Chu, Kuo-Chin. Electromagnetically-induced rocking clock. 4,525,078, Cl. 368-134.000.
Chung, Charng J. Fixation tweezers. 4,524,648, Cl. 294-99.200.
Church, Peter K., to El-Chem Corporation. Water and oil repellent metal oxide-organic combination coating systems and method of making same. 4,525,425, Cl. 428-428.000.
Ciba-Geigy Corporation: *See—*
Adam, Jean-Marie, 4,525,583, Cl. 534-606.000.
Balliello, Paolo, 4,525,170, Cl. 8-524.000.
Diethelm, Hermann; and Zahir, Sheik A., 4,525,572, Cl. 528-170.000.
Zink, Rudolf, 4,525,588, Cl. 544-89.000.
Ciba-Geigy S.p.A.: *See—*
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Cielo, Paolo G.; and McMahon, Garfield W., to Canada, Her Majesty the Queen in right of, as represented by Minister of National Defence of Her Majesty's Canadian Government. Stable fiber-optic hydrophone. 4,525,818, Cl. 367-149.000.
Cincinnati Incorporated: *See—*
Lucas, Delbert E.; and Lieland, Stephen J., 4,524,582, Cl. 60-421.000.
Citizen Watch Co., Ltd.: *See—*
Murakami, Tomomi, 4,525,074, Cl. 368-10.000.
Claes, Roger G., to GTE Products Corporation. Electroacoustic delay lines. 4,525,692, Cl. 333-142.000.
Clanchin, Jean: *See—*
Bolzer, Rene J. M.; and Clanchin, Jean, 4,525,366, Cl. 426-271.000.
Clancy, Gerald F.: *See—*
Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Mundie, Craig J.; Schleimer, Stephen I.; and Wallach, Steven J., 4,525,780, Cl. 364-200.000.
Clar, Milton, to Blondes, Leonard S., a part interest. Method of reinforcing loose-leaf sheets and disposable reinforcing tab applicator therefor. 4,525,237, Cl. 156-540.000.
Clarion Co., Ltd.: *See—*
Hamada, Masanori; and Ono, Sadao, 4,525,869, Cl. 455-277.000.
Takai, Kazuki; Hakumoto, Mitsuhiro; and Yamada, Yasuo, 4,525,756, Cl. 360-75.000.

Clark, Alfred L. Positioning jig for positioning copy material for offset printing. 4,525,062, Cl. 355-72.000.
Clark, Henry B., Jr.: *See—*
Marshall, John; and Clark, Henry B., Jr., 4,524,908, Cl. 236-46.00R.
Clark, Roger J.: *See—*
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Clarke, Beresford N. Recuperator. 4,524,752, Cl. 126-91.00A.
Class, Eberhard; Schweizer, Heiner; and Frank, Gunther, to ULO-Werk Moritz Ullmann GmbH & Co. KG. Speed governor for motor vehicles. 4,524,843, Cl. 180-179.000.
Class, Walter H.; Hurwitt, Steven D.; and Hill, Michael L., to Materials Research Corporation. Magnetron reactive bias sputtering method and apparatus. 4,525,262, Cl. 204-192.00R.
Claussen, Nils; Ruhle, Manfred; and Petzow, Gunter, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften. Ceramic body of zirconium dioxide (ZrO_2) and method for its preparation. 4,525,464, Cl. 501-103.000.
Clay, Sandra B.: *See—*
Schmidt, John C.; Campbell, Donald N.; and Clay, Sandra B., 4,525,266, Cl. 204-412.000.
Clayton Dewandre Co., Ltd.: *See—*
Thistleton, John S., 4,525,128, Cl. 417-550.000.
Cleveland, Ronald N.: *See—*
Cochran, John M., Jr.; and Cleveland, Ronald N., 4,524,839, Cl. 177-45.000.
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Trickey, Peter W.; Netherway, David C.; and Clifford, William S., 4,525,010, Cl. 297-216.000.
Cline, Harvey E.; Holik, Andrew S.; and Lorensen, William E., to General Electric Company. Method and apparatus for reconstruction of three-dimensional surfaces from interference fringes. 4,525,858, Cl. 382-1.000.
Clinton, Peter, to Smiths Industries Public Limited Company. Unidirectional capacitive fluid-gauging systems. 4,525,792, Cl. 364-509.000.
Cochran, John M., Jr.; and Cleveland, Ronald N., to Frontier Electronics, Inc. Apparatus for monitoring tare weight in a fiber blending line. 4,524,839, Cl. 177-45.000.
Cochran, William H.; and Wu, Philip T., to International Business Machines Corporation. Semiconductor memory capable of both read/write and read-only operation. 4,525,810, Cl. 365-102.000.
Cocks, Eric H., to Spraymation, Inc. Filter for adhesive applicator. 4,524,887, Cl. 222-146.500.
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Lanner, Michael; and Coffey, Cynthia L., 4,524,721, Cl. 119-17.000.
Cohen, Albert E.; Hance, William G.; Moir, Ian; Lane, Thao; and Caussarieu, Frederic, to Databit, Inc.; and Ouest Standard Telematique. Advanced network processor. 4,525,830, Cl. 370-60.000.
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Tehsildar, Tehmtan J.; and Colbert, Robert R., 4,524,496, Cl. 27-18.000.
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Cole, Stephen J., to Yakima, Inc. Bicycle carrier. 4,524,893, Cl. 224-319.000.
Coleman, William M., III; and Edmondson, Morris S., to Dow Chemical Company, The. Polymerization of olefins. 4,525,556, Cl. 526-125.000.
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Magnasco, Enrico; and Viale, Giorgio, 4,524,801, Cl. 137-567.000.
Coll, Juan V.; Bacardit, Joan S.; and Bofill, Joaquim F., to Bendiberica /S.A. Short master-cylinder. 4,524,585, Cl. 60-562.000.
Colman, Joseph C., to Walker Machine and Foundry Company. Load holder guard. 4,525,113, Cl. 410-41.000.
Colt Industries Operating Corp.: *See—*
McAuliffe, Lawrence, Jr.; and Chauvin, Richard, 4,524,743, Cl. 123-438.000.
Combustion Engineering, Inc.: *See—*
Hill, Frank P., Jr.; Alden, John W., Jr.; and Williams, Harry K., 4,524,729, Cl. 122-498.000.
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Boateng, Daniel A. D.; Ball, Donald L.; and Swinkels, Godefridus M., 4,525,332, Cl. 423-89.000.
Commissariat a l'Energie Atomique: *See—*
Jamet, Jean; Poupeau, Jean-Jacques; Omnes, Jacqueline; and Le Pennec, Claude, 4,525,337, Cl. 423-449.000.
Jouve, Hubert; and Magnin, Joel, 4,525,807, Cl. 365-36.000.
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Bardin, Roland; Mack, Joel; and Counioux, Jean-Jacques, 4,525,327, Cl. 420-565.000.
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Van Hijfte, Willy H. P.; and Vanmarcke, Luc A., 4,525,198, Cl. 71-28.000.
Condon, Larry J. Heater using hot waste flue gases. 4,524,910, Cl. 237-81.000.
Conner, Randall C., to American Cast Iron Pipe Company. Method of assembling a pipe joint. 4,524,505, Cl. 29-453.000.
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Sauget, Bernard, 4,525,154, Cl. 493-154.000.
Container Specialties, Inc. (by Kleman): *See—*
Darlington, Rex F., 4,524,750, Cl. 124-23.00R.
Continental Group, Inc., The: *See—*
Pocock, John F. E.; Mahajan, Gautam K.; Krishnakumar, Suppayan M.; and Friendship, Kenneth F. M., 4,525,401, Cl. 428-64.000.
Contraves AG: *See—*
Hanseler, Urs; Meier, Urs; and Muther, Franz, 4,525,771, Cl. 361-413.000.
Conway, Paul: *See—*
Rooney, John M.; Woods, John; and Conway, Paul, 4,525,232, Cl. 156-273.300.
Rooney, John M.; and Conway, Paul, 4,525,553, Cl. 526-120.000.
Coon, Clifford L.: *See—*
McGuire, Raymond R.; Coon, Clifford L.; Harrar, Jackson E.; and Pearson, Richard K., 4,525,252, Cl. 204-101.000.
Cooper, Ian V., to Dow Corning Corporation. Dewatering of mineral slurries. 4,525,279, Cl. 210-728.000.
Cooper, Ian V., to Dow Corning Corporation. Dewatering of mineral slurries. 4,525,281, Cl. 210-735.000.
Cooper Thermometer Company, The: *See—*
Krehel, Charles A.; and Kaniwec, George N., 4,524,617, Cl. 73-296.000.
Copple, Charles M.: *See—*
Champoux, Robert L.; and Copple, Charles M., 4,524,600, Cl. 72-391.000.
Corbi, Ronald W. Preset throttle release device. 4,524,741, Cl. 123-342.000.
Cordes, Harry D.; Haberer, Thomas G.; and Verrando, Marcel G., III, to Pall Corporation. Valves for desiccant dryers. 4,525,183, Cl. 55-179.000.
Cordiano, Ettore, to Corint S.r.L. Valve for power-steering systems. 4,524,631, Cl. 74-388.0PS.
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Cordiano, Ettore, 4,524,631, Cl. 74-388.0PS.
Cornely, Wolfgang: *See—*
Meyer, Frank; Cornely, Wolfgang; and Mehesch, Hans, 4,525,103, Cl. 405-261.000.
Corzine, Robert G.; and Mosko, Joseph A., to United States of America, Navy. Integrated spiral antenna and printed circuit balun. 4,525,720, Cl. 343-895.000.
Coulter Electronics, Inc.: *See—*
Groves, Michael R., 4,525,666, Cl. 324-71.100.
Counioux, Jean-Jacques: *See—*
Bardin, Roland; Mack, Joel; and Counioux, Jean-Jacques, 4,525,327, Cl. 420-565.000.
Crass, Gunther: *See—*
Hammerschmidt, Peter; and Crass, Gunther, 4,525,416, Cl. 428-220.000.
Craun, Gary P.; and DeGraaf, Henry J., to SCM Corporation. Aqueous glycoluril thermosetting coating. 4,525,535, Cl. 525-163.000.
Craun, Gary P.: *See—*
Hunter, Wood E.; and Craun, Gary P., 4,525,509, Cl. 524-141.000.
Crawford & Russell, Inc.: *See—*
Horowitz, Franklin B.; Pfeffer, Martin; and Hertanu, Herold T., 4,525,071, Cl. 366-152.000.
Crean, Peter A., to Xerox Corporation. Ink jet interlace strategy. 4,525,721, Cl. 346-1.100.
Crist, Robert M. Mail box signal device. 4,524,905, Cl. 232-35.000.
Croudace, Michael C., to Union Oil Company Of California. Method and fuel composition for control of octane requirement increase. 4,525,174, Cl. 44-68.000.
Crow, Robert W.: *See—*
Hilts, Robert L.; and Crow, Robert W., 4,524,833, Cl. 166-381.000.
Crowley, Raymond R.; and Soderberg, John H., to Pitney Bowes Inc. Electronic postage meter having a one time actuable operating program to enable setting of critical accounting registers to predetermined values. 4,525,786, Cl. 364-466.000.
Crowther, Paul A., to Marconi Company Limited, The. Sonar arrangements. 4,525,816, Cl. 367-123.000.
Cruz, Claude A.; and Vermeulen, Johannes C., to International Business Machines Corporation. Flip-flop programmer using cascaded logic arrays. 4,525,641, Cl. 307-465.000.
Culbertson, Edwin C.: *See—*
Posey, Robert G.; and Culbertson, Edwin C., 4,525,419, Cl. 428-336.000.
Culp, Murl F.: *See—*
Lindgren, Matts J.; and Culp, Murl F., 4,524,930, Cl. 244-152.000.
Curci, Alfred. Rotary wing aircraft. 4,525,123, Cl. 416-115.000.
Curran, Kevin G.; Golson, Steven E.; and Rode, Christian S., to General Computer Corporation. Software protection methods and apparatus. 4,525,599, Cl. 178-22.080.
Curran, Paul F.; and Marshall, Hubert T., II, to Texaco Inc. Method and system for measuring the speed of a ship. 4,524,615, Cl. 73-181.000.
Curtis, Lee J.: *See—*
Lynham, Thomas F.; and Curtis, Lee J., 4,524,483, Cl. 16-114.00R.
Cusano, Dominic A.: *See—*
DiBianca, Frank A.; Georges, Jean-Pierre J.; Cusano, Dominic A.; and Greskovich, Charles D., 4,525,628, Cl. 250-367.000.
Cuscurida, Michael; and Speranza, George P., to Texaco Inc. Preparation of polyaddition products of Mannich condensates and polyisocyanates in polyols and their use in polyurethanes. 4,525,488, Cl. 521-164.000.
Cushing, Donald S., to General Electric Company. Timer mechanism with improved interval accuracy. 4,525,608, Cl. 200-38.00R.

Cushman, Mark E.; and Gilbert, Lawrence A. Bleaching detergent compositions comprising sulfosuccinate bleach promoters. 4,525,292, Cl. 252-102.000.
Cusumano, Salvatore V., to G & G Sewing Machine Co., Inc. Accessory-holding jig providing multiple sewing positions. 4,524,704, Cl. 112-105.000.
CVI Incorporated: *See—*
Jensen, Jack E., 4,524,586, Cl. 62-6.000.
Daar, Yair; and Yahav, Shimon. Apparatus for hair removal. 4,524,772, Cl. 128-355.000.
Dai Nippon Toryo Co., Ltd.: *See—*
Hayashi, Masaaki; and Sasaki, Hiroharu, 4,525,499, Cl. 523-523.000.
Daicel Chemical Industries, Ltd.: *See—*
Taguchi, Atsushi; and Ohmiya, Takeo, 4,525,585, Cl. 536-98.000.
Watanabe, Shoji; and Okitsu, Kiyoshi, 4,525,258, Cl. 204-159.230.
Daimler-Benz Aktiengesellschaft: *See—*
Wohlfarth, Dieter; and Kostelezky, Walter, 4,525,782, Cl. 364-431.010.
Dainippon Ink and Chemicals Inc.: *See—*
Takagaki, Hidetsugu; Nakanishi, Shigenori; Tanaka, Yasuyuki; Watanabe, Michihiro; and Yonehara, Yoriko, 4,525,303, Cl. 260-239.55R.
Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Maeda, Kiyoshi; and Kawatani, Masafumi, 4,525,749, Cl. 358-290.000.
Takagi, Tsuneo; and Yonehara, Hiroyuki, 4,525,065, Cl. 355-77.000.
Dall'Aglio, Carlo: *See—*
Golinelli, Guido; and Dall'Aglio, Carlo, 4,524,523, Cl. 33-143.00L.
Dalton, Raymond F.; Price, Raymond; Quan, Peter M.; and Stewart, David, to Imperial Chemical Industries Limited. Process for the extraction of metal values and novel metal extractants. 4,525,330, Cl. 423-24.000.
Damas Maskinfabrik A/S: *See—*
Ewald, Ole, 4,525,271, Cl. 209-303.000.
D'Amelia, Ronald P.; Stroz, John J.; and White, Roy, to Nabisco Brands, Inc. Single compatibilizing agents for elastomer-resin combination gum base. 4,525,363, Cl. 426-3.000.
Damen, Theodoor C.: *See—*
Chemla, Daniel S.; Damen, Theodoor C.; Gossard, Arthur C.; Miller, David A. B.; and Wood, Thomas H., 4,525,687, Cl. 332-7.510.
Danfoss A/S: *See—*
Lehmann, Kjeld, 4,525,769, Cl. 361-386.000.
Romer, Bendt W., 4,524,806, Cl. 137-856.000.
D'Angelo, Kenneth R.; and Childress, Timothy T., to Scan-Optics, Inc. Document handling device. 4,524,963, Cl. 271-3.100.
Dangers, Gerard: *See—*
Genetay, Michel; and Dangers, Gerard, 4,524,500, Cl. 29-157.00R.
Danielson, Carl O.; Gustafsson, Bo B.; Richardsson, Gote E.; and Lundh, Karl-Erik, to Pharmacia AB. Closure device. 4,524,880, Cl. 220-288.000.
Darlington, Rex F., to Container Specialties, Inc. (by Kleman). Archery bow and cable positioner. 4,524,750, Cl. 124-23.00R.
Das, Jagabandhu; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane substituted thiocarbamate prostaglandin analogs useful as cardiovascular agents. 4,525,479, Cl. 514-469.000.
Da Silva, Artur F., to U.S. Philips Corporation. Hair-drier with valves for controlling the air flow. 4,525,623, Cl. 219-373.000.
Data General Corporation: *See—*
Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Mundie, Craig J.; Schleimer, Stephen I.; and Wallach, Steven J., 4,525,780, Cl. 364-200.000.
Databit, Inc.: *See—*
Cohen, Albert E.; Hance, William G.; Moir, Ian; Lane, Thao; and Caussarieu, Frederic, 4,525,830, Cl. 370-60.000.
Davenport, Harold D.; and DeVito, Anthony J., to Penn Lithographics, Inc. Pre-fold, web scoring apparatus for signature folding machines. 4,524,962, Cl. 270-21.100.
Davids, Martin; Blackman, Peter; and Teo, Lily, to Reuters Ltd. Conversational video system. 4,525,779, Cl. 364-200.000.
Davis, Walter G., to NesTier Corporation. Removable poultry nest bottoms of variable widths. 4,524,723, Cl. 119-45.00R.
Day, Robert H., to S.D.S. Industries, Inc. Connector for tubular frame members. 4,525,099, Cl. 403-371.000.
Dayco Corporation: *See—*
Quick, Terrence R.; Standley, Paul M.; Foley, Mark P.; Howerton, Anderson W.; Miranti, Joseph P., Jr.; Oliver, Larry R.; Holloway, Gerald C., Jr.; and Richmond, Kenneth D., 4,525,150, Cl. 474-93.000.
Speer, Billy L.; Burris, Lee R.; and Rogers, Jerry W., 4,525,152, Cl. 474-133.000.
Wilson, Leslie B., 4,525,153, Cl. 474-138.000.
Dayton, Birney D.; and Leavitt, Dale L., to Grass Valley Group, Inc., The. Circuit for converting a logical signal into two balanced logical signals. 4,525,836, Cl. 370-67.000.
De La Rue Systems Limited: *See—*
Chapman, Christopher P., 4,525,630, Cl. 250-572.000.
de la Sota Martinez, Alejandro. Chair changeable into easy chair. 4,525,009, Cl. 297-118.000.
De Bijl, Adrianus M. J.; and Melai, Henri A. I., to U.S. Philips Corporation. DC/AC Converter with voltage dependent timing circuit for discharge lamps. 4,525,648, Cl. 315-224.000.
Debry, Paul. Wax tool. 4,524,713, Cl. 118-102.000.
DeCarlo, Alfred F., Jr., to Joint Medical Products Corp. Apparatus for constraining a socket bearing in an artificial joint. 4,524,467, Cl. 603-22.000.
Deere & Company: *See—*
Boardman, Peter W., 4,524,955, Cl. 266-49.000.
Deffontaine, Etienne: *See—*
Edme , Jacques; and Deffontaine, Etienne, 4,525,705, Cl. 340-677.000.
Defrance, Michel: *See—*
Hareng, Michel; Perbet, Jean-Noel; and Defrance, Michel, 4,525,709, Cl. 340-719.000.
Defuans, Jean-Louis. Objective lens. 4,525,039, Cl. 350-465.000.
DeGooyer, William J., to Celanese Corporation. Novolac based epoxy resin curing agents for use in solvent. 4,525,542, Cl. 525-484.000.
DeGraaf, Henry J.: *See—*
Craun, Gary P.; and DeGraaf, Henry J., 4,525,535, Cl. 525-163.000.
De Grave, Isidoor: *See—*
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,525,484, Cl. 521-56.000.
Deihl, Joseph A., to Mayor Pharmaceutical Laboratories, Inc. Method of administering vitamins. 4,525,341, Cl. 424-43.000.
Deisz, George A.: *See—*
Tung, William C. T.; and Deisz, George A., 4,525,524, Cl. 524-601.000.
de Jong, Rudolf: *See—*
Sielfeld, Gilbert; and de Jong, Rudolf, 4,525,559, Cl. 526-200.000.
de Lannoy, Jean: *See—*
Baltes, Eugene ; de Lannoy, Jean; and Rodriguez, Ludovic, 4,525,358, Cl. 514-255.000.
Del Fabro, Giorgio: *See—*
Del Fabro, Marcello; and Del Fabro, Giorgio, 4,524,656, Cl. 83-23.000.
Del Fabro, Marcello; and Del Fabro, Giorgio, to SAE s.r.l. Method for cutting metal rods into shorter lengths. 4,524,656, Cl. 83-23.000.
DeMunda, Gabriel P.: *See—*
Kaiser, Gregory A.; DeMunda, Gabriel P.; and Tressler, Richard E., 4,525,429, Cl. 428-566.000.
DenHartog, Herman C.; and Walus, Aloysius N., to Du Pont de Nemours, E. I., and Company. Coating composition of an acrylic polymer having amino ester groups and a glycidyl acrylic polymer. 4,525,521, Cl. 524-517.000.
Dennison, William G.; Horr, Kenneth R.; and Kindler, Robert I., to Eaton Corporation. Electromagnetic contactor. 4,525,694, Cl. 335-132.000.
Dent, Hugh R., to Sterimatic Holdings Limited. Fitments for containers from which liquid is intended to be withdrawn by a hollow needle or tube. 4,524,809, Cl. 141-1.000.
Dentsply Research & Development Corp.: *See—*
Plowman, Richard E.; and VanLenten, James A., 4,524,816, Cl. 164-287.000.
Denzinger, Walter; Hartmann, Heinrich; Faulhaber, Gerhard; and Raubenheimer, Hans-Jurgen, to BASF Aktiengesellschaft. Increasing the efficiency of high molecular weight crosslinked polycarboxylic acids. 4,525,581, Cl. 528-503.000.
De Ronde, Frans C., to U.S. Philips Corporation. N-port coupler. 4,525,690, Cl. 333-116.000.
De Roo, Pierre R.; and Tavernier, Serge M., to Agfa-Gevaert N.V. Electrostatic toner comprising thermoplastic resin binder for nigrosine base salt. 4,525,445, Cl. 430-109.000.
DeSoto, Inc.: *See—*
Sekmakas, Kazys; and Shah, Raj, 4,525,510, Cl. 524-156.000.
Sekmakas, Kazys; and Murphy, Edward J., 4,525,543, Cl. 525-529.000.
Despois, Claude: *See—*
Rebourg, Jean-Claude; and Despois, Claude, 4,525,798, Cl. 364-826.000.
Detty, Michael R.; and Perlstein, Jerome H., to Eastman Kodak Company. Novel 3-trihalochalcogenpropenone compounds. 4,525,443, Cl. 430-83.000.
Deutschbein, Ulrich: *See—*
Reil, Wilhelm; Deutschbein, Ulrich; and Wallich, Manfred, 4,525,318, Cl. 264-259.000.
Deutsche Fibrit Gesellschaft Ebers & Dr. Muller mbH: *See—*
Tonniges, Heinz, 4,525,321, Cl. 264-517.000.
Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Hamel, Peter; and Karmann, Rudiger, 4,525,784, Cl. 364-434.000.
Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH: *See—*
Spilker, Harry; and Einfeld, Klaus, 4,525,324, Cl. 376-272.000.
Deutsche Nemectron GmbH: *See—*
Hildebrandt, Jurgen, 4,524,774, Cl. 128-421.000.
Deutsche Spezialglas AG: *See—*
Behr, Werner, 4,525,462, Cl. 501-71.000.
Deutsche Texaco Aktiengesellschaft: *See—*
Bartsch, Erich O.; and Vollstedt, Gerald, 4,525,282, Cl. 210-747.000.
Ripkens, Gerd; Schittek, Hans; and Buschfeld, Adolf, 4,525,227, Cl. 156-62.200.
Develcon Electronics Ltd.: *See—*
Dodds, David E.; and Bertsch, Ludo A., 4,525,845, Cl. 375-36.000.
Develop Dr. Eisbein GmbH & Co.: *See—*
Eisbein, Jurgen, 4,525,063, Cl. 355-72.000.
Kaufmann, Heinrich; and Brenner, Friedhelm, 4,525,057, Cl. 355-3.0FU.
Deverell, Harry E.; and Beigay, Jack M., to Allegheny Ludlum Steel Corporation. Method of welding ferritic and austenitic stainless steels and product thereof. 4,525,620, Cl. 219-137.0WM.

DeVito, Anthony J.: *See—*
Davenport, Harold D.; and DeVito, Anthony J., 4,524,962, Cl. 270-21.100.

De Volder, Noel J.: *See—*
Uytterhoeven, Herman J.; Gilliams, Yvan K.; De Winter, Walter F.; Marien, August M.; and De Volder, Noel J., 4,525,446, Cl. 430-117.000.

DeVries, Douglas C.: *See—*
Mallalieu, David H.; Apostola, Samuel N.; and DeVries, Douglas C., 4,524,514, Cl. 30-169.000.

DeWerth, Douglas W.; and Sheridan, Roger D., to Gas Research Institute. Regulation of blue flame combustion emissions. 4,525,141, Cl. 431-347.000.

De Winter, Walter F.: *See—*
Uytterhoeven, Herman J.; Gilliams, Yvan K.; De Winter, Walter F.; Marien, August M.; and De Volder, Noel J., 4,525,446, Cl. 430-117.000.

de Zbikowski, Juan L. Functional attachment system for osteosynthesis by means of compression plates. 4,524,765, Cl. 128-92.00D.

Deziel, Edward W. Enclosure assembly. 4,524,814, Cl. 160-133.000.

Diana, Giorgio, to A. Salvi & C. S.p.A. Damping spacer for bundle conductors of high-voltage electric lines, with improved damping effectiveness. 4,525,596, Cl. 174-42.000.

Diasonics, Inc.: *See—*
Terwilliger, Richard A., 4,524,623, Cl. 73-633.000.

Diaz, Joe; and Spector, George. Electric socket wrench. 4,524,649, Cl. 81-57.130.

DiBianca, Frank A.; Georges, Jean-Pierre J.; Cusano, Dominic A.; and Greskovich, Charles D., to General Electric Company. Rare earth ceramic scintillator. 4,525,628, Cl. 250-367.000.

DiBuo, Louis J.; Solt, Paul E.; and Souders, Marvyn L., to Fuller Company. Pneumatic conveying device. 4,525,106, Cl. 406-60.000.

DiCostanzo, Pam, to PD Giftware Designs, Inc. Novelty greeting gift apparatus. 4,525,393, Cl. 428-7.000.

Didde Graphic Systems Corporation: *See—*
Rodvelt, Ronnie L., 4,524,692, Cl. 101-350.000.

Dieck, Ronald L.: *See—*
Zukosky, Mimzee; and Dieck, Ronald L., 4,525,531, Cl. 525-92.000.

Diels, Jean-Claude, to United States of America, Navy. Ring laser with wavefront conjugating beams. 4,525,843, Cl. 372-94.000.

Diesel Kiki Co., Ltd.: *See—*
Kaibara, Nobuhiro; Ida, Toshio; Okuda, Shinji; and Motohashi, Takayuki, 4,524,914, Cl. 239-452.000.
Uchida, Kazuo, 4,524,613, Cl. 73-119.00A.

Diethelm, Hermann; and Zahir, Sheik A., to Ciba-Geigy Corporation. Heat-curable mixtures, stable on storage, based on polyimides and containing polymerization catalysts. 4,525,572, Cl. 528-170.000.

Digby, James J., to Facet Enterprises, Inc. Compact engine starter drive. 4,524,629, Cl. 74-7.00R.

Dimigen, Heinz; and Hubsch, Hubertus, to U.S. Philips Corporation. Carbon-containing sliding layer. 4,525,417, Cl. 428-244.000.

Dinklage, Horst; Fink, Herbert; and Wolf, Hans-Peter, to Rohm GmbH. Two-layered packaging material for foodstuffs one layer of which comprises a polymer blend. 4,525,418, Cl. 428-264.000.

Di Noia, Emanuel J.; and Breunich, Theodore R., to Peerless Nuclear Corporation. Pressure and differential pressure detectors and transmitter for use in hostile environment. 4,524,624, Cl. 73-708.000.

Dipper, Barry: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,524,941, Cl. 248-544.000.

Dirksing, John W.: *See—*
Keyes, Richard E.; and Dirksing, John W., 4,524,916, Cl. 241-101.00A.

Dislich, Heinz; and Richter, Horst, to Dislich, Heinz; and Krupp Stahl Aktiengesellschaft, part interest to each. Spout-filling mass. 4,525,463, Cl. 501-99.000.

Dissett, Walter L.: *See—*
Neumann, Lawrence T.; and Dissett, Walter L., 4,524,640, Cl. 74-650.000.

Dodds, David E.; and Bertsch, Ludo A., to Develcon Electronics Ltd. Balanced circuit for connecting receiver and transmitter to transmission line. 4,525,845, Cl. 375-36.000.

Doell, Brant; and Wright, John T., to Doellwood Financial, Inc. Method for improving fuel efficiency and reduced emissions in internal combustion engines. 4,524,730, Cl. 123-27.0GE.

Doellwood Financial, Inc.: *See—*
Doell, Brant; and Wright, John T., 4,524,730, Cl. 123-27.0GE.

Doessel, Karl-Friedrich, to Hoechst Aktiengesellschaft. Electrophotographic recording material. 4,525,444, Cl. 430-96.000.

Dolp, Heinrich. Device for accommodating billiard balls in spaces provided for billiards playing. 4,524,968, Cl. 273-2.000.

Donaher, Thomas P.: *See—*
Hesselberth, Robert J.; Donaher, Thomas P.; and Sandahl, Joel E., 4,525,685, Cl. 331-10.000.

Donets, Oleg V.: *See—*
Feofanov, Vitaly A.; Pilat, Boris V.; Zhdanovich, Larisa P.; Romanenko, Anatoly G.; Lukhanin, Boris S.; Donets, Oleg V.; and Korobochkin, Valery P., 4,525,254, Cl. 204-150.000.

Donnelly Corporation: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,524,941, Cl. 248-544.000.

Dorman, Linneaus C.; and Meyers, Paul A., to Dow Chemical Company, The. Mineral filled composites. 4,525,495, Cl. 523-205.000.

Dorn, Friedrich-Wilhelm: *See—*
Kuxdorf, Bernhard; Luhr, Peter; Werner, Hugo; Thummler, Ursus; and Dorn, Friedrich-Wilhelm, 4,525,329, Cl. 422-202.000.

Dornier GmbH: *See—*
Schmidt, Wolfgang; and Longo, Jose M., 4,524,928, Cl. 244-35.00R.

Dorr-Oliver Incorporated: *See—*
Willus, Charles A.; Kosonen, Vaino J.; and Sanchez, Dale R., 4,525,274, Cl. 210-232.000.

Dorschner, Terry A., to Raytheon Company. Enhanced magnetic mirror. 4,525,028, Cl. 350-377.000.

Dove, Georges: *See—*
Giddey, Claude; and Dove, Georges, 4,525,372, Cl. 426-564.000.

Dow Chemical Company, The: *See—*
Adaway, Timothy J.; Fravel, Harold G., Jr.; and Easterly, James P., Jr., 4,525,496, Cl. 523-337.000.
Coleman, William M., III; and Edmondson, Morris S., 4,525,556, Cl. 526-125.000.
Dorman, Linneaus C.; and Meyers, Paul A., 4,525,495, Cl. 523-205.000.
McKinney, Linda M.; and McKinney, Osborne K., 4,525,405, Cl. 428-95.000.
Nelson, Donald L.; and Lamont, Mary H., 4,525,544, Cl. 525-531.000.
Tung, Lu H.; Lo, Grace Y.; and Griggs, Jerald A., 4,525,532, Cl. 525-98.000.
Wessling, Ritchie A.; and Pickelman, Dale M., 4,525,526, Cl. 524-815.000.
Woo, Edmund P.; and Mullins, Michael J., 4,525,577, Cl. 528-327.000.

Dow Corning Corporation: *See—*
Cooper, Ian V., 4,525,279, Cl. 210-728.000.
Cooper, Ian V., 4,525,281, Cl. 210-735.000.
Homan, Gary R.; and Stickles, David L., 4,525,566, Cl. 528-17.000.
Kohl, Charles F., 4,525,470, Cl. 502-167.000.

Dowell, Howard A.: *See—*
Norman, Edward C.; and Dowell, Howard A., 4,525,501, Cl. 524-28.000.

Downen, Jim L.: *See—*
Sutliff, Wayne N., 4,524,838, Cl. 175-297.000.

Drake, Daniel. Cart anti-theft device. 4,524,985, Cl. 280-33.99C.

Dresser Industries, Inc.: *See—*
Patel, Arvind D., 4,525,562, Cl. 526-271.000.

Drexel, Charles F.; and Blair, Richard F., to Tylan Corporation. Adjustable laminar flow bypass. 4,524,616, Cl. 73-203.000.

Drexler Technology Corporation: *See—*
Haddock, Richard, 4,524,925, Cl. 242-197.000.

Dria, Dennis E.: *See—*
Bremer, Noel J.; Dria, Dennis E.; Milberger, Ernest C.; Blum, Patricia R.; and Nicholas, Mark L., 4,525,471, Cl. 502-209.000.

D'Silva, Themistocles D. J.: *See—*
Bushey, Dean F.; and D'Silva, Themistocles D. J., 4,525,357, Cl. 514-258.000.

Dubiel, Oswald; Hirtsiefer, Karl-Richard; and Wagner, Paul-Heinz, to Paul-Heinz Wagner. Power wrench. 4,524,651, Cl. 81-57.390.

DuBois, Dale R.: *See—*
Campbell, Bryant A.; DuBois, Dale R.; Manriquez, Ralph F.; and Miller, Nicholas E., 4,524,719, Cl. 118-719.000.

Duffaut, Francois, to Imphy S.A. Iron-based alloys for welded structural elements, method of manufacturing such elements and structures built therefrom. 4,525,431, Cl. 428-638.000.

Duke, Jerry R.: *See—*
Wenzel, Kenneth G.; and Duke, Jerry R., 4,524,652, Cl. 81-63.000.

Duncan, Seymour. Electromagnetic pickup for a stringed musical instrument having ferromagnetic strings and method. 4,524,667, Cl. 84-1.150.

Duni Bila AB: *See—*
Svensson, Sven A. T., 4,524,474, Cl. 5-484.000.

Dunn, James M.; and Haas, Ronald T., to Verex Laboratories, Inc. Constant order release, solid dosage indomethacin formulation and method of treating arthritis and other inflammatory conditions. 4,525,345, Cl. 424-22.000.

Dunner, Max, to Lista AG. Locking apparatus for drawers and the like. 4,525,012, Cl. 312-222.000.

Du Pont de Nemours, E. I., and Company: *See—*
Baker, Melvin C., 4,525,580, Cl. 528-490.000.
DenHartog, Herman C.; and Walus, Aloysius N., 4,525,521, Cl. 524-517.000.
Feiring, Andrew E., 4,525,539, Cl. 525-326.300.
Mack, Mark P.; and Shannon, Mark L., 4,525,468, Cl. 502-104.000.
Page, Matthew A.; Libbey, William J.; and Lundeen, Allan J., 4,525,322, Cl. 264-531.000.

Duracell Inc.: *See—*
Barnette, Luverne H.; and Liang, Charles C., 4,525,440, Cl. 429-191.000.

Durenec, Peter; and Lowe, Clifford E., to United States of America, Army. Detachably connectable sight assembly for a small defense weapon. 4,524,675, Cl. 89-41.030.

Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., to Feldmuhle Aktiengesellschaft. Cylinder head of a piston engine. 4,524,732, Cl. 123-193.00H.

Dworsky, Lawrence N., to Motorola, Inc. Dual frequency, dual mode quartz resonator. 4,525,647, Cl. 310-361.000.

Dyatlova, Nina M.: *See—*
Kisil, Evgeny D.; Komova, Svetlana N.; Kulikova, Olga A.; Kutyanin, Leonid I.; Popova, Larisa V.; Dyatlova, Nina M.; Lastovsky, Rostislav P.; Yaroshenko, Galina F.; Khramov, Rem A.; Dytjuk,

Leonid T.; Samakaev, Rafail K.; and Vasnev, Anatoly N., 4,525,293, Cl. 252-181.000.

Dynamit Nobel AG: *See—*
Theis, Christoph; and Prange, Uwe, 4,525,310, Cl. 260-465.600.

Dytjuk, Leonid T.: *See—*
Kisil, Evgeny D.; Komova, Svetlana N.; Kulikova, Olga A.; Kutyanin, Leonid I.; Popova, Larisa V.; Dyatlova, Nina M.; Lastovsky, Rostislav P.; Yaroshenko, Galina F.; Khramov, Rem A.; Dytjuk, Leonid T.; Samakaev, Rafail K.; and Vasnev, Anatoly N., 4,525,293, Cl. 252-181.000.

E. R. Squibb & Sons, Inc.: *See—*
Das, Jagabandhu; and Haslanger, Martin F., 4,525,479, Cl. 514-469.000.

Easterly, James P., Jr.: *See—*
Adaway, Timothy J.; Fravel, Harold G., Jr.; and Easterly, James P., Jr., 4,525,496, Cl. 523-337.000.

Eastman Kodak Company: *See—*
Affolter, Peter, 4,525,829, Cl. 369-284.000.
Detty, Michael R.; and Perlstein, Jerome H., 4,525,443, Cl. 430-83.000.
Guardino, Robert F.; and Belly, Robert T., 4,525,453, Cl. 435-34.000.
Losee, David L., 4,525,733, Cl. 357-65.000.
Morris, John C.; and Zannucci, Joseph S., 4,525,504, Cl. 524-99.000.
Schmidt, Robert R., 4,525,551, Cl. 526-116.000.

Eaton Corporation: *See—*
Dennison, William G.; Horr, Kenneth R.; and Kindler, Robert I., 4,525,694, Cl. 335-132.000.
Jones, William H.; and Chambers, Worthy L., 4,525,697, Cl. 337-354.000.

Ebata, Yoshihiro; Tamari, Nobuyuki; Toibana, Yasuo; and Hayami, Ryozo, to Agency of Industrial Science & Technology. Process for metallizing the surface of a ceramic. 4,525,387, Cl. 427-190.000.

Eberling, Ernest W., Jr. Portable gravity assisted lumbar traction device. 4,524,763, Cl. 128-75.000.

Ebert, Karl, to Max Widenmann Armaturenfabrik. Hose coupling. 4,524,997, Cl. 285-74.000.

Ebert, Michael: *See—*
Reick, Franklin G., 4,525,286, Cl. 252-21.000.

Echte, Adolf: *See—*
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,525,484, Cl. 521-56.000.

Eckberg, Richard P., to General Electric Company. Vinyl gum cure accelerators for condensation-cure silicone. 4,525,391, Cl. 427-391.000.

Eckerson, Richard L. Fishing lure retriever. 4,524,536, Cl. 43-17.200.

Eckert, Alton B.: *See—*
Soderberg, John H.; Eckert, Alton B.; and McFiggans, Robert B., 4,525,785, Cl. 364-464.000.

Eckert, Hans: *See—*
Mangold, Hans; Eckert, Hans; and Schonborn, Jurgen, 4,525,746, Cl. 358-254.000.

Economopoulos. Peter C.: *See—*
Still, David W.; and Economopoulos, Peter C., 4,525,714, Cl. 340-825.830.

Economou, John E.: *See—*
Freeman, Edward J.; Economou, John E.; Pecorari, John G.; John, Gunter; Halter, Jerome B.; James, Jack E.; Castle, Richard M.; and Palmer, Richard C., 4,525,751, Cl. 358-342.000.

Edahiro, Takao: *See—*
Okamoto, Katsunari; Edahiro, Takao; Kawana, Akio; and Miya, Tetsuo, 4,525,027, Cl. 350-96.300.

Edgerton, Robert F., to Energy Conversion Devices, Inc. Optical methods for controlling layer thickness. 4,525,376, Cl. 427-10.000.

Edme , Jacques; and Deffontaine, Etienne, to Centre Technique Industriel Dit: Insttiut Textile de France; and Establissement Public Dit: Agence Nationale de Valorisation de la Recherche (Anvar). System for detecting the presence of a yarn on a continuous spinning frame. 4,525,705, Cl. 340-677.000.

Edmondson, Morris S.: *See—*
Coleman, William M., III; and Edmondson, Morris S., 4,525,556, Cl. 526-125.000.

Ehlers, Raymond G.: *See—*
Ghaem-Maghami, Sanjar; and Ehlers, Raymond G., 4,525,745, Cl. 358-237.000.

Ehlers, Thomas G. Wind powered grain drying apparatus. 4,524,528, Cl. 34-102.000.

Ehnot, Donald J.: *See—*
Klee, David J.; and Ehnot, Donald J., 4,524,548, Cl. 51-322.000.

Eibner, Robert; Nolle, Hans-Heinrich; Schneider, Alfred; and Kohl, Wilhelm, to Schering Aktiengesellschaft. Fertilizer. 4,525,197, Cl. 71-11.000.

Eichelberger, Leo: *See—*
Fleischer, Wolfgang; Eichelberger, Leo; and Endress, Georg, 4,524,808, Cl. 138-103.000.

Einfeld, Klaus: *See—*
Spilker, Harry; and Einfeld, Klaus, 4,525,324, Cl. 376-272.000.

Eisbein, Jurgen, to Develop Dr. Eisbein GmbH & Co. Paper holder for a photocopying machine. 4,525,063, Cl. 355-72.000.

Ekholm, Jan: *See—*
Bengtsson, Bengt L.; Palmlin, Peter; and Ekholm, Jan, 4,525,368, Cl. 426-438.000.

El-Chem Corporation: *See—*
Church, Peter K., 4,525,425, Cl. 428-428.000.

Eldumiati, Ismail I.; and Maul, Michael K., to Bell Telephone Laboratories, Incorporated. Arithmetic logic unit arranged for manipulating bits. 4,525,776, Cl. 364-200.000.

Electric Power Research Institute, Inc.: *See—*
Johnson, Benjamin M., 4,524,728, Cl. 122-459.000.
Tassicker, Owen J., 4,525,184, Cl. 55-302.000.

Electro-Voice, Incorporated: *See—*
Frye, Kent, 4,525,604, Cl. 179-115.50H.

Electrochem International, Inc.: *See—*
Horn, Richard E.; and Rodeheaver, Bradley D., 4,525,259, Cl. 204-182.400.

Elesh, James N., to Flexi-Mat Corporation. Nylon or polyester treated fabric for bedding. 4,525,409, Cl. 428-193.000.

Elf France: *See—*
Gourlia, Jean-Paul; Jacob, Philippe; and Jamen, Robert, 4,525,244, Cl. 203-26.000.

Eli Lilly and Company: *See—*
Chou, Ta-Sen; and Heath, Perry C., 4,525,587, Cl. 544-025.000.
Gallick-Whitaker, Nancy G., 4,525,584, Cl. 536-24.000.
Hall, David A.; and Spitzer, Wayne A., 4,525,304, Cl. 260-245.400.

Elias, Moenes L.; and Burger, Walter L., to Plastic Specialties and Technologies, Inc. Dissolution of metals utilizing tungsten. 4,525,240, Cl. 156-659.100.

Elion, Glenn R., to Aetna Telecommunications Laboratories. Optical fiber protection by powder filled coatings. 4,525,026, Cl. 350-96.230.

Elliott, James J. Ornamental fixture for suspending potted plants. 4,524,542, Cl. 47-67.000.

Elliott, Olin S. Carding apparatus and method. 4,524,492, Cl. 19-107.000.

Elmec Corporation: *See—*
Kameya, Kazuo, 4,525,691, Cl. 333-139.000.

Elms, Robert T.: *See—*
Hicks, John M.; Engel, Joseph C.; Spreadbury, Robert J.; Elms, Robert T.; and Saletta, Gary F., 4,525,650, Cl. 315-226.000.

Eltech Systems Corporation: *See—*
Miller, Thomas M.; Schraff, Raymond J.; and Labas, Nicholas, 4,524,702, Cl. 110-173.00A.

Emhart Industries, Inc.: *See—*
Fenton, Frank A., 4,525,191, Cl. 65-83.000.
Foster, Thomas V., 4,525,195, Cl. 65-260.000.

EMI Limited: *See—*
Sansom, David J., 4,525,671, Cl. 324-252.000.

Encon Products, Inc.: *See—*
Simpson, Harold G., 4,524,554, Cl. 52-693.000.

Encon Systems, Ltd.: *See—*
Schmidt, Donald R., 4,524,733, Cl. 123-196.00A.

Endress, Georg: *See—*
Fleischer, Wolfgang; Eichelberger, Leo; and Endress, Georg, 4,524,808, Cl. 138-103.000.

Energy Conversion Devices, Inc.: *See—*
Edgerton, Robert F., 4,525,376, Cl. 427-10.000.
Keem, John E.; and Marshall, Gerald F., 4,525,853, Cl. 378-84.000.

Engdahl, Roger, to Proform, Inc. Opening cover for railroad cars. 4,524,700, Cl. 105-377.000.

Engel, Hartmut: *See—*
Hesse, Kurt; and Engel, Hartmut, 4,525,773, Cl. 362-413.000.

Engel, Joseph C.: *See—*
Hicks, John M.; Engel, Joseph C.; Spreadbury, Robert J.; Elms, Robert T.; and Saletta, Gary F., 4,525,650, Cl. 315-226.000.

Engelhard Corporation: *See—*
Kostansek, Edward C., 4,525,518, Cl. 524-447.000.

Enoki, Takashi; Nakamura, Hiroaki; and Nakashima, Fujio, to Hitachi, Ltd. Function selecting method and system for an audio/video recording and reproducing system. 4,525,820, Cl. 369-2.000.

Enokido, Nobuo: *See—*
Tanaka, Toru; Iwatani, Kazutoshi; Enokido, Nobuo; Murakami, Atsushi; and Yamaguchi, Yukio, 4,525,554, Cl. 526-124.000.

Enoxy Chimica S.p.A.: *See—*
Carbonaro, Antonio; and Ferraro, Domenico, 4,525,549, Cl. 526-92.000.

Enterra Corporation: *See—*
Norman, Edward C.; and Dowell, Howard A., 4,525,501, Cl. 524-28.000.

Epson Corporation: *See—*
Akazawa, Hiroyuki, 4,525,085, Cl. 400-59.000.
Koto, Haruhiko, 4,525,728, Cl. 346-140.00R.

Erickson, James R.: *See—*
Abbey, Kirk J.; and Erickson, James R., 4,525,260, Cl. 204-181.700.

Ericson, Kurt S. B.; and Van Olst, Gijsbrecht H. J., to Ericson, Kurt Sture Birger. Hydraulic device for the drainage of waste water. 4,524,795, Cl. 137-216.200.

Ericson, Kurt Sture Birger: *See—*
Ericson, Kurt S. B.; and Van Olst, Gijsbrecht H. J., 4,524,795, Cl. 137-216.200.

Eriksson, Sture, to Armerad Betong Vagforbattringar Aktiebolag. Method of dewatering a cake of biomass. 4,525,172, Cl. 44-32.000.

Erkes, Joseph W.: *See—*
Mannava, Seetha R.; and Erkes, Joseph W., 4,525,068, Cl. 356-35.500.

Erzmoneit, Horst. Billiard apparatus having sensors in lieu of pockets. 4,524,969, Cl. 273-3.00R.

Esaki, Hiroshi: *See—*
Kohashi, Tadao; Irie, Hiroyuki; Ide, Susumu; and Esaki, Hiroshi, 4,525,727, Cl. 346-140.00R.

Essex Specialty Products, Inc.: *See—*
Kirby, Michael D.; and Mazzeo, Michael P., 4,525,511, Cl. 524-158.000.

Etablissement Public Dit: Agence Nationale de Valorisation de la Recherche (Anvar): *See—*
Edme , Jacques; and Deffontaine, Etienne, 4,525,705, Cl. 340-677.000.

Estabrook, Lawrence E.: *See—*
Koog, Wolfgang; and Estabrook, Lawrence E., 4,525,176, Cl. 48-197.00R.

Estes, Morton B.: *See—*
Sunnen, Robert M.; and Estes, Morton B., 4,524,549, Cl. 51-347.000.

Etablissements Tourtellier S.A.: *See—*
Tourtellier, Jean-Louis; and Schoen, Roger, 4,524,698, Cl. 104-107.000.

Etat Francais: *See—*
Bisping, Bernhard; Gersbach, Klaus; Luther, Hans; Simon, Walter; Wallow, Peter; Montier, Patrick; Moreau, Pierre A.; and Sauvestre, Jean C., 4,524,695, Cl. 102-430.000.

Ethicon Inc.: *See—*
McGregor, Walter; and Troutman, Richard C., 4,524,771, Cl. 128-339.000.

Evans, Edwin R.: *See—*
Bush, Richard B.; and Evans, Edwin R., 4,525,528, Cl. 524-860.000.

Evans Pipeline Equipment Company: *See—*
Slavens, Clyde M., 4,525,616, Cl. 219-60.00R.

Evans, Robert D.: *See—*
Gullotti, Damian V.; Winter, Joseph; Young, Kenneth P.; and Evans, Robert D., 4,524,820, Cl. 164-476.000.

Ewald, Ole, to Damas Maskinfabrik A/S. Screening apparatus for grains, seeds or the like materials or granules. 4,525,271, Cl. 209-303.000.

Ewing, John J.: *See—*
Fecik, Michael T.; Ewing, John J.; and Mates, Edward I., 4,525,196, Cl. 65-287.000.

Exxon Research & Engineering Co.: *See—*
Huff, Terrence; and Poirot, Eugene E., 4,525,467, Cl. 502-121.000.
Sartori, Guido; and Thaler, Warren A., 4,525,294, Cl. 252-182.000.
Soled, Stuart L.; Wold, Aaron; and Kershaw, Robert, 4,525,206, Cl. 75-0.5BA.
Turner, S. Richard; Walker, Thad O.; Peiffer, Dennis G.; and Lundberg, Robert D., 4,525,522, Cl. 524-547.000.
Yablonovitch, Eli, 4,525,593, Cl. 136-255.000.

Eydelman, Grigory. Adaptive control system. 4,525,775, Cl. 364-148.000.

F. F. Seeley Nominees Pty. Ltd.: *See—*
Mortimer, John K., 4,524,902, Cl. 229-52.00A.

Fabriques De Tabac Reunies S.A.: *See—*
Gaisch, Helmut; and Schultheiss, Dieter, 4,524,786, Cl. 131-308.000.

Facet Enterprises, Inc.: *See—*
Digby, James J., 4,524,629, Cl. 74-7.00R.
Miller, Donald L., 4,524,854, Cl. 192-84.00C.

Fahrmbacher-Lutz, Ludwig; and Seidler, Klaus, to Ludwig Fahrmbacher-Lutz. Method for chemical removal of oxide layers from objects of metal. 4,525,250, Cl. 204-58.500.

Fairchild Industries, Inc.: *See—*
Renshaw, Theodore A., 4,524,898, Cl. 228-1.100.

Falconieri, Remo, to C. Olivetti & C., S.p.A. Document feed-in device. 4,525,089, Cl. 400-639.100.

Falkenberg, Werner: *See—*
Horak, Otto; Falkenberg, Werner; Muders, Rolf; and Beinert, Werner, 4,525,283, Cl. 210-762.000.

Fanget, Bernard J. C.: *See—*
Montagnon, Bernard J.; and Fanget, Bernard J. C., 4,525,349, Cl. 424-89.000.

Fanti, Hansruedi, to Matra AG. Foam material body for a pad, particularly a mattress. 4,524,473, Cl. 5-481.000.

Farazandeh, Edward A.: *See—*
Heaston, Gaylord E.; and Farazandeh, Edward A., 4,524,547, Cl. 51-165.770.

Faulhaber, Gerhard: *See—*
Denzinger, Walter; Hartmann, Heinrich; Faulhaber, Gerhard; and Raubenheimer, Hans-Jurgen, 4,525,581, Cl. 528-503.000.

Fazekas, Carl F., to Panavision, Inc. Camera for three-dimensional movies. 4,525,045, Cl. 352-57.000.

Fecik, Michael T.; Ewing, John J.; and Mates, Edward I., to PPG Industries, Inc. Glass sheet handling devices. 4,525,196, Cl. 65-287.000.

Feder, Alvin: *See—*
Rapps, Gary M.; and Feder, Alvin, 4,524,497, Cl. 29-25.350.

Federal Paper Board Company, Inc.: *See—*
Frost, Arthur W., III, 4,525,278, Cl. 210-638.000.

Fehrer, Ernst. Apparatus for making a yarn from a roving. 4,524,580, Cl. 57-401.000.

Feiring, Andrew E., to Du Pont de Nemours, E. I., and Company. Vulcanizable nitrile-containing perfluoroelastomer. 4,525,539, Cl. 525-326.300.

Feldman, Paul L.: *See—*
Gleason, Robert J.; and Feldman, Paul L., 4,525,142, Cl. 423-235.000.

Feldmuhle Aktiengesellschaft: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., 4,524,732, Cl. 123-193.00H.

Feldsted, Robert J. C. Barge having a pneumatic loading and unloading system. 4,525,107, Cl. 406-25.000.

Felix, Raymond A., to Stauffer Chemical Company. O,O-Dialkyl-N-(benzyl or t-butyl)-N-cyanomethyl aminomethylphosphonates. 4,525,311, Cl. 260-940.000.

Fenn, Ronald S.: *See—*
Wiegers, Wilhelmus J.; Fenn, Ronald S.; Boden, Richard M.; and Schreiber, William L., 4,524,783, Cl. 131-276.000.

Fenne, Ivor, to Lucas Industries public limited company. Delivery valves. 4,524,799, Cl. 137-516.270.

Fenton, Frank A., to Emhart Industries, Inc. Method of cooling a glass ware mould. 4,525,191, Cl. 65-83.000.

Feofanov, Vitaly A.; Pilat, Boris V.; Zhdanovich, Larisa P.; Romanenko, Anatoly G.; Lukhanin, Boris S.; Donets, Oleg V.; and Korobochkin, Valery P., to Gosudarstvenny Nauchno-Issledovatelsky I Proektny Institut Po Obogascheniju Rud Tsvetnykh Metallov "Kazmekhanobr". Process and apparatus for purifying effluents and liquors. 4,525,254, Cl. 204-150.000.

Ferguson, Michael H.: *See—*
Barnich, Richard G.; Ferguson, Michael H.; and McGregor, Charles K., 4,525,601, Cl. 179-7.0MM.

Ferraro, Domenico: *See—*
Carbonaro, Antonio; and Ferraro, Domenico, 4,525,549, Cl. 526-92.000.

Feusi, Markus; Huber, Josef; Oswald, Heinz; and Pfyffer, Peter, to Rieter Machine Works, Ltd. Filament winding machine. 4,524,918, Cl. 242-18.00A.

Fiberglas Canada Inc.: *See—*
Rastall, Mary H.; Ng, Norman H.; and MacPherson, Edwin J., 4,525,492, Cl. 521-181.000.

Field, Thomas R.; Hughes, Frank M.; Shakib, Iraj D.; and Vitek, Edward J., Jr., to International Business Machines Corporation. Solenoid actuated pivotal printer hammer mechanism. 4,525,086, Cl. 400-144.200.

Fields, Robert J. Perforated reinforcing strip for use with continuous forms. 4,525,399, Cl. 428-43.000.

Filderman, Rene ; and Pilache, Michel, to Valeo. Belt and pulley transmission. 4,525,159, Cl. 474-201.000.

Fingerle, Dieter: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., 4,524,732, Cl. 123-193.00H.

Finike Italiana Marposs S.p.A.: *See—*
Golinelli, Guido; and Dall'Aglio, Carlo, 4,524,523, Cl. 33-143.00L.

Fink, Herbert: *See—*
Dinklage, Horst; Fink, Herbert; and Wolf, Hans-Peter, 4,525,418, Cl. 428-264.000.

Finkler, Saul M., to Centennial Jewelers, Inc. Diamond gauge with three-dimensional stone simulant. 4,524,525, Cl. 33-178.00B.

Finn Corporation: *See—*
Keyes, Richard E.; and Dirksing, John W., 4,524,916, Cl. 241-101.00A.

Firmenich SA: *See—*
Schulte-Elte, Karl H.; and Muller, Bernard L., 4,525,298, Cl. 252-522.00R.

Fischell, Robert E.; Newman, Arnold L.; Riblet, Henry B.; and Powell, William R., to John Hopkins University, The. Apparatus for inhibiting self-injurious behavior (SIB) in patients. 4,524,773, Cl. 128-419.00S.

Fischell, Robert E., to Johns Hopkins University, The. Fluid handling system for medication infusion system. 4,525,165, Cl. 604-131.000.

Fitzgerald, J. Vincent; Matusik, Frank J.; and Nelson, Donald W., to National Metal and Refining Company, Ltd. In-line vibratory viscometer-densitometer. 4,524,610, Cl. 73-54.000.

Fitzgerald, William V., to RCA Corporation. Television receiver power supply regulation responding to beam current changes. 4,525,739, Cl. 358-190.000.

Fives-Cail Babcock: *See—*
Pietryka, Joseph, 4,524,818, Cl. 164-448.000.

Flakt AB: *See—*
Bockman, Ole K., 4,525,181, Cl. 55-71.000.

Flanagan, Joseph E.: *See—*
Artz, Glen D.; and Flanagan, Joseph E., 4,525,226, Cl. 149-35.000.

Flassayer, Claude; Le Grives, Bernard; and Simon, Paul R., to Sfernice Societe Francaise de l'Electro-Resistance. Process for manufacturing an electric circuit intended for firing a pyrotechnic device and the circuit thus obtained. 4,525,238, Cl. 156-645.000.

Fleischer, Wolfgang; Eichelberger, Leo; and Endress, Georg, to Siemens Aktiengesellschaft; and Technochemie Kessler & Co. GmbH. Vacuum cleaner hose. 4,524,808, Cl. 138-103.000.

Fleissner, Heinz, to Vepa Aktiengesellschaft. Apparatus for froth processing of lengths of material. 4,524,589, Cl. 68-5.00D.

Fletcher, Mary A., to University of Miami. New purified glycoproteins and use in diagnosing infectious mononucleosis. 4,525,459, Cl. 436-544.000.

Flexi-Mat Corporation: *See—*
Elesh, James N., 4,525,409, Cl. 428-193.000.

Flohr, Wolfgang P.: *See—*
Bourauel, Fritz; Flohr, Wolfgang P.; and Weishaupt, Walter, 4,524,612, Cl. 73-117.300.

Flynn, Richard T.: *See—*
Webster, Marvin K.; Flynn, Richard T.; Porter, Marion G.; and Seminsky, George M., 4,525,777, Cl. 364-200.000.

Fochler, Helmut P.: *See—*
Pate, Harold T.; and Fochler, Helmut P., 4,524,999, Cl. 285-158.000.

Focke & Co.: *See—*
Focke, Heinz; and Liedtke, Kurt, 4,524,658, Cl. 83-152.000.

Focke, Heinz; and Liedtke, Kurt, to Focke & Co. Apparatus for producing packaging blanks. 4,524,658, Cl. 83-152.000.

Foggini, Giovanni, to Lear S.n.c. di Foggini & C. Swivel attachment for auto vehicle adjustable sun visors. 4,525,008, Cl. 296-97.00K.

Foley, Mark P.: *See—*
Quick, Terrence R.; Standley, Paul M.; Foley, Mark P.; Howerton, Anderson W.; Miranti, Joseph P., Jr.; Oliver, Larry R.; Holloway, Gerald C., Jr.; and Richmond, Kenneth D., 4,525,150, Cl. 474-93.000.

Fookes, Michael J.: *See—*
Bleimann, Karl R.; Fookes, Michael J.; McVicker, Richard W.; Munn, John W.; and Nelson, Eugene R., 4,525,139, Cl. 431-189.000.

Ford Aerospace & Communications Corporation: *See—*
Wagner, Gary L.; and Serrone, Michael J., 4,525,689, Cl. 333-104.000.

Ford Motor Company: *See—*
Hargunani, Ashok B.; and Chou, Clifford C., 4,524,603, Cl. 73-12.000.
Hartsock, Dale L., 4,524,498, Cl. 29-156.4WL.
Hoffman, David W., 4,525,264, Cl. 204-298.000.
Kordomenos, Panagiotis I., 4,525,569, Cl. 528-73.000.

Fore, William M., to Halliburton Company. Well packer. 4,524,825, Cl. 166-139.000.

Forestier, Alexandre; Pluquet, Alain A.; Rosa, Roger A.; Tabet, Mansour; and Teysseyre, Pierre M., to S.N.E.C.M.A. Apparatus for molding and perforating a FRP sheet. 4,525,135, Cl. 425-290.000.

Formo, Jerome L.; Lasher, Albert C.; and White, Robert W., to O Tray Corporation. Nestable, stackable cutlery. 4,524,512, Cl. 30-147.000.

Forsythe, Alan K.: *See—*
Green, Charles J.; and Forsythe, Alan K., 4,524,951, Cl. 251-327.000.

Foseco Trading A.G.: *See—*
Baas, Willem; Hof, Tette; Comes, Heinrich; Jaunich, Helmut; and Krampe, Hubert, 4,524,954, Cl. 266-45.000.

Foster, Thomas V., to Emhart Industries, Inc. Take-out mechanism for a glassware forming machine. 4,525,195, Cl. 65-260.000.

Foust, Robert K. Coffin bed adjusting apparatus. 4,524,472, Cl. 5-62.000.

Fowler, David P., to Frito-Lay, Inc. Apparatus and method for supporting, guiding and temperature-treating a puff extruded food product. 4,525,369, Cl. 426-446.000.

Foyt, Arthur G.; Leonberger, Frederick J.; and Williamson, Richard C., to Massachusetts Institute of Technology. High speed optoelectronic mixer. 4,525,871, Cl. 455-325.000.

Franaszek, Peter A.; and Yarmchuk, Edward J., to International Business Machines Corporation. Magnetic recording head array for longitudinal magnetic printing with staggered head arrangement and clustered wiring. 4,525,724, Cl. 346-74.500.

Frank, Gunther: *See—*
Class, Eberhard; Schweizer, Heiner; and Frank, Gunther, 4,524,843, Cl. 180-179.000.

Frank, Jimmy I.; and Wolfe, John R., III, to Gagemaker, Inc. Gage for measuring diameters. 4,524,524, Cl. 33-147.00M.

Franz Haas Waffelmaschinen Industriegesellschaft m.b.H.: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,524,682, Cl. 99-477.000.

Franz, Herbert: *See—*
Burba, Christian; and Franz, Herbert, 4,525,571, Cl. 528-111.000.

Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V.: *See—*
Muller, Dietmar, 4,525,313, Cl. 264-3.00B.

Fraunhofer-Gesellschaft zur Forderung der angwandten Forschung e.V.: *See—*
Scheicher, Hans; Siegele, Dieter; and Soltesz, Uwe, 4,525,145, Cl. 433-173.000.

Fravel, Harold G., Jr.: *See—*
Adaway, Timothy J.; Fravel, Harold G., Jr.; and Easterly, James P., Jr., 4,525,496, Cl. 523-337.000.

Freeburg, Thomas A., to Motorola, Inc. Zoned data communications system for communicating message signals between portable radios and a host computer. 4,525,861, Cl. 455-33.000.

Freeman, Edward J.; Economou, John E.; Pecorari, John G.; John, Gunter; Halter, Jerome B.; James, Jack E.; Castle, Richard M.; and Palmer, Richard C., to RCA Corporation. Disc record with tapered groove. 4,525,751, Cl. 358-342.000.

Frieden, Peter: *See—*
Berges, Hanns-Peter; Frieden, Peter; and Leier, Wolfgang, 4,525,129, Cl. 418-84.000.

Friedrich, Michael B.: *See—*
Buck, Robert; Friedrich, Michael B.; Gesthuysen, Hans D.; and Marhofer, Gerd, 4,525,699, Cl. 340-512.000.

Friedrich, Wolfgang: *See—*
Brandenstein, Manfred; Haas, Roland; Friedrich, Wolfgang; and Hans, Rudiger, 4,525,082, Cl. 384-138.000.

Friendship, Kenneth F. M.: *See—*
Pocock, John F. E.; Mahajan, Gautam K.; Krishnakumar, Suppayan M.; and Friendship, Kenneth F. M., 4,525,401, Cl. 428-64.000.

Frito-Lay, Inc.: *See—*
Fowler, David P., 4,525,369, Cl. 426-446.000.

Fritsch, Joseph E. High torque infinitely variable epicyclic transmission. 4,524,642, Cl. 74-796.000.

Fritz, Bobby D. Dental attachment. 4,525,144, Cl. 433-118.000.

Frohlich, Sigurd. Piezoelectric-enhanced circuit connection means. 4,525,644, Cl. 310-328.000.

Frontier Electronics, Inc.: *See—*
Cochran, John M., Jr.; and Cleveland, Ronald N., 4,524,839, Cl. 177-45.000.

Fronzoni, Mario A.: *See—*
Staffin, Robert; Girrell, Carol A.; and Fronzoni, Mario A., 4,524,957, Cl. 266-252.000.

Frost, Arthur W., III, to Federal Paper Board Company, Inc. Method of treating chemical process water. 4,525,278, Cl. 210-638.000.

Frye, Kent, to Electro-Voice, Incorporated. Horn loudspeaker with convex diaphragm. 4,525,604, Cl. 179-115.50H.

Fuchigami, Shuzo: *See—*
Ishizaki, Keiichi; and Fuchigami, Shuzo, 4,525,392, Cl. 427-420.000.

Fuchs Systems, Inc.: *See—*
Bleimann, Karl R.; Fookes, Michael J.; McVicker, Richard W.; Munn, John W.; and Nelson, Eugene R., 4,525,139, Cl. 431-189.000.

Fuji Photo Film Company, Limited: *See—*
Ishizaki, Keiichi; and Fuchigami, Shuzo, 4,525,392, Cl. 427-420.000.
Nakajima, Junya; Imai, Kiyoshi; and Nakamura, Takashi, 4,525,449, Cl. 430-407.000.
Nishizawa, Junichi; Tamamushi, Takashige; Ando, Fumihiko; Yoshikawa, Shigeo; and Shimanuki, Koji, 4,525,742, Cl. 358-213.000.
Ohashi, Saichiro, 4,525,050, Cl. 354-195.120.
Ohki, Nobutaka; and Yoshida, Yoshinobu, 4,525,451, Cl. 430-551.000.
Tsunekawa, Yuzo; and Tomizawa, Takashi, 4,524,596, Cl. 72-133.000.
Yokoo, Hirokazu, 4,525,055, Cl. 354-468.000.

Fuji Xerox Co., Ltd.: *See—*
Miyao, Fumio, 4,525,832, Cl. 370-85.000.
Nishimura, Nobuo, 4,525,822, Cl. 369-44.000.
Tan, Yoichi; and Miyao, Fumio, 4,525,837, Cl. 370-85.000.

Fujibayashi, Kazuo; Sugiura, Muneharu; and Tsuji, Sadahiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Zoom lens. 4,525,036, Cl. 350-427.000.

Fujiki, Norio: *See—*
Fukuhara, Hiroshige; and Fujiki, Norio, 4,525,870, Cl. 455-297.000.

Fujikogyosho Co., Ltd.: *See—*
Saito, Akihiro, 4,525,617, Cl. 219-83.000.

Fujikura Ltd.: *See—*
Saito, Takashi; Suzuki, Kazumoto; and Naganuma, Yoshihiro, 4,525,432, Cl. 428-653.000.

Fujimura, Hiroshi: *See—*
Ide, Eizo; and Fujimura, Hiroshi, 4,525,619, Cl. 219-124.220.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Sato, Yoshinari, 4,525,478, Cl. 514-350.000.

Fujitsu Limited: *See—*
Morikawa, Masaki; Yoshida, Hideaki; and Kishida, Kunio, 4,525,434, Cl. 428-674.000.
Sano, Yoshiaki; Tsuchiya, Chikara; and Maida, Osamu, 4,525,637, Cl. 307-350.000.
Toyoda, Kazuhiro; and Ono, Chikai, 4,525,812, Cl. 365-155.000.

Fujiwara, Koji: *See—*
Misawa, Yoshihiko; Seno, Makito; and Fujiwara, Koji, 4,524,860, Cl. 198-740.000.

Fukawa, Isaburo; and Sato, Kazutoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing polyethylene and an ethylene-α-olefin copolymer. 4,525,546, Cl. 526-68.000.

Fukoku Kogyo Co., Ltd.: *See—*
Sato, Hachiro, 4,524,684, Cl. 100-117.000.

Fukuda, Tadaji: *See—*
Shirai, Shigeru; Kanbe, Junichiro; and Fukuda, Tadaji, 4,525,442, Cl. 430-57.000.

Fukuhara, Hiroshige; and Fujiki, Norio, to Nissan Motor Company, Limited. Automotive radio receiver with radio frequency interference elimination circuit. 4,525,870, Cl. 455-297.000.

Fukui, Hisatoshi: *See—*
Maeda, Hirofumi; Nakamura, Kyoichi; and Fukui, Hisatoshi, 4,525,485, Cl. 521-58.000.

Fukui, Hishao: *See—*
Shimizu, Takahiko; Fukui, Hishao; and Kohno, Tadashi, 4,525,092, Cl. 401-265.000.

Fukui, Yukio: *See—*
Sugiyama, Toshio; Suenaga, Hideo; and Fukui, Yukio, 4,525,823, Cl. 369-44.000.

Fuller Company: *See—*
DiBuo, Louis J.; Solt, Paul E.; and Souders, Marvyn L., 4,525,106, Cl. 406-60.000.

Fulton, John D. Collapsible garment hanger. 4,524,890, Cl. 223-94.000.

Funaki, Masahiko: *See—*
Narisawa, Shigeyuki; Funaki, Masahiko; Kojima, Hiroaki; and Kuga, Kazuhiko, 4,525,491, Cl. 521-174.000.

Fundom, Danny L.; and Kirk, William A., to Van Dorn Company. Can end pour spout and pull tab construction. 4,524,879, Cl. 220-273.000.

G-C Dental Industrial Corporation: *See—*
Shimokobe, Hirokata; Saito, Sueo; Tomioka, Kentaro; Akahane, Shoji; and Hirota, Kazuo, 4,524,824, Cl. 106-35.000.

G.D Societa' per Azioni: *See—*
Seragnoli, Enzo, 4,524,781, Cl. 131-108.000.
Seragnoli, Enzo; and Neri, Armando, 4,524,784, Cl. 131-281.000.
Seragnoli, Enzo; and Neri, Armando, 4,524,785, Cl. 131-281.000.

G & G Sewing Machine Co., Inc.: *See—*
Cusumano, Salvatore V., 4,524,704, Cl. 112-105.000.

Gagemaker, Inc.: *See*—
Frank, Jimmy I.; and Wolfe, John R., III, 4,524,524, Cl. 33-147.00M.

Gaisch, Helmut; and Schulthess, Dieter, to Fabriques De Tabac Reunies S.A. Continuous process for microbial degradation of tobacco constituents containing nitrates. 4,524,786, Cl. 131-308.000.

Galiasso, Roberto: *See*—
Morales, Alfredo; Galiasso, Roberto; and Carrasquel, Angel R., 4,525,472, Cl. 502-323.000.

Galla, Edward A.; and Smoyer, Bruce A., to Air Products and Chemicals, Inc. Shipping flexible polyurethane foam product. 4,525,316, Cl. 264-54.000.

Gallick-Whitaker, Nancy G., to Eli Lilly and Company. 4aR,8aS,9R-5,6-Permissibly substituted-9-hydroxy-octahydro-1H(and 2H) pyrazolo[3,4-g]quinoline. 4,525,584, Cl. 536-24.000.

Gallup, Jeffrey M.: *See*—
Mosier, John E.; Surjaatmadja, Jim B.; McLawhon, George B.; and Gallup, Jeffrey M., 4,525,804, Cl. 364-900.000.

Gallup, Michael G.: *See*—
Smith, Philip S.; and Gallup, Michael G., 4,525,851, Cl. 377-110.000.

Game Time, Inc.: *See*—
Shannon, William H.; and Sutton, Wesley D., Jr., 4,524,966, Cl. 272-85.000.

Garcia, Juan R. Cross. 4,525,821, Cl. 369-31.000.

Garcia, Rodrigo A.; and Martinovich, Robert J. Halogenated organic peroxides in flame retardant ethylene polymer compositions. 4,525,516, Cl. 524-380.000.

Gard Corporation: *See*—
Jones, Larry J., 4,525,219, Cl. 134-1.000.

Garner, Ronald S., Sr. Tack system. 4,525,115, Cl. 411-457.000.

Garwin, Leo. Method for producing isotopically enriched helium-4 and use of same as nuclear reactor coolant. 4,525,186, Cl. 62-22.000.

Gas Research Institute: *See*—
DeWerth, Douglas W.; and Sheridan, Roger D., 4,525,141, Cl. 431-347.000.

Gaudiana, Russell A.: *See*—
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,525,413, Cl. 428-212.000.

Gavrin, Edward S.: *See*—
Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Mundie, Craig J.; Schleimer, Stephen I.; and Wallach, Steven J., 4,525,780, Cl. 364-200.000.

Gebhard, David F., to Grumman Aerospace Corporation. Short take off jump mode for airplane landing gear struts. 4,524,929, Cl. 244-63.000.

Gebruder Schmidt GmbH & Co. KG: *See*—
Schmidt, Karl W., 4,525,079, Cl. 368-276.000.

Gehrman, Sybil H.; and Porubcan, Randolph S., to Chr. Hansen's Laboratory, Inc. Liquid adherent disinfectant compositions for topical application and method of preparation. 4,525,351, Cl. 424-95.000.

Geiges, Albert F., Jr. Blooming plant implant with message holder. 4,524,541, Cl. 47-58.000.

Geisen, Ingeborg: *See*—
Herold, Julius; and Geisen, Ingeborg, 4,525,234, Cl. 156-332.000.

General Computer Corporation: *See*—
Curran, Kevin G.; Golson, Steven E.; and Rode, Christian S., 4,525,599, Cl. 178-22.080.

General Dynamics Corporation/Convair Div.: *See*—
Hujsak, Edward J., 4,524,552, Cl. 52-108.000.

General Electric Company: *See*—
Ahlgren, Frederic F., 4,525,651, Cl. 315-240.000.
Anthony, Blair T., 4,525,426, Cl. 428-447.000.
Bellino, Joseph P., 4,525,703, Cl. 340-628.000.
Bush, Richard B.; and Evans, Edwin R., 4,525,528, Cl. 524-860.000.
Campbell, John R.; and Williams, Robert E., Jr., 4,525,567, Cl. 528-27.000.
Cline, Harvey E.; Holik, Andrew S.; and Lorensen, William E., 4,525,858, Cl. 382-1.000.
Cushing, Donald S., 4,525,608, Cl. 200-38.00R.
DiBianca, Frank A.; Georges, Jean-Pierre J.; Cusano, Dominic A.; and Greskovich, Charles D., 4,525,628, Cl. 250-367.000.
Eckberg, Richard P., 4,525,391, Cl. 427-391.000.
Ghaem-Maghami, Sanjar; and Ehlers, Raymond G., 4,525,745, Cl. 358-237.000.
Gigl, Paul D., 4,525,179, Cl. 51-309.000.
Hamerla, Donald R., 4,525,800, Cl. 364-900.000.
Hardy, Robert M.; and Premerlani, William J., 4,525,763, Cl. 361-24.000.
Hetzel, Frederick; and McCracken, William G., Jr., 4,525,230, Cl. 156-179.000.
Lee, Gim F., Jr., 4,525,508, Cl. 524-140.000.
Mannava, Seetha R.; and Erkes, Joseph W., 4,525,068, Cl. 356-35.500.
Mears, David F., 4,525,865, Cl. 455-186.000.
Pedersen, James R., 4,525,083, Cl. 384-278.000.
Stackhouse, Bill L., 4,525,793, Cl. 364-513.500.
Surprenant, Richard P., 4,525,400, Cl. 428-54.000.
Traver, Frank J., 4,525,502, Cl. 524-96.000.
Wei, Chung H., 4,525,545, Cl. 526-65.000.

General Motors Corporation: *See*—
Sharma, Ram A., 4,525,212, Cl. 75-68.00R.

General Research of Electronics, Inc.: *See*—
Imazeki, Kazuyoshi; and Yokoyama, Nobuaki, 4,525,718, Cl. 343-702.000.
Imazeki, Kazuyoshi; and Wani, Hasashi, 4,525,738, Cl. 358-181.000.

General Scanning Inc.: *See*—
Montagu, Jean I.; and Pelsue, Kurt A., 4,525,030, Cl. 350-255.000.

General Signal Corporation: *See*—
Bachle, Walter W., 4,525,000, Cl. 285-177.000.

Genetay, Michel; and Dangers, Gerard, to Societe Anonyme des Produits Ceramiques de Touraine. Process for converting a ceramic toilet commode intended to be supplied with an independent water supply pipe into a toilet commode adapted to be supplied with water by an associated tank. 4,524,500, Cl. 29-157.00R.

Genetics Institute, Inc.: *See*—
Rozzell, J. David, 4,525,454, Cl. 435-106.000.

Gentry, Robert R .: *See*—
Atkins, Kenneth E.; and Gentry, Robert R ., 4,525,498, Cl. 523-511.000.

Georges, Jean-Pierre J.: *See*—
DiBianca, Frank A.; Georges, Jean-Pierre J.; Cusano, Dominic A.; and Greskovich, Charles D., 4,525,628, Cl. 250-367.000.

Gerber, Bego: *See*—
Jones, Wendy; and Gerber, Bego, 4,525,452, Cl. 435-7.000.

Gerber Garment Technology, Inc.: *See*—
Leblond, Claude W., 4,524,894, Cl. 225-2.000.

Gering, Julie. Tire breaker apparatus. 4,524,813, Cl. 157-1.170.

Gersbach, Klaus: *See*—
Bisping, Bernhard; Gersbach, Klaus; Luther, Hans; Simon, Walter; Wallow, Peter; Montier, Patrick; Moreau, Pierre A.; and Sauvestre, Jean C., 4,524,695, Cl. 102-430.000.
Bocker, Jurgen; Gersbach, Klaus; Bethmann, Karl W.; and Glotz, Gerhard, 4,524,697, Cl. 102-517.000.

Gery, Alan R. Three-dimensional fiber optic display. 4,525,711, Cl. 340-815.310.

Gesthuysen, Hans D.: *See*—
Buck, Robert; Friedrich, Michael B.; Gesthuysen, Hans D.; and Marhofer, Gerd, 4,525,699, Cl. 340-512.000.

GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H.: *See*—
Blaimschein, Gottfried; and Marzy, Otto, 4,525,112, Cl. 409-199.000.

Ghaem-Maghami, Sanjar; and Ehlers, Raymond G., to General Electric Company. Temperature compensation for TV projection lens and CRT assembly. 4,525,745, Cl. 358-237.000.

Ghosh, Chuni L., to International Telephone and Telegraph Corporation. Method of fabricating sub-half-micron-size gates on semiconductor substrates. 4,525,448, Cl. 430-314.000.

Giannotti, Hugo V. Apparatus for separating and re-circulating oversize fuel particles in spark-ignition engines. 4,524,748, Cl. 123-591.000.

Giddey, Claude; and Dove, Georges, to Battelle Memorial Institute. Light condiment having a mustard base and a process for its preparation. 4,525,372, Cl. 426-564.000.

Giebmanns, Karl-Heinz, to ITM International Tool Machines Inc. Grinding machine. 4,524,545, Cl. 51-99.000.

Gigl, Paul D., to General Electric Company. Process for making diamond and cubic boron nitride compacts. 4,525,179, Cl. 51-309.000.

Gilbert, Lawrence A.: *See*—
Cushman, Mark E.; and Gilbert, Lawrence A., 4,525,292, Cl. 252-102.000.

Gillberg, James E., to RCA Corporation. Transient signal suppression circuit. 4,525,635, Cl. 307-247.00R.

Gillen, Gerard J. Timber pile connection system. 4,525,102, Cl. 405-232.000.

Gilliams, Yvan K.: *See*—
Uytterhoeven, Herman J.; Gilliams, Yvan K.; De Winter, Walter F.; Marien, August M.; and De Volder, Noel J., 4,525,446, Cl. 430-117.000.

Gilvydis, Jaunutis B., to United States of America, Army. Military vehicles. 4,524,674, Cl. 89-36.00H.

Giovagnoli, Paul S., to Master Pitching Machine, Inc. Spring-type ball pitching machine. 4,524,749, Cl. 124-7.000.

Girmes Vertriebsgesellschaft fur Industrietextilien mbH: *See*—
Hynek, Bernd; Valk, Giselher; and Treptau, Gerhard, 4,525,403, Cl. 428-87.000.

Girrell, Carol A.: *See*—
Staffin, Robert; Girrell, Carol A.; and Fronzoni, Mario A., 4,524,957, Cl. 266-252.000.

Giusti, Raolo B., to T. Giusti & Son Ltd. Rotary mixing apparatus. 4,525,072, Cl. 366-168.000.

Glantschnig, Josef, to Zimmer, Johannes. Wiper assembly for flat-screen printer. 4,524,688, Cl. 101-123.000.

Glassman, Jacob A. Surgical drapes. 4,524,767, Cl. 128-132.00D.

Glasstech, Inc.: *See*—
McMaster, Ronald A.; and Nitschke, John S., 4,525,193, Cl. 65-114.000.

Glaze, John W., Jr., to Intech Corporation. Hosiery processing method. 4,524,889, Cl. 223-76.000.

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Krenzer, Theodore J., 4,525,108, Cl. 407-22.000.

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Tung, William C. T.; and Deisz, George A., 4,525,524, Cl. 524-601.000.

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Chemla, Daniel S.; Damen, Theodoor C.; Gossard, Arthur C.; Miller, David A. B.; and Wood, Thomas H., 4,525,687, Cl. 332-7.510.

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Feofanov, Vitaly A.; Pilat, Boris V.; Zhdanovich, Larisa P.; Romanenko, Anatoly G.; Lukhanin, Boris S.; Donets, Oleg V.; and Korobochkin, Valery P., 4,525,254, Cl. 204-150.000.

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Gottlieb, Robert K.; and Piotroski, Peter N., to Pitney Bowes Inc. Scanner interface circuit for universal multi-station document inserter. 4,525,788, Cl. 364-478.000.

Gourlia, Jean-Paul; Jacob, Philippe; and Jamen, Robert, to Elf France. Vapor recompression reboiling process. 4,525,244, Cl. 203-26.000.

Graham, John W., to Swiss-Tex, Incorporated. Extension handle having cooperating male and female locking sleeves. 4,524,484, Cl. 16-115.000.

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Miller, Curtis B., 4,524,691, Cl. 101-232.000.

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Dayton, Birney D.; and Leavitt, Dale L., 4,525,836, Cl. 370-67.000.
Rorden, William L., 4,525,677, Cl. 330-258.000.

Gray, Randall C., to International Business Machines Corporation. Zener referenced threshold detector with hysteresis. 4,525,638, Cl. 307-350.000.

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Greten, Ernst, 4,525,315, Cl. 264-40.400.

Green, Charles J.; and Forsythe, Alan K., to GT Development Corporation. Center-position biased slide valve. 4,524,951, Cl. 251-327.000.

Green, Jasper L.; and Hackett, Steven B., to Weldtec, Inc. Connecting clamp for builder's scaffolding. 4,525,096, Cl. 403-49.000.

Greene, Robert T.: *See*—
Bremer, Gordon; Betts, William L.; and Greene, Robert T., 4,525,846, Cl. 375-39.000.

Greenway, Frank L., III; and Bray, George A. Treatment for selective weight control. 4,525,359, Cl. 514-653.000.

Greenway, Peter R. Spur equipped boot. 4,524,530, Cl. 36-113.000.

Greenwood, Christopher J., to Leyland Vehicles Limited. Continuously-variable ratio-transmission. 4,524,641, Cl. 74-691.000.

Greer, Bradley G., to A & E Systems, Inc. Brake for awning assembly. 4,524,791, Cl. 135-89.000.

Grenell, David J. Toilet lid lock mechanism. 4,524,470, Cl. 4-253.000.

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Knischka, Paul O.; and Grenz, Hans J., 4,525,171, Cl. 23-300.000.

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DiBianca, Frank A.; Georges, Jean-Pierre J.; Cusano, Dominic A.; and Greskovich, Charles D., 4,525,628, Cl. 250-367.000.

Gressette, Tatum W., Jr. Rotary mixing apparatus. 4,525,070, Cl. 366-18.000.

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Grier, Jesse G.; and Hodges, Jimmie R. Chromate ion removal from aqueous solutions. 4,525,483, Cl. 521-28.000.

Griesshammer, Rudolf; and Peterat, Michael, to Wacker-Chemitronic Gesellschaft fur Elektronik Grundstoffe m.b.H. Process for removing impurities from silicon fragments. 4,525,336, Cl. 423-348.000.

Griffith, Louis E., to Power Access Corporation. Automatic wire cutting machine. 4,524,657, Cl. 83-69.000.

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Ayers, William J., Jr.; Carter, Charles R.; Griffith, Richard A.; Loomis, Richard B.; and Notestein, John E., 4,524,796, Cl. 137-240.000.

Griggs, Jerald A.: *See*—
Tung, Lu H.; Lo, Grace Y.; and Griggs, Jerald A., 4,525,532, Cl. 525-98.000.

Grimes, John R.: *See*—
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Grimes, Philip M.; and Grimes, John R. Method of making coated abrasive disc. 4,525,177, Cl. 51-295.000.

Grimes, Richard V.; Harlamert, W. Benjamin; and Thompson, David F., to TRW Inc. Method of fabricating an aircraft propeller assembly with composite blades. 4,524,499, Cl. 29-156.80B.

Groom, James S.; and McIntyre, Robert W., to Package Machinery Company. Cartoning method. 4,524,564, Cl. 53-449.000.

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Groves, Michael R., to Coulter Electronics, Inc. Cell breakdown. 4,525,666, Cl. 324-71.100.

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Gebhard, David F., 4,524,929, Cl. 244-63.000.
Wertheim, Max M.; and Herbermann, Richard J., 4,525,633, Cl. 290-44.000.

Grundig E.M.V.: *See*—
Mangold, Hans; Eckert, Hans; and Schonborn, Jurgen, 4,525,746, Cl. 358-254.000.

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Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Mundie, Craig J.; Schleimer, Stephen I.; and Wallach, Steven J., 4,525,780, Cl. 364-200.000.

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GTE Automatic Electric Inc.: *See*—
Simmons, Nathaniel; and Parikh, Kamal I., 4,525,831, Cl. 370-63.000.

GTE Laboratories Incorporated: *See*—
Stites, Francis H., 4,525,863, Cl. 455-83.000.

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Cheresnowsky, Michael J.; Brunelli, Timothy A.; Munn, Robin W.; and Kim, Tai K., 4,525,331, Cl. 423-54.000.
Claes, Roger G., 4,525,692, Cl. 333-142.000.
Knoll, William C.; and Bay, David L., 4,525,649, Cl. 315-96.000.

Guardino, Robert F.; and Belly, Robert T., to Eastman Kodak Company. Process for rapidly differentiating between gram-negative and gram-positive microorganisms. 4,525,453, Cl. 435-34.000.

Guillaume, Michel; and Pichot, Michel. Method and device for measuring temperature using a diffraction grating. 4,525,066, Cl. 356-43.000.

Guillet, James E. Photochemical reactions for commercial synthesis. 4,525,255, Cl. 204-158.00R.

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Heilman, William J.; and Kemp, Richard A., 4,525,557, Cl. 526-128.000.

Gullotti, Damian V.; Winter, Joseph; Young, Kenneth P.; and Evans, Robert D., to International Telephone and Telegraph Corporation. Apparatus for providing improved slurry cast structures by hot working. 4,524,820, Cl. 164-476.000.

Gustafsson, Bo B.: *See*—
Danielson, Carl O.; Gustafsson, Bo B.; Richardsson, Gote E.; and Lundh, Karl-Erik, 4,524,880, Cl. 220-288.000.

Gutsche, Gunter E. Slide-on rotary tools. 4,525,111, Cl. 408-239.00A.

Gyurina, F. Dennis: *See*—
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H. Flude & Company (Hinckley) Limited: *See*—
Humphreys, John C., 4,524,705, Cl. 112-121.150.

Haas, Franz, Jr.: *See*—
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Haas, Roland: *See*—
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Haberer, Thomas G.: *See*—
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Habib, Robert. Machine for backing-off and/or grinding drifting spindles provided with teeth. 4,524,544, Cl. 51-92.00R.

Hackamack, Paul, to Cache Technology Corporation. Portable electronic testing apparatus. 4,525,802, Cl. 364-900.000.

Hacker, John H. Thermal insulated building slab. 4,524,553, Cl. 52-169.110.

Hackett, Steven B.: *See—*
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Hadco Corporation: *See—*
Needham, Maurice E., 4,525,246, Cl. 204-15.000.
Haddock, Richard, to Drexler Technology Corporation. Optical data tape cartridge having wide angle read/write surface. 4,524,925, Cl. 242-197.000.
Hage, Manfred; and Junker, Otto, to Wieland-Werke AG. Safety heat-transmitting device. 4,524,822, Cl. 165-141.000.
Hagen, Norman R.: *See—*
Lewis, Arnold; and Hagen, Norman R., 4,525,146, Cl. 433-198.000.
Hagiwara, Syuya; and Hori, Yasuro, to Hitachi, Ltd. Method and apparatus for reducing vibrations of stationary induction apparatus. 4,525,791, Cl. 364-508.000.
Hagiwara, Zenji; Ohki, Hideo; Hoshino, Shigetaka; Nohara, Saburo; Ida, Shunya; and Tagawa, Kenichi, to Kanebo, Ltd.; and Kanto Chemical Co., Inc. Particle-packed fiber article having antibacterial property. 4,525,410, Cl. 428-198.000.
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, to BASF Aktiengesellschaft. Particulate polystyrene containing blowing agent and having improved expandability. 4,525,484, Cl. 521-56.000.
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Hailey, Laurence N.: *See—*
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Haines, Frederick K. Air release and anti-siphon valve. 4,524,794, Cl. 137-202.000.
Hair, James M., III: *See—*
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Hakulinen, Martti J. A.: *See—*
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Hakumoto, Mitsuhiro: *See—*
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Halcon SD Group, Inc., The: *See—*
Cascone, Ronald F.; and Solomon, C. Ashley, 4,524,581, Cl. 60-39.020.
Hall, Charles W.; and Anderson, Orin M., to Southwest Research Institute. Continuous rotation reversible pitch axial thrust heart pump. 4,524,466, Cl. 603-3.000.
Hall, Dale G., to Ranco Incorporated. Electrically controlled pressure transducer valve. 4,524,948, Cl. 251-139.000.
Hall, David A.; and Spitzer, Wayne A., to Eli Lilly and Company. Process for preparing oxazolinoazetidinones. 4,525,304, Cl. 260-245.400.
Hall, David R., to Megadiamond Industries, Inc. Composite polycrystalline diamond. 4,525,178, Cl. 51-309.000.
Halliburton Company: *See—*
Brisco, David P., 4,524,998, Cl. 285-101.000.
Fore, William M., 4,524,825, Cl. 166-139.000.
Hanlon, David J.; and Almond, Stephen W., 4,524,829, Cl. 166-294.000.
Mosier, John E.; Surjaatmadja, Jim B.; McLawhon, George B.; and Gallup, Jeffrey M., 4,525,804, Cl. 364-900.000.
Sabins, Fred; and Childs, Jerry D., 4,524,828, Cl. 166-293.000.
Son, Adelina J.; and Loftin, Royal E., 4,525,285, Cl. 252-8.50M.
Halter, Jerome B.: *See—*
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Halvorsen, Stephen H. Trolling board. 4,524,538, Cl. 43-43.130.
Hamada, Masanori; and Ono, Sadao, to Clarion Co., Ltd. Diversity receiver. 4,525,869, Cl. 455-277.000.
Hamalainen, Kaarlo J., to RCA Corporation. Automatic tracking system for multitrack recorders. 4,525,750, Cl. 358-327.000.
Hamel, Peter; and Karmann, Rudiger, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Steering and stabilization system for vehicles. 4,525,784, Cl. 364-434.000.
Hamerla, Donald R., to General Electric Co. Enhanced reliability data storage system with second memory for preserving time-dependent progressively updated data from destructive transient conditions. 4,525,800, Cl. 364-900.000.
Hammerschmidt, Peter; and Crass, Gunther, to Hoechst Aktiengesellschaft. Adhesive tape. 4,525,416, Cl. 428-220.000.
Hanak, Joseph J., to RCA Corporation. Method of controllong the deposition of hydrogenated amorphous silicon and apparatus therefor. 4,525,375, Cl. 427-8.000.
Hance, William G.: *See—*
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Handley, Kirk H., to Ampex Corporation. System and method for synchronization of rotary head magnetic recording/reproducing devices. 4,525,754, Cl. 360-51.000.
Handy, Richard L.: *See—*
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Haneda, Satoshi: *See—*
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Hankel, Dirk, to Metallgesellschaft Aktiengesellschaft. Process of producing briquettes to be charged to zinc-producing shaft furnaces. 4,525,207, Cl. 75-3.000.
Hanlon, David J.; and Almond, Stephen W., to Halliburton Company. Method of altering the permeability of a subterranean formation. 4,524,829, Cl. 166-294.000.
Hanna, Marie R.: *See—*
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Hanna, Thomas B. Animal halter apparatus. 4,524,569, Cl. 54-24.000.
Hans, Rudiger: *See—*
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Hanseler, Urs; Meier, Urs; and Muther, Franz, to Contraves AG. Circuit board module mounting unit. 4,525,771, Cl. 361-413.000.
Hansen, Earl S. Closed circuit fuel vapor system. 4,524,746, Cl. 123-538.000.
Hanson, Steven P.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Action matching game. 4,524,967, Cl. 273-1.0GE.
Hara, Susumu: *See—*
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Hara, Yoshihumi; Takano, Hiroji; Kabashima, Shoshi; and Hasegawa, Mikio, to Matsushita Electric Industrial Co., Ltd. Laminated core producing apparatus. 4,524,507, Cl. 29-564.200.
Harada, Hiromi: *See—*
Yasukawa, Motohiro; Ishikawa, Yukio; Ojima, Yasuo; Harada, Hiromi; and Mori, Yoshiaki, 4,525,208, Cl. 75-25.000.
Haramaki, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Exposure apparatus to guide reflected light from a subject to a photosensitive body. 4,525,059, Cl. 355-8.000.
Harden, Jerrell W., to Allied Products Corporation. Soil conditioning and bed preparation apparatus. 4,524,837, Cl. 172-156.000.
Hardinge Brothers, Inc.: *See—*
Waldron, Joseph P.; and Brown, Ivan R., 4,524,655, Cl. 82-36.00A.
Hardy, Georjes: *See—*
Jeanrat, Roger G.; Martin, Pierre M.; and Hardy, Georjes, 4,524,680, Cl. 99-277.100.
Hardy, Robert M.; and Premerlani, William J., to General Electric Company. Apparatus and method to protect motors and to protect motor life. 4,525,763, Cl. 361-24.000.
Hareng, Michel; Hehlen, Robert; Marcenac, Philippe; Le Berre, Serge; Leclerc, Pierre; and Perbet, Jean-Noel, to Thomson-CSF. Thermoelectric effect display device. 4,525,708, Cl. 340-713.000.
Hareng, Michel; Perbet, Jean-Noel; and Defrance, Michel, to Thomson-CSF. Electrically controlled display device. 4,525,709, Cl. 340-719.000.
Hargunani, Ashok B.; and Chou, Clifford C., to Ford Motor Company. Method of impact testing motor vehicles. 4,524,603, Cl. 73-12.000.
Harlamert, W. Benjamin: *See—*
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Harrar, Jackson E.: *See—*
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Harriman, Robert W., to Keene Corporation. Radiation resistant closure. 4,525,595, Cl. 174-35.0GC.
Harris, Alfred W., to Boeing Company, The. Hinge structure with controlled translation of hinge axis. 4,524,485, Cl. 16-364.000.
Harris Corporation: *See—*
Pan, Jing-Jong; and Wilson, John B., 4,525,680, Cl. 330-277.000.
Harris, Harold D.; and Harris, Thomas J. Friction heat generator. 4,524,755, Cl. 126-247.000.
Harris, Hubert; and Smith, Durward A., to Auburn Research Foundation. Methods and apparatus for thermal blast feeling, skinning, or shelling of food products. 4,524,681, Cl. 99-474.000.
Harris, Martin, to Shell Oil Company. Insecticidal N-substituted-2-(nitromethylene)-tetrahydro-2H-1,3-thiazines. 4,525,474, Cl. 514-226.000.
Harris, Thomas J.: *See—*
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Hartsock, Dale L., to Ford Motor Company. Method and apparatus for modifying the combustion chamber of an engine to accept ceramic liners. 4,524,498, Cl. 29-156.4WL.
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Hasegawa, Mikio: *See—*
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Hashimoto, Kazuo, to Hashimoto Corportion. Automatic telephone answering device. 4,525,600, Cl. 179-6.020.
Hashimoto, Seiji; Suga, Akira; and Tanaka, Nobuyoshi, to Canon Kabushiki Kaisha. Color solid state image pick-up device. 4,525,737, Cl. 358-44.000.

Hashimoto, Yasuo: *See—*
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Haslanger, Martin F.: *See—*
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Hata, Hitoshi: *See—*
Tsubouchi, Toshiyuki; and Hata, Hitoshi, 4,525,290, Cl. 252-73.000.
Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Shigeru, to Pioneer Electronic Corporation. Information recording system. 4,525,824, Cl. 369-45.000.
Hattori, Shinichiro; Hosoda, Seiichi; and Takamatsu, Takeshi, to Olympus Optical Co., Ltd. Endoscope apparatus. 4,524,761, Cl. 128-6.000.
Hauers, Manfred; and Baur, Walter, to Rovema Verpackungsmaschinen GmbH & Co. KG. Packaging machine. 4,524,566, Cl. 53-534.000.
Hauk, Peter: *See—*
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Haupt, Heinrich: *See—*
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Haupt, Robert C., to Allis-Chalmers Corp. Transmission shifting mechanism. 4,524,634, Cl. 74-473.00R.
Hauser, Henry W., Jr., to Alcan Aluminum Corporation. Cable-coating extruder head system with changeable die and guider elements. 4,525,131, Cl. 425-114.000.
Hayami, Ryozo: *See—*
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Hayashi, Ikuo; Itikawa, Tadao; Ogihara, Keizo; and Shimizu, Kiyoshi, to Nitto Boseki Co. Ltd. Process for producing sequential polyamino acid resin. 4,525,576, Cl. 528-313.000.
Hayashi, Isao: *See—*
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Hayashi, Masaaki; and Sasaki, Hiroharu, to Dai Nippon Toryo Co., Ltd. Non-aqueous dispersion type resin composition. 4,525,499, Cl. 523-523.000.
Hayashida, Hajime: *See—*
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Hayes, Daniel F.; Sias, Robert G.; Chesney, Lloyd; and Waldron, John W., to MED Products, Inc. Method and apparatus for purification of water. 4,525,253, Cl. 204-149.000.
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Haylock, John C.: *See—*
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Heaston, Gaylord E.; and Farazandeh, Edward A., to Litton Industrial Products, Inc. Automatic double disc grinder control cycle. 4,524,547, Cl. 51-165.770.
Heath, Perry C.: *See—*
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Heckler, Manfred: *See—*
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Hefer, Fred W., to Oyo Corporation, U.S.A. Horizontal geophone transducer assembly. 4,525,819, Cl. 367-188.000.
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Heinz, Richard; and Kutzner, Reinhard, to Robert Bosch GmbH. Method and apparatus for maintaining word synchronization after a synchronizing word dropout in reproduction of recorded digitally encoded signals. 4,525,840, Cl. 371-47.000.
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Herold, Julius; and Geisen, Ingeborg, 4,525,234, Cl. 156-332.000.
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Goedert, Jean; Thill, Fernand; Henrion, Romain; Klein, Henri; Liesch, Jean-Francois; and Peckels, Jean, 4,524,958, Cl. 266-272.000.
Henry, Paul M., to Burr-Brown Corporation. Precision band-gap voltage reference circuit. 4,525,663, Cl. 323-280.000.
Henson, James H., to Swimaid, Inc. Electrochemical ionization system for purifying water. 4,525,272, Cl. 210-149.000.
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Hernandez, Gonzalo J., to United States of America, Commerce. Twin-etalon scanning spectrometer. 4,525,067, Cl. 356-346.000.
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Hertz, Daniel L., Jr., to Seals Eastern Inc. Seal for aggressive environments. 4,524,982, Cl. 277-229.000.
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Hess, Grant F., to National Gypsum Company. Plastic siding sample case. 4,524,852, Cl. 190-16.000.
Hess, Herman A. Separable fastener. 4,524,495, Cl. 24-590.000.
Hesse, Kurt; and Engel, Hartmut. Light fixture. 4,525,773, Cl. 362-413.000.
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Ratzlaff, Howard J., 4,524,574, Cl. 56-341.000.
Hetzel, Frederick; and McCracken, William G., Jr., to General Electric Company. Method of manufacturing a ballast resistor support member. 4,525,230, Cl. 156-179.000.
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Heywood, Alan E., to Johnson Matthey Public Limited Company. Composite material. 4,525,433, Cl. 428-670.000.
Hicks, John M.; Engel, Joseph C.; Spreadbury, Robert J.; Elms, Robert T.; and Saletta, Gary F., to North American Philips Lighting Corporation. Starting and operating method and apparatus for discharge lamps. 4,525,650, Cl. 315-226.000.
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Hirai, Hidefumi; Komiyama, Makoto; and Hara, Susumu, 4,525,180, Cl. 55-37.000.
Higashiyama, Yasushi; Chiba, Shu; and Sawazaki, Norikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical magnetic recording device. 4,525,828, Cl. 369-111.000.
Higby, Jeffrey P.: *See—*
Broughton, George L.; Higby, Jeffrey P.; and Young, Robert F., 4,525,149, Cl. 440-1.000.
Higuchi, Akira; and Okamoto, Miyoshi, to Toray Industries, Inc. Artificial grain leather having different color spot groups. 4,525,169, Cl. 8-485.000.
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Hill, Frank P., Jr.; Alden, John W., Jr.; and Williams, Harry K., to Combustion Engineering, Inc. Primary manway closure redundant restraint. 4,524,729, Cl. 122-498.000.
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Svoboda, Josef; Himmetsberger, Alois; and Szabo, Emilie, 4,524,990, Cl. 280-633.000.
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Hirabayashi, Masao, to Tokyo Sintered Metal Co., Ltd. Method of manufacturing vent element. 4,524,899, Cl. 228-173.200.
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Hirst, John A. B., to Rotabolt Limited. Fastener device. 4,525,114, Cl. 411-9.000.
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Hitachi Koki Co., Ltd.: *See—*
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Abe, Yumiko; and Yasuda, Kenji, 4,525,265, Cl. 204-403.000.
Enoki, Takashi; Nakamura, Hiroaki; and Nakashima, Fujio, 4,525,820, Cl. 369-2.000.
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Kodama, Naoki; Suzuki, Ryo; Takeuchi, Teruaki; Takeshita, Masatoshi; and Sugita, Yutaka, 4,525,808, Cl. 365-36.000.
Kominami, Yasuo; Ohkubo, Yuichi; Aizawa, Kohki; and Sasaki, Satoshi, 4,525,636, Cl. 307-264.000.
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Nakamura, Shigeru; Tsunoda, Yoshito; Shigematsu, Kazuo; Kaku, Toshimitsu; Maeda, Takeshi; and Kato, Tsuyoshi, 4,525,826, Cl. 369-46.000.
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Okano, Yoshio; Okuma, Yasuo; Aizawa, Kuniomi; Oyama, Yasuyoshi; and Kitamura, Yoichiro, 4,525,712, Cl. 340-825.310.
Omoda, Koichiro; Inagami, Yasuhiro; Torii, Shunichi; and Nagashima, Shigeo, 4,525,796, Cl. 364-730.000.
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Hitachi Metals, Ltd.: *See—*
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Hochberg, Arie; Haylock, John C.; and Mason, Charles D., to Allied Corporation. Flame retardant polyamide composition. 4,525,513, Cl. 524-288.000.
Hodges, Jimmie R.: *See—*
Grier, Jesse G.; and Hodges, Jimmie R., 4,525,483, Cl. 521-28.000.
Hoechst Aktiengesellschaft: *See—*
Doessel, Karl-Friedrich, 4,525,444, Cl. 430-96.000.
Hammerschmidt, Peter; and Crass, Gunther, 4,525,416, Cl. 428-220.000.
Henning, Rainer; and Urbach, Hansjorg, 4,525,301, Cl. 260-112.50R.
Kuxdorf, Bernhard; Luhr, Peter; Werner, Hugo; Thummler, Ursus; and Dorn, Friedrich-Wilhelm, 4,525,329, Cl. 422-202.000.
Schimmel, Gunther; Heymer, Gero; Krause, Werner; and Pieper, Werner, 4,525,333, Cl. 423-112.000.
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Baas, Willem; Hof, Tette; Comes, Heinrich; Jaunich, Helmut; and Krampe, Hubert, 4,524,954, Cl. 266-45.000.
Hofer, Rainer; and Bartnick, Bernhard, to Henkel Kommanditgesellschaft (Henkel KGaA). Use of bis-semiesters of sulfosuccinic acid with polyether diols based on ethylene oxide/propylene oxide or their salts as surface-active agents. 4,525,525, Cl. 524-742.000.
Hoffman, Allan C. Normally closed duckbill valve and method of manufacture. 4,524,805, Cl. 137-846.000.
Hoffman, David W., to Ford Motor Company. Cylindrical post magnetron sputtering system. 4,525,264, Cl. 204-298.000.
Hoffman, Harry S., Jr.; Thompson, Donald R.; and Zimmerman, Luther L., to International Business Machines Corporation. Gas panel interrogation by selective sustain. 4,525,707, Cl. 340-707.000.
Hoffmann-La Roche Inc.: *See—*
Behl, Charanjit; Beskid, George; Shah, Navnit; Tossounian, Jacques; and Unowsky, Joel, 4,525,339, Cl. 424-16.000.
Hofman, Eberhard, to Robert Bosch GmbH. Fuel injection apparatus with an auxiliary pump for pilot and main injection. 4,524,737, Cl. 123-300.000.
Hogg, James W., to Anchor Wire Corporation. Double pronged fastener with partially delaminated adhesive layer. 4,524,939, Cl. 248-467.000.
Hoglund, Allen C. Portable cooking device. 4,524,751, Cl. 126-25.00A.
Hohenhovel, Paul. Pasting machine for a web of material, preferably wallpaper. 4,524,714, Cl. 118-123.000.
Hohmann, Gerhard: *See—*
Casper, Rudolf; Wendling, Peter; Konter, Wolfgang; Pampus, Gottfried; and Hohmann, Gerhard, 4,525,561, Cl. 526-220.000.
Hohmann, Thomas C.; Lewis, Norris E.; and Miller, Michael B., to Litton Systems Inc. Fiber optic rotary joint using a reflective surface and tangentially mounted rotor and stator optical fibers. 4,525,025, Cl. 350-96.150.
Hokuriku Pharmaceutical Co., Ltd.: *See—*
Itho, Yasuo; Kato, Hideo; Ogawa, Nobuo; Yamagishi, Kagari; Koshinaka, Eiichi; and Mitani, Kazuya, 4,525,356, Cl. 514-234.000.
Holberton, Philip M.; Randall, Bruce E.; and Marshall, Jay K., to Sangamo Weston, Inc. Power measurement in an electrical distribution system having three or more wires. 4,525,669, Cl. 324-142.000.
Holce, Thomas J.; and Huckins, Charles M., to Sentrol, Inc. Modular terminal housing. 4,525,018, Cl. 339-91.00R.
Holden, Kirk N., to Motorola, Inc. N-bit carry select adder circuit having only one full adder per bit. 4,525,797, Cl. 364-788.000.
Holik, Andrew S.: *See—*
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Holland, Marion D., to Robbins, Robert E. One-way brake bleeder check valve with sealing cap. 4,524,800, Cl. 137-516.270.
Holloway, Gerald C., Jr.: *See—*
Quick, Terrence R.; Standley, Paul M.; Foley, Mark P.; Howerton, Anderson W.; Miranti, Joseph P., Jr.; Oliver, Larry R.; Holloway, Gerald C., Jr.; and Richmond, Kenneth D., 4,525,150, Cl. 474-93.000.
Holman, Howard E.; and Turner, Roy D., to T. J. Electronics. Aircraft grounding receptacle. 4,525,014, Cl. 339-14.00R.
Holmberg, Albert E., to Holmberg Company, The. Prefabricated bindable sheet and binding method and apparatus. 4,525,116, Cl. 412-8.000.
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Holmwood, Graham; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Method and compositions for regulating plant growth using pyrimidine-butanol compounds. 4,525,204, Cl. 71-92.000.
Holoff, Geraldine, executrix: *See—*
Holoff, Manning, deceased; and Holoff, Geraldine, executrix, 4,524,647, Cl. 294-99.200.
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Homan, Gary R.; and Stickles, David L., to Dow Corning Corporation. Coating method and silicone composition for PSA release coating. 4,525,566, Cl. 528-17.000.
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Still, David W.; and Economopoulos, Peter C., 4,525,714, Cl. 340-825.830.
Webster, Marvin K.; Flynn, Richard T.; Porter, Marion G.; and Seminsky, George M., 4,525,777, Cl. 364-200.000.
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Mucsy, Endre; and Hoos, Kazmer, 4,525,661, Cl. 322-4.000.
Hooten, John A.: *See—*
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Hoover, Bradley R.; and Bagdal, Karl T. Roll profile gauge. 4,524,546, Cl. 51-165.00R.
Horak, Otto; Falkenberg, Werner; Muders, Rolf; and Beinert, Werner, to Bayer Aktiengesellschaft. Process for the decontamination of effluents. 4,525,283, Cl. 210-762.000.
Hori, Yasuro: *See—*
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Horiba, Ltd.: *See—*
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Horio, Kimihide: *See—*
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Horn, Richard E.; and Rodeheaver, Bradley D., to Electrochem International, Inc. Method and apparatus for electrodialysis. 4,525,259, Cl. 204-182.400.
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Horowitz, Franklin B.; Pfeffer, Martin; and Hertanu, Herold T., to Crawford & Russell, Inc. Additive inventory control, batching and delivery system. 4,525,071, Cl. 366-152.000.
Horr, Kenneth R.: *See—*
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Hosaka, Yaoji, to Toyu Food Co-Operative Corporation. Process for manufacturing flavored and patterned tofu. 4,525,373, Cl. 426-634.000.
Hoshi, Hideo; and Kamamori, Hitoshi, to Seiko Instruments & Electronics Ltd. Picture display device. 4,525,710, Cl. 340-784.000.

Hoshino, Shigetaka: *See—*
Hagiwara, Zenji; Ohki, Hideo; Hoshino, Shigetaka; Nohara, Saburo; Ida, Shunya; and Tagawa, Kenichi, 4,525,410, Cl. 428-198.000.
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Hosokawa, Teruo: *See—*
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Cole, Martin; Howarth, Thomas T.; and Reading, Christopher, 4,525,353, Cl. 424-114.000.
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Howells, Richard D.: *See—*
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Howie, John K.; and Bullock, Steven S., to Procter & Gamble Company, The. Alpha-phosphono lauramide lubricant additives. 4,525,289, Cl. 252-49.900.
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Ohmi, Shigeaki; Shingaki, Seiichi; Sakai, Hiroyuki; and Asahara, Yoshiyuki, 4,525,189, Cl. 65-3.150.
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Huber, Siegfried, to Bayerische Motoren Werke AG. Safety helmet, especially for motorcyclists. 4,524,465, Cl. 2-424.000.
Huber, William B.: *See—*
Slavik, William H.; and Huber, William B., 4,525,163, Cl. 604-65.000.
Hubner, Horst; Lydtin, Hans; Rehder, Ludwig; and Zaengel, Thomas, to U.S. Philips Corporation. Method of manufacturing an electrode for a high-pressure gas discharge lamp and electrode for such a lamp. 4,525,379, Cl. 427-53.100.
Hubsch, Hubertus: *See—*
Dimigen, Heinz; and Hubsch, Hubertus, 4,525,417, Cl. 428-244.000.
Huckins, Charles M.: *See—*
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Hudson, Barry, to BP Chemicals Limited. Coalescing agents. 4,525,512, Cl. 524-284.000.
Huff, Terrence; and Poirot, Eugene E., to Exxon Research & Engineering Co. High efficiency polymerization catalyst component for use in the polymerization of propylene and higher alpha-olefins. 4,525,467, Cl. 502-121.000.
Hughes, Frank M.: *See—*
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Hughes Helicopters, Inc.: *See—*
Wright, Dale M.; and Kiraly, Robert L., 4,524,620, Cl. 73-587.000.
Hujsak, Edward J., to General Dynamics Corporation/Convair Div. Mechanism for deploying a deployable truss beam. 4,524,552, Cl. 52-108.000.
Hulin, Rene ; and Schuler, Daniel, to Automobiles Peugeot/Automobiles Citroen. Manual control device for changing speeds including a locking of the reverse speed. 4,524,635, Cl. 74-476.000.
Hummel, Karl-Ernst; Humpolik, Bohumil; Ingelmann, Hans-Joachim; and Staffa, Karl-Heinz, to Suddeutsch Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Heat exchanger having a helical distributor located within the connecting tank. 4,524,823, Cl. 165-174.000.
Humphrey Products Company: *See—*
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Humphreys, John C., to H. Flude & Company (Hinckley) Limited. Spade gusset seaming apparatus. 4,524,705, Cl. 112-121.150.
Humphries, Benjamin T.; and Spisak, Andrew J., to Westinghouse Electric Corp. Turbine generator with stator end winding support assembly including resilient bracket. 4,525,642, Cl. 310-260.000.
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Hunter, Wood E.; and Craun, Gary P., to Calgon Corporation. Method for producing free-flowing, water-soluble polymer gels. 4,525,509, Cl. 524-141.000.
Hunting Oilfield Services (UK) Limited: *See—*
Lumsden, Norman; and Phillips, Brian K., 4,525,001, Cl. 285-328.000.
Hurley, Patrick J.: *See—*
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Hurwitt, Steven D.: *See—*
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Roche, Joseph R.; Alexander, Gabriel G.; and Carbaugh, William L., 4,524,832, Cl. 166-347.000.
Hydroperfect International H. P. I.: *See—*
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Hynek, Bernd; Valk, Giselher; and Treptau, Gerhard, to Bayer Aktiengesellschaft; and Girmes Vertriebsgesellschaft fur Industrietextilien mbH. Stabilized pile article, production and use thereof for the treatment of surfaces. 4,525,403, Cl. 428-87.000.
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Buck, Robert; Friedrich, Michael B.; Gesthuysen, Hans D.; and Marhofer, Gerd, 4,525,699, Cl. 340-512.000.
Ichida, Hiroshi: *See—*
Takahata, Kei; Murasawa, Sadao; Ichida, Hiroshi; Okada, Mizuho; and Nakayama, Takao, 4,525,441, Cl. 430-46.000.
Ichinohe, Shoji: *See—*
Shibata, Takanori; Yoshikawa, Toshiharu; Isobe, Kenichi; and Ichinohe, Shoji, 4,525,563, Cl. 526-279.000.
Ichiyanagi, Takashi: *See—*
Imanishi, Kiyokazu; Ichiyanagi, Takashi; Sakurai, Yasuo; Naka, Hirouki; and Nakagawa, Koji, 4,525,757, Cl. 360-130.240.
Ida, Shunya: *See—*
Hagiwara, Zenji; Ohki, Hideo; Hoshino, Shigetaka; Nohara, Saburo; Ida, Shunya; and Tagawa, Kenichi, 4,525,410, Cl. 428-198.000.
Ida, Toshio: *See—*
Kaibara, Nobuhiro; Ida, Toshio; Okuda, Shinji; and Motohashi, Takayuki, 4,524,914, Cl. 239-452.000.
Ide, Eizo; and Fujimura, Hiroshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Automatic weld line following method. 4,525,619, Cl. 219-124.220.
Ide, Susumu: *See—*
Kohashi, Tadao; Irie, Hiroyuki; Ide, Susumu; and Esaki, Hiroshi, 4,525,727, Cl. 346-140.00R.
Idel, Karsten; Ostlinning, Edgar; Koch, Wolfgang; and Heitz, Walter, to Bayer Aktiengesellschaft. Process for the production of optionally branched polyarylene sulphides with polyhalogenated polyaromatic compound. 4,525,579, Cl. 528-388.000.
Idemitsu Kosan Company Limited: *See—*
Tsubouchi, Toshiyuki; and Hata, Hitoshi, 4,525,290, Cl. 252-73.000.
Igarashi, Masahiko: *See—*
Nakamura, Hatsuo; Kato, Tiharu; Yonezawa, Toshio; Koguchi, Shigeo; Mori, Kiyoto; and Igarashi, Masahiko, 4,525,523, Cl. 524-572.000.
Iida, Tomimaru. Desalting system utilizing solar energy. 4,525,242, Cl. 202-177.000.
IIT Research Institute: *See—*
Bridges, Jack E.; Taflove, Allen; and Sresty, Guggilam C., 4,524,827, Cl. 166-248.000.
Ikeda, Yoshiaki, to Seikosha Co., Ltd. Device for adjusting position of printing head of printer. 4,525,084, Cl. 400-55.000.
Ikematsu, Masaki; Honzyo, Isao; and Sakai, Kazuo, to Nippon Oil Co., Ltd. Process for the solvent deasphalting of asphaltene-containing hydrocarbons. 4,525,269, Cl. 208-309.000.
Ikemoto, Shigeru. Hand wrapping apparatus. 4,524,559, Cl. 53-219.000.
Ikuma, Sadao; Aoki, Yuji; and Watanabe, Noboru, to Mitsubishi Monsanto Chemical Company. Heat resistant resin composition. 4,525,536, Cl. 525-194.000.
Imada, Isuke: *See—*
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,525,361, Cl. 514-689.000.
Imagawa, Kenichi: *See—*
Yoshida, Mitsuaki; Sugano, Haruo; Shimizu, Fumio; and Imagawa, Kenichi, 4,525,300, Cl. 260-112.50R.
Imahashi, Issei; and Asakawa, Teruo, to Telmec Co., Ltd. Positioning stage having a vibration suppressor. 4,525,659, Cl. 318-649.000.
Imai, Fusao; and Okumura, Norio, to Toyo Boseki Kabushiki Kaisha. Polyurethane elastic yarns and their production. 4,525,420, Cl. 428-372.000.
Imai, Hirosuke: *See—*
Sakata, Ko; and Imai, Hirosuke, 4,525,457, Cl. 435-178.000.
Imai, Kiyoshi: *See—*
Nakajima, Junya; Imai, Kiyoshi; and Nakamura, Takashi, 4,525,449, Cl. 430-407.000.
Imajima, Mitsuhiro: *See—*
Tomioka, Mitsuharu; and Imajima, Mitsuhiro, 4,525,137, Cl. 431-76.000.
Imamura, Shigeyuki; Misaki, Hideo; and Muto, Naoki, to Toyo Jozo Company, Ltd. Method for the production of sphingomyelinase. 4,525,458, Cl. 435-196.000.
Imani, Kambiz: *See—*
Mansouri, Mansour N.; Mansouri, Masoud N.; and Imani, Kambiz, 4,524,471, Cl. 5-8.000.
Imanishi, Kiyokazu; Ichiyanagi, Takashi; Sakurai, Yasuo; Naka, Hirouki; and Nakagawa, Koji, to Matsushita Electric Industrial Co., Ltd. Rotary head assembly. 4,525,757, Cl. 360-130.240.
Imazeki, Kazuyoshi; and Yokoyama, Nobuaki, to General Research of Electronics, Inc. Antenna with coaxial connector. 4,525,718, Cl. 343-702.000.

Imazeki, Kazuyoshi; and Wani, Hasashi, to General Research of Electronics, Inc. Amplified video signal distributing apparatus. 4,525,738, Cl. 358-181.000.

Imhof, Heinrich, to Ingenieurburo Imhof GmbH. Assembly for sealing an annular gap between the wall of a large vessel and a floating cover. 4,524,878, Cl. 220-224.000.

Imperial Chemical Industries Limited: *See—*
Dalton, Raymond F.; Price, Raymond; Quan, Peter M.; and Stewart, David, 4,525,330, Cl. 423-24.000.

Imphy S.A.: *See—*
Duffaut, Francois, 4,525,431, Cl. 428-638.000.

INA Walzlager Schaeffler KG: *See—*
Bender, Rolf; Jacob, Werner; and Pfuderer, Horst, 4,524,671, Cl. 89-14.050.

Inagami, Yasuhiro: *See—*
Omoda, Koichiro; Inagami, Yasuhiro; Torii, Shunichi; and Nagashima, Shigeo, 4,525,796, Cl. 364-730.000.

Inagi, Toshio; Muramatsu, Toyojiro; and Nagai, Hidetaka, to Kowa Company Limited. Antiinflammatory analgesic gelled ointment. 4,525,347, Cl. 424-81.000.

Inamura, Akio, to Yoshida Kogyo K. K. Watertight slide fastener. 4,524,493, Cl. 24-389.000.

Indian Head Inc.: *See—*
Pate, Harold T.; and Fochler, Helmut P., 4,524,999, Cl. 285-158.000.

Industrial Management Co.: *See—*
Rooklyn, Jack, 4,525,398, Cl. 428-40.000.

Ingelmann, Hans-Joachim: *See—*
Hummel, Karl-Ernst; Humpolik, Bohumil; Ingelmann, Hans-Joachim; and Staffa, Karl-Heinz, 4,524,823, Cl. 165-174.000.

Ingenieurburo Imhof GmbH: *See—*
Imhof, Heinrich, 4,524,878, Cl. 220-224.000.

Ingeniorsfirma N.D.C. Netzler & Dahlgren Co Aktiebolag: *See—*
Nilsson, Arne H. A., 4,524,931, Cl. 246-167.00D.

Inooka, Masayoshi, to Chiyoda Chemical Engineering & Construction Co., Ltd. Process for hydrocracking hydrocarbons with hydrotreatment-regeneration of spent catalyst. 4,525,267, Cl. 208-58.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,524,543, Cl. 51-34.00R.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Vibratory abrasive contour-finishing method and apparatus. 4,524,543, Cl. 51-34.00R.

Inoue, Masao; Suzuki, Shingo; and Gotoh, Hajime, to Mitsubishi Rayon Co., Ltd. Rear projection screen. 4,525,029, Cl. 350-128.000.

Intech Corporation: *See—*
Glaze, John W., Jr., 4,524,889, Cl. 223-76.000.

Integral Profilsystem Ab: *See—*
Johansson, Lars, 4,525,408, Cl. 428-159.000.

Intermedicat GmbH: *See—*
Leclerc, Roland-Yves J., 4,525,166, Cl. 604-133.000.

International Business Machines Corporation: *See—*
Alpaugh, Warren A.; Amelio, William J.; Markovich, Voya; and Sambucetti, Carlos J., 4,525,390, Cl. 427-305.000.
Barnes, Johnny G.; Hooten, John A.; Hurley, Patrick J.; and Miller, Ernest L., 4,525,806, Cl. 364-900.000.
Beha, Johannes G.; Jaeckel, Heinz; and Vettiger, Peter, 4,525,730, Cl. 357-5.000.
Bradshaw, Richard L., 4,525,424, Cl. 428-425.900.
Chappell, Terry I.; Jackson, Thomas N.; and Woodall, Jerry M., 4,525,731, Cl. 357-12.000.
Cochran, William H.; and Wu, Philip T., 4,525,810, Cl. 365-102.000.
Cruz, Claude A.; and Vermeulen, Johannes C., 4,525,641, Cl. 307-465.000.
Field, Thomas R.; Hughes, Frank M.; Shakib, Iraj D.; and Vitek, Edward J., Jr., 4,525,086, Cl. 400-144.200.
Franaszek, Peter A.; and Yarmchuk, Edward J., 4,525,724, Cl. 346-74.500.
Gray, Randall C., 4,525,638, Cl. 307-350.000.
Hoffman, Harry S., Jr.; Thompson, Donald R.; and Zimmerman, Luther L., 4,525,707, Cl. 340-707.000.
Patel, Arvind M., 4,525,838, Cl. 371-37.000.
Sachdev, Krishna G.; Sachdev, Harbans S.; Aviram, Ari; and Wizner, Mark A., 4,525,722, Cl. 346-1.100.

International Flavors & Fragrances Inc.: *See—*
Wiegers, Wilhelmus J.; Fenn, Ronald S.; Boden, Richard M.; and Schreiber, William L., 4,524,783, Cl. 131-276.000.
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,525,364, Cl. 426-3.000.

International Standard Electric Corporation: *See—*
Vance, Ian A. W.; and Bainton, Stephen D., 4,525,835, Cl. 370-29.000.

International Telephone and Telegraph Corporation: *See—*
Ghosh, Chuni L., 4,525,448, Cl. 430-314.000.
Gullotti, Damian V.; Winter, Joseph; Young, Kenneth P.; and Evans, Robert D., 4,524,820, Cl. 164-476.000.

Interox Chemicals Limited: *See—*
Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., 4,525,291, Cl. 252-95.000.

Intevep, S.A.: *See—*
Morales, Alfredo; Galiasso, Roberto; and Carrasquel, Angel R., 4,525,472, Cl. 502-323.000.

Intini, Anthony V., Jr. Flat tip spoon. 4,524,513, Cl. 30-149.000.

Iowa State University Research Foundation, Inc.: *See—*
Pabst, Mark W.; and Handy, Richard L., 4,524,626, Cl. 73-784.000.

Irie, Hiroyuki: *See—*
Kohashi, Tadao; Irie, Hiroyuki; Ide, Susumu; and Esaki, Hiroshi, 4,525,727, Cl. 346-140.00R.

Irvine, Robert: *See—*
Silverman, Harold; Ramsey, James S.; and Irvine, Robert, 4,524,557, Cl. 53-55.000.

Iscar Limited: *See—*
Porat, Reuven, 4,525,415, Cl. 428-216.000.

Isernhagen, Fritz: *See—*
Reinecke, Erich; and Isernhagen, Fritz, 4,524,850, Cl. 188-71.800.

Ishida, Takashi: *See—*
Tominari, Noboru; and Ishida, Takashi, 4,524,745, Cl. 123-478.000.

Ishihara Sangyo Kaisha, Ltd.: *See—*
Takahata, Kei; Murasawa, Sadao; Ichida, Hiroshi; Okada, Mizuho; and Nakayama, Takao, 4,525,441, Cl. 430-46.000.

Ishii, Fumiaki: *See—*
Sasa, Hiroyuki; Yabe, Hisao; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, 4,525,220, Cl. 134-21.000.

Ishii, Shinichi: *See—*
Someno, Tetsuya; Kato, Kazuo; Saino, Tetsushi; Ishii, Shinichi; Takeuchi, Tomio; and Umezawa, Hamao, 4,525,465, Cl. 502-7.000.

Ishii, Tamaki: *See—*
Yachigo, Shinichi; Ishii, Tamaki; Takahashi, Yukoh; and Terada, Yutaka, 4,525,514, Cl. 524-291.000.

Ishikawa, Toshiro: *See—*
Shimeki, Yasuharu; Kato, Misao; Matsushima, Hiroshi; and Ishikawa, Toshiro, 4,525,753, Cl. 360-45.000.

Ishikawa, Yukio: *See—*
Yasukawa, Motohiro; Ishikawa, Yukio; Ojima, Yasuo; Harada, Hiromi; and Mori, Yoshiaki, 4,525,208, Cl. 75-25.000.

Ishino, Ken; and Hashimoto, Yasuo, to TDK Corporation. Absorber device for microwave leakage. 4,525,614, Cl. 219-10.55D.

Ishiyama, Shinobu: *See—*
Konomi, Toshiaki; and Ishiyama, Shinobu, 4,525,781, Cl. 364-431.010.

Ishizaki, Keiichi; and Fuchigami, Shuzo, to Fuji Photo Film Company, Limited. Method of simultaneously applying multiple layers to web. 4,525,392, Cl. 427-420.000.

Isobe, Kenichi: *See—*
Shibata, Takanori; Yoshikawa, Toshiharu; Isobe, Kenichi; and Ichinohe, Shoji, 4,525,563, Cl. 526-279.000.

Isoya, Toshiro: *See—*
Yamataka, Kazunori; and Isoya, Toshiro, 4,525,251, Cl. 204-79.000.

Isuzu Motor, Ltd.: *See—*
Kawamura, Hideo; Sagawa, Nobukazu; and Yamamoto, Noriyoshi, 4,525,622, Cl. 219-270.000.

Italiano, Pietro; and Riva, Ermete, to Carlo Erba Strumentazione S.p.A. Porosimeter with detection by capacity variations. 4,524,605, Cl. 73-38.000.

Itami, Teruhiko: *See—*
Nishimura, Nobuo; Itami, Teruhiko; Kimoto, Toshifumi; Tomiyama, Shunsuke; and Saitoh, Koichi, 4,525,723, Cl. 346-74.400.

Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, to Konishiroku Photo Industry Co., Ltd. Developing means for electrostatic latent image. 4,525,056, Cl. 355-3.0DD.

Itho, Yasuo; Kato, Hideo; Ogawa, Nobuo; Yamagishi, Kagari; Koshinaka, Eiichi; and Mitani, Kazuya, to Hokuriku Pharmaceutical Co., Ltd. N-substituted flavone-8-carboxamides. 4,525,356, Cl. 514-234.000.

Itikawa, Tadao: *See—*
Hayashi, Ikuo; Itikawa, Tadao; Ogihara, Keizo; and Shimizu, Kiyoshi, 4,525,576, Cl. 528-313.000.

ITM International Tool Machines Inc.: *See—*
Giebmanns, Karl-Heinz, 4,524,545, Cl. 51-99.000.

Ito, Kenichi; Musha, Tohru; Kato, Kiichi; and Yamamoto, Kimiaki, to Olympus Optical Co., Ltd. Method and apparatus for detecting focussing and tracking error signals. 4,525,825, Cl. 369-45.000.

Ito, Kiyoshi, to Komori Printing Machinery Co., Ltd. Varnish coater for printed product. 4,524,712, Cl. 118-46.000.

Ito, Osamu; Yamasaki, Harumasa; Minakata, Itsuo; and Nishizawa, Kazunori, to Kao Corporation. Twisted yarn. 4,524,577, Cl. 57-200.000.

Itoh, Isamu; and Hirose, Takeshi. Silver halide color photographic light sensitive material containing a coupler containing at least one of a sulfamoylphenylenesulfonyl, sulfamoylaminophenylenesulfonyl, or sulfoamidophenylenesulfonyl group. 4,525,450, Cl. 430-552.000.

Iwata, Ryuichi: *See—*
Sato, Ikuro; and Iwata, Ryuichi, 4,525,719, Cl. 343-761.000.

Iwatani, Kazutoshi: *See—*
Tanaka, Toru; Iwatani, Kazutoshi; Enokido, Nobuo; Murakami, Atsushi; and Yamaguchi, Yukio, 4,525,554, Cl. 526-124.000.

Iwatsu Electric Co., Ltd.: *See—*
Kinoshita, Kunio; and Kokaji, Norio, 4,525,725, Cl. 346-74.500.
Sawano, Katsutoshi; and Miyashita, Tetsuharu, 4,525,667, Cl. 324-140.00R.

J/Mac Corporation: *See—*
Jones, William R., 4,524,912, Cl. 239-150.000.

J. Stanley Miller Corporation: *See—*
Miller, Stanley, 4,525,243, Cl. 202-181.000.

Jackson, Thomas N.: *See—*
Chappell, Terry I.; Jackson, Thomas N.; and Woodall, Jerry M., 4,525,731, Cl. 357-12.000.

Jacob, Ezekiel J.: *See—*
Pitz, Richard J.; and Jacob, Ezekiel J., 4,525,147, Cl. 433-224.000.

Jacob, Philippe: *See—*
Gourlia, Jean-Paul; Jacob, Philippe; and Jamen, Robert, 4,525,244, Cl. 203-26.000.

Jacob, Werner: *See—*
Bender, Rolf; Jacob, Werner; and Pfuderer, Horst, 4,524,671, Cl. 89-14.050.

Jacobs, Erwin P.: *See—*
Schwabe, Ulrich; Jacobs, Erwin P.; and Neppl, Franz, 4,525,378, Cl. 427-38.000.

Jaeckel, Heinz: *See—*
Beha, Johannes G.; Jaeckel, Heinz; and Vettiger, Peter, 4,525,730, Cl. 357-5.000.

Jaggi, Ernst, to Swiss Aluminium Ltd. Device for controlled batch feeding of a fluidizible particulate material and process for its operation. 4,525,105, Cl. 406-50.000.

Jamen, Robert: *See—*
Gourlia, Jean-Paul; Jacob, Philippe; and Jamen, Robert, 4,525,244, Cl. 203-26.000.

James Burn Bindings Limited: *See—*
Jones, Leonard W. N., 4,525,117, Cl. 412-39.000.

James, Jack E.: *See—*
Freeman, Edward J.; Economou, John E.; Pecorari, John G.; John, Gunter; Halter, Jerome B.; James, Jack E.; Castle, Richard M.; and Palmer, Richard C., 4,525,751, Cl. 358-342.000.

Jamet, Jean; Poupeau, Jean-Jacques; Omnes, Jacqueline; and Le Pennec, Claude, to Commissariat a l'Energie Atomique; and Office National d'Etudes et de Recherche Aerospatiales. Process for the manufacture of compact composite carbonaceous materials by densification of porous carbonaceous substrates. 4,525,337, Cl. 423-449.000.

Jamieson, H. William, Jr., to Offset Engineering, Inc. Apparatus for transferring printed material onto a chain delivery. 4,524,964, Cl. 271-204.000.

Jamieson, John R., to Vickers p.l.c. Derrick crane. 4,524,875, Cl. 212-239.000.

Janczer, Peter: *See—*
Brugger, Manfred; Janczer, Peter; and Peter, Hans, 4,524,817, Cl. 164-290.000.

Jansen, Dirk: *See—*
Wildermuth, Eberhard; Jansen, Dirk; Burkhardt, Rudolf; and Merz, Joachim, 4,525,717, Cl. 343-452.000.

Japan Inorganic Material Co., Ltd.: *See—*
Kawai, Kyosuke; Nakagawa, Mitsuru; Yanase, Shinji; and Kawai, Kiyoshi, 4,525,190, Cl. 65-14.000.

Japanese Foundation for Cancer Research: *See—*
Yoshida, Mitsuaki; Sugano, Haruo; Shimizu, Fumio; and Imagawa, Kenichi, 4,525,300, Cl. 260-112.50R.

Jasch, Gunter: *See—*
Neumann, Manfred; Schiller, Siegfried; ZeiBig, Gerhard; Morgner, Henry; and Jasch, Gunter, 4,524,717, Cl. 118-718.000.

Jaschke, Max J.: *See—*
Seitz, Fred H.; and Jaschke, Max J., 4,524,976, Cl. 273-388.000.

Jason, Barry L., to Motorola, Inc. Current mirror having base current error cancellation circuit. 4,525,683, Cl. 330-288.000.

Jaunich, Helmut: *See—*
Baas, Willem; Hof, Tette; Comes, Heinrich; Jaunich, Helmut; and Krampe, Hubert, 4,524,954, Cl. 266-45.000.

Jeanrat, Roger G.; Martin, Pierre M.; and Hardy, Georjes, to Methode Champenoise Automatisee-M C.A. G.I.E. Device for riddling bottles according to the champagne method. 4,524,680, Cl. 99-277.100.

Jeffrey, Jewell W., to Lewis, Lloyd James, a part interest. Combination level system for a thin rule. 4,524,527, Cl. 33-451.000.

Jensen, Jack E., to CVI Incorporated. Cryogenic refrigerator. 4,524,586, Cl. 62-6.000.

Jensen, Thomas H., to PPG Industries, Inc. Fiber forming bushing and method for using same. 4,525,188, Cl. 65-1.000.

Jidosha Kiki Co., Ltd.: *See—*
Kobayashi, Michio, 4,524,584, Cl. 60-554.000.

Jin-Luh, Su: *See—*
Maw-Cheng, Shieh; Seng-Jung, Chen; Li-Jung, Hu; and Jin-Luh, Su, 4,525,210, Cl. 75-58.000.

Johansson, Lars, to Integral Profilsystem Ab. Insulation of aluminum profiles in a fixture. 4,525,408, Cl. 428-159.000.

John, Gunter: *See—*
Freeman, Edward J.; Economou, John E.; Pecorari, John G.; John, Gunter; Halter, Jerome B.; James, Jack E.; Castle, Richard M.; and Palmer, Richard C., 4,525,751, Cl. 358-342.000.

John Hopkins University, The: *See—*
Fischell, Robert E.; Newman, Arnold L.; Riblet, Henry B.; and Powell, William R., 4,524,773, Cl. 128-419.00S.

Johns Hopkins University, The: *See—*
Fischell, Robert E., 4,525,165, Cl. 604-131.000.

Johnson, Benjamin M., to Electric Power Research Institute, Inc. Steam condensing apparatus. 4,524,728, Cl. 122-459.000.

Johnson, James D.; Belden, Byron B.; and Kamp, Terrence A., to Reliance Electric Company. Powdered metal, flanged bushing for securing machine elements to shafts. 4,525,094, Cl. 403-11.000.

Johnson & Johnson Dental Products Company: *See—*
Martin, Brian, 4,525,256, Cl. 204-159.180.

Johnson, Martin: *See—*
Baker, Peter J.; Brookes, David A.; and Johnson, Martin, 4,525,173, Cl. 44-51.000.

Johnson Matthey Public Limited Company: *See—*
Heywood, Alan E., 4,525,433, Cl. 428-670.000.

Johnson Products Co., Inc.: *See—*
Khalil, Ezzat N.; and Cheslow, Ernest, 4,524,787, Cl. 132-7.000.

Joint Medical Products Corp.: *See—*
DeCarlo, Alfred F., Jr., 4,524,467, Cl. 603-22.000.

Jones, Larry J., to Gard Corporation. Ampule cleaning and quality control system. 4,525,219, Cl. 134-1.000.

Jones, Leonard W. N., to James Burn Bindings Limited. Wire binding machines. 4,525,117, Cl. 412-39.000.

Jones, Stephen R., to Standard Telephones and Cables plc. Optical fibre reinstatement. 4,525,312, Cl. 264-1.500.

Jones, Wendy; and Gerber, Bego, to BTC Diagnostics Limited Partnership. Enzyme immunoassay with step of immersing sample in deionized water. 4,525,452, Cl. 435-7.000.

Jones, William H.; and Chambers, Worthy L., to Eaton Corporation. Thermally responsive controller and switch assembly therefor. 4,525,697, Cl. 337-354.000.

Jones, William R., to J/Mac Corporation. Agricultural portable chemical applicator with protective shield. 4,524,912, Cl. 239-150.000.

Jordan, Alfons: *See—*
Krude, Werner; Jordan, Alfons; and Harz, Peter, 4,525,098, Cl. 403-280.000.

Joseph Ayers, Inc.: *See—*
Pratt, Charles E., 4,525,307, Cl. 556-182.000.

Jouve, Hubert; and Magnin, Joel, to Commissariat a l'Energie Atomique. Magnetic bubble store with non-implanted motifs and method for controlling the same. 4,525,807, Cl. 365-36.000.

Judas, Herbert: *See—*
Weiss, Ervin; Rosenberg, Melvin; and Judas, Herbert, 4,525,342, Cl. 424-49.000.

Jufuku, Yasunobu: *See—*
Okawa, Susumu; Matsui, Hideaki; Jufuku, Yasunobu; and Kato, Toshimi, 4,525,160, Cl. 474-242.000.

Junker, Otto: *See—*
Hage, Manfred; and Junker, Otto, 4,524,822, Cl. 165-141.000.

Junkosha Company Ltd.: *See—*
Suzuki, Hirosuke; and Ohki, Hajime, 4,525,693, Cl. 333-236.000.
Yasumoto, Hiromi, 4,525,020, Cl. 339-99.00R.

K-Tron International, Inc.: *See—*
Wilson, David H.; and Loe, James M., 4,524,886, Cl. 222-58.000.

Kabashima, Shoshi: *See—*
Hara, Yoshihumi; Takano, Hiroji; Kabashima, Shoshi; and Hasegawa, Mikio, 4,524,507, Cl. 29-564.200.

Kabushiki Kaisha Kanemitsu: *See—*
Oda, Misao, 4,524,595, Cl. 72-84.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Suzuki, Norio; Kajikawa, Hiroshi; and Nishikawa, Tadashi, 4,524,622, Cl. 73-620.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Nishikawa, Yoshinori; and Takahashi, Iwashige, 4,525,706, Cl. 340-679.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Koto, Haruhiko, 4,525,728, Cl. 346-140.00R.
Kubota, Satoshi; Nakashima, Mikito; Mogami, Takao; and Nakagawa, Tetsuo, 4,525,421, Cl. 428-412.000.
Ota, Tadashi, 4,525,033, Cl. 350-350.00R.

Kabushiki Kaisha Universal: *See—*
Nishikawa, Ikuo, 4,524,636, Cl. 74-527.000.

Kage, Kouzou; and Watanabe, Hiroshi, to Nippon Electric Co., Ltd.; and Nippon Telegraph & Telephone Public Corporation. Interference wave detection circuit for use in radio receiver. 4,525,868, Cl. 455-206.000.

Kagiura, Kazuo: *See—*
Hirabayashi, Hiromitsu; Sakurai, Masaaki; and Kagiura, Kazuo, 4,525,058, Cl. 355-3.0FU.

Kaibara, Nobuhiro; Ida, Toshio; Okuda, Shinji; and Motohashi, Takayuki, to Diesel Kiki Co., Ltd. Throttling pintle-type fuel injection nozzle having an improved initial injection characteristic. 4,524,914, Cl. 239-452.000.

Kaiser, Gregory A.; DeMunda, Gabriel P.; and Tressler, Richard E., to Kennecott Corporation. Porous semiconductor dopant carriers. 4,525,429, Cl. 428-566.000.

Kajikawa, Hiroshi: *See—*
Suzuki, Norio; Kajikawa, Hiroshi; and Nishikawa, Tadashi, 4,524,622, Cl. 73-620.000.

Kaku, Toshimitsu: *See—*
Nakamura, Shigeru; Tsunoda, Yoshito; Shigematsu, Kazuo; Kaku, Toshimitsu; Maeda, Takeshi; and Kato, Tsuyoshi, 4,525,826, Cl. 369-46.000.

Kamachi, Hajime: *See—*
Aburaki, Shimpei; Kamachi, Hajime; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,525,473, Cl. 514-202.000.

Kamada, Kazumasa; Tamai, Katsumi; Abe, Kazunori; and Shiraishi, Yoshinobu, to Mitsubishi Rayon Co., Ltd. Methacrylic resin shaped article, process for producing the same and process for producing a shaped article having a mat surface from said resin shaped article. 4,525,537, Cl. 525-198.000.

Kamamori, Hitoshi: *See—*
Hoshi, Hideo; and Kamamori, Hitoshi, 4,525,710, Cl. 340-784.000.

Kameya, Kazuo, to Elmec Corporation. Variable delay line. 4,525,691, Cl. 333-139.000.

Kamimura, Masanori: *See—*
Tanaka, Hideki; Kamimura, Masanori; Horikawa, Koji; and Kawasaki, Katsuyuki, 4,525,158, Cl. 474-167.000.

Kammiller, Neil A., to Reliance Electric Company. Circuit for synchronizing a switching power supply to a load clock. 4,525,674, Cl. 328-63.000.

Kamp, Terrence A.: *See—*
Johnson, James D.; Belden, Byron B.; and Kamp, Terrence A., 4,525,094, Cl. 403-11.000.

Kanazawa, Hirotaka, to Mazda Motor Corporation. Flexible coupling for providing variable rate steering. 4,524,842, Cl. 180-132.000.

Kanbe, Junichiro: *See—*
Shirai, Shigeru; Kanbe, Junichiro; and Fukuda, Tadaji, 4,525,442, Cl. 430-57.000.

Kanebo, Ltd.: *See—*
Hagiwara, Zenji; Ohki, Hideo; Hoshino, Shigetaka; Nohara, Saburo; Ida, Shunya; and Tagawa, Kenichi, 4,525,410, Cl. 428-198.000.
Matsui, Masao; Okamoto, Kazuo; and Naruse, Tutomu, 4,525,404, Cl. 428-92.000.

Kanebo Synthetic Fibers, Ltd.: *See—*
Matsui, Masao; Okamoto, Kazuo; and Naruse, Tutomu, 4,525,404, Cl. 428-92.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Shigeru; and Nakamura, Munehiro, 4,525,486, Cl. 521-59.000.
Maeda, Hirofumi; Nakamura, Kyoichi; and Fukui, Hisatoshi, 4,525,485, Cl. 521-58.000.
Mathumoto, Sigemi; Kubota, Hidetaka; and Nagoshi, Fumiya, 4,525,530, Cl. 525-84.000.

Kaniwec, George N.: *See—*
Krehel, Charles A.; and Kaniwec, George N., 4,524,617, Cl. 73-296.000.

Kanto Chemical Co., Inc.: *See—*
Hagiwara, Zenji; Ohki, Hideo; Hoshino, Shigetaka; Nohara, Saburo; Ida, Shunya; and Tagawa, Kenichi, 4,525,410, Cl. 428-198.000.
Nakamura, Hatsuo; Kato, Tiharu; Yonezawa, Toshio; Koguchi, Shigeo; Mori, Kiyoto; and Igarashi, Masahiko, 4,525,523, Cl. 524-572.000.

Kantor, Frederick W. Rotary thermodynamic apparatus and method. 4,524,587, Cl. 62-101.000.

Kanzaki Paper Manufacturing Company, Ltd.: *See—*
Shioi, Shunsuke; Matoba, Gensuke; and Miyake, Makoto, 4,525,520, Cl. 524-512.000.

Kao Corporation: *See—*
Ito, Osamu; Yamasaki, Harumasa; Minakata, Itsuo; and Nishizawa, Kazunori, 4,524,577, Cl. 57-200.000.

Karady, Sandor: *See—*
Amato, Joseph S.; Karady, Sandor; and Weinstock, Leonard M., 4,525,582, Cl. 534-558.000.

Karmann, Rudiger: *See—*
Hamel, Peter; and Karmann, Rudiger, 4,525,784, Cl. 364-434.000.

Karn, Donald L., to Monarch Marking Systems, Inc. Print head and method of making same. 4,524,686, Cl. 101-111.000.

Karol, Herman S.: *See—*
Lamb, Miles P.; and Karol, Herman S., 4,525,095, Cl. 403-16.000.

Kashiwa, Norio: *See—*
Ueda, Takashi; and Kashiwa, Norio, 4,525,469, Cl. 502-125.000.

Kashiwaya, Mineo; Morita, Kiyomi; and Sakamoto, Masahide, to Hitachi, Ltd. Engine control method. 4,524,739, Cl. 123-339.000.

Kashiyama, Hajime: *See—*
Yagi, Yoshio; Kondo, Toshihiko; Matsubara, Norio; Miyazaki, Shoichiro; Kashiyama, Hajime; and Shibata, Makoto, 4,524,562, Cl. 53-409.000.

Kaspe, Paul E., to Prolite Plastics Limited. Method and apparatus for forming a single flange pipe adapter. 4,525,319, Cl. 264-322.000.

Kato, Akifumi; Yoshida, Junichi; and Yamamoto, Ryoichi, to Mitsui Petrochemical Industries Ltd. Process for producing ethylene copolymer by gaseous phase copolymerization. 4,525,547, Cl. 526-68.000.

Kato, Hideo: *See—*
Itho, Yasuo; Kato, Hideo; Ogawa, Nobuo; Yamagishi, Kagari; Koshinaka, Eiichi; and Mitani, Kazuya, 4,525,356, Cl. 514-234.000.

Kato, Hidetoshi; Sada, Takeshi; Mayumi, Nobuo; and Matsuhashi, Hajime, to Nippondenso Co., Ltd. Battery charging control system for automobile. 4,525,662, Cl. 322-28.000.

Kato, Kazuo: *See—*
Someno, Tetsuya; Kato, Kazuo; Saino, Tetsushi; Ishii, Shinichi; Takeuchi, Tomio; and Umezawa, Hamao, 4,525,465, Cl. 502-7.000.

Kato, Kiichi: *See—*
Ito, Kenichi; Musha, Tohru; Kato, Kiichi; and Yamamoto, Kimiaki, 4,525,825, Cl. 369-45.000.

Kato, Kunitoshi, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for operating plural poly phase A.C. motors having a common load. 4,525,656, Cl. 318-85.000.

Kato, Misao: *See—*
Shimeki, Yasuharu; Kato, Misao; Matsushima, Hiroshi; and Ishikawa, Toshiro, 4,525,753, Cl. 360-45.000.

Kato, Mitsumi, to Nippon Gakki Seizo Kabushiki Kaisha. Musical tone forming system. 4,524,666, Cl. 84-1.030.

Kato, Shigeru: *See—*
Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Shigeru, 4,525,824, Cl. 369-45.000.

Kato, Tiharu: *See—*
Nakamura, Hatsuo; Kato, Tiharu; Yonezawa, Toshio; Koguchi, Shigeo; Mori, Kiyoto; and Igarashi, Masahiko, 4,525,523, Cl. 524-572.000.

Kato, Toshimi: *See—*
Okawa, Susumu; Matsui, Hideaki; Jufuku, Yasunobu; and Kato, Toshimi, 4,525,160, Cl. 474-242.000.

Kato, Tsuyoshi: *See—*
Nakamura, Shigeru; Tsunoda, Yoshito; Shigematsu, Kazuo; Kaku, Toshimitsu; Maeda, Takeshi; and Kato, Tsuyoshi, 4,525,826, Cl. 369-46.000.

Kato, Yukiteru; and Watanabe, Kazuhiro, to Lotte Co., Ltd. Coated frozen-dessert and a process for preparation thereof. 4,525,365, Cl. 426-101.000.

Katsaros, Arthur T.: *See—*
Woodward, Donald W.; Katsaros, Arthur T.; and Rowles, Howard C., 4,525,187, Cl. 62-31.000.

Katsma, William L.: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,524,941, Cl. 248-544.000.

Katto, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for inverter. 4,525,660, Cl. 318-798.000.

Kaufmann, Heinrich; and Brenner, Friedhelm, to Develop Dr. Eisbein GmbH & Co. Guide path for transfer of sheets to a fixing apparatus of a copying machine. 4,525,057, Cl. 355-3.0FU.

Kawabe, Kiyoshi: *See—*
Tajima, Yoshio; Miyoshi, Mituji; Sugita, Shoji; Kawabe, Kiyoshi; and Matsuura, Kazuo, 4,525,555, Cl. 526-125.000.

Kawabe, Tadashi: *See—*
Tanaka, Minoru; and Kawabe, Tadashi, 4,525,335, Cl. 423-344.000.

Kawada, Mitsuru: *See—*
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,525,361, Cl. 514-689.000.

Kawai, Kiyoshi: *See—*
Kawai, Kyosuke; Nakagawa, Mitsuru; Yanase, Shinji; and Kawai, Kiyoshi, 4,525,190, Cl. 65-14.000.

Kawai, Kyosuke; Nakagawa, Mitsuru; Yanase, Shinji; and Kawai, Kiyoshi, to Japan Inorganic Material Co., Ltd. Apparatus for producing glass fibers with centrifugal force. 4,525,190, Cl. 65-14.000.

Kawakami, Yasuo, to Pioneer Electronic Corporation. Device for generating a tuning frequency set command signal of a tuner system. 4,525,864, Cl. 455-160.000.

Kawamura, Hideo; Sagawa, Nobukazu; and Yamamoto, Noriyoshi, to Isuzu Motor, Ltd.; and Kyoto Ceramic Co., Ltd. Ceramic glow plug. 4,525,622, Cl. 219-270.000.

Kawana, Akio: *See—*
Okamoto, Katsunari; Edahiro, Takao; Kawana, Akio; and Miya, Tetsuo, 4,525,027, Cl. 350-96.300.

Kawasaki, Katsuyuki: *See—*
Tanaka, Hideki; Kamimura, Masanori; Horikawa, Koji; and Kawasaki, Katsuyuki, 4,525,158, Cl. 474-167.000.

Kawashima, Hirofumi, to Seiko Instruments & Electronics, Ltd. Flexural mode vibrator formed of lithium tantalate. 4,525,646, Cl. 310-360.000.

Kawashima, Kazue, to Tokyo Shibaura Denki Kabushiki Kaisha. Gas insulated switch. 4,525,612, Cl. 200-147.00R.

Kawatani, Masafumi: *See—*
Maeda, Kiyoshi; and Kawatani, Masafumi, 4,525,749, Cl. 358-290.000.

Kaye, Gordon E.; and Agnello, Joseph A., Jr., to Univention Incorporated. Position actuated illuminated gunsight. 4,524,534, Cl. 42-1.00S.

Keem, John E.; and Marshall, Gerald F., to Energy Conversion Devices, Inc. Point source X-ray focusing device. 4,525,853, Cl. 378-84.000.

Keene Corporation: *See—*
Harriman, Robert W., 4,525,595, Cl. 174-35.0GC.

Kefalas A/S: *See—*
Perregaard, Jens K., 4,525,360, Cl. 514-277.000.

Kelley, Robert E.; and Prince, David. Device for cleaning teeth and orthodontal braces. 4,524,790, Cl. 132-84.00R.

Kelly, David R., to Professional Chemical & Color, Inc. Method of treating polyaramid fiber. 4,525,168, Cl. 8-130.100.

Kelman, Charles D. Intraocular lenses. 4,524,468, Cl. 603-6.000.

Kemp, Richard A.: *See—*
Heilman, William J.; and Kemp, Richard A., 4,525,557, Cl. 526-128.000.

Kemper, Kyran B.; and Rubin, Harvey, to AT&T Bell Laboratories. Programmable network tester with data formatter. 4,525,789, Cl. 364-481.000.

Kemper, Reinhard: *See—*
Lotsch, Wolfgang; Kemper, Reinhard; and Schefczik, Ernst, 4,525,591, Cl. 544-250.000.

Kempton, Calvin E.: *See—*
Kenyon, Richard L.; and Kempton, Calvin E., 4,524,906, Cl. 236-12.110.

Kendall Company, The: *See—*
Van Overloop, Ronald R., 4,525,091, Cl. 401-134.000.

Kennecott Corporation: *See—*
Boecker, Wolfgang D. G.; and Hailey, Laurence N., 4,525,461, Cl. 501-90.000.
Kaiser, Gregory A.; DeMunda, Gabriel P.; and Tressler, Richard E., 4,525,429, Cl. 428-566.000.

Kenyon, Richard L.; and Kempton, Calvin E., to Parker-Hannifin Corporation. Temperature control valve and sensor/controller therefor. 4,524,906, Cl. 236-12.110.

Kershaw, Robert: *See—*
Soled, Stuart L.; Wold, Aaron; and Kershaw, Robert, 4,525,206, Cl. 75-0.5BA.

Ketcham, Russell S.: *See—*
Bulka, Raymond I.; Ketcham, Russell S.; and Mak, Kelvin K., 4,525,118, Cl. 414-43.000.

Ketner, Eugene N. Timepiece having central opening. 4,525,077, Cl. 368-77.000.

Keyes, Richard E.; and Dirksing, John W., to Finn Corporation. Dispersing machine for large bales. 4,524,916, Cl. 241-101.00A.

Khalil, Ezzat N.; and Cheslow, Ernest, to Johnson Products Co., Inc. Hair relaxer. 4,524,787, Cl. 132-7.000.

Khramov, Rem A.: *See—*
Kisil, Evgeny D.; Komova, Svetlana N.; Kulikova, Olga A.; Kutyanin, Leonid I.; Popova, Larisa V.; Dyatlova, Nina M.; Lastovsky, Rostislav P.; Yaroshenko, Galina F.; Khramov, Rem A.; Dytjuk, Leonid T.; Samakaev, Rafail K.; and Vasnev, Anatoly N., 4,525,293, Cl. 252-181.000.

Kidawara, Atsushi; and Kobayashi, Kazunari, to Olympus Optical Co., Ltd. Film cassette. 4,524,920, Cl. 242-71.100.

Kienzle Apparate GmbH: *See—*
Goedecke, Wolf-Dieter; Schneckenburger, Gerhard; and Schwenzer, Reinhard, 4,524,804, Cl. 137-625.640.

Kikuchi, Katsutoshi: *See—*
Ohsaki, Kozo; Kikuchi, Katsutoshi; and Hirota, Yoshitsugu, 4,525,482, Cl. 518-707.000.

Kim, Sang K., to Oh, Myung Keun; and Poong San Metal Corp. Tricycles. 4,524,987, Cl. 280-204.000.

Kim, Tai K.: *See—*
Cheresnowsky, Michael J.; Brunelli, Timothy A.; Munn, Robin W.; and Kim, Tai K., 4,525,331, Cl. 423-54.000.

Kimberlin, Fred, Jr. Tab can opening tool. 4,524,646, Cl. 81-3.550.

Kimoto, Toshifumi: *See—*
Nishimura, Nobuo; Itami, Teruhiko; Kimoto, Toshifumi; Tomiyama, Shunsuke; and Saitoh, Koichi, 4,525,723, Cl. 346-74.400.

Kimpara, Masaomi; and Suzuki, Munehiro, to American Cyanamid Company. Aqueous-soluble compositions for adjusting growth of ornamental and crop plants. 4,525,200, Cl. 71-76.000.

Kimura, Tetsuo; Tanaka, Seiichi; and Suzuki, Takashi, to Nittan Company, Ltd. Fire alarm system. 4,525,700, Cl. 340-518.000.

Kindler, Robert I.: *See—*
Dennison, William G.; Horr, Kenneth R.; and Kindler, Robert I., 4,525,694, Cl. 335-132.000.

King-Seeley Thermos Company: *See—*
Spinner, Joseph R., 4,525,073, Cl. 366-323.000.

Kingston, Richard L.: *See—*
Benusa, John E.; and Kingston, Richard L., 4,525,156, Cl. 604-28.000.

Kinney David J. Vacuum finger harvester for strawberries or the like. 4,524,573, Cl. 56-330.000.

Kino, Jirou; and Uemura, Toshirou, to Hitachi, Ltd. Regulated AC-DC converter having saturation inductance in resonant circuit. 4,525,774, Cl. 363-17.000.

Kinoshita, Kunio; and Kokaji, Norio, to Iwatsu Electric Co., Ltd. Method and apparatus for forming magnetic latent images. 4,525,725, Cl. 346-74.500.

Kiraly, Robert L.: *See—*
Wright, Dale M.; and Kiraly, Robert L., 4,524,620, Cl. 73-587.000.

Kirby, Michael D.; and Mazzeo, Michael P., to Essex Specialty Products, Inc. Method and compositions for improving bonding to painted surfaces. 4,525,511, Cl. 524-158.000.

Kirk, William A.: *See—*
Fundom, Danny L.; and Kirk, William A., 4,524,879, Cl. 220-273.000.

Kishida, Kunio: *See—*
Morikawa, Masaki; Yoshida, Hideaki; and Kishida, Kunio, 4,525,434, Cl. 428-674.000.

Kisil, Evgeny D.; Komova, Svetlana N.; Kulikova, Olga A.; Kutyanin, Leonid I.; Popova, Larisa V.; Dyatlova, Nina M.; Lastovsky, Rostislav P.; Yaroshenko, Galina F.; Khramov, Rem A.; Dytjuk, Leonid T.; Samakaev, Rafail K.; and Vasnev, Anatoly N. Composition for preventing deposition of inorganic salts. 4,525,293, Cl. 252-181.000.

Kisioka, Kazuya; and Yamakoshi, Kenichi, to Ueda Electronic Works Limited. Automatic, continuous and indirect blood pressure measurement apparatus. 4,524,777, Cl. 128-677.000.

Kita, Kazunori, to Casio Computer Co., Ltd. Electronic wristwatch with printer function. 4,525,075, Cl. 368-10.000.

Kitagawa, Tadao; Kosuge, Yutaka; and Noda, Yoichiro. Flexible tying member for theftproof device. 4,525,702, Cl. 340-556.000.

Kitahara, Shizuo; and Sugi, Nagatoshi, to Nippon Zeon Co. Ltd. Method for modifying rubbers. 4,525,541, Cl. 525-337.000.

Kitajima, Goro : *See—*
Nemoto, Shigeru; Saitou, Sinichi; Kitajima, Goro ; and Osada, Hazime, 4,525,760, Cl. 360-137.000.

Kitamura, Mitsuhiro; Mito, Ikuo; and Kobayashi, Kohroh, to Nippon Electric Co., Ltd. Double channel planar buried heterostructure laser. 4,525,841, Cl. 372-48.000.

Kitamura, Yoichiro: *See—*
Okano, Yoshio; Okuma, Yasuo; Aizawa, Kuniomi; Oyama, Yasuyoshi; and Kitamura, Yoichiro, 4,525,712, Cl. 340-825.310.

Kitaue, Masaaki: *See—*
Akamatsu, Osamu; and Kitaue, Masaaki, 4,525,611, Cl. 200-83.00R.

Kiyomiya, Tadashi: *See—*
Nakane, Yasuaki; Akamatsu, Junichi; Sakamoto, Susumu; and Kiyomiya, Tadashi, 4,525,412, Cl. 428-199.000.

Klebanoff, Steven L., to Ruskin Manufacturing Company. Damper with integral support. 4,524,678, Cl. 98-1.000.

Klee, David J.; and Ehnot, Donald J., to Air Products and Chemicals, Inc. Continuous deflashing system. 4,524,548, Cl. 51-322.000.

Klee, David J.: *See—*
Burke, Thomas W.; and Klee, David J., 4,524,550, Cl. 51-424.000.

Klee, Howard W., Jr., to Chevron Research Company. Method for removal of hydrogen sulfide. 4,525,338, Cl. 423-573.00G.

Klein, Hans-Jorg; and Bohmer, Herbert, to Kraftwerk Union Aktiengesellschaft. Case for accommodating written material for presentation purposes. 4,524,867, Cl. 206-232.000.

Klein, Henri: *See—*
Goedert, Jean; Thill, Fernand; Henrion, Romain; Klein, Henri; Liesch, Jean-Francois; and Peckels, Jean, 4,524,958, Cl. 266-272.000.

Klinger, Max H. Receptacle for containing disposable cloths and a stick-like container. 4,524,871, Cl. 206-233.000.

Klockner-Becorit GmbH: *See—*
Gotte, Elmar; and Schulte, Heinrich, 4,524,859, Cl. 198-735.000.

Knifton, John F.: *See—*
Lin, Jiang-Jen; and Knifton, John F., 4,525,481, Cl. 518-700.000.

Knischka, Paul O.; and Grenz, Hans J., to Knischka Rubine Gesellschaft m.b.H. Gradient process of growing crystals from liquid media. 4,525,171, Cl. 23-300.000.

Knischka Rubine Gesellschaft m.b.H: *See—*
Knischka, Paul O.; and Grenz, Hans J., 4,525,171, Cl. 23-300.000.

Knoll, William C.; and Bay, David L., to GTE Products Corporation. Drive scheme for a plurality of flourescent lamps. 4,525,649, Cl. 315-96.000.

Knudtson, Lynn A.; and Sprenger, Glenn R., to Stauffer Chemical Company. In line dry material sampler. 4,524,628, Cl. 73-863.430.

Kobayashi, Hisashi: *See—*
Snyder, William J.; Miller, Raymond H.; and Kobayashi, Hisashi, 4,525,138, Cl. 431-187.000.

Kobayashi, Kazunari: *See—*
Kidawara, Atsushi; and Kobayashi, Kazunari, 4,524,920, Cl. 242-71.100.

Kobayashi, Kohroh: *See—*
Kitamura, Mitsuhiro; Mito, Ikuo; and Kobayashi, Kohroh, 4,525,841, Cl. 372-48.000.

Kobayashi, Michio, to Jidosha Kiki Co., Ltd. Brake booster. 4,524,584, Cl. 60-554.000.

Kobayashi, Minoru, to Olympus Optical Company Limited. Transcriber with erasing device. 4,525,761, Cl. 360-137.000.

Kobayashi, Seishichi; Miyazawa, Tetsuo; and Ueno, Hiroshi, to Toyo Seikan Kaisha, Ltd. Process for producing epoxy-type-lacquer. 4,525,497, Cl. 523-400.000.

Kobayashi, Shigeru; and Nakamura, Munehiro, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for preparing modified polyolefin particles and foamed article made from the particles. 4,525,486, Cl. 521-59.000.

Koch, Wolfgang: *See—*
Idel, Karsten; Ostlinning, Edgar; Koch, Wolfgang; and Heitz, Walter, 4,525,579, Cl. 528-388.000.

Kodama, Naoki; Suzuki, Ryo; Takeuchi, Teruaki; Takeshita, Masatoshi; and Sugita, Yutaka, to Hitachi, Ltd. Hybrid magnetic bubble memory device. 4,525,808, Cl. 365-36.000.

Koguchi, Shigeo: *See—*
Nakamura, Hatsuo; Kato, Tiharu; Yonezawa, Toshio; Koguchi, Shigeo; Mori, Kiyoto; and Igarashi, Masahiko, 4,525,523, Cl. 524-572.000.

Kohashi, Tadao; Irie, Hiroyuki; Ide, Susumu; and Esaki, Hiroshi, to Matsushita Electric Industrial Company, Limited. Electroosmotic ink printer. 4,525,727, Cl. 346-140.00R.

Kohl, Charles F., to Dow Corning Corporation. Catalyst compositions for preparing polyorganosiloxanes. 4,525,470, Cl. 502-167.000.

Kohl, Wilhelm: *See—*
Eibner, Robert; Nolle, Hans-Heinrich; Schneider, Alfred; and Kohl, Wilhelm, 4,525,197, Cl. 71-11.000.

Kohler, Manfred R.: *See—*
ten Broeke, Klaas E.; and Kohler, Manfred R., 4,524,874, Cl. 212-197.000.

Kohno, Tadashi: *See—*
Shimizu, Takahiko; Fukui, Hishao; and Kohno, Tadashi, 4,525,092, Cl. 401-265.000.

Koike, Shinkichi: *See—*
Yamauchi, Takashi; Maruhashi, Shigeaki; Koike, Shinkichi; and Yamada, Keizo, 4,525,209, Cl. 75-51.500.

Kojima, Hiroaki: *See—*
Narisawa, Shigeyuki; Funaki, Masahiko; Kojima, Hiroaki; and Kuga, Kazuhiko, 4,525,491, Cl. 521-174.000.

Kojima, Shigezo: *See—*
Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Kurihara, Kazuhiko; and Yazawa, Hirosi, 4,525,317, Cl. 264-235.800.

Kokaji, Norio: *See—*
Kinoshita, Kunio; and Kokaji, Norio, 4,525,725, Cl. 346-74.500.

Kokubo, Shozo: *See—*
Toda, Shozo; Yasuda, Kenji; and Kokubo, Shozo, 4,525,276, Cl. 210-433.200.

Kolb, Alfred. Projection table for an optical projection pattern grinding machine. 4,524,521, Cl. 33-1.0AA.

Koller, Otto: *See—*
Pochmarski, Luzian; Koller, Otto; and Abendstein, Karl, 4,525,211, Cl. 75-58.000.

Kollmeyer, Willy D.; and Brown, Thomas L., to Shell Oil Company. Oxaspiro alkane and alkene ether herbicides. 4,525,201, Cl. 71-76.000.

Kominami, Yasuo; Ohkubo, Yuichi; Aizawa, Kohki; and Sasaki, Satoshi, to Hitachi, Ltd.; and Pioneer Electronic Corp. Variable electronic impedance circuit. 4,525,636, Cl. 307-264.000.
Komiyama, Makoto: *See—*
Hirai, Hidefumi; Komiyama, Makoto; and Hara, Susumu, 4,525,180, Cl. 55-37.000.
Komori Printing Machinery Co., Ltd.: *See—*
Ito, Kiyoshi, 4,524,712, Cl. 118-46.000.
Omori, Tamotsu, 4,524,690, Cl. 101-148.000.
Suzuki, Yosihide, 4,524,961, Cl. 270-4.000.
Komova, Svetlana N.: *See—*
Kisil, Evgeny D.; Komova, Svetlana N.; Kulikova, Olga A.; Kutyanin, Leonid I.; Popova, Larisa V.; Dyatlova, Nina M.; Lastovsky, Rostislav P.; Yaroshenko, Galina F.; Khramov, Rem A.; Dytjuk, Leonid T.; Samakaev, Rafail K.; and Vasnev, Anatoly N., 4,525,293, Cl. 252-181.000.
Kondo, Shinichi: *See—*
Umezawa, Hamao; Takeuchi, Tomio; and Kondo, Shinichi, 4,525,299, Cl. 260-112.50R.
Kondo, Toshihiko: *See—*
Yagi, Yoshio; Kondo, Toshihiko; Matsubara, Norio; Miyazaki, Shoichiro; Kashiyama, Hajime; and Shibata, Makoto, 4,524,562, Cl. 53-409.000.
Konecny, James W., to Thorsen Tool Company. Ratchet wrench of the socket drive type with socket ejector. 4,524,653, Cl. 81-63.000.
Konig, Klaus: *See—*
Rasshofer, Werner; Konig, Klaus; Meyborg, Holger; Meckel, Walter; and Zenner, Armin, 4,525,590, Cl. 544-222.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, 4,525,056, Cl. 355-3.0DD.
Konno, Kunio: *See—*
Nakamura, Soichi; and Konno, Kunio, 4,525,744, Cl. 358-224.000.
Konomi, Toshiaki; and Ishiyama, Shinobu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of determining fluctuations in indicated mean effective pressure of engine and apparatus therefor. 4,525,781, Cl. 364-431.010.
Konter, Wolfgang: *See—*
Casper, Rudolf; Wendling, Peter; Konter, Wolfgang; Pampus, Gottfried; and Hohmann, Gerhard, 4,525,561, Cl. 526-220.000.
Koog, Wolfgang; and Estabrook, Lawrence E., to Texaco Inc. Preheating and deslagging a gasifier. 4,525,176, Cl. 48-197.00R.
Koomen, Pieter C. Dual blade windshield wiper. 4,524,481, Cl. 15-250.410.
Kordomenos, Panagiotis I., to Ford Motor Company. Thermosetting coating composition. 4,525,569, Cl. 528-73.000.
Korman, Nathaniel I., to Ventures Research & Development Group. Selective color modification. 4,525,736, Cl. 358-28.000.
Korobochkin, Valery P.: *See—*
Feofanov, Vitaly A.; Pilat, Boris V.; Zhdanovich, Larisa P.; Romanenko, Anatoly G.; Lukhanin, Boris S.; Donets, Oleg V.; and Korobochkin, Valery P., 4,525,254, Cl. 204-150.000.
Koshinaka, Eiichi: *See—*
Itho, Yasuo; Kato, Hideo; Ogawa, Nobuo; Yamagishi, Kagari; Koshinaka, Eiichi; and Mitani, Kazuya, 4,525,356, Cl. 514-234.000.
Kosonen, Vaino J.: *See—*
Willus, Charles A.; Kosonen, Vaino J.; and Sanchez, Dale R., 4,525,274, Cl. 210-232.000.
Kostansek, Edward C., to Engelhard Corporation. Chalking-resistant, calcined kaolin clay pigment and method of making. 4,525,518, Cl. 524-447.000.
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Wohlfarth, Dieter; and Kostelezky, Walter, 4,525,782, Cl. 364-431.010.
Kosuge, Yutaka: *See—*
Kitagawa, Tadao; Kosuge, Yutaka; and Noda, Yoichiro, 4,525,702, Cl. 340-556.000.
Kosugi, Yoshinobu; and Tachibana, Kaoru, to Slik Tripod Co., Ltd. Device for fixing a camera to a tripod. 4,525,052, Cl. 354-293.000.
Koto, Haruhiko, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Ink jet recording head. 4,525,728, Cl. 346-140.00R.
Kouba, Daniel J.: *See—*
Boyle, David H.; and Kouba, Daniel J., 4,525,640, Cl. 307-450.000.
Kowa Company Limited: *See—*
Inagi, Toshio; Muramatsu, Toyojiro; and Nagai, Hidetaka, 4,525,347, Cl. 424-81.000.
Koyama, Toshio: *See—*
Ogawa, Harumi; Obikawa, Fumito; Koyama, Toshio; Otsubo, Yoshiaki; Wakabayashi, Hiroshi; and Otani, Tadashi, 4,525,049, Cl. 354-173.110.
Kraftwerk Union Aktiengesellschaft: *See—*
Klein, Hans-Jorg; and Bohmer, Herbert, 4,524,867, Cl. 206-232.000.
Krampe, Hubert: *See—*
Baas, Willem; Hof, Tette; Comes, Heinrich; Jaunich, Helmut; and Krampe, Hubert, 4,524,954, Cl. 266-45.000.
Krause, Werner: *See—*
Schimmel, Gunther; Heymer, Gero; Krause, Werner; and Pieper, Werner, 4,525,333, Cl. 423-112.000.
Krehel, Charles A.; and Kaniwec, George N., to Cooper Thermometer Company, The. Fuel gauge for propane tank. 4,524,617, Cl. 73-296.000.
Krempl, Peter W.; and Schindler, Wolfgang, to A V L Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik m.b.H. Method and device for continuous measurement of the mass of aerosol particles in gaseous samples. 4,525,627, Cl. 250-345.000.
Krenzer, Theodore J., to Gleason Works, The. Cutter and method for gear manufacture. 4,525,108, Cl. 407-22.000.
Krishnakumar, Suppayan M.: *See—*
Pocock, John F. E.; Mahajan, Gautam K.; Krishnakumar, Suppayan M.; and Friendship, Kenneth F. M., 4,525,401, Cl. 428-64.000.
Krnac, Ondrej. Wind-powered machine. 4,525,122, Cl. 416-80.000.
Krohn, Ulrich: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., 4,524,732, Cl. 123-193.00H.
Krude, Werner; Jordan, Alfons; and Harz, Peter. Assembly for connecting together torque-transmitting members. 4,525,098, Cl. 403-280.000.
Krufka, Frank S., to RCA Corporation. System for measuring and identifying line spacing on a curved surface. 4,525,735, Cl. 358-10.000.
Krupp Stahl Aktiengesellschaft: *See—*
Dislich, Heinz; and Richter, Horst, 4,525,463, Cl. 501-99.000.
Kubo, Kunimichi; Yoshikawa, Mamoru; Watanabe, Motokazu; Miyazaki, Yasunosuke; and Miyoshi, Mituji, to Nippon Oil Company Limited. Method for vapor phase polymerization of olefins. 4,525,548, Cl. 526-72.000.
Kubo, Tetsushi. Holder of pipes or pipe joints for welding. 4,524,959, Cl. 269-43.000.
Kubota, Hidetaka: *See—*
Mathumoto, Sigemi; Kubota, Hidetaka; and Nagoshi, Fumiya, 4,525,530, Cl. 525-84.000.
Kubota, Naohiro: *See—*
Minagawa, Motonobu; Kubota, Naohiro; Shibata, Toshihiro; and Arata, Ryozo, 4,525,506, Cl. 524-102.000.
Kubota, Satoshi; Nakashima, Mikito; Mogami, Takao; and Nakagawa, Tetsuo, to Kabushiki Kaisha Suwa Seikosha. Surface hard coat for a synthetic resin lens. 4,525,421, Cl. 428-412.000.
Kueny, Don F., to Outboard Marine Corporation. Outboard motor mounting assembly. 4,524,942, Cl. 248-643.000.
Kuga, Kazuhiko: *See—*
Narisawa, Shigeyuki; Funaki, Masahiko; Kojima, Hiroaki; and Kuga, Kazuhiko, 4,525,491, Cl. 521-174.000.
Kulikova, Olga A.: *See—*
Kisil, Evgeny D.; Komova, Svetlana N.; Kulikova, Olga A.; Kutyanin, Leonid I.; Popova, Larisa V.; Dyatlova, Nina M.; Lastovsky, Rostislav P.; Yaroshenko, Galina F.; Khramov, Rem A.; Dytjuk, Leonid T.; Samakaev, Rafail K.; and Vasnev, Anatoly N., 4,525,293, Cl. 252-181.000.
Kulpa, Walter J., to Pitney Bowes Inc. Envelope stacking machine. 4,524,965, Cl. 271-214.000.
Kupfer, Karl H., to U.S. Philips Corporation. Narrow-band amplifier, more specifically television intermediate frequency amplifier. 4,525,681, Cl. 330-286.000.
Kuraray Co., Ltd.: *See—*
Omura, Ikuo; and Yamauchi, Junichi, 4,525,493, Cl. 523-116.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Ohya, Masaki; Matsukura, Yoshihiro; and Anzai, Mitsuru, 4,525,414, Cl. 428-213.000.
Kurihara, Kazuhiko: *See—*
Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Kurihara, Kazuhiko; and Yazawa, Hirosi, 4,525,317. Cl. 264-235.800.
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; Matsuura, Kazuo; and Miyoshi, Mitsuji, to Nippon Oil Co., Ltd. Process for producing polyolefins. 4,525,552, Cl. 526-116.000.
Kurtz, Stuart J.; and Potts, James E., to Union Carbide Corporation. Low level irradiated linear low density ethylene/alpha-olefin copolymers and film extruded therefrom. 4,525,257, Cl. 204-159.200.
Kush, Stephen T.; and Meffe, Marc E., to Sperry Corporation. Fiber optic vibration modal sensor. 4,525,626, Cl. 250-227.000.
Kusz, Maximillian, to Owens-Illinois, Inc. Tamper indicating child-resistant package. 4,524,876, Cl. 215-224.000.
Kutyanin, Leonid I.: *See—*
Kisil, Evgeny D.; Komova, Svetlana N.; Kulikova, Olga A.; Kutyanin, Leonid I.; Popova, Larisa V.; Dyatlova, Nina M.; Lastovsky, Rostislav P.; Yaroshenko, Galina F.; Khramov, Rem A.; Dytjuk, Leonid T.; Samakaev, Rafail K.; and Vasnev, Anatoly N., 4,525,293, Cl. 252-181.000.
Kutzner, Reinhard: *See—*
Heinz, Richard; and Kutzner, Reinhard, 4,525,840, Cl. 371-47.000.
Kuus, Felix: *See—*
Barron, Charles D.; and Kuus, Felix, 4,524,834, Cl. 166-385.000.
Kuwabara, Shigeyuki, to Hitachi, Ltd. Disk storage controller. 4,525,801, Cl. 364-900.000.
Kuxdorf, Bernhard; Luhr, Peter; Werner, Hugo; Thummler, Ursus; and Dorn, Friedrich-Wilhelm, to Hoechst Aktiengesellschaft. Process and apparatus for making phosphorus pentoxide with utilization of reaction heat. 4,525,329, Cl. 422-202.000.
Kuzanian, Armen S.: *See—*
Petrosian, Ashot G.; Bagdasarov, Khachik S.; Kuzanian, Armen S.; Ovanesian, Karine L.; and Butaeva, Tatyana I., 4,525,460, Cl. 501-86.000.
Kyoto Ceramic Co., Ltd.: *See—*
Kawamura, Hideo; Sagawa, Nobukazu; and Yamamoto, Noriyoshi, 4,525,622, Cl. 219-270.000.
Laapotti, Jorma, to Valmet Oy. Press section of a paper machine. 4,525,241, Cl. 162-301.000.
Labas, Nicholas: *See—*
Miller, Thomas M.; Schraff, Raymond J.; and Labas, Nicholas, 4,524,702, Cl. 110-173.00A.

Labaune, Gerard: *See—*
Larigaldie, Serge; and Labaune, Gerard, 4,525,140, Cl. 431-258.000.
Labib, Mohamed E.; and Poliniak, Eugene S., to RCA Corporation. High-density information disc lubricants. 4,525,402, Cl. 428-64.000.
Lagerstedt & Krantz AB: *See—*
Magnusson, Per-Erik, 4,524,469, Cl. 4-216.000.
Lai, Stephen H.; and Srivastava, Gopal K., to Zenith Electronics Corporation. Biased current mirror having minimum switching delay. 4,525,682, Cl. 330-288.000.
Laisney, Bernard; Letoffe, Michel; Perrin, Patrice; and Ulrich, Jean, to Rhone-Poulenc Specialites Chimiques. Single component organopolysiloxane compositions containing silanes with acyloxy or ketoniminoxy groups as cross linking agents and organic derivatives of titanium or zirconium as catalysts. 4,525,565, Cl. 528-17.000.
Laiterie Triballat: *See—*
Bolzer, Rene J. M.; and Clanchin, Jean, 4,525,366, Cl. 426-271.000.
Lam, Leo K.; and Phillips, Edward, to Litton Systems, Inc. Apparatus and method for laser pumping of nuclear magnetic resonance cell. 4,525,672, Cl. 324-304.000.
Lamb, Miles P.; and Karol, Herman S., to Westinghouse Electric Corp. Driving and aligning coupling. 4,525,095, Cl. 403-16.000.
Lamiral, Jean P.: *See—*
Cau, Egidio; and Lamiral, Jean P., 4,525,833, Cl. 370-99.000.
Lamont, Mary H.: *See—*
Nelson, Donald L.; and Lamont, Mary H., 4,525,544, Cl. 525-531.000.
Lancaster, Patrick R.; and Lancaster, William G., to Lantech, Inc. Power assisted rotatable film wrapping apparatus. 4,524,568, Cl. 53-556.000.
Lancaster, William G.: *See—*
Lancaster, Patrick R.; and Lancaster, William G., 4,524,568, Cl. 53-556.000.
Landa, Vaclav; and Vitek, Jaromir, to Stani vyzkumny ustav materoalu. Process for the electrolytic deposition of layers of nickel alloys. 4,525,248, Cl. 204-29.000.
Lane, Thao: *See—*
Cohen, Albert E.; Hance, William G.; Moir, Ian; Lane, Thao; and Caussarieu, Frederic, 4,525,830, Cl. 370-60.000.
Lange, Horst: *See—*
Pavel, Klaus; and Lange, Horst, 4,524,815, Cl. 163-5.000.
Lange, Wolfgang; and Boer, G. J., to Akzo NV. Composite body for long-term delivery of effective substances. 4,525,340, Cl. 424-16.000.
Lanka, Richard I. Lock device for chain driven vehicles. 4,524,591, Cl. 70-236.000.
Lankford, Frank L., Jr.: *See—*
Rome, Gerald F.; and Lankford, Frank L., Jr., 4,524,952, Cl. 254-269.000.
Lanner, Michael; and Coffey, Cynthia L., to Beth Israel Hospital Association, The. Animal cage insert and convertible animal cage. 4,524,721, Cl. 119-17.000.
Lantech, Inc.: *See—*
Lancaster, Patrick R.; and Lancaster, William G., 4,524,568, Cl. 53-556.000.
Large, George B.; and Buren, Lawrence L., to Stauffer Chemical Co. Phosphonium salts of N-phosphonomethylglycine and their use as herbicides and plant growth regulants. 4,525,202, Cl. 71-86.000.
Larigaldie, Serge; and Labaune, Gerard, to Office National d'Etudes et de Recherches Aerospatiales dit O.N.E.R.A. Ignition method and igniter device for igniting carburated gaseous mixtures. 4,525,140, Cl. 431-258.000.
Lasher, Albert C.: *See—*
Formo, Jerome L.; Lasher, Albert C.; and White, Robert W., 4,524,512, Cl. 30-147.000.
Lassmann, Manfred: *See—*
Raasch, Hans; and Lassmann, Manfred, 4,524,578, Cl. 57-263.000.
Lastovsky, Rostislav P.: *See—*
Kisil, Evgeny D.; Komova, Svetlana N.; Kulikova, Olga A.; Kutyanin, Leonid I.; Popova, Larisa V.; Dyatlova, Nina M.; Lastovsky, Rostislav P.; Yaroshenko, Galina F.; Khramov, Rem A.; Dytjuk, Leonid T.; Samakaev, Rafail K.; and Vasnev, Anatoly N., 4,525,293, Cl. 252-181.000.
Laumont, Roger, to Hydroperfect International H. P. I. Electrohydraulic unit for steering, braking, suspension and like devices for vehicles. 4,525,126, Cl. 417-310.000.
Laverman, Royce J., to Chicago Bridge & Iron Company. Thermal energy storage tank using modular heat batteries. 4,524,756, Cl. 126-400.000.
Law, Kock-Yee; and Bailey, Frank C., to Xerox Corporation. Process for squaraine compositions. 4,525,592, Cl. 564-307.000.
Lawrence, John N.; and Sandor, Istvan, to Bio-Chem Valve Corp. Pinch valve. 4,524,802, Cl. 137-595.000.
Lawson, Gustaf R., to AMP Incorporated. Electrical connector. 4,525,023, Cl. 339-258.00R.
Leach, John M. Screw-jack type accumulation conveyor. 4,524,862, Cl. 198-781.000.
Lear S.n.c. di Foggini & C.: *See—*
Foggini, Giovanni, 4,525,008, Cl. 296-97.00K.
Leavitt, Dale L.: *See—*
Dayton, Birney D.; and Leavitt, Dale L., 4,525,836, Cl. 370-67.000.
Le Berre, Serge: *See—*
Hareng, Michel; Hehlen, Robert; Marcenac, Philippe; Le Berre, Serge; Leclerc, Pierre; and Perbet, Jean-Noel, 4,525,708, Cl. 340-713.000.
Leblond, Claude W., to Gerber Garment Technology, Inc. Method and apparatus for forming pattern pieces. 4,524,894, Cl. 225-2.000.
Leclerc, Pierre: *See—*
Hareng, Michel; Hehlen, Robert; Marcenac, Philippe; Le Berre, Serge; Leclerc, Pierre; and Perbet, Jean-Noel, 4,525,708, Cl. 340-713.000.
Leclerc, Roland-Yves J., to Intermedicat GmbH. Rolled flexible medical suction drainage device. 4,525,166, Cl. 604-133.000.
Leco Corporation: *See—*
Bredeweg, Roger L., 4,525,328, Cl. 422-80.000.
Ledebuhr, Richard L.: *See—*
Wilde, Bernard D.; Van Ee, Gary R.; Ledebuhr, Richard L.; and Rotz, C. Alan, 4,524,572, Cl. 56-327.00R.
Lee, Donald L.: *See—*
Chai, Bruce H.; Bailey, Dana S.; Vetelino, John F.; Lee, Donald L.; and Andle, Jeffrey C., 4,525,643, Cl. 310-313.00A.
Lee, Gim F., Jr., to General Electric Company. Plasticized reinforced compositions of a polyphenylene ether resin. 4,525,508, Cl. 524-140.000.
Lee, Shy-Fuh, to Zoecon Corporation. Herbicidal compositions comprising compounds containing a phenylaminophenoxy moiety. 4,525,205, Cl. 71-108.000.
Legille, Edouard; and Mailliet, Pierre, to Paul Wurth S.A. Method of and apparatus for controllably charging a furnace. 4,525,120, Cl. 414-160.000.
Le Grives, Bernard: *See—*
Flassayer, Claude; Le Grives, Bernard; and Simon, Paul R., 4,525,238, Cl. 156-645.000.
Lehmann, Kjeld, to Danfoss A/S. Equipment box for a power converter arrangement. 4,525,769, Cl. 361-386.000.
Lehmann, Randall E.; Brehm, Gailon E.; and Seymour, David J., to Texas Instruments Incorporated. Monolithic low noise common-gate amplifier. 4,525,678, Cl. 330-277.000.
Leibinger, Berthold, to Trumpf GmbH & Co. Bottom die construction. 4,524,661, Cl. 83-690.000.
Leier, Wolfgang: *See—*
Berges, Hanns-Peter; Frieden, Peter; and Leier, Wolfgang, 4,525,129, Cl. 418-84.000.
Leih, Michael P. Security alarm arrangement. 4,525,701, Cl. 340-541.000.
Leising, Frederic, to Rhone-Poulenc Specialites Chimiques. Stable amphoteric latices of copolymers based on conjugated dienes. 4,525,519, Cl. 524-457.000.
Le Magourou, Yves, to Societe d'Exploitation des Procedes Marechal. Quick make and break plug and socket connector. 4,525,610, Cl. 200-51.130.
Lemaster, Milton R. Dehydration apparatus for printing press inking system. 4,524,689, Cl. 101-141.000.
Leno, Theodore M.: *See—*
Cardona, Ramon M.; Leno, Theodore M.; and O'Leary, Melody M., 4,525,087, Cl. 400-613.200.
Lenze GmbH & Co. KG Aerzen: *See—*
Wehrmann, Claus, 4,524,919, Cl. 242-67.10R.
Leonard, Patrick R.: *See—*
Pelletier, Charles A.; Gonso, William E., Jr.; Cameron, Douglas S.; and Leonard, Patrick R., 4,524,607, Cl. 73-40.50R.
Leonberger, Frederick J.: *See—*
Foyt, Arthur G.; Leonberger, Frederick J.; and Williamson, Richard C., 4,525,871, Cl. 455-325.000.
Le Pennec, Claude: *See—*
Jamet, Jean; Poupeau, Jean-Jacques; Omnes, Jacqueline; and Le Pennec, Claude, 4,525,337, Cl. 423-449.000.
LePoire, Robert A. Adjustable jig. 4,524,960, Cl. 269-45.000.
Lerner, Elaine. Sexual aid. 4,524,760, Cl. 128-1.00R.
Les Ateliers Mecaniques Alexandre, Inc.: *See—*
Tzabanakis, George, 4,524,792, Cl. 135-90.000.
Letoffe, Michel: *See—*
Laisney, Bernard; Letoffe, Michel; Perrin, Patrice; and Ulrich, Jean, 4,525,565, Cl. 528-17.000.
Leunig, Carl V.; and Susi, Michael F., to Tex-Tech Industries. Tennis ball evaluator. 4,524,614, Cl. 73-147.000.
Le Van Mao, Raymond: *See—*
Moretti, Enrico; Zamboni, Valentino; Le Van Mao, Raymond; Padovan, Mario; and Solari, Marcello, 4,525,466, Cl. 502-63.000.
Levine, Peter A.: *See—*
Wood, Robert F., Jr.; Monahan, John F.; and Levine, Peter A., 4,525,743, Cl. 358-213.000.
Levine, Seymour, to Litton Systems, Inc. Apparatus and method for inertial measurement of pipeline deflection. 4,524,526, Cl. 33-312.000.
Levy, Nessim I. Carriage positioning system. 4,524,520, Cl. 33-1.00M.
Lewis, Arnold; and Hagen, Norman R. Natural appearing posterior teeth for denture plates and the like. 4,525,146, Cl. 433-198.000.
Lewis, Lloyd James: *See—*
Jeffrey, Jewell W., 4,524,527, Cl. 33-451.000.
Lewis, Norris E.: *See—*
Hohmann, Thomas C.; Lewis, Norris E.; and Miller, Michael B., 4,525,025, Cl. 350-96.150.
Leybold-Heraeus GmbH: *See—*
Berges, Hanns-Peter; Frieden, Peter; and Leier, Wolfgang, 4,525,129, Cl. 418-84.000.
Sperzel, Wolfgang; and Sturmer, Johann, 4,525,652, Cl. 315-307.000.
Leyland Vehicles Limited: *See—*
Greenwood, Christopher J., 4,524,641, Cl. 74-691.000.
LGZ Landis & Gyr Zug AG: *See—*
Lienhard, Heinz; and Petr, Jan, 4,525,668, Cl. 324-142.000.

Liang, Charles C.: *See—*
Barnette, Luverne H.; and Liang, Charles C., 4,525,440, Cl. 429-191.000.

Libbey, William J.: *See—*
Page, Matthew A.; Libbey, William J.; and Lundeen, Allan J., 4,525,322, Cl. 264-531.000.

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Schenkel, Klaus D.; and Welzenbach, Manfred, 4,525,834, Cl. 370-3.000.
Scheuermann, Helmut, 4,525,844, Cl. 375-2.100.

Liedtke, Kurt: *See—*
Focke, Heinz; and Liedtke, Kurt, 4,524,658, Cl. 83-152.000.

Liekens, J. Alfons F.; and Hendriks, Ivo G. M., to Teepak, Inc. Method and apparatus for packaging sheathed tubular strands. 4,524,561, Cl. 53-397.000.

Lieland, Stephen J.: *See—*
Lucas, Delbert E.; and Lieland, Stephen J., 4,524,582, Cl. 60-421.000.

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Goedert, Jean; Thill, Fernand; Henrion, Romain; Klein, Henri; Liesch, Jean-Francois; and Peckels, Jean, 4,524,958, Cl. 266-272.000.

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Cau, Egidio; and Lamiral, Jean P., 4,525,833, Cl. 370-99.000.

Li-Jung, Hu: *See—*
Maw-Cheng, Shieh; Seng-Jung, Chen; Li-Jung, Hu; and Jin-Luh, Su, 4,525,210, Cl. 75-58.000.

Lillibridge, Herbert J.; and Schwarzmann, Russell A., to United Technologies Corporation. Intersecting feather seals for interlocking gas turbine vanes. 4,524,980, Cl. 277-199.000.

Lin, Jiang-Jen; and Knifton, John F., to Texaco Inc. Acetaldehyde production from synthesis gas. 4,525,481, Cl. 518-700.000.

Lindgren, Matts J.; and Culp, Murl F., to Lockheed Missiles & Space Co., Inc. Inflation-controlled parachute. 4,524,930, Cl. 244-152.000.

Line Industry Corp.: *See—*
Matsushita, Yoshihiro, 4,524,861, Cl. 198-781.000.

Linn, Maynard W. Binding unit. 4,524,992, Cl. 281-45.000.

Linn, Michael A., to Nox-Crete Chemicals, Incorporated. Composition for waterproofing and inhibiting erosion and corrosion of silicon dioxide containing substrates. 4,525,213, Cl. 106-2.000.

Lista AG: *See—*
Dunner, Max, 4,525,012, Cl. 312-222.000.

Lister, Jerry D., to Adver-Togs, Inc. Method of and composition for producing glow printing. 4,525,295, Cl. 252-301.360.

Little, William M., Jr.: *See—*
Withers, Stanley J.; Schneiderman, Gary E.; and Little, William M., Jr., 4,524,776, Cl. 128-644.000.

Litton Industrial Products, Inc.: *See—*
Heaston, Gaylord E.; and Farazandeh, Edward A., 4,524,547, Cl. 51-165.770.

Litton Systems Inc.: *See—*
Hohmann, Thomas C.; Lewis, Norris E.; and Miller, Michael B., 4,525,025, Cl. 350-96.150.
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Louis, Arnold S.; and Wiener, Robert P., 4,525,698, Cl. 338-39.000.
Schwindt, Gary W., 4,525,015, Cl. 339-17.00C.

Livak, Ronald J., to Pfizer Inc. Copper-nickel-tin-cobalt spinodal alloy. 4,525,325, Cl. 420-473.000.

Lo, Grace Y.: *See—*
Tung, Lu H.; Lo, Grace Y.; and Griggs, Jerald A., 4,525,532, Cl. 525-98.000.

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Barletta, Joseph M.; and Yang, John P., 4,525,713, Cl. 340-825.540.

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Lindgren, Matts J.; and Culp, Murl F., 4,524,930, Cl. 244-152.000.

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Rooney, John M.; Woods, John; and Conway, Paul, 4,525,232, Cl. 156-273.300.
Rooney, John M.; and Conway, Paul, 4,525,553, Cl. 526-120.000.

Loe, James M.: *See—*
Wilson, David H.; and Loe, James M., 4,524,886, Cl. 222-58.000.

Loeb, Marvin P.; and Olson, Arne M., to Biotek, Inc. Wearable medication infusion system with arcuated reservoir. 4,525,164, Cl. 604-131.000.

Loftin, Royal E.: *See—*
Son, Adelina J.; and Loftin, Royal E., 4,525,285, Cl. 252-8.50M.

Logsdon, Duane D. Drain grate with adjustable weirs. 4,525,273, Cl. 210-164.000.

Longo, Jose M.: *See—*
Schmidt, Wolfgang; and Longo, Jose M., 4,524,928, Cl. 244-35.00R.

Loomis, Richard B.: *See—*
Ayers, William J., Jr.; Carter, Charles R.; Griffith, Richard A.; Loomis, Richard B.; and Notestein, John E., 4,524,796, Cl. 137-240.000.

Lopes Cardozo, Benjamin: *See—*
Admiraal, Daniel J. H.; and Lopes Cardozo, Benjamin, 4,525,856, Cl. 381-93.000.

Lorensen, William E.: *See—*
Cline, Harvey E.; Holik, Andrew S.; and Lorensen, William E., 4,525,858, Cl. 382-1.000.

Lori Corporation: *See—*
Hennessy, Thomas F., 4,524,593, Cl. 70-358.000.

Losee, David L., to Eastman Kodak Company. Patterning method for reducing hillock density in thin metal films and a structure produced thereby. 4,525,733, Cl. 357-65.000.

Lotsch, Wolfgang; Kemper, Reinhard; and Schefczik, Ernst, to BASF Aktiengesellschaft. 2,4-Dioxotetrahydropyrimido-(1,2-a)-benzimidazole substituted isoindoline dyes and their use. 4,525,591, Cl. 544-250.000.

Lotte Co., Ltd.: *See—*
Kato, Yukiteru; and Watanabe, Kazuhiro, 4,525,365, Cl. 426-101.000.

Louis, Arnold S.; and Wiener, Robert P., to Litton Systems, Inc. Pneumatic switch potentiometer. 4,525,698, Cl. 338-39.000.

Lowe, Clifford E.: *See—*
Durenec, Peter; and Lowe, Clifford E., 4,524,675, Cl. 89-41.030.

Lucas, Delbert E.; and Lieland, Stephen J., to Cincinnati Incorporated. Control system for hydraulic presses. 4,524,582, Cl. 60-421.000.

Lucas Industries Limited: *See—*
Ashman, Glynn; Winterbottom, Martin E.; and Berry, Kelvin T., 4,524,677, Cl. 92-168.000.

Lucas Industries public limited company: *See—*
Fenne, Ivor, 4,524,799, Cl. 137-516.270.

Luccarelli, Domenick, Jr.: *See—*
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,525,364, Cl. 426-3.000.

Lucey, Leslie G. Multi-spindle automatic screw machine. 4,524,654, Cl. 82-3.000.

Ludwig Fahrmbacher-Lutz: *See—*
Fahrmbacher-Lutz, Ludwig; and Seidler, Klaus, 4,525,250, Cl. 204-58.500.

Luhr, Peter: *See—*
Kuxdorf, Bernhard; Luhr, Peter; Werner, Hugo; Thummler, Ursus; and Dorn, Friedrich-Wilhelm, 4,525,329, Cl. 422-202.000.

Luke, John A., to British-American Tobacco Company Limited. Method for producing tobacco smoke filters. 4,525,161, Cl. 493-42.000.

Lukhanin, Boris S.: *See—*
Feofanov, Vitaly A.; Pilat, Boris V.; Zhdanovich, Larisa P.; Romanenko, Anatoly G.; Lukhanin, Boris S.; Donets, Oleg V.; and Korobochkin, Valery P., 4,525,254, Cl. 204-150.000.

Lumsden, Norman; and Phillips, Brian K., to Hunting Oilfield Services (UK) Limited. Pipe connector with interengagable tubular pin and tubular box members. 4,525,001, Cl. 285-328.000.

Lundberg, Robert D.: *See—*
Turner, S. Richard; Walker, Thad O.; Peiffer, Dennis G.; and Lundberg, Robert D., 4,525,522, Cl. 524-547.000.

Lundeen, Allan J.: *See—*
Page, Matthew A.; Libbey, William J.; and Lundeen, Allan J., 4,525,322, Cl. 264-531.000.

Lunden, Bertil, to Molnlycke AB. Holder for paper roll with central dispensing of the paper. 4,524,895, Cl. 225-19.000.

Lundh, Karl-Erik: *See—*
Danielson, Carl O.; Gustafsson, Bo B.; Richardsson, Gote E.; and Lundh, Karl-Erik, 4,524,880, Cl. 220-288.000.

Lungu, Corneliu, to Robert Bosch GmbH. Solenoid valve. 4,524,797, Cl. 137-343.000.

L'Universite de Bordeaux 1: *See—*
Vidalin, Jacques; and Aucouturier, Jean L., 4,525,803, Cl. 364-900.000.

Lurssen, Klaus: *See—*
Holmwood, Graham; and Lurssen, Klaus, 4,525,204, Cl. 71-92.000.

Luther, Hans: *See—*
Bisping, Bernhard; Gersbach, Klaus; Luther, Hans; Simon, Walter; Wallow, Peter; Montier, Patrick; Moreau, Pierre A.; and Sauvestre, Jean C., 4,524,695, Cl. 102-430.000.

Lydtin, Hans: *See—*
Hubner, Horst; Lydtin, Hans; Rehder, Ludwig; and Zaengel, Thomas, 4,525,379, Cl. 427-53.100.

Lynham, Thomas F.; and Curtis, Lee J. Adjustable length flexible handle. 4,524,483, Cl. 16-114.00R.

Lynn, Michael E., to Marley Tile A.G. Polymer-modified cement mortars and concretes and processes for the production thereof. 4,525,500, Cl. 524-5.000.

Lynn, Michael M.; and Howells, Richard D., to Minnesota Mining and Manufacturing Company. Fluorochemical copolymers and ovenable paperboard and textile fibers treated therewith. 4,525,423, Cl. 428-421.000.

Lyons, Harold W., to Whelen Engineering Co., Inc. Air valve. 4,524,679, Cl. 98-40.020.

Machinefabriek G.J. Nijhuis B.V.: *See—*
Goossens, Jan B. R., 4,524,487, Cl. 17-1.00E.

Mack, Joel: *See—*
Bardin, Roland; Mack, Joel; and Counioux, Jean-Jacques, 4,525,327, Cl. 420-565.000.

Mack, Mark P.; and Shannon, Mark L., to Du Pont de Nemours, E. I., and Company. Olefin polymerization catalyst. 4,525,468, Cl. 502-104.000.

MacPherson, Edwin J.: *See—*
Rastall, Mary H.; Ng, Norman H.; and MacPherson, Edwin J., 4,525,492, Cl. 521-181.000.

MAD Computer, Inc.: *See—*
Yurchenco, James R.; and Nuttall, Michael J., 4,524,940, Cl. 248-359.000.

Maeda, Hirofumi; Nakamura, Kyoichi; and Fukui, Hisatoshi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Pre-expanding process and apparatus for the same. 4,525,485, Cl. 521-58.000.

Maeda, Kiyoshi; and Kawatani, Masafumi, to Dainippon Screen Seizo Kabushiki Kaisha. Method and apparatus for scanning an object by using the light. 4,525,749, Cl. 358-290.000.

Maeda, Takeshi: *See—*
Nakamura, Shigeru; Tsunoda, Yoshito; Shigematsu, Kazuo; Kaku, Toshimitsu; Maeda, Takeshi; and Kato, Tsuyoshi, 4,525,826, Cl. 369-46.000.

Magnasco, Enrico; and Viale, Giorgio, to Colgate-Palmolive Company. Apparatus for the selection, metering and delivery of liquids, in particular treatment liquids for industrial laundry washers. 4,524,801, Cl. 137-567.000.

Magnin, Joel: *See—*
Jouve, Hubert; and Magnin, Joel, 4,525,807, Cl. 365-36.000.

Magnusson, Per-Erik, to Lagerstedt & Krantz AB. Combined fan and valve. 4,524,469, Cl. 4-216.000.

Mahajan, Gautam K.: *See—*
Pocock, John F. E.; Mahajan, Gautam K.; Krishnakumar, Suppayan M.; and Friendship, Kenneth F. M., 4,525,401, Cl. 428-64.000.

Maida, Osamu: *See—*
Sano, Yoshiaki; Tsuchiya, Chikara; and Maida, Osamu, 4,525,637, Cl. 307-350.000.

Mailliet, Pierre: *See—*
Legille, Edouard; and Mailliet, Pierre, 4,525,120, Cl. 414-160.000.

Majefski, Richard L., to Rockwell International Corporation. Autoequalizer apparatus. 4,525,684, Cl. 330-304.000.

Mak, Kelvin K.: *See—*
Bulka, Raymond I.; Ketcham, Russell S.; and Mak, Kelvin K., 4,525,118, Cl. 414-43.000.

Mak, Randall L.; and Young, Larry W. Corn harvester machine with mechanism for picking up downed cornstalks and retrieving ears therefrom. 4,524,571, Cl. 56-98.000.

Makino, Shoji: *See—*
Aoki, Akihiro; Hiratsuka, Shozaburo; Yamaguchi, Norihisa; and Makino, Shoji, 4,525,384, Cl. 427-174.000.

Makishima, Hideo: *See—*
Matsushita, Toshihiko; Morishita, Sadao; and Makishima, Hideo, 4,525,428, Cl. 428-488.100.

Malchert, Arthur F., Sr. Barbless fishhook. 4,524,537, Cl. 43-36.000.

Mallalieu, David H.; Apostola, Samuel N.; and DeVries, Douglas C., to Hyde Mfg. Co. Combination of a tool and a hollow tool sectional handle. 4,524,514, Cl. 30-169.000.

Malvern Scale Company: *See—*
Stuart, James M., 4,524,840, Cl. 177-210.00C.

Mangold, Hans; Eckert, Hans; and Schonborn, Jurgen, to Grundig E.M.V. Television set. 4,525,746, Cl. 358-254.000.

Mannava, Seetha R.; and Erkes, Joseph W., to General Electric Company. Torque measurement method and apparatus. 4,525,068, Cl. 356-35.500.

Mannesmann Rexroth GmbH: *See—*
Mucheyer, Norbert; and Schulte, Heinz, 4,524,945, Cl. 251-75.000.

Manresa, Inc.: *See—*
Vaillancourt, Vincent L., 4,525,157, Cl. 604-52.000.
Vaillancourt, Vincent L., 4,525,374, Cl. 427-2.000.

Manriquez, Ralph F.: *See—*
Campbell, Bryant A.; DuBois, Dale R.; Manriquez, Ralph F.; and Miller, Nicholas E., 4,524,719, Cl. 118-719.000.

Mansouri, Mansour N.; Mansouri, Masoud N.; and Imani, Kambiz. Power operated separable beds and support therefor. 4,524,471, Cl. 5-8.000.

Mansouri, Masoud N.: *See—*
Mansouri, Mansour N.; Mansouri, Masoud N.; and Imani, Kambiz, 4,524,471, Cl. 5-8.000.

MAPA - Societa Per Azioni: *See—*
Patelli, Ferruccio, 4,524,567, Cl. 53-552.000.

Marcenac, Philippe: *See—*
Hareng, Michel; Hehlen, Robert; Marcenac, Philippe; Le Berre, Serge; Leclerc, Pierre; and Perbet, Jean-Noel, 4,525,708, Cl. 340-713.000.

Marconi Company Limited, The: *See—*
Crowther, Paul A., 4,525,816, Cl. 367-123.000.

Marhofer. Gerd: *See—*
Buck, Robert; Friedrich, Michael B.; Gesthuysen, Hans D.; and Marhofer, Gerd, 4,525,699, Cl. 340-512.000.

Marien, August M.: *See—*
Uytterhoeven, Herman J.; Gilliams, Yvan K.; De Winter, Walter F.; Marien, August M.; and De Volder, Noel J., 4,525,446, Cl. 430-117.000.

Mark Products Incorporated: *See—*
Woodall, James C., 4,525,814, Cl. 367-20.000.

Markovich, Voya: *See—*
Alpaugh, Warren A.; Amelio, William J.; Markovich, Voya; and Sambucetti, Carlos J., 4,525,390, Cl. 427-305.000.

Marks, Joel S. Squeeze-ratchet tool assembly. 4,524,650, Cl. 81-57.390.

Marley Cooling Tower Company, The: *See—*
McGowan, Joseph L., 4,524,873, Cl. 212-177.000.

Marley Tile A.G.: *See—*
Lynn, Michael E., 4,525,500, Cl. 524-5.000.

Marmon Group, Inc., The: *See—*
Bione, Angelo A.; and Bagus, Brian M., 4,524,665, Cl. 84-1.010.

Marshall, Charles W.: *See—*
Parker, Samuel S.; Marshall, Charles W.; and Money, Durward G., 4,524,683, Cl. 100-3.000.

Marshall, Gerald F.: *See—*
Keem, John E.; and Marshall, Gerald F., 4,525,853, Cl. 378-84.000.

Marshall, Hubert T., II: *See—*
Curran, Paul F.; and Marshall, Hubert T., II, 4,524,615, Cl. 73-181.000.

Marshall, Jay K.: *See—*
Holberton, Philip M.; Randall, Bruce E.; and Marshall, Jay K., 4,525,669, Cl. 324-142.000.

Marshall, John; and Clark, Henry B., Jr. Set-back thermostat assembly. 4,524,908, Cl. 236-46.00R.

Marson Corporation: *See—*
Todisco, Joseph, 4,525,235, Cl. 156-511.000.

Martin, Brian, to Johnson & Johnson Dental Products Company. Photopolymerizable composition including catalyst comprising diketone plus 4-(N,N-dimethylamino)benzoic acid or ester thereof. 4,525,256, Cl. 204-159.180.

Martin, Pierre M.: *See—*
Jeanrat, Roger G.; Martin, Pierre M.; and Hardy, Georjes, 4,524,680, Cl. 99-277.100.

Martinovich, Robert J.: *See—*
Garcia, Rodrigo A.; and Martinovich, Robert J., 4,525,516, Cl. 524-380.000.

Marts, Maynard W.: *See—*
Barnes, Pierre D.; and Marts, Maynard W., 4,524,947, Cl. 251-129.000.

Maruhashi, Shigeaki: *See—*
Yamauchi, Takashi; Maruhashi, Shigeaki; Koike, Shinkichi; and Yamada, Keizo, 4,525,209, Cl. 75-51.500.

Maruyama, Seiichiro: *See—*
Ohmura, Yasuhiro; Maruyama, Seiichiro; and Shigemoto, Shigeru, 4,525,529, Cl. 525-64.000.

Marvin Glass & Associates: *See—*
Hanson, Steven P.; and Breslow, Jeffrey D., 4,524,967, Cl. 273-1.0GE.

Marzy, Otto: *See—*
Blaimschein, Gottfried; and Marzy, Otto, 4,525,112, Cl. 409-199.000.

Masaaki, Nagashima. Underwater bearing protection device. 4,524,977, Cl. 277-3.000.

Mason, Charles D.: *See—*
Hochberg, Arie; Haylock, John C.; and Mason, Charles D., 4,525,513, Cl. 524-288.000.

Massachusetts Computer Corporation: *See—*
Cane, David A., 4,525,778, Cl. 364-200.000.

Massachusetts Institute of Technology: *See—*
Foyt, Arthur G.; Leonberger, Frederick J.; and Williamson, Richard C., 4,525,871, Cl. 455-325.000.

Masse , Lionel; and Boisvert, Richard L. Vault. 4,524,904, Cl. 232-7.000.

Master Pitching Machine, Inc.: *See—*
Giovagnoli, Paul S., 4,524,749, Cl. 124-7.000.

Masuoka, Fujio, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory and method of producing the same. 4,525,811, Cl. 365-154.000.

Materials Research Corporation: *See—*
Class, Walter H.; Hurwitt, Steven D.; and Hill, Michael L., 4,525,262, Cl. 204-192.00R.

Mates, Edward I.: *See—*
Fecik, Michael T.; Ewing, John J.; and Mates, Edward I., 4,525,196, Cl. 65-287.000.

Mathumoto, Sigemi; Kubota, Hidetaka; and Nagoshi, Fumiya, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Thermoplastic resin compositions. 4,525,530, Cl. 525-84.000.

Matoba, Gensuke: *See—*
Shioi, Shunsuke; Matoba, Gensuke; and Miyake, Makoto, 4,525,520, Cl. 524-512.000.

Matra AG: *See—*
Fanti, Hansruedi, 4,524,473, Cl. 5-481.000.

Matsubara, Norio: *See—*
Yagi, Yoshio; Kondo, Toshihiko; Matsubara, Norio; Miyazaki, Shoichiro; Kashiyama, Hajime; and Shibata, Makoto, 4,524,562, Cl. 53-409.000.

Matsuhashi, Hajime: *See—*
Kato, Hidetoshi; Sada, Takeshi; Mayumi, Nobuo; and Matsuhashi, Hajime, 4,525,662, Cl. 322-28.000.

Matsui, Hideaki: *See—*
Okawa, Susumu; Matsui, Hideaki; Jufuku, Yasunobu; and Kato, Toshimi, 4,525,160, Cl. 474-242.000.

Matsui, Masao; Okamoto, Kazuo; and Naruse, Tutomu, to Kanebo, Ltd.; and Kanebo Synthetic Fibers, Ltd. Pile articles with attenuated upper portion and a method for producing the same. 4,525,404, Cl. 428-92.000.

Matsukura, Yoshihiro: *See—*
Ohya, Masaki; Matsukura, Yoshihiro; and Anzai, Mitsuru, 4,525,414, Cl. 428-213.000.

Matsumoto, Akio; and Yokota, Mitsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Pressure responsive pump control system having an alarm lamp. 4,525,125, Cl. 417-44.000.

Matsumoto, Akio; and Yamada, Takao, to Matsushita Electric Co., Ltd. Timer apparatus. 4,525,609, Cl. 200-38.00R.

Matsumura, Hiromu: *See—*
Narisada, Masayuki; Watanabe, Fumihiko; Okada, Tetsuo; and Matsumura, Hiromu, 4,525,355, Cl. 514-210.000.

Matsushima, Hiroshi: *See—*
Shimeki, Yasuharu; Kato, Misao; Matsushima, Hiroshi; and Ishikawa, Toshiro, 4,525,753, Cl. 360-45.000.

Matsushita Electric Co., Ltd.: *See—*
Matsumoto, Akio; and Yamada, Takao, 4,525,609, Cl. 200-38.00R.

Matsushita Electric Industrial Co., Ltd.: *See*—
Hara, Yoshihumi; Takano, Hiroji; Kabashima, Shoshi; and Hasegawa, Mikio, 4,524,507, Cl. 29-564.200.
Imanishi, Kiyokazu; Ichiyanagi, Takashi; Sakurai, Yasuo; Naka, Hirouki; and Nakagawa, Koji, 4,525,757, Cl. 360-130.240.
Kohashi, Tadao; Irie, Hiroyuki; Ide, Susumu; and Esaki, Hiroshi, 4,525,727, Cl. 346-140.00R.
Misawa, Yoshihiko; Seno, Makito; and Fujiwara, Koji, 4,524,860, Cl. 198-740.000.
Nakagawa, Koichiro; Suyama, Satoshi; Yanagi, Masahiro; and Nakajima, Yasutaka, 4,525,758, Cl. 360-133.000.
Nakase, Hiromi; Gotoh, Yasuhiro; and Ozawa, Kuniichi, 4,525,657, Cl. 318-254.000.
Shimeki, Yasuharu; Kato, Misao; Matsushima, Hiroshi; and Ishikawa, Toshiro, 4,525,753, Cl. 360-45.000.
Tomioka, Mitsuharu; and Imajima, Mitsuhiro, 4,525,137, Cl. 431-76.000.

Matsushita, Toshihiko; Morishita, Sadao; and Makishima, Hideo, to Mitsubishi Paper Mills, Ltd. Process for producing multicolor heat-transfer recording paper. 4,525,428, Cl. 428-488.100.

Matsushita, Yoshihiro, to Tsubakimoto Machinery & Engineering Co., Ltd.; and Line Industry Corp. Conveyor driving roller. 4,524,861, Cl. 198-781.000.

Matsuura, Kazuo: *See*—
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; Matsuura, Kazuo; and Miyoshi, Mitsuji, 4,525,552, Cl. 526-116.000.
Tajima, Yoshio; Miyoshi, Mituji; Sugita, Shoji; Kawabe, Kiyoshi; and Matsuura, Kazuo, 4,525,555, Cl. 526-125.000.

Matsuura, Norio. Golf tee. 4,524,974, Cl. 273-207.000.

Matteson, Donald S.; and Sadhu, Kizhakethil M., to Washington State University Research Foundation, Inc. Lewis acid catalysis of the homologation of boronic esters with haloalkylmetal reagents. 4,525,309, Cl. 260-462.00C.

Matusik, Frank J.: *See*—
Fitzgerald, J. Vincent; Matusik, Frank J.; and Nelson, Donald W., 4,524,610, Cl. 73-54.000.

Maul, Michael K.: *See*—
Eldumiati, Ismail I.; and Maul, Michael K., 4,525,776, Cl. 364-200.000.

Mauser, Richard J., to Ampat/Midwest Corp. Simulated structural gasket. 4,524,978, Cl. 277-189.000.

Mavilor Systemes S.A.: *See*—
Ziegler, Rolf; and Hauk, Peter, 4,524,643, Cl. 74-801.000.

Maw-Cheng, Shieh; Seng-Jung, Chen; Li-Jung, Hu; and Jin-Luh, Su, to China Steel Corporation. Si contained ferroalloy addition as a weak pre-deoxidation process in steelmaking. 4,525,210, Cl. 75-58.000.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften: *See*—
Claussen, Nils; Ruhle, Manfred; and Petzow, Gunter, 4,525,464, Cl. 501-103.000.

Max Widenmann Armaturenfabrik: *See*—
Ebert, Karl, 4,524,997, Cl. 285-74.000.

Maxey, Carl W. Edger transport and position apparatus. 4,524,858, Cl. 198-434.000.

Mayor Pharmaceutical Laboratories, Inc.: *See*—
Deihl, Joseph A., 4,525,341, Cl. 424-43.000.

Mayumi, Nobuo: *See*—
Kato, Hidetoshi; Sada, Takeshi; Mayumi, Nobuo; and Matsuhashi, Hajime, 4,525,662, Cl. 322-28.000.

Mazda Motor Corporation: *See*—
Kanazawa, Hirotaka, 4,524,842, Cl. 180-132.000.
Tanaka, Hideki; Kamimura, Masanori; Horikawa, Koji; and Kawasaki, Katsuyuki, 4,525,158, Cl. 474-167.000.

Mazer Corporation, The: *See*—
Panken, Irving, 4,525,214, Cl. 106-19.000.

Mazzeo, Michael P.: *See*—
Kirby, Michael D.; and Mazzeo, Michael P., 4,525,511, Cl. 524-158.000.

McAuliffe, Lawrence, Jr.; and Chauvin, Richard, to Colt Industries Operating Corp. Fuel injection apparatus and system. 4,524,743, Cl. 123-438.000.

McCain Manufacturing Corporation: *See*—
Bulka, Raymond I.; Ketcham, Russell S.; and Mak, Kelvin K., 4,525,118, Cl. 414-43.000.

McCann, John C. Mineral separating process and apparatus. 4,525,270, Cl. 209-44.000.

McCracken, William G., Jr.: *See*—
Hetzel, Frederick; and McCracken, William G., Jr., 4,525,230, Cl. 156-179.000.

McFiggans, Robert B.: *See*—
Soderberg, John H.; Eckert, Alton B.; and McFiggans, Robert B., 4,525,785, Cl. 364-464.000.

McGowan, Joseph L., to Marley Cooling Tower Company, The. Method and apparatus for disassembling sectional boom of tower crane at terminal heights. 4,524,873, Cl. 212-177.000.

McGregor, Charles K.: *See*—
Barnich, Richard G.; Ferguson, Michael H.; and McGregor, Charles K., 4,525,601, Cl. 179-7.0MM.

McGregor, Walter; and Troutman, Richard C., to Ethicon Inc., a part interest. Multiple curved surgical needle. 4,524,771, Cl. 128-339.000.

McGuire, Raymond R.; Coon, Clifford L.; Harrar, Jackson E.; and Pearson, Richard K., to United States of America, Energy. Method for synthesizing N_2O_5. 4,525,252, Cl. 204-101.000.

McHenry, Robert J.; and Ryan, Martin A., to American Can Company. Apparatus for making a multi-layer injection blow molded container. 4,525,134, Cl. 425-130.000.

McIntyre, Robert W.: *See*—
Groom, James S.; and McIntyre, Robert W., 4,524,564, Cl. 53-449.000.

McKenna, Quentin M. Collapsible wind propelled water craft. 4,524,709, Cl. 114-39.000.

McKinney, Linda M.; and McKinney, Osborne K., to Dow Chemical Company, The. Polyurethane backed carpet containing a non-chlorinated polymer. 4,525,405, Cl. 428-95.000.

McKinney, Osborne K.: *See*—
McKinney, Linda M.; and McKinney, Osborne K., 4,525,405, Cl. 428-95.000.

McLawhon, George B.: *See*—
Mosier, John E.; Surjaatmadja, Jim B.; McLawhon, George B.; and Gallup, Jeffrey M., 4,525,804, Cl. 364-900.000.

McMahan, William J.; and Ball, John M. Low flow calibrator. 4,524,606, Cl. 73-40.000.

McMahon, Garfield W.; and Armstrong, Bruce A., to Canada, Her Majesty the Queen in right of, as represented by Minister of National Defence of Her Majesty's Canadian Government. Underwater transducer with depth compensation. 4,524,693, Cl. 367-167.000.

McMahon, Garfield W.: *See*—
Cielo, Paolo G.; and McMahon, Garfield W., 4,525,818, Cl. 367-149.000.

McMaster, Ronald A.; and Nitschke, John S., to Glasstech, Inc. Method and apparatus for supplying cooling air in a glass sheet quench. 4,525,193, Cl. 65-114.000.

McMonagle, Rodger P., to Rogers Corporation. Microwave circuit boards and method of manufacture thereof. 4,525,247, Cl. 204-24.000.

McQueen, Daniel H.: *See*—
Bayha, Charles E.; and McQueen, Daniel H., 4,525,427, Cl. 428-458.000.

McVicker, Richard W.: *See*—
Bleimann, Karl R.; Fookes, Michael J.; McVicker, Richard W.; Munn, John W.; and Nelson, Eugene R., 4,525,139, Cl. 431-189.000.

Mears, David F., to General Electric Company. Programmable radio. 4,525,865, Cl. 455-186.000.

Meckel, Walter: *See*—
Rasshofer, Werner; Konig, Klaus; Meyborg, Holger; Meckel, Walter; and Zenner, Armin, 4,525,590, Cl. 544-222.000.

MED Products, Inc.: *See*—
Hayes, Daniel F.; Sias, Robert G.; Chesney, Lloyd; and Waldron, John W., 4,525,253, Cl. 204-149.000.

Meek, Thomas, to Norwood Industries, Inc. Apparatus for recording and playing back magnetic tape cassettes and the like. 4,525,755, Cl. 360-63.000.

Meeker, Donald J.: *See*—
Bangerter, Roger O.; and Meeker, Donald J., 4,525,323, Cl. 376-106.000.

Meffe, Marc E.: *See*—
Kush, Stephen T.; and Meffe, Marc E., 4,525,626, Cl. 250-227.000.

Megadiamond Industries, Inc.: *See*—
Hall, David R., 4,525,178, Cl. 51-309.000.

Meguro, Takashi; Ogata, Yasunobu; and Sawada, Yoshizo, to Hitachi Metals, Ltd. Method of heat-treating amorphous material. 4,525,222, Cl. 148-121.000.

Mehesch, Hans: *See*—
Meyer, Frank; Cornely, Wolfgang; and Mehesch, Hans, 4,525,103, Cl. 405-261.000.

Meier, Urs: *See*—
Hanseler, Urs; Meier, Urs; and Muther, Franz, 4,525,771, Cl. 361-413.000.

Melai, Henri A. I.: *See*—
De Bijl, Adrianus M. J.; and Melai, Henri A. I., 4,525,648, Cl. 315-224.000.

Merck & Co., Inc.: *See*—
Amato, Joseph S.; Karady, Sandor; and Weinstock, Leonard M., 4,525,582, Cl. 534-558.000.

Merz, Joachim: *See*—
Wildermuth, Eberhard; Jansen, Dirk; Burkhardt, Rudolf; and Merz, Joachim, 4,525,717, Cl. 343-452.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Prochaska, Wolfgang; and Schulz, Ralf-Thilo, 4,525,005, Cl. 293-117.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschrankter Haftung: *See*—
Sarh, Branko; and Pasenau, Hartmut, 4,524,556, Cl. 52-807.000.

Metabi, Tsuneyo, to Minolta Camera Kabushiki Kaisha. Objective lens assembly of variable focal length having a diaphragm mechanism with adjustable aperture. 4,525,037, Cl. 350-450.000.

Metallgesellschaft Aktiengesellschaft: *See*—
Hankel, Dirk, 4,525,207, Cl. 75-3.000.

Methode Champenoise Automatisee-M C.A. G.I.E.: *See*—
Jeanrat, Roger G.; Martin, Pierre M.; and Hardy, Georjes, 4,524,680, Cl. 99-277.100.

Meyborg, Holger: *See*—
Rasshofer, Werner; Konig, Klaus; Meyborg, Holger; Meckel, Walter; and Zenner, Armin, 4,525,590, Cl. 544-222.000.

Meyer, Frank; Cornely, Wolfgang; and Mehesch, Hans, to Bergwerksverband GmbH. Method of fixation of anchoring bolts in boreholes. 4,525,103, Cl. 405-261.000.

Meyers, Paul A.: *See*—
Dorman, Linneaus C.; and Meyers, Paul A., 4,525,495, Cl. 523-205.000.

Michael, Dietrich: *See*—
Bonten, Heinz; Nielinger, Werner; Michael, Dietrich; and Haupt, Heinrich, 4,525,505, Cl. 524-100.000.

Michigan Hanger Company, Inc.: *See*—
Rumble, Ray M., 4,524,934, Cl. 248-62.000.
Rumble, Ray M., 4,524,935, Cl. 248-62.000.

Micronix Partners: *See*—
Rosenberg, Lawrence M., 4,525,852, Cl. 378-34.000.

Mierzwa, Dietmar, to Andreas Stihl. Cap for a tank. 4,524,881, Cl. 220-374.000.

Mikuni Kogyo Co., Ltd.: *See*—
Tominari, Noboru; and Ishida, Takashi, 4,524,745, Cl. 123-478.000.

Milberger, Ernest C.: *See*—
Bremer, Noel J.; Dria, Dennis E.; Milberger, Ernest C.; Blum, Patricia R.; and Nicholas, Mark L., 4,525,471, Cl. 502-209.000.

Miles, Bernard. Sheet holder for food dispenser. 4,524,558, Cl. 53-157.000.

Miller, Curtis B., to Graphic Arts Technical Innovators, Inc. Envelope feeder for printing press with timing circuit for suction cups, feed roller and flywheel. 4,524,691, Cl. 101-232.000.

Miller, David A. B.: *See*—
Chemla, Daniel S.; Damen, Theodoor C.; Gossard, Arthur C.; Miller, David A. B.; and Wood, Thomas H., 4,525,687, Cl. 332-7.510.

Miller, Donald L., to Facet Enterprises, Inc. Adjustable air gap and method for electromagnetic clutch. 4,524,854, Cl. 192-84.00C.

Miller, Ernest L.: *See*—
Barnes, Johnny G.; Hooten, John A.; Hurley, Patrick J.; and Miller, Ernest L., 4,525,806, Cl. 364-900.000.

Miller, Harold E.; and Cheney, Ronald W. Knee brace. 4,524,764, Cl. 128-80.00C.

Miller, Kenneth L., to Chrysler Corporation. Fluid level sensor employing hot wire probe and digital sample and hold circuitry. 4,525,850, Cl. 377-19.000.

Miller, Michael B.: *See*—
Hohmann, Thomas C.; Lewis, Norris E.; and Miller, Michael B., 4,525,025, Cl. 350-96.150.

Miller, Nicholas E.: *See*—
Campbell, Bryant A.; DuBois, Dale R.; Manriquez, Ralph F.; and Miller, Nicholas E., 4,524,719, Cl. 118-719.000.

Miller, Raymond H.: *See*—
Snyder, William J.; Miller, Raymond H.; and Kobayashi, Hisashi, 4,525,138, Cl. 431-187.000.

Miller, Stanley, to J. Stanley Miller Corporation. Apparatus for desalinating water. 4,525,243, Cl. 202-181.000.

Miller, Thomas J., to Topline Automotive Engineering Inc. Apparatus and method for engine prelubrication. 4,524,734, Cl. 123-196.00S.

Miller, Thomas M.; Schraff, Raymond J.; and Labas, Nicholas, to Eltech Systems Corporation. Readily repairable and lightweight cover for a heated vessel. 4,524,702, Cl. 110-173.00A.

Millipore Corporation: *See*—
Rising, Donald B.; and Naegeli, Richard G., Jr., 4,525,182, Cl. 55-159.000.

Mimura, Yoshiki: *See*—
Arai, Tetsuji; and Mimura, Yoshiki, 4,525,380, Cl. 427-53.100.

Minagawa, Motonobu; Kubota, Naohiro; Shibata, Toshihiro; and Arata, Ryozo, to Adeka Argus Chemical Co., Ltd. Polyhydric alcohol ethers of 2,2,6,6-tetramethyl-4-piperidone ketals and synthetic resin compositions. 4,525,506, Cl. 524-102.000.

Minakata, Itsuo: *See*—
Ito, Osamu; Yamasaki, Harumasa; Minakata, Itsuo; and Nishizawa, Kazunori, 4,524,577, Cl. 57-200.000.

Mingrone, Frank V. Fire suppression systems. 4,524,835, Cl. 169-65.000.

Ministry of International Trade & Industry: *See*—
Yamanaka, Kazushi, 4,524,621, Cl. 73-597.000.

Minnesota Mining and Manufacturing Company: *See*—
Lynn, Michael M.; and Howells, Richard D., 4,525,423, Cl. 428-421.000.
Patel, Kalyanji U., 4,525,305, Cl. 260-401.000.
Vogelgesang, Peter J., 4,525,696, Cl. 335-272.000.

Minoh, Michihiko: *See*—
Sakai, Toshiyuki; Ohta, Yuichi; Minoh, Michihiko; and Hino, Masatoshi, 4,525,747, Cl. 358-284.000.

Minolta Camera Kabushiki Kaisha: *See*—
Metabi, Tsuneyo, 4,525,037, Cl. 350-450.000.
Tanaka, Susumu; and Takebe, Kaoru, 4,525,447, Cl. 430-122.000.

Mintz, Daniel. Ladder. 4,524,847, Cl. 182-23.000.

Miranti, Joseph P., Jr.: *See*—
Quick, Terrence R.; Standley, Paul M.; Foley, Mark P.; Howerton, Anderson W.; Miranti, Joseph P., Jr.; Oliver, Larry R.; Holloway, Gerald C., Jr.; and Richmond, Kenneth D., 4,525,150, Cl. 474-93.000.

Misaki, Hideo: *See*—
Imamura, Shigeyuki; Misaki, Hideo; and Muto, Naoki, 4,525,458, Cl. 435-196.000.

Misawa, Yoshihiko; Seno, Makito; and Fujiwara, Koji, to Matsushita Electric Industrial Co., Ltd. Automatic board transfer apparatus. 4,524,860, Cl. 198-740.000.

Mitani, Kazuya: *See*—
Itho, Yasuo; Kato, Hideo; Ogawa, Nobuo; Yamagishi, Kagari; Koshinaka, Eiichi; and Mitani, Kazuya, 4,525,356, Cl. 514-234.000.

Mito, Ikuo: *See*—
Kitamura, Mitsuhiro; Mito, Ikuo; and Kobayashi, Kohroh, 4,525,841, Cl. 372-48.000.

Mitsubishi Chemical Industries Limited: *See*—
Ohmura, Yasuhiro; Maruyama, Seiichiro; and Shigemoto, Shigeru, 4,525,529, Cl. 525-64.000.
Tanaka, Toru; Iwatani, Kazutoshi; Enokido, Nobuo; Murakami, Atsushi; and Yamaguchi, Yukio, 4,525,554, Cl. 526-124.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Kato, Kunitoshi, 4,525,656, Cl. 318-85.000.
Katto, Masayuki, 4,525,660, Cl. 318-798.000.
Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,525,125, Cl. 417-44.000.
Sato, Shinichi, 4,524,508, Cl. 29-571.000.
Shiratani, Yuji, 4,525,867, Cl. 455-194.000.
Tanaka, Toshinori, 4,525,632, Cl. 290-38.00R.
Tatsumi, Takumi, 4,524,645, Cl. 74-866.000.
Yoshizumi, Toshiaki, 4,524,637, Cl. 74-569.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Ide, Eizo; and Fujimura, Hiroshi, 4,525,619, Cl. 219-124.220.

Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Morikawa, Masaki; Yoshida, Hideaki; and Kishida, Kunio, 4,525,434, Cl. 428-674.000.

Mitsubishi Monsanto Chemical Company: *See*—
Ikuma, Sadao; Aoki, Yuji; and Watanabe, Noboru, 4,525,536, Cl. 525-194.000.

Mitsubishi Paper Mills, Ltd.: *See*—
Matsushita, Toshihiko; Morishita, Sadao; and Makishima, Hideo, 4,525,428, Cl. 428-488.100.

Mitsubishi Rayon Co., Ltd.: *See*—
Inoue, Masao; Suzuki, Shingo; and Gotoh, Hajime, 4,525,029, Cl. 350-128.000.
Kamada, Kazumasa; Tamai, Katsumi; Abe, Kazunori; and Shiraishi, Yoshinobu, 4,525,537, Cl. 525-198.000.

Mitsubishi Steel Mfg. Co., Ltd.: *See*—
Yoshimura, Tsuneo, 4,524,819, Cl. 164-468.000.

Mitsui Petrochemical Industries Ltd.: *See*—
Kato, Akifumi; Yoshida, Junichi; and Yamamoto, Ryoichi, 4,525,547, Cl. 526-68.000.
Ueda, Takashi; and Kashiwa, Norio, 4,525,469, Cl. 502-125.000.

Miya, Tetsuo: *See*—
Okamoto, Katsunari; Edahiro, Takao; Kawana, Akio; and Miya, Tetsuo, 4,525,027, Cl. 350-96.300.

Miyagawa, Seiichi; and Nakane, Takeshi, to Aisin Seiki Kabushiki Kaisha. Generator for generating a rotational signal in accordance with changing saturation magnetic flux density of a magnetic member. 4,525,670, Cl. 324-208.000.

Miyake, Makoto: *See*—
Shioi, Shunsuke; Matoba, Gensuke; and Miyake, Makoto, 4,525,520, Cl. 524-512.000.

Miyamoto, Hiroshi, to Orc Manufacturing Co., Ltd. Exposure apparatus. 4,525,060, Cl. 355-53.000.

Miyao, Fumio, to Fuji Xerox Co., Ltd. Digital signal transmission system. 4,525,832, Cl. 370-85.000.

Miyao, Fumio: *See*—
Tan, Yoichi; and Miyao, Fumio, 4,525,837, Cl. 370-85.000.

Miyashita, Tetsuharu: *See*—
Sawano, Katsutoshi; and Miyashita, Tetsuharu, 4,525,667, Cl. 324-140.00R.

Miyazaki, Michio: *See*—
Nozawa, Masafumi; and Miyazaki, Michio, 4,525,839, Cl. 371-38.000.

Miyazaki, Shoichiro: *See*—
Yagi, Yoshio; Kondo, Toshihiko; Matsubara, Norio; Miyazaki, Shoichiro; Kashiyama, Hajime; and Shibata, Makoto, 4,524,562, Cl. 53-409.000.

Miyazaki, Yasunosuke: *See*—
Kubo, Kunimichi; Yoshikawa, Mamoru; Watanabe, Motokazu; Miyazaki, Yasunosuke; and Miyoshi, Mituji, 4,525,548, Cl. 526-72.000.

Miyazawa, Tetsuo: *See*—
Kobayashi, Seishichi; Miyazawa, Tetsuo; and Ueno, Hiroshi, 4,525,497, Cl. 523-400.000.

Miyoshi, Mitsuji: *See*—
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; Matsuura, Kazuo; and Miyoshi, Mitsuji, 4,525,552, Cl. 526-116.000.

Miyoshi, Mituji: *See*—
Kubo, Kunimichi; Yoshikawa, Mamoru; Watanabe, Motokazu; Miyazaki, Yasunosuke; and Miyoshi, Mituji, 4,525,548, Cl. 526-72.000.
Tajima, Yoshio; Miyoshi, Mituji; Sugita, Shoji; Kawabe, Kiyoshi; and Matsuura, Kazuo, 4,525,555, Cl. 526-125.000.

Mizogui, Toyokazu: *See*—
Someya, Hiromi; Aihara, Yoshihiko; Mizogui, Toyokazu; and Suzuki, Nobuyuki, 4,525,054, Cl. 354-443.000.

Mobay Chemical Corporation: *See*—
Yeater, Robert P., 4,525,575, Cl. 528-301.000.

Mobil Oil Corporation: *See*—
Robertson, Arthur B., 4,525,395, Cl. 428-35.000.

Mogami, Takao: *See*—
Kubota, Satoshi; Nakashima, Mikito; Mogami, Takao; and Nakagawa, Tetsuo, 4,525,421, Cl. 428-412.000.

Moge , Robert A., to Rockwell International Corporation. Conveyor apparatus. 4,524,863, Cl. 198-797.000.

Moir, Ian: *See*—
Cohen, Albert E.; Hance, William G.; Moir, Ian; Lane, Thao; and Caussarieu, Frederic, 4,525,830, Cl. 370-60.000.

Molbert, John L.; and Riddle, Eddie R., to Troxler Electronic Laboratories, Inc. Radiation scatter apparatus and method. 4,525,854, Cl. 378-089.000.

Moll, Reiner; and Hornung, Armin, to Moll, Reiner. Modular framework system for furniture racks or similar articles. 4,525,093, Cl. 403-4.000.

Molnlycke AB: *See—*
Lunden, Bertil, 4,524,895, Cl. 225-19.000.

Monahan, John F.: *See—*
Wood, Robert F., Jr.; Monahan, John F.; and Levine, Peter A., 4,525,743, Cl. 358-213.000.

Monarch Marking Systems, Inc.: *See—*
Karn, Donald L., 4,524,686, Cl. 101-111.000.

Money, Durward G.: *See—*
Parker, Samuel S.; Marshall, Charles W.; and Money, Durward G., 4,524,683, Cl. 100-3.000.

Montagnon, Bernard J.; and Fanget, Bernard J. C., to Societe Anonyme dite: Institut Merueux. Process for the large-scale production of a vaccine against poliomyelitis and the resulting vaccine. 4,525,349, Cl. 424-89.000.

Montagu, Jean I.; and Pelsue, Kurt A., to General Scanning Inc. Positioner for optical element. 4,525,030, Cl. 350-255.000.

Montedison S.p.A.: *See—*
Moretti, Enrico; Zamboni, Valentino; Le Van Mao, Raymond; Padovan, Mario; and Solari, Marcello, 4,525,466, Cl. 502-63.000.

Montefina, S.A.: *See—*
Bertrand, Jean-Noel; and Castelein, Jean, 4,525,533, Cl. 525-98.000.

Montier, Patrick: *See—*
Bisping, Bernhard; Gersbach, Klaus; Luther, Hans; Simon, Walter; Wallow, Peter; Montier, Patrick; Moreau, Pierre A.; and Sauvestre, Jean C., 4,524,695, Cl. 102-430.000.

Montiero, Richard, to Remcut International Inc. Adjustable interior pipe cutter. 4,524,511, Cl. 30-108.000.

Moore, Milton D. Accident reconstruction device. 4,524,602, Cl. 73-9.000.

Morales, Alfredo; Galiasso, Roberto; and Carrasquel, Angel R., to Intevep, S.A. Process for catalyst preparation for the hydrodemetallization of heavy crudes and residues. 4,525,472, Cl. 502-323.000.

Moreau, Pierre A.: *See—*
Bisping, Bernhard; Gersbach, Klaus; Luther, Hans; Simon, Walter; Wallow, Peter; Montier, Patrick; Moreau, Pierre A.; and Sauvestre, Jean C., 4,524,695, Cl. 102-430.000.

Moretti, Enrico; Zamboni, Valentino; Le Van Mao, Raymond; Padovan, Mario; and Solari, Marcello, to Montedison S.p.A. Process for synthetizing zeolites having a mordenite structure and having high catalytic activity. 4,525,466, Cl. 502-63.000.

Morgner, Henry: *See—*
Neumann, Manfred; Schiller, Siegfried; ZeiBig, Gerhard; Morgner, Henry; and Jasch, Gunter, 4,524,717, Cl. 118-718.000.

Mori, Kei. Solar ray collecting device. 4,524,758, Cl. 126-440.000.

Mori, Kei. Solar light energy and electric lighting system and solar and electric light lamps used therein. 4,525,031, Cl. 350-265.000.

Mori, Kiyoto: *See—*
Nakamura, Hatsuo; Kato, Tiharu; Yonezawa, Toshio; Koguchi, Shigeo; Mori, Kiyoto; and Igarashi, Masahiko, 4,525,523, Cl. 524-572.000.

Mori, Yoshiaki: *See—*
Yasukawa, Motohiro; Ishikawa, Yukio; Ojima, Yasuo; Harada, Hiromi; and Mori, Yoshiaki, 4,525,208, Cl. 75-25.000.

Mori, Yuichirou, to Sharp Kabushiki Kaisha. Interpolation dot control in an ink jet system printer. 4,525,726, Cl. 346-75.000.

Morikawa, Masaki; Yoshida, Hideaki; and Kishida, Kunio, to Mitsubishi Kinzoku Kabushiki Kaisha; and Fujitsu Limited. Copper alloy having high resistance to oxidation for use in leads on semiconductor devices and clad material containing said alloy. 4,525,434, Cl. 428-674.000.

Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, to Takeda Chemical Industries, Ltd. Aralkyl carboxylic acid compounds in compositions for potentiating immuno activity. 4,525,361, Cl. 514-689.000.

Morishita, Sadao: *See—*
Matsushita, Toshihiko; Morishita, Sadao; and Makishima, Hideo, 4,525,428, Cl. 428-488.100.

Morita, Hirofumi; and Hosokawa, Teruo, to Nippon Telegraph & Telephone Public Corporation. Deflective focusing system for charged particle beam. 4,525,629, Cl. 250-396.0ML.

Morita, Kiyomi: *See—*
Kashiwaya, Mineo; Morita, Kiyomi; and Sakamoto, Masahide, 4,524,739, Cl. 123-339.000.

Morizumi, Masaaki: *See—*
Takaoka, Yukio; Morizumi, Masaaki; and Takahashi, Norimichi, 4,525,046, Cl. 354-149.110.

Morrell, Robert F., Jr., to Senco Products, Inc. Reversible staple feeder shoe and door system for the magazine of a staple driving tool. 4,524,896, Cl. 227-126.000.

Morris, John C.; and Zannucci, Joseph S., to Eastman Kodak Company. Stabilized polyester compositions suitable for outdoor applications. 4,525,504, Cl. 524-99.000.

Morris, Robert C.; and Shelton, Russell S. Thermostatic fishing device. 4,524,539, Cl. 43-44.870.

Mortimer, John K., to F. F. Seeley Nominees Pty. Ltd. Carton handle. 4,524,902, Cl. 229-52.00A.

Moser, David: *See—*
Parkhurst, Warren E.; and Moser, David, 4,525,263, Cl. 204-196.000.

Mosier, John E.; Surjaatmadja, Jim B.; McLawhon, George B.; and Gallup, Jeffrey M., to Halliburton Company. Interface apparatus for host computer and graphics terminal. 4,525,804, Cl. 364-900.000.

Mosko, Joseph A.: *See—*
Corzine, Robert G.; and Mosko, Joseph A., 4,525,720, Cl. 343-895.000.

Mosler, Gerhard: *See—*
Blum, Rainer; Spoor, Herbert; Osterloh, Rolf; Mosler, Gerhard; and Rubbert, Bernhard, 4,525,570, Cl. 528-75.000.

Motohashi, Takayuki: *See—*
Kaibara, Nobuhiro; Ida, Toshio; Okuda, Shinji; and Motohashi, Takayuki, 4,524,914, Cl. 239-452.000.

Motorola, Inc.: *See—*
Boyle, David H.; and Kouba, Daniel J., 4,525,640, Cl. 307-450.000.
Dworsky, Lawrence N., 4,525,647, Cl. 310-361.000.
Freeburg, Thomas A., 4,525,861, Cl. 455-33.000.
Holden, Kirk N., 4,525,797, Cl. 364-788.000.
Jason, Barry L., 4,525,683, Cl. 330-288.000.
Parker, Norman W., 4,525,862, Cl. 455-47.000.
Rapps, Gary M.; and Feder, Alvin, 4,524,497, Cl. 29-25.350.
Richmond, Carl T.; Butler, Thomas A.; and Andrews, Joseph E., Jr., 4,525,675, Cl. 328-140.000.
Smith, Philip S.; and Gallup, Michael G., 4,525,851, Cl. 377-110.000.

MTD Products Inc.: *See—*
Ballard, Louis F., 4,524,632, Cl. 74-471.00R.

Muchel, Franz, to Carl-Zeiss-Stiftung. Optical system of variable focal and back-focal length. 4,525,042, Cl. 350-519.000.

Mucheyer, Norbert; and Schulte, Heinz, to Mannesmann Rexroth GmbH. Pressure-fluid operated limit switch. 4,524,945, Cl. 251-75.000.

Mucsy, Endre; and Hoos, Kazmer. Stand-by electrical supply source. 4,525,661, Cl. 322-4.000.

Muders, Rolf: *See—*
Horak, Otto; Falkenberg, Werner; Muders, Rolf; and Beinert, Werner, 4,525,283, Cl. 210-762.000.

Muehling, Anthony A. Continuous loop flexible saw. 4,524,519, Cl. 30-382.000.

Mueller, Christoph. Unitary resilient bearing support. 4,524,482, Cl. 16-44.000.

Mueller, Hans J., to Appleton Papers Inc. Adjustable air knife. 4,524,716, Cl. 118-665.000.

Muller, Bernard L.: *See—*
Schulte-Elte, Karl H.; and Muller, Bernard L., 4,525,298, Cl. 252-522.00R.

Muller, Dietmar, to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V. Process and apparatus for producing single- or multi-base propellants. 4,525,313, Cl. 264-3.00B.

Muller, Rolf. Fish eye lens system. 4,525,038, Cl. 350-462.000.

Mullins, Michael J.: *See—*
Woo, Edmund P.; and Mullins, Michael J., 4,525,577, Cl. 528-327.000.

Mullis, H. Leon. Glass sight gauge for high pressure vessel. 4,524,618, Cl. 73-323.000.

Mundie, Craig J.: *See—*
Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Mundie, Craig J.; Schleimer, Stephen I.; and Wallach, Steven J., 4,525,780, Cl. 364-200.000.

Munn, John W.: *See—*
Bleimann, Karl R.; Fookes, Michael J.; McVicker, Richard W.; Munn, John W.; and Nelson, Eugene R., 4,525,139, Cl. 431-189.000.

Munn, Robin W.: *See—*
Cheresnowsky, Michael J.; Brunelli, Timothy A.; Munn, Robin W.; and Kim, Tai K., 4,525,331, Cl. 423-54.000.

Murakami, Atsushi: *See—*
Tanaka, Toru; Iwatani, Kazutoshi; Enokido, Nobuo; Murakami, Atsushi; and Yamaguchi, Yukio, 4,525,554, Cl. 526-124.000.

Murakami, Tomomi, to Citizen Watch Co., Ltd. Apparatus for measuring the quantity of physical exercise. 4,525,074, Cl. 368-10.000.

Muramatsu, Toyojiro: *See—*
Inagi, Toshio; Muramatsu, Toyojiro; and Nagai, Hidetaka, 4,525,347, Cl. 424-81.000.

Murasawa, Sadao: *See—*
Takahata, Kei; Murasawa, Sadao; Ichida, Hiroshi; Okada, Mizuho; and Nakayama, Takao, 4,525,441, Cl. 430-46.000.

Murata, Masanori; and Hayashi, Isao, to Nissan Motor Co., Ltd. Supporting structure for a floor-mounted type speed change lever. 4,524,633, Cl. 74-473.00R.

Murphy, Desmond L.; and Wimmer, Warren K., to Tektronix, Inc. Oscilloscope signal input circuit including an attenuator. 4,525,688, Cl. 333-81.00R.

Murphy, Edward J.: *See—*
Sekmakas, Kazys; and Murphy, Edward J., 4,525,543, Cl. 525-529.000.

Murphy, Peter H. Modulated forming machine. 4,524,812, Cl. 144-134.00A.

Murray, Myles N. Electrolytic capacitor and improved header therefor. 4,525,022, Cl. 339-220.00C.

Musha, Tohru: *See—*
Ito, Kenichi; Musha, Tohru; Kato, Kiichi; and Yamamoto, Kimiaki, 4,525,825, Cl. 369-45.000.

Muther, Franz: *See—*
Hanseler, Urs; Meier, Urs; and Muther, Franz, 4,525,771, Cl. 361-413.000.

Muto, Naoki: *See—*
Imamura, Shigeyuki; Misaki, Hideo; and Muto, Naoki, 4,525,458, Cl. 435-196.000.

Myers, Harold P. Burglar and intruder detection system. 4,525,047, Cl. 354-173.000.

Myers, John D. Laser device and method. 4,525,842, Cl. 372-92.000.

Myers, William C. Bingo cover dispenser. 4,524,884, Cl. 221-231.000.

Myhre, Douglas C., to Rosemount Inc. Vibration dampened beam. 4,525,081, Cl. 374-208.000.

N. Schlumberger & Cie: *See—*
Herubel, Jean-Frederic, 4,525,002, Cl. 289-2.000.

Nabisco Brands, Inc.: *See—*
D'Amelia, Ronald P.; Stroz, John J.; and White, Roy, 4,525,363, Cl. 426-3.000.

Nader, N. Joseph. Pill dispenser and method of loading. 4,524,869, Cl. 206-358.000.

Naegeli, Richard G., Jr.: *See—*
Rising, Donald B.; and Naegeli, Richard G., Jr., 4,525,182, Cl. 55-159.000.

Nagai, Hidetaka: *See—*
Inagi, Toshio; Muramatsu, Toyojiro; and Nagai, Hidetaka, 4,525,347, Cl. 424-81.000.

Nagai, Shigeo, to Nisshin Kogyo Kabushiki Kaisha. Clutch brake arrangement for farm work machinery or other equipment. 4,524,853, Cl. 192-18.00R.

Naganawa, Tadahisa: *See—*
Tomita, Tsutomu; Horio, Kimihide; and Naganawa, Tadahisa, 4,525,151, Cl. 474-101.000.

Naganuma, Yoshihiro: *See—*
Saito, Takashi; Suzuki, Kazumoto; and Naganuma, Yoshihiro, 4,525,432, Cl. 428-653.000.

Nagashima, Shigeo: *See—*
Omoda, Koichiro; Inagami, Yasuhiro; Torii, Shunichi; and Nagashima, Shigeo, 4,525,796, Cl. 364-730.000.

Nagler, Albert. Wide angle eyepiece. 4,525,035, Cl. 350-410.000.

Nagoshi, Fumiya: *See—*
Mathumoto, Sigemi; Kubota, Hidetaka; and Nagoshi, Fumiya, 4,525,530, Cl. 525-84.000.

Naito, Takayuki: *See—*
Aburaki, Shimpei; Kamachi, Hajime; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,525,473, Cl. 514-202.000.

Naka, Hirouki: *See—*
Imanishi, Kiyokazu; Ichiyanagi, Takashi; Sakurai, Yasuo; Naka, Hirouki; and Nakagawa, Koji, 4,525,757, Cl. 360-130.240.

Nakagawa, Koichiro; Suyama, Satoshi; Yanagi, Masahiro; and Nakajima, Yasutaka, to Matsushita Electric Industrial Co., Ltd. Cartridge. 4,525,758, Cl. 360-133.000.

Nakagawa, Koji: *See—*
Imanishi, Kiyokazu; Ichiyanagi, Takashi; Sakurai, Yasuo; Naka, Hirouki; and Nakagawa, Koji, 4,525,757, Cl. 360-130.240.

Nakagawa, Mitsuru: *See—*
Kawai, Kyosuke; Nakagawa, Mitsuru; Yanase, Shinji; and Kawai, Kiyoshi, 4,525,190, Cl. 65-14.000.

Nakagawa, Tetsuo: *See—*
Kubota, Satoshi; Nakashima, Mikito; Mogami, Takao; and Nakagawa, Tetsuo, 4,525,421, Cl. 428-412.000.

Nakajima, Junya; Imai, Kiyoshi; and Nakamura, Takashi, to Fuji Photo Film Company, Limited. Method of treatment of color photographic materials. 4,525,449, Cl. 430-407.000.

Nakajima, Yasutaka: *See—*
Nakagawa, Koichiro; Suyama, Satoshi; Yanagi, Masahiro; and Nakajima, Yasutaka, 4,525,758, Cl. 360-133.000.

Nakajima, Yukio: *See—*
Sasa, Hiroyuki; Yabe, Hisao; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, 4,525,220, Cl. 134-21.000.

Nakamata, Hideo, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for hydraulically assembling a driven shaft and a drive member. 4,524,503, Cl. 29-407.000.

Nakamura, Hatsuo; Kato, Tiharu; Yonezawa, Toshio; Koguchi, Shigeo; Mori, Kiyoto; and Igarashi, Masahiko, to Kanto Chemical Co., Inc.; and Tokyo Shibaura Denki Kabushiki Kaisha. Negative-working photoresist coating composition. 4,525,523, Cl. 524-572.000.

Nakamura, Hiroaki: *See—*
Enoki, Takashi; Nakamura, Hiroaki; and Nakashima, Fujio, 4,525,820, Cl. 369-2.000.

Nakamura, Kyoichi: *See—*
Maeda, Hirofumi; Nakamura, Kyoichi; and Fukui, Hisatoshi, 4,525,485, Cl. 521-58.000.

Nakamura, Masahiro, to Ohtake Works Company, Ltd. Method for oscillating ultrasonic waves and a microcomputer's built-in ultrasonic wave oscillator circuitry. 4,525,790, Cl. 364-484.000.

Nakamura, Masakatsu: *See—*
Takasa, Kenji; and Nakamura, Masakatsu, 4,525,396, Cl. 428-35.000.

Nakamura, Munehiro: *See—*
Kobayashi, Shigeru; and Nakamura, Munehiro, 4,525,486, Cl. 521-59.000.

Nakamura, Shigeru; Tsunoda, Yoshito; Shigematsu, Kazuo; Kaku, Toshimitsu; Maeda, Takeshi; and Kato, Tsuyoshi, to Hitachi, Ltd. Optical track position detecting apparatus and optical information processor using the same. 4,525,826, Cl. 369-46.000.

Nakamura, Soichi; and Konno, Kunio, to Nippon Kogaku K.K. Viewfinder optical arrangement of a camera. 4,525,744, Cl. 358-224.000.

Nakamura, Takashi: *See—*
Nakajima, Junya; Imai, Kiyoshi; and Nakamura, Takashi, 4,525,449, Cl. 430-407.000.

Nakamura, Takeaki: *See—*
Sasa, Hiroyuki; Yabe, Hisao; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, 4,525,220, Cl. 134-21.000.

Nakamura, Toru, to Olympus Optical Co., Ltd. Lens system for optical recording type disks. 4,525,040, Cl. 350-480.000.

Nakamura, Toru: *See—*
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; Matsuura, Kazuo; and Miyoshi, Mitsuji, 4,525,552, Cl. 526-116.000.

Nakane, Takeshi: *See—*
Miyagawa, Seiichi; and Nakane, Takeshi, 4,525,670, Cl. 324-208.000.

Nakane, Yasuaki; Akamatsu, Junichi; Sakamoto, Susumu; and Kiyomiya, Tadashi, to Sony Corporation. Information recording medium. 4,525,412, Cl. 428-199.000.

Nakanishi, Mikihiko, to Sakura Color Products Corp. Ink composition. 4,525,216, Cl. 106-30.000.

Nakanishi, Mikihiko: *See—*
Shioi, Keiko; and Nakanishi, Mikihiko, 4,525,215, Cl. 106-22.000.

Nakanishi, Shigenori: *See—*
Takagaki, Hidetsugu; Nakanishi, Shigenori; Tanaka, Yasuyuki; Watanabe, Michihiro; and Yonehara, Yoriko, 4,525,303, Cl. 260-239.55R.

Nakase, Hiromi; Gotoh, Yasuhiro; and Ozawa, Kuniichi, to Matsushita Electric Industrial Co., Ltd. Torque ripple compensation circuit for a brushless D.C. motor. 4,525,657, Cl. 318-254.000.

Nakashima, Fujio: *See—*
Enoki, Takashi; Nakamura, Hiroaki; and Nakashima, Fujio, 4,525,820, Cl. 369-2.000.

Nakashima, Mikito: *See—*
Kubota, Satoshi; Nakashima, Mikito; Mogami, Takao; and Nakagawa, Tetsuo, 4,525,421, Cl. 428-412.000.

Nakayama, Takao: *See—*
Takahata, Kei; Murasawa, Sadao; Ichida, Hiroshi; Okada, Mizuho; and Nakayama, Takao, 4,525,441, Cl. 430-46.000.

Narayan, Thirumurti, to BASF Wyandotte Corporation. Phosphonium carboxylate catalysts for the preparation of foams characterized by isocyanurate, and/or urethane linkages. 4,525,489, Cl. 521-108.000.

Narayanan, Sarukkai R. Multi-modal educational and entertainment system. 4,525,148, Cl. 434-340.000.

Narisada, Masayuki; Watanabe, Fumihiko; Okada, Tetsuo; and Matsumura, Hiromu, to Shionogi & Co., Ltd. 7-β-Ureidoacetamidooxacephalosporins. 4,525,355, Cl. 514-210.000.

Narisawa, Shigeyuki; Funaki, Masahiko; Kojima, Hiroaki; and Kuga, Kazuhiko, to Asahi Glass Company, Ltd. Process for producing a polyurethane elastomer by reaction injection molding. 4,525,491, Cl. 521-174.000.

Narita, Yukio: *See—*
Aburaki, Shimpei; Kamachi, Hajime; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,525,473, Cl. 514-202.000.

Naruse, Tutomu: *See—*
Matsui, Masao; Okamoto, Kazuo; and Naruse, Tutomu, 4,525,404, Cl. 428-92.000.

National Drying Machinery Co.: *See—*
Parkes, Richard B., 4,525,370, Cl. 426-508.000.

National Gypsum Company: *See—*
Hess, Grant F., 4,524,852, Cl. 190-16.000.

National Metal and Refining Company, Ltd.: *See—*
Fitzgerald, J. Vincent; Matusik, Frank J.; and Nelson, Donald W., 4,524,610, Cl. 73-54.000.

National Research Development Corporation: *See—*
Capaccio, Giancarlo; and Ward, Ian M., 4,525,564, Cl. 526-348.100.

NCR Corporation: *See—*
Chahal, Maninderpal S.; and Therrien, Roger H., 4,525,741, Cl. 358-212.000.
Shipos, Louis E.; and Tinker, Steven I., 4,525,088, Cl. 400-621.000.

NEC Corporation: *See—*
Sato, Ikuro; and Iwata, Ryuichi, 4,525,719, Cl. 343-761.000.

Needham, Maurice E., to Hadco Corporation. Making solderable printed circuit boards. 4,525,246, Cl. 204-15.000.

Nelson, Donald L.; and Lamont, Mary H., to Dow Chemical Company, The. Vinyl ester resin composition. 4,525,544, Cl. 525-531.000.

Nelson, Donald W.: *See—*
Fitzgerald, J. Vincent; Matusik, Frank J.; and Nelson, Donald W., 4,524,610, Cl. 73-54.000.

Nelson, Eugene R.: *See—*
Bleimann, Karl R.; Fookes, Michael J.; McVicker, Richard W.; Munn, John W.; and Nelson, Eugene R., 4,525,139, Cl. 431-189.000.

Nelson Research & Development Co.: *See—*
Rajakhyaksha, Vithal J., 4,525,199, Cl. 514-788.000.

Nemoto, Shigeru; Saitou, Sinichi; Kitajima, Goro ; and Osada, Hazime, to Olympus Optical Co., Ltd. Operating lever device of a magnetic recording tape driving apparatus. 4,525,760, Cl. 360-137.000.

Nemoto, Tsuneo; and Sugawara, Kokichi, to Sony Corporation. Cassette and cassette adapter for use therewith. 4,524,926, Cl. 242-198.000.

Neppl, Franz: *See—*
Schwabe, Ulrich; Jacobs, Erwin P.; and Neppl, Franz, 4,525,378, Cl. 427-38.000.

Neri, Armando: *See—*
Seragnoli, Enzo; and Neri, Armando, 4,524,784, Cl. 131-281.000.
Seragnoli, Enzo; and Neri, Armando, 4,524,785, Cl. 131-281.000.

Ness, Irving S., to Chicopee. Elastic composites. 4,525,407, Cl. 428-138.000.

Nestec S.A.: *See—*
Bengtsson, Bengt L.; Palmlin, Peter; and Ekholm, Jan, 4,525,368, Cl. 426-438.000.

NesTier Corporation: *See—*
Davis, Walter G., 4,524,723, Cl. 119-45.00R.

Netherway, David C.: *See—*
Trickey, Peter W.; Netherway, David C.; and Clifford, William S., 4,525,010, Cl. 297-216.000.

Netznik, Frederick P. Upright bicycle for handicapped. 4,524,988, Cl. 280-208.000.

Netznik, Frederick P. Adjustable molding frame. 4,525,130, Cl. 425-2.000.

Neumann, Lawrence T.; and Dissett, Walter L., to Tractech, Inc. Integral holdout ring and spring retainer for differentials. 4,524,640, Cl. 74-650.000.

Neumann, Manfred; Schiller, Siegfried; ZeiBig, Gerhard; Morgner, Henry; and Jasch, Gunter, to Bakish Materials Corp. Electron beam strip-coating apparatus. 4,524,717, Cl. 118-718.000.

New England Institute, Inc., The: *See—*
Casey, Adria C.; Adler, Alan D.; and Premuzic, Eugene T., 4,525,350, Cl. 424-94.000.

Newman, Arnold L.: *See—*
Fischell, Robert E.; Newman, Arnold L.; Riblet, Henry B.; and Powell, William R., 4,524,773, Cl. 128-419.00S.

Newton, Charles L., to Air Products and Chemicals, Inc. Dual mixed refrigerant natural gas liquefaction with staged compression. 4,525,185, Cl. 62-11.000.

Newville, Randy. Crawfish peeler. 4,524,490, Cl. 17-48.000.

Ng, Norman H.: *See—*
Rastall, Mary H.; Ng, Norman H.; and MacPherson, Edwin J., 4,525,492, Cl. 521-181.000.

NGK Insulators, Ltd.: *See—*
Abe, Shozo, 4,525,597, Cl. 174-52.0FP.

Nicholas, Mark L.: *See—*
Bremer, Noel J.; Dria, Dennis E.; Milberger, Ernest C.; Blum, Patricia R.; and Nicholas, Mark L., 4,525,471, Cl. 502-209.000.

Nickel, Gerhard E. B.; and Alberghini, Alfred C., to Sewell Plastics, Inc. Method of applying coating. 4,525,377, Cl. 427-12.000.

Nielinger, Werner: *See—*
Bonten, Heinz; Nielinger, Werner; Michael, Dietrich; and Haupt, Heinrich, 4,525,505, Cl. 524-100.000.

Nifco Inc.: *See—*
Sato, Youji; Omata, Nobuaki; and Shimbara, Sakuzo, 4,524,494, Cl. 24-453.000.
Tanaka, Toshie, 4,525,004, Cl. 292-171.000.

Nilsen, Arnold W. Windrow aerator. 4,524,575, Cl. 56-372.000.

Nilsson, Arne H. A., to Ingeniorsfirma N.D.C. Netzler & Dahlgren Co Aktiebolag. Device for indicating a certain proximity between movable units. 4,524,931, Cl. 246-167.00D.

Nilsson, Mary Nilsson and Goran, legal representatives: *See—*
Nilsson, Vilgot, deceased, 4,525,155, Cl. 494-3.000.

Nilsson, Vilgot, deceased (by Nilsson, Mary Nilsson and Goran, legal representatives), to Alfa-Laval Marine and Powering Engineering AB. Centrifugal separator and method of operating the same. 4,525,155, Cl. 494-3.000.

Nippon Air Brake Co., Ltd.: *See—*
Akamatsu, Osamu; and Kitaue, Masaaki, 4,525,611, Cl. 200-83.00R.

Nippon Electric Co., Ltd.: *See—*
Atobe, Masaaki; and Tagashira, Yoshimi, 4,525,676, Cl. 329-50.000.
Chiba, Fumitaka; and Shimizu, Kyozo, 4,525,809, Cl. 365-51.000.
Kage, Kouzou; and Watanabe, Hiroshi, 4,525,868, Cl. 455-206.000.
Kitamura, Mitsuhiro; Mito, Ikuo; and Kobayashi, Kohroh, 4,525,841, Cl. 372-48.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Kato, Mitsumi, 4,524,666, Cl. 84-1.030.
Nonaka, Terumoto, 4,525,639, Cl. 307-446.000.
Takuya, Suzuki, 4,525,817, Cl. 367-140.000.
Tomisawa, Norio; Uchiyama, Yasuji; and Suzuki, Hideo, 4,524,668, Cl. 84-1.240.
Yamamoto, Jun; Hayashida, Hajime; and Takahashi, Hiroyoshi, 4,524,669, Cl. 84-433.000.

Nippon Kayaku Kabushiki Kaisha: *See—*
Someno, Tetsuya; Kato, Kazuo; Saino, Tetsushi; Ishii, Shinichi; Takeuchi, Tomio; and Umezawa, Hamao, 4,525,465, Cl. 502-7.000.

Nippon Kogaku K.K.: *See—*
Nakamura, Soichi; and Konno, Kunio, 4,525,744, Cl. 358-224.000.
Ogawa, Harumi; Obikawa, Fumito; Koyama, Toshio; Otsubo, Yoshiaki; Wakabayashi, Hiroshi; and Otani, Tadashi, 4,525,049, Cl. 354-173.110.
Sano, Yoshiaki; Tsuchiya, Chikara; and Maida, Osamu, 4,525,637, Cl. 307-350.000.
Shiokama, Yoshiharu; and Suzuki, Shigeru, 4,525,053, Cl. 354-400.000.

Nippon Oil Co., Ltd.: *See—*
Ikematsu, Masaki; Honzyo, Isao; and Sakai, Kazuo, 4,525,269, Cl. 208-309.000.
Kubo, Kunimichi; Yoshikawa, Mamoru; Watanabe, Motokazu; Miyazaki, Yasunosuke; and Miyoshi, Mituji, 4,525,548, Cl. 526-72.000.
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; Matsuura, Kazuo; and Miyoshi, Mitsuji, 4,525,552, Cl. 526-116.000.
Sakata, Ko; and Imai, Hirosuke, 4,525,457, Cl. 435-178.000.
Tajima, Yoshio; Miyoshi, Mituji; Sugita, Shoji; Kawabe, Kiyoshi; and Matsuura, Kazuo, 4,525,555, Cl. 526-125.000.

Nippon Petrochemicals, Co., Ltd.: *See—*
Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Kurihara, Kazuhiko; and Yazawa, Hirosi, 4,525,317, Cl. 264-235.800.

Nippon Telegraph & Telephone Public Corporation: *See—*
Kage, Kouzou; and Watanabe, Hiroshi, 4,525,868, Cl. 455-206.000.
Morita, Hirofumi; and Hosokawa, Teruo, 4,525,629, Cl. 250-396.0ML.
Okamoto, Katsunari; Edahiro, Takao; Kawana, Akio; and Miya, Tetsuo, 4,525,027, Cl. 350-96.300.

Nippon Zeon Co. Ltd.: *See—*
Kitahara, Shizuo; and Sugi, Nagatoshi, 4,525,541, Cl. 525-337.000.

Nippondenso Co., Ltd.: *See—*
Kato, Hidetoshi; Sada, Takeshi; Mayumi, Nobuo; and Matsuhashi, Hajime, 4,525,662, Cl. 322-28.000.

Nishikawa, Ikuo, to Kabushiki Kaisha Universal. Slot machine handle locking device. 4,524,636, Cl. 74-527.000.

Nishikawa, Tadashi: *See—*
Suzuki, Norio; Kajikawa, Hiroshi; and Nishikawa, Tadashi, 4,524,622, Cl. 73-620.000.

Nishikawa, Yoshinori; and Takahashi, Iwashige, to Kabushiki Kaisha Komatsu Seisakusho. Misfeed monitoring apparatus for transfer press. 4,525,706, Cl. 340-679.000.

Nishimura, Nobuo; Itami, Teruhiko; Kimoto, Toshifumi; Tomiyama, Shunsuke; and Saitoh, Koichi, to Xerox Corporation. Magnetic recording head. 4,525,723, Cl. 346-74.400.

Nishimura, Nobuo, to Fuji Xerox Company, Limited. Optical data recordation and reproduction system. 4,525,822, Cl. 369-44.000.

Nishimura, Syozi: *See—*
Tsukamoto, Takashi; Sudo, Chuzo; Aihara, Kenji; and Nishimura, Syozi, 4,525,598, Cl. 174-128.00R.

Nishizawa, Junichi; Tamamushi, Takashige; Ando, Fumihiko; Yoshikawa, Shigeo; and Shimanuki, Koji, to Fuji Photo Film Co. Ltd. Two-dimensional solid-state image sensor device. 4,525,742, Cl. 358-213.000.

Nishizawa, Kazunori: *See—*
Ito, Osamu; Yamasaki, Harumasa; Minakata, Itsuo; and Nishizawa, Kazunori, 4,524,577, Cl. 57-200.000.

Nissan Motor Company, Limited: *See—*
Fukuhara, Hiroshige; and Fujiki, Norio, 4,525,870, Cl. 455-297.000.
Murata, Masanori; and Hayashi, Isao, 4,524,633, Cl. 74-473.00R.
Takeuchi, Kiyoshi, 4,524,625, Cl. 73-754.000.

Nisshin Kogyo Kabushiki Kaisha: *See—*
Nagai, Shigeo, 4,524,853, Cl. 192-18.00R.

Nisshin Steel Co. Ltd.: *See—*
Yamauchi, Takashi; Maruhashi, Shigeaki; Koike, Shinkichi; and Yamada, Keizo, 4,525,209, Cl. 75-51.500.

Nitschke, John S.: *See—*
McMaster, Ronald A.; and Nitschke, John S., 4,525,193, Cl. 65-114.000.

Nittan Company, Ltd.: *See—*
Kimura, Tetsuo; Tanaka, Seiichi; and Suzuki, Takashi, 4,525,700, Cl. 340-518.000.

Nitto Boseki Co. Ltd.: *See—*
Hayashi, Ikuo; Itikawa, Tadao; Ogihara, Keizo; and Shimizu, Kiyoshi, 4,525,576, Cl. 528-313.000.

Nobutoki, Michiharu: *See—*
Arizono, Kenzo; Terasawa, Michio; and Nobutoki, Michiharu, 4,525,348, Cl. 424-81.000.

Noda, Yoichiro: *See—*
Kitagawa, Tadao; Kosuge, Yutaka; and Noda, Yoichiro, 4,525,702, Cl. 340-556.000.

Noguchi, Naoki: *See—*
Tanaka, Masaru; Noguchi, Naoki; Yoshino, Kenji; and Saitoh, Osamu, 4,525,069, Cl. 356-435.000.

Nohara, Saburo: *See—*
Hagiwara, Zenji; Ohki, Hideo; Hoshino, Shigetaka; Nohara, Saburo; Ida, Shunya; and Tagawa, Kenichi, 4,525,410, Cl. 428-198.000.

Nolle, Hans-Heinrich: *See—*
Eibner, Robert; Nolle, Hans-Heinrich; Schneider, Alfred; and Kohl, Wilhelm, 4,525,197, Cl. 71-11.000.

Nonaka, Terumoto, to Nippon Gakki Seizo Kabushiki Kaisha. Dynamic MOS circuit block and static bipolar transistor circuit block integrated circuit device. 4,525,639, Cl. 307-446.000.

Nonnenmann, Wolfgang: *See—*
Pischke, Jurgen; and Nonnenmann, Wolfgang, 4,525,783, Cl. 364-431.110.

Norman, Edward C.; and Dowell, Howard A., to Enterra Corporation. Protection against soiling. 4,525,501, Cl. 524-28.000.

Norris, Claude R. Arc suppression device and method. 4,525,762, Cl. 361-13.000.

North American Philips Corporation: *See—*
Arora, Mulk R., 4,525,249, Cl. 204-129.750.

North American Philips Lighting Corporation: *See—*
Hicks, John M.; Engel, Joseph C.; Spreadbury, Robert J.; Elms, Robert T.; and Saletta, Gary F., 4,525,650, Cl. 315-226.000.

Norton, Robert L.: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,524,941, Cl. 248-544.000.

Norwood Industries, Inc.: *See—*
Meek, Thomas, 4,525,755, Cl. 360-63.000.

Notestein, John E.: *See—*
Ayers, William J., Jr.; Carter, Charles R.; Griffith, Richard A.; Loomis, Richard B.; and Notestein, John E., 4,524,796, Cl. 137-240.000.

Nowak, David J.; and Zupfer, David F., to R.J. LeVesque Manufacturing Co. Electrical disconnect tool. 4,525,006, Cl. 294-19.100.

Nox-Crete Chemicals, Incorporated: *See—*
Linn, Michael A., 4,525,213, Cl. 106-2.000.

Nozaki, Satoshi: *See—*
Suzuki, Migaku; Ochi, Mitsuzo; and Nozaki, Satoshi, 4,525,229, Cl. 156-161.000.

Nozawa, Masafumi; and Miyazaki, Michio, to Hitachi, Ltd. Method of controlling storage device. 4,525,839, Cl. 371-38.000.

Nuttall, Michael J.: *See—*
Yurchenco, James R.; and Nuttall, Michael J., 4,524,940, Cl. 248-359.000.

Nuvatec, Inc.: *See—*
Slavik, William H.; and Huber, William B., 4,525,163, Cl. 604-65.000.

O Tray Corporation: *See—*
Formo, Jerome L.; Lasher, Albert C.; and White, Robert W., 4,524,512, Cl. 30-147.000.

Oberg, Gary R., to Toro Company, The. Rotary cutting assembly with filament feed. 4,524,515, Cl. 30-276.000.

Obikawa, Fumito: *See—*
Ogawa, Harumi; Obikawa, Fumito; Koyama, Toshio; Otsubo, Yoshiaki; Wakabayashi, Hiroshi; and Otani, Tadashi, 4,525,049, Cl. 354-173.110.

Ochi, Mitsuzo: *See—*
Suzuki, Migaku; Ochi, Mitsuzo; and Nozaki, Satoshi, 4,525,229, Cl. 156-161.000.

Oda, Misao, to Kabushiki Kaisha Kanemitsu. Method of manufacturing sheet metal made poly-V pulleys. 4,524,595, Cl. 72-84.000.

Odermann, Charles R.: *See—*
Rodda, Donald; and Odermann, Charles R., 4,524,708, Cl. 112-231.000.

Office National d'Etudes et de Recherche Aerospatiales: *See—*
Jamet, Jean; Poupeau, Jean-Jacques; Omnes, Jacqueline; and Le Pennec, Claude, 4,525,337, Cl. 423-449.000.

Office National d'Etudes et de Recherches Aerospatiales: *See—*
Ropars, Marcel; and Bloch, Bertrand, 4,525,573, Cl. 528-232.000.

Office National d'Etudes et de Recherches Aerospatiales dit O.N.E.R.A.: *See—*
Larigaldie, Serge; and Labaune, Gerard, 4,525,140, Cl. 431-258.000.

Offset Engineering, Inc.: *See—*
Jamieson, H. William, Jr., 4,524,964, Cl. 271-204.000.

Ogata, Yasunobu: *See—*
Meguro, Takashi; Ogata, Yasunobu; and Sawada, Yoshizo, 4,525,222, Cl. 148-121.000.

Ogawa, Harumi; Obikawa, Fumito; Koyama, Toshio; Otsubo, Yoshiaki; Wakabayashi, Hiroshi; and Otani, Tadashi, to Nippon Kogaku K.K. Motor driving device of a camera. 4,525,049, Cl. 354-173.110.

Ogawa, Nobuo: *See—*
Itho, Yasuo; Kato, Hideo; Ogawa, Nobuo; Yamagishi, Kagari; Koshinaka, Eiichi; and Mitani, Kazuya, 4,525,356, Cl. 514-234.000.

Ogden, Danny W. Wrap around garment. 4,524,463, Cl. 2-105.000.

Ogihara, Keizo: *See—*
Hayashi, Ikuo; Itikawa, Tadao; Ogihara, Keizo; and Shimizu, Kiyoshi, 4,525,576, Cl. 528-313.000.

Oh, Myung Keun: *See—*
Kim, Sang K., 4,524,987, Cl. 280-204.000.

Ohashi, Kenzi: *See—*
Yamane, Toshihiro; Ohashi, Kenzi; and Sakaguchi, Toshiharu, 4,525,297, Cl. 252-511.000.

Ohashi, Saichiro, to Fuji Photo Film Co., Ltd. Photographic camera with built-in optical converter. 4,525,050, Cl. 354-195.120.

Ohaus Scale Corporation: *See—*
Scheffer, Daniel G.; Brock, Christopher W.; and Schumer, Douglas B., 4,525,794, Cl. 364-567.000.

Ohki, Hajime: *See—*
Suzuki, Hirosuke; and Ohki, Hajime, 4,525,693, Cl. 333-236.000.

Ohki, Hideo: *See—*
Hagiwara, Zenji; Ohki, Hideo; Hoshino, Shigetaka; Nohara, Saburo; Ida, Shunya; and Tagawa, Kenichi, 4,525,410, Cl. 428-198.000.

Ohki, Nobutaka; and Yoshida, Yoshinobu, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material comprising phenol or naphthol having sulfamoylamino group. 4,525,451, Cl. 430-551.000.

Ohkubo, Yuichi: *See—*
Kominami, Yasuo; Ohkubo, Yuichi; Aizawa, Kohki; and Sasaki, Satoshi, 4,525,636, Cl. 307-264.000.

Ohmi, Shigeaki; Shingaki, Seiichi; Sakai, Hiroyuki; and Asahara, Yoshiyuki, to Hoya Corporation. Process for producing glass product having gradient of refractive index. 4,525,189, Cl. 65-3.150.

Ohmiya, Takeo: *See—*
Taguchi, Atsushi; and Ohmiya, Takeo, 4,525,585, Cl. 536-98.000.

Ohmura, Yasuhiro; Maruyama, Seiichiro; and Shigemoto, Shigeru, to Mitsubishi Chemical Industries Limited. Polyester resin composition. 4,525,529, Cl. 525-64.000.

Ohsaki, Kozo; Kikuchi, Katsutoshi; and Hirota, Yoshitsugu, to Toyo Engineering Corporation. Process for producing a gas containing methane. 4,525,482, Cl. 518-707.000.

Ohta, Yuichi: *See—*
Sakai, Toshiyuki; Ohta, Yuichi; Minoh, Michihiko; and Hino, Masatoshi, 4,525,747, Cl. 358-284.000.

Ohtake Works Company, Ltd.: *See—*
Nakamura, Masahiro, 4,525,790, Cl. 364-484.000.

Ohya, Masaki; Matsukura, Yoshihiro; and Anzai, Mitsuru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Heat-shrinkable composite laminate film and process for preparing the same. 4,525,414, Cl. 428-213.000.

Ojima, Yasuo: *See—*
Yasukawa, Motohiro; Ishikawa, Yukio; Ojima, Yasuo; Harada, Hiromi; and Mori, Yoshiaki, 4,525,208, Cl. 75-25.000.

Okada, Mizuho: *See—*
Takahata, Kei; Murasawa, Sadao; Ichida, Hiroshi; Okada, Mizuho; and Nakayama, Takao, 4,525,441, Cl. 430-46.000.

Okada, Tetsuo: *See—*
Narisada, Masayuki; Watanabe, Fumihiko; Okada, Tetsuo; and Matsumura, Hiromu, 4,525,355, Cl. 514-210.000.

Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Kurihara, Kazuhiko; and Yazawa, Hirosi, to Nippon Petrochemicals, Co., Ltd.; and Polymer Processing Research Institute Ltd. Method and apparatus for stretching film or fibrous web. 4,525,317, Cl. 264-235.800.

Okamoto, Katsunari; Edahiro, Takao; Kawana, Akio; and Miya, Tetsuo, to Nippon Telegraph & Telephone Public Corp. Single mode optical fibers. 4,525,027, Cl. 350-96.300.

Okamoto, Kazuo: *See—*
Matsui, Masao; Okamoto, Kazuo; and Naruse, Tutomu, 4,525,404, Cl. 428-92.000.

Okamoto, Miyoshi: *See—*
Higuchi, Akira; and Okamoto, Miyoshi, 4,525,169, Cl. 8-485.000.

Okano, Yoshio; Okuma, Yasuo; Aizawa, Kuniomi; Oyama, Yasuyoshi; and Kitamura, Yoichiro, to Hitachi, Ltd. Transaction processing system. 4,525,712, Cl. 340-825.310.

Okawa, Susumu; Matsui, Hideaki; Jufuku, Yasunobu; and Kato, Toshimi, to Toyota Jidosha Kabushiki Kaisha. Endless belt member for a continuously variable transmission. 4,525,160, Cl. 474-242.000.

Okawa, Tamotsu; and Yuasa, Hiromi, to Omron Tateisi Electronics Co. Electronic cash register. 4,525,799, Cl. 364-900.000.

Oki, Toshiro, to ORC Manufacturing Co., Ltd. Combination of a plate for exposure and frame plates. 4,525,061, Cl. 355-72.000.

Okitsu, Kiyoshi: *See—*
Watanabe, Shoji; and Okitsu, Kiyoshi, 4,525,258, Cl. 204-159.230.

Okuda, Shinji: *See—*
Kaibara, Nobuhiro; Ida, Toshio; Okuda, Shinji; and Motohashi, Takayuki, 4,524,914, Cl. 239-452.000.

Okuma, Yasuo: *See—*
Okano, Yoshio; Okuma, Yasuo; Aizawa, Kuniomi; Oyama, Yasuyoshi; and Kitamura, Yoichiro, 4,525,712, Cl. 340-825.310.

Okumura, Jun: *See—*
Aburaki, Shimpei; Kamachi, Hajime; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,525,473, Cl. 514-202.000.

Okumura, Norio: *See—*
Imai, Fusao; and Okumura, Norio, 4,525,420, Cl. 428-372.000.

Olapinski, Hans: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., 4,524,732, Cl. 123-193.00H.

O'Leary, Melody M.: *See—*
Cardona, Ramon M.; Leno, Theodore M.; and O'Leary, Melody M., 4,525,087, Cl. 400-613.200.

Olin Corporation: *See—*
Butt, Sheldon H.; Smith, Edward F., III; and Gyurina, F. Dennis, 4,525,422, Cl. 428-418.000.

Oliver, Larry R.: *See—*
Quick, Terrence R.; Standley, Paul M.; Foley, Mark P.; Howerton, Anderson W.; Miranti, Joseph P., Jr.; Oliver, Larry R.; Holloway, Gerald C., Jr.; and Richmond, Kenneth D., 4,525,150, Cl. 474-93.000.

Olson, Arne M.: *See—*
Loeb, Marvin P.; and Olson, Arne M., 4,525,164, Cl. 604-131.000.

Olympus Optical Co., Ltd.: *See—*
Hattori, Shinichiro; Hosoda, Seiichi; and Takamatsu, Takeshi, 4,524,761, Cl. 128-6.000.
Ito, Kenichi; Musha, Tohru; Kato, Kiichi; and Yamamoto, Kimiaki, 4,525,825, Cl. 369-45.000.
Kidawara, Atsushi; and Kobayashi, Kazunari, 4,524,920, Cl. 242-71.100.
Kobayashi, Minoru, 4,525,761, Cl. 360-137.000.
Nakamura, Toru, 4,525,040, Cl. 350-480.000.
Nemoto, Shigeru; Saitou, Sinichi; Kitajima, Goro ; and Osada, Hazime, 4,525,760, Cl. 360-137.000.
Sasa, Hiroyuki; Yabe, Hisao; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, 4,525,220, Cl. 134-21.000.

Omata, Nobuaki: *See—*
Sato, Youji; Omata, Nobuaki; and Shimbara, Sakuzo, 4,524,494, Cl. 24-453.000.

Omnes, Jacqueline: *See—*
Jamet, Jean; Poupeau, Jean-Jacques; Omnes, Jacqueline; and Le Pennec, Claude, 4,525,337, Cl. 423-449.000.

Omoda, Koichiro; Inagami, Yasuhiro; Torii, Shunichi; and Nagashima, Shigeo, to Hitachi, Ltd. Pipelined operation unit for vector data. 4,525,796, Cl. 364-730.000.

Omori, Tamotsu, to Komori Printing Machinery Co., Ltd. Water supply apparatus for printing press. 4,524,690, Cl. 101-148.000.

Omron Tateisi Electronics Co.: *See—*
Okawa, Tamotsu; and Yuasa, Hiromi, 4,525,799, Cl. 364-900.000.

Omura, Ikuo; and Yamauchi, Junichi, to Kuraray Co., Ltd. Highly water-resistant adhesive. 4,525,493, Cl. 523-116.000.

Ono, Chikai: *See—*
Toyoda, Kazuhiro; and Ono, Chikai, 4,525,812, Cl. 365-155.000.
Ono, Sadao: *See—*
Hamada, Masanori; and Ono, Sadao, 4,525,869, Cl. 455-277.000.
Orandi, Ahmad. Endoscope injection needle. 4,524,770, Cl. 128-303.100.
Orban Associates, Inc.: *See—*
Orban, Robert A., 4,525,857, Cl. 381-100.000.
Orban, Robert A., to Orban Associates, Inc. Crossover network. 4,525,857, Cl. 381-100.000.
Orc Manufacturing Co., Ltd.: *See—*
Miyamoto, Hiroshi, 4,525,060, Cl. 355-53.000.
Oki, Toshiro, 4,525,061, Cl. 355-72.000.
Orton, Edward: *See—*
Weinstein, Boris; and Orton, Edward, 4,525,540, Cl. 525-327.200.
Osada, Hazime: *See—*
Nemoto, Shigeru; Saitou, Sinichi; Kitajima, Goro ; and Osada, Hazime, 4,525,760, Cl. 360-137.000.
Oshima, Shigeru: *See—*
Wong, Wan C.; and Oshima, Shigeru, 4,525,048, Cl. 354-173.100.
Wong, Wan C.; and Oshima, Shigeru, 4,525,051, Cl. 354-203.000.
Osterloh, Rolf: *See—*
Blum, Rainer; Spoor, Herbert; Osterloh, Rolf; Mosler, Gerhard; and Rubbert, Bernhard, 4,525,570, Cl. 528-75.000.
Ostlinning, Edgar: *See—*
Idel, Karsten; Ostlinning, Edgar; Koch, Wolfgang; and Heitz, Walter, 4,525,579, Cl. 528-388.000.
Ostlund, Gunnar, to Aktiebolaget Svenskt Mjolsocker. Concentric filter elements. 4,525,275, Cl. 210-323.200.
Oswald, Heinz: *See—*
Feusi, Markus; Huber, Josef; Oswald, Heinz; and Pfyffer, Peter, 4,524,918, Cl. 242-18.00A.
Ota, Tadashi, to Kabushiki Kaisha Suwa Seikosha. Liquid crystal compound and compositions containing same. 4,525,033, Cl. 350-350.00R.
Otaki, Sakashi: *See—*
Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Shigeru, 4,525,824, Cl. 369-45.000.
Otani, Tadashi: *See—*
Ogawa, Harumi; Obikawa, Fumito; Koyama, Toshio; Otsubo, Yoshiaki; Wakabayashi, Hiroshi; and Otani, Tadashi, 4,525,049, Cl. 354-173.110.
Otis Engineering Corporation: *See—*
Hilts, Robert L.; and Crow, Robert W., 4,524,833, Cl. 166-381.000.
Williams, Charles R., 4,524,830, Cl. 166-321.000.
Otsubo, Yoshiaki: *See—*
Ogawa, Harumi; Obikawa, Fumito; Koyama, Toshio; Otsubo, Yoshiaki; Wakabayashi, Hiroshi; and Otani, Tadashi, 4,525,049, Cl. 354-173.110.
Otsuka Pharmaceutical Co., Ltd.: *See—*
Yoshida, Mitsuaki; Sugano, Haruo; Shimizu, Fumio; and Imagawa, Kenichi, 4,525,300, Cl. 260-112.50R.
Ouest Standard Telematique: *See—*
Cohen, Albert E.; Hance, William G.; Moir, Ian; Lane, Thao; and Caussarieu, Frederic, 4,525,830, Cl. 370-60.000.
Outboard Marine Corporation: *See—*
Broughton, George L.; Higby, Jeffrey P.; and Young, Robert F., 4,525,149, Cl. 440-1.000.
Kueny, Don F., 4,524,942, Cl. 248-643.000.
Ovanesian, Karine L.: *See—*
Petrosian, Ashot G.; Bagdasarov, Khachik S.; Kuzanian, Armen S.; Ovanesian, Karine L.; and Butaeva, Tatyana I., 4,525,460, Cl. 501-86.000.
Owen, Thomas E.: *See—*
Shirley, Donald J.; and Owen, Thomas E., 4,525,645, Cl. 310-337.000.
Owens-Illinois, Inc.: *See—*
Kusz, Maximillian, 4,524,876, Cl. 215-224.000.
Oyama, Yasuyoshi: *See—*
Okano, Yoshio; Okuma, Yasuo; Aizawa, Kuniomi; Oyama, Yasuyoshi; and Kitamura, Yoichiro, 4,525,712, Cl. 340-825.310.
Oyo Corporation, U.S.A.: *See—*
Hefer, Fred W., 4,525,819, Cl. 367-188.000.
Ozaki, Kiyomi; and Tsunoda, Kikuo, to Ryobi Ltd. Fishing reel. 4,524,921, Cl. 242-84.10J.
Ozaki, Kiyomi: *See—*
Tunoda, Kikuo; and Ozaki, Kiyomi, 4,524,923, Cl. 242-84.50A.
Ozawa, Kuniichi: *See—*
Nakase, Hiromi; Gotoh, Yasuhiro; and Ozawa, Kuniichi, 4,525,657, Cl. 318-254.000.
Ozeki, Isamu. Hanger attachment. 4,524,892, Cl. 224-256.000.
Pabst, Mark W.; and Handy, Richard L., to Iowa State University Research Foundation, Inc. Soil effective stress sensor and method of using same. 4,524,626, Cl. 73-784.000.
Pacific Metals & Co. Ltd.: *See—*
Yamauchi, Takashi; Maruhashi, Shigeaki; Koike, Shinkichi; and Yamada, Keizo, 4,525,209, Cl. 75-51.500.
Package Machinery Company: *See—*
Groom, James S.; and McIntyre, Robert W., 4,524,564, Cl. 53-449.000.
Padovan, Mario: *See—*
Moretti, Enrico; Zamboni, Valentino; Le Van Mao, Raymond; Padovan, Mario; and Solari, Marcello, 4,525,466, Cl. 502-63.000.
Page, Matthew A.; Libbey, William J.; and Lundeen, Allan J., to Du Pont de Nemours, E. I., and Company. Ethylene polymer composition for blow molding. 4,525,322, Cl. 264-531.000.
Pall Corporation: *See—*
Cordes, Harry D.; Haberer, Thomas G.; and Verrando, Marcel G., III, 4,525,183, Cl. 55-179.000.
Silverwater, Bernard, 4,524,793, Cl. 137-198.000.
Palm, Bengt N. J.: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; Krohn, Ulrich; Hakulinen, Martti J. A.; and Palm, Bengt N. J., 4,524,732, Cl. 123-193.00H.
Palm, Lars-Erik, to Tetra Pak International AB. Packing container for pressurized contents and a method for manufacturing the same. 4,524,565, Cl. 53-449.000.
Palmer, Richard C.: *See—*
Freeman, Edward J.; Economou, John E.; Pecorari, John G.; John, Gunter; Halter, Jerome B.; James, Jack E.; Castle, Richard M.; and Palmer, Richard C., 4,525,751, Cl. 358-342.000.
Palmlin, Peter: *See—*
Bengtsson, Bengt L.; Palmlin, Peter; and Ekholm, Jan, 4,525,368, Cl. 426-438.000.
Pampus, Gottfried: *See—*
Casper, Rudolf; Wendling, Peter; Konter, Wolfgang; Pampus, Gottfried; and Hohmann, Gerhard, 4,525,561, Cl. 526-220.000.
Pan, Jing-Jong; and Wilson, John B., to Harris Corporation. Microwave/millimeter wave amplifier with RF feedback. 4,525,680, Cl. 330-277.000.
Panavision, Inc.: *See—*
Fazekas, Carl F., 4,525,045, Cl. 352-57.000.
Panken, Irving, to Mazer Corporation, The. Crayon adapted for development of latent images. 4,525,214, Cl. 106-19.000.
Pantalone, Antonio. Section-iron for braces or uprights for lattice girders and like structures. 4,524,555, Cl. 52-738.000.
Paradyne Corporation: *See—*
Bremer, Gordon; Betts, William L.; and Greene, Robert T., 4,525,846, Cl. 375-39.000.
Bremer, Gordon, 4,525,847, Cl. 375-59.000.
Parikh, Kamal I.: *See—*
Simmons, Nathaniel; and Parikh, Kamal I., 4,525,831, Cl. 370-63.000.
Parker-Hannifin Corporation: *See—*
Kenyon, Richard L.; and Kempton, Calvin E., 4,524,906, Cl. 236-12.110.
Sheng, Shih Y.; and York, Ray A., 4,525,695, Cl. 335-262.000.
Parker, Norman W., to Motorola, Inc. Transform modulation system. 4,525,862, Cl. 455-47.000.
Parker, Samuel S.; Marshall, Charles W.; and Money, Durward G., to Parker Tobacco Company, Inc. Method of improving the handling of tobacco. 4,524,683, Cl. 100-3.000.
Parker Tobacco Company, Inc.: *See—*
Parker, Samuel S.; Marshall, Charles W.; and Money, Durward G., 4,524,683, Cl. 100-3.000.
Parkes, Richard B., to National Drying Machinery Co. Water type blancher. 4,525,370, Cl. 426-508.000.
Parkhurst, Warren E.; and Moser, David. Method for cleaning a corrosion protection anode. 4,525,263, Cl. 204-196.000.
Pasco, Robert W.: *See—*
Schwarz, James A.; and Pasco, Robert W., 4,525,734, Cl. 357-67.000.
Pasenau, Hartmut: *See—*
Sarh, Branko; and Pasenau, Hartmut, 4,524,556, Cl. 52-807.000.
Pate, Harold T.; and Fochler, Helmut P., to Indian Head Inc. Flexible conduit system. 4,524,999, Cl. 285-158.000.
Patel, Arvind D., to Dresser Industries, Inc. Thermally stable drilling fluid additive. 4,525,562, Cl. 526-271.000.
Patel, Arvind M., to International Business Machines Corporation. Multibyte error correcting system involving a two-level code structure. 4,525,838, Cl. 371-37.000.
Patel, Kalyanji U., to Minnesota Mining and Manufacturing Company. Leather with fluorochemical finish. 4,525,305, Cl. 260-401.000.
Patelli, Ferruccio, to MAPA - Societa Per Azioni. Machine for making, filling and sealing bags. 4,524,567, Cl. 53-552.000.
Patil, Arvind S.; Bantjes, John H.; Pepoy, Louis J.; and Sappok, Reinhard J., to BASF Wyandotte Corporation. Process for preparing ferriferrocyanide pigments. 4,525,217, Cl. 106-304.000.
Patil, Suresh S.: *See—*
Birch, Robert G.; and Patil, Suresh S., 4,525,354, Cl. 424-115.000.
Paul-Heinz Wagner: *See—*
Dubiel, Oswald; Hirtsiefer, Karl-Richard; and Wagner, Paul-Heinz, 4,524,651, Cl. 81-57.390.
Paul Wurth S.A.: *See—*
Legille, Edouard; and Mailliet, Pierre, 4,525,120, Cl. 414-160.000.
Pauldine, Donald D. Hair roller. 4,524,788, Cl. 132-42.00R.
Pavel, Klaus; and Lange, Horst, to Rhein-Nadel Maschinennadel Gesellschaft mit beschrankter Haftung. Method of producing sewing machine needles. 4,524,815, Cl. 163-5.000.
Pavia, Michael R.: *See—*
Butler, Donald E.; Hershenson, Fred M.; and Pavia, Michael R., 4,525,476, Cl. 514-326.000.
Pavlick, Michael J., to Budd Company, The. Low level freight car for carrying trailers. 4,524,699, Cl. 105-4.00R.
Payne, George B.; and Powell, James E., to Shell Oil Company. ((3,4,5,6-Tetrahydro-2H-pyran-2-yl)methoxy)oxabicycloalkane herbicides. 4,525,203, Cl. 71-88.000.
PD Giftware Designs, Inc.: *See—*
DiCostanzo, Pam, 4,525,393, Cl. 428-7.000.
Pearson, Ernest J., to Chloride Group Public Limited Company. Recombination multicell electric storage battery. 4,525,438, Cl. 429-149.000.

Pearson, Richard K.: *See—*
McGuire, Raymond R.; Coon, Clifford L.; Harrar, Jackson E.; and Pearson, Richard K., 4,525,252, Cl. 204-101.000.
Peascoe, Warren J.: *See—*
Ahnemiller, James; and Peascoe, Warren J., 4,525,487, Cl. 521-78.000.
Peck, Anthony F., to Britax Vega Limited. Vehicle lamp assembly. 4,525,772, Cl. 362-290.000.
Peckels, Jean: *See—*
Goedert, Jean; Thill, Fernand; Henrion, Romain; Klein, Henri; Liesch, Jean-Francois; and Peckels, Jean, 4,524,958, Cl. 266-272.000.
Pecorari, John G.: *See—*
Freeman, Edward J.; Economou, John E.; Pecorari, John G.; John, Gunter; Halter, Jerome B.; James, Jack E.; Castle, Richard M.; and Palmer, Richard C., 4,525,751, Cl. 358-342.000.
Pedersen, James R., to General Electric Company. Trimetallic bearings. 4,525,083, Cl. 384-278.000.
Peerless Nuclear Corporation: *See—*
Di Noia, Emanuel J.; and Breunich, Theodore R., 4,524,624, Cl. 73-708.000.
Pehrson, John V., to Reno Energy Systems, Inc. Scraper with dual-direction blade tilt control. 4,524,836, Cl. 172-4.500.
Peiffer, Dennis G.: *See—*
Turner, S. Richard; Walker, Thad O.; Peiffer, Dennis G.; and Lundberg, Robert D., 4,525,522, Cl. 524-547.000.
Peignier, Michel; and Renault, Claude, to Rhone-Poulenc Specialites Chimiques. Storage-stable, pumpable concentrated suspensions of water-soluble polymers. 4,525,515, Cl. 524-378.000.
Pelletier, Charles A.; Gonso, William E., Jr.; Cameron, Douglas S.; and Leonard, Patrick R., to Science Applications International Corporation. System and method for locating leaking tubes. 4,524,607, Cl. 73-40.50R.
Pelsue, Kurt A.: *See—*
Montagu, Jean I.; and Pelsue, Kurt A., 4,525,030, Cl. 350-255.000.
Penn Lithographics, Inc.: *See—*
Davenport, Harold D.; and DeVito, Anthony J., 4,524,962, Cl. 270-21.100.
Pennwalt Corporation: *See—*
Sanchez, Jose, 4,525,308, Cl. 260-453.0RZ.
Pentel Kabushiki Kaisha: *See—*
Shimizu, Takahiko; Fukui, Hishao; and Kohno, Tadashi, 4,525,092, Cl. 401-265.000.
Pepoy, Louis J.: *See—*
Patil, Arvind S.; Bantjes, John H.; Pepoy, Louis J.; and Sappok, Reinhard J., 4,525,217, Cl. 106-304.000.
Perbet, Jean-Noel: *See—*
Hareng, Michel; Hehlen, Robert; Marcenac, Philippe; Le Berre, Serge; Leclerc, Pierre; and Perbet, Jean-Noel, 4,525,708, Cl. 340-713.000.
Hareng, Michel; Perbet, Jean-Noel; and Defrance, Michel, 4,525,709, Cl. 340-719.000.
Perfection Automotive Products Corp.: *See—*
Bloom, Stephen R., 4,524,480, Cl. 15-159.00A.
Perlstein, Jerome H.: *See—*
Detty, Michael R.; and Perlstein, Jerome H., 4,525,443, Cl. 430-83.000.
Perregaard, Jens K., to Kefalas A/S. Anti-psychotic phenylindene derivatives and acid addition salts thereof. 4,525,360, Cl. 514-277.000.
Perretta, Frederick A., to United Technologies Corporation. Clamping circuit board guides. 4,525,770, Cl. 361-399.000.
Perrigo, Stephen M. Low frequency speaker enclosure. 4,524,845, Cl. 181-152.000.
Perrin, Patrice: *See—*
Laisney, Bernard; Letoffe, Michel; Perrin, Patrice; and Ulrich, Jean, 4,525,565, Cl. 528-17.000.
Perrone, John J.: *See—*
Zawadzki, Stanley C., Jr.; Stadelmaier, Robert A.; and Perrone, John J., 4,525,100, Cl. 405-129.000.
Perry, Patricia, to Butterick Company, Inc. Fitting curve and ruler. 4,524,522, Cl. 33-11.000.
Persson, Ingemar. Apparatus for production of hot tap water. 4,524,909, Cl. 237-2.00B.
Peter, Hans: *See—*
Brugger, Manfred; Janczer, Peter; and Peter, Hans, 4,524,817, Cl. 164-290.000.
Peterat, Michael: *See—*
Griesshammer, Rudolf; and Peterat, Michael, 4,525,336, Cl. 423-348.000.
Petersen, Kurt E., to Transensory Devices, Inc. Method and apparatus for forming hermetically sealed electrical feedthrough conductors. 4,525,766, Cl. 361-283.000.
Petersen, Thomas D. Surgical knee alignment method and system. 4,524,766, Cl. 128-92.00H.
Peterson, William D., II. Belt conveyor gap stringer support system. 4,524,864, Cl. 198-828.000.
Petr, Jan: *See—*
Lienhard, Heinz; and Petr, Jan, 4,525,668, Cl. 324-142.000.
Petrolite Corporation: *See—*
Quinlan, Patrick M., 4,525,296, Cl. 252-391.000.
Petrosian, Ashot G.; Bagdasarov, Khachik S.; Kuzanian, Armen S.; Ovanesian, Karine L.; and Butaeva, Tatyana I. Single-crystal material based on aluminium garnets. 4,525,460, Cl. 501-86.000.
Petzow, Gunter: *See—*
Claussen, Nils; Ruhle, Manfred; and Petzow, Gunter, 4,525,464, Cl. 501-103.000.
Pfaff Industriemaschinen GmbH: *See—*
Sander, Wilfried, 4,524,707, Cl. 112-152.000.
Willenbacher, Erich, 4,524,703, Cl. 112-098.000.
Pfeffer, Martin: *See—*
Horowitz, Franklin B.; Pfeffer, Martin; and Hertanu, Herold T., 4,525,071, Cl. 366-152.000.
Pfizer Inc.: *See—*
Livak, Ronald J., 4,525,325, Cl. 420-473.000.
Pfuderer, Horst: *See—*
Bender, Rolf; Jacob, Werner; and Pfuderer, Horst, 4,524,671, Cl. 89-14.050.
Pfyffer, Peter: *See—*
Feusi, Markus; Huber, Josef; Oswald, Heinz; and Pfyffer, Peter, 4,524,918, Cl. 242-18.00A.
Phan, Xuan T.; and Shannon, Paul J., to Armstrong World Industries, Inc. Acrylate and methacrylate polymers and processes for preparing them. 4,525,302, Cl. 260-239.30R.
Pharmacia AB: *See—*
Danielson, Carl O.; Gustafsson, Bo B.; Richardsson, Gote E.; and Lundh, Karl-Erik, 4,524,880, Cl. 220-288.000.
Phillips, Ann L.: *See—*
Phillips, Roger W.; and Phillips, Ann L., 4,524,953, Cl. 256-23.000.
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Staudte, Juergen H., 4,524,619, Cl. 73-505.000.
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Saxby, Willard A.; and Pikula, Robert D., 4,524,877, Cl. 215-228.000.
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Silverman, Harold; Ramsey, James S.; and Irvine, Robert, 4,524,557, Cl. 53-55.000.
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Pitz, Richard J.; and Jacob, Ezekiel J. Root canal implant, proximity indicative, and method of implantation. 4,525,147, Cl. 433-224.000.
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Vitas, John K.; and Reed, Harry J., 4,524,950, Cl. 251-326.000.
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Elias, Moenes L.; and Burger, Walter L., 4,525,240, Cl. 156-659.100.
Plowman, Richard E.; and VanLenten, James A., to Dentsply Research & Development Corp. Centrifugal casting furnace. 4,524,816, Cl. 164-287.000.
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Pocock, John F. E.; Mahajan, Gautam K.; Krishnakumar, Suppayan M.; and Friendship, Kenneth F. M., to Continental Group, Inc., The. Plastic container with internal rib reinforced bottom. 4,525,401, Cl. 428-64.000.
Poirot, Eugene E.: *See*—
Huff, Terrence; and Poirot, Eugene E., 4,525,467, Cl. 502-121.000.
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Agulnek, Martin A.; Canter, Joseph M.; and Reisch, Michael L., 4,525,729, Cl. 346-154.000.
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,525,413, Cl. 428-212.000.
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Labib, Mohamed E.; and Poliniak, Eugene S., 4,525,402, Cl. 428-64.000.
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Polymer Processing Research Institute Ltd.: *See*—
Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Kurihara, Kazuhiko; and Yazawa, Hirosi, 4,525,317, Cl. 264-235.800.
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Hotta, Hiroshi; and Suzuki, Yoshiharu, 4,525,261, Cl. 204-192.0EC.
Polysar Limited: *See*—
Sato, Kyosaku, 4,525,517, Cl. 524-394.000.
Pontefract, Ronald M., to Rowntree Mackintosh plc. Data logging device. 4,525,624, Cl. 235-383.000.
Poong San Metal Corp.: *See*—
Kim, Sang K., 4,524,987, Cl. 280-204.000.
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Kisil, Evgeny D.; Komova, Svetlana N.; Kulikova, Olga A.; Kutyanin, Leonid I.; Popova, Larisa V.; Dyatlova, Nina M.; Lastovsky, Rostislav P.; Yaroshenko, Galina F.; Khramov, Rem A.; Dytjuk, Leonid T.; Samakaev, Rafail K.; and Vasnev, Anatoly N., 4,525,293, Cl. 252-181.000.
Porat, Reuven, to Iscar Limited. Sintered hard metal products having a multi-layer wear-resistant coating. 4,525,415, Cl. 428-216.000.
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Webster, Marvin K.; Flynn, Richard T.; Porter, Marion G.; and Seminsky, George M., 4,525,777, Cl. 364-200.000.
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Gehrman, Sybil H.; and Porubcan, Randolph S., 4,525,351, Cl. 424-95.000.
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Poulin, Maurice. Method for cleaning a septic tank. 4,525,277, Cl. 210-601.000.
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Jamet, Jean; Poupeau, Jean-Jacques; Omnes, Jacqueline; and Le Pennec, Claude, 4,525,337, Cl. 423-449.000.
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Payne, George B.; and Powell, James E., 4,525,203, Cl. 71-88.000.
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Fischell, Robert E.; Newman, Arnold L.; Riblet, Henry B.; and Powell, William R., 4,524,773, Cl. 128-419.00S.
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Griffith, Louis E., 4,524,657, Cl. 83-69.000.
Powerflow, Inc.: *See*—
Ward, Douglas K., 4,524,986, Cl. 280-154.50R.
PPG Industries, Inc.: *See*—
Fecik, Michael T.; Ewing, John J.; and Mates, Edward I., 4,525,196, Cl. 65-287.000.
Jensen, Thomas H., 4,525,188, Cl. 65-1.000.
Prange, Uwe: *See*—
Theis, Christoph; and Prange, Uwe, 4,525,310, Cl. 260-465.600.
Pratt, Charles E., to Joseph Ayers, Inc. Modified aluminum tri-alkoxide compounds. 4,525,307, Cl. 556-182.000.
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Andrews, Stanley W., 4,525,041, Cl. 350-484.000.
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Hardy, Robert M.; and Premerlani, William J., 4,525,763, Cl. 361-24.000.
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Primiano, George A.; and Primiano, Frank P., Jr., 4,524,464, Cl. 2-161.00A.
Primiano, George A.; and Primiano, Frank P., Jr. Safety glove with modified dorsal thumb spica brace. 4,524,464, Cl. 2-161.00A.
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Pringle, Ronald E., to Camco, Incorporated. Hydraulic controlled well valve. 4,524,831, Cl. 166-322.000.
Pringle, William L., to United States Steel Corporation. Apparatus for joining flared ended tubes. 4,524,501, Cl. 29-237.000.
Probst, Evan N. Windrowed hay fluffing agricultural implement. 4,524,576, Cl. 56-372.000.
Procedyne Corp.: *See*—
Staffin, Robert; Girrell, Carol A.; and Fronzoni, Mario A., 4,524,957, Cl. 266-252.000.
Prochaska, Wolfgang; and Schulz, Ralf-Thilo, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Bumper component made of fiber-reinforced material for automobiles or the like. 4,525,005, Cl. 293-117.000.
Procter & Gamble Company, The: *See*—
Howie, John K.; and Bullock, Steven S., 4,525,289, Cl. 252-49.900.
Proctor, Ronald A. Seat belt reel. 4,524,924, Cl. 242-107.40A.
Professional Chemical & Color, Inc.: *See*—
Kelly, David R., 4,525,168, Cl. 8-130.100.
Proform, Inc.: *See*—
Engdahl, Roger, 4,524,700, Cl. 105-377.000.
Prolite Plastics Limited: *See*—
Kaspe, Paul E., 4,525,319, Cl. 264-322.000.
Proprietary Technology, Inc.: *See*—
Bartholomew, Donald D., 4,524,995, Cl. 285-54.000.
Prosan, Richard; Hair, James M., III; and Sheppard, Donald A. Secure locking system employing radiant energy and electrical data transmission. 4,525,805, Cl. 364-900.000.
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Goodman, James A., 4,524,560, Cl. 53-374.000.
Prutec Limited: *See*—
Simpson, Raymond W., 4,525,848, Cl. 375-87.000.
Pryor, James W., to R. J. Reynolds Tobacco Company. Application of additives to cigarette filter tow. 4,525,385, Cl. 427-177.000.
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Chen, Li F.; and Yang, Che-Ming, 4,525,218, Cl. 127-37.000.
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Strahs, Martin P.; and Vosbikian, John, 4,524,938, Cl. 248-110.000.
Quinlan, Patrick M., to Petrolite Corporation. Halide free corrosion inhibitors. 4,525,296, Cl. 252-391.000.
R.J. LeVesque Manufacturing Co.: *See*—
Nowak, David J.; and Zupfer, David F., 4,525,006, Cl. 294-19.100.
R. J. Reynolds Tobacco Company: *See*—
Pryor, James W., 4,525,385, Cl. 427-177.000.
Raaf, Helmut, to Blendax-Werke R. Schneider GmbH & Co. Tooth and mouth care agent. 4,525,343, Cl. 424-54.000.
Raasch, Hans; and Lassmann, Manfred, to W. Schlafhorst & Co. Apparatus for controlling the thread joining process in an open end rotor spinning machine. 4,524,578, Cl. 57-263.000.
Racinet, Jean-Claude. Blanket-saddle for sporting horse-riding. 4,524,570, Cl. 54-44.000.
Rahdener Maschinenfabrik August Kolbus: *See*—
Rathert, Horst; and Hedrich, Winfried, 4,524,857, Cl. 198-409.000.
Rajakhyaksha, Vithal J., to Nelson Research & Development Co. Method of improved pest control. 4,525,199, Cl. 514-788.000.
Ramsey, James S.: *See*—
Silverman, Harold; Ramsey, James S.; and Irvine, Robert, 4,524,557, Cl. 53-55.000.
Ranco Incorporated: *See*—
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Randall, Bruce E.: *See*—
Holberton, Philip M.; Randall, Bruce E.; and Marshall, Jay K., 4,525,669, Cl. 324-142.000.
Rapps, Gary M.; and Feder, Alvin, to Motorola, Inc. Method of making a low-profile crystal package with an improved crystal-mounting arrangement. 4,524,497, Cl. 29-25.350.
Rasmussen, Jan. Medical electrode and a method of manufacturing same. 4,524,775, Cl. 128-640.000.
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Rasshofer, Werner; Konig, Klaus; Meyborg, Holger; Meckel, Walter; and Zenner, Armin, to Bayer Aktiengesellschaft. Simplified process for the production of polyamines by the alkaline hydrolysis of compounds containing NCO-groups. 4,525,590, Cl. 544-222.000.
Rastall, Mary H.; Ng, Norman H.; and MacPherson, Edwin J., to Fiberglas Canada Inc. Modified phenolic foams. 4,525,492, Cl. 521-181.000.
Rathert, Horst; and Hedrich, Winfried, to Rahdener Maschinenfabrik August Kolbus. Book block feed device. 4,524,857, Cl. 198-409.000.
Ratzlaff, Howard J., to Hesston Corporation. Underfed crop baler having single rotary feeder. 4,524,574, Cl. 56-341.000.
Raubenheimer, Hans-Jurgen: *See*—
Denzinger, Walter; Hartmann, Heinrich; Faulhaber, Gerhard; and Raubenheimer, Hans-Jurgen, 4,525,581, Cl. 528-503.000.
Raychem Corporation: *See*—
Zukosky, Mimzee; and Dieck, Ronald L., 4,525,531, Cl. 525-92.000.
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Dorschner, Terry A., 4,525,028, Cl. 350-377.000.

RCA Corporation: *See*—
Fitzgerald, William V., 4,525,739, Cl. 358-190.000.
Freeman, Edward J.; Economou, John E.; Pecorari, John G.; John, Gunter; Halter, Jerome B.; James, Jack E.; Castle, Richard M.; and Palmer, Richard C., 4,525,751, Cl. 358-342.000.
Gillberg, James E., 4,525,635, Cl. 307-247.00R.
Hamalainen, Kaarlo J., 4,525,750, Cl. 358-327.000.
Hanak, Joseph J., 4,525,375, Cl. 427-8.000.
Krufka, Frank S., 4,525,735, Cl. 358-10.000.
Labib, Mohamed E.; and Poliniak, Eugene S., 4,525,402, Cl. 428-64.000.
Wood, Robert F., Jr.; Monahan, John F.; and Levine, Peter A., 4,525,743, Cl. 358-213.000.
Wu, Chung P., 4,525,221, Cl. 148-1.500.
Reading, Christopher: *See*—
Cole, Martin; Howarth, Thomas T.; and Reading, Christopher, 4,525,352, Cl. 424-114.000.
Cole, Martin; Howarth, Thomas T.; and Reading, Christopher, 4,525,353, Cl. 424-114.000.
Rebourg, Jean-Claude; and Despois, Claude. Apparatus for performing a Hadamard transformation. 4,525,798, Cl. 364-826.000.
Redlich, Horst, to TELDEC Telefunken - Decca Schallplatten GmbH. Apparatus for removing a cut chip by suction. 4,525,827, Cl. 369-72.000.
Reed, Harry J.: *See*—
Vitas, John K.; and Reed, Harry J., 4,524,950, Cl. 251-326.000.
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Bascou, Jacques, 4,524,594, Cl. 70-456.00R.
Chastagner, Paul, 4,524,738, Cl. 123-339.000.
Rehder, Ludwig: *See*—
Hubner, Horst; Lydtin, Hans; Rehder, Ludwig; and Zaengel, Thomas, 4,525,379, Cl. 427-53.100.
Rehder, Thomas E.; and Williams, Terrance L., to USG Corporation. Process for expanding and coating perlite. 4,525,388, Cl. 427-221.000.
Reick, Franklin G., to Ebert, Michael. Enhanced grease. 4,525,286, Cl. 252-21.000.
Reil, Wilhelm; Deutschbein, Ulrich; and Wallich, Manfred, to Tetra Pak Developpement S.A. Apparatus for moulding a plastics component onto a length of flexible web material and method for same. 4,525,318, Cl. 264-259.000.
Reinecke, Erich; and Isernhagen, Fritz, to WABCO Fahrzeugbremsen GmbH. Wear compensating operating mechanism for disk brakes. 4,524,850, Cl. 188-71.800.
Reisch, Michael L.: *See*—
Agulnek, Martin A.; Canter, Joseph M.; and Reisch, Michael L., 4,525,729, Cl. 346-154.000.
Reliance Electric Company: *See*—
Johnson, James D.; Belden, Byron B.; and Kamp, Terrence A., 4,525,094, Cl. 403-11.000.
Kammiller, Neil A., 4,525,674, Cl. 328-63.000.
Remcut International Inc.: *See*—
Montiero, Richard, 4,524,511, Cl. 30-108.000.
Renaud, Pierre, to VALEO. Clutch release bearing control mechanism. 4,524,856, Cl. 192-98.000.
Renault, Claude: *See*—
Peignier, Michel; and Renault, Claude, 4,525,515, Cl. 524-378.000.
Reno Energy Systems, Inc.: *See*—
Pehrson, John V., 4,524,836, Cl. 172-4.500.
Renon, Henri: *See*—
Richon, Dominique; and Renon, Henri, 4,524,611, Cl. 73-59.000.
Renshaw, Theodore A., to Fairchild Industries, Inc. Apparatus for preventing step-edge shearing during ultrasonic welding. 4,524,898, Cl. 228-1.100.
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Gleason, Robert J.; and Feldman, Paul L., 4,525,142, Cl. 423-235.000.
Reuters Ltd.: *See*—
Davids, Martin; Blackman, Peter; and Teo, Lily, 4,525,779, Cl. 364-200.000.
Rhein-Nadel Maschinennadel Gesellschaft mit beschrankter Haftung: *See*—
Pavel, Klaus; and Lange, Horst, 4,524,815, Cl. 163-5.000.
Rheinmetall GmbH: *See*—
Altenau, Ernst-Wilhelm; Hahn, Ulf; and Sabranski, Udo, 4,524,696, Cl. 102-491.000.
Bocker, Jurgen; Gersbach, Klaus; Bethmann, Karl W.; and Glotz, Gerhard, 4,524,697, Cl. 102-517.000.
Boeder, Dieter, 4,524,694, Cl. 102-393.000.
Rhoads, Jack L. Hydraulic valve lifter with continuous void. 4,524,731, Cl. 123-90.570.
Rhone-Poulenc Specialites Chimiques: *See*—
Laisney, Bernard; Letoffe, Michel; Perrin, Patrice; and Ulrich, Jean, 4,525,565, Cl. 528-17.000.
Leising, Frederic, 4,525,519, Cl. 524-457.000.
Peignier, Michel; and Renault, Claude, 4,525,515, Cl. 524-378.000.
Rhythm Watch Company Limited: *See*—
Takebe, Katuhiko, 4,525,076, Cl. 368-63.000.
Riblet, Henry B.: *See*—
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Richardsson, Gote E.: *See*—
Danielson, Carl O.; Gustafsson, Bo B.; Richardsson, Gote E.; and Lundh, Karl-Erik, 4,524,880, Cl. 220-288.000.
Richmond, Carl T.; Butler, Thomas A.; and Andrews, Joseph E., Jr., to Motorola, Inc. Ultra linear frequency discriminator circuitry. 4,525,675, Cl. 328-140.000.
Richmond, Kenneth D.: *See*—
Quick, Terrence R.; Standley, Paul M.; Foley, Mark P.; Howerton, Anderson W.; Miranti, Joseph P., Jr.; Oliver, Larry R.; Holloway, Gerald C., Jr.; and Richmond, Kenneth D., 4,525,150, Cl. 474-93.000.
Richon, Dominique; and Renon, Henri, to Association pour la Recherche et le Developpement des Methodes et Processus Industriels (ARMINES). Rheometer for measuring high pressure and high temperature with sampling. 4,524,611, Cl. 73-59.000.
Richter, Horst: *See*—
Dislich, Heinz; and Richter, Horst, 4,525,463, Cl. 501-99.000.
Ricoh Company, Ltd.: *See*—
Abe, Michiharu, 4,525,625, Cl. 250-201.000.
Yanagida, Shoji, 4,525,658, Cl. 318-317.000.
Riddle, Eddie R.: *See*—
Molbert, John L.; and Riddle, Eddie R., 4,525,854, Cl. 378-089.000.
Riddle, Ronald G., to Riddle, Terrence Arthur, a part interest. Tripod. 4,524,849, Cl. 182-170.000.
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Riddle, Ronald G., 4,524,849, Cl. 182-170.000.
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Schwellinger, Pius; Ried, Alois; Timm, Jurgen; and Heckler, Manfred, 4,525,326, Cl. 420-535.000.
Rieter Machine Works, Ltd.: *See*—
Feusi, Markus; Huber, Josef; Oswald, Heinz; and Pfyffer, Peter, 4,524,918, Cl. 242-18.00A.
Wurmli, Arthur, 4,524,579, Cl. 57-276.000.
Riley, Arthur W.: *See*—
Riley, Patrice J.; and Riley, Arthur W., 4,525,090, Cl. 401-127.000.
Riley, Patrice J.; and Riley, Arthur W. Liquid dispensing bottles with built-in applicators. 4,525,090, Cl. 401-127.000.
Rios, Victor; and Wolf, Henry W., to Pivot Metal Works, Inc. Self-locking, self-aligning stepped spring hinge pin. 4,524,486, Cl. 16-381.000.
Ripkens, Gerd; Schittek, Hans; and Buschfeld, Adolf, to Deutsche Texaco Aktiengesellschaft. Process for the manufacture of multi-layer particle board using a phenol formaldehyde resin having a lower solids content. 4,525,227, Cl. 156-62.200.
Rising, Donald B.; and Naegeli, Richard G., Jr., to Millipore Corporation. I.V. Filter apparatus. 4,525,182, Cl. 55-159.000.
Riva, Ermete: *See*—
Italiano, Pietro; and Riva, Ermete, 4,524,605, Cl. 73-38.000.
Roantree, Michael L.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. 2-Thiazolyl, isothiazolyl, oxazolyl and isoxazolyl alkylamino-3-nitro-heterocyclic compounds. 4,525,477, Cl. 514-333.000.
Robbins, Robert E.: *See*—
Holland, Marion D., 4,524,800, Cl. 137-516.270.
Robert Bosch GmbH: *See*—
Heinz, Richard; and Kutzner, Reinhard, 4,525,840, Cl. 371-47.000.
Hofman, Eberhard, 4,524,737, Cl. 123-300.000.
Lungu, Corneliu, 4,524,797, Cl. 137-343.000.
Pischke, Jurgen; and Nonnenmann, Wolfgang, 4,525,783, Cl. 364-431.110.
Robertson, Arthur B., to Mobil Oil Corporation. Shaped articles from poly (p-methylstyrene) blends. 4,525,395, Cl. 428-35.000.
Robra, Joerg; and Goschin, Hans, to TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH. Method of and a circuit for energizing a subscriber's circuit in a telephone system. 4,525,602, Cl. 179-16.00F.
Robroy Industries: *See*—
Zizan, John P., 4,524,937, Cl. 248-74.300.
Roccaforte, Harry I.; and Christie, Robert A., to Champion International Corporation. Visible and easy accessible package. 4,524,870, Cl. 206-608.000.
Roche, Joseph R.; Alexander, Gabriel G.; and Carbaugh, William L., to Hydril Company. Diverter/BOP system and method for a bottom supported offshore drilling rig. 4,524,832, Cl. 166-347.000.
Rockwell International Corporation: *See*—
Artz, Glen D.; and Flanagan, Joseph E., 4,525,226, Cl. 149-35.000.
Majefski, Richard L., 4,525,684, Cl. 330-304.000.
Moge , Robert A., 4,524,863, Cl. 198-797.000.
Rodda, Donald; and Odermann, Charles R., to Singer Company, The. Noise suppression and thread control arrangement for a sewing machine. 4,524,708, Cl. 112-231.000.
Rode, Christian S.: *See*—
Curran, Kevin G.; Golson, Steven E.; and Rode, Christian S., 4,525,599, Cl. 178-22.080.
Rodeheaver, Bradley D.: *See*—
Horn, Richard E.; and Rodeheaver, Bradley D., 4,525,259, Cl. 204-182.400.
Rodriguez, Ludovic: *See*—
Baltes, Eugene ; de Lannoy, Jean; and Rodriguez, Ludovic, 4,525,358, Cl. 514-255.000.
Rodvelt, Ronnie L., to Didde Graphic Systems Corporation. Electronic ink flow control for printing. 4,524,692, Cl. 101-350.000.
Rogers Corporation: *See*—
McMonagle, Rodger P., 4,525,247, Cl. 204-24.000.
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., to Polaroid Corporation. Optical device including birefringent polymer. 4,525,413, Cl. 428-212.000.
Rogers, Jerry W.: *See*—
Speer, Billy L.; Burris, Lee R.; and Rogers, Jerry W., 4,525,152, Cl. 474-133.000.
Rogers, Larry K., to American Standard Inc. Hydraulic cylinder locking device. 4,524,676, Cl. 91-43.000.

Rohm GmbH: *See—*
Dinklage, Horst; Fink, Herbert; and Wolf, Hans-Peter, 4,525,418, Cl. 428-264.000.

Rohrbach, Ronald P., to UOP Inc. Support matrix and immobilized enzyme system. 4,525,456, Cl. 435-176.000.

Romanenko, Anatoly G.: *See—*
Feofanov, Vitaly A.; Pilat, Boris V.; Zhdanovich, Larisa P.; Romanenko, Anatoly G.; Lukhanin, Boris S.; Donets, Oleg V.; and Korobochkin, Valery P., 4,525,254, Cl. 204-150.000.

Rome, Gerald F.; and Lankford, Frank L., Jr., to Texaco Inc. Safety system for an oil well derrick. 4,524,952, Cl. 254-269.000.

Romer, Bendt W., to Danfoss A/S. Pressure valve for a compressor. 4,524,806, Cl. 137-856.000.

Rooklyn, Jack, to Industrial Management Co. Conductive laminate product for application to vertical and horizontal surfaces. 4,525,398, Cl. 428-40.000.

Rooney, John M.; Woods, John; and Conway, Paul, to Loctite (Ireland) Ltd. Polymerizable acrylic compositions having vinyl ether additive. 4,525,232, Cl. 156-273.300.

Rooney, John M.; and Conway, Paul, to Loctite (Ireland) Limited. Acrylic polymerization catalysts containing ferricenium salts. 4,525,553, Cl. 526-120.000.

Ropars, Marcel; and Bloch, Bertrand, to Societe Nationale des Poudres et Explosifs; and Office National d'Etudes et de Recherches Aerospatiales. Thermoset polymers and prepolymers obtained by polycondensation of alkyl pyridine with hydroxyl aromatic monoaldehydes. 4,525,573, Cl. 528-232.000.

Rorden, William L., to Grass Valley Group, Inc., The. Differential amplifier having high common-mode rejection ratio. 4,525,677, Cl. 330-258.000.

Rosa, Roger A.: *See—*
Forestier, Alexandre; Pluquet, Alain A.; Rosa, Roger A.; Tabet, Mansour; and Teysseyre, Pierre M., 4,525,135, Cl. 425-290.000.

Rosemount Inc.: *See—*
Myhre, Douglas C., 4,525,081, Cl. 374-208.000.

Rosen, William E.: *See—*
Berke, Philip A.; and Rosen, William E., 4,525,480, Cl. 514-544.000.

Rosenberg, Lawrence M., to Micronix Partners. Alignment apparatus. 4,525,852, Cl. 378-34.000.

Rosenberg, Melvin: *See—*
Weiss, Ervin; Rosenberg, Melvin; and Judas, Herbert, 4,525,342, Cl. 424-49.000.

Ross, L. Wayne. Toothbrush. 4,524,478, Cl. 15-106.000.

Rotabolt Limited: *See—*
Hirst, John A. B., 4,525,114, Cl. 411-9.000.

Rotz, C. Alan: *See—*
Wilde, Bernard D.; Van Ee, Gary R.; Ledebuhr, Richard L.; and Rotz, C. Alan, 4,524,572, Cl. 56-327.00R.

Rouws, Petrus L. A., to U.S. Philips Corporation. Apparatus and mounting shell having retaining tongues formed by cuts. 4,524,933, Cl. 248-27.300.

Rovema Verpackungsmaschinen GmbH & Co. KG: *See—*
Hauers, Manfred; and Baur, Walter, 4,524,566, Cl. 53-534.000.

Rowe, Neal E., to Westinghouse Electric Corp. Method of rolling a simulated hole in sheet metal without drilling or punching. 4,524,598, Cl. 72-198.000.

Rowles, Howard C.: *See—*
Woodward, Donald W.; Katsaros, Arthur T.; and Rowles, Howard C., 4,525,187, Cl. 62-31.000.

Rowley, William W. Application for forming a plastic tube coupling. 4,525,136, Cl. 425-384.000.

Rowntree Mackintosh plc: *See—*
Pontefract, Ronald M., 4,525,624, Cl. 235-383.000.

Rozniecki, Edward J. Oscillating flow nozzle. 4,524,911, Cl. 239-101.000.

Rozzell, J. David, to Genetics Institute, Inc. Production of L-4-phenyl-2-aminobutanoic acid by transamination. 4,525,454, Cl. 435-106.000.

Rubbert, Bernhard: *See—*
Blum, Rainer; Spoor, Herbert; Osterloh, Rolf; Mosler, Gerhard; and Rubbert, Bernhard, 4,525,570, Cl. 528-75.000.

Rubin, Harvey, to AT&T Bell Laboratories. Digital signal generator. 4,525,795, Cl. 364-721.000.

Rubin, Harvey: *See—*
Kemper, Kyran B.; and Rubin, Harvey, 4,525,789, Cl. 364-481.000.

Rudle, Manfred: *See—*
Stoll, Kurt; and Rudle, Manfred, 4,524,803, Cl. 137-625.640.

Rudoi, Boris L. Apparatus for simultaneous production of double glass panels. 4,525,194, Cl. 65-145.000.

Ruggles, Wesley, Jr.: *See—*
Willcocks, Martin E. G., 4,525,855, Cl. 381-22.000.

Ruhle, Manfred: *See—*
Claussen, Nils; Ruhle, Manfred; and Petzow, Gunter, 4,525,464, Cl. 501-103.000.

Ruiz, Marco A.: *See—*
Wever, Ruben; Allred, Lorin D.; and Ruiz, Marco A., 4,525,605, Cl. 179-175.20R.

Rumble, Ray M., to Michigan Hanger Company, Inc. Pipe hanger. 4,524,934, Cl. 248-62.000.

Rumble, Ray M., to Michigan Hanger Company, Inc. Pipe hanger. 4,524,935, Cl. 248-62.000.

Rupe, Iris A. Sanitary tasting spoon. 4,524,517, Cl. 30-324.000.

Ruskin Manufacturing Company: *See—*
Klebanoff, Steven L., 4,524,678, Cl. 98-1.000.

Russell, Frank S.; and Simonelli, Robert J., to Sleeper & Hartley Corp. Method of supporting a camshaft in a wire coiling machine. 4,524,597, Cl. 72-135.000.

Russo, John B. Device for deterring unauthorized climbing of permanent ladders. 4,524,848, Cl. 182-77.000.

Ryan, Martin A.: *See—*
McHenry, Robert J.; and Ryan, Martin A., 4,525,134, Cl. 425-130.000.

Ryobi Ltd.: *See—*
Ozaki, Kiyomi; and Tsunoda, Kikuo, 4,524,921, Cl. 242-84.10J.
Tunoda, Kikuo; and Ozaki, Kiyomi, 4,524,923, Cl. 242-84.50A.

S.D.S. Industries, Inc.: *See—*
Day, Robert H., 4,525,099, Cl. 403-371.000.

S.N.E.C.M.A.: *See—*
Forestier, Alexandre; Pluquet, Alain A.; Rosa, Roger A.; Tabet, Mansour; and Teysseyre, Pierre M., 4,525,135, Cl. 425-290.000.

Saalasti, Vaino T. Method for the clarification of water. 4,525,284, Cl. 210-777.000.

Sabins, Fred; and Childs, Jerry D., to Halliburton Company. Method of using thixotropic cements for combating gas migration problems. 4,524,828, Cl. 166-293.000.

Sabranski, Udo: *See—*
Altenau, Ernst-Wilhelm; Hahn, Ulf; and Sabranski, Udo, 4,524,696, Cl. 102-491.000.

Sachdev, Harbans S.: *See—*
Sachdev, Krishna G.; Sachdev, Harbans S.; Aviram, Ari; and Wizner, Mark A., 4,525,722, Cl. 346-1.100.

Sachdev, Krishna G.; Sachdev, Harbans S.; Aviram, Ari; and Wizner, Mark A., to International Business Machines Corporation. Chemical heat amplification in thermal transfer printing. 4,525,722, Cl. 346-1.100.

Sackett, Robert L. Fluid flow failure detection means. 4,524,736, Cl. 123-198.00D.

Sada, Takeshi: *See—*
Kato, Hidetoshi; Sada, Takeshi; Mayumi, Nobuo; and Matsuhashi, Hajime, 4,525,662, Cl. 322-28.000.

Sadhu, Kizhakethil M.: *See—*
Matteson, Donald S.; and Sadhu, Kizhakethil M., 4,525,309, Cl. 260-462.00C.

Sado, Ryoichi. Sensor switch. 4,525,606, Cl. 200-5.00A.

SAE s.r.l.: *See—*
Del Fabro, Marcello; and Del Fabro, Giorgio, 4,524,656, Cl. 83-23.000.

Sagawa, Nobukazu: *See—*
Kawamura, Hideo; Sagawa, Nobukazu; and Yamamoto, Noriyoshi, 4,525,622, Cl. 219-270.000.

Sahatjian, Ronald A.: *See—*
Rogers, Howard G.; Bilofsky, Ruth C.; Gaudiana, Russell A.; and Sahatjian, Ronald A., 4,525,413, Cl. 428-212.000.

Saikosha Works Ltd.: *See—*
Saitoh, Hisashi, 4,524,592, Cl. 70-287.000.

Saino, Tetsushi: *See—*
Someno, Tetsuya; Kato, Kazuo; Saino, Tetsushi; Ishii, Shinichi; Takeuchi, Tomio; and Umezawa, Hamao, 4,525,465, Cl. 502-7.000.

Saito, Akihiro, to Fujikogyosho Co., Ltd. Method and apparatus for automatic electric seam resistance welding of can bodies. 4,525,617, Cl. 219-83.000.

Saito, Sueo: *See—*
Shimokobe, Hirokata; Saito, Sueo; Tomioka, Kentaro; Akahane, Shoji; and Hirota, Kazuo, 4,524,824, Cl. 106-35.000.

Saito, Susumu: *See—*
Tatsuno, Kimio; and Saito, Susumu, 4,525,024, Cl. 350-6.500.

Saito, Takashi; Suzuki, Kazumoto; and Naganuma, Yoshihiro, to Fujikura Ltd. Magnetic material wire. 4,525,432, Cl. 428-653.000.

Saito, Tamio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing multilayer circuit substrate. 4,525,383, Cl. 427-89.000.

Saitoh, Hisashi, to Saikosha Works Ltd. Combination lock. 4,524,592, Cl. 70-287.000.

Saitoh, Koichi: *See—*
Nishimura, Nobuo; Itami, Teruhiko; Kimoto, Toshifumi; Tomiyama, Shunsuke; and Saitoh, Koichi, 4,525,723, Cl. 346-74.400.

Saitoh, Osamu: *See—*
Tanaka, Masaru; Noguchi, Naoki; Yoshino, Kenji; and Saitoh, Osamu, 4,525,069, Cl. 356-435.000.

Saitou, Sinichi: *See—*
Nemoto, Shigeru; Saitou, Sinichi; Kitajima, Goro ; and Osada, Hazime, 4,525,760, Cl. 360-137.000.

Sakaguchi, Toshiharu: *See—*
Yamane, Toshihiro; Ohashi, Kenzi; and Sakaguchi, Toshiharu, 4,525,297, Cl. 252-511.000.

Sakai, Hiroyuki: *See—*
Ohmi, Shigeaki; Shingaki, Seiichi; Sakai, Hiroyuki; and Asahara, Yoshiyuki, 4,525,189, Cl. 65-3.150.

Sakai, Kazuo: *See—*
Ikematsu, Masaki; Honzyo, Isao; and Sakai, Kazuo, 4,525,269, Cl. 208-309.000.

Sakai, Toshiyuki; Ohta, Yuichi; Minoh, Michihiko; and Hino, Masatoshi. Analog-to-digital image signal conversion. 4,525,747, Cl. 358-284.000.

Sakamoto, Masahide: *See—*
Kashiwaya, Mineo; Morita, Kiyomi; and Sakamoto, Masahide, 4,524,739, Cl. 123-339.000.

Sakamoto, Susumu: *See—*
Nakane, Yasuaki; Akamatsu, Junichi; Sakamoto, Susumu; and Kiyomiya, Tadashi, 4,525,412, Cl. 428-199.000.

Sakata, Ko; and Imai, Hirosuke, to Nippon Oil Co., Ltd. Method of immobilizing enzymatically active materials. 4,525,457, Cl. 435-178.000.

Sakura Color Products Corp.: *See—*
Nakanishi, Mikihiko, 4,525,216, Cl. 106-30.000.
Shioi, Keiko; and Nakanishi, Mikihiko, 4,525,215, Cl. 106-22.000.

Sakurai, Masaaki: *See—*
Hirabayashi, Hiromitsu; Sakurai, Masaaki; and Kagiura, Kazuo, 4,525,058, Cl. 355-3.0FU.

Sakurai, Yasuo: *See—*
Imanishi, Kiyokazu; Ichiyanagi, Takashi; Sakurai, Yasuo; Naka, Hirouki; and Nakagawa, Koji, 4,525,757, Cl. 360-130.240.

Salama, Clement A. T.: *See—*
Wong, Stephen L.; and Salama, Clement A. T., 4,525,679, Cl. 330-277.000.

Saletta, Gary F.: *See—*
Hicks, John M.; Engel, Joseph C.; Spreadbury, Robert J.; Elms, Robert T.; and Saletta, Gary F., 4,525,650, Cl. 315-226.000.

Salminen, Arvo, to A. Ahlstrom Osakeyhtio. Two-piece sliding box with tear strip separation. 4,524,900, Cl. 229-19.000.

Samakaev, Rafail K.: *See—*
Kisil, Evgeny D.; Komova, Svetlana N.; Kulikova, Olga A.; Kutyanin, Leonid I.; Popova, Larisa V.; Dyatlova, Nina M.; Lastovsky, Rostislav P.; Yaroshenko, Galina F.; Khramov, Rem A.; Dytjuk, Leonid T.; Samakaev, Rafail K.; and Vasnev, Anatoly N., 4,525,293, Cl. 252-181.000.

Sambucetti, Carlos J.: *See—*
Alpaugh, Warren A.; Amelio, William J.; Markovich, Voya; and Sambucetti, Carlos J., 4,525,390, Cl. 427-305.000.

Sanchez, Dale R.: *See—*
Willus, Charles A.; Kosonen, Vaino J.; and Sanchez, Dale R., 4,525,274, Cl. 210-232.000.

Sanchez, Jose, to Pennwalt Corporation. Hydroxy-t-alkyl peroxyesters. 4,525,308, Cl. 260-453.0RZ.

Sandahl, Joel E.: *See—*
Hesselberth, Robert J.; Donaher, Thomas P.; and Sandahl, Joel E., 4,525,685, Cl. 331-10.000.

Sander, Wilfried, to Pfaff Industriemaschinen GmbH. Device for feeding and sewing a trimming ribbon to a garment part. 4,524,707, Cl. 112-152.000.

Sandor, Istvan: *See—*
Lawrence, John N.; and Sandor, Istvan, 4,524,802, Cl. 137-595.000.

Sangamo Weston, Inc.: *See—*
Holberton, Philip M.; Randall, Bruce E.; and Marshall, Jay K., 4,525,669, Cl. 324-142.000.

Sano, Yoshiaki; Tsuchiya, Chikara; and Maida, Osamu, to Fujitsu Limited; and Nippon Kogaku K.K. Integrated circuit having an input voltage-clamping function and an input current-detecting function. 4,525,637, Cl. 307-350.000.

Sansom, David J., to EMI Limited. Apparatus for sensing two components of a magnetic field. 4,525,671, Cl. 324-252.000.

Santalucia, Andre R.: *See—*
Billard, Alain A.; Santalucia, Andre R.; and Breseghello, Christian, 4,524,670, Cl. 89-1.530.

Santrade Ltd.: *See—*
Bylund, Sven O., 4,525,109, Cl. 407-36.000.

Sappok, Reinhard J.: *See—*
Patil, Arvind S.; Bantjes, John H.; Pepoy, Louis J.; and Sappok, Reinhard J., 4,525,217, Cl. 106-304.000.

Sarh, Branko; and Pasenau, Hartmut, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschrankter Haftung. Surface type structural component, especially for aircraft. 4,524,556, Cl. 52-807.000.

Sartori, Guido; and Thaler, Warren A., to Exxon Research and Engineering Co. Amino acid mixtures, their alkali metal salts and process for preparing same. 4,525,294, Cl. 252-182.000.

Sarumaru, Kazumasa. Method of preheating and preforming a green tire. 4,525,320, Cl. 264-502.000.

Sasa, Hiroyuki; Yabe, Hisao; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, to Olympus Optical Co., Ltd. Method of cleaning endoscope channels. 4,525,220, Cl. 134-21.000.

Sasaki, Hiroharu: *See—*
Hayashi, Masaaki; and Sasaki, Hiroharu, 4,525,499, Cl. 523-523.000.

Sasaki, Satoshi: *See—*
Kominami, Yasuo; Ohkubo, Yuichi; Aizawa, Kohki; and Sasaki, Satoshi, 4,525,636, Cl. 307-264.000.

Sasaki, Yasuharu: *See—*
Hidaka, Hiroyoshi; Sone, Takanori; Sasaki, Yasuharu; and Sugihara, Taisuke, 4,525,589, Cl. 544-128.000.

Sassi, Carlo, to Tito Manzini & Figli S.p.A. Process and plant for aseptic filling of pre-sterilized, non-rigid containers. 4,524,563, Cl. 53-426.000.

Sasso, Albert. Two dimensional puzzle. 4,524,971, Cl. 273-153.00S.

Sato, Hachiro, to Fukoku Kogyo Co., Ltd. Continuous press. 4,524,684, Cl. 100-117.000.

Sato, Ikuro; and Iwata, Ryuichi, to NEC Corporation. Dual-band antenna system of a beam waveguide type. 4,525,719, Cl. 343-761.000.

Sato, Kazutoshi: *See—*
Fukawa, Isaburo; and Sato, Kazutoshi, 4,525,546, Cl. 526-68.000.

Sato, Kyosaku, to Polysar Limited. Vulcanizable polymer compositions with improved scorch. 4,525,517, Cl. 524-394.000.

Sato, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing semiconductor device. 4,524,508, Cl. 29-571.000.

Sato, Yoshinari, to Fujisawa Pharmaceutical Co., Ltd. Certain 4-aryl-1,4-dihydro-3,5-pyridinedicarboxylates having vasodilating and antihypertensive properties. 4,525,478, Cl. 514-350.000.

Sato, Youji; Omata, Nobuaki; and Shimbara, Sakuzo, to Nifco Inc. Detachable fastener. 4,524,494, Cl. 24-453.000.

Sauget, Bernard, to Construction-Gerance-Exploitation "CONGEX". Foil transfer device for an installation for manufacturing hollow truncated cone shaped articles and in particular wine bottle caps. 4,525,154, Cl. 493-154.000.

Sauvestre, Jean C.: *See—*
Bisping, Bernhard; Gersbach, Klaus; Luther, Hans; Simon, Walter; Wallow, Peter; Montier, Patrick; Moreau, Pierre A.; and Sauvestre, Jean C., 4,524,695, Cl. 102-430.000.

Savage, Kerry D., to Texaco Inc. Method of heating an oil shale formation. 4,524,826, Cl. 166-248.000.

Sawada, Yoshizo: *See—*
Meguro, Takashi; Ogata, Yasunobu; and Sawada, Yoshizo, 4,525,222, Cl. 148-121.000.

Sawano, Katsutoshi; and Miyashita, Tetsuharu, to Iwatsu Electric Co., Ltd. System for observing a plurality of digital signals. 4,525,667, Cl. 324-140.00R.

Sawano, Susumu; Gofuku, Yoshihiro; Hashimoto, Junji; and Ando, Takayuki, to Tokico Ltd. Mechanical snubber. 4,524,851, Cl. 188-134.000.

Sawazaki, Norikazu: *See—*
Higashiyama, Yasushi; Chiba, Shu; and Sawazaki, Norikazu, 4,525,828, Cl. 369-111.000.

Saxby, Willard A.; and Pikula, Robert D. Pressurizing and closure apparatus for carbonated beverage containers. 4,524,877, Cl. 215-228.000.

Sazdanoff, Elizabeth. Finger rest for manicuring. 4,524,789, Cl. 132-73.000.

Scan-Optics, Inc.: *See—*
D'Angelo, Kenneth R.; and Childress, Timothy T., 4,524,963, Cl. 271-3.100.

Schaefer, Helmut. Insole for shoes. 4,524,529, Cl. 36-98.000.

Schefczik, Ernst: *See—*
Lotsch, Wolfgang; Kemper, Reinhard; and Schefczik, Ernst, 4,525,591, Cl. 544-250.000.

Scheffer, Daniel G.; Brock, Christopher W.; and Schumer, Douglas B., to Ohaus Scale Corporation. Electronic balance. 4,525,794, Cl. 364-567.000.

Scheibengraber, Karl J. Stirling engine. 4,524,583, Cl. 60-525.000.

Scheicher, Hans; Siegele, Dieter; and Soltesz, Uwe, to Fraunhofer-Gesellschaft zur Forderung der angwandten Forschung e.V.; and Scheicher, Hans. Connecting device for joining a superstructure element with an implant member. 4,525,145, Cl. 433-173.000.

Scheiwiller, Rolf. Construction units for the erection of walls and method of utilization. 4,524,551, Cl. 52-98.000.

Schenkel, Klaus D.; and Welzenbach, Manfred, to LICENTIA Patent-Verwaltungs-GmbH. Service integrated digital transmission system. 4,525,834, Cl. 370-3.000.

Schering AG: *See—*
Burba, Christian; and Franz, Herbert, 4,525,571, Cl. 528-111.000.

Schering Aktiengesellschaft: *See—*
Eibner, Robert; Nolle, Hans-Heinrich; Schneider, Alfred; and Kohl, Wilhelm, 4,525,197, Cl. 71-11.000.

Scheuermann, Helmut, to Licentia Patent-Verwaltungs-GmbH. Method for interchanging n partial bands. 4,525,844, Cl. 375-2.100.

Schick, Rupert: *See—*
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,525,484, Cl. 521-56.000.

Schildkraut, Alan L.; and Brush, Robert W., Sr., to Allied Corporation. Anti-decoupling mechanism for an electrical connector assembly. 4,525,017, Cl. 339-89.00M.

Schiller, Siegfried: *See—*
Neumann, Manfred; Schiller, Siegfried; ZeiBig, Gerhard; Morgner, Henry; and Jasch, Gunter, 4,524,717, Cl. 118-718.000.

Schimmel, Gunther; Heymer, Gero; Krause, Werner; and Pieper, Werner, to Hoechst Aktiengeselischaft. Process for separating gallium and indium from aqueous solutions. 4,525,333, Cl. 423-112.000.

Schindler, Wolfgang: *See—*
Krempl, Peter W.; and Schindler, Wolfgang, 4,525,627, Cl. 250-345.000.

Schittek, Hans: *See—*
Ripkens, Gerd; Schittek, Hans; and Buschfeld, Adolf, 4,525,227, Cl. 156-62.200.

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Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Mundie, Craig J.; Schleimer, Stephen I.; and Wallach, Steven J., 4,525,780, Cl. 364-200.000.

Schlicht, Raymond C., to Texaco Inc. Lubricants containing hydroxyalkoxy acid amides of alkyl amines as friction reducers. 4,525,288, Cl. 252-32.70E.

Schmidt, Donald R., to Encon Systems, Ltd. Modified full-flow filter and by-pass filter apparatus for internal combustion engines. 4,524,733, Cl. 123-196.00A.

Schmidt, John C.; Campbell, Donald N.; and Clay, Sandra B., to Allied Corporation. Electrochemical gas sensor. 4,525,266, Cl. 204-412.000.

Schmidt, John C.: *See—*
Campbell, Donald N.; and Schmidt, John C., 4,525,704, Cl. 340-632.000.

Schmidt, Karl W., to Gebruder Schmidt GmbH & Co. KG. System for retaining a wall on a clock housing. 4,525,079, Cl. 368-276.000.

Schmidt, Klaus, to Carl Freudenberg, Firma. Cleaning cloth. 4,525,411, Cl. 428-198.000.

Schmidt, Robert R., to Eastman Kodak Company. Highly active and efficient polyolefin catalyst. 4,525,551, Cl. 526-116.000.

Schmidt, Wolfgang; and Longo, Jose M., to Dornier GmbH. Wing-sections, in particular aircraft lift-wing sections. 4,524,928, Cl. 244-35.00R.

Schneckenburger, Gerhard: *See—*
Goedecke, Wolf-Dieter; Schneckenburger, Gerhard; and Schwenzer, Reinhard, 4,524,804, Cl. 137-625.640.

Schneider, Alfred: *See—*
Eibner, Robert; Nolle, Hans-Heinrich; Schneider, Alfred; and Kohl, Wilhelm, 4,525,197, Cl. 71-11.000.

Schneiderman, Gary E.: *See—*
Withers, Stanley J.; Schneiderman, Gary E.; and Little, William M., Jr., 4,524,776, Cl. 128-644.000.

Schoen, Roger: *See—*
Tourtellier, Jean-Louis; and Schoen, Roger, 4,524,698, Cl. 104-107.000.

Schonborn, Jurgen: *See—*
Mangold, Hans; Eckert, Hans; and Schonborn, Jurgen, 4,525,746, Cl. 358-254.000.

Schraff, Raymond J.: *See—*
Miller, Thomas M.; Schraff, Raymond J.; and Labas, Nicholas, 4,524,702, Cl. 110-173.00A.

Schreiber, William L.: *See—*
Wiegers, Wilhelmus J.; Fenn, Ronald S.; Boden, Richard M.; and Schreiber, William L., 4,524,783, Cl. 131-276.000.

Schubert, Elliot V. Heating appliance. 4,524,754, Cl. 126-110.00R.

Schuler, Daniel: *See—*
Hulin, Rene ; and Schuler, Daniel, 4,524,635, Cl. 74-476.000.

Schulman, David A. Seat having movable supporting surfaces. 4,524,762, Cl. 128-33.000.

Schulte-Elte, Karl H.; and Muller, Bernard L., to Firmenich SA. Aliphatic alcohols and esters and their use as perfuming ingredients. 4,525,298, Cl. 252-522.00R.

Schulte, Heinrich: *See—*
Gotte, Elmar; and Schulte, Heinrich, 4,524,859, Cl. 198-735.000.

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Mucheyer, Norbert; and Schulte, Heinz, 4,524,945, Cl. 251-75.000.

Schulthess, Dieter: *See—*
Gaisch, Helmut; and Schulthess, Dieter, 4,524,786, Cl. 131-308.000.

Schulz, Ralf-Thilo: *See—*
Prochaska, Wolfgang; and Schulz, Ralf-Thilo, 4,525,005, Cl. 293-117.000.

Schumer, Douglas B.: *See—*
Scheffer, Daniel G.; Brock, Christopher W.; and Schumer, Douglas B., 4,525,794, Cl. 364-567.000.

Schwabe, Ulrich; Jacobs, Erwin P.; and Neppl, Franz, to Siemens Aktiengesellschaft. Method for manufacturing VLSI complementary MOS field effect circuits. 4,525,378, Cl. 427-38.000.

Schwarz, James A.; and Pasco, Robert W., to Syracuse University. Hydrogen charged thin film conductor. 4,525,734, Cl. 357-67.000.

Schwarzmann, Russell A.: *See—*
Lillibridge, Herbert J.; and Schwarzmann, Russell A., 4,524,980, Cl. 277-199.000.

Schweizer, Heiner: *See—*
Class, Eberhard; Schweizer, Heiner; and Frank, Gunther, 4,524,843, Cl. 180-179.000.

Schwellinger, Pius; Ried, Alois; Timm, Jurgen; and Heckler, Manfred, to Swiss Aluminium Ltd. Aluminum alloy. 4,525,326, Cl. 420-535.000.

Schwenzer, Reinhard: *See—*
Goedecke, Wolf-Dieter; Schneckenburger, Gerhard; and Schwenzer, Reinhard, 4,524,804, Cl. 137-625.640.

Schwindt, Gary W., to Litton Systems, Inc. Preassembled press fit connector with assembly insert. 4,525,015, Cl. 339-17.00C.

Schwinn Bicycle Company: *See—*
Centeny, Norman L., 4,524,989, Cl. 280-281.00R.

Science Applications International Corporation: *See—*
Pelletier, Charles A.; Gonso, William E., Jr.; Cameron, Douglas S.; and Leonard, Patrick R., 4,524,607, Cl. 73-40.50R.

SCM Corporation: *See—*
Abbey, Kirk J.; and Erickson, James R., 4,525,260, Cl. 204-181.700.
Craun, Gary P.; and DeGraaf, Henry J., 4,525,535, Cl. 525-163.000.

Scott, John H., to Boeing Company, The. Automatic trim system for hydrofoil craft. 4,524,710, Cl. 114-275.000.

Seals Eastern Inc.: *See—*
Hertz, Daniel L., Jr., 4,524,982, Cl. 277-229.000.

Secretary of State for United Kingdom Atomic Energy Authority: *See—*
Pollock, James F., 4,525,406, Cl. 428-137.000.

Seidler, Klaus: *See—*
Fahrmbacher-Lutz, Ludwig; and Seidler, Klaus, 4,525,250, Cl. 204-58.500.

Seiko Instruments & Electronics Ltd.: *See—*
Hoshi, Hideo; and Kamamori, Hitoshi, 4,525,710, Cl. 340-784.000.
Kawashima, Hirofumi, 4,525,646, Cl. 310-360.000.

Seikosha Co., Ltd.: *See—*
Ikeda, Yoshiaki, 4,525,084, Cl. 400-55.000.

Seitz, Fred H.; and Jaschke, Max J., to Air Cabin Engineering. Magnetic target assembly. 4,524,976, Cl. 273-388.000.

Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Thermosetting latex coating compositions produced by copolymerization in aqueous emulsion in the presence of water-insoluble polyhydric alcohol. 4,525,510, Cl. 524-156.000.

Sekmakas, Kazys; and Murphy, Edward J., to DeSoto, Inc. Epoxy-free hydroxy functional polyether based on oleyl alcohol and solvent-soluble copolymers containing the same. 4,525,543, Cl. 525-529.000.

Semiconductor Energy Laboratory Co., Ltd.: *See—*
Yamazaki, Shunpei, 4,525,435, Cl. 429-111.000.
Yamazaki, Shunpei, 4,525,436, Cl. 429-111.000.
Yamazaki, Shunpei, 4,525,437, Cl. 429-111.000.

Seminsky, George M.: *See—*
Webster, Marvin K.; Flynn, Richard T.; Porter, Marion G.; and Seminsky, George M., 4,525,777, Cl. 364-200.000.

Senco Products, Inc.: *See—*
Morrell, Robert F., Jr., 4,524,896, Cl. 227-126.000.

Seng-Jung, Chen: *See—*
Maw-Cheng, Shieh; Seng-Jung, Chen; Li-Jung, Hu; and Jin-Luh, Su, 4,525,210, Cl. 75-58.000.

Seno, Makito: *See—*
Misawa, Yoshihiko; Seno, Makito; and Fujiwara, Koji, 4,524,860, Cl. 198-740.000.

Senoh, Yasutaka. Simplified electric switch construction. 4,525,607, Cl. 200-16.00R.

Sentrol, Inc.: *See—*
Holce, Thomas J.; and Huckins, Charles M., 4,525,018, Cl. 339-91.00R.

Seragnoli, Enzo, to G.D Societa' per Azioni. Cigarette-making machine with an auxiliary tobacco supply unit. 4,524,781, Cl. 131-108.000.

Seragnoli, Enzo; and Neri, Armando, to G.D Societa' per Azioni. Device for forming perforations in bar-shape articles. 4,524,784, Cl. 131-281.000.

Seragnoli, Enzo; and Neri, Armando, to G.D Societa' per Azioni. Method and apparatus for forming perforations in bar-like articles. 4,524,785, Cl. 131-281.000.

Serrao, Charles A., to Argentino, Giovanni. Restraint garment. 4,524,768, Cl. 128-134.000.

Serrone, Michael J.: *See—*
Wagner, Gary L.; and Serrone, Michael J., 4,525,689, Cl. 333-104.000.

Sewell Plastics, Inc.: *See—*
Nickel, Gerhard E. B.; and Alberghini, Alfred C., 4,525,377, Cl. 427-12.000.

Seymour, David J.: *See—*
Lehmann, Randall E.; Brehm, Gailon E.; and Seymour, David J., 4,525,678, Cl. 330-277.000.

Sfernice Societe Francaise de l'Electro-Resistance: *See—*
Flassayer, Claude; Le Grives, Bernard; and Simon, Paul R., 4,525,238, Cl. 156-645.000.

Shah, Navnit: *See—*
Behl, Charanjit; Beskid, George; Shah, Navnit; Tossounian, Jacques; and Unowsky, Joel, 4,525,339, Cl. 424-16.000.

Shah, Raj: *See—*
Sekmakas, Kazys; and Shah, Raj, 4,525,510, Cl. 524-156.000.

Shakib, Iraj D.: *See—*
Field, Thomas R.; Hughes, Frank M.; Shakib, Iraj D.; and Vitek, Edward J., Jr., 4,525,086, Cl. 400-144.200.

Shannon, Mark L.: *See—*
Mack, Mark P.; and Shannon, Mark L., 4,525,468, Cl. 502-104.000.

Shannon, Paul J.: *See—*
Phan, Xuan T.; and Shannon, Paul J., 4,525,302, Cl. 260-239.30R.

Shannon, William H.; and Sutton, Wesley D., Jr., to Game Time, Inc. Seat for recreational swing set. 4,524,966, Cl. 272-85.000.

Sharma, Ram A., to General Motors Corporation. Decontamination of aluminum by chlorination. 4,525,212, Cl. 75-68.00R.

Sharp, Bruce R. Storage tank systems. 4,524,609, Cl. 73-49.200.

Sharp Kabushiki Kaisha: *See—*
Mori, Yuichirou, 4,525,726, Cl. 346-75.000.

Shell Oil Company: *See—*
Harris, Martin, 4,525,474, Cl. 514-226.000.
Kollmeyer, Willy D.; and Brown, Thomas L., 4,525,201, Cl. 71-76.000.
Payne, George B.; and Powell, James E., 4,525,203, Cl. 71-88.000.
Stevens, James W.; and Ayers, Ray R., 4,525,101, Cl. 405-169.000.

Shelton, Russell S.: *See—*
Morris, Robert C.; and Shelton, Russell S., 4,524,539, Cl. 43-44.870.

Sheng, Shih Y.; and York, Ray A., to Parker Hannifin Corporation. Force motor with ball mounted armature. 4,525,695, Cl. 335-262.000.

Sheppard, Donald A.: *See—*
Prosan, Richard; Hair, James M., III; and Sheppard, Donald A., 4,525,805, Cl. 364-900.000.

Sheridan, Roger D.: *See—*
DeWerth, Douglas W.; and Sheridan, Roger D., 4,525,141, Cl. 431-347.000.

Shibata, Makoto: *See—*
Yagi, Yoshio; Kondo, Toshihiko; Matsubara, Norio; Miyazaki, Shoichiro; Kashiyama, Hajime; and Shibata, Makoto, 4,524,562, Cl. 53-409.000.

Shibata, Mitsuyoshi: *See—*
Berry, Milton E.; and Shibata, Mitsuyoshi, 4,524,821, Cl. 164-482.000.

Shibata, Takanori; Yoshikawa, Toshiharu; Isobe, Kenichi; and Ichinohe, Shoji, to Toyo Contact Lens Co.; and Shin-Etsu Chemical Co., Ltd. Oxygen permeable soft contact lens composition. 4,525,563, Cl. 526-279.000.

Shibata, Toshihiro: *See—*
Minagawa, Motonobu; Kubota, Naohiro; Shibata, Toshihiro; and Arata, Ryozo, 4,525,506, Cl. 524-102.000.

Shigematsu, Kazuo: *See—*
Nakamura, Shigeru; Tsunoda, Yoshito; Shigematsu, Kazuo; Kaku, Toshimitsu; Maeda, Takeshi; and Kato, Tsuyoshi, 4,525,826, Cl. 369-46.000.

Shigemoto, Shigeru: *See—*
Ohmura, Yasuhiro; Maruyama, Seiichiro; and Shigemoto, Shigeru, 4,525,529, Cl. 525-64.000.

Shikatani, Yutaka: *See—*
Kuroda, Nobuyuki; Nakamura, Toru; Shikatani, Yutaka; Matsuura, Kazuo; and Miyoshi, Mitsuji, 4,525,552, Cl. 526-116.000.

Shimanuki, Koji: *See—*
Nishizawa, Junichi; Tamamushi, Takashige; Ando, Fumihiko; Yoshikawa, Shigeo; and Shimanuki, Koji, 4,525,742, Cl. 358-213.000.

Shimbara, Sakuzo: *See—*
Sato, Youji; Omata, Nobuaki; and Shimbara, Sakuzo, 4,524,494, Cl. 24-453.000.

Shimeki, Yasuharu; Kato, Misao; Matsushima, Hiroshi; and Ishikawa, Toshiro, to Matsushita Electric Industrial Company, Limited. Circuit arrangement and method for magnetic recording/reproducing. 4,525,753, Cl. 360-45.000.

Shimizu, Fumio: *See—*
Yoshida, Mitsuaki; Sugano, Haruo; Shimizu, Fumio; and Imagawa, Kenichi, 4,525,300, Cl. 260-112.50R.

Shimizu, Kiyoshi: *See—*
Hayashi, Ikuo; Itikawa, Tadao; Ogihara, Keizo; and Shimizu, Kiyoshi, 4,525,576, Cl. 528-313.000.

Shimizu, Kyozo: *See—*
Chiba, Fumitaka; and Shimizu, Kyozo, 4,525,809, Cl. 365-51.000.

Shimizu, Takahiko; Fukui, Hishao; and Kohno, Tadashi, to Pentel Kabushiki Kaisha. Tubular writing tip having an outer reduced diameter portion. 4,525,092, Cl. 401-265.000.

Shimokobe, Hirokata; Saito, Sueo; Tomioka, Kentaro; Akahane, Shoji; and Hirota, Kazuo, to G-C Dental Industrial Corporation. Dental cement. 4,524,824, Cl. 106-35.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Shibata, Takanori; Yoshikawa, Toshiharu; Isobe, Kenichi; and Ichinohe, Shoji, 4,525,563, Cl. 526-279.000.

Shingaki, Seiichi: *See—*
Ohmi, Shigeaki; Shingaki, Seiichi; Sakai, Hiroyuki; and Asahara, Yoshiyuki, 4,525,189, Cl. 65-3.150.

Shioi, Keiko; and Nakanishi, Mikihiko, to Sakura Color Products Corp. Ink composition. 4,525,215, Cl. 106-22.000.

Shioi, Shunsuke; Matoba, Gensuke; and Miyake, Makoto, to Kanzaki Paper Manufacturing Company, Ltd. Method of preparing microcapsules. 4,525,520, Cl. 524-512.000.

Shiokama, Yoshiharu; and Suzuki, Shigeru, to Nippon Kogaku K.K. Motor-drivable photographing lens assembly. 4,525,053, Cl. 354-400.000.

Shionogi & Co., Ltd.: *See—*
Narisada, Masayuki; Watanabe, Fumihiko; Okada, Tetsuo; and Matsumura, Hiromu, 4,525,355, Cl. 514-210.000.

Shipley Company Inc.: *See—*
Valayil, Silvester P.; and Aronson, Vita, 4,525,759, Cl. 360-135.000.

Shipos, Louis E.; and Tinker, Steven I., to NCR Corporation. Compact rotary knife mechanism. 4,525,088, Cl. 400-621.000.

Shirai, Shigeru; Kanbe, Junichiro; and Fukuda, Tadaji, to Canon Kabushiki Kaisha. Photoconductive member containing an amorphous boron layer. 4,525,442, Cl. 430-57.000.

Shiraishi, Yoshinobu: *See—*
Kamada, Kazumasa: Tamai, Katsumi; Abe, Kazunori; and Shiraishi, Yoshinobu, 4,525,537, Cl. 525-198.000.

Shiratani, Yuji, to Mitsubishi Denki Kabushiki Kaisha. Radio receiver. 4,525,867, Cl. 455-194.000.

Shirley, Donald J.; and Owen, Thomas E., to Southwest Research Institute. Cylindrical bender-type vibration transducer. 4,525,645, Cl. 310-337.000.

Sias, Robert G.: *See—*
Hayes, Daniel F.; Sias, Robert G.; Chesney, Lloyd; and Waldron, John W., 4,525,253, Cl. 204-149.000.

Siccardi, Frank J. Livestock enclosure environmental control method. 4,524,722, Cl. 119-21.000.

Sieben, Joannes H. F. C., to U.S. Philips Corporation. Magnetic-tape cassette with a flexible latch for a cover. 4,524,927, Cl. 242-198.000.

Siegele, Dieter: *See—*
Scheicher, Hans; Siegele, Dieter; and Soltesz, Uwe, 4,525,145, Cl. 433-173.000.

Sielfeld, Gilbert; and de Jong, Rudolf, to Chemische Werke Huels AG. Suspension polymerization of vinyl chloride wherein suspension agent is added after the monomer charge. 4,525,559, Cl. 526-200.000.

Siemens Aktiengesellschaft: *See—*
Baues, Peter, 4,525,873, Cl. 455-600.000.
Baues, Peter, 4,525,874, Cl. 455-600.000.
Brajder, Antonio, 4,525,765, Cl. 361-88.000.
Fleischer, Wolfgang; Eichelberger, Leo; and Endress, Georg, 4,524,808, Cl. 138-103.000.
Schwabe, Ulrich; Jacobs, Erwin P.; and Neppl, Franz, 4,525,378, Cl. 427-38.000.
Wolf, Gerhard, 4,525,849, Cl. 375-118.000.

Silva, Rosemary A. Needle keeper device. 4,524,891, Cl. 223-109.00R.

Silverman, Harold; Ramsey, James S.; and Irvine, Robert, to Pitney Bowes Inc. Sheet processing apparatus. 4,524,557, Cl. 53-55.000.

Silverwater, Bernard, to Pall Corporation. Automatic reservoir bleed valve. 4,524,793, Cl. 137-198.000.

Simard, Patrice. Safety valve for automatically stopping the flow of a fluid brought by a conduit to a reservoir. 4,524,798, Cl. 137-448.000.

Simmons, Clarke V. Polarizing retroreflecting prism. 4,525,034, Cl. 350-395.000.

Simmons, Nathaniel; and Parikh, Kamal I., to GTE Automatic Electric Inc. Interface arrangement for buffering communication information between a transmitting and receiving stage of a time-space-time digital switching system. 4,525,831, Cl. 370-63.000.

Simon, Paul R.: *See—*
Flassayer, Claude; Le Grives, Bernard; and Simon, Paul R., 4,525,238, Cl. 156-645.000.

Simon, Walter: *See—*
Bisping, Bernhard; Gersbach, Klaus; Luther, Hans; Simon, Walter; Wallow, Peter; Montier, Patrick; Moreau, Pierre A.; and Sauvestre, Jean C., 4,524,695, Cl. 102-430.000.

Simonelli, Robert J.: *See—*
Russell, Frank S.; and Simonelli, Robert J., 4,524,597, Cl. 72-135.000.

Simonton, Robert D. Connector aperture seal for a galvanic cell. 4,525,439, Cl. 429-162.000.

Simpson, Harold G., to Encon Products, Inc. Structural bracing system. 4,524,554, Cl. 52-693.000.

Simpson, Raymond W., to Prutec Limited. Manchester decoder. 4,525,848, Cl. 375-87.000.

Singer Company, The: *See—*
Rodda, Donald; and Odermann, Charles R., 4,524,708, Cl. 112-231.000.

SKF Kugellagerfabriken GmbH: *See—*
Brandenstein, Manfred, 4,524,855, Cl. 192-88.00A.
Brandenstein, Manfred; Haas, Roland; Friedrich, Wolfgang; and Hans, Rudiger, 4,525,082, Cl. 384-138.000.

Slavens, Clyde M., to Evans Pipeline Equipment Company. Internal pipe welding apparatus. 4,525,616, Cl. 219-60.00R.

Slavik, William H.; and Huber, William B., to Nuvatec, Inc. Intravenous set flow control device. 4,525,163, Cl. 604-65.000.

Sleeper & Hartley Corp.: *See—*
Russell, Frank S.; and Simonelli, Robert J., 4,524,597, Cl. 72-135.000.

Slik Tripod Co., Ltd.: *See—*
Kosugi, Yoshinobu; and Tachibana, Kaoru, 4,525,052, Cl. 354-293.000.

Smalley, Daniel S. Induction furnace monitor. 4,525,665, Cl. 324-52.000.

Smeets, Andreas L. M. T.: *See—*
van den Wildenberg, Adrianus M. M.; and Smeets, Andreas L. M. T., 4,524,747, Cl. 123-557.000.

Smith, Douglas D., to United States of America, Energy. Apparatus for accurately measuring high temperatures. 4,525,080, Cl. 374-115.000.

Smith, Durward A.: *See—*
Harris, Hubert; and Smith, Durward A., 4,524,681, Cl. 99-474.000.

Smith, Edward F., III: *See—*
Butt, Sheldon H.; Smith, Edward F., III; and Gyurina, F. Dennis, 4,525,422, Cl. 428-418.000.

Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., to Interox Chemicals Limited. Liquid detergent compositions. 4,525,291, Cl. 252-95.000.

Smith, Harrison C., to Tele-Drill, Inc. Toroidal coupled telemetry apparatus. 4,525,715, Cl. 340-854.000.

Smith International, Inc.: *See—*
Barron, Charles D.; and Kuus, Felix, 4,524,834, Cl. 166-385.000.
Hertz, Daniel L., Jr., 4,524,981, Cl. 277-210.000.

Smith, James, to U.S. Philips Corporation. Modular display apparatus with means for preventing brightness variations. 4,525,653, Cl. 315-366.000.

Smith Kline & French Laboratories Limited: *See—*
Roantree, Michael L.; and Young, Rodney C., 4,525,477, Cl. 514-333.000.

Smith, Philip S.; and Gallup, Michael G., to Motorola Inc. Frequency generator circuit. 4,525,851, Cl. 377-110.000.

Smith, Richard L. Solution polymerization of conjugated dienes. 4,525,560, Cl. 526-201.000.

Smith, Stuart B., to Thermocell Development, Ltd. High tear strength flexible urethane foam composition and method of preparation. 4,525,490, Cl. 521-124.000.

Smiths Industries Public Limited Company: *See—*
Clinton, Peter, 4,525,792, Cl. 364-509.000.

Smoyer, Bruce A.: *See—*
Galla, Edward A.; and Smoyer, Bruce A., 4,525,316, Cl. 264-54.000.

Snyder, William J.; Miller, Raymond H.; and Kobayashi, Hisashi, to Union Carbide Corporation. Flame signal enhancer for post-mixed burner. 4,525,138, Cl. 431-187.000.

Societe Anonyme des Produits Ceramiques de Touraine: *See—*
Genetay, Michel; and Dangers, Gerard, 4,524,500, Cl. 29-157.00R.

Societe Anonyme dite: Institut Merieux: *See—*
Montagnon, Bernard J.; and Fanget, Bernard J. C., 4,525,349, Cl. 424-89.000.

Societe d'Exploitation des Procedes Marechal: *See—*
Le Magourou, Yves, 4,525,610, Cl. 200-51.130.

Societe E. Lacroix-Tous Artifices: *See—*
Billard, Alain A.; Santalucia, Andre R.; and Breseghello, Christian, 4,524,670, Cl. 89-1.530.

Societe Nationale des Poudres et Explosifs: *See—*
Ropars, Marcel; and Bloch, Bertrand, 4,525,573, Cl. 528-232.000.

Soderberg, John H.; Eckert, Alton B.; and McFiggans, Robert B., to Pitney Bowes Inc. Electronic postage meter having plural computing system. 4,525,785, Cl. 364-464.000.

Soderberg, John H.: *See—*
Crowley, Raymond R.; and Soderberg, John H., 4,525,786, Cl. 364-466.000.

Solari, Marcello: *See—*
Moretti, Enrico; Zamboni, Valentino; Le Van Mao, Raymond; Padovan, Mario; and Solari, Marcello, 4,525,466, Cl. 502-63.000.

Soled, Stuart L.; Wold, Aaron; and Kershaw, Robert, to Exxon Research & Engineering Co. Reduction process for forming powdered alloys from mixed metal iron oxides. 4,525,206, Cl. 75-0.5BA.
Solomon, C. Ashley: *See—*
Cascone, Ronald F.; and Solomon, C. Ashley, 4,524,581, Cl. 60-39.020.
Solt, Paul E.: *See—*
DiBuo, Louis J.; Solt, Paul E.; and Souders, Marvyn L., 4,525,106, Cl. 406-60.000.
Soltesz, Uwe: *See—*
Scheicher, Hans; Siegele, Dieter; and Soltesz, Uwe, 4,525,145, Cl. 433-173.000.
Someno, Tetsuya; Kato, Kazuo; Saino, Tetsushi; Ishii, Shinichi; Takeuchi, Tomio; and Umezawa, Hamao, to Nippon Kayaku Kabushiki Kaisha. Water-insoluble biospecific absorbent containing argininal derivative. 4,525,465, Cl. 502-7.000.
Someya, Hiromi; Aihara, Yoshihiko; Mizogui, Toyokazu; and Suzuki, Nobuyuki, to Canon Kabushiki Kaisha. Camera. 4,525,054, Cl. 354-443.000.
Son, Adelina J.; and Loftin, Royal E., to Halliburton Company. Method of preventing loss of an oil-base drilling fluid during the drilling of an oil or gas well into a subterranean formation. 4,525,285, Cl. 252-8.50M.
Sone, Takanori: *See—*
Hidaka, Hiroyoshi; Sone, Takanori; Sasaki, Yasuharu; and Sugihara, Taisuke, 4,525,589, Cl. 544-128.000.
Sony Corporation: *See—*
Nakane, Yasuaki; Akamatsu, Junichi; Sakamoto, Susumu; and Kiyomiya, Tadashi, 4,525,412, Cl. 428-199.000.
Nemoto, Tsuneo; and Sugawara, Kokichi, 4,524,926, Cl. 242-198.000.
Watanabe, Nobuhiko; and Tanaka, Masato, 4,525,752, Cl. 360-13.000.
Yokoya, Satoshi, 4,525,686, Cl. 331-17.000.
Souders, Marvyn L.: *See—*
DiBuo, Louis J.; Solt, Paul E.; and Souders, Marvyn L., 4,525,106, Cl. 406-60.000.
Southard, James S. Alternating current switching device. 4,525,634, Cl. 307-115.000.
Southwest Research Institute: *See—*
Hall, Charles W.; and Anderson, Orin M., 4,524,466, Cl. 603-3.000.
Shirley, Donald J.; and Owen, Thomas E., 4,525,645, Cl. 310-337.000.
Southwire Company: *See—*
Berry, Milton E.; and Shibata, Mitsuyoshi, 4,524,821, Cl. 164-482.000.
Spector, George: *See—*
Diaz, Joe; and Spector, George, 4,524,649, Cl. 81-57.130.
Spectracom Corp.: *See—*
Hesselberth, Robert J.; Donaher, Thomas P.; and Sandahl, Joel E., 4,525,685, Cl. 331-10.000.
Speer, Billy L.; Burris, Lee R.; and Rogers, Jerry W., to Dayco Corporation. Belt tensioner and method of making the same. 4,525,152, Cl. 474-133.000.
Speranza, George P.: *See—*
Cuscurida, Michael; and Speranza, George P., 4,525,488, Cl. 521-164.000.
Sperry Corporation: *See—*
Kush, Stephen T.; and Meffe, Marc E., 4,525,626, Cl. 250-227.000.
Sperzel, Wolfgang; and Sturmer, Johann, to Leybold-Heraeus GmbH. Auxiliary-voltage source for supplying electric circuits which are at a high potential. 4,525,652, Cl. 315-307.000.
Spilker, Harry; and Einfeld, Klaus, to Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH. Dry storage facility for irradiated nuclear reactor fuel elements. 4,525,324, Cl. 376-272.000.
Spinner, Joseph R., to King-Seeley Thermos Company. Ice making apparatus. 4,525,073, Cl. 366-323.000.
Spisak, Andrew J.: *See—*
Humphries, Benjamin T.; and Spisak, Andrew J., 4,525,642, Cl. 310-260.000.
Spitzer, Wayne A.: *See—*
Hall, David A.; and Spitzer, Wayne A., 4,525,304, Cl. 260-245.400.
Spoor, Herbert: *See—*
Blum, Rainer; Spoor, Herbert; Osterloh, Rolf; Mosler, Gerhard; and Rubbert, Bernhard, 4,525,570, Cl. 528-75.000.
Spraymation, Inc.: *See—*
Cocks, Eric H., 4,524,887, Cl. 222-146.500.
Spreadbury, Robert J.: *See—*
Hicks, John M.; Engel, Joseph C.; Spreadbury, Robert J.; Elms, Robert T.; and Saletta, Gary F., 4,525,650, Cl. 315-226.000.
Sprenger, Glenn R.: *See—*
Knudtson, Lynn A.; and Sprenger, Glenn R., 4,524,628, Cl. 73-863.430.
Sresty, Guggilam C.: *See—*
Bridges, Jack E.; Taflove, Allen; and Sresty, Guggilam C., 4,524,827, Cl. 166-248.000.
Srivastava, Gopal K.: *See—*
Lai, Stephen H.; and Srivastava, Gopal K., 4,525,682, Cl. 330-288.000.
Staba, E. John: *See—*
Zito, Santo W.; and Staba, E. John, 4,525,455, Cl. 435-135.000.
Stackhouse, Bill L., to General Electric Company. Voice-responsive mobile status unit. 4,525,793, Cl. 364-513.500.
Stadelmaier, Robert A.: *See—*
Zawadzki, Stanley C., Jr.; Stadelmaier, Robert A.; and Perrone, John J., 4,525,100, Cl. 405-129.000.
Staffa, Karl-Heinz: *See—*
Hummel, Karl-Ernst; Humpolik, Bohumil; Ingelmann, Hans-Joachim; and Staffa, Karl-Heinz, 4,524,823, Cl. 165-174.000.
Staffin, Robert; Girrell, Carol A.; and Fronzoni, Mario A., to Procedyne Corp. Apparatus for metal treatment. 4,524,957, Cl. 266-252.000.
Standard Oil Company, The: *See—*
Bremer, Noel J.; Dria, Dennis E.; Milberger, Ernest C.; Blum, Patricia R.; and Nicholas, Mark L., 4,525,471, Cl. 502-209.000.
Wu, Mu-Yen M.; and Ball, Lawrence E., 4,525,578, Cl. 528-354.000.
Standard Register Company, The: *See—*
Vath, F. Leo, 4,524,903, Cl. 229-73.000.
Standard Telephones and Cables plc: *See—*
Alexander, John H., 4,525,767, Cl. 361-321.000.
Jones, Stephen R., 4,525,312, Cl. 264-1.500.
Wheeler, Jennifer M., 4,525,768, Cl. 361-321.000.
Standard-Thomson Corporation: *See—*
Wong, Backman, 4,524,907, Cl. 236-34.500.
Standley, Paul M.: *See—*
Quick, Terrence R.; Standley, Paul M.; Foley, Mark P.; Howerton, Anderson W.; Miranti, Joseph P., Jr.; Oliver, Larry R.; Holloway, Gerald C., Jr.; and Richmond, Kenneth D., 4,525,150, Cl. 474-93.000.
Standley, Rosalie K. Rosette bow. 4,525,394, Cl. 428-26.000.
Stani vyzkumny ustav materoalu: *See—*
Landa, Vaclav; and Vitek, Jaromir, 4,525,248, Cl. 204-29.000.
Stanley Works, The: *See—*
West, Robert F., 4,524,518, Cl. 30-330.000.
Stark, Raymond L., to Alcon Laboratories, Inc. Aqueous antimicrobial ophthalmic solutions. 4,525,346, Cl. 424-80.000.
Staudte, Juergen H., to Piezoelectric Technology Investors, Limited. Vibratory angular rate sensor system. 4,524,619, Cl. 73-505.000.
Stauffer Chemical Company: *See—*
Felix, Raymond A., 4,525,311, Cl. 260-940.000.
Knudtson, Lynn A.; and Sprenger, Glenn R., 4,524,628, Cl. 73-863.430.
Large, George B.; and Buren, Lawrence L., 4,525,202, Cl. 71-86.000.
Stegenga, Philip D.: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,524,941, Cl. 248-544.000.
Stellaccio, Robert J., to Texaco Inc. High turn down burner for partial oxidation of slurries of solid fuel. 4,525,175, Cl. 48-86.00R.
Stemmler, Bruno; and Zeilinger, Hans, to Aktiengesellschaft M.A.N. Maschinenfabrik Augsburg-Nurnberg. Method for conveying and treating a gas employed for the coating of workpieces by means of a chemical, heterogeneous vapor-phase reaction. 4,525,389, Cl. 427-255.100.
Stephan, Peter, to Bergwerksverband GmbH. Roof support for tunnel excavator. 4,525,104, Cl. 405-290.000.
Sterbik, William G. Grip-correcting golf club handle. 4,524,973, Cl. 273-183.00D.
Sterimatic Holdings Limited: *See—*
Dent, Hugh R., 4,524,809, Cl. 141-1.000.
Steudler, Frederick W., Jr., to Val Products, Inc. Nipple for feeding liquids to fowl and/or small animals. 4,524,724, Cl. 119-72.500.
Stevens, James W.; and Ayers, Ray R., to Shell Oil Company. Drill string deployment of cable pulling tool. 4,525,101, Cl. 405-169.000.
Stewart, David: *See—*
Dalton, Raymond F.; Price, Raymond; Quan, Peter M.; and Stewart, David, 4,525,330, Cl. 423-24.000.
Stickles, David L.: *See—*
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Still, David W.; and Economopoulos, Peter C., to Honeywell Information Systems Inc. Programmable logic array with test capability in the unprogrammed state. 4,525,714, Cl. 340-825.830.
Still, Samuel A., Jr. Realtor sign system. 4,524,533, Cl. 40-607.000.
Stites, Francis H., to GTE Laboratories Incorporated. Solid state transmit/receive switch. 4,525,863, Cl. 455-83.000.
Stojanovski, Stojan. Indexable ball nose end mill. 4,525,110, Cl. 407-40.000.
Stoll, Kurt; and Rudle, Manfred. Spool valve. 4,524,803, Cl. 137-625.640.
Stopinc Aktiengesellschaft: *See—*
Bachmann, Herbert, 4,524,956, Cl. 266-236.000.
Stork PMT B.V.: *See—*
van Mil, Martinus P. G., 4,524,489, Cl. 17-11.000.
Strahs, Martin P.; and Vosbikian, John, to Quickie Manufacturing Corporation. Self contained broom hanging system. 4,524,938, Cl. 248-110.000.
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D'Amelia, Ronald P.; Stroz, John J.; and White, Roy, 4,525,363, Cl. 426-3.000.
Stuart, James M., to Malvern Scale Company. Electronic scale with non-parallel capacitance means. 4,524,840, Cl. 177-210.00C.
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Sugioka, Shinji, to Ushio Denki Kabushiki Kaisha. Photochemical vapor deposition apparatus. 4,525,382, Cl. 427-54.100.
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Sugiura, Muneharu: *See—*
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Sugiyama, Toshio; Suenaga, Hideo; and Fukui, Yukio, to Hitachi, Ltd. Optical tracking system. 4,525,823, Cl. 369-44.000.
Sulzer Brothers Limited: *See—*
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Sumitomo Chemical Co., Ltd.: *See—*
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Tsukamoto, Takashi; Sudo, Chuzo; Aihara, Kenji; and Nishimura, Syozi, 4,525,598, Cl. 174-128.00R.
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Yasukawa, Motohiro; Ishikawa, Yukio; Ojima, Yasuo; Harada, Hiromi; and Mori, Yoshiaki, 4,525,208, Cl. 75-25.000.
Sunnen Products Company: *See—*
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Sunnen, Robert M.; and Estes, Morton B., to Sunnen Products Company. Honing head construction. 4,524,549, Cl. 51-347.000.
Surjaatmadja, Jim B.: *See—*
Mosier, John E.; Surjaatmadja, Jim B.; McLawhon, George B.; and Gallup, Jeffrey M., 4,525,804, Cl. 364-900.000.
Surprenant, Richard P., to General Electric Company. Composition for promoting adhesion of curable silicones to substrates. 4,525,400, Cl. 428-54.000.
Susi, Michael F.: *See—*
Leunig, Carl V.; and Susi, Michael F., 4,524,614, Cl. 73-147.000.
Sussman, Howard. Plant-watering device. 4,524,944, Cl. 251-6.000.
Sutliff, Wayne N., to Downen, Jim L. Oil well jar. 4,524,838, Cl. 175-297.000.
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Suzuki, Hideo: *See—*
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Suzuki, Hirosuke; and Ohki, Hajime, to Junkosha Company Ltd. Transmission line of unsintered PTFE having sintered high density portions. 4,525,693, Cl. 333-236.000.
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Suzuki, Migaku; Ochi, Mitsuzo; and Nozaki, Satoshi, to UniCharm Corporation. Method for attaching elastic band to sanitary articles. 4,525,229, Cl. 156-161.000.
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Suzuki, Norio; Kajikawa, Hiroshi; and Nishikawa, Tadashi, to Kabushiki Kaisha Kobe Seiko Sho. Method and apparatus of ultrasonic flaw detection. 4,524,622, Cl. 73-620.000.
Suzuki, Ryo: *See—*
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Suzuki, Takashi: *See—*
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Suzuki, Yoshiharu: *See—*
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Suzuki, Yosihide, to Komori Printing Machinery Co., Ltd. Paper discharge apparatus for use in paper folders of rotary presses. 4,524,961, Cl. 270-4.000.
Svensson, Sven A. T., to Duni Bila AB. Absorption pad. 4,524,474, Cl. 5-484.000.
Svoboda, Josef; Himmetsberger, Alois; and Szabo, Emilie, to TMC Corporation. Adjusting mechanism. 4,524,990, Cl. 280-633.000.
Swimaid, Inc.: *See—*
Henson, James H., 4,525,272, Cl. 210-149.000.
Swinkels, Godefridus M.: *See—*
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Swiss Aluminium Ltd.: *See—*
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Schwarz, James A.; and Pasco, Robert W., 4,525,734, Cl. 357-67.000.
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Taguchi, Atsushi; and Ohmiya, Takeo, to Daicel Chemical Industries, Ltd. Sodium carboxymethylcellulose. 4,525,585, Cl. 536-98.000.
Tajima, Fujio; and Hirai, Hiromu, to Hitachi, Ltd. Tape transport control unit. 4,525,654, Cl. 318-7.000.
Tajima, Yoshio; Miyoshi, Mituji; Sugita, Shoji; Kawabe, Kiyoshi; and Matsuura, Kazuo, to Nippon Oil Company, Limited. Process for preparing polyolefins. 4,525,555, Cl. 526-125.000.
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Takagaki, Hidetsugu; Nakanishi, Shigenori; Tanaka, Yasuyuki; Watanabe, Michihiro; and Yonehara, Yoriko, to Dainippon Ink and Chemicals Inc. Process for preparation of steroids. 4,525,303, Cl. 260-239.55R.
Takagi, Tsuneo; and Yonehara, Hiroyuki, to Dainippon Screen Seizo Kabushiki Kaisha. Method for controlling an exposure time in consideration of the reciprocity law failure of a photosensitive material. 4,525,065, Cl. 355-77.000.
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Takahata, Kei; Murasawa, Sadao; Ichida, Hiroshi; Okada, Mizuho; and Nakayama, Takao, to Ishihara Sangyo Kaisha, Ltd. Multicolor electrophotographic process using TiO_2. 4,525,441, Cl. 430-46.000.
Takai, Kazuki; Hakumoto, Mitsuhiro; and Yamada, Yasuo, to Clarion Co., Ltd. Head shift mechanism. 4,525,756, Cl. 360-75.000.

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Takasa, Kenji; and Nakamura, Masakatsu, to Asahi Kasei Kogyo Kabushiki Kaisha. Pressure-resistant paper vessel. 4,525,396, Cl. 428-35.000.
Takebe, Kaoru: *See—*
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Takebe, Katuhiko, to Rhythm Watch Company Limited. Vocal announcing device for electronic timepiece. 4,525,076, Cl. 368-63.000.
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Takeda, Hisao; and Taniguchi, Yasunori, to American Colloid Company. Production process for highly water absorbable polymer. 4,525,527, Cl. 524-831.000.
Takeshita, Masatoshi: *See—*
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Takeuchi, Kiyoshi, to Nissan Motor Company, Limited. Pressure sensor. 4,524,625, Cl. 73-754.000.
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Takeuchi, Tomio: *See—*
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Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, to Toyo Stauffer Chemical Co., Ltd. Catalytic component for polymerization of α-olefin and method for homo- or co-polymerization of α-olefin. 4,525,558, Cl. 526-142.000.
Takuya, Suzuki, to Nippon Gakki Seizo Kabushiki Kaisha. Acoustic resistor in an electroacoustic transducer. 4,525,817, Cl. 367-140.000.
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Tan, Yoichi; and Miyao, Fumio, to Fuji Xerox Co., Ltd. Digital signal transmission system. 4,525,837, Cl. 370-85.000.
Tanaka, Hideki; Kamimura, Masanori; Horikawa, Koji; and Kawasaki, Katsuyuki, to Mazda Motor Corporation. Belt-pulley drive mechanism. 4,525,158, Cl. 474-167.000.
Tanaka, Kazuya; and Sugioka, Shinji, to Ushio Denki Kabushiki Kaisha. Photochemical vapor deposition apparatus. 4,525,381, Cl. 427-54.100.
Tanaka, Masaru; Noguchi, Naoki; Yoshino, Kenji; and Saitoh, Osamu, to Horiba, Ltd. Optical absorption analyzer. 4,525,069, Cl. 356-435.000.
Tanaka, Masato: *See—*
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Tanaka, Minoru; and Kawabe, Tadashi, to Tateho Kagaku Kogyo Kabushiki Kaisha. Method of manufacturing crystalline silicon nitride and method of separation thereof. 4,525,335, Cl. 423-344.000.
Tanaka, Nobuyoshi: *See—*
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Tanaka, Seiichi: *See—*
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Tanaka, Susumu; and Takebe, Kaoru, to Minolta Camera Kabushiki Kaisha. Image forming method using three component developer. 4,525,447, Cl. 430-122.000.
Tanaka, Toru; Iwatani, Kazutoshi; Enokido, Nobuo; Murakami, Atsushi; and Yamaguchi, Yukio, to Mitsubishi Chemical Industries Ltd. Process for polymerizing olefin. 4,525,554, Cl. 526-124.000.
Tanaka, Toshie, to Nifco Inc. Lid lock structure. 4,525,004, Cl. 292-171.000.
Tanaka, Toshinori, to Mitsubishi Denki Kabushiki Kaisha. Starter motor for an internal combustion engine. 4,525,632, Cl. 290-38.00R.
Tanaka, Yasuyuki: *See—*
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Tate, John L., Jr. Knotting device. 4,525,003, Cl. 289-17.000.
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Tatsumi, Takumi, to Mitsubishi Denki Kabushiki Kaisha. Speed change control unit of automatic transmission for automobiles utilizing fluid flow rate. 4,524,645, Cl. 74-866.000.
Tatsuno, Kimio; and Saito, Susumu, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Two-beam scanning optical system. 4,525,024, Cl. 350-6.500.
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Taylor, Julian S. Engine oil sampling device. 4,524,811, Cl. 141-325.000.
TDK Corporation: *See—*
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Teijin Limited: *See—*
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Templin, Frank C., to Zenith Electronics Corporation. Stack memory tuning. 4,525,866, Cl. 455-186.000.
ten Broeke, Klaas E.; and Kohler, Manfred R., to American Pecco Corporation. Tower crane with overbooming protection. 4,524,874, Cl. 212-197.000.
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Tetra Pak Developpement S.A.: *See—*
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Tetra Pak International AB: *See—*
Palm, Lars-Erik, 4,524,565, Cl. 53-449.000.
Tex-Tech Industries: *See—*
Leunig, Carl V.; and Susi, Michael F., 4,524,614, Cl. 73-147.000.
Texaco Inc.: *See—*
Curran, Paul F.; and Marshall, Hubert T., II, 4,524,615, Cl. 73-181.000.
Cuscurida, Michael; and Speranza, George P., 4,525,488, Cl. 521-164.000.
Koog, Wolfgang; and Estabrook, Lawrence E., 4,525,176, Cl. 48-197.00R.
Lin, Jiang-Jen; and Knifton, John F., 4,525,481, Cl. 518-700.000.
Rome, Gerald F.; and Lankford, Frank L., Jr., 4,524,952, Cl. 254-269.000.
Savage, Kerry D., 4,524,826, Cl. 166-248.000.
Schlicht, Raymond C., 4,525,288, Cl. 252-32.70E.
Stellaccio, Robert J., 4,525,175, Cl. 48-86.00R.
Vasconcellos, Stephen R.; Yaghmaie, Farrokh; and Howe, Paul E., 4,525,280, Cl. 210-728.000.
Texas Instruments Incorporated: *See—*
Bayraktaroglu, Burhan, 4,525,732, Cl. 357-13.000.
Lehmann, Randall E.; Brehm, Gailon E.; and Seymour, David J., 4,525,678, Cl. 330-277.000.
Teysseyre, Pierre M.: *See—*
Forestier, Alexandre; Pluquet, Alain A.; Rosa, Roger A.; Tabet, Mansour; and Teysseyre, Pierre M., 4,525,135, Cl. 425-290.000.
Thaler, Warren A.: *See—*
Sartori, Guido; and Thaler, Warren A., 4,525,294, Cl. 252-182.000.

Theeuwes, Felix: *See—*
Urquhart, John; and Theeuwes, Felix, 4,525,162, Cl. 604-56.000.
Theis, Christoph; and Prange, Uwe, to Dynamit Nobel AG. Method of preparing 3-alkoxy acrylonitriles. 4,525,310, Cl. 260-465.600.
Thermocell Development, Ltd.: *See—*
Smith, Stuart B., 4,525,490, Cl. 521-124.000.
Therrien, Roger H.: *See—*
Chahal, Maninderpal S.; and Therrien, Roger H., 4,525,741, Cl. 358-212.000.
Thill, Fernand: *See—*
Goedert, Jean; Thill, Fernand; Henrion, Romain; Klein, Henri; Liesch, Jean-Francois; and Peckels, Jean, 4,524,958, Cl. 266-272.000.
Thistleton, John S., to Clayton Dewandre Co., Ltd. Reciprocating exhauster. 4,525,128, Cl. 417-550.000.
Thomas & Betts Corporation: *See—*
Brandeau, Edward P., 4,524,510, Cl. 29-861.000.
Thomas J. Lipton, Inc.: *See—*
Blemlek, William A., 4,525,371, Cl. 426-557.000.
Thomas, John F., Jr.: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,524,941, Cl. 248-544.000.
Thomas, Ralph D. Snap on device for hardcover ring binder. 4,524,991, Cl. 281-20.000.
Thompson, David F.: *See—*
Grimes, Richard V.; Harlamert, W. Benjamin; and Thompson, David F., 4,524,499, Cl. 29-156.80B.
Thompson, Donald R.: *See—*
Hoffman, Harry S., Jr.; Thompson, Donald R.; and Zimmerman, Luther L., 4,525,707, Cl. 340-707.000.
Thompson, William E. Ball valve having improved seal means. 4,524,946, Cl. 251-88.000.
Thomson-CSF: *See—*
Hareng, Michel; Hehlen, Robert; Marcenac, Philippe; Le Berre, Serge; Leclerc, Pierre; and Perbet, Jean-Noel, 4,525,708, Cl. 340-713.000.
Hareng, Michel; Perbet, Jean-Noel; and Defrance, Michel, 4,525,709, Cl. 340-719.000.
Thorogood, Peter B. Prevention of thrombolic disorder with imidazole derivatives and salts thereof. 4,525,475, Cl. 514-304.000.
Thorsen Tool Company: *See—*
Konecny, James W., 4,524,653, Cl. 81-63.000.
Wenzel, Kenneth G.; and Duke, Jerry R., 4,524,652, Cl. 81-63.000.
Thummler, Ursus: *See—*
Kuxdorf, Bernhard; Luhr, Peter; Werner, Hugo; Thummler, Ursus; and Dorn, Friedrich-Wilhelm, 4,525,329, Cl. 422-202.000.
Tiegel Manufacturing Co.: *See—*
Wegner, Paul C., 4,524,509, Cl. 29-623.500.
Tikka, Kyosti, to A. Ahlstrom Osakeyhtio. Sliding two-piece box with tear strip. 4,524,901, Cl. 229-19.000.
Timm, Jurgen: *See—*
Schwellinger, Pius; Ried, Alois; Timm, Jurgen; and Heckler, Manfred, 4,525,326, Cl. 420-535.000.
Timperley, Doreen A.: *See—*
Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., 4,525,291, Cl. 252-95.000.
Tinker, Steven I.: *See—*
Shipos, Louis E.; and Tinker, Steven I., 4,525,088, Cl. 400-621.000.
Titchener, Dorothy M.: *See—*
Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., 4,525,291, Cl. 252-95.000.
Tito Manzini & Figli S.p.A.: *See—*
Sassi, Carlo, 4,524,563, Cl. 53-426.000.
Titus, Charles H. System for disconnecting an electrical power source from a load. 4,525,764, Cl. 361-42.000.
TMC Corporation: *See—*
Svoboda, Josef; Himmetsberger, Alois; and Szabo, Emilie, 4,524,990, Cl. 280-633.000.
Toda, Shozo; Yasuda, Kenji; and Kokubo, Shozo, to Tokyo Ohka Kogyo Kabushiki Kaisha. Apparatus for separation of immiscible liquids. 4,525,276, Cl. 210-433.200.
Todisco, Joseph, to Marson Corporation. Paper and tape dispensing apparatus. 4,525,235, Cl. 156-511.000.
Toibana, Yasuo: *See—*
Ebata, Yoshihiro; Tamari, Nobuyuki; Toibana, Yasuo; and Hayami, Ryozo, 4,525,387, Cl. 427-190.000.
Tokico Ltd.: *See—*
Sawano, Susumu; Gofuku, Yoshihiro; Hashimoto, Junji; and Ando, Takayuki, 4,524,851, Cl. 188-134.000.
Tokyo Ohka Kogyo Kabushiki Kaisha: *See—*
Toda, Shozo; Yasuda, Kenji; and Kokubo, Shozo, 4,525,276, Cl. 210-433.200.
Tokyo Printing Ink Mfg. Co., Ltd.: *See—*
Yamane, Toshihiro; Ohashi, Kenzi; and Sakaguchi, Toshiharu, 4,525,297, Cl. 252-511.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Fujibayashi, Kazuo; Sugiura, Muneharu; and Tsuji, Sadahiko, 4,525,036, Cl. 350-427.000.
Haramaki, Toshio, 4,525,059, Cl. 355-8.000.
Higashiyama, Yasushi; Chiba, Shu; and Sawazaki, Norikazu, 4,525,828, Cl. 369-111.000.
Kawashima, Kazue, 4,525,612, Cl. 200-147.00R.
Masuoka, Fujio, 4,525,811, Cl. 365-154.000.
Nakamura, Hatsuo; Kato, Tiharu; Yonezawa, Toshio; Koguchi, Shigeo; Mori, Kiyoto; and Igarashi, Masahiko, 4,525,523, Cl. 524-572.000.
Saito, Tamio, 4,525,383, Cl. 427-89.000.
Tokyo Sintered Metal Co., Ltd.: *See—*
Hirabayashi, Masao, 4,524,899, Cl. 228-173.200.
Toliusis, Vytautas J., to Humphrey Products Company. Snap-together modular manifold construction. 4,524,807, Cl. 137-884.000.
Tominari, Noboru; and Ishida, Takashi, to Mikuni Kogyo Co., Ltd.; and Tominari, Noboru. Electronic control fuel injection system for spark ignition internal combustion engine. 4,524,745, Cl. 123-478.000.
Tomioka, Kentaro: *See—*
Shimokobe, Hirokata; Saito, Sueo; Tomioka, Kentaro; Akahane, Shoji; and Hirota, Kazuo, 4,524,824, Cl. 106-35.000.
Tomioka, Mitsuharu; and Imajima, Mitsuhiro, to Matsushita Electric Industrial Co., Ltd. Liquid fuel combustion device. 4,525,137, Cl. 431-76.000.
Tomisawa, Norio; Uchiyama, Yasuji; and Suzuki, Hideo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument capable of performing natural slur effect. 4,524,668, Cl. 84-1.240.
Tomita, Tsutomu; Horio, Kimihide; and Naganawa, Tadahisa, to Toyota Jidosha Kabushiki Kaisha. Timing adjustment mechanism in wrapping connector driving device. 4,525,151, Cl. 474-101.000.
Tomiyama, Shunsuke: *See—*
Nishimura, Nobuo; Itami, Teruhiko; Kimoto, Toshifumi; Tomiyama, Shunsuke; and Saitoh, Koichi, 4,525,723, Cl. 346-74.400.
Tomiyasu, Shizuo: *See—*
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,525,558, Cl. 526-142.000.
Tomizawa, Takashi: *See—*
Tsunekawa, Yuzo; and Tomizawa, Takashi, 4,524,596, Cl. 72-133.000.
Tomono, Makoto: *See—*
Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, 4,525,056, Cl. 355-3.0DD.
Tonniges, Heinz, to Deutsche Fibrit Gesellschaft Ebers & Dr. Muller mbH. Process for preparing flat articles based on defibrated components of wood. 4,525,321, Cl. 264-517.000.
Topline Automotive Engineering Inc.: *See—*
Miller, Thomas J., 4,524,734, Cl. 123-196.00S.
Toray Industries, Inc.: *See—*
Higuchi, Akira; and Okamoto, Miyoshi, 4,525,169, Cl. 8-485.000.
Yamane, Toshihiro; Ohashi, Kenzi; and Sakaguchi, Toshiharu, 4,525,297, Cl. 252-511.000.
Torii, Shunichi: *See—*
Omoda, Koichiro; Inagami, Yasuhiro; Torii, Shunichi; and Nagashima, Shigeo, 4,525,796, Cl. 364-730.000.
Toro Company, The: *See—*
Oberg, Gary R., 4,524,515, Cl. 30-276.000.
Torobin, Leonard B. Producing metal and metal glass microfilaments. 4,525,314, Cl. 264-9.000.
Tossounian, Jacques: *See—*
Behl, Charanjit; Beskid, George; Shah, Navnit; Tossounian, Jacques; and Unowsky, Joel, 4,525,339, Cl. 424-16.000.
Toth, David M.: *See—*
Toth, Leo A.; and Toth, David M., 4,524,630, Cl. 74-110.000.
Toth, Leo A.; and Toth, David M. Mechanical force amplifier. 4,524,630, Cl. 74-110.000.
Tourtellier, Jean-Louis; and Schoen, Roger, to Etablissements Tourtellier S.A. Modular rail member for the translation of load-bearing carriages on an overhead track. 4,524,698, Cl. 104-107.000.
Toyo Boseki Kabushiki Kaisha: *See—*
Imai, Fusao; and Okumura, Norio, 4,525,420, Cl. 428-372.000.
Toyo Contact Lens Co.: *See—*
Shibata, Takanori; Yoshikawa, Toshiharu; Isobe, Kenichi; and Ichinohe, Shoji, 4,525,563, Cl. 526-279.000.
Toyo Engineering Corporation: *See—*
Ohsaki, Kozo; Kikuchi, Katsutoshi; and Hirota, Yoshitsugu, 4,525,482, Cl. 518-707.000.
Toyo Jozo Company, Ltd.: *See—*
Imamura, Shigeyuki; Misaki, Hideo; and Muto, Naoki, 4,525,458, Cl. 435-196.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Kobayashi, Seishichi; Miyazawa, Tetsuo; and Ueno, Hiroshi, 4,525,497, Cl. 523-400.000.
Toyo Stauffer Chemical Co., Ltd.: *See—*
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,525,558, Cl. 526-142.000.
Toyoda, Kazuhiro; and Ono, Chikai, to Fujitsu Limited. Semiconductor memory device. 4,525,812, Cl. 365-155.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Nakamata, Hideo, 4,524,503, Cl. 29-407.000.
Okawa, Susumu; Matsui, Hideaki; Jufuku, Yasunobu; and Kato, Toshimi, 4,525,160, Cl. 474-242.000.
Tomita, Tsutomu; Horio, Kimihide; and Naganawa, Tadahisa, 4,525,151, Cl. 474-101.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Konomi, Toshiaki; and Ishiyama, Shinobu, 4,525,781, Cl. 364-431.010.
Toyu Food Co-Operative Corporation: *See—*
Hosaka, Yaoji, 4,525,373, Cl. 426-634.000.
Tractech, Inc.: *See—*
Neumann, Lawrence T.; and Dissett, Walter L., 4,524,640, Cl. 74-650.000.

Trammell, Earl M., Jr., to Bek-Tech Products Incorporated. Electronic fuse tester. 4,525,664, Cl. 324-51.000.

Transensory Devices, Inc.: *See—*
Petersen, Kurt E., 4,525,766, Cl. 361-283.000.

Traver, Frank J., to General Electric Company. Water based resin emulsions. 4,525,502, Cl. 524-96.000.

Treptau, Gerhard: *See—*
Hynek, Bernd; Valk, Giselher; and Treptau, Gerhard, 4,525,403, Cl. 428-87.000.

Tressler, Richard E.: *See—*
Kaiser, Gregory A.; DeMunda, Gabriel P.; and Tressler, Richard E., 4,525,429, Cl. 428-566.000.

Trickey, Peter W.; Netherway, David C.; and Clifford, William S., to Westland plc. Aircraft seat. 4,525,010, Cl. 297-216.000.

Triolo, Innocenzo: *See—*
Bonfiglioli, Silverio; and Triolo, Innocenzo, 4,524,742, Cl. 123-438.000.

Troutman, Richard C.: *See—*
McGregor, Walter; and Troutman, Richard C., 4,524,771, Cl. 128-339.000.

Troxler Electronic Laboratories, Inc.: *See—*
Molbert, John L.; and Riddle, Eddie R., 4,525,854, Cl. 378-089.000.

Trumpf GmbH & Co.: *See—*
Leibinger, Berthold, 4,524,661, Cl. 83-690.000.

TRW Ehrenreich GmbH & Co. KG: *See—*
Busch, Peter; and Barbet, Karl-Heinz, 4,524,943, Cl. 249-63.000.

TRW Inc.: *See—*
Grimes, Richard V.; Harlamert, W. Benjamin; and Thompson, David F., 4,524,499, Cl. 29-156.80B.

Tsubakimoto Machinery & Engineering Co., Ltd.: *See—*
Matsushita, Yoshihiro, 4,524,861, Cl. 198-781.000.

Tsubouchi, Toshiyuki; and Hata, Hitoshi, to Idemitsu Kosan Company Limited. Process for improving traction coefficient of traction drive fluid at high temperatures. 4,525,290, Cl. 252-73.000.

Tsuchiya, Chikara: *See—*
Sano, Yoshiaki; Tsuchiya, Chikara; and Maida, Osamu, 4,525,637, Cl. 307-350.000.

Tsuji, Sadahiko: *See—*
Fujibayashi, Kazuo; Sugiura, Muneharu; and Tsuji, Sadahiko, 4,525,036, Cl. 350-427.000.

Tsukamoto, Takashi; Sudo, Chuzo; Aihara, Kenji; and Nishimura, Syozi, to Sumitomo Metal Industries, Ltd. Steel wire for use in stranded steel core of an aluminum conductor, steel reinforced and production of same. 4,525,598, Cl. 174-128.00R.

Tsunekawa, Yuzo; and Tomizawa, Takashi, to Fuji Photo Film Co., Ltd. Method of forming and feeding torsion springs. 4,524,596, Cl. 72-133.000.

Tsunoda, Kikuo: *See—*
Ozaki, Kiyomi; and Tsunoda, Kikuo, 4,524,921, Cl. 242-84.10J.

Tsunoda, Yoshito: *See—*
Nakamura, Shigeru; Tsunoda, Yoshito; Shigematsu, Kazuo; Kaku, Toshimitsu; Maeda, Takeshi; and Kato, Tsuyoshi, 4,525,826, Cl. 369-46.000.

Tsuya, Noboru; and Arai, Kenichi, to Tsuya, Noboru. Method of manufacturing a thin ribbon wafer of semiconductor material. 4,525,223, Cl. 148-171.000.

Tung, Lu H.; Lo, Grace Y.; and Griggs, Jerald A., to Dow Chemical Company, The. Impact resistant α-methylstyrene-styrene copolymer blends. 4,525,532, Cl. 525-98.000.

Tung, William C. T.; and Deisz, George A., to Goodyear Tire & Rubber Company, The. Polyester composition. 4,525,524, Cl. 524-601.000.

Tunoda, Kikuo; and Ozaki, Kiyomi, to Ryobi Limited. Fishing spinning reels. 4,524,923, Cl. 242-84.50A.

Tuomaala, Jorma A. K., to Teratuote Oy. Elastic mounting for the rod-shaped tooth of a cut-off saw. 4,524,664, Cl. 83-840.000.

Turbo Kogyo Co., Ltd.: *See—*
Yamagishi, Takashi, 4,524,915, Cl. 241-39.000.

Turner, Roy D.: *See—*
Holman, Howard E.; and Turner, Roy D., 4,525,014, Cl. 339-14.00R.

Turner, S. Richard; Walker, Thad O.; Peiffer, Dennis G.; and Lundberg, Robert D., to Exxon Research and Engineering Co. Drilling fluids based on sulfonated thermoplastic polymers having improved low temperature rheological properties. 4,525,522, Cl. 524-547.000.

Tutsky, Ronald J. Skin care and shaving composition. 4,525,344, Cl. 424-73.000.

Tylan Corporation: *See—*
Drexel, Charles F.; and Blair, Richard F., 4,524,616, Cl. 73-203.000.

Tzabanakis, George, to Les Ateliers Mecaniques Alexandre, Inc. Tent bracket. 4,524,792, Cl. 135-90.000.

Tzvetkov, Krum K., to Centralen Savet na Nauchnotechnicheski Sayusi. Program automaton for weaving machines. 4,525,787, Cl. 364-470.000.

UCB Pharmaceuticals, Inc.: *See—*
Baltes, Eugene ; de Lannoy, Jean; and Rodriguez, Ludovic, 4,525,358, Cl. 514-255.000.

Uchida, Kazuo, to Diesel Kiki Co., Ltd. Adjusting device for adjusting initial injection lift of a double injection type fuel injection valve. 4,524,613, Cl. 73-119.00A.

Uchiyama, Yasuji: *See—*
Tomisawa, Norio; Uchiyama, Yasuji; and Suzuki, Hideo, 4,524,668, Cl. 84-1.240.

Ueda Electronic Works Limited: *See—*
Kisioka, Kazuya; and Yamakoshi, Kenichi, 4,524,777, Cl. 128-677.000.

Ueda, Takashi; and Kashiwa, Norio, to Mitsui Petrochemical Industries Ltd. Catalyst composition for polymerizing olefins. 4,525,469, Cl. 502-125.000.

Uemura, Toshirou: *See—*
Kino, Jirou; and Uemura, Toshirou, 4,525,774, Cl. 363-17.000.

Ueno, Hiroshi: *See—*
Kobayashi, Seishichi; Miyazawa, Tetsuo; and Ueno, Hiroshi, 4,525,497, Cl. 523-400.000.

ULO-Werk Moritz Ullmann GmbH & Co. KG: *See—*
Class, Eberhard; Schweizer, Heiner; and Frank, Gunther, 4,524,843, Cl. 180-179.000.

Ulrich, Jean: *See—*
Laisney, Bernard; Letoffe, Michel; Perrin, Patrice; and Ulrich, Jean, 4,525,565, Cl. 528-17.000.

Umezawa, Hamao; Takeuchi, Tomio; and Kondo, Shinichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. (−)-15-Deoxyspergualin, process for the preparation thereof, and intermediate of the same. 4,525,299, Cl. 260-112.50R.

Umezawa, Hamao: *See—*
Someno, Tetsuya; Kato, Kazuo; Saino, Tetsushi; Ishii, Shinichi; Takeuchi, Tomio; and Umezawa, Hamao, 4,525,465, Cl. 502-7.000.

UniCharm Corporation: *See—*
Suzuki, Migaku; Ochi, Mitsuzo; and Nozaki, Satoshi, 4,525,229, Cl. 156-161.000.

Union Carbide Corporation: *See—*
Atkins, Kenneth E.; and Gentry, Robert R ., 4,525,498, Cl. 523-511.000.
Bushey, Dean F.; and D'Silva, Themistocles D. J., 4,525,357, Cl. 514-258.000.
Chiu, Herman S., 4,525,397, Cl. 428-36.000.
Kurtz, Stuart J.; and Potts, James E., 4,525,257, Cl. 204-159.200.
Snyder, William J.; Miller, Raymond H.; and Kobayashi, Hisashi, 4,525,138, Cl. 431-187.000.

Union Oil Company Of California: *See—*
Croudace, Michael C., 4,525,174, Cl. 44-68.000.

Union Underwear Company, Inc.: *See—*
Bell, James D., 4,524,706, Cl. 112-121.290.

Uniroyal, Inc.: *See—*
Ahnemiller, James; and Peascoe, Warren J., 4,525,487, Cl. 521-78.000.

United Kingdom Atomic Energy Authority: *See—*
Bowen, Dennis H., 4,525,228, Cl. 156-155.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Hilsum, Cyril, 4,525,032, Cl. 350-331.00R.

U.S. Floor Systems, Inc.: *See—*
Williams, Robert C., III; and Williams, Stephen R., 4,524,477, Cl. 15-50.00R.

United States of America
Army: *See—*
Durenec, Peter; and Lowe, Clifford E., 4,524,675, Cl. 89-41.030.
Gilvydis, Jaunutis B., 4,524,674, Cl. 89-36.00H.
Commerce: *See—*
Hernandez, Gonzalo J., 4,525,067, Cl. 356-346.000.
Energy: *See—*
Ayers, William J., Jr.; Carter, Charles R.; Griffith, Richard A.; Loomis, Richard B.; and Notestein, John E., 4,524,796, Cl. 137-240.000.
Bangerter, Roger O.; and Meeker, Donald J., 4,525,323, Cl. 376-106.000.
McGuire, Raymond R.; Coon, Clifford L.; Harrar, Jackson E.; and Pearson, Richard K., 4,525,252, Cl. 204-101.000.
Smith, Douglas D., 4,525,080, Cl. 374-115.000.
Navy: *See—*
Corzine, Robert G.; and Mosko, Joseph A., 4,525,720, Cl. 343-895.000.
Diels, Jean-Claude, 4,525,843, Cl. 372-94.000.
Phillips, Raymond J., 4,525,013, Cl. 339-7.000.

U.S. Philips Corporation: *See—*
Admiraal, Daniel J. H.; and Lopes Cardozo, Benjamin, 4,525,856, Cl. 381-93.000.
Da Silva, Artur F., 4,525,623, Cl. 219-373.000.
De Bijl, Adrianus M. J.; and Melai, Henri A. I., 4,525,648, Cl. 315-224.000.
De Ronde, Frans C., 4,525,690, Cl. 333-116.000.
Dimigen, Heinz; and Hubsch, Hubertus, 4,525,417, Cl. 428-244.000.
Hubner, Horst; Lydtin, Hans; Rehder, Ludwig; and Zaengel, Thomas, 4,525,379, Cl. 427-53.100.
Kupfer, Karl H., 4,525,681, Cl. 330-286.000.
Rouws, Petrus L. A., 4,524,933, Cl. 248-27.300.
Sieben, Joannes H. F. C., 4,524,927, Cl. 242-198.000.
Smith, James, 4,525,653, Cl. 315-366.000.

United States Steel Corporation: *See—*
Pringle, William L., 4,524,501, Cl. 29-237.000.

United Technologies Corporation: *See—*
Lillibridge, Herbert J.; and Schwarzmann, Russell A., 4,524,980, Cl. 277-199.000.
Perretta, Frederick A., 4,525,770, Cl. 361-399.000.

Univention Incorporated: *See—*
Kaye, Gordon E.; and Agnello, Joseph A., Jr., 4,524,534, Cl. 42-1.00S.

Universitat Stuttgart, Institut Fur Flugnavigation: *See—*
Wildermuth, Eberhard; Jansen, Dirk; Burkhardt, Rudolf; and Merz, Joachim, 4,525,717, Cl. 343-452.000.

University of Hawaii: *See—*
Birch, Robert G.; and Patil, Suresh S., 4,525,354, Cl. 424-115.000.

University of Miami: *See—*
Fletcher, Mary A., 4,525,459, Cl. 436-544.000.

University of Minnesota, Regents of the: *See—*
Zito, Santo W.; and Staba, E. John, 4,525,455, Cl. 435-135.000.

University of Toronto Innovations Foundation, The: *See—*
Wong, Stephen L.; and Salama, Clement A. T., 4,525,679, Cl. 330-277.000.

Unowsky, Joel: *See—*
Behl, Charanjit; Beskid, George; Shah, Navnit; Tossounian, Jacques; and Unowsky, Joel, 4,525,339, Cl. 424-16.000.

UOP Inc.: *See—*
Rohrbach, Ronald P., 4,525,456, Cl. 435-176.000.

Upjohn Company, The: *See—*
Aristoff, Paul A., 4,525,586, Cl. 544-174.000.

Urbach, Hansjorg: *See—*
Henning, Rainer; and Urbach, Hansjorg, 4,525,301, Cl. 260-112.50R.

Urquhart, John; and Theeuwes, Felix, to ALZA Corporation. Parenteral controlled delivery. 4,525,162, Cl. 604-56.000.

USG Corporation: *See—*
Rehder, Thomas E.; and Williams, Terrance L., 4,525,388, Cl. 427-221.000.

Ushio Denki Kabushiki Kaisha: *See—*
Arai, Tetsuji; and Mimura, Yoshiki, 4,525,380, Cl. 427-53.100.
Sugioka, Shinji, 4,525,382, Cl. 427-54.100.
Tanaka, Kazuya; and Sugioka, Shinji, 4,525,381, Cl. 427-54.100.

USM Corporation: *See—*
Carlson, John H., 4,524,639, Cl. 74-640.000.

Uytterhoeven, Herman J.; Gilliams, Yvan K.; De Winter, Walter F.; Marien, August M.; and De Volder, Noel J., to Agfa-Gevaert, N.V. Liquid developer for development of electrostatic images comprising onium salt polymer and an anion. 4,525,446, Cl. 430-117.000.

Vaillancourt, Vincent L., to Manresa, Inc. Closed system catheter with guide wire. 4,525,157, Cl. 604-52.000.

Vaillancourt, Vincent L., to Manresa, Inc. Treating hydrophobic filters to render them hydrophilic. 4,525,374, Cl. 427-2.000.

Val Products, Inc.: *See—*
Steudler, Frederick W., Jr., 4,524,724, Cl. 119-72.500.

Valayil, Silvester P.; and Aronson, Vita, to Shipley Company Inc. Aluminum storage disc. 4,525,759, Cl. 360-135.000.

Valentino, Pearl T. Hospital bed step. 4,524,475, Cl. 5-507.000.

Valeo: *See—*
Filderman, Rene ; and Pilache, Michel, 4,525,159, Cl. 474-201.000.
Renaud, Pierre, 4,524,856, Cl. 192-98.000.

Valk, Giselher: *See—*
Hynek, Bernd; Valk, Giselher; and Treptau, Gerhard, 4,525,403, Cl. 428-87.000.

Valmet Oy: *See—*
Laapotti, Jorma, 4,525,241, Cl. 162-301.000.

Van Dorn Company: *See—*
Fundom, Danny L.; and Kirk, William A., 4,524,879, Cl. 220-273.000.

Vance, Ian A. W.; and Bainton, Stephen D., to International Standard Electric Corporation. Duplex radio system utilizing time compression expansion. 4,525,835, Cl. 370-29.000.

van den Bogert, Andries J. E. Apparatus for dissecting slaughtered animals. 4,524,488, Cl. 17-11.000.

van den Wildenberg, Adrianus M. M.; and Smeets, Andreas L. M. T., to Vialle B.V. Evaporating-pressure regulating device. 4,524,747, Cl. 123-557.000.

VanDeripe, Donald R. Golf shoes. 4,524,531, Cl. 36-127.000.

Van Ee, Gary R.: *See—*
Wilde, Bernard D.; Van Ee, Gary R.; Ledebuhr, Richard L.; and Rotz, C. Alan, 4,524,572, Cl. 56-327.00R.

Van Hee, Michel A. J., to Atlas Copco Aktiebolag. Gear box for a compressor plant. 4,524,638, Cl. 74-606.00R.

Van Hijfte, Willy H. P.; and Vanmarcke, Luc A., to Compagnie Neerlandaise de l'Azote. Process for the production of urea granules. 4,525,198, Cl. 71-28.000.

VanLenten, James A.: *See—*
Plowman, Richard E.; and VanLenten, James A., 4,524,816, Cl. 164-287.000.

Van Loveren, Augustinus G.: *See—*
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,525,364, Cl. 426-3.000.

Vanmarcke, Luc A.: *See—*
Van Hijfte, Willy H. P.; and Vanmarcke, Luc A., 4,525,198, Cl. 71-28.000.

van Mil, Martinus P. G., to Stork PMT B.V. Device for separating and processing the gizzards of slaughtered poultry. 4,524,489, Cl. 17-11.000.

Van Olst, Gijsbrecht H. J.: *See—*
Ericson, Kurt S. B.; and Van Olst, Gijsbrecht H. J., 4,524,795, Cl. 137-216.200.

Van Overloop, Ronald R., to Kendall Company, The. Scrub sponge with opposed puncture member arms. 4,525,091, Cl. 401-134.000.

Varian Associates, Inc.: *See—*
Berkowitz, Edward H., 4,525,673, Cl. 324-312.000.

Vasconcellos, Stephen R.; Yaghmaie, Farrokh; and Howe, Paul E., to Texaco Inc. Process for separating a water dispersion of ash, slag and char particulate matter. 4,525,280, Cl. 210-728.000.

Vasnev, Anatoly N.: *See—*
Kisil, Evgeny D.; Komova, Svetlana N.; Kulikova, Olga A.; Kutyanin, Leonid I.; Popova, Larisa V.; Dyatlova, Nina M.; Lastovsky, Rostislav P.; Yaroshenko, Galina F.; Khramov, Rem A.; Dytjuk, Leonid T.; Samakaev, Rafail K.; and Vasnev, Anatoly N., 4,525,293, Cl. 252-181.000.

Vath, F. Leo, to Standard Register Company, The. One-piece two-way mailer unit. 4,524,903, Cl. 229-73.000.

Veltkamp, John H.: *See—*
Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., 4,524,941, Cl. 248-544.000.

Ventures Research & Development Group: *See—*
Korman, Nathaniel I., 4,525,736, Cl. 358-28.000.

Vepa Aktiengesellschaft: *See—*
Fleissner, Heinz, 4,524,589, Cl. 68-5.00D.

Verdi, Guido, to BAMA, SpA. Device for the insertion of small blocking strips or ribbons for multiple sheet material. 4,525,236, Cl. 156-517.000.

Verex Laboratories, Inc.: *See—*
Dunn, James M.; and Haas, Ronald T., 4,525,345, Cl. 424-22.000.

Vermeulen, Johannes C.: *See—*
Cruz, Claude A.; and Vermeulen, Johannes C., 4,525,641, Cl. 307-465.000.

Verrando, Marcel G., III: *See—*
Cordes, Harry D.; Haberer, Thomas G.; and Verrando, Marcel G., III, 4,525,183, Cl. 55-179.000.

Vetelino, John F.: *See—*
Chai, Bruce H.; Bailey, Dana S.; Vetelino, John F.; Lee, Donald L.; and Andle, Jeffrey C., 4,525,643, Cl. 310-313.00A.

Vettiger, Peter: *See—*
Beha, Johannes G.; Jaeckel, Heinz; and Vettiger, Peter, 4,525,730, Cl. 357-5.000.

Viale, Giorgio: *See—*
Magnasco, Enrico; and Viale, Giorgio, 4,524,801, Cl. 137-567.000.

Vialle B.V.: *See—*
van den Wildenberg, Adrianus M. M.; and Smeets, Andreas L. M. T., 4,524,747, Cl. 123-557.000.

Vickers p.l.c.: *See—*
Jamieson, John R., 4,524,875, Cl. 212-239.000.

Vidalin, Jacques; and Aucouturier, Jean L., to L'Universite de Bordeaux 1. Method for controlling the comparison to be effected between reference logical entities and logical entities issuing from a file. 4,525,803, Cl. 364-900.000.

Vitas, John K.; and Reed, Harry J., to Plasti-fab, Inc. Open channel gate valve. 4,524,950, Cl. 251-326.000.

Vitek, Edward J., Jr.: *See—*
Field, Thomas R.; Hughes, Frank M.; Shakib, Iraj D.; and Vitek, Edward J., Jr., 4,525,086, Cl. 400-144.200.

Vitek, Jaromir: *See—*
Landa, Vaclav; and Vitek, Jaromir, 4,525,248, Cl. 204-29.000.

Vivarelli, Franco. Fishing reel with oscillating movement actuating lever. 4,524,922, Cl. 242-84.10R.

Vlasak, Thomas, to BBC Brown, Boveri & Cie. Method for the doping of supporting silicon plates for the manufacture of semiconductors. 4,525,224, Cl. 148-189.000.

Vock, Manfred H.: *See—*
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,525,364, Cl. 426-3.000.

Voest-Alpine Aktiengesellschaft: *See—*
Pochmarski, Luzian; Koller, Otto; and Abendstein, Karl, 4,525,211, Cl. 75-58.000.

Vogelgesang, Peter J., to Minnesota Mining & Manufacturing Company. Driver for rotating a magnetic playback head. 4,525,696, Cl. 335-272.000.

Vollstedt, Gerald: *See—*
Bartsch, Erich O.; and Vollstedt, Gerald, 4,525,282, Cl. 210-747.000.

Vondran, Gary L. Concrete permeability testing device and method. 4,524,604, Cl. 73-38.000.

von Hofen, Edward L. Universal platform chain. 4,524,865, Cl. 198-852.000.

Voplex Corporation: *See—*
Wnuk, Jack G., 4,525,231, Cl. 156-185.000.

Vosbikian, John: *See—*
Strahs, Martin P.; and Vosbikian, John, 4,524,938, Cl. 248-110.000.

W. Haking Enterprises, Limited: *See—*
Wong, Wan C.; and Oshima, Shigeru, 4,525,048, Cl. 354-173.100.
Wong, Wan C.; and Oshima, Shigeru, 4,525,051, Cl. 354-203.000.

W. Schlafhorst & Co.: *See—*
Raasch, Hans; and Lassmann, Manfred, 4,524,578, Cl. 57-263.000.

WABCO Fahrzeugbremsen GmbH: *See—*
Reinecke, Erich; and Isernhagen, Fritz, 4,524,850, Cl. 188-71.800.

Wacker-Chemitronic Gesellschaft fur Elektronik Grundstoffe m.b.H.: *See—*
Griesshammer, Rudolf; and Peterat, Michael, 4,525,336, Cl. 423-348.000.

Waggoner, Wayne. Auxiliary axle apparatus. 4,524,841, Cl. 280-81.00A.

Wagner, Gary L.; and Serrone, Michael J., to Ford Aerospace & Communications Corporation. N×m stripline switch. 4,525,689, Cl. 333-104.000.

Wagner, Paul-Heinz: *See—*
Dubiel, Oswald; Hirtsiefer, Karl-Richard; and Wagner, Paul-Heinz, 4,524,651, Cl. 81-57.390.

Wakabayashi, Hiroshi: *See—*
Ogawa, Harumi; Obikawa, Fumito; Koyama, Toshio; Otsubo, Yoshiaki; Wakabayashi, Hiroshi; and Otani, Tadashi, 4,525,049, Cl. 354-173.110.

Waldron, John W.: *See—*
Hayes, Daniel F.; Sias, Robert G.; Chesney, Lloyd; and Waldron, John W., 4,525,253, Cl. 204-149.000.

Waldron, Joseph P.; and Brown, Ivan R., to Hardinge Brothers, Inc. Indexable machine tool turret and attachments therefor. 4,524,655, Cl. 82-36.00A.

Walker, David E. Two stage electric drive. 4,525,655, Cl. 318-45.000.

Walker Machine and Foundry Company: *See—*
Colman, Joseph C., 4,525,113, Cl. 410-41.000.

Walker-Taylor, Sherry. Book assembly. 4,524,993, Cl. 281-46.000.

Walker, Thad O.: *See—*
Turner, S. Richard; Walker, Thad O.; Peiffer, Dennis G.; and Lundberg, Robert D., 4,525,522, Cl. 524-547.000.

Wallach, Steven J.: *See—*
Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Mundie, Craig J.; Schleimer, Stephen I.; and Wallach, Steven J., 4,525,780, Cl. 364-200.000.

Wallich, Manfred: *See—*
Reil, Wilhelm; Deutschbein, Ulrich; and Wallich, Manfred, 4,525,318, Cl. 264-259.000.

Wallow, Peter: *See—*
Bisping, Bernhard; Gersbach, Klaus; Luther, Hans; Simon, Walter; Wallow, Peter; Montier, Patrick; Moreau, Pierre A.; and Sauvestre, Jean C., 4,524,695, Cl. 102-430.000.

Walus, Aloysius N.: *See—*
DenHartog, Herman C.; and Walus, Aloysius N., 4,525,521, Cl. 524-517.000.

Wang, Faa-Ching, to Hewlett-Packard Company. Extrinsic gettering of GaAs wafers for MESFETS and integrated circuits. 4,525,239, Cl. 156-645.000.

Wani, Hasashi: *See—*
Imazeki, Kazuyoshi; and Wani, Hasashi, 4,525,738, Cl. 358-181.000.

Ward, Douglas K., to Powerflow, Inc. Splash guard. 4,524,986, Cl. 280-154.50R.

Ward, Ian M.: *See—*
Capaccio, Giancarlo; and Ward, Ian M., 4,525,564, Cl. 526-348.100.

Warkentin, Henry, to Agriculture Service Corporation. Combine attachment for harvesting radish seeds and the like. 4,524,780, Cl. 130-30.00G.

Warner-Lambert Company: *See—*
Butler, Donald E.; Hershenson, Fred M.; and Pavia, Michael R., 4,525,476, Cl. 514-326.000.

Warzelhan, Volker; and Ball, Wolfgang, to BASF Aktiengesellschaft. Preparation of homopolymers and copolymers of α-monoolefins using a ziegler catalyst system. 4,525,550, Cl. 526-116.000.

Washington Research Foundation: *See—*
Weinstein, Boris; and Orton, Edward, 4,525,540, Cl. 525-327.200.

Washington State University Research Foundation, Inc.: *See—*
Matteson, Donald S.; and Sadhu, Kizhakethil M., 4,525,309, Cl. 260-462.00C.

Watanabe, Fumihiko: *See—*
Narisada, Masayuki; Watanabe, Fumihiko; Okada, Tetsuo; and Matsumura, Hiromu, 4,525,355, Cl. 514-210.000.

Watanabe, Hiroshi: *See—*
Kage, Kouzou; and Watanabe, Hiroshi, 4,525,868, Cl. 455-206.000.

Watanabe, Kazuhiro: *See—*
Kato, Yukiteru; and Watanabe, Kazuhiro, 4,525,365, Cl. 426-101.000.

Watanabe, Masazumi: *See—*
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,525,361, Cl. 514-689.000.

Watanabe, Michihiro: *See—*
Takagaki, Hidetsugu; Nakanishi, Shigenori; Tanaka, Yasuyuki; Watanabe, Michihiro; and Yonehara, Yoriko, 4,525,303, Cl. 260-239.55R.

Watanabe, Motokazu: *See—*
Kubo, Kunimichi; Yoshikawa, Mamoru; Watanabe, Motokazu; Miyazaki, Yasunosuke; and Miyoshi, Mituji, 4,525,548, Cl. 526-72.000.

Watanabe, Noboru: *See—*
Ikuma, Sadao; Aoki, Yuji; and Watanabe, Noboru, 4,525,536, Cl. 525-194.000.

Watanabe, Nobuhiko; and Tanaka, Masato, to Sony Corporation. Apparatus for recording and reproducing a digital signal. 4,525,752, Cl. 360-13.000.

Watanabe, Shoji; and Okitsu, Kiyoshi, to Daicel Chemical Industries, Ltd. Radiation-curable resin composition. 4,525,258, Cl. 204-159.230.

Watson, Philip: *See—*
Watson, Thomas A.; and Watson, Philip, 4,525,124, Cl. 416-132.00B.

Watson, Thomas A.; and Watson, Philip. Balanced stress vertical axis wind turbine. 4,525,12[illegible], Cl. 416-132.00B.

Watson, W. Keith R. Well pipe perforation detector. 4,525,815, Cl. 367-35.000.

Weber S.p.A.: *See—*
Bonfiglioli, Silverio; and Triolo, Innocenzo, 4,524,742, Cl. 123-438.000.

Webster, Marvin K.; Flynn, Richard T.; Porter, Marion G.; and Seminsky, George M., to Honeywell Information Systems Inc. Split-cycle cache system with SCU controlled cache clearing during cache store access period. 4,525,777, Cl. 364-200.000.

Wegner, Paul C., to Tiegel Manufacturing Co. Enveloping a battery plate by a dip process and product produced thereby. 4,524,509, Cl. 29-623.500.

Wehrmann, Claus, to Lenze GmbH & Co. KG Aerzen. Multiple bolt turning machine. 4,524,919, Cl. 242-67.10R.

Wei, Chung H., to General Electric Company. Homogenizer process for forming emulsion/suspension polymers. 4,525,545, Cl. 526-65.000.

Weinstein, Boris; and Orton, Edward, to Washington Research Foundation. Cyclic ester dienes, polymeric and other derivatives thereof. 4,525,540, Cl. 525-327.200.

Weinstock, Leonard M.: *See—*
Amato, Joseph S.; Karady, Sandor; and Weinstock, Leonard M., 4,525,582, Cl. 534-558.000.

Weishaupt, Walter: *See—*
Bourauel, Fritz; Flohr, Wolfgang P.; and Weishaupt, Walter, 4,524,612, Cl. 73-117.300.

Weisman, Morey. Technique for property enhancement of open-cell foam material. 4,525,386, Cl. 427-185.000.

Weiss, Ervin; Rosenberg, Melvin; and Judas, Herbert. Dental and oral preparation. 4,525,342, Cl. 424-49.000.

Weldtec, Inc.: *See—*
Green, Jasper L.; and Hackett, Steven B., 4,525,096, Cl. 403-49.000.

Welker Engineering Company: *See—*
Welker, Robert H., 4,525,127, Cl. 417-479.000.

Welker, Robert H., to Welker Engineering Company. Fluid pump mechanism. 4,525,127, Cl. 417-479.000.

Welzenbach, Manfred: *See—*
Schenkel, Klaus D.; and Welzenbach, Manfred, 4,525,834, Cl. 370-3.000.

Wendling, Peter: *See—*
Casper, Rudolf; Wendling, Peter; Konter, Wolfgang; Pampus, Gottfried; and Hohmann, Gerhard, 4,525,561, Cl. 526-220.000.

Wenzel, Kenneth G.; and Duke, Jerry R., to Thorsen Tool Company. Ratchet wrench of the socket drive type with socket ejector. 4,524,652, Cl. 81-63.000.

Werner, Hugo: *See—*
Kuxdorf, Bernhard; Luhr, Peter; Werner, Hugo; Thummler, Ursus; and Dorn, Friedrich-Wilhelm, 4,525,329, Cl. 422-202.000.

Wertheim, Max M.; and Herbermann, Richard J., to Grumman Aerospace Corporation. Wind turbine maximum power tracking device. 4,525,633, Cl. 290-44.000.

Wessling, Ritchie A.; and Pickelman, Dale M., to Dow Chemical Company, The. Surface active polymeric surfactants containing side chain hydrophobes. 4,525,526, Cl. 524-815.000.

West, Robert F., to Stanley Works, The. Utility knife. 4,524,518, Cl. 30-330.000.

Western Design Corporation: *See—*
Golden, Michael D., 4,524,673, Cl. 89-33.020.

Westinghouse Electric Corp.: *See—*
Humphries, Benjamin T.; and Spisak, Andrew J., 4,525,642, Cl. 310-260.000.
Lamb, Miles P.; and Karol, Herman S., 4,525,095, Cl. 403-16.000.
Rowe, Neal E., 4,524,598, Cl. 72-198.000.

Westland plc: *See—*
Trickey, Peter W.; Netherway, David C.; and Clifford, William S., 4,525,010, Cl. 297-216.000.

Wetterlin, Kjell I. L., to Aktiebolaget Draco. Dosage inhalator. 4,524,769, Cl. 128-203.150.

Wever, Ruben; Allred, Lorin D.; and Ruiz, Marco A., to Wiltron Company. System for accessing electrical circuits and relay switch thereof. 4,525,605, Cl. 179-175.20R.

Wheeler, Jennifer M., to Standard Telephones and Cables, PLC. Ceramic capacitors and dielectric compositions. 4,525,768, Cl. 361-321.000.

Whelen Engineering Co., Inc.: *See—*
Lyons, Harold W., 4,524,679, Cl. 98-40.020.

Whitby, Ronney J. Loudspeaker system. 4,524,846, Cl. 181-152.000.

White Mop Wringer Company: *See—*
Wright, Paul O., 4,524,479, Cl. 15-147.00R.

White, Robert W.: *See—*
Formo, Jerome L.; Lasher, Albert C.; and White, Robert W., 4,524,512, Cl. 30-147.000.

White, Roy: *See—*
D'Amelia, Ronald P.; Stroz, John J.; and White, Roy, 4,525,363, Cl. 426-3.000.

Wiechard, Charles A., to AT&T Technologies, Inc. Molded plastic article having metallic inserts. 4,524,516, Cl. 30-290.000.

Wiegers, Wilhelmus J.; Fenn, Ronald S.; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. Alkanoic acid ésters of 3,4,5,6,6-pentamethyl heptanol-2 and alkyl homologues thereof; process for preparing same and organoleptic uses thereof. 4,524,783, Cl. 131-276.000.

Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Flavoring with a macrocyclic carbonate. 4,525,364, Cl. 426-3.000.

Wieland-Werke AG: *See—*
Hage, Manfred; and Junker, Otto, 4,524,822, Cl. 165-141.000.

Wiener, Robert P.: *See—*
Louis, Arnold S.; and Wiener, Robert P., 4,525,698, Cl. 338-39.000.

Wilde, Bernard D.; Van Ee, Gary R.; Ledebuhr, Richard L.; and Rotz, C. Alan. Pickle harvester. 4,524,572, Cl. 56-327.00R.

Wildermuth, Eberhard; Jansen, Dirk; Burkhardt, Rudolf; and Merz, Joachim, to Universitat Stuttgart, Institut Fur Flugnavigation. Position display instrument. 4,525,717, Cl. 343-452.000.

Wilke, Rudolf. Method for attaching an article to a wall. 4,524,506, Cl. 29-453.000.

Willcocks, Martin E. G., to Bogue, John C.; and Ruggles, Wesley, Jr. Variable rate and variable limit dimension controls for a directional enhancement system. 4,525,855, Cl. 381-22.000.

Willenbacher, Erich, to Pfaff Industriemaschinen GmbH. Thread changing mechanism for sewing machines. 4,524,703, Cl. 112-098.000.

Williams, Charles R., to Otis Engineering Corporation. Landing nipple with subsurface safety valve. 4,524,830, Cl. 166-321.000.

Williams, Harry K.: *See—*
Hill, Frank P., Jr.; Alden, John W., Jr.; and Williams, Harry K., 4,524,729, Cl. 122-498.000.

Williams, John E., Jr., to AAKAC Industries Inc. Anti-dive front wheel suspension suitable for motorcycle. 4,524,844, Cl. 180-219.000.

Williams Patent Crusher and Pulverizer Company: *See—*
Williams, Robert M., 4,524,917, Cl. 241-101.200.

Williams, Robert A. Locking apparatus for test probe. 4,525,016, Cl. 339-75.00R.

Williams, Robert A. Electrical cable connector assembly. 4,525,021, Cl. 339-104.000.

Williams, Robert C., III; and Williams, Stephen R., to U.S. Floor Systems, Inc. Cleaning solution dispenser attachment for rotary floor cleaning machine. 4,524,477, Cl. 15-50.00R.

Williams, Robert E., Jr.: *See—*
Campbell, John R.; and Williams, Robert E., Jr., 4,525,567, Cl. 528-27.000.

Williams, Robert M., to Williams Patent Crusher and Pulverizer Company. Air seal and lubrication system for roller grinding mills. 4,524,917, Cl. 241-101.200.

Williams, Rulon A. Machine for molding and curing a mass of resilient material. 4,525,132, Cl. 425-117.000.

Williams, Stephen R.: *See—*
Williams, Robert C., III; and Williams, Stephen R., 4,524,477, Cl. 15-50.00R.

Williams, Terrance L.: *See—*
Rehder, Thomas E.; and Williams, Terrance L., 4,525,388, Cl. 427-221.000.

Williamson, Richard C.: *See—*
Foyt, Arthur G.; Leonberger, Frederick J.; and Williamson, Richard C., 4,525,871, Cl. 455-325.000.

Willus, Charles A.; Kosonen, Vaino J.; and Sanchez, Dale R., to Dorr-Oliver Incorporated. Filtrate discharge system for pressure filter. 4,525,274, Cl. 210-232.000.

Wilmarth, Charles R. Wire puzzle. 4,524,972, Cl. 273-158.000.

Wilson, David H.; and Loe, James M., to K-Tron International, Inc. Apparatus and method for improving the accuracy of a loss-in-weight feeding system. 4,524,886, Cl. 222-58.000.

Wilson, John B.: *See—*
Pan, Jing-Jong; and Wilson, John B., 4,525,680, Cl. 330-277.000.

Wilson, Leslie B., to Dayco Corporation. Belt tensioner and method of making the same. 4,525,153, Cl. 474-138.000.

Wilson, Richard L., to American Standard Inc. Vigilance safety control system. 4,525,011, Cl. 303-19.000.

Wiltron Company: *See—*
Wever, Ruben; Allred, Lorin D.; and Ruiz, Marco A., 4,525,605, Cl. 179-175.20R.

Wimmer, Warren K.: *See—*
Murphy, Desmond L.; and Wimmer, Warren K., 4,525,688, Cl. 333-81.00R.

Winter, Joseph: *See—*
Gullotti, Damian V.; Winter, Joseph; Young, Kenneth P.; and Evans, Robert D., 4,524,820, Cl. 164-476.000.

Winterbottom, Martin E.: *See—*
Ashman, Glynn; Winterbottom, Martin E.; and Berry, Kelvin T., 4,524,677, Cl. 92-168.000.

Withers, Stanley J.; Schneiderman, Gary E.; and Little, William M., Jr. Split carrier for eyelid sensor and the like. 4,524,776, Cl. 128-644.000.

Wittmer, Paul: *See—*
Hahn, Klaus; Wittmer, Paul; De Grave, Isidoor; Schick, Rupert; and Echte, Adolf, 4,525,484, Cl. 521-56.000.

Wizner, Mark A.: *See—*
Sachdev, Krishna G.; Sachdev, Harbans S.; Aviram, Ari; and Wizner, Mark A., 4,525,722, Cl. 346-1.100.

Wnuk, Jack G., to Voplex Corporation. Method of making cushioned automotive strap handle. 4,525,231, Cl. 156-185.000.

Woditsch, Peter; Abels, Martin; and Brazel, Berthold, to Bayer Aktiengesellschaft. Process for the production of silicon. 4,525,334, Cl. 423-324.000.

Wohlfarth, Dieter; and Kostelezky, Walter, to Daimler-Benz Aktiengesellschaft. Process for determining maintenance and serving intervals on motor vehicles. 4,525,782, Cl. 364-431.010.

Wold, Aaron: *See—*
Soled, Stuart L.; Wold, Aaron; and Kershaw, Robert, 4,525,206, Cl. 75-0.5BA.

Wolf, Daniel. Infra-red heating apparatus. 4,524,753, Cl. 126-99.00R.

Wolf, Gerhard, to Siemens Aktiengesellschaft. Data transmission facility between two asynchronously controlled data processing systems with a buffer memory. 4,525,849, Cl. 375-118.000.

Wolf, Hans-Peter: *See—*
Dinklage, Horst; Fink, Herbert; and Wolf, Hans-Peter, 4,525,418, Cl. 428-264.000.

Wolf, Henry W.: *See—*
Rios, Victor; and Wolf, Henry W., 4,524,486, Cl. 16-381.000.

Wolfe, John R., III: *See—*
Frank, Jimmy I.; and Wolfe, John R., III, 4,524,524, Cl. 33-147.00M.

Wong, Backman, to Standard-Thomson Corporation. Automotive thermostatic fluid control valve device. 4,524,907, Cl. 236-34.500.

Wong, Stephen L.; and Salama, Clement A. T., to University of Toronto Innovations Foundation, The. High gain amplifying stage by output conductance cancellation. 4,525,679, Cl. 330-277.000.

Wong, Wan C.; and Oshima, Shigeru, to W. Haking Enterprises, Limited. Automatic slot positioning device for camera take-up spool. 4,525,048, Cl. 354-173.100.

Wong, Wan C.; and Oshima, Shigeru, to W. Haking Enterprises, Limited. Still camera with pressure plate control device. 4,525,051, Cl. 354-203.000.

Woo, Edmund P.; and Mullins, Michael J., to Dow Chemical Company, The. Polymers of 3,3-disubstituted-furandione compounds. 4,525,577, Cl. 528-327.000.

Wood, Denis; Thomas, John F., Jr.; Dipper, Barry; Stegenga, Philip D.; Veltkamp, John H.; Katsma, William L.; and Norton, Robert L., to Donnelly Corporation. Rearview mirror support bracket. 4,524,941, Cl. 248-544.000.

Wood, Robert F., Jr.; Monahan, John F.; and Levine, Peter A., to RCA Corporation. Dark current measurement and control for cameras having field-transfer CCD imagers. 4,525,743, Cl. 358-213.000.

Wood, Thomas H.: *See—*
Chemla, Daniel S.; Damen, Theodoor C.; Gossard, Arthur C.; Miller, David A. B.; and Wood, Thomas H., 4,525,687, Cl. 332-7.510.

Woodall, James C., to Mark Products Incorporated. Leakage testing cable connector network. 4,525,814, Cl. 367-20.000.

Woodall, Jerry M.: *See—*
Chappell, Terry I.; Jackson, Thomas N.; and Woodall, Jerry M., 4,525,731, Cl. 357-12.000.

Woods, John: *See—*
Rooney, John M.; Woods, John; and Conway, Paul, 4,525,232, Cl. 156-273.300.

Woodward, Donald W.; Katsaros, Arthur T.; and Rowles, Howard C., to Air Products and Chemicals, Inc. Dual dephlegmator process to separate and purify syngas mixtures. 4,525,187, Cl. 62-31.000.

Wright, Dale M.; and Kiraly, Robert L., to Hughes Helicopters, Inc. In-flight monitoring of composite structural components such as helicopter rotor blades. 4,524,620, Cl. 73-587.000.

Wright, John T.: *See—*
Doell, Brant; and Wright, John T., 4,524,730, Cl. 123-27.0GE.

Wright, Paul O., to White Mop Wringer Company. Replaceable plastic mophead. 4,524,479, Cl. 15-147.00R.

Wu, Chung P., to RCA Corporation. Alloying of aluminum metallization. 4,525,221, Cl. 148-1.500.

Wu, Mu-Yen M.; and Ball, Lawrence E., to Standard Oil Company, The. Process for the preparation of polyesteramide from cyclic lactone. 4,525,578, Cl. 528-354.000.

Wu, Philip T.: *See—*
Cochran, William H.; and Wu, Philip T., 4,525,810, Cl. 365-102.000.

Wulff, Lee. Fly line. 4,524,540, Cl. 43-44.980.

Wurmli, Arthur, to Rieter Machine Works Ltd. Device for donning bobbins onto a transport band. 4,524,579, Cl. 57-276.000.

Wyland, Alvin D., to Amana Refrigeration, Inc. Method for microwave defrosting. 4,525,615, Cl. 219-10.55M.

Xerox Corporation: *See—*
Crean, Peter A., 4,525,721, Cl. 346-1.100.
Law, Kock-Yee; and Bailey, Frank C., 4,525,592, Cl. 564-307.000.
Nishimura, Nobuo; Itami, Teruhiko; Kimoto, Toshifumi, Tomiyama, Shunsuke; and Saitoh, Koichi, 4,525,723, Cl. 346-74.400.

Yabe, Hisao: *See—*
Sasa, Hiroyuki; Yabe, Hisao; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, 4,525,220, Cl. 134-21.000.

Yablonovitch, Eli, to Exxon Research and Engineering Co. Inverted, optically enhanced solar cell. 4,525,593, Cl. 136-255.000.

Yachigo, Shinichi; Ishii, Tamaki; Takahashi, Yukoh; and Terada, Yutaka, to Sumitomo Chemical Co., Ltd. Stabilizer for polymeric substance and polymeric substance composition containing the same. 4,525,514, Cl. 524-291.000.

Yaghmaie, Farrokh: *See—*
Vasconcellos, Stephen R.; Yaghmaie, Farrokh; and Howe, Paul E., 4,525,280, Cl. 210-728.000.

Yagi, Yoshio; Kondo, Toshihiko; Matsubara, Norio; Miyazaki, Shoichiro; Kashiyama, Hajime; and Shibata, Makoto, to Yuwa Sangyo KK. Method and apparatus for making a cylindrical package for steel strip coil. 4,524,562, Cl. 53-409.000.

Yahav, Shimon: *See—*
Daar, Yair; and Yahav, Shimon, 4,524,772, Cl. 128-355.000.

Yajima, Mizuo, to Asama Chemical Co., Ltd. Method for prevention of oxidation of oils and fats and soft capsules containing the treated oils and fats. 4,525,306, Cl. 260-428.500.

Yakima, Inc.: *See—*
Cole, Stephen J., 4,524,893, Cl. 224-319.000.

Yamada, Keizo: *See—*
Yamauchi, Takashi; Maruhashi, Shigeaki; Koike, Shinkichi; and Yamada, Keizo, 4,525,209, Cl. 75-51.500.

Yamada, Takao: *See—*
Matsumoto, Akio; and Yamada, Takao, 4,525,609, Cl. 200-38.00R.

Yamada, Yasuo: *See—*
Takai, Kazuki; Hakumoto, Mitsuhiro; and Yamada, Yasuo, 4,525,756, Cl. 360-75.000.

Yamagishi, Kagari: *See—*
Itho, Yasuo; Kato, Hideo; Ogawa, Nobuo; Yamagishi, Kagari; Koshinaka, Eiichi; and Mitani, Kazuya, 4,525,356, Cl. 514-234.000.

Yamagishi, Takashi, to Turbo Kogyo Co., Ltd. Opposed type jet mill. 4,524,915, Cl. 241-39.000.

Yamaguchi, Norihisa: *See*—
Aoki, Akihiro; Hiratsuka, Shozaburo; Yamaguchi, Norihisa; and Makino, Shoji, 4,525,384, Cl. 427-174.000.
Yamaguchi, Yukio: *See*—
Tanaka, Toru; Iwatani, Kazutoshi; Enokido, Nobuo; Murakami, Atsushi; and Yamaguchi, Yukio, 4,525,554, Cl. 526-124.000.
Yamakoshi, Kenichi: *See*—
Kisioka, Kazuya; and Yamakoshi, Kenichi, 4,524,777, Cl. 128-677.000.
Yamamoto, Jun; Hayashida, Hajime; and Takahashi, Hiroyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Key-driving/detecting mechanism for keyboard instrument. 4,524,669, Cl. 84-433.000.
Yamamoto, Kimiaki: *See*—
Ito, Kenichi; Musha, Tohru; Kato, Kiichi; and Yamamoto, Kimiaki, 4,525,825, Cl. 369-45.000.
Yamamoto, Noriyoshi: *See*—
Kawamura, Hideo; Sagawa, Nobukazu; and Yamamoto, Noriyoshi, 4,525,622, Cl. 219-270.000.
Yamamoto, Ryoichi: *See*—
Kato, Akifumi; Yoshida, Junichi; and Yamamoto, Ryoichi, 4,525,547, Cl. 526-68.000.
Yamanaka, Kazushi, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for measurement of velocity of surface acoustic wave. 4,524,621, Cl. 73-597.000.
Yamane, Toshihiro; Ohashi, Kenzi; and Sakaguchi, Toshiharu, to Toray Industries, Inc.; and Tokyo Printing Ink Mfg. Co., Ltd. Electro-conductive thermoplastic resin foam and preparation process thereof. 4,525,297, Cl. 252-511.000.
Yamasaki, Harumasa: *See*—
Ito, Osamu; Yamasaki, Harumasa; Minakata, Itsuo; and Nishizawa, Kazunori, 4,524,577, Cl. 57-200.000.
Yamasaki, Hiro; Chin, Tung Jin; and Akiyama, Chuji, to Yokogawa Hokushin Electric Corporation. Electromagnetic flow meter. 4,524,627, Cl. 73-861.120.
Yamataka, Kazunori; and Isoya, Toshiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing dimethyl esters of higher dibasic acid. 4,525,251, Cl. 204-79.000.
Yamauchi, Junichi: *See*—
Omura, Ikuo; and Yamauchi, Junichi, 4,525,493, Cl. 523-116.000.
Yamauchi, Takashi; Maruhashi, Shigeaki; Koike, Shinkichi; and Yamada, Keizo, to Pacific Metals & Co. Ltd.; and Nisshin Steel Co. Ltd. Process for producing low P chromium-containing steel. 4,525,209, Cl. 75-51.500.
Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Light energy conversion system. 4,525,435, Cl. 429-111.000.
Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Light energy conversion system. 4,525,436, Cl. 429-111.000.
Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Light energy conversion system. 4,525,437, Cl. 429-111.000.
Yanagi, Masahiro: *See*—
Nakagawa, Koichiro; Suyama, Satoshi; Yanagi, Masahiro; and Nakajima, Yasutaka, 4,525,758, Cl. 360-133.000.
Yanagida, Shoji, to Ricoh Co., Ltd. Servomotor drive system. 4,525,658, Cl. 318-317.000.
Yanase, Shinji: *See*—
Kawai, Kyosuke; Nakagawa, Mitsuru; Yanase, Shinji; and Kawai, Kiyoshi, 4,525,190, Cl. 65-14.000.
Yang, Che-Ming: *See*—
Chen, Li F.; and Yang, Che-Ming, 4,525,218, Cl. 127-37.000.
Yang, John P.: *See*—
Barletta, Joseph M.; and Yang, John P., 4,525,713, Cl. 340-825.540.
Yarmchuk, Edward J.: *See*—
Franaszek, Peter A.; and Yarmchuk, Edward J., 4,525,724, Cl. 346-74.500.
Yaroshenko, Galina F.: *See*—
Kisil, Evgeny D.; Komova, Svetlana N.; Kulikova, Olga A.; Kutyanin, Leonid I.; Popova, Larisa V.; Dyatlova, Nina M.; Lastovsky, Rostislav P.; Yaroshenko, Galina F.; Khramov, Rem A.; Dytjuk, Leonid T.; Samakaev, Rafail K.; and Vasnev, Anatoly N., 4,525,293, Cl. 252-181.000.
Yasuda, Kenji: *See*—
Abe, Yumiko; and Yasuda, Kenji, 4,525,265, Cl. 204-403.000.
Toda, Shozo; Yasuda, Kenji; and Kokubo, Shozo, 4,525,276, Cl. 210-433.200.
Yasukawa, Motohiro; Ishikawa, Yukio; Ojima, Yasuo; Harada, Hiromi; and Mori, Yoshiaki, to Sumitomo Metal Mining Company Limited. Method for recovery of Zn and Pb from iron and steel dust. 4,525,208, Cl. 75-25.000.
Yasumoto, Hiromi, to Junkosha Company Ltd. Electrical connector. 4,525,020, Cl. 339-99.00R.
Yazawa, Hirosi: *See*—
Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Kurihara, Kazuhiko; and Yazawa, Hirosi, 4,525,317, Cl. 264-235.800.
Yeater, Robert P., to Mobay Chemical Corporation. Polyester polyols and mixtures made therefrom. 4,525,575, Cl. 528-301.000.
Yeh, An-I: *See*—
Berg, Lloyd; and Yeh, An-I, 4,525,245, Cl. 203-51.000.
Yokogawa Hokushin Electric Corporation: *See*—
Yamasaki, Hiro; Chin, Tung Jin; and Akiyama, Chuji, 4,524,627, Cl. 73-861.120.
Yokoo, Hirokazu, to Fuji Photo Film Co., Ltd. Photographic camera having battery remaining life indicating means. 4,525,055, Cl. 354-468.000.
Yokota, Mitsuyoshi: *See*—
Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,525,125, Cl. 417-44.000.
Yokoya, Satoshi, to Sony Corporation. Phase-locked loop circuit with variable bandwidth filter. 4,525,686, Cl. 331-17.000.
Yokoyama, Nobuaki: *See*—
Imazeki, Kazuyoshi; and Yokoyama, Nobuaki, 4,525,718, Cl. 343-702.000.
Yonehara, Hiroyuki: *See*—
Takagi, Tsuneo; and Yonehara, Hiroyuki, 4,525,065, Cl. 355-77.000.
Yonehara, Yoriko: *See*—
Takagaki, Hidetsugu; Nakanishi, Shigenori; Tanaka, Yasuyuki; Watanabe, Michihiro; and Yonehara, Yoriko, 4,525,303, Cl. 260-239.55R.
Yonezawa, Keitaro, to Aioi Seiki Kabushiki Kaisha. Pneumatic-hydraulic driving device for the knockout mechanism associated with the slide of a press-machine. 4,524,660, Cl. 83-639.000.
Yonezawa, Toshio: *See*—
Nakamura, Hatsuo; Kato, Tiharu; Yonezawa, Toshio; Koguchi, Shigeo; Mori, Kiyoto; and Igarashi, Masahiko, 4,525,523, Cl. 524-572.000.
York, Ray A.: *See*—
Sheng, Shih Y.; and York, Ray A., 4,525,695, Cl. 335-262.000.
Yoshida, Hideaki: *See*—
Morikawa, Masaki; Yoshida, Hideaki; and Kishida, Kunio, 4,525,434, Cl. 428-674.000.
Yoshida, Junichi: *See*—
Kato, Akifumi; Yoshida, Junichi; and Yamamoto, Ryoichi, 4,525,547, Cl. 526-68.000.
Yoshida Kogyo K. K.: *See*—
Inamura, Akio, 4,524,493, Cl. 24-389.000.
Yunoki, Akio, 4,524,659, Cl. 83-80.000.
Yoshida, Mitsuaki; Sugano, Haruo; Shimizu, Fumio; and Imagawa, Kenichi, to Japanese Foundation for Cancer Research; and Otsuka Pharmaceutical Co., Ltd. Human leukemia virus-related peptides, antibodies of the peptides and a process for production of the antibodies. 4,525,300, Cl. 260-112.50R.
Yoshida, Yoshinobu: *See*—
Ohki, Nobutaka; and Yoshida, Yoshinobu, 4,525,451, Cl. 430-551.000.
Yoshikawa, Mamoru: *See*—
Kubo, Kunimichi; Yoshikawa, Mamoru; Watanabe, Motokazu; Miyazaki, Yasunosuke; and Miyoshi, Mituji, 4,525,548, Cl. 526-72.000.
Yoshikawa, Shigeo: *See*—
Nishizawa, Junichi; Tamamushi, Takashige; Ando, Fumihiko; Yoshikawa, Shigeo; and Shimanuki, Koji, 4,525,742, Cl. 358-213.000.
Yoshikawa, Toshiharu: *See*—
Shibata, Takanori; Yoshikawa, Toshiharu; Isobe, Kenichi; and Ichinohe, Shoji, 4,525,563, Cl. 526-279.000.
Yoshimura, Tsuneo, to Mitsubishi Steel Mfg. Co., Ltd. Method of manufacturing leaded free-cutting steel by continuous casting process. 4,524,819, Cl. 164-468.000.
Yoshino, Kenji: *See*—
Tanaka, Masaru; Noguchi, Naoki; Yoshino, Kenji; and Saitoh, Osamu, 4,525,069, Cl. 356-435.000.
Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Arizono, Kenzo; Terasawa, Michio; and Nobutoki, Michiharu, 4,525,348, Cl. 424-81.000.
Yoshizumi, Toshiaki, to Mitsubishi Denki Kabushiki Kaisha. Spring-operated mechanism. 4,524,637, Cl. 74-569.000.
Young, Kenneth P.: *See*—
Gullotti, Damian V.; Winter, Joseph; Young, Kenneth P.; and Evans, Robert D., 4,524,820, Cl. 164-476.000.
Young, Larry W.: *See*—
Mak, Randall L.; and Young, Larry W., 4,524,571, Cl. 56-98.000.
Young, Robert F.: *See*—
Broughton, George L.; Higby, Jeffrey P.; and Young, Robert F., 4,525,149, Cl. 440-1.000.
Young, Rodney C.: *See*—
Roantree, Michael L.; and Young, Rodney C., 4,525,477, Cl. 514-333.000.
Yuasa, Hiromi: *See*—
Okawa, Tamotsu; and Yuasa, Hiromi, 4,525,799, Cl. 364-900.000.
Yunoki, Akio, to Yoshida Kogyo K. K. Apparatus for cutting continuous slide fastener chain. 4,524,659, Cl. 83-80.000.
Yurchenco, James R.; and Nuttall, Michael J., to MAD Computer, Inc. Monitor foot. 4,524,940, Cl. 248-359.000.
Yuwa Sangyo KK: *See*—
Yagi, Yoshio; Kondo, Toshihiko; Matsubara, Norio; Miyazaki, Shoichiro; Kashiyama, Hajime; and Shibata, Makoto, 4,524,562, Cl. 53-409.000.
Zaengel, Thomas: *See*—
Hubner, Horst; Lydtin, Hans; Rehder, Ludwig; and Zaengel, Thomas, 4,525,379, Cl. 427-53.100.
Zahir, Sheik A.: *See*—
Diethelm, Hermann; and Zahir, Sheik A., 4,525,572, Cl. 528-170.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Takeuchi, Tomio; and Kondo, Shinichi, 4,525,299, Cl. 260-112.50R.
Zamboni, Valentino: *See*—
Moretti, Enrico; Zamboni, Valentino; Le Van Mao, Raymond; Padovan, Mario; and Solari, Marcello, 4,525,466, Cl. 502-63.000.
Zannucci, Joseph S.: *See*—
Morris, John C.; and Zannucci, Joseph S., 4,525,504, Cl. 524-99.000.

Zawadzki, Stanley C., Jr.; Stadelmaier, Robert A.; and Perrone, John J., to Cecos International, Inc. Transportation and disposal of waste materials. 4,525,100, Cl. 405-129.000.
ZeiBig, Gerhard: *See*—
Neumann, Manfred; Schiller, Siegfried; ZeiBig, Gerhard; Morgner, Henry; and Jasch, Gunter, 4,524,717, Cl. 118-718.000.
Zeilinger, Hans: *See*—
Stemmler, Bruno; and Zeilinger, Hans, 4,525,389, Cl. 427-255.100.
Zenith Electronics Corporation: *See*—
Borg, Arthur N., 4,525,740, Cl. 358-192.100.
Lai, Stephen H.; and Srivastava, Gopal K., 4,525,682, Cl. 330-288.000.
Templin, Frank C., 4,525,866, Cl. 455-186.000.
Zenner, Armin: *See*—
Rasshofer, Werner; Konig, Klaus; Meyborg, Holger; Meckel, Walter; and Zenner, Armin, 4,525,590, Cl. 544-222.000.
Zhdanovich, Larisa P.: *See*—
Feofanov, Vitaly A.; Pilat, Boris V.; Zhdanovich, Larisa P.; Romanenko, Anatoly G.; Lukhanin, Boris S.; Donets, Oleg V.; and Korobochkin, Valery P., 4,525,254, Cl. 204-150.000.
Ziegelmeyer, Harold R. Force multiplying locking arrangement. 4,525,097, Cl. 403-259.000.
Ziegler, Rolf; and Hauk, Peter, to Mavilor Systemes S.A. Epicyclic gear. 4,524,643, Cl. 74-801.000.
Zimmer, Johannes: *See*—
Glantschnig, Josef, 4,524,688, Cl. 101-123.000.
Zimmerly, Harry L. Break-away inflator. 4,524,885, Cl. 222-5.000.
Zimmerman, Luther L.: *See*—
Hoffman, Harry S., Jr.; Thompson, Donald R.; and Zimmerman, Luther L., 4,525,707, Cl. 340-707.000.
Zink, Rudolf, to Ciba Geigy Corporation. Chromogenic naphtholactams. 4,525,588, Cl. 544-89.000.
Zito, Santo W.; and Staba, E. John, to University of Minnesota, Regents of the. Method for preparing a cell free homogenate of *Chrysanthemum cinerariaefolium* (Trev.) Bocc. containing enzymes and methods of use. 4,525,455, Cl. 435-135.000.
Zizan, John P., to Robroy Industries. Buckle connection for hanging cable. 4,524,937, Cl. 248-74.300.
Zochowski, John S. Amplifier. 4,525,872, Cl. 455-344.000.
Zoecon Corporation: *See*—
Lee, Shy-Fuh, 4,525,205, Cl. 71-108.000.
Zukosky, Mimzee; and Dieck, Ronald L., to Raychem Corporation. Polymeric compositions suitable for use in the medical field and containing a polyolefin, a polysiloxane and an elastomer. 4,525,531, Cl. 525-92.000.
Zupfer, David F.: *See*—
Nowak, David J.; and Zupfer, David F., 4,525,006, Cl. 294-19.100.
501 S.C.R. Engineers, Ltd.: *See*—
Brayer, Eyal, 4,524,720, Cl. 119-14.140.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF JUNE, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Beloit Corporation: *See—*
Justus, Edgar J.; and Roerig, Arnold J., Re. 31,923, Cl. 162-358.000.

Biohumus, Inc.: *See—*
Starr, Jerry, deceased, Re. 31,924, Cl. 210-610.000.

Boehringer Ingelheim GmbH: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, Re. 31,926, Cl. 514-157.000.

Burroughs Corporation: *See—*
Miller, Donald E., Re. 31,928, Cl. 313-631.000.

Christensen, Gordon D.: *See—*
Donaher, Charles J.; and Christensen, Gordon D., Re. 31,929, Cl. 361-393.000.

Clear, Theodore E.; and Miller, Robert. Methods and apparatus for stacking cementitious reinforced panels. Re. 31,921, Cl. 414-82.000.

Coffee, Ronald A.; Young, Brian W.; and Middleton, Michael R., to Imperial Chemical Industries PLC. Electrostatically sprayable insecticidal formulations. Re. 31,927, Cl. 514-521.000.

Donaher, Charles J.; and Christensen, Gordon D., to Thomas & Betts Corporation. Electronic package and accessory component assembly. Re. 31,929, Cl. 361-393.000.

Goeth, Hanns: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, Re. 31,926, Cl. 514-157.000.

Imperial Chemical Industries PLC: *See—*
Coffee, Ronald A.; Young, Brian W.; and Middleton, Michael R., Re. 31,927, Cl. 514-521.000.

Jenks, Richard H.; and Kipp, Egbert M., to Revere Copper and Brass Incorporated. Process for compression rolling of polymeric films. Re. 31,925, Cl. 264-280.000.

Johnson & Johnson: *See—*
Mesek, Frederick K.; and Mesek, Virginia R., Re. 31,922, Cl. 604-385.00A.

Justus, Edgar J.; and Roerig, Arnold J., to Beloit Corporation. Extended nip press. Re. 31,923, Cl. 162-358.000.

Kipp, Egbert M.: *See—*
Jenks, Richard H.; and Kipp, Egbert M., Re. 31,925, Cl. 264-280.000.

Lechner, Uwe: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, Re. 31,926, Cl. 514-157.000.

Maier, Roland: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, Re. 31,926, Cl. 514-157.000.

Mesek, Frederick K.; and Mesek, Virginia R., to Johnson & Johnson. Conformable disposable diapers having absorbent panel with bulged side members. Re. 31,922, Cl. 604-385.00A.

Mesek, Virginia R.: *See—*
Mesek, Frederick K.; and Mesek, Virginia R., Re. 31,922, Cl. 604-385.00A.

Middleton, Michael R.: *See—*
Coffee, Ronald A.; Young, Brian W.; and Middleton, Michael R., Re. 31,927, Cl. 514-521.000.

Miller, Donald E., to Burroughs Corporation. Display panel for displaying a bar of light. Re. 31,928, Cl. 313-631.000.

Miller, Robert: *See—*
Clear, Theodore E.; and Miller, Robert, Re. 31,921, Cl. 414-82.000.

Noda, Hideo, to Shimano Industrial Company Limited. Fishing reel having support for a deflected spool shaft. Re. 31,920, Cl. 242-212.000.

Reuter, Wolfgang: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, Re. 31,926, Cl. 514-157.000.

Revere Copper and Brass Incorporated: *See—*
Jenks, Richard H.; and Kipp, Egbert M., Re. 31,925, Cl. 264-280.000.

Roerig, Arnold J.: *See—*
Justus, Edgar J.; and Roerig, Arnold J., Re. 31,923, Cl. 162-358.000.

Shimano Industrial Company Limited: *See—*
Noda, Hideo, Re. 31,920, Cl. 242-212.000.

Starr, Jerry, deceased (by Williams, Walter C., administrator), to Biohumus, Inc. Composition and method for stimulation of bacteria. Re. 31,924, Cl. 210-610.000.

Thomas & Betts Corporation: *See—*
Donaher, Charles J.; and Christensen, Gordon D., Re. 31,929, Cl. 361-393.000.

Werner, Rolf: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, Re. 31,926, Cl. 514-157.000.

Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, to Boehringer Ingelheim GmbH. Penicillins and salts thereof. Re. 31,926, Cl. 514-157.000.

Williams, Walter C., administrator: *See—*
Starr, Jerry, deceased, Re. 31,924, Cl. 210-610.000.

Woitun, Eberhard: *See—*
Wetzel, Bernd; Reuter, Wolfgang; Woitun, Eberhard; Maier, Roland; Lechner, Uwe; Goeth, Hanns; and Werner, Rolf, Re. 31,926, Cl. 514-157.000.

Young, Brian W.: *See—*
Coffee, Ronald A.; Young, Brian W.; and Middleton, Michael R., Re. 31,927, Cl. 514-521.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Eyberger, Harry, to Vamco Machine and Tool, Inc. Self-contained feed roll for power punch presses. B1 1,029,795, 6-25-85, Cl. 83-245.000.

Grise , Frederick G. J. Pipe freezing device. B1 3,742,723, 6-25-85, Cl. 62-293.000.

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Allen, George A., Jr. Combined smoke gasket and intumescent expanding seal device for sliding elevator doors and the like. 279,409, 6-25-85, Cl. D25-74.000.

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CLASSIFICATION OF PATENTS

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106 4,524,478
147 R 4,524,479
159 A 4,524,480
250.41 4,524,481

CLASS 16

44 4,524,482
114 R 4,524,483
115 4,524,484
364 4,524,485
381 4,524,486

CLASS 17

1 E 4,524,487
11 4,524,488
4,524,489
48 4,524,490
52 4,524,491

CLASS 19

107 4,524,492

CLASS 23

300 4,525,171

CLASS 24

389 4,524,493
453 4,524,494
590 4,524,495

CLASS 27

18 4,524,496

CLASS 29

25.35 4,524,497
156.4 WL 4,524,498
156.8 B 4,524,499
157 R 4,524,500
237 4,524,501
268 4,524,502
407 4,524,503
450 4,524,504
453 4,524,505
4,524,506
564.2 4,524,507
571 4,524,508
623.5 4,524,509
861 4,524,510

CLASS 30

108 4,524,511
147 4,524,512
149 4,524,513
169 4,524,514
276 4,524,515
290 4,524,516
324 4,524,517
330 4,524,518
382 4,524,519

CLASS 33

1 AA 4,524,521
1 M 4,524,520
11 4,524,522
143 L 4,524,523
147 M 4,524,524
178 B 4,524,525
312 4,524,526
451 4,524,527

CLASS 34

102 4,524,528

CLASS 36

98 4,524,529
113 4,524,530
127 4,524,531

CLASS 37

117.5 4,524,532

CLASS 40

607 4,524,533

CLASS 42

1 S 4,524,534

CLASS 43

4.5 4,524,535
17.2 4,524,536
36 4,524,537
43.13 4,524,538
44.87 4,524,539
44.98 4,524,540

CLASS 44

32 4,525,172
51 4,525,173
68 4,525,174

CLASS 47

58 4,524,541
67 4,524,542

CLASS 48

86 R 4,525,175
197 R 4,525,176

CLASS 51

34 R 4,524,543
92 R 4,524,544
99 4,524,545
165 R 4,524,546
165.77 4,524,547
295 4,525,177
309 4,525,178
4,525,179
322 4,524,548
347 4,524,549
424 4,524,550

CLASS 52

98 4,524,551
108 4,524,552
169.11 4,524,553
693 4,524,554
738 4,524,555
807 4,524,556

CLASS 53

55 4,524,557
157 4,524,558
219 4,524,559
374 4,524,560
397 4,524,561
409 4,524,562
426 4,524,563
449 4,524,564
4,524,565
534 4,524,566
552 4,524,567
556 4,524,568

CLASS 54

24 4,524,569
44 4,524,570

CLASS 55

37 4,525,180
71 4,525,181
159 4,525,182
179 4,525,183
302 4,525,184

CLASS 56

98 4,524,571
327 R 4,524,572
330 4,524,573
341 4,524,574
372 4,524,575
4,524,576

CLASS 57

200 4,524,577
263 4,524,578
276 4,524,579
401 4,524,580

CLASS 60

39.02 4,524,581
421 4,524,582
525 4,524,583
554 4,524,584
562 4,524,585

CLASS 62

6 4,524,586
11 4,525,185
22 4,525,186
31 4,525,187
101 4,524,587
262 4,524,588
293 B1 3,742,723

CLASS 65

1 4,525,188
3.15 4,525,189
14 4,525,190
83 4,525,191
110 4,525,192
114 4,525,193
145 4,525,194
260 4,525,195
287 4,525,196

CLASS 68

5 D 4,524,589

CLASS 70

129 4,524,590
236 4,524,591
287 4,524,592
358 4,524,593
456 R 4,524,594

CLASS 71

11 4,525,197
28 4,525,198
76 4,525,200
4,525,201
86 4,525,202
88 4,525,203
92 4,525,204
108 4,525,205

CLASS 72

84 4,524,595
133 4,524,596
135 4,524,597
198 4,524,598
321 4,524,599
391 4,524,600
422 4,524,601

CLASS 73

9 4,524,602
12 4,524,603
38 4,524,604
4,524,605
40 4,524,606
40.5 R 4,524,607
4,524,608
49.2 4,524,609
54 4,524,610
59 4,524,611
117.3 4,524,612
119 A 4,524,613
147 4,524,614
181 4,524,615
203 4,524,616
296 4,524,617
323 4,524,618
505 4,524,619
587 4,524,620
597 4,524,621
620 4,524,622
633 4,524,623
708 4,524,624
754 4,524,625
784 4,524,626
861.12 4,524,627
863.43 4,524,628

CLASS 74

7 R 4,524,629
110 4,524,630
388 PS 4,524,631
471 R 4,524,632
473 R 4,524,633
4,524,634
476 4,524,635
527 4,524,636
569 4,524,637
606 R 4,524,638
640 4,524,639
650 4,524,640
691 4,524,641
796 4,524,642
801 4,524,643
804 4,524,644
866 4,524,645

CLASS 75

0.5 BA 4,525,206
3 4,525,207
25 4,525,208
51.5 4,525,209
58 4,525,210
4,525,211
68 R 4,525,212

CLASS 81

3.55 4,524,646
57.13 4,524,649
57.39 4,524,650
4,524,651
63 4,524,652
4,524,653

CLASS 82

3 4,524,654
36 A 4,524,655

CLASS 83

23 4,524,656
69 4,524,657
80 4,524,659
152 4,524,658
245 B1 Re.29,795
639 4,524,660
640 4,524,661
745 4,524,662
762 4,524,663
840 4,524,664

CLASS 84

1.01 4,524,665
1.03 4,524,666
1.15 4,524,667
1.24 4,524,668
433 4,524,669

CLASS 89

1.53 4,524,670
14.05 4,524,671
33.02 4,524,673
33.1 4,524,672
36 H 4,524,674
41.03 4,524,675

CLASS 91

43 4,524,676

CLASS 92

168 4,524,677

CLASS 98

1 4,524,678
40.02 4,524,679

CLASS 99

277.1 4,524,680
474 4,524,681
477 4,524,682

CLASS 100

3 4,524,683
117 4,524,684
210 4,524,685

CLASS 101

111 4,524,686
123 4,524,687
4,524,688
141 4,524,689
145 4,524,690
232 4,524,691
350 4,524,692

CLASS 102

393 4,524,694
430 4,524,695
491 4,524,696
517 4,524,697

CLASS 104

107 4,524,698

CLASS 105

4 R 4,524,699
377 4,524,700

CLASS 106

2 4,525,213
19 4,525,214
22 4,525,215
30 4,525,216
35 4,524,824
304 4,525,217

CLASS 108

44 4,524,701

CLASS 110

173 A 4,524,702

CLASS 112

098 4,524,703
105 4,524,704
121.15 4,524,705
121.29 4,524,706
152 4,524,707
231 4,524,708

CLASS 114

39 4,524,709
215 4,524,711
275 4,524,710

CLASS 118

46 4,524,712
102 4,524,713
123 4,524,714
221 4,524,715
665 4,524,716
718 4,524,717
4,524,718
719 4,524,719

CLASS 119

14.14 4,524,720
17 4,524,721
21 4,524,722
45 R 4,524,723
72.5 4,524,724

CLASS 122

7 R 4,524,725
13 R 4,524,726
235 A 4,524,727
459 4,524,728
498 4,524,729

CLASS 123

27 GE 4,524,730
90.57 4,524,731
193 H 4,524,732
196 A 4,524,733
196 R 4,524,735
196 S 4,524,734
198 D 4,524,736
300 4,524,737
339 4,524,738
4,524,739
340 4,524,740
342 4,524,741
438 4,524,742
4,524,743
459 4,524,744
478 4,524,745
538 4,524,746
557 4,524,747
591 4,524,748

CLASS 124

7 4,524,749
23 R 4,524,750

CLASS 126

25 A 4,524,751
91 A 4,524,752
99 R 4,524,753
110 R 4,524,754
247 4,524,755
400 4,524,756
426 4,524,757
440 4,524,758
452 4,524,759

CLASS 127

37 4,525,218

CLASS 128

1 R 4,524,760
6 4,524,761
33 4,524,762
75 4,524,763
80 C 4,524,764
92 D 4,524,765
92 H 4,524,766
132 D 4,524,767
134 4,524,768
203.15 4,524,769
303.1 4,524,770
339 4,524,771
355 4,524,772
419 S 4,524,773
421 4,524,774
640 4,524,775
644 4,524,776
677 4,524,777
736 4,524,778
4,524,779

CLASS 130

30 G 4,524,780

CLASS 131

108 4,524,781
180 4,524,782
276 4,524,783
281 4,524,784
4,524,785
308 4,524,786

CLASS 132

7 4,524,787
42 R 4,524,788
73 4,524,789
84 R 4,524,790

CLASS 134

1 4,525,219
21 4,525,220

CLASS 135

89 4,524,791
90 4,524,792

CLASS 136

255 4,525,593
256 4,525,594

CLASS 137

198 4,524,793
202 4,524,794
216.2 4,524,795
240 4,524,796
343 4,524,797
448 4,524,798
516.27 4,524,799
4,524,800
567 4,524,801
595 4,524,802
625.64 4,524,803
4,524,804
846 4,524,805
856 4,524,806
884 4,524,807

CLASS 138

103 4,524,808

CLASS 141

1 4,524,809
250 4,524,810
325 4,524,811

CLASS 144

134 A 4,524,812

CLASS 148

1.5 4,525,221
121 4,525,222
171 4,525,223
189 4,525,224

CLASS 149

19.5 4,525,225
35 4,525,226

CLASS 156
62.2 4,525,227
155 4,525,228
161 4,525,229
179 4,525,230
185 4,525,231
273.3 4,525,232
273.9 4,525,233
332 4,525,234
511 4,525,235
517 4,525,236
540 4,525,237
645 4,525,238
4,525,239
659.1 4,525,240

CLASS 157
1.17 4,524,813

CLASS 160
133 4,524,814

CLASS 162
301 4,525,241
358 Re.31,923

CLASS 163
5 4,524,815

CLASS 164
287 4,524,816
290 4,524,817
448 4,524,818
468 4,524,819
476 4,524,820
482 4,524,821

CLASS 165
141 4,524,822
174 4,524,823

CLASS 166
139 4,524,825
248 4,524,826
4,524,827
293 4,524,828
294 4,524,829
321 4,524,830
322 4,524,831
347 4,524,832
381 4,524,833
385 4,524,834

CLASS 169
65 4,524,835

CLASS 172
4.5 4,524,836
156 4,524,837

CLASS 174
35 GC 4,525,595
42 4,525,596
52 FP 4,525,597
128 R 4,525,598

CLASS 175
297 4,524,838

CLASS 177
45 4,524,839
210 C 4,524,840

CLASS 178
22.08 4,525,599

CLASS 179
6.02 4,525,600
7 MM 4,525,601
16 F 4,525,602
84 R 4,525,603
115.5 H 4,525,604
175.2 R 4,525,605

CLASS 180
132 4,524,842
179 4,524,843
219 4,524,844

CLASS 181
152 4,524,845
4,524,846

CLASS 182
23 4,524,847
77 4,524,848
170 4,524,849

CLASS 188
71.8 4,524,850
134 4,524,851

CLASS 190
16 4,524,852

CLASS 192
18 R 4,524,853
84 C 4,524,854
88 A 4,524,855
88 4,524,856

CLASS 198
409 4,524,857
434 4,524,858
735 4,524,859
740 4,524,860
781 4,524,861
4,524,862
797 4,524,863
828 4,524,864
852 4,524,865

CLASS 200
5 A 4,525,606
16 R 4,525,607
38 R 4,525,608
4,525,609
51.13 4,525,610
83 R 4,525,611
147 R 4,525,612
159 R 4,525,613

CLASS 202
177 4,525,242
181 4,525,243

CLASS 203
26 4,525,244
51 4,525,245

CLASS 204
15 4,525,246
24 4,525,247
29 4,525,248
58.5 4,525,250
79 4,525,251
101 4,525,252
129.75 4,525,249
149 4,525,253
150 4,525,254
158 R 4,525,255
159.18 4,525,256
159.2 4,525,257
159.23 4,525,258
181.7 4,525,260
182.4 4,525,259
192 EC 4,525,261
192 R 4,525,262
196 4,525,263
298 4,525,264
403 4,525,265
412 4,525,266

CLASS 206
223 4,524,866
232 4,524,867
233 4,524,871
358 4,524,869
364 4,524,868
608 4,524,870

CLASS 208
58 4,525,267
73 4,525,268
309 4,525,269

CLASS 209
44 4,525,270
303 4,525,271

CLASS 210
149 4,525,272
164 4,525,273
232 4,525,274
323.2 4,525,275
433.2 4,525,276
501 4,525,277
610 Re.31,924
638 4,525,278
728 4,525,279
4,525,280
735 4,525,281
747 4,525,282
762 4,525,283
777 4,525,284

CLASS 211
4 4,524,872

CLASS 212
177 4,524,873
197 4,524,874
239 4,524,875

CLASS 215
224 4,524,876
228 4,524,877

CLASS 219
10.55 D 4,525,614
10.55 M 4,525,615
60 R 4,525,616
83 4,525,617
4,525,618
124.22 4,525,619
137 PS 4,525,621
137 WM 4,525,620
270 4,525,622
373 4,525,623

CLASS 220
224 4,524,878
273 4,524,879
288 4,524,880
306 4,524,882
374 4,524,881
462 4,524,883

CLASS 221
231 4,524,884

CLASS 222
3 4,524,885
4,524,886
146.5 4,524,887
153 4,524,888

CLASS 223
76 4,524,889
94 4,524,890
109 R 4,524,891

CLASS 224
256 4,524,892
319 4,524,893

CLASS 225
2 4,524,894
19 4,524,895

CLASS 227
126 4,524,896
131 4,524,897

CLASS 228
1.1 4,524,898
173.2 4,524,899

CLASS 229
19 4,524,900
4,524,901
52 A 4,524,902
73 4,524,903

CLASS 232
7 4,524,904
35 4,524,905

CLASS 235
383 4,525,624

CLASS 236
12.11 4,524,906
34.5 4,524,907
46 R 4,524,908

CLASS 237
2 B 4,524,909
81 4,524,910

CLASS 239
101 4,524,911
150 4,524,912
222.17 4,524,913
452 4,524,914

CLASS 241
39 4,524,915
101 A 4,524,916
101.2 4,524,917

CLASS 242
18 A 4,524,918
67.1 R 4,524,919
71.1 4,524,920
84.1 J 4,524,921
84.1 R 4,524,922
84.5 A 4,524,923
107.4 A 4,524,924
197 4,524,925
198 4,524,926
4,524,927
212 Re.31,920

CLASS 244
35 R 4,524,928
63 4,524,929
152 4,524,930

CLASS 246
167 D 4,524,931
247 4,524,932

CLASS 248
27.3 4,524,933
62 4,524,934
4,524,935
4,524,936
74.3 4,524,937
110 4,524,938
359 4,524,940
467 4,524,939
544 4,524,941
643 4,524,942

CLASS 249
63 4,524,943

CLASS 250
201 4,525,625
227 4,525,626
345 4,525,627
367 4,525,628
396 ML 4,525,629
572 4,525,630

CLASS 251
6 4,524,944
75 4,524,945
88 4,524,946
129 4,524,947
139 4,524,948
163 4,524,949
326 4,524,950
327 4,524,951

CLASS 252
8.5 M 4,525,285
21 4,525,286
26 4,525,287
32.7 E 4,525,288
49.9 4,525,289
73 4,525,290
95 4,525,291
102 4,525,292
181 4,525,293
182 4,525,294
301.36 4,525,295
391 4,525,296
511 4,525,297
522 R 4,525,298

CLASS 254
269 4,524,952

CLASS 256
23 4,524,953

CLASS 260
112.5 R 4,525,299
4,525,300
4,525,301
239.3 R 4,525,302
239.55 R 4,525,303
245.4 4,525,304
401 4,525,305
428.5 4,525,306
453 RZ 4,525,308
462 C 4,525,309
465.6 4,525,310
940 4,525,311

CLASS 264
1.5 4,525,312
3 B 4,525,313
9 4,525,314
40.4 4,525,315
54 4,525,316
235.8 4,525,317
259 4,525,318
280 Re.31,925
322 4,525,319
502 4,525,320
517 4,525,321
531 4,525,322

CLASS 266
45 4,524,954
49 4,524,955
236 4,524,956
252 4,524,957
272 4,524,958

CLASS 269
43 4,524,959
45 4,524,960

CLASS 270
4 4,524,961
21.1 4,524,962

CLASS 271
3.1 4,524,963
204 4,524,964
214 4,524,965

CLASS 272
85 4,524,966

CLASS 273
1 GE 4,524,967
2 4,524,968
3 R 4,524,969
153 S 4,524,971
158 4,524,972
183 D 4,524,973
207 4,524,974
247 4,524,975
388 4,524,976

CLASS 277
3 4,524,977
189 4,524,978
199 4,524,979
210 4,524,981
229 4,524,982

CLASS 279
110 4,524,983

CLASS 280
18 4,524,984
33.99 C 4,524,985
81 A 4,524,841
154.5 R 4,524,986
204 4,524,987
208 4,524,988
281 R 4,524,989
633 4,524,990

CLASS 281
20 4,524,991
45 4,524,992
46 4,524,993

CLASS 285
38 4,524,994
54 4,524,995
55 4,524,996
74 4,524,997
101 4,524,998
158 4,524,999
177 4,525,000
328 4,525,001

CLASS 289
2 4,525,002
17 4,525,003

CLASS 290
4 R 4,525,631
38 R 4,525,632
44 4,525,633

CLASS 292
171 4,525,004

CLASS 293
117 4,525,005

CLASS 294
19.1 4,525,006
74 4,525,007
99.2 4,524,647
4,524,648

CLASS 296
97 K 4,525,008

CLASS 297
118 4,525,009
216 4,525,010

CLASS 303
19 4,525,011

CLASS 307
115 4,525,634
247 R 4,525,635
264 4,525,636
350 4,525,637
4,525,638
446 4,525,639
450 4,525,640
465 4,525,641

CLASS 310
260 4,525,642
313 A 4,525,643
328 4,525,644
337 4,525,645
360 4,525,646
361 4,525,647

CLASS 312
222 4,525,012

CLASS 313
631 Re.31,928

CLASS 315
96 4,525,649
224 4,525,648
226 4,525,650
240 4,525,651
307 4,525,652
366 4,525,653

CLASS 318
7 4,525,654
45 4,525,655
85 4,525,656
254 4,525,657
317 4,525,658
649 4,525,659
798 4,525,660

CLASS 322
4 4,525,661
28 4,525,662

CLASS 323
280 4,525,663

CLASS 324
51 4,525,664
52 4,525,665
71.1 4,525,666
140 R 4,525,667
142 4,525,668
4,525,669
208 4,525,670
252 4,525,671
304 4,525,672
312 4,525,673

CLASS 328
63 4,525,674
140 4,525,675

CLASS 329
50 4,525,676

CLASS 330
258 4,525,677
277 4,525,678
4,525,679
4,525,680
286 4,525,681
288 4,525,682
4,525,683
304 4,525,684

CLASS 331
10 4,525,685
17 4,525,686

CLASS 332
7.51 4,525,687

CLASS 333
81 R 4,525,688
104 4,525,689
116 4,525,690
139 4,525,691
142 4,525,692
236 4,525,693

CLASS 335
132 4,525,694
262 4,525,695
272 4,525,696

CLASS 337
354 4,525,697

CLASS 338
39 4,525,698

CLASS 339
7 4,525,013
14 R 4,525,014
17 C 4,525,015
75 R 4,525,016
89 M 4,525,017
91 R 4,525,018
98 4,525,019
99 R 4,525,020
104 4,525,021
220 C 4,525,022
258 R 4,525,023

CLASS 340
512 4,525,699
518 4,525,700
541 4,525,701
556 4,525,702
628 4,525,703
632 4,525,704
677 4,525,705
679 4,525,706
707 4,525,707
713 4,525,708
719 4,525,709
784 4,525,710
815.31 4,525,711
825.31 4,525,712
825.54 4,525,713
825.83 4,525,714
854 4,525,715

CLASS 343
381 4,525,716
452 4,525,717
702 4,525,718
761 4,525,719
895 4,525,720

CLASS 346
1.1 4,525,721
4,525,722
74.4 4,525,723
74.5 4,525,724
4,525,725
75 4,525,726
140 R 4,525,727
4,525,728
154 4,525,729

CLASS 350
6.5 4,525,024
96.15 4,525,025
96.23 4,525,026
96.30 4,525,027
128 4,525,029
255 4,525,030
265 4,525,031
331 R 4,525,032
350 R 4,525,033
377 4,525,028
395 4,525,034
410 4,525,035
427 4,525,036
450 4,525,037
462 4,525,038
465 4,525,039
480 4,525,040
484 4,525,041
519 4,525,042

CLASS 351
160 H 4,525,044
160 R 4,525,043

CLASS 352
57 4,525,045

CLASS 354
149.11 4,525,046
173 4,525,047
173.1 4,525,048
173.11 4,525,049
195.12 4,525,050
203 4,525,051
293 4,525,052
400 4,525,053
443 4,525,054
468 4,525,055

CLASS 355
3 DD 4,525,056
3 FU 4,525,057
4,525,058
8 4,525,059
53 4,525,060
72 4,525,061
4,525,062
4,525,063
75 4,525,064
77 4,525,065

CLASS 356
35.5 4,525,068
43 4,525,066
346 4,525,067
435 4,525,069

CLASS 357
5 4,525,730
12 4,525,731
13 4,525,732
65 4,525,733
67 4,525,734

CLASS 358
10 4,525,735
28 4,525,736
44 4,525,737
181 4,525,738
190 4,525,739
192.1 4,525,740
212 4,525,741
213 4,525,742
4,525,743
224 4,525,744
237 4,525,745
254 4,525,746
284 4,525,747
286 4,525,748
290 4,525,749
327 4,525,750
342 4,525,751

CLASS 360
13 4,525,752
45 4,525,753
51 4,525,754
63 4,525,755
75 4,525,756
130.24 4,525,757
133 4,525,758
135 4,525,759
137 4,525,760
4,525,761

CLASS 361
13 4,525,762
24 4,525,763
42 4,525,764
88 4,525,765
283 4,525,766
321 4,525,767
4,525,768
386 4,525,769
393 Re.31,929
399 4,525,770
413 4,525,771

CLASS 362
290 4,525,772
413 4,525,773

CLASS 363
17 4,525,774

CLASS 364
148 4,525,775
200 4,525,776
4,525,777
4,525,778
4,525,779
4,525,780
431.01 4,525,781
4,525,782
431.11 4,525,783
434 4,525,784
464 4,525,785
466 4,525,786
470 4,525,787
478 4,525,788
481 4,525,789
484 4,525,790
508 4,525,791
509 4,525,792
513.5 4,525,793
567 4,525,794
721 4,525,795
730 4,525,796
788 4,525,797
826 4,525,798
900 4,525,799
4,525,800
4,525,801
4,525,802
4,525,803
4,525,804
4,525,805
4,525,806

CLASS 365
36 4,525,807
4,525,808
51 4,525,809
102 4,525,810
154 4,525,811
155 4,525,812

CLASS 366
18 4,525,070
152 4,525,071
168 4,525,072
323 4,525,073

CLASS 367
20 4,525,813
4,525,814
35 4,525,815
123 4,525,816
140 4,525,817
149 4,525,818
167 4,524,693
188 4,525,819

CLASS 368
10 4,525,074
4,525,075
63 4,525,076
77 4,525,077
134 4,525,078
276 4,525,079

CLASS 369
2 4,525,820
31 4,525,821
44 4,525,822
4,525,823
45 4,525,824
4,525,825
46 4,525,826
72 4,525,827
111 4,525,828
284 4,525,829

CLASS 370
3 4,525,834
29 4,525,835
60 4,525,830
63 4,525,831
67 4,525,836
85 4,525,832
4,525,837
99 4,525,833

CLASS 371
37 4,525,838
38 4,525,839
47 4,525,840

CLASS 372
48 4,525,841
92 4,525,842
94 4,525,843

CLASS 374
115 4,525,080
208 4,525,081

CLASS 375
2.1 4,525,844
36 4,525,845
39 4,525,846
59 4,525,847
87 4,525,848
118 4,525,849

CLASS 376
106 4,525,323
272 4,525,324

CLASS 377
19 4,525,850
110 4,525,851

CLASS 378
34 4,525,852
84 4,525,853
089 4,525,854

CLASS 381
22 4,525,855
93 4,525,856
100 4,525,857

CLASS 382
1 4,525,858
5 4,525,859
21 4,525,860

CLASS 384
138 4,525,082
278 4,525,083

CLASS 400
55 4,525,084
59 4,525,085
144.2 4,525,086
613.2 4,525,087
621 4,525,088
639.1 4,525,089

CLASS 401
127 4,525,090
134 4,525,091
265 4,525,092

CLASS 403
4 4,525,093
11 4,525,094
16 4,525,095
49 4,525,096
259 4,525,097
280 4,525,098
371 4,525,099

CLASS 405
129 4,525,100
169 4,525,101
232 4,525,102
261 4,525,103
290 4,525,104

CLASS 406
25 4,525,107
50 4,525,105
60 4,525,106

CLASS 407
22 4,525,108
36 4,525,109
40 4,525,110

CLASS 408
239 A 4,525,111

CLASS 409
199 4,525,112

CLASS 410
41 4,525,113

CLASS 411
9 4,525,114
457 4,525,115

CLASS 412
8 4,525,116
39 4,525,117

CLASS 414
43 4,525,118
82 Re.31,921
111 4,525,119
160 4,525,120
564 4,525,121

CLASS 416
80 4,525,122
115 4,525,123
132 B 4,525,124

CLASS 417
44 4,525,125
310 4,525,126
479 4,525,127
550 4,525,128

CLASS 418
84 4,525,129

CLASS 420
473 4,525,325
535 4,525,326
565 4,525,327

CLASS 422
80 4,525,328
202 4,525,329

CLASS 423
24 4,525,330
54 4,525,331
89 4,525,332
112 4,525,333
235 4,525,142
324 4,525,334
344 4,525,335
348 4,525,336
449 4,525,337
573 G 4,525,338

CLASS 424
16 4,525,339
4,525,340
22 4,525,345
43 4,525,341
49 4,525,342
54 4,525,343
73 4,525,344
80 4,525,346
81 4,525,347
4,525,348
59 4,525,349
74 4,525,350
95 4,525,351
114 4,525,352
4,525,353
115 4,525,354

CLASS 425
2 4,525,130
114 4,525,131
117 4,525,132
120 4,525,133
130 4,525,134
290 4,525,135
384 4,525,136

CLASS 426
3 4,525,363
4,525,364
101 4,525,365
271 4,525,366
394 4,525,367
438 4,525,368
446 4,525,369
508 4,525,370
557 4,525,371
564 4,525,372
634 4,525,373

CLASS 427
2 4,525,374
8 4,525,375
10 4,525,376
12 4,525,377
38 4,525,378
53.1 4,525,379
4,525,380
54.1 4,525,381
4,525,382
89 4,525,383
174 4,525,384
177 4,525,385
185 4,525,386
190 4,525,387
221 4,525,388
255.1 4,525,389
305 4,525,390
391 4,525,391
420 4,525,392

CLASS 428
7 4,525,393
26 4,525,394
35 4,525,395
4,525,396
36 4,525,397
40 4,525,398
43 4,525,399
54 4,525,400
64 4,525,401
4,525,402
87 4,525,403
92 4,525,404
95 4,525,405
137 4,525,406
138 4,525,407
159 4,525,408
193 4,525,409
198 4,525,410
4,525,411
199 4,525,412
212 4,525,413
213 4,525,414
216 4,525,415
220 4,525,416
244 4,525,417
264 4,525,418
336 4,525,419
372 4,525,420
412 4,525,421
418 4,525,422
421 4,525,423
425.9 4,525,424
428 4,525,425
447 4,525,426
458 4,525,427
488.1 4,525,428
566 4,525,429
625 4,525,430
638 4,525,431
653 4,525,432
670 4,525,433
674 4,525,434

CLASS 429
111 4,525,435
4,525,436
4,525,437
149 4,525,438
162 4,525,439
191 4,525,440

CLASS 430
46 4,525,441
57 4,525,442
83 4,525,443
96 4,525,444
109 4,525,445
117 4,525,446
122 4,525,447
314 4,525,448
407 4,525,449
551 4,525,451
552 4,525,450

CLASS 431
76 4,525,137
187 4,525,138
189 4,525,139
258 4,525,140
347 4,525,141

CLASS 433
3 4,525,143
118 4,525,144
173 4,525,145
198 4,525,146
224 4,525,147

CLASS 434
340 4,525,148

CLASS 435
7 4,525,452
30 4,525,453
106 4,525,454
135 4,525,455
176 4,525,456
178 4,525,457
196 4,525,458

CLASS 436
544 4,525,459

CLASS 440
1 4,525,149

CLASS 455
33 4,525,861
47 4,525,862
83 4,525,863
160 4,525,864
186 4,525,865
4,525,866
194 4,525,867
206 4,525,868
277 4,525,869
297 4,525,870
325 4,525,871
344 4,525,872
600 4,525,873
4,525,874

CLASS 474
93 4,525,150
101 4,525,151
133 4,525,152
138 4,525,153
167 4,525,158
201 4,525,159
242 4,525,160

CLASS 493
42 4,525,161
154 4,525,154

CLASS 494
3 4,525,155

CLASS 501
71 4,525,462
86 4,525,460
90 4,525,461
99 4,525,463
103 4,525,464

CLASS 502
7 4,525,465
63 4,525,466
104 4,525,468
121 4,525,467
125 4,525,469
167 4,525,470
209 4,525,471
323 4,525,472

CLASS 514
157 Re.31,926
202 4,525,473
210 4,525,355
226 4,525,474
234 4,525,356
255 4,525,358
258 4,525,357
277 4,525,360
304 4,525,475
326 4,525,476
333 4,525,477
350 4,525,478
469 4,525,479
521 Re.31,927
544 4,525,480
653 4,525,359
689 4,525,361
712 4,525,362
788 4,525,199

CLASS 518
700 4,525,481
707 4,525,482

CLASS 521
28 4,525,483
56 4,525,484
58 4,525,485
59 4,525,486
78 4,525,487
108 4,525,489
124 4,525,490
164 4,525,488
174 4,525,491
181 4,525,492

CLASS 523
116 4,525,493
200 4,525,494
205 4,525,495
337 4,525,496
400 4,525,497
511 4,525,498
523 4,525,499

CLASS 524
5 4,525,500
28 4,525,501
96 4,525,502
98 4,525,503
99 4,525,504
100 4,525,505
102 4,525,506
104 4,525,507
140 4,525,508
141 4,525,509
156 4,525,510
158 4,525,511
284 4,525,512
288 4,525,513
291 4,525,514
378 4,525,515
380 4,525,516
394 4,525,517
447 4,525,518
457 4,525,519
512 4,525,520
517 4,525,521
547 4,525,522
572 4,525,523
601 4,525,524
742 4,525,525
815 4,525,526
831 4,525,527
840 4,525,528

CLASS 525
64 4,525,529
84 4,525,530
92 4,525,531
98 4,525,532
4,525,533
127 4,525,534
163 4,525,535
194 4,525,536

CLASSIFICATION OF PATENTS

198	4,525,537	116	4,525,550	348.1	4,525,564	327	4,525,577		CLASS 544		CLASS 603
275	4,525,538		4,525,551		CLASS 528	354	4,525,578	59	4,525,588	3	4,524,466
326.3	4,525,539		4,525,552	17	4,525,565	388	4,525,579	025	4,525,587	6	4,524,468
327.2	4,525,540	120	4,525,553		4,525,566	490	4,525,580	128	4,525,589	22	4,524,467
337	4,525,541	124	4,525,554	27	4,525,567	503	4,525,581	174	4,525,586		CLASS 604
484	4,525,542	125	4,525,555	60	4,525,568		CLASS 534	222	4,525,590	28	4,525,156
529	4,525,543		4,525,556	73	4,525,569	558	4,525,582	250	4,525,591	52	4,525,157
531	4,525,544	128	4,525,557	75	4,525,570	606	4,525,583		CLASS 556	56	4,525,162
	CLASS 526	142	4,525,558	111	4,525,571		CLASS 536	182	4,525,307	65	4,525,163
65	4,525,545	200	4,525,559	170	4,525,572	24	4,525,584		CLASS 564	131	4,525,164
68	4,525,546	201	4,525,560	232	4,525,573	98	4,525,585	307	4,525,592		4,525,165
	4,525,547	220	4,525,561	283	4,525,574					133 J	4,525,166
72	4,525,548	271	4,525,562	301	4,525,575					135	4,525,167
92	4,525,549	279	4,525,563	313	4,525,576					385 A	Re.31,922

CLASSIFICATION OF DESIGNS

D2—	282	279,325		466	279,341		450	279,357		53	279,373	D20—	39	279,389	D24—	23	279,405
	298	279,326			279,342	D10—	71	279,358		100	279,374	D21—	52	279,390		36	279,406
	310	279,327		522	279,343		126	279,359		113	279,375			279,391		53	279,407
D3—	35	279,328		596	279,344	D11—	71	279,360	D15—	5	279,376			279,392	D25—	25	279,408
	40	279,329	D7—	28	279,345	D12—	9	279,361		7	279,377		59	279,393		74	279,409
	76	279,330		77	279,346		133	279,362		138	279,378		86	279,394	D26—	69	279,410
D6—	335	279,333	D8—	1	279,347		143	279,363			279,379		92	279,395	D28—	53	279,411
	354	279,334		11	279,348		146	279,364	D17—	20	279,380		201	279,396		58	279,412
	361	279,335		13	279,349		147	279,365	D18—	2	279,381		212	279,397	D30—	11	279,413
	368	279,336		71	279,350			279,366		4	279,382			279,398		43	279,414
	371	279,337		331	279,351		149	279,367	D19—	51	279,383		221	279,399	D32—	49	279,415
	376	279,338		354	279,352		157	279,368		75	279,384		232	279,400		69	279,416
	379	279,331	D9—	349	279,353		158	279,369		77	279,385		245	279,401	D34—	1	279,417
		279,332		351	279,354		159	279,370		91	279,386	D23—	2	279,402		38	279,418
	384	279,339		432	279,355	D14—	16	279,371			279,387		28	279,403	D99—	29	279,419
	429	279,340		434	279,356		52	279,372			279,388		62	279,404			

CLASSIFICATION OF PLANTS

P.—	58	5,501	70	5,499	73	5,498		5,500	76	5,502	

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
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Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,524,505	4,524,776	4,525,644		4,525,770	4,524,991		4,524,706			
	4,524,527	4,524,782	4,525,672		4,525,786	4,525,087		4,524,753			
	4,524,606	4,524,791	4,525,673		4,525,788	4,525,091		4,524,800			
	4,524,681	4,524,794	4,525,677	10 :	4,525,539	4,525,118		4,525,086			
	4,524,837	4,524,805	4,525,689		4,525,545	4,525,130		4,525,268			
	4,524,966	4,524,813	4,525,695	11 :	4,525,367	4,525,134		4,525,295			
	4,525,850	4,524,834	4,525,720	12 :	4,524,497	4,525,149		4,525,483			
04 :	4,524,481	4,524,838	4,525,754		4,524,504	4,525,163		4,525,542			
	4,524,535	4,524,846	4,525,766		4,524,511	4,525,164		4,525,608			
	4,524,630	4,524,869	4,525,802		4,524,691	4,525,167	22 :	4,524,490			
	4,524,731	4,524,893	4,525,815		4,524,713	4,525,338		4,524,602			
	4,524,886	4,524,906	4,525,836		4,524,767	4,525,388		4,525,003			
	4,525,043	4,524,925	4,525,838		4,524,885	4,525,393		4,525,102			
	4,525,144	4,524,930	4,525,852		4,524,887	4,525,397	24 :	4,524,607			
	4,525,247	4,524,940	4,525,857		4,524,944	4,525,409		4,524,773			
	4,525,272	4,524,962	08 : 4,524,608		4,525,183	4,525,422		4,525,165			
	4,525,287	4,524,964	4,525,064		4,525,253	4,525,456		4,525,237			
	4,525,341	4,524,975	4,525,067		4,525,459	4,525,510		4,525,266			
	4,525,424	4,524,976	4,525,263		4,525,642	4,525,543		4,525,704			
	4,525,638	4,524,983	4,525,345		4,525,680	4,525,647		4,525,859			
	4,525,663	4,524,984	4,525,425		4,525,805	4,525,682	25 :	4,524,514			
	4,525,675	4,524,985	09 : 4,524,467		4,525,821	4,525,697		4,524,564			
	4,525,714	4,524,992	4,524,518		4,525,846	4,525,740		4,524,597			
	4,525,777	4,525,045	4,524,545		4,525,847	4,525,831		4,524,639			
05 :	4,524,573	4,525,090	4,524,557	13 :	4,524,491	4,525,861		4,524,644			
06 :	Re.31,922	4,525,096	4,524,593		4,524,516	4,525,862		4,524,718			
	Re.31,924	4,525,099	4,524,599		4,524,659	4,525,866		4,524,721			
	Re.31,929	4,525,133	4,524,617		4,524,723	18 : 4,524,472		4,524,754			
	4,524,471	4,525,143	4,524,624		4,524,744	4,524,571		4,524,760			
	4,524,509	4,525,156	4,524,679		4,524,821	4,524,752		4,524,790			
	4,524,517	4,525,162	4,524,820		4,524,993	4,524,884		4,524,907			
	4,524,526	4,525,174	4,524,835		4,525,168	4,524,946		4,525,026			
	4,524,552	4,525,184	4,524,872		4,525,314	4,525,062		4,525,028			
	4,524,553	4,525,199	4,524,874		4,525,377	4,525,218		4,525,030			
	4,524,601	4,525,201	4,524,877		4,525,490	4,525,304		4,525,182			
	4,524,604	4,525,202	4,524,894		4,525,669	4,525,584		4,525,235			
	4,524,616	4,525,203	4,524,963	15 :	4,524,709	4,525,587		4,525,246			
	4,524,619	4,525,205	4,524,965	16 :	4,525,309	4,525,739		4,525,413			
	4,524,620	4,525,226	4,524,980	17 :	4,524,513	4,525,751		4,525,452			
	4,524,623	4,525,239	4,525,000		4,524,537	19 : 4,524,515		4,525,454			
	4,524,647	4,525,252	4,525,013		4,524,560	4,524,528		4,525,599			
	4,524,650	4,525,270	4,525,015		4,524,665	4,524,588		4,525,729			
	4,524,662	4,525,273	4,525,019		4,524,687	4,524,626		4,525,759			
	4,524,667	4,525,311	4,525,044		4,524,734	4,524,764		4,525,778			
	4,524,673	4,525,323	4,525,071		4,524,756	4,525,615		4,525,780			
	4,524,711	4,525,359	4,525,123		4,524,787	20 : 4,524,569		4,525,863			
	4,524,719	4,525,398	4,525,274		4,524,827	4,524,574		4,525,871			
	4,524,722	4,525,399	4,525,325		4,524,870	4,524,692		3,742,723			
	4,524,736	4,525,531	4,525,344		4,524,882	4,524,947	26 :	4,524,480			
	4,524,746	4,525,603	4,525,350		4,524,942	4,525,219		4,524,498			
	4,524,757	4,525,605	4,525,487		4,524,967	21 : 4,524,568		4,524,501			
	4,524,759	4,525,613	4,525,595		4,524,988	4,524,676		4,524,519			
	4,524,766	4,525,641	4,525,703		4,524,989	4,524,683		4,524,536			

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DESIGN PATENTS

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